

LABORATORIES—INFRASTRUCTURE—COMPANIES

# DIRECTORY 2015



**GENOPOLE**  
INNOVATION TODAY. EVERY DAY



**île de France**



## Genopole's websites

[www.genopole.fr](http://www.genopole.fr)

Our website describes what's happening on the biocluster in words and pictures. It provides an accurate snap-shot of life on the campus and contains detailed information on the biocluster's activities and stakeholders. You can view all the Genopole press releases, get the latest news from campus labs and companies and learn about events on the biocluster. The website "Join" (<http://join-the-biocluster.genopole.fr>) is specifically intended for entrepreneurs.



## Genopole is active on social networks



A Facebook page called "Genopole Réussir en biotechnologies" provides regular news of website updates and, more broadly, the scientific discoveries and societal & ethical issues raised by new fields of investigation in life sciences.

<https://www.facebook.com/pages/Genopole-Réussir-en-biotechnologies/175395621643?ref=ts>

Genopole also has a Facebook page called "Les Cafés du Gène", dedicated to the public understanding of life sciences.

<https://www.facebook.com/pages/Les-Cafés-du-Gène/172168977373>



You can also view a series of videos on our website or at:

<http://www.youtube.com/user/Genopole>



Our presentations are available on SlideShare:

<http://www.slideshare.net/genopole/>



And you can keep up with our news on Twitter and LinkedIn:



<http://twitter.com/#!/Genopole>  
<http://www.linkedin.com/company/genopole>

# CONTENTS

Genopole France's leading biocluster	4
The Genopole strategy	9
Genopole projects	10
The Genopole teams: their missions	12
Genopole Research	13
Genopole Enterprises	14
The G1J Île-de-France pre-seed fund	15
Genopole Global Infrastructure and Platforms	16
Genopole International	17
Genopole Events	18
Genopole Communication	19
Genopole Real Estate	20
Laboratories	21
Infrastructures	47
Companies	75
Index of contacts	150
Index of laboratories, infrastructure and companies	155
Field of activity of the companies	157

# GENOPOLE FRANCE'S LEADING BIOCLUSTER

Genopole is France's leading biocluster and has a special focus on life sciences. It is located just south of Paris (in the towns of Évry and Corbeil-Essonnes).

Its mission is to give impetus today to innovations that will help us live better and healthier. Toward this, Genopole supports the creation and development of businesses in biotechnology and research in genomics and postgenomics.

Genopole was created in 1998 under the impetus of the AFM-Téléthon and with support from the French government and local authorities. The biocluster has been growing steadily and is currently home to 20 academic labs, 81 biotech companies and 21 shared-use facilities.

## ○ Genopole's missions

- Promoting the growth of the biotech industry by creating or attracting innovative companies and providing them with business support and real estate solutions.
- Structuring and overseeing a genomics and post-genomics research hub.
- Reinforcing a life science teaching and training cluster, in collaboration with the University of Évry Val-d'Essonne (UEVE).
- Creating favorable conditions on campus for cross-fertilization between skills.
- Disseminating scientific and cultural information to the general public and contributing to societal debate on issues in genetics research.

## ○ Europe's leading research zone

Genopole is located within a dense, high-quality scientific environment at the heart of the Essonne administrative department, with universities (the University of Évry-Val-d'Essonne and the University of Paris Sud 11 in Orsay), research laboratories, elite Haute École engineering schools (Polytechnique, Supélec, the Institut des hautes études scientifiques, etc.), government and not-for profit research institutes (CEA, CNRS, Institut Curie, ONERA, etc.) and major scientific facilities (e.g. the Soleil Synchrotron and the NeuroSpin imaging facility). The development of Genopole and that of the Saclay Plateau are complementary. To enable cooperation for research and business creation, Genopole will be an associate member of the Saclay campus.



## GENOPOLE: KEY FIGURES\*

- 81** biotech companies;
- 20** academic laboratories;
- 21** shared-access technology platforms and facilities;
- €403M** in funds raised by Genopole portfolio companies;
- €158M** in turnover estimated for 2013 generated by 50 companies;
- 4** companies listed on the stock market,  
**3** publicly traded companies;



Genopole is located within a “biotech valley” south of Paris and works in synergy with the world-class Medicen Paris Region cluster (dedicated to innovative healthcare technologies and novel therapies).

Furthermore, in May 2014, Genopole signed a convention with the French Armed Biomedical Research Institute (IRBA, Military Health Services division of the Defense Ministry), the Val d’Orge Urban Area, and the intercommunal cooperation syndicate SIVU, to develop scientific cooperation and the shared use of platforms and infrastructures on the former airbase at Brétigny-sur-Orge, which will ultimately accommodate 450 researchers.

The Île-de-France administrative region is Europe’s leading territory for research in terms of European patent applications and home to 40% of France’s researchers and 27% of its university students. The region is home to 300 public or private research laboratories, and nearly 200 biotech companies, nearly half of those in activity in France.

Genopole benefits from one of the highest concentrations of biotech companies in France.

- **164** products from the regulatory preclinical phase through to market launch;
- Genopole represents a total of **2,240** direct jobs. Real estate developments cover a total of **102,160** square meters;
- Genopole is funded mainly by the Île-de-France Regional Council (20.3%), the Essonne Departmental Council (28.1%) and the French State (10.5%).

## ○ Genopole: a hub for genetics research

Genopole encompasses 20 research labs. Most specialize in genomics, post-genomics and biotherapies (70%) but there are also skills in biophysics/biochemistry (10%), bioinformatics/biomathematics (10%), and clinical research (5%).

The majority of these labs are administered or accredited by France’s national research institutes (CNRS, INRA, CEA and INSERM).

This research firepower makes Genopole the leading French biocluster for genome sequencing, genotyping and human stem cell research, as well as for applications of this fundamental life science research, such as gene therapy of rare genetic diseases and functional genomics in crop species.

## ○ Genopole: a center of reference for synthetic biology

Genopole stands out among French research hubs for its commitment to synthetic biology, an emerging discipline at the interface between genetic engineering and engineering sciences that consists in designing and building new biological circuits with functions that are absent in nature.

The economic stakes are high and synthetic biology has many applications in the fields of healthcare (e.g. vaccines), the environment (remediation) and energy (biofuels).

In partnership with the CNRS, Genopole has created an Institute of Systems & Synthetic Biology (ISSB) and hosts five research groups (including biologists, computer scientists and physicists). The institute has a biological resource center (for DNA and cell samples), an automated molecular biology facility and a bioinformatics platform based essentially on novel software developed in-house.

# GENOPOLE FRANCE'S LEADING BIOCLUSTER

## **● A lodestone for biotech businesses**

Currently Genopole is home to 81 companies, 59.3% of which are active in the biomedical/healthcare sector and 40% in other sectors such as environmental technologies, agro-industry or scientific instruments to name just a few.

The Genopole biocluster is home to a range of start-ups (half of which were founded by public-sector researchers) seeking to turn scientific knowledge into a drug, a medical device or innovative products in the agricultural or environmental sectors.

The Genopole Enterprises team provides startup and business development support to campus companies. This support can be managerial (strategy), logistic (premises and scientific facilities) or financial (business development and fundraising). To address its companies' accommodation needs, Genopole offers real estate solutions that range from an office (from 20 to

150 square meters – just right for recent start-ups) to much larger office/lab space (from 200 to 1,200 square meters) for more mature companies. Genopole has also financed the construction and operation of 21 technical facilities (including a cell irradiator, a transmission electron microscope and a high-throughput screening platform), all of which are available for use by campus labs and companies.

In addition to its longstanding partners (such as the Essonne Chamber of Commerce and Industry [CCIE] and the Essonne Economic Development Agency [AEE]), Genopole Enterprises interfaces with the skills of the Ile-de-France Innovation Center (CFI). A CFI advisor holds a monthly clinic on campus. Since its advent, 158 businesses have been incubated or accompanied by Genopole.

Entrepreneurs looking for a place to set up business can learn about Genopole's accompaniment and real estate offer on the dedicated website:  
<http://join-the-biocluster.genopole.fr>



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Genopole offers even more help to portfolio companies by providing them with shared services. These notably include IT services such as secure networks, website and e-mail hosting and management, update management and access to electronic business databases.

Furthermore, by joining the BioSupport employers group, biocluster companies can access an even wider range of services, including a part-time administrative and financial director, quality assurance, IT maintenance and communication.

### **○ Genopole – a key partner for the University of Évry Val-d’Essonne (UEVE)**

In addition to research and business creation, Genopole’s third major axis is training and the creation of new academic curricula, tasks assured by one of its founding members, the University of Évry-Val-d’Essonne (UEVE). A dozen research groups (most of which are joint units with the CNRS, INSERM, INRA and CEA national research institutes) form the UEVE’s Department of Biology (awarded a grade “A” ranking by the French Agency for the Evaluation of Research and Higher Education [AERES]). The research fields include biotherapy, stem cells, genomics, post-genomics, bioinformatics, biomaterials and synthetic biology.

The UEVE created a Master’s in Systems and Synthetic Biology, in collaboration with the iSSB.

In order to reinforce the campus’s attractiveness, the UEVE opened an Institute of Genetic Biology and Bioinformatics. The Institute provides high-quality teaching and training in genomics and post-genomics as applied to healthcare, the environment, bioinformatics and complex systems engineering. Along with UEVE and several prestigious French Grandes Écoles, Genopole is also a founding member of Évry Sciences Innovation (ex PSEVS), whose objective is to develop higher learning and research in and about Évry.

# GENOPOLE FRANCE'S LEADING BIOCLUSTER

## ○ Capital of genobiomedicine

With its Horizon 2025 plan, Genopole intends to employ 6000 staff members (10,000 with the South Île-de-France Medical Center) and become the European capital of genobiomedicine. Over the next ten years, research in genomics and genetics will lead to the development of a new "personalized" medicine. Current organ-level practices will yield to genetic, molecular and cellular treatments. Cancer treatments will be among the first on this pathway: by comparing the normal genome of the patient to the diseased genome of the cancer, physicians will be able to define treatments specifically for the genetic particularities of both the tumor and the affected patient.

Genopole is well positioned for this promising future in medicine. Its assets include computational power for sequencing among Europe's highest, centers for sequencing and genotyping (CEA), centers for genetics research in rare and common diseases (Inserm, AFM), the clinical and translational research center to accelerate research with the South Île-de-France Medical Center (see page 10), numerous innovative companies, and even gene therapy manufacturing capacities with Genethon BioProd (see page 103).

## ○ Biotechs for sustainable development

Beyond the field of medicine (called "red" biotech), the biocluster is also active in environmental ("yellow"), agronomic ("green") and industrial ("white") biotechnologies. A competition for innovative start-ups is organized yearly to attract to the biopark projects capable of resolving issues in sustainable development. Also in this vein, Genopole has partnered with Industries & Agro-Resources (IAR), an internationally-oriented industrial biotechnology competitiveness cluster located in the Picardy region of France.

## ○ Open to debate

Genopole provides information to the public. It organizes or affords support to a number of public events throughout the year, for example, its own Gene Café and Science Festival, or Genethon's DNA Learning Center. These events are an opportunity for campus researchers to present their activities to the public in a simple manner and discuss issues that they may raise. This consideration of the social and human implications of life sciences and contribution to the diffusion of scientific information is an important mission for the biocluster.



# THE GENOPOLE STRATEGY



**Genopole is putting in place a strategy of expansion for horizon 2025 based on the development of personalized medicine and innovations in environmental protection.**

## **○ Four orientations have been defined:**

**For science:** Genopole supports the development of not only medical, but also environmental and industrial biotechnologies. The biocluster, a leader in France for synthetic biology, is home to eminent researchers and leading innovators in the fields of stem cells, genetic biomarkers and e-health.

**For business creation:** Genopole has implemented in France a unique process for accompanying creators of biotech startups. A team of project managers provides guidance and assistance to solidify the initial concept, mobilize the necessary competencies (legal, managerial,

scientific, etc.) and raise capital (seed funds, angel and venture capital investors, government subventions, etc.). Today, Genopole wishes to extend the reach of its know-how to more mature companies with the objectives of maintaining their presence on the site and stimulating job creation.

**For the territory:** Genopole's image contributes to those of the region and the nation. The biocluster is bringing new competencies aboard to increase its international visibility and renown, particularly in China, the United States and Canada, to favor the arrival of foreign businesses on the site.

**For society:** Genopole provides knowledge to the public to address their concerns on ethical issues brought about by progress in genomics and the use of personal genetic data.

# GENOPOLE PROJECTS



## ○ Leading a pilot project in personalized medicine

The personalized medicine revolution is underway. With the goal of rapidly actualizing custom-tailored medical care in France, the French government has asked Genopole to oversee a pilot program involving several thousand genomes over the next two years. Being charged with this task is only logical as Genopole, via its laboratories and businesses, is the only entity in France with the large-scale genotyping and sequencing capacities needed for the project. Furthermore, Genopole has placed personalized medicine as one of its major axes of development.

## ○ Getting research to the patient faster

The Clinical and Translational Research Center (CRCT) was conceived by Genopole in partnership with the CHSF (South Île-de-France Medical Center, 1041 beds, 20 operating rooms, 130 consultation rooms), the AFM-Téléthon and the University of Évry-Val-d'Essonne (UEVE).

The purpose of the CRCT, a unique concept in France, is to act as a link and a place of exchange between Genopole and the CHSF, thus making it easier for laboratory discoveries to become medical applications. There, researchers,

professors, industrials, physicians and patient associations can work together to improve the entire healthcare chain and accelerate the development of new therapies.

The CRCT will prioritize biotherapy (gene and cell therapies) projects, particularly those focused on rare genetic diseases, chronic diseases such as diabetes, cardiovascular diseases and osteoarthropathies.

Inaugurated in March 2015, the CRCT will soon be home to I-Stem, a laboratory specialized in stem cell research and directed by Marc Peschanski, and the Inserm UMR935 Malignant and Therapeutic Stem Cell Models team, headed by Annelise Benaceur-Griscelli.

## ○ Exploring the potential of stem cells

With their potential in tissue repair, pluripotent stem cells hold great promise in regenerative medicine. Having placed these cells as a strategic pillar of development, Genopole is creating Cytopolis, a mini-cluster dedicated to stem cell research:

- A European leader in human pluripotent stem cell research, the Center for Stem Cell Studies (CECS, AFM-Telethon), the Laboratory for the Genomics and Radiobiology of Keratinopoiesis (CEA) as well as the INSERM unit Stem Cells and Cardiogenesis, focused on heart disease;

- The South Île-de-France Medical Center located close to Genopole;
- The Clinical and Translational Research Center.

The therapeutically-oriented stem cell research being done at Genopole will take a leading role in France with the arrival of I-Stem and the Inserm 935 collaborative research unit at the CRCT.

## ○ Strengthening synthetic biology

Synthetic biology will also get its own mini-cluster (see page 5), which will profit from strong industrial, research and training entities already present at Genopole:

- the Absynth facility (iSSB/ CNRS/UEVE/ Genopole), soon to join the Genomics Institute;
- the UEVE-Paris-Saclay University European master's degree developed in partnership with AgroParis Tech, Télécom SudParis and Sup'Biotech;
- a professional training degree in biotechnologies for the agro-resources industry;
- certain activities within the CEA Genome Institute;
- Genopole-accompanied businesses: Global Bioenergies (see page 107), Biométhodes (see page 92), WatchFrog (see page 149) and others.

## ○ Supporting industrial, food & agriculture and environmental biotech

Genopole is developing the Iris project to deploy an ecosystem advantageous to the development of biotech companies in the industrial, food & agriculture and environmental sectors. Complementing the yearly Genopole Competition, which discovers and accompanies innovative start-ups, the Iris project is focused on making sure that companies and laboratories in these sectors have what they need in terms of equipment and services at Genopole.

## ○ Developing bioproduction

Genopole is renowned for its investments in bioproduction and developing a third mini-cluster for it, with industrial (Généthon Bioprod, see page 103), research (GPPI laboratory, see page 27) and training (IMT, see page 108) aspects.

The AFM-Téléthon and Généthon Bioprod are conducting MR Biopharma, a project to industrialize the production of biodrugs and gene therapies for rare diseases. Through industrial and governmental support, this project will triple the biopark's strength in this setting.

Furthermore, Genopole and Medicago, a Canadian pharmaceutical company specialized in the development of vaccines and therapeutic proteins, are establishing an R&D laboratory for the production of therapeutic molecules in vegetal systems. Building upon a successful initial collaboration, Genopole and Medicago have signed a new partnership agreement to continue developing this technology at Évry.

## ○ Attracting new competencies

Through the generosity of its first donors (MSD France, Crédit Agricole Île-de-France, Amgen), Fondagen, an endowment fund for biotech innovation created in 2013, is now actively deploying actions to strengthen competencies at the Genopole campus. A junior chair at iSSB, a postdoc's return to France and his first two months of salary at I-Stem, and several training trips for PhD students were thus financed by Fondagen in 2015.

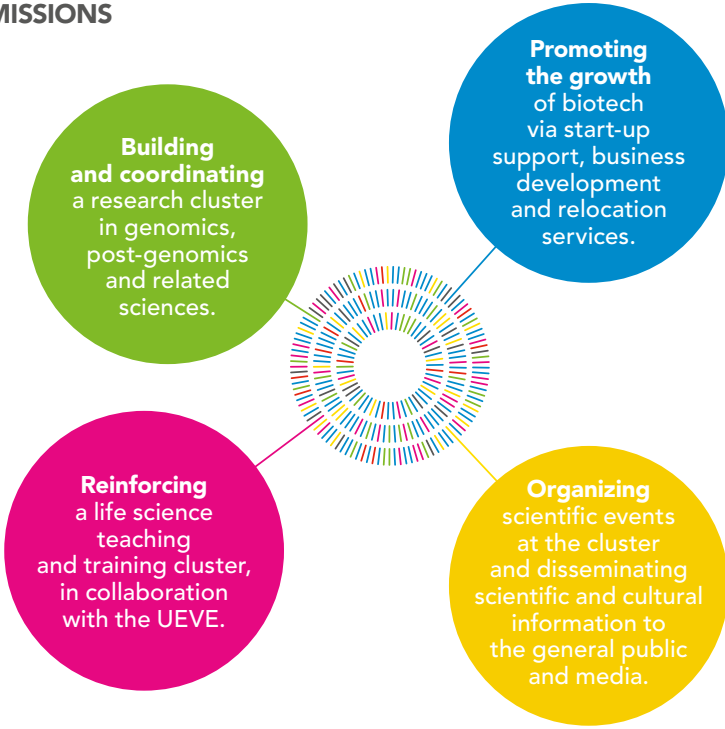
The objective of the endowment fund is to collect €1.5 million over the next three years not only to attract young talent and future leaders, but also to better prepare project holders for the creation of viable businesses.

## ○ Beyond work: a biocluster for living, playing and interacting

The SEM Genopole is creating a life center on the campus. Situated along the N7 national roadway, the 22,000 m<sup>2</sup> site will offer food services, a gym, numerous businesses, a residence for researchers and physicians, paramedical activities and more. The life center is scheduled to open in late 2017.

# THE GENOPOLE TEAMS

## THEIR MISSIONS



To provide researchers and entrepreneurs with a comprehensive range of on-site resources and support services, Genopole has five teams of expert staff: Research/Enterprises/Communication/Global Infrastructure/International.

### President



**Isabelle This Saint-Jean**  
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### Genopole Research and Global Infrastructure [pages 13 and 16]



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### Genopole Communication and Events [pages 18-19]



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# RESEARCH



**Genopole Research's** mission is to (i) reinforce the biocluster's research strengths, (ii) structure and coordinate scientific life within the cluster and (iii) contribute to the development of new academic sectors.

The Genopole Research team provides research groups and individual researchers with opportunities for developing their research and exploiting their results: tools to enable researchers to move into functional, customized lab space. Genopole can provide support and funding for taking on staff and buying equipment, as well as access to a range of shared-access facilities and a high-quality program of scientific events.

Genopole Research implements a pro-active policy for attracting top-class researchers and research groups to the biocluster.

Genopole Research supports fast-expanding research programs on:

- stem cells and biotherapies;
- synthetic and systems biology;
- and genomic medicine.

Genopole Research also fosters the emergence of new scientific leaders: Genopole created its ATIGE grants to enable young researchers to set up and grow a group within an academic laboratory on the Genopole biocluster. After a call for research proposals, the ATIGE recipients are selected by an independent review committee. Fellows receive a project grant of €76,500 per year for three years. Since 2001, a total of 23 ATIGE fellowships have been awarded.

Genopole Research also promotes the "reverse brain drain" by helping French-trained researchers to move back after doing their postdoc work abroad. Candidates are selected on the basis of scientific excellence and, to date, 70 postdocs have thus received a grant-in-aid of €57,000 per year for two years, in order to undertake a research project on the Genopole campus. After these two years, all the recipients have found positions in an academic lab, a company or a teaching institution.

Genopole Research coordinates scientific events with biocluster stakeholders and their off-campus partners by promoting interdisciplinarity and mutual knowledge of research activities (notably for PhD students and postdocs).

Genopole Research helps to fund and organize a rich program of high-level scientific events and meetings: colloquia, international symposiums, workshops, joint clinical & fundamental research days, etc.

Genopole Research contributes to the development of new academic fields and the constitution of joint national research institute/university units.

In partnership with the association *Arbre des Connaissances*, Genopole Research organizes *Apprentis Chercheurs*, a program that gives students at the secondary education level a chance to conduct a project in one of the campus laboratories.

# ENTERPRISES

**Genopole Enterprises' mission is to promote the creation of hi-tech companies and provide business support from the first day (the genesis of the business idea) through to the successive funding rounds. The goals are to transform the results of life science research into drugs or industrial products, build a truly world-class biocluster and contribute to the emergence of French biotech.**

## ○ Personalized project support

The **Genopole Enterprises** team is made up of experienced project managers with complementary backgrounds. It covers all the operational phases in business creation and development. Genopole works closely with other business support organizations and the financial community to provide budding or experienced entrepreneurs with scientific, managerial, logistic and financial assistance. A committee of independent experts helps the Genopole Enterprises team to evaluate and refine business plans. Genopole portfolio companies and entrepreneurs are also eligible to receive pre-seed finance from the G1J Île-de-France pre-seed fund.

## ○ Genopole Enterprises is active in four main areas

— Helping entrepreneurs to transform their ideas into market-validated companies: fundraising, industrial alliances and turnover generation.

— Encouraging existing companies to move to the top-class Genopole campus.

— Promoting the development of Genopole portfolio companies: winning international business, in- and out-licensing operations, product and service commercialization, etc.

— On-site networking, with monthly business clubs for promoting dialogue on key corporate issues.

## ○ Accreditation: a sign of excellence

Before receiving financial and project support from Genopole, each candidate for business incubation is evaluated by **Genopole Enterprises** and undergoes validation by a committee of independent experts in business, finance and science. Accredited companies obtain full access to Genopole services and a special network of business development partners. Established companies wishing to benefit from preferential access to the biocluster's environment and facilities can also apply to the Genopole Executive Board for accreditation.

**A website intended specifically for entrepreneurs was created in 2014:**

<http://join-the-biocluster.genopole.fr>



# THE G1J ÎLE-DE-FRANCE PRE-SEED FUND



## ○ Providing biotech companies with early-stage funding

G1J Île-de-France is a biotech-dedicated pre-seed fund that was set up in collaboration with France's *Caisse des Dépôts et Consignations* state savings and investment bank.

Over the period 2000-2012, the fund invested €3.2M in 31 Genopole portfolio start-ups and has leveraged investment totaling €170.65M. Since mid-2008 (and an additional €5M round of fundraising), the G1J Île-de-France has extended its activity to early-stage investment in innovative companies throughout the Paris Île-de-France region.

Since 2010, management of the portfolio was entrusted to CapDecisif Management. G1J IdF put an end to its active investment phase in 2013.

## ○ G1J Île-de-France's shareholders

- \_ Bpifrance
- \_ Conseil régional d'Île-de-France (CRIF)
- \_ MGEN
- \_ Groupe industriel Marcel Dassault (GIMD)
- \_ Banque Populaire Rives de Paris
- \_ Société Générale/Franpart
- \_ Association française contre les myopathies (AFM-Téléthon)
- \_ Merck Serono Biodevelopment
- \_ Crédit Agricole Île-de-France
- \_ Investissement Québec
- \_ Fonds des travailleurs québécois (FTQ)
- \_ CCI Essonne
- \_ Biogemma
- \_ Maignon Développement 3
- \_ Laboratoires Servier
- \_ Accor
- \_ IBM
- \_ Safidi / Groupe EDF
- \_ Unigrains
- \_ Sofiprotéol

### Contact

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# GLOBAL INFRASTRUCTURE AND PLATFORMS



## ○ Sharing technologies and competencies

**With its Global Infrastructure and Platforms Department, Genopole supports the development of its companies and research laboratories by giving them access to research infrastructures, cutting-edge equipment and expertise that they would otherwise not be able to finance individually.**

To assure this, the Infrastructure and Platforms Team:

— Identifies the needs of the biocluster companies and labs and then drives the creation of shared-access facilities and services to meet their research needs. A DNA encapsulation facility is set up and the "L2A2" extension of the Center for Exploration and Experimental Functional Research (CERFE) is planned.

— Defines and monitors criteria in terms of accessibility, marketing and quality of the facilities and checks that these latter are self-financing.

— Provides shared access to semi-heavy equipment.

— Establishes a network between companies and laboratories, with a view to boosting competitiveness and increasing the efficiency of technology transfer.

— Coordinates measures for increasing use of the various platforms.

— Pilots marketing, communication and events related to the promotion of Genopole shared-use facilities.

— Assures site tech events by organizing demonstrations of innovative equipment and thematic seminars to explain newly available technologies.



# INTERNATIONAL

**Cultivating Genopole's international renown to strengthen its position, competitiveness and leadership across the globe.**

## **O Specific objectives**

- Establish and sustain closer relationships with leading European, American and Asian bioclusters to benchmark trends in comparable biopharmaceutical and biotechnological ecosystems and to implement strategic transnational partnerships.
- Ensure technical and commercial monitoring of major pharmaceutical and chemical groups working in Genopole's fields of interest (regenerative medicine, personalized medicine, synthetic biology) and develop closer relationships with them to create a more significant industrial presence at the site.
- Shoulder Genopole Enterprises in international pre-prospection to identify foreign innovative companies susceptible to choose Genopole for their European activities.
- Approach industrials and internationally-oriented public agencies to investigate and define new funding sources for Genopole's activities.
- Commit to bringing public/private partnerships to Genopole to finance innovation.
- Invite internationally renowned experts to Genopole to share their points of view on subjects related to the Genopole Horizon 2025 development objectives.



## **Genopole across the world**

Located in Wuhan, China, the Biolake biocluster is one of three pilot sites identified by the Chinese government for biotech development and a Genopole partner. The two bioparks pursue reciprocal promotional activities for Chinese and French companies. This partnership is the result of a cooperation agreement between the Essonne department and the city of Wuhan in the Hubei province.

In 2014, Genopole initiated targeted genomics technology transfer activities with three countries of the Arabian Peninsula (Saudi Arabia, the United Arab Emirates, Qatar) as well as Canada and Brazil. Genopole is also exploring partnership possibilities with other European clusters such as BioQuarter (Edinburgh), MedCity (London), Parc Ciencia Barcelona, BioM (Munich) Karolinska (Stockholm) and One Nucleus (Cambridge).

Finally, Genopole is now a member of the Club of Associated Research Organizations (CLORA) and the Council of European Bioregions (CEBR), both located in Brussels, as well as MEDEF International, headquartered in Paris.

# GENOPOLE EVENTS



The Genopole biocluster brings together businesses, university laboratories, professors and students among others. To encourage a biocluster spirit, Genopole organizes a number of recurrent events to favor interaction, the diffusion of scientific or business information and the sharing of experiences.



**The 9:15 Club** is held the third Tuesday of each month from 9:15 to 10:15 a.m. and is open to all biocluster businesses. The attendees enjoy a breakfast while a facilitator leads a discussion on a chosen business strategy.



**Workshops** are held quarterly to provide company heads an opportunity to gain valuable insights on business issues from specialized consultants.

Workshops are followed by a shared lunch to further encourage exchange.



**Welcome sessions** are held two or three times per year to hail new Genopole companies and give them an opportunity to present their activities to an audience of "Genopolians" and regional researchers.



**Equipment demos** are provided regularly to present and perfect the use of Genopole's cutting-edge technical equipment and show how it serves different fields of study, development or industrialization.



**Platform day** is held every two years to give the users and the managers of Genopole's 21 shared-use facilities the opportunity to meet. There, Genopole's state-of-the-art technologies and disciplines are presented, demonstrated and debated over stands and during round-tables and presentations.



**MATINALES.COM** events are a chance for Genopole actors to learn about services provided by the communication department such as press releases or write ups for the online magazine Genopole.mag, or to receive media training (exercises in "pitch", the creation of targeted messages, etc.) from invited specialists.

# GENOPOLE COMMUNICATION

Genopole Communication publicizes the biocluster's assets and provides support to the site's businesses and laboratories to increase their visibility.

○ The communication team's missions are as follows:

## Raising Genopole's profile

Reinforcing the attractiveness of the biocluster through:

- The organization of the attendance of biocluster companies and labs attendance at major national and international events in healthcare and biotech (EuroBiO, BIO, etc.).
- The organization of a yearly competition for biotech startups in the environmental, agronomic and industrial sectors to attract new companies to the site.
- Media coverage: drafting and circulation of press releases, organization of press conferences to promote the actions of the site's businesses and laboratories.
- Genopole.mag, a magazine published in paper and web versions to inform a large audience of readers on what's new among the biocluster's companies and laboratories.
- Marketing material: brochures, annual reports, directories, corporate videos, the website, newsletters, etc.
- The organization of dedicated events on the biocluster: inaugurations, visits, seminars, colloquia, etc.



## Developing a campus culture

Creating and accentuating a sense of belonging at Genopole and promoting dialogue between campus stakeholders via: the Genopole website and extranet; the internal news magazine "Forum", available on paper or on the web, written collectively by a team of Genopole actors.

## Promoting lively, socially responsible communication

Circulating scientific information to the general public by:

- Organizing the "Gene Café" debates for the general public and researchers.
- Coordinating campus events as part of France's annual Science Festival: open days at labs and companies, events for the general public, etc.

# GENOPOLE REAL ESTATE



**With nearly 102,160 square meters dedicated to research and biotech, Genopole offers diversified real estate solutions in an advantageous environment:**

- the Gare de Lyon major train station in Paris is 35 min away (via the RER D light railway);
- Paris Orly international airport is 20 km away by car and Paris Roissy international airport is 70 km away;
- an intercompany restaurant;
- a convention center with a 700-seat plenary room;
- access to an ultra-high broadband IT network;
- park and landscaped areas.

## **○ A complete offer**

- Business creator offices made available without charge for a defined period;
- Structured support for setting up a business, thanks to France's first biotech dedicated ISO 9001-2000-certified incubator (run by the Essonne Chamber of Commerce and Industry). The incubator can also provide entrepreneurs with office space and equipped BSL1/BSL2 labs in modules ranging from 9 to 100 m<sup>2</sup>, together with facilities management services (secretarial assistance, reception, maintenance, janitorial services and round-the-clock security services).
- Shared-use technical premises: an intermediary offer between the incubator and Genopole's larger office+lab buildings (building 7, see photo), with modular floors comprising offices, L1 and L2 laboratories and shared-use equipment (laundry, cold rooms, cafeteria, meeting room, etc.).
- Office and lab accommodation for mature companies, organized by SEM Genopole.

The SEM Genopole real estate company leases 25,500 square meters of space in eight different buildings fitted-out for research or production activities.

This modular real estate offer ranges from 200 to 3,000 square meters. SEM Genopole also has 8,500 square meters of real estate reserves available for new construction projects.

## **Five real estate products are available**

- floor space only (unfitted);
- custom-fit floor space, equipped according to a company's business plan and needs;
- turn-key office space and BSL1 /BSL2 labs;
- technical facilities with shared access to equipment (glass wash rooms, cold rooms, meeting rooms, cafeteria, storage space, etc.);
- office space at the business center.

The custom-fit premises are specifically equipped for biotech activities and feature:

- lab space with different biological safety levels, as required;
- refrigeration and air treatment plants (from standard to HEPA levels).

SEM Genopole provides or arranges a number of facilities management services, notably for:

- on-site security (closed circuit TV);
- security staff (at night and weekends);
- air conditioning maintenance.

Lastly, the nearby Leonardo de Vinci business park in the town of Lisses (developed by the Évry Center Essonne Urban Area and the Paris Region Real Estate Authority) offers companies needing more space a range of plots (from 5,000 m<sup>2</sup> to 10 hectares) in a high-quality environment.

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# LABORATORIES



**BIOINFORMATICS MATHEMATICS**

—Epigenomics Program .....	24
—IT for Integrated Biology and Complex Systems [lbisc] .....	32
—Laboratory for Mathematics and Modeling - Évry [LaMME] .....	36

**BIOPHYSICS / BIOCHEMISTRY**

—Laboratory for Analysis and Modeling in Biology and the Environment [LAMBE] .....	33
—Structure and Activity of Normal and Pathological Biomolecules .....	41

**BIO THERAPIES / VACCINOLOGY**

—Genopole Plant Process Innovation .....	27
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**GENOMICS / POSTGENOMICS**

—Genethon R&D Division .....	25
—GenHotel - European Research Laboratory for Rheumatoid Arthritis .....	26
—Genoscope - CNS, CEA/Genomics Institute .....	28
—Institute for Stem Cell Therapy and Exploration of Monogenic Diseases [I-Stem] .....	29
—Institute of Systems and Synthetic Biology [iSSB] .....	30
—INTEGRARE: Integrated genetic approaches and new therapies for rare diseases .....	31
—Laboratory for the Genomics and Radiobiology of Keratinopoiesis .....	34
—Metabolic Genomics .....	37
—National Genotyping Center [CNG] CEA / Genomics Institute .....	38
—Plant Genome Polymorphism Research Unit [EPGV] .....	39
—Plant Sciences Institute Paris-Saclay [IPS2] .....	40
—Tumor Functional Genomics and Epigenetics .....	43
—Unit for Integrated Biology in Adaptations to Exercise [UBIAE] .....	44

**MEDICINE / TELEMEDICINE**

—Study and Research Center for the Intensification of Diabetes Treatment [CERITD] .....	42
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**INNOVATION AND TECHNOLOGY MANAGEMENT SCIENCES**

—Laboratory for Innovation, Technology, Management and Economics [LITEM] .....	35
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## Public research organisms and universities (supervisory bodies) of the academic laboratories

### CEA

- Genoscope
- Laboratory for Analysis and Modeling in Biology and the Environment (LAMBE)
- Laboratory for the Genomics and Radiobiology of Keratinopoiesis
- Metabolic genomics
- The National Genotyping Center (CNG)
- Tumor Functional Genomics and Epigenetics

### CNRS

- IT for Integrated Biology and Complex Systems (IBISC)
- Institute for Systems and Synthetic Biology (iSSB)
- Laboratory for Analysis and Modeling in Biology and the Environment (LAMBE)
- Laboratory for Mathematics and Modeling - Évry [LaMME]
- Metabolic Genomics
- Plant Sciences Institute Paris-Saclay [IPS2]

### INRA

- Laboratory for Mathematics and Modeling - Évry [LaMME]
- Plant Genome Polymorphism Research Unit
- Plant Sciences Institute Paris-Saclay [IPS2]

### INSERM

- Genethon R&D Division
- Institute for Stem Cell Therapy and Exploration of Monogenic Diseases - I-Stem
- INTEGRARE: Integrated genetic approaches and new therapies for rare diseases
- Laboratory for the Genomics and Radiobiology of Keratinopoiesis
- Structure and Activity of Normal and Pathological Biomolecules
- Unit for Integrated Biology in Adaptations to Exercise (UBIAE)

### UNIVERSITY OF ÉVRY-VAL-D'ESSONNE

- Genethon R&D Division
- GenHotel
- Institute for Stem Cell Therapy and Exploration of Monogenic Diseases - I-Stem
- Institute of Systems and Synthetic Biology (iSSB)
- IT for Integrated Biology and Complex Systems (IBISC)
- INTEGRARE: Integrated genetic approaches and new therapies for rare diseases
- Laboratory for Analysis and Modeling in Biology and the Environment (LAMBE)
- Laboratory for Innovation, Technology, Management and Economics [LITEM]
- Laboratory for Mathematics and Modeling - Évry [LaMME]
- Metabolic Genomics
- Plant Sciences Institute Paris-Saclay [IPS2]
- Structure and Activity of Normal and Pathological Biomolecules
- Unit for Integrated Biology in Adaptations to Exercise (UBIAE)

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BIOINFORMATICS / MATHEMATICS /  
SYSTEMS BIOLOGY



## Epigenomics Program

### Supervisory body

Genopole - University of  
Évry-Val-d'Essonne - CNRS

### Director

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### Website

[www.epigenomique.genopole.fr](http://www.epigenomique.genopole.fr)

### MAIN TOPIC

A multidisciplinary modeling approach for systems biology and synthetic biology.

### FIELDS OF ACTIVITY

- Modeling and simulation of biological processes in a (post)genomics context.
- Epi-organization of genomes.

**KEYWORDS:** Modeling / Simulation / Engineering / Macromolecular networks / Epigenesis

### RESEARCH THEMES

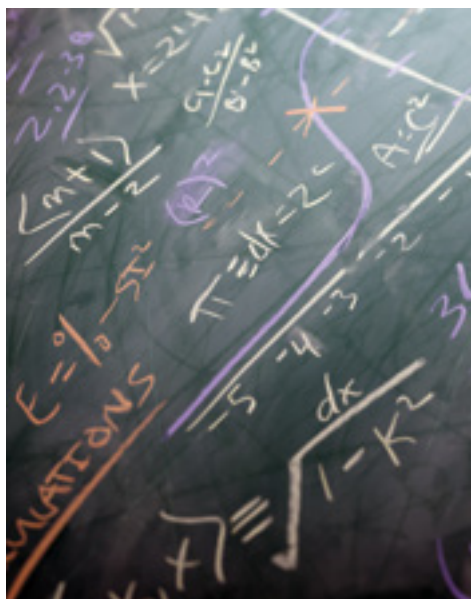
The Institute of Systems and Synthetic Biology is developing the Epigenomics Program (see page 30).

The Genopole Epigenomics Project (founded in 2002 under the banner "modeling for understanding") aims first and foremost to be a forum for dialogue in order to catalyze research on complex biological problems via contributions from a range of disciplines: biology, computing, mathematics, theoretical physics, artificial chemistry and so on.

The Program simultaneously serves as:

- a vector for training researchers in disciplines other than their own,
- a hotbed of pioneering science (stimulating the invention of new research subjects and supporting them through targeted, thematic activities),
- a collaborative program that federates Évry-based research efforts on modeling in biology.

All the activities funded by the Epigenomics Program are highly thematically targeted and are based around a small number of leading researchers.





**GENOMICS / POSTGENOMICS /  
BIOTHERAPIES**

**Genethon R&D Division**
**Supervisory bodies**

Genethon - Inserm -  
University of Évry-Val-  
d'Essonne

**CSO**

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**MAIN TOPIC**

Gene therapy for rare genetic diseases.

**FIELD OF ACTIVITY**

Design, preclinical and clinical development of innovative therapies for rare genetic diseases with a specific focus on neuromuscular disorders.

**KEYWORDS:** Rare diseases / Neuromuscular diseases / Immunodeficiencies / Muscular dystrophy / Gene therapy / Therapeutics based on genetic knowledge / Gene transfer products / Gene targeting / Process development and biomanufacturing / Gene transfer / Stem cells / GMP facilities for producing gene transfer products

**R&D THEMES**

The Genethon R&D Division is active in **three main areas**:

**Therapeutic programs**

—Identification of new therapeutic approaches for monogenic neuromuscular diseases, including Duchenne Muscular Dystrophy, progressive limb-girdle muscular dystrophies, X-linked myotubular myopathy and spinal muscular atrophy. The research includes the investigation of physiopathological mechanisms, the search for new biomarkers, and the identification of new therapeutic strategies based on locoregional or systemic administration of adeno-associated viral vectors.

This research is carried out by the groups of Isabelle Richard, Ph.D. (DR1 CNRS), Anna Buj-Bello, Ph.D. (CR2 INSERM) and Fedor Svinartchouk, Ph.D.

—Gene therapy of primary immunodeficiencies, including Wiskott-Aldrich syndrome, chronic granulomatous disease, and X-linked and Artemis-deficient severe combined immunodeficiencies. The research includes the development of new lentiviral vectors for the genetic modification of hematopoietic stem cells, the analysis of stem cell differentiation, and the study of the genetic and epigenetic consequences of gene transfer in the human genome.

This work is performed in the INSERM Unit U951 led by Anne Galy PhD (DR1 INSERM) (see page 31).

—Gene therapy of liver diseases and metabolic disorders, including Crigler-Najjar syndrome and Pompe disease. The research includes the development of new adeno-associated viral vectors and a clinical translation strategy based on liver specific gene expression after systemic intravenous administration.

This research is carried out by Federico Mingozzi (Associate Professor, Pierre and Marie Curie University).

**Horizontal research activity**

1. Muscle physiology and pathology (Isabelle Richard).
2. Vector technology (Otto Merten). Innovating design, production, purification and analysis of gene transfer vectors.
3. Vector-host interactions (Anne Galy, Fulvio Mavilio). Understanding the immune consequences of *in vivo* gene delivery.
4. Genome editing (Fulvio Mavilio). Exploring the power of site-directed DNA cleavage to correct mutations or alter gene regulation.

**Development for clinical applications**

1. Development of products and processes (M Hebben)
2. Analytical development (Christine Le Bec).

The goal of these units is to improve the productivity, scale and robustness of the manufacturing processes, increase the quality of the vectors produced, reduce the cost per "dose", and develop an accurate, robust and economical QC. Processes and analytical tests are then transferred to Genethon BioProd to be validated, and implemented in the GMP production routine.

The Units interact upstream with research units and downstream to the GMP manufacturing and quality control teams of Genethon BioProd.

Then Genethon BioProd produce clinical batches for clinical trials conducted in France, in Europe and in the United States (see page 103).

**GENOMICS / POSTGENOMICS /  
BIOTHERAPIES**

GenHotel

**GenHotel**

European Research Laboratory for Rheumatoid Arthritis

**Supervisory bodies**University of Évry-Val-  
d'Essonne  
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[www.genhotel.com](http://www.genhotel.com)**MAIN TOPIC**

Genomics - Genetic Statistics.

**FIELD OF ACTIVITY**

Research on genetic susceptibility to complex diseases through genomic analyses with a focus on rheumatoid arthritis.

**KEYWORDS:** Human genetics / Multifactorial diseases / Genomic variants / Genetic statistics**RESEARCH THEMES**

Rheumatoid arthritis, the most common autoimmune disease, is a painful chronic rheumatism that leads to progressive joint destruction. This multifactorial disease involves a large number of genetic factors, many of which have not yet been characterized.

GenHotel's goal is to determine the multifactorial determinism of rheumatoid arthritis by studying genetic and environmental factors in patients and their families. The final purpose is to contribute to new drug target development, with a view to prevent and cure this disease. The research methodology will be extended to other diseases having a major impact on public health.

In this context, GenHotel's activity is focused on characterization of genomic variants for sequence, copy number and expression, in familial samples. Furthermore, combination studies are performed on clinical, genomic and environmental data.

These analyses are essential for the characterization of interactions between all the known risk factors of rheumatoid arthritis.

**COLLABORATIONS**

—GenHotel is involved in several collaborations on the Genopole campus, notably with the National Genotyping Center (JF Deleuze), and with Laboratory for Mathematics and Modeling - Évry [LaMME] (C. Ambroise, see page 36).

—GenHotel is in close contact with several clinicians, notably F Cornélis (CHU Clermont-Ferrand), T Bardin (Hôpital Lariboisière, AP-HP, Paris) and Dr Hilliquin, Dr Quillet and Dr Lemaire (CHSF Corbeil-Essonnes).

—Through sharing activities, GenHotel develops several national and international collaborations, which lead to research projects on rheumatoid arthritis or on other autoimmune or inflammatory/ rheumatic diseases (P Migliorini, Pisa University, Italy).  
– L Michou, CHUL Quebec, Canada – A Boudjema, Oran University USTO, Algeria – A Maalej & H Ayadi, Sfax University, Tunisia – A Finck, CHU Geneva, Switzerland).

## BIOTHERAPIES / VACCINOLOGY



GENOPOLE

## Genopole Plant Process Innovation

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Genopole

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**MAIN TOPIC**

Development of vaccines and therapeutic proteins via plant molecular farming.

**FIELD OF ACTIVITY**

Research and development of vaccine and recombinant protein production systems using plant-based transient expression.

**KEYWORDS:** Virus-like particles (VLP) / Recombinant antibodies / Therapeutic proteins / Vaccines / Diagnostics / Transient expression / Plant molecular farming

**RESEARCH THEMES**

The Genopole laboratory Plant Process Innovation (PPI) develops new and innovative processes for the production of recombinant proteins using genetically engineered plants. PPI is equipped with VLPEXpress™, a high-throughput virus-like particle (VLP) testing platform developed by the Canadian biotechnology company Medicago. The platform speeds the identification of candidate VLPs and in turn the development of therapeutic or diagnostic vaccinal and recombinant antibody applications.

The laboratory thus benefits from:

- an alternative transient expression method in plants;
- rapid selection of the best expression strategies;
- a miniaturized and automated production process that can be directly extrapolated to pharmaceutical GMP.

This allows the laboratory to attain one objective: assure R&D in the transient expression of VLPs or recombinant antibodies.

**COLLABORATIONS**

- Medicago.
- Inra-IPS2 (Plant Sciences Institute Paris-Saclay, see page 40).
- CEA.

## GENOMICS / POSTGENOMICS



## Genoscope-CNS

CEA/Genomics Institute

**Supervisory body**  
CEA

**Director and CSO**  
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## MAIN TOPIC

Genomics and postgenomics of biodiversity / Metagenomics of microorganisms from the environment.

## FIELDS OF ACTIVITY

- High-throughput production of DNA sequences.
- Analysis of genomes and metagenomes.
- Functional genomics, metabolism.
- Applications: research on biological solutions for replacing chemical synthesis.

**KEYWORDS:** Sequencing / Genomics / Metagenomics / Bioinformatics / Comparative genomics / Biochemistry / Metabolism / Bioconversions / Metabolic engineering

## RESEARCH THEMES

Since its inception in 1997, Genoscope's mission has been to participate in ambitious collaborative projects, selected upon criteria of scientific excellence, by providing the scientific community with cutting-edge expertise and large scale capacities for the production and analysis of genomic data. Genoscope has thus participated in the Human Genome Project (Chromosome 14), in plant genome projects (algae, grapevine, the banana tree, *Arabidopsis*, rice, cocoa tree, medicago truncatule, etc.), animal genome projects (*Tetraodon*, *Anopheles*, etc.) and fungi (truffle, fungal pathogens such as *Leptosphaeria maculans* and *Botrytis cinerea*). Genoscope has also sequenced more than fifty prokaryotic genomes.

Genoscope is part of the Genomics Institute of the CEA since 2007, and now carries out its mission of serving the scientific community within the framework of the « France Génomique » national infrastructure ([www.france-genomique.org](http://www.france-genomique.org)). The Genomics Institute of the CEA is the coordinator of "France Génomique", which was created in 2011 thanks to a grant from the French « Investissements d'Avenir » program.

Since its creation, Genoscope maintains its international competitiveness by incorporating the many technological leaps and developments produced worldwide in the field of genomic data production and analysis. The Genoscope sequencing facility today includes four Illumina HiSeq2000 instruments, two Illumina HiSeq2500, five Oxford Nanopore Minlon, two Illumina MiSeq and two ABI 3730xl capillary Sanger sequencers. The facility will be progressively upgraded with third generation NGS

instruments and technologies that are beginning to appear on the market.

Genoscope's activities also strongly rely on its informatics, bioinformatics and bioanalysis expertise and resources, which are integral elements of Genoscope platforms.

Genoscope is currently focusing its own research activity on the metagenomics of microorganisms from the environment, and more specifically marine protists (the TARA Oceans project), the bacterial flora of the human digestive tract, or those involved in effluent treatment. The shared objective of these projects is to understand how new genetic functions appear and evolve. The exploitation of sequence data (now extended to the identification of biological functions, notably in the biocatalysis field) is opening up new possibilities for developments in industrial biotechnology. With a sustainable development perspective, Genoscope is searching for biological solutions in chemical synthesis, in order to reduce pollution and energy & fossil fuel consumption. To this end, Genoscope has developed a high-throughput enzyme activity screening platform and a metabolic engineering laboratory. This research is performed in close collaboration with the UMR 8030 Metabolic Genomics research unit (CEA/CNRS/UEVE, hosted by Genoscope, see page 37).

Including all these activities, Genoscope teams have co-authored more than 500 peer-reviewed publications.

## INDUSTRIAL COLLABORATIONS

- Global bioenergies (see page 107)
- Isthmus
- Suez Environnement.

GENOMICS / POSTGENOMICS /  
BIOTHERAPIES



## Institute for Stem Cell Therapy and Exploration of Monogenic Diseases [I-STEM]

### Supervisory bodies

Inserm - University of  
Évry-Val-d'Essonne - AFM-  
Téléthon – CECS

### Director

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### MAIN TOPIC

Postgenomics and biotherapies of monogenic diseases.

### FIELD OF ACTIVITY

Evaluation of the therapeutic potential of human pluripotent stem cells in monogenic diseases. Within this setting, the institute focuses on 1) exploring the therapeutic potential of these stem cells in regenerative medicine and 2) studying stem cells that present the causal mutations of monogenic diseases, first to better understand their pathophysiological mechanisms and second to identify potentially therapeutic compounds via pharmacological screening.

**KEYWORDS:** Cell therapy / Disease modeling / Pluripotent stem cells / Stem cells / Monogenic diseases

### RESEARCH THEMES

I-STEM is composed of two research entities: Inserm/UEVE and CECS. I-STEM is developing 11 research themes:

- Neurodegenerative diseases** (cell therapy, modeling and screening for therapeutics in Huntington's disease).
- Motoneuron diseases** (pathophysiological mechanisms involved in the development of motor neuron diseases such as myotonic dystrophy or infantile spinal muscular atrophy, pathological modeling and screening).
- Accelerated aging** (modeling and therapeutic screening for progeria).
- Muscle diseases** (disease modeling, repair).
- Neuroplasticity and therapeutics** (study of molecular mechanisms involved in neural development).
- Retinopathies and neural development diseases** (cell therapy, disease modeling).
- Genodermatoses** (disease, cell therapy).
- Metabolic diseases** (pathological modeling and screening for Wolfram syndrome).

—**Biotechnology of human stem cells** (mass production of cells, genetic engineering).

—**High-throughput screening.**

—**Functional genomics** (development of dedicated technological tools for the study of monogenic diseases).

Participation in French National Research Agency programs, Medicen Paris Region cluster programs and several European Union projects.

### INDUSTRIAL COLLABORATIONS

- Texcell (see page 142).
- Covance.
- CiToxLAB.
- METAFORA biosystems (see page 120).
- Roche.
- Pierre Fabre.
- Servier.
- Phenocell (see page 132).

### CHAIR

- Chair of excellence for an associate professor.

GENOMICS / POSTGENOMICS / BIOTHERAPIES /  
SYSTEMS AND SYNTHETIC BIOLOGY



## Institute of Systems and Synthetic Biology [iSSB]

UEVE - CNRS FRE 3561

### Supervisory bodies

University of Évry-Val-d'Essonne – CNRS – Genopole

### Director

Jean-Loup Faulon

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### MAIN TOPIC

Systems and synthetic biology.

### FIELDS OF ACTIVITY

—Modeling, simulation and engineering of biological processes.  
—Metabolic engineering.

—Molecular biology.  
—Bioinformatics.  
—Microfluidics.  
—Xenobiology.

**KEYWORDS:** Synthetic biology / Engineering / Modeling / Simulation / Macromolecular networks

### RESEARCH THEMES

The iSSB develops fundamental processes for the engineering of biological systems at several levels ranging from metabolic pathways to complete multicellular organisms. The institute has two objectives:

—to better understand and direct the logic of life and the mechanisms underlying the function of biological systems;  
—to develop synthetic biology tools and techniques useable in biotech for a range of industrial applications.

Four multidisciplinary research groups contribute to achieving these goals through experimental, theoretical and computational studies to conceive, construct and validate biological systems:

—The **Synth-Bio** research group is developing computational methods for designing biological and metabolic circuits within bacteria. These synthetic biological circuits are then characterized *in vivo*. Lastly, the bench data feed into established models and thus close the loop.

—The **Bio-RetroSynth** group's research interests cover the use of retrosynthetic methods for designing and building new metabolic networks. Retrosynthesis consists in choosing a set of exogenous enzymes that, when introduced in a host organism, produce the desired target compound. The method is being applied to the production of drug compounds in bacteria and in yeast.

—The **Mega** research group analyzes the topology of transcriptional networks in time and space. Its recent work has dealt with the functional organization and evolution of genomes, and with links between carbon metabolism and DNA replication. The group's theoretical work is prompting bench experiments that examine the cell's regulatory networks on the genomewide scale.

—The ultimate aim of the **Xenome** team is to design and engineer novel cellular components ("xeno"-nucleic acids, XNA) to elaborate safe GMOs whose *in vivo* generation and functionality can be strictly controlled, and that therefore allow the development of new and advanced applications in biotechnology.

### INDUSTRIAL COLLABORATIONS

—WatchFrog (see page 149).  
—Isthmus.  
—Chemtex.  
—Abolis Biotechnologies (see p. 79).

### OTHER COLLABORATIONS

—European networks ERASynbio.  
—ERASysbio.  
—GDRE-systemes biology.  
—GDR-Biosynsys (systems and synthetic biology).

## INTEGRARE Integrated genetic approaches and new therapies for rare diseases



### Supervisory bodies

Genethon - Inserm -  
University d'Évry-Val-  
d'Essonne - École Pratique  
des Hautes Études

### Director

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### Website

www.genethon.fr

### MAIN TOPIC

Gene therapies for rare diseases.

### FIELDS OF ACTIVITY

- Treatment and study of genetic immune, blood, muscular or metabolic diseases.
- Study of therapeutic host/vector interactions, particularly within the immune system.
- Technological innovation, genomic and cellular targeting.

**KEYWORDS:** Gene therapy / Rare diseases / Clinical trials / Immunodeficiency / Wiskott-Aldrich syndrome / Chronic Granulomatous Disease / Fanconi anemia / Muscular dystrophies / Myotubular myopathy / Limb-girdle muscular dystrophy / Crigler-Najjar syndrome / Hematopoietic stem cells / Liver / Lentiviral vectors / Adeno-associated virus vectors / CRISPR-Cas9 / Imaging cytometry

### RESEARCH THEMES

The collaborative UMR\_S951 "INTEGRARE" research unit is an Inserm-accredited structure uniting public sector (Inserm, CNRS, University of Évry-Val-d'Essonne, École pratique des hautes études) and Généthon researchers, who thus share competencies in genetics, epigenetics, molecular biology, immunology, virology, hematology and therapeutic development.

The subject of the INTEGRARE team is the development of corrective gene therapies for rare genetic diseases affecting the immune system, blood components, skeletal muscle or metabolism.

INTEGRARE's projects enable:

- the development of technological innovation;
- a better understanding of the biology and pathophysiology of the diseases of interest and the identification of therapeutic targets.
- the evaluation and control of genomic, epigenetic and immune interactions between gene therapy vectors and the host.

INTEGRARE's translational research is coupled with Généthon's therapeutic programs and clinical trials (see pages 25 and 103).

### COLLABORATIONS

INTEGRARE participates in collaborative projects and international networks.

At Genopole:

- The Myocapture project in partnership with France Génomique, the CEA and the CNG, see page 38)

In Europe:

- Net4CGD ([www.net4CGD.eu](http://www.net4CGD.eu))
- Eurofancolen ([www.eurofancolen.eu](http://www.eurofancolen.eu))
- RISE Marie Skłodowska Curie Network (H2020)

Two of the unit's researchers have received European Research Council funding.

BIOINFORMATICS / MATHEMATICS /  
SYSTEMS BIOLOGY



## IT for Integrated Biology and Complex Systems [Ibisc]

**Supervisory body**  
University of Évry-Val-  
d'Essonne – CNRS

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### MAIN TOPIC

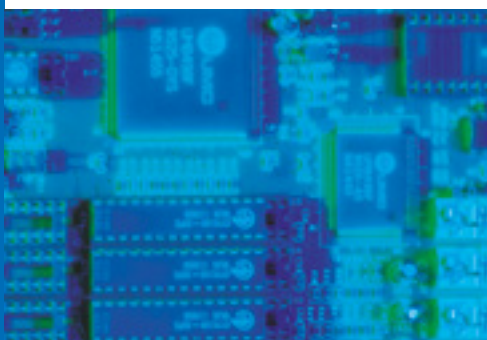
Computer science, bioinformatics, ICT and engineering science applied to biological systems.

### FIELDS OF ACTIVITY

- Bioinformatics, analysis, modeling.
- Identification and simulation of biological processes.
- Software engineering.
- Operational research.
- Communication & transport networks.
- Agent-based & communicative systems.
- Biomedicine & healthcare (signals, machine-assisted medical procedures).

- Assistance robotics for people with loss of autonomy and their support providers).
- Assistance robotics for people with loss of autonomy and their support providers.
- Biometrics.
- Multimodal man-machine interfacing.
- Road safety.
- Biology of the cellular microenvironment / Modeling in physiology.

**KEYWORDS:** Bioinformatics / Postgenomics / Data integration and advanced databases / Formal methods / Algorithmics / Optimization / Learning / Complexity sciences / Data / Signal and image processing / Virtual reality / Augmented reality / Haptics interaction / Human-robot interactions / Intelligent vehicles / Cell migration / Cell environment / Experimental biology



- The representation, analysis and comparison of DNA, RNA and protein sequences; the determination of functional motifs, annotation, etc.
- The organization and analysis of transcriptomic, proteomic and metabolomic data, together with statistical learning based on these data with a view to the development of systems biology tools.
- The representation, modeling, simulation and identification of biological processes, with a focus on the simulation of cellular and tissue processes; regulatory networks and cell / microenvironment interactions during metastatic spreading.

### RESEARCH THEMES

The group's scientific activity is organized into three themes: biological systems, assistance robotics and airborne vehicles.

Within Genopole, IBISC's specificity involves studying potential applications of computing science and automation to genomics and systems biology.

Research in this area covers three main themes:

### COLLABORATIONS

In addition to its participation in around 10 European Union projects and 20 or so French National Research Agency projects, IBISC collaborates directly with a number of industrial partners, including: Arent, Cliris, Continental and Oktal.



BIOPHYSICS / BIOCHEMISTRY /  
NANOTECHNOLOGIES / BIOMATERIALS

## Laboratory for Analysis and Modeling in Biology and the Environment [LAMBE]

UMR 8587



### Supervisory bodies

CNRS - CEA - University of  
Évry-Val-d'Essonne -  
University of Cergy-  
Pontoise

### Director

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### MAIN TOPIC

Chemistry, biology and physics applied to the analysis and modeling of biomolecules and materials.

### FIELDS OF ACTIVITY

- Mass spectrometry structural analysis of macromolecular synthetic systems of biological interest.
- Classical and *ab initio* modeling of the structure, dynamics and reactivity of biomolecules.
- Electrochemistry and activity of materials at interfaces in confined media (toxic radioactive elements), development of electrochemical sensors for trace analyses.
- Biophysics and macromolecular synthesis for therapeutics and the environment.

**KEYWORDS:** Mass spectrometry (MS) / Biomolecule modeling and simulation / Proteomic analyses / Development of new analytical strategies (MS / separation techniques coupling) / Electrochemistry / Corrosion / Electrochemical sensor development / Macromolecular chemistry / Supramolecular assemblies / Macro and supramolecular synthesis of biosourced materials / Membrane transport / Natural and synthetic nanopores / Gene therapy / Extracellular matrix and the cellular microenvironment

### RESEARCH THEMES

- Proteomic studies (analysis of post-translational modifications, immunopurified protein complexes, etc.) by using MALDI/TOF, electrospray/Q/TOF, capillary electrophoresis/ion trap and LTQ orbitrap mass spectrometers.
- Development of new capillary electrophoresis/surface plasmon resonance (SPR)/mass spectrometry coupling.
- Study of the role of metal cations in the catalysis and activation of model biological compounds (amino acids, nucleotides, saccharides, etc.) in the gaseous phase.
- Multiscale modeling of the structure and function of biological assemblies.
- Development of coarse-grained force fields via protein-protein binding.
- Prediction and modeling of the long-term behavior of final electronuclear waste.

- Study of the transport (translocation) of single macromolecules through nanometer-scale protein-based pores and artificial biomimetic pores (nanolithography).
- Development of electrochemical sensors and biosensors for pollutant analyses.
- Synthesis of polymer gene therapy vectors and analysis of their *in vitro* and *in vivo* structure and function.
- Synthesis of biosourced polymers.

### INDUSTRIAL COLLABORATIONS

- Arcelor.
- Synchrotron Soleil.
- Ceva (Centre for the Study and Exploitation of Algae).
- Global Bioenergies (see page 107).
- Horiba Jobin Yvon.
- GeneSignal (see page 101).
- LFB.
- Polytheragene (see page 136).

GENOMICS / POSTGENOMICS /  
BIOTHERAPIES

## Laboratory for the Genomics and Radiobiology of Keratinopoiesis

### Supervisory bodies

CEA/DSV/iRCM -  
Inserm U967

### Director

Michèle Martin

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### MAIN TOPIC

Stem cells of the human epidermis.

### FIELDS OF ACTIVITY

- Stem cell biology.
- Radiobiology.
- Cancer.

**KEYWORDS:** Somatic stem cells / Human skin / Genomics / Transcription factors / Epigenetics / Skin organogenesis / Regenerative medicine / Cancer / Hypersensitive patients / Ionizing and UV radiation / DNA damage and repair

### RESEARCH THEMES

#### Homeostasis, regenerative potential and radiosensitivity of human epidermal stem cells.

Human interfollicular epidermis is the multilayered epithelium that covers the human skin. This tissue is in perpetual renewal, a process named keratinopoiesis which is maintained through stem cells and their ability to self-renew.

Although potentialities of human epidermal stem cells have been exploited for clinical purposes for more than 20 years, they are still poorly known. Keratinocyte stem cells are located in the basal layer of epidermis. They are defined as undifferentiated and quiescent cells, capable of a large proliferative potential when stimulated. Their direct progeny, called keratinocyte progenitors, are responsible for the short-term maintenance of epidermis. Our laboratory aims at better characterizing these two basal cell populations, both in normal skin homeostasis and after genotoxic stress.

Our group dissects the determinants of stemness and self-renewal in keratinocyte stem cells, notably those related to the TGF- $\beta$ 1 network. We also aim at understanding the mechanisms that maintain genomic stability in the basal keratinocytes, which are the major target of skin carcinogenesis after ionizing or UV radiation. DNA damage and repair are characterized in normal and hypersensitive skin, derived from patients with rare genetic dermatologic diseases, as Gorlin Syndrome.



**INNOVATION AND TECHNOLOGY  
MANAGEMENT SCIENCES**

**Laboratory for Innovation, Technology,  
Management and Economics [LITEM]**
**Supervisory bodies**

University of Évry-Val-d'Essonne - Grenoble École de Management - Télécom École de Management

**Director**

Chantal Ammi

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**MAIN TOPIC**

Innovation and technologies.

**FIELDS OF ACTIVITY**

- Information and communication technologies
- Biotechnologies
- Health and well-being
- Energy
- Funding innovation, funding of innovative organization and alternative funding
- Networks, connected objects
- Big data
- New forms of management
- Sustainable development

**KEYWORDS:** Innovation / Information and communication technologies / Social networks / Health / Biotechnologies

**RESEARCH THEMES**

The LITEM is structured around five research orientations:

**—Innovation, technology:**

- Study of emergence and change in business models (ecology and creation of new business models, impact of digitization).
- Engineering and management of information systems: A part of the researchers' work is dedicated to the management of the transformation of organizations brought about by digital technologies, and to the evolution of IS careers.

**—Innovation and entrepreneurship:**

This category groups research on innovative themes in entrepreneurship.

**—Finance:**

The study of the function of current financial and accounting systems with a focus on two themes: i) financial innovation and the financing of innovative organizations, and ii) current evolutions in finance toward alternative modes, particularly Islamic financing and micro-financing.

**—Social networks, connected objects and big data:**

Research on innovations in products and services, on new forms of marketing and on the impact of social network management on business strategies.

**—New forms and structures for organizations (NFSO):**

Research that focuses on the critical analysis of organizational theory and proposes new methods for apprehending current managerial phenomena such as social and environmental innovations or alternative forms of organization.

**TEACHING AND RESEARCH CHAIRS**

- Mindfulness (Grenoble School of Management (GEM)).
- BNP Paribas for services (GEM).
- Orange "Digital natives" (GEM).
- Serious Games "IRT Nano" (GEM).
- Social networks (Télécom School of Management (TEM)).
- Big data for e-commerce (TEM).

## BIOINFORMATICS / MATHEMATICS



## Laboratory for Mathematics and Modeling - Évry [LaMME]

CNRS UMR 8071 - Inra

### Supervisory bodies

CNRS - University of Évry-Val-d'Essonne - ENSIIE - Inra

### Director

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### MAIN TOPIC

Mathematics and bioinformatics applied to the analysis of genomics and postgenomics data, partial derivative equations and analysis, probabilities and financial mathematics.

### FIELDS OF ACTIVITY

- Development of mathematical tools for the analysis of biological sequences (Markov chains) and genome networks.
- Gene expression and SNP analysis.
- Gene and cell therapy statistics.
- Study of dispersive and parabolic PDEs.
- Biomathematics.
- Development of digital methods in analysis and probabilities.
- Probabilities and stochastic processes.
- Financial mathematics, financial risk modeling (credit, counterparty, liquidity).

**KEYWORDS:** Bayesian / Modeling / Statistical analysis / Sequence evolution / Massive comparison / Genetics / Dynamic systems / Stochastic processes / Partial derivative equations / Financial mathematics

### RESEARCH THEMES

**LaMME covers a broad range of research in mathematics and its applications structured across three teams:**

- “analysis and PDE”;
- “probabilities and financial mathematics”;
- “statistics and Genomes” (S&G).

Particularly, the S&G team focuses its activities on the:

- conceptualization of statistical methods for the analysis of DNA or protein sequences and for the study of associated molecular expression;
- availability of these methods for the biology community via web-based technologies.

#### The major research orientations are:

- Statistical inference in genomic networks (interaction, regulation, metabolic pathways), based on data obtained from a range of experimental conditions or on dynamic data.
- Analysis of genome data to identify genes involved in disease causation (analysis of single nucleotide polymorphisms) and the study of gene expression mechanisms over time (Markov models, etc.).

- Study of gene associations, support for automated annotation via massive sequence comparisons. Transposable elements.
  - Study of the evolution of protein sequences.
  - Analysis of transcriptome/proteome data.
- Detailed descriptions of the two other teams are provided on the laboratory's website.

### COLLABORATIONS

- Numerous scientific collaborations with laboratories in France and abroad. At Évry, IPS2 (see page 40), GenHotel (see page 26) and Genoscope (see page 28) are important scientific partners.
- Scientific contracts with industrial partners (Bioptimize, Carpe Aeam, Pharnext, Scor, Zeliade), most of which appertain to the fulfillment of CIFRE theses.

### CHAIR

Financial mathematics chair «Markets in Mutation», UEVE / Ecole Polytechnique / FBF.

## Metabolic Genomics

CEA/Genomics Institute - UMR 8030



### Supervisory bodies

CNRS - CEA - University of Évry-Val-d'Essonne

### Director

Marcel Salanoubat

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### MAIN TOPIC

Study of the diversity of organisms and its chemistry.

### FIELDS OF ACTIVITY

—Genomics of eukaryotes, prokaryotes and metagenomes.  
—Metabolism.  
—Biocatalysis.

—Bioremediation.  
—Organic and analytical chemistry.  
—Metabolic engineering, synthetic biology.

**KEYWORDS:** Sequencing / Biochemistry / Metabolism / Metabolomics / Comparative genomics / Functional genomics / Enzyme / Biocatalysis / Bioremediation / Transcriptomics / Mass spectrometry / Synthetic biology / Metabolic engineering.

### RESEARCH THEMES

The Metabolic Genomics Laboratory (UMR 8030) is the basic research structure of the Genoscope-National Sequencing Center (see page 28), which is fully integrated in the Genomics Institute of the CEA.

In our various in-house, national and international collaborative projects, we explore organism biodiversity via genome analyses, thus participating significantly in the exploration of life on earth. New sequencing techniques have profoundly changed genomic research by making access to sequencing data commonplace and by extending sequencing knowledge to cover all biodiversity. Particularly, a flagship project, involving the sequencing bioinformatics analysis team (P. Wincker), is underway to explore the biodiversity of ocean life (Tara Oceans).

This flood of *de novo* sequencing data has also accelerated growth in the number of identified genes whose purpose is currently a mystery. Genoscope and UMR have thus decided to extend our biodiversity focus to the study of the chemical reactions of organisms according to five major axes:

—**Exploration of orphan genes in eukaryotes, particularly protists** (LAGE-P. Wincker).  
—**The discovery of novel biochemical reactions to increase the knowledge of prokaryotic metabolism** (Laboratory of Genomics and Metabolic

Biochemistry, M. Salanoubat, Laboratory of Bioinformatics Analysis in Genomics and Metabolism, C. Médigue).

—**The discovery of new biocatalysts to provide alternatives to synthetic chemistry** (Biocatalytic Activity Screening Laboratory, V. De Berardinis, Laboratory of Organic Chemistry and Biocatalysis, A. Zaparucha).

—**The development of bioremediation processes** (LMP-P. Wincker).

—**The development, using metabolic engineering and synthetic biology**, strains of potential interest for industrial biotechnology (laboratoire d'application (M. Bouzon Bloch).

Beyond its interest in fundamental research, this branch of biochemistry based on the discovery and use of enzymes («white biotech») will contribute greatly to inventing new ways of producing of-interest compounds. It also participates in the development of sustainable chemistry by contributing to the deployment of chemistry processes that require less fossil fuels, lower energy needs and reduce pollution.

### CHAIR

Andrew Tolonen, Chair of Excellence UEVE-CNRS since 2011.

GENOMICS / POSTGENOMICS /  
BIOTHERAPIES

**CNG** CENTRE NATIONAL DE GÉNOTYPAGE



## National Genotyping Center [CNG]

CEA/Genomics Institute

### Supervisory body

CEA

### Director

Jean-François Deleuze

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### MAIN TOPIC

Genomics and postgenomics of human diseases.

### FIELDS OF ACTIVITY

—Research in and the characterization of genes and biomarkers associated with human disease.

—Analysis of human genome variations in individuals and populations.

**KEYWORDS:** Genotyping / Sequencing / Epigenetics / Bioinformatics / Bioanalysis / Biostatistics / Functional genomics / Human disease / Translational medicine / Personalized medicine

### RESEARCH THEMES

**The CNG is the French national research center for high throughput sequencing and genotyping.**

**To forward genetic and genomic research in human disease,** the CNG creates banks of DNA samples, identifies disease-associated genes, studies transcriptomes and epigenomes, and unites the knowledge gained from these activities.

The CNG was integrated within the Genomics Institute of the CEA in 2008 and is also a founding partner of LABEX (Laboratory of Excellence) GENMED and France Génomique ("Investissements d'Avenir"-funded projects, 2014 and 2011 respectively). The CNG offers its expertise and data production, storage and analysis capacities to the scientific community for collaborative projects meeting scientific excellence criteria in the field of medical genomics for pathologies such as autoimmune diseases, psychiatric disorders, cardiovascular diseases, several cancers (breast, prostate, kidney) infectious diseases and rare diseases.

The CNG evaluates advanced genomics technologies and adopts the best of them to maintain its international competitiveness. To identify genes and biomarkers in human disease, the CNG has deployed a number of integrated platforms:

—A biobank to manage and prepare a wide range of biological samples in accordance with ethical and confidentiality laws and guidelines.

—High-throughput technologies for whole genome studies on numerous samples.

—Medium-throughput technologies for smaller projects.

—A technology development group responsible for evaluating emerging technologies and assuring, when necessary, the transfer of these technologies to the production platforms.

—An epigenetics laboratory.

—A functional genomics laboratory.

—A bioinformatics laboratory for analyses and pipeline development.

—A biostatistics group responsible for the validation of experimental designs and the statistical analysis of data.

—A group responsible for data quality control.

**The CNG participates in national and European programs for both the development of technologies and the study of human diseases.**

It is also involved in many ambitious projects such as the decoding of the genetic causes of rare disease, the study of the genetic basis of autism, or the exploration of the genetic foundation of toxicity for certain breast cancer treatments. More recently, the CNG has embarked on the production of "heritage" data for the French population to furnish the scientific community with reference information needed for the identification of genetic/genomic variations responsible for disease. The CNG's production infrastructures are used widely by the French and European scientific community and its teams have undertaken more than 500 research projects originating from about 300 laboratories in France and more than 60 abroad. Since its creation, the CNG has been involved in more than 600 studies published in renowned international scientific journals.

## Plant Genome Polymorphism Research Unit [EPGV]

US\_1279



### Supervisory body

Inra

### Director

Marie-Christine Le Paslier

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### MAIN TOPIC

Plant genomics.

### FIELD OF ACTIVITY

Detection, analysis and management of plant species polymorphism.

**KEYWORDS:** Plant genomics / High-throughput sequencing / Genotyping



In order to address this, the U.S. INRA\_1279 EPGV (Étude du Polymorphisme des Génomes Végétaux) was founded in 2001 and is located at CEA/Genomics Institute (IG) / National Genotyping Center (CNG), Évry (see page 38).

The main activities include:

- Development of customized protocols based on the specificities of plant genomes (genome size, genetic variability, polyploidy, etc.) and of the evolution of new techniques available at the technological platform of the Genomics Institute.
- Providing different teams (Inra, Cirad, etc.) with tools for high-throughput sequencing and genotyping.
- Establishment of collaborations with bioinformaticians for the implementation of analytical tools and data management of polymorphisms.

The EPGV team is a partner of the “France Génomique” program.

### RESEARCH THEMES

The major challenges in plant breeding are the analysis of diversity and of the evolution of genes and genomes, the identification of genetic factors controlling traits of agronomic interest (QTL mapping, association studies) and marker-assisted selection. Scientific projects with these core subjects require the application of high-throughput sequencing and genotyping.

### COLLABORATIONS

The EPGV team is a partner for many ANR, KBBE and Investments d’Avenir programs (BreedWheat, Amazing, Sunrise) involving major French seed companies.

**GENOMICS / POST-GENOMICS /  
SYSTEMS BIOLOGY**

**Plant Sciences Institute Paris-Saclay  
[IPS2]**
**Supervisory bodies**

Inra - CNRS – University  
d'Évry-Val-d'Essonne -  
Université Paris-Sud -  
Université Paris-Diderot

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Martin Crespi

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**MAIN TOPIC**

Analysis of the genetic and molecular mechanisms driving the growth and development of model and cultivated plants.

**FIELD OF ACTIVITY**

Genomics, molecular and cellular biology, and bioinformatics applied to plant biology and physiology, plant signaling, and plant-microorganism interactions.

**KEYWORDS:** Plant genomics / Plant physiology / Growth and development / Plant models / Cultivated plants

**RESEARCH THEMES**

IPS2 focuses on the analysis of growth and development in model plants and the transfer of thus gained knowledge to cultivated plants, agriculture, and the creation of innovation.

IPS2 employs a multidisciplinary approach (genomics, molecular and cellular biology, bioinformatics, biochemistry, genetics, physiology) and creates tools (bioinformatics modeling) to enable the development of predictive biology and ease translational research between model and cultivated plant species.

The institute's research themes follow three principal orientations:

**—Developmental biology:**

- Sex determination.
- Non-coding RNA and root plasticity.
- Cell cycle and chromatin.
- Root architecture in leguminous plants.

**—Signaling and physiology:**

- Redox states and chromatin.
- Primary metabolism and carbon-nitrogen interactions.
- MAP kinase signaling.

**—Plant-microorganism interactions:**

- Symbiotic nitrogen fixation.
- Interactions between cereals and pathogenic agents.
- Pathogen resistance and genome dynamics in beans.
- Control of organelle genetic expression.
- Bioinformatics and "gene network" modeling.

Two transversal orientations are also to be developed:

- Biological networks.
- Translational biology.

The first will strengthen bioinformatics and modeling approaches by easing the development of specific projects (particularly the modeling of plant genetic and metabolic regulatory pathways). The second will facilitate translational research between model and cultivated plants.

**INDUSTRIAL COLLABORATIONS**

- Biogemma.
- BASF.
- Bayer.
- Semillas Fyto.
- Medicago.
- BIOtransfer.
- Syngenta.
- Arvalis.

The unit possesses three plant-specific platforms:

- a) **Translational biology** (TILLING platform for tomato, Brachypodium, melon and cucumber).
- b) **Transcriptomics, RNA sequencing** and associated technologies (see page 72).
- c) **Metabolomics**, with the recent objective of developing fluxomics as well.



BIOPHYSICS / BIOCHEMISTRY /  
NANOTECHNOLOGIES

## Structure and Activity of Normal and Pathological Biomolecules

Inserm - UEVE U829

### Supervisory bodies

University of Évry-Val-d'Essonne - Inserm

### Director

David Pastré

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### MAIN TOPIC

Dynamics of the cytoskeleton.

### FIELDS OF ACTIVITY

—Cell biology.  
—Cancer.

—Neuroscience.

—Medicine.

—Drug design.

**KEYWORDS:** RNA / Proteins / NMR / Atomic force microscope / Tubulin / Cancers / Nervous system / Mutations



### RESEARCH THEMES

—Physiopathology of the cytoskeleton, effects on the cell cycle and neuronal function.

—Dynamics and structures of ribonucleoprotein complexes (spliceosomes and stress granules) and their implication in neurodegenerative diseases and cancer.

—Structure, folding, stability and dynamics of proteins in solution, impact of mutation.

—Development of a multifunctional biomolecule fluorescent marker based on nanodiamonds.

### ASSOCIATED CHAIR OF EXCELLENCE

Cellular Neurobiology and the Cytoskeleton.

**MEDICINE / TELEMEDICINE /  
CLINICAL RESEARCH**



## Study and Research Center for the Intensification of Diabetes Treatment [CERITD]

### Supervisory body

Ceritd French Association  
Law 1901

### CEO

Guillaume Charpentier

### Director

Jean-Hughes Masgnaud

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### MAIN TOPIC

Study, research and provision of care for the intensification of diabetes treatment.

### FIELDS OF ACTIVITY

- Ambulatory healthcare center for diabetic patients treated with external insulin pumps.
- Translational clinical research center.

**KEYWORDS:** Type 1 diabetes, type 2 diabetes / Genetics / Artificial pancreas / Insulin pump / Clinical research / Telemedicine / Innovative technologies / Cooperation protocol / Therapeutic education / Evaluation

### RESEARCH THEMES

#### Genetics and prediction of type 2 diabetes:

—Establishment of a computerized database (clinical, medical history, social-economic and biological data) and a DNA bank (6,000 patients) under the management of Prof. Froguel's team in Lille, France.

—Sponsor of the Descendants program aimed at validating a method for detecting glycemic abnormalities at different ages in the children of people with type 2 diabetes.

#### Innovative technologies:

—Sponsor of clinical studies.

—Founding member of Diabeloop, a French consortium for the development of an artificial pancreas for glycemia control in diabetic patients.

—Modeling of postprandial glycemia in type 2 diabetes patients.

—Modeling of glycemia during different levels of physical activity.

#### Epidemiological cohort monitoring:

—Prospective monitoring of patients treated by insulin pumps in the southern Greater Paris area.

—European collaborative study to assess the quality of type 2 diabetes management and its coherence with existing recommendations in 8 European countries.

#### Telemedicine:

—Development of algorithms to automatically calculate insulin doses; decision-making support and patient coaching via electronic blood glucose journals for type 1 (at the origin of the Diabéo system) and type 2 diabetes patients.

—Development of a shared information system for health professionals (ePEP software) permitting telemedical monitoring of patients using electronic blood glucose journals.

#### COLLABORATIONS

Numerous collaborations over many projects in the fields of type 2 diabetes genetics and maturity onset diabetes of the young (MODY): development of innovative technologies, scientific, industrial, pharmacological and institutional collaborations, reorganization of care provision.

GENOMICS / POSTGENOMICS /  
BIOTHERAPIES

## Tumor Functional Genomics and Epigenetics

an ATIGE research Group



### Supervisory body

CEA (iRCM)

### Manager

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### MAIN TOPIC

Tumor genomics, postgenomics and biotherapies.

### FIELDS OF ACTIVITY

- Functional genomics for translational research.
- Regulatory networks.
- Epigenetics.

**KEYWORDS:** RNA CRISPR interference / Synthetic lethality / Gene regulation / Cancer in humans / Cell models / Drug targets / Prognostic markers

### RESEARCH THEMES

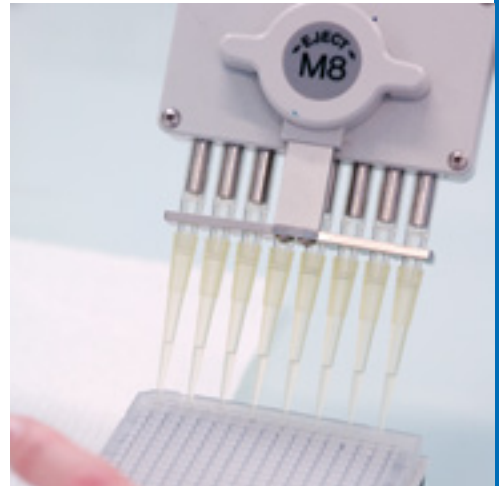
#### —Genome-wide identification of synthetic lethal genetic interactions with recurrent oncogenic mutations (TP53, BRCA1 and Fanconi pathways...).

Isogenic human cancer cells are screened in parallel using RNA interference or CRISPR/Cas9-derived constructs targeting all human genes. The constructs inhibiting specifically the cells carrying the oncogenic alteration under study are identified and validated in our models, then their modes of action are investigated. Their potential in personalized or precision medicine is analyzed thereafter in collaboration with clinicians.

This uncovers the genetic and epigenetic reprogramming of human cells by oncogenic events and provides new therapeutic leads for translational research.

#### —Identification of genes involved in therapeutic resistance.

We are currently investigating genes involved in olaparib resistance in BRCA 1 deficient cancers and in vemurafenib or selumetinib resistance in melanoma.



### COLLABORATIONS

- Jean Soulier (Hôpital Saint-Louis).
- Michael Green (HHMI, USA).
- Genomics Institute, CEA (Évry).

GENOMICS / POSTGENOMICS /  
TÉLÉMÉDECINE



## Unit for Integrated Biology in Adaptations to Exercise [UBIAE]

Inserm U902

### Supervisory bodies

Genopole - University  
of Évry-Val-d'Essonne

### Director

Véronique Billat

### Assistant Director

Laurence Hamard

### Contact details

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Website www.billat.net

### MAIN TOPIC

Physiology, genomics and postgenomics for the implementation of physical exercise protocols.

### FIELDS OF ACTIVITY

- Genomics and bioenergetics of muscle activity in healthy subjects and patients.
- Analysis of the physiological and metabolomic responses to acute and chronic exercise (training) in the mammals (the humans, the mice and the horses in particular).
- E-learning for health by exercise via electronic and GPRS data transmission.
- Analysis of physiological and perceptive response to exercise.

**KEYWORDS:** Cardiovascular and muscular capacity / Exercise / Heart / Mitochondrion / Muscle / Oxygen uptake and deficit /  $VO_{2max}$

### RESEARCH THEMES

The laboratory's work is set against a public health context, with the objective of optimizing motor performance. Our group analyzes the bioenergetic responses to muscle exercise (from physiology to molecular biology) in humans and animals (with murine and equine models). Our expertise in the field of effort training and re-training enables improvements in motor performance in both patients and experienced athletes.

In fact, we develop physical training methods, which are specifically adapted to an individual's physiological profile, in order to reconcile performance and health.

—Unit 902 performs research in physiology and integrative biology. One particular novel feature relates to the research unit's integrative approach on four different levels.

—In terms of experimental models, we study the mouse and the horse, as well as humans.

—In terms of methodological approaches, we study the biological reactions to physical exercise on the physiological, cellular and molecular (genetic) levels.

—Our approach is based on human exercise performed not only in the laboratory but also in the field, so as not to interfere with spontaneous regulation of the speed of movement (notably during competitive sport).

—Our goal is to contribute to health by prevention thanks to health by exercise education, e-learning and telemedicine as well as physiological measurement.

In summary, our laboratory is at the cutting edge of efforts to develop new methods for analyzing bioenergetic responses to exercise (from physiology through to molecular biology) in healthy or diseased humans and animals. This involves a wide range of techniques, from the validation of DNA chips to the use of telemedicine.

# FIELD OF ACTIVITY OF THE LABORATORIES

	BIO-INFORMATICS / MATHEMATICS	SYSTEMS BIOLOGY	SYNTHETIC BIOLOGY	BIOCHEMISTRY / BIOCHEMISTRY	NANOTECHNOLOGIES	BIOMATERIALS	GENOMICS / POSTGENOMICS	BIOETHERAPIES	VACCINOLOGY	MEDICINE	TELEMEDICINE	CLINICAL RESEARCH	INNOVATION AND TECHNOLOGY MANAGEMENT SCIENCES
Epigenomics Program	•												
Genethon Research Division													
GenHotel - European Research Laboratory for Rheumatoid Arthritis													
Genopole Plant Process Innovation									•				
Genoscope-CNS													
Institute for Stem Cell Therapy and Exploration of Monogenic Diseases [I-Stem]													
Institute for Systems and Synthetic Biology [ISSB]			•										
INTEGRARE: Integrated genetic approaches and new therapies for rare diseases													
IT for Integrated Biology and Complex Systems [Ibisc]		•											
Laboratory for Analysis and Modeling in Biology and the Environment [LAMBE]													
Laboratory for the Genomics and Radiobiology of Keratinopoiesis				•									
Laboratory for Innovation, Technology, Management and Economics [LITEM]													
Laboratory for Mathematics and Modeling - Évry [LaMME]	•												
Metabolic Genomics													
National Genotyping Center [CNG]													
Plant Genome Polymorphism Research Unit													
Plant Sciences Institute Paris-Saclay (IPS2)													
Structure and Activity of Normal and Pathological Biomolecules													
Study and Research Center for the Intensification of Diabetes Treatment [CERTID]													
Tumor Functional Genomics and Epigenetics													
Unit for Integrated Biology in Adaptations to Exercise [UBIAE]													



Consult the thematic indexes of

–Laboratories p. 45

–Platforms & Infrastructure p. 74

–Companies p. 157

# INFRASTRUCTURE



## FIELD OF ACTIVITY

**BIOLOGICAL RESOURCES CENTER**  
**BIOMANUFACTURING**  
**CELL BIOLOGY – MICROSCOPY**  
**FUNCTIONAL EXPLORATION**  
**IT AND BIOINFORMATICS**  
**MOLECULAR BIOLOGY**  
**ROBOTIZATION - AUTOMATION**  
**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

Genopole Infrastructure provides Genopole entities with access to **19 technical platforms and a technical facility** (Genopole Enterprises / Essonne Chamber of Commerce and Industry business incubator technical facility, p.56). These tools provide real solutions to the biocluster's companies and laboratories in **eight fields of research in life sciences** (see below). An **international conference center** (Genocentre, p.63) and a **municipal very high-speed communications network** (REVE, p.62) complete this offer.

### BIOLOGICAL RESOURCES CENTER

These platforms provide access to collections of biological samples as well as storing facilities.

—The Biobanks, Bioprocesses and HTS Platform.....	53	—DNA and Cell Bank.....	59
—The Center for Functional Investigation and Experimental Research in Amphibians and Fish [Cerfap].....	58	—DNA Extraction and Encapsulation Genopole Facility.....	60

### BIOMANUFACTURING

Genopole benefits from eukaryotic cell and plant system biomanufacturing platforms. The Genopole Biomanufacturing center focuses on production of therapeutic monoclonal antibodies and recombinant proteins using eukaryotic cells, and the Bioprocesses Platform on automated production of human pluripotent stem cells. Alternatively, the Genopole Plant Process Innovation platform uses plant-based transient expression – thus GMO-free-to produce monoclonal antibodies or virus-like particles.

—The Biomanufacturing Center Genopole.....	54	—Genopole Plant Process Innovation Platform - [GPPI].....	65
—The Biobanks, Bioprocesses and HTS Platform.....	53		

### CELL BIOLOGY - MICROSCOPY

These platforms provide access to a range of competencies serving functional exploration, flow cytometry and high-throughput screening, as well as a range of microscopy equipment including two-photon microscopy, transmission electron microscopy, spectral microscopy and evanescent wave microscopy.

—The abSYNTH Facility.....	52	—The Center for Functional Investigation and Experimental Research in Amphibians and Fish [Cerfap].....	58
—The Biobanks, Bioprocesses and HTS Platform.....	53	—Imaging & Cytometry Platform.....	66
—Business Incubator Technical Facility.....	55	—Irradiation Research Platform.....	67
—Cell Sorting Workstation.....	56	—Structural Biology Platform.....	71
—Center for Exploration and Experimental Functional Research [Cerfe].....	57	—Transmission Electron Microscopy.....	73



## FUNCTIONAL EXPLORATION

These platforms provide animal housing, experimentation units and shared equipment for exploratory and characterization work in cellular, piscine, amphibian and murine models. They provide optimal conditions for research while insuring the total respect of health and ethical standards.

—The Biobank, Bioprocesses and HTS Platform .....	53	—The Center for Functional Investigation and Experimental Research in Amphibians and Fish [Cerfap].....	58
—Center for Exploration and Experimental Functional Research [Cerfe].....	57	—Imaging & Cytometry Platform.....	66

## IT AND BIOINFORMATICS

These platforms provide a complete environment for IT and its application in bioinformatics. This includes calculation resources and high-performance software to enable applications in systems biology, synthetic biology, genomics, image analyses and virtual and augmented reality.

—The abSYNTH Facility .....	52	—Imaging & Cytometry Platform.....	66
—Evr@ Platform.....	61	—MicroScope Platform .....	69
—ÉvryRNA Platform .....	62	—PBPK Modeling Platform.....	70
—Évry-Val-d'Essonne REVE high-speed network.....	63	—Structural Biology Platform.....	71

## MOLECULAR BIOLOGY

These platforms provide expertise in DNA processing and cloning, transcriptomic analyses, construction of complex biological systems for synthetic biology, etc. and access to a large range of instruments: gel documentation system, PCR and qPCR systems, slide scanner, etc.

—The abSYNTH Facility .....	52	—DNA Extraction and Encapsulation Genopole Facility .....	60
—The Biobank, Bioprocesses and HTS Platform .....	53	—Genopole Plant Process Innovation Platform [GPPi] .....	65
—Business Incubator Technical Facility.....	55	—Imaging & Cytometry Platform .....	66
—The Center for Functional Investigation and Experimental Research in Amphibians and Fish [Cerfap].....	58	—Transcriptomics Platform.....	72

## ROBOTIZATION - AUTOMATION

These platforms benefit from technologies for robotization and automation, enabling applications in imaging, high throughput screening, microinjection, long term preservation and agroinfiltration.

—The abSYNTH Facility .....	52	—Evr@ Platform .....	61
—The Biobanks, Bioprocesses and HTS Platform.....	53	—Genopole Plant Process Innovation Platform [GPPi].....	65
—DNA Extraction and Encapsulation Genopole Facility.....	60	—Imaging & Cytometry Platform.....	66

## STRUCTURAL BIOLOGY – CHEMICAL ANALYSIS

These platforms offer a range of technologies for the study of molecular structures and interactions of ligands, proteins and nucleic acids, as well as a variety of separation techniques. In particular, equipment for nuclear magnetic resonance (NMR), atomic force microscopy (AFM), spectrofluorometry and mass spectrometry are available via these platforms.

—Mass Spectrometry Platform .....	68	—Structural Biology Platform.....	71
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**AFM-TÉLÉTHON**

French Muscular Dystrophy Association

**CAECE**

Évry Centre-Essonne Urban Area

**CCI ESSONNE**

Essonne Chamber of Commerce and Industry

**CD91**

Essonne Department Council

**CRIF**

Île-de-France Regional Council

**FRM**

Foundation for Medical Research

**IBISA**

Biology, Healthcare and Agronomy Infrastructure

**MENESR**

Ministry of Higher Education and Research

**PIA**

Program Investissements d'Avenir

**UCP**

University of Cergy-Pontoise

**UEVE**

University of Évry-Val-d'Essonne

**IBISA accreditation ("infrastructure in biology, healthcare and agronomy")**

Is awarded to platforms that provide open access to academic and private-sector researchers on the regional and national levels. These platforms have to meet a strict set of operating specifications guaranteeing the quality of the service offering and its long-term technological performance.

### **SHARED-USE TECHNICAL FACILITY**

A set of technical resources brought together on a single site, with a view to offering high-level technological services and resources to a user community.

### **SHARED-USE PLATFORM**

A set of technical and human resources brought together on a single site, with a view to offering high-level technological services and resources to a user community.

#### **—COLLABORATIVE PLATFORM**

A facility whose use requires the elaboration of a joint scientific program.

#### **—SERVICE PLATFORM**

A service-based facility whose use does not require scientific collaboration.

#### **—COLLABORATIVE/SERVICE PLATFORM**

A facility that operates in both service-based and collaborative modes.

### **INFRASTRUCTURES**

Major technology platforms within the Genopole biocluster.

#### **Contact**

Emmanuel Dequier  
Director Genopole Research and Global Infrastructure  
emmanuel.dequier@genopole.fr

COLLABORATIVE / SERVICE PLATFORM

ab SYNTH

## The abSYNTH Facility

### Host laboratory

Institute for Systems and Synthetic Biology [iSSB]

### Supervisory bodies

University of Évry-Val-d'Essonne, CNRS

### Funding bodies

UEVE - CNRS - CG91 - Genopole

### Director

Jean-Loup Faulon

### Technical facility manager

Joan Hérisson

### Contact details

iSSB - Genopole Campus 1  
Bâtiment 6  
5 rue Henri-Desbruères  
F-91030 ÉVRY Cedex

### Website

[www.issb.genopole.fr/absynth](http://www.issb.genopole.fr/absynth)

### FIELDS OF ACTIVITY

—The design, construction and characterization of complex biological systems based on or inspired by living organisms but with functions that are not found in nature.

—Automated conception of genetic circuits.

**KEYWORDS:** Synthetic biology / Cellular imaging / Metabolic Engineering / Bioinformatics



- Promis (Catalytic and Substrate Promiscuity Prediction),
- EcoliTox (Toxicity Prediction),
- SolenCAD (Gene Insertion Engineering Based on Regularities),
- XenBrowser (GBrowser for *Xenopus tropicalis*)

### Construction

—Molecular biology equipment for producing DNA clones.

—High-performance centrifuge.

—Automated pipetting systems.

—Precision weighing chamber.

### Characterization

—Microfluidics for:

- single-cell microscopic observation of prokaryotes,
- the development of custom-made chips (cell sorting, directed evolution).

—Fluorescence plate readers.

—Quantitative PCR systems.

—High-performance liquid chromatography/mass spectrometry.

—Ball mill.

### ACCESS PROCEDURE

The facility can be accessed after prior submission of projects to a steering committee.

### Please contact:

Joan Hérisson

Tel +33 1 69 47 44 41

[joan.herisson@issb.genopole.fr](mailto:joan.herisson@issb.genopole.fr)

### EQUIPMENT

#### Design

—An intensive calculation service (2.7 TFlops).

—A scientific software portal:

- AutoBioCAD (Genetic Design),
- SinCePRO (Single Cell Microscopy Image Processing),
- Ribomaker (Computational Design of Conformation-based Riboregulation),
- PrecisePrimer (Primer Design for Cloning Libraries),
- Sscan (Canonical Signatures Computation),

**BIOLOGICAL RESOURCES CENTER  
BIOMANUFACTURING**

▶ **CELL BIOLOGY - MICROSCOPY**

▶ **FUNCTIONAL EXPLORATION**

▶ **IT AND BIOINFORMATICS**

▶ **MOLECULAR BIOLOGY**

▶ **ROBOTIZATION - AUTOMATION**

▶ **STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

## The Biobanks, Bioprocesses and HTS Platform

### Host laboratory

CECS/I-Stem (Institute for Stem Cell Therapy and Exploration of Monogenic Diseases)

### Supervisory bodies

AFM-Téléthon - Inserm - UEVE

### Funding bodies

Biobanks: AFM-Téléthon - Genopole  
Bioprocesses and HTS: CRIF - AFM-Téléthon - Inserm - Genopole

### Director

Raymond Zakhia

### Technical facility manager

Biobanks: Raymond Zakhia  
Bioprocesses and HTS: Mathilde Girard

### Contact details

CECS/I-Stem  
Genopole Campus 1  
5 rue Henri-Desbruères  
F-91030 ÉVRY Cedex

### Website

[www.istem.eu](http://www.istem.eu)

### FIELD OF ACTIVITY

- Accommodation of nitrogen tanks for cell bank stocks.
- Automated production of human pluripotent stem cells and derivatives.
- High-throughput molecular screening for drug discovery.

**KEYWORDS:** Biobank / Storage / Safety and traceability / Cell production / Downstream process / Quality control / Automation / High throughput screening / High content imaging / Functional genomics / Compound library / Pluripotent stem cells / Test development

### EQUIPMENT

#### Biobanks:

- Air Liquide vacuum-isolated network.
- Monitoring system for automated liquid nitrogen supply.
- Safety and traceability system.

#### Bioprocesses:

- Compact Select/TAP system.
- Fill-It: Dispensing of cells in cryotubes.
- Cryomed: Controlled-rate freezing.

#### HTS:

- Biocell 1800 (Agilent Technologies).
- 2 Bravo (Agilent Technologies).
- ClarioStar (Labtech).
- Arrayscan (Cellomics).
- ImageXpress (Molecular Device).

### ACCESS PROCEDURE

#### Please contact

Raymond Zakhia  
Tel +33 6 84 03 81 28  
[rzakhia@istem.fr](mailto:rzakhia@istem.fr)



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**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

## SERVICE PLATFORM

## The Biomanufacturing Center Genopole

**Host structure**

Genopole

**Supervisory body**

GIP Genopole

**Funding bodies**

CRIF - CG91 - MENESR

**Contact details**

Genopole Campus 1  
Bâtiment 8 - Porte 865  
5 rue Henri-Desbruères  
F-91030 ÉVRY Cedex

## FIELD OF ACTIVITY

Custom production of monoclonal antibodies and recombinant proteins.

**KEYWORDS:** Biomanufacturing / Cell culture / Monoclonal antibodies / Therapeutic proteins



At its Évry campus, Genopole benefits from a center for the biomanufacturing of recombinant proteins, in particular monoclonal antibodies, in mammalian cell cultures.

In its bioreactors, the center can produce research and non-GMP preclinical biomolecule batches.

**EQUIPMENT**

- Bioreactors (1-20 L).
- Purification equipment: clarification – membrane/ filter ultrafiltration – column chromatography – nanofiltration.
- Analysis equipment.

**ACCESS PROCEDURE****Please contact**

Emmanuel Dequier  
Tel +33 1 60 87 83 00  
plates-formes@genopole.fr

## BIOLOGICAL RESOURCES CENTER

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IT AND BIOINFORMATICS

MOLECULAR BIOLOGY

ROBOTIZATION - AUTOMATION

STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS

## SHARED-USE TECHNICAL FACILITY

## Business Incubator Technical Facility

Certified ISO 9001v2008

**Host structure**Genopole Entreprises  
Incubator CCI Essonne**Supervisory bodies**

CCI Essonne - Genopole

**Funding bodies**CRIF - CD91 - CCI Essonne -  
Genopole**Director**

Marie-Noëlle Decarreaux

**Technical facility manager**

Erwann Guellaen

**Contact details**4 rue Pierre Fontaine  
F-91058 ÉVRY Cedex**Website**

www.essonne.cci.fr

**FIELD OF ACTIVITY**

Support for biotech start-ups via the provision of a comprehensive range of specific services and biomedical/ healthcare research equipment.

**KEYWORDS:** Accommodation / Equipment and mutualization management / P2 labs / Business crossroads**EQUIPMENT**

The technical facility features both private and shared-access premises and research equipment.

Shared-access scientific and technical facilities:

—Central wash room, 250-liter autoclave, washing machine, oven.

—A 4°C cold room and a 37°C warm room.

—A suite with -150°C, -80°C and -20°C freezers.

—Sample preparation room: stirrers, centrifuges, freeze dryer, incubator, ultra-pure water production, deionized water production, chip ice, microtome, growth chamber, sonicator, ball mill, rotary evaporator and SpeedVac.

—Sample analyses room: GeneQuant and Nanodrop 2000 spectrophotometer, SpeedVac concentrator, DNA amplifier, HPLC system, Q-PCR Light Cycler 480 II v. 96, plate reader, bioanalyzer, luminescence bioimaging.

—Platform comprising five P2 laboratories (each approximately 20 m<sup>2</sup>): temperature-controlled negative pressure airlock, shared management of CO<sub>2</sub> supply and alarm.**ACCESS PROCEDURE****Please contact**

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mn.decarreaux@essonne.cci.fr

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**ROBOTIZATION - AUTOMATION**  
**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

## COLLABORATIVE PLATFORM

## Cell Sorting Workstation

**Host laboratory**

Laboratory for the Genomics and radiobiology of Keratinopoiesis

**Supervisory body**

CEA

**Funding bodies**

CEA - CRIF - Genopole

**Director**

Michèle Martin

**Technical facility manager**

Pierre Vaigot

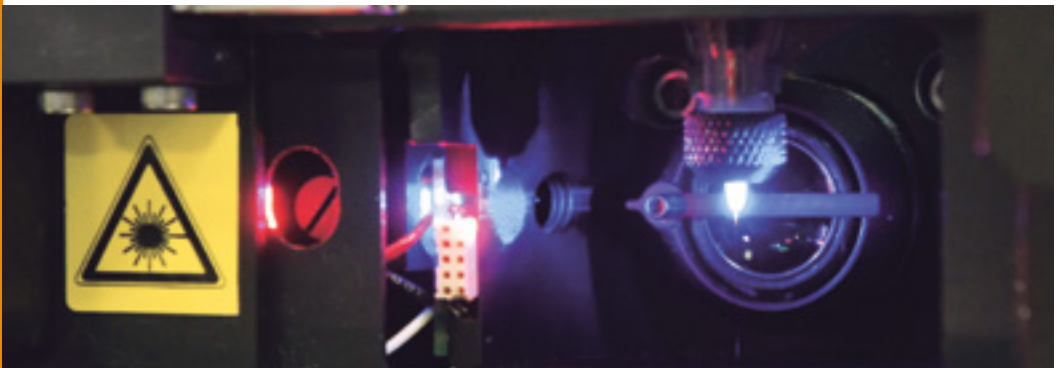
**Contact details**

Laboratoire de Génomique et Radiobiologie de la Kératinopoïèse  
Genopole Campus 2  
Bâtiment G2  
2 rue Gaston-Crémieux  
CP 5722  
F-91057 ÉVRY Cedex

**FIELDS OF ACTIVITY**

- Flow cytometry.
- High-speed cell sorting.

**KEYWORDS:** Cell sorting / Cell cloning / Stem cells / Keratinocyte / Cell cycle / Multiparametric analysis

**EQUIPMENT**

- MoFlo MIs cell sorter / cloner (Beckman/Coulter).
- 3 lasers (UV, red, blue); 7 colors.

**ACCESS PROCEDURE**

The platform may be accessed by all members of the Genopole's public- and private-sector scientific community, subject to specific arrangements with the CEA.

**Please contact**

Pierre Vaigot  
Tel +33 1 60 87 34 96  
pierre.vaigot@cea.fr

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**ROBOTIZATION - AUTOMATION**  
**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**



## SERVICE PLATFORM



## Center for Exploration and Experimental Functional Research [Cerfe]

Certified ISO 9001v2008

### Host structure

Genopole

### Supervisory body

GIP Genopole

### Funding bodies

CRIF - CD91 - MENESR

### Website

[www.genopole.fr](http://www.genopole.fr)

### FIELDS OF ACTIVITY

- Small animal functional exploration and breeding (rodents):
  - Production and conservation of mouse genetic models.
  - Functional exploration and phenotyping.
- Creation of experimental models.
- Provision of equipped laboratories.

**KEYWORDS:** Rearing / Functional exploration / Small animal models / *In vivo* evaluation / Ethics committee

### EQUIPMENT

- Housing units: ventilated racks, isolators, flow hoods.
- Automated washing and sterilization equipment.
- Shared *in vitro* and *ex vivo* cell culturing equipment: BSC, incubators, Nikon TE2000 inverted microscope, refrigerated centrifuge.
- Shared laboratory equipment (refrigerators, incubators, weight scales, BSCs, stereoscopic loupe, infusion and anesthesia equipment, etc.).
- Shared functional equipment: Caloric and cardiovascular measurement system for treadmill tests, actimetry platform, IVIS Caliper Xenogen fluorescence / bioluminescence imaging systems, MS9-5 cells counting system.

### ACCESS PROCEDURE

The CERFE may be accessed upon authorization from the Minister for Higher Education and Research following a favorable opinion from the CERFE ethics committee (n° 51). To request use of the installations and services and for all quotes and contractual matters:

### Please contact

[cerfe@genopole.fr](mailto:cerfe@genopole.fr)



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 FUNCTIONAL EXPLORATION  
 IT AND BIOINFORMATICS  
 MOLECULAR BIOLOGY  
 ROBOTIZATION - AUTOMATION  
 STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS

COLLABORATIVE / SERVICE PLATFORM

## The Center for Functional Investigation and Experimental Research in Amphibians and Fish [Cerfap]

**Host structure**  
WatchFrog

**Funding bodies**  
Genopole - CD91 -  
WatchFrog

### FIELDS OF ACTIVITY

- Creation and development of small aquatic model organisms:
  - Production of eggs and aquatic larvae.
  - Molecular genetics.
  - Functional genomics.
  - Creation of disease models.
  - Evaluation of environmental risks.
- Development and implementation of routine testing within the framework of a quality management system.
- Testing platform for API toxicity on embryonic development (FETAX, ASTM Guidelines).

**KEYWORDS:** Xenopus / Japanese rice fish / Animal model / Environmental risk / Molecular genetics



### EQUIPMENT

- Automated animal housing units.
- Confined environments (biosafety level 2 and above) with controlled temperature, pressure, light and water quality.
- Automated imaging systems and imaging-in-flow devices for use in aquatic environments.
- Automated microinjector.

### ACCESS PROCEDURE

Access to the CERFAP is subject to prior approval by the platform management committee.

### Please contact

cerfap@genopole.fr

**BIOLOGICAL RESOURCES CENTER**  
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**MOLECULAR BIOLOGY**  
**ROBOTIZATION - AUTOMATION**  
**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

## SERVICE PLATFORM

## DNA and Cell Bank

Certified IBiSA  
and AFNOR NF-96-900  
National Facility

**Host structure**

Genethon - French  
Association Law of 1901

**Funding bodies**

AFM-Téléthon - Généthon -  
Genopole

**CEO**

Frédéric Revah

**CSO**

Fulvio Mavilio

**Platform manager**

Safaa Saker-Delye

**Contact details**

Généthon  
1 bis rue de l'Internationale  
BP 60  
F-91002 ÉVRY Cedex

**Website**

[www.genethon.fr](http://www.genethon.fr)

## FIELD OF ACTIVITY

Processing and storage of human blood samples (serum, DNA, lymphocytes and lymphoblastoid B cell lines) and biopsy samples (primary cultures – mainly myoblasts and fibroblasts).

**KEYWORDS:** DNA / Lymphoblastoid cell lines / Fibroblasts / Myoblasts / Cell cultures

## EQUIPMENT

- DNA Extractor AutoGene.
- 5 microbial safety cabinets.
- 11 CO<sub>2</sub> incubators.
- 6 -80°C freezers.
- 6 -20°C freezers.
- 14 nitrogen tanks (600L or 660L).
- Documentation system for electrophoresis gels.
- DropSense96 UV/VIS spectrophotometer.
- Pulsed field gel electrophoresis system for DNA.
- Labchip GX-Touch (Perkin/Elmer).

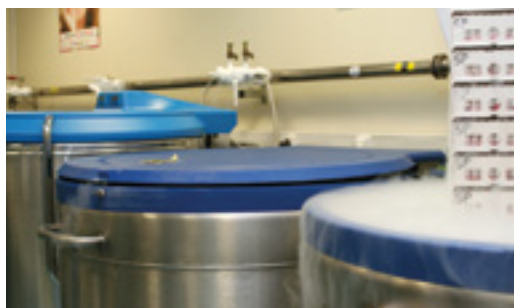
## ACCESS PROCEDURE

All requests for collaboration with the DNA and Cell Bank should be made in writing and sent to Dr Safaa Saker-Delye.

After approval of the application, a partnership agreement (specifying the parties' rights and obligations) will be drawn up.

**Please contact:**

Safaa Saker-Delye – Tel +33 1 69 47 29 77  
[saker@genethon.fr](mailto:saker@genethon.fr)



## BIOLOGICAL RESOURCES CENTER

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IT AND BIOINFORMATICS  
MOLECULAR BIOLOGY  
ROBOTIZATION - AUTOMATION  
STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS

## SERVICE PLATFORM

## DNA Extraction and Encapsulation Genopole Facility

**Host structure**

Imagene

**Funding body**

ANR - PIA - Genopole

**Director**

Sophie Tuffet

**Technical facility manager**

Marthe Colotte

**Contact details**

Imagene

Genopole Campus 1 - Bât 6  
5 rue Henri-Desbrùères  
F-91030 ÉVRY Cedex

**Website**

[www.imagene.fr](http://www.imagene.fr)

**FIELDS OF ACTIVITY**

- Extraction and encapsulation of DNA in an anhydrous and anoxic state for its long-term storage at room temperature.
- Back-up DNA bank.

**KEYWORDS:** DNA extraction / Biobank / Long-term room-temperature DNA conservation / Biological resources center

The principal steps of the facility's services are:

- Reception of files and samples.
- Extraction and purification of DNA.
- Quantification and qualification of DNA.
- Encapsulation process:
  - Aliquoting.
  - Drying.
  - Encapsulation.
  - Verification of the DNAsell® minicapsule water/ airtightness.
- Delivery of the minicapsules in a stocking tray or local stockage.

This large-scale facility uses a laboratory information management system to marry advanced technologies in robotics, biology, industrial automation, laser micro-welding, traceability and in-house software. The facility meets ISO 9001v2000 and NF X50-900 quality standards and its technology is compatible with a vast range of sample types (human or animal, blood, tissue, non-pathogenic microorganisms, plants, etc.).

**EQUIPMENT**

- Freezer -80° C (Panasonic).
- Class II BSC (ADS Laminaire).
- High-capacity and micro centrifuges (THERMO).
- Automated extractors Autopure and QIAcube (Qiagen).
- Minicapsule DNA/aliquot quality control station:
  - Robot STAR (Hamilton)
  - Synergy 2 plate reader (BioTek)
  - Data matrix code reader (Imagene)
  - E-Gel electrophoresis system (Invitrogen)
- Evaporation system (Genevac HT-4).
- Encapsulation station (Imagene).
- Minicapsule seal verification (Imagene).
- Minicapsule storage and retrieval stations (Imagene).
- Complete information system.

**ACCESS PROCEDURE****Contact:**

Sophie Tuffet  
Tel: + 33 1 60 77 62 22  
PF-encapsulationADN@imagene.fr

**BIOLOGICAL RESOURCES CENTER**

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IT AND BIOINFORMATICS

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STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS

**COLLABORATIVE  
PLATFORM**
**Evr@ Platform**

Virtual Environment and @ugmented Reality

**Host laboratory**

 IT for Integrated Biology  
and Complex Systems

**Supervisory body**

 University of Évry-  
Val-d'Essonne

**Funding bodies**

 UEVE - CNRS - CD91 -  
MENESR - Genopole

**Director**

Pr. Franck Delaplace

**Scientific managers**

 Malik Mallem,  
Samir Otmane

**Technical facility  
manager**

Frédéric Davesne

**Contact details**

 Ibisc - Université d'Évry-  
Val-d'Essonne  
40 rue du Pelvoux  
CE 1455 Courcouronnes  
F-91020 ÉVRY Cedex

**Website**
<http://evra.ibisc.univ-evry.fr>
**FIELDS OF ACTIVITY**

- Augmented reality and virtual reality.
- Collaborative teleworking.
- Visualization and exploration of massive data sets in biology.
- User-centered immersive interfaces for molecular interactions.

**KEYWORDS:** Personal multimodal digital assistance / Human motion capture and analysis / Precise robotics teleoperation via natural movements / Collaborative telework / Assistance with structural hypothesis experimentation in biology

**EQUIPMENT**
**Two virtual reality platforms (VR)**

—A semi-large-scale platform for user semi-immersion:

*Visualization system*

- 3D visualization screen (3.2 m x 2.4 m).
- 3-DLP projector for active stereoscopy with high ambient light levels.
- High-performance graphics and video server.

—A lightweight, portable platform:

*Visualization system*

- 3D visualization screen (1.5 m x 1.5 m).
- Projector for active stereoscopy.
- High-performance graphics and video server.

*System permitting interactivity between the two platforms*

- Front-positioned user motion tracking (infrared cameras, Flystick, markers).
- Spidar-type force feedback systems.

—HAPTIC feedback arm.

**Augmented reality equipment (AR)**
*Visualization system*

- Ultralight augmented reality monacle with mini-camera, VR/AR headpiece.

*Localization sensors*

- High precision cameras, GPS, inertial unit.

**A robotic platform**

—Two 6-axis industrial robots, 1 ROV (underwater robot) with 2 cameras and one 25-axis humanoid robot.

The four robots can be maneuvered via the Internet.

—Two wheeled autonomous robots.

**Mutualized equipment/software**

—One 40-inch multi-touch 3D screen.

—One 3D printer.

—Two software development platforms: VR (3DVIA Virtools) and AR (ARCS, developed by Ibisc).

**ACCESS PROCEDURE**

For collaborations as part of French or EU-funded research projects.

**Please contact:**

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**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

COLLABORATIVE / SERVICE PLATFORM

## ÉvryRNA Platform

Algorithms and programs for the identification of non-coding RNAs and the prediction of their structure

### Host laboratory

IT for Integrated Biology and Complex Systems  
[Ibisc UEVE EA 4526]

### Supervisory body

University of Évry-Val-d'Essonne

### Funding body

UEVE - Genopole - CD91

### Director

Franck Delaplace

### Technical facility manager

Fariza Tahî

### Contact details

Institute of Genetics  
Biology and Bioinformatics (IBGBI)  
23 Boulevard de France  
F-91000 Évry

### Website

<http://EvryRNA.ibisc.univ-evry.fr/>

### FIELDS OF ACTIVITY

- Prediction of non-coding RNA secondary structures.
- Large-scale identification and prediction of non-coding RNA genomic sequences, particularly small RNAs (microRNA, piRNA, etc.).

**KEYWORDS:** Bioinformatics platform / Non-coding RNA / Secondary structure prediction / MicroRNA prediction / Large-scale research / piRNA prediction

ÉvryRNA is a web server that provides the scientific community with access to the range of non-coding RNA predictive tools and algorithms developed by Ibisc (see page 32):

- algorithms for the prediction of RNA secondary structures, including pseudoknots: P-DCFold (Tahî et al., IJAIT 2005), SSCA (Engelen and Tahî, BMC Bioinformatics 2007) and Tfold (Engelen and Tahî, NAR 2010),
- algorithms for *ab initio* prediction of microRNAs: miRNAFold (Tempel and Tahî, NAR 2012), miBoostSVM (Tran et al., JOBIM 2012) and ncRNAclassifier (Tempel et al., BMC Bioinformatics 2012),
- algorithms for the prediction of piwi-interacting RNAs (piRNA): piRPred (Brayet et al., Bioinformatics 2014).

### EQUIPMENT

Software:

- P-DCFold, for the prediction of RNA secondary structures, including pseudoknots.
- SSCA, for the selection of homologous sequences in a comparative approach to predicting RNA secondary structures.
- Tfold, for the prediction of secondary structures, including pseudoknots (integration of SSCA and P-DCFold).
- miRNAFold, for *ab initio* large-scale research of microRNA precursors (pre-miRNAs) in genomes.
- ncRNAclassifier, to determine if a non-coding RNA is derived from a transposable element (TE) or confused with a TE.
- miRBoost, to identify true or false pre-miRNA sequences.
- piRPred, for piRNA prediction.

Complementary tools:

- RNA-SC: for the comparison of predicted RNA secondary structures to reference structures.

### ACCESS PROCEDURE

**Contact:**

fariza.tahî@ibisc.univ-evry.fr  
Tel: +33 6 10 44 21 22

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## INFRASTRUCTURE

## The Évry-Val-d'Essonne REVE high-speed network

The GIE private-public joint venture

### Host structure

University of Évry-Val-d'Essonne

### Funding bodies

CRIF - Initially the Évry Centre Essonne Urban Area, then the GIE REVE members

### President of the board

Pierre Tambourin

### GIE REVE members

UEVE - Genopole - Télécom SudParis et Télécom École de management - Centre des Matériaux de Mines ParisTech - Généthron - École nationale supérieure d'informatique pour l'industrie et l'entreprise (ENSIIE) - Institut de Génomique du CEA - CROUS

### Contact details

Genopole Campus 1  
5 rue Henri-Desbruères  
F-91030 ÉVRY Cedex

### Website

[www.reve.fr](http://www.reve.fr)

### FIELD OF ACTIVITY

A private telecom network in Évry.

**KEYWORDS:** Network / High-speed IP / Internet / Information and communication technology (ICT)

### EQUIPMENT

REVE links 14 scientific sites in the Évry Centre Essonne Urban Area and is available to companies based on the Évry-Corbeil biocluster. It provides rapid access to genetics and genomics data. REVE enables deployment of the technologies needed to build a cross-disciplinary, virtual campus.

For academic stakeholders, it provides infrastructure that is essential for developing and leveraging information and communication technologies. For business stakeholders, it provides an attractive, validated platform for reinforcing the area's hi-tech industrial fabric particularly in the field of genomics.

### TECHNICAL CHARACTERISTICS

14 connection points with a dual redundant loop configuration.

- High-speed IP network.
- Capable of interconnection with long-distance broadband networks (Internet), the Renater higher education network and the private operator. FrontierOnline (with user selection of the end operator).
- Support for IP multicasting.
- Traffic compatibility and skimming functions.
- Support for IPv4 and IPv6.

### ACCESS PROCEDURE

**Please contact the technical service:**

[contact@reve.fr](mailto:contact@reve.fr)

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## INFRASTRUCTURE



## The Genocentre

### International Convention Center

A forum for dialogue and knowledge sharing at the heart of Genopole.

#### Funding bodies

CRIF - CD91  
AFM-Téléthon

#### AFM Secretary

Jean-Pierre Gaspard

#### Operations director

Laurence Rimac

#### Contact details

1 rue de l'Internationale  
BP 59  
F-91002 ÉVRY Cedex

#### Website

[www.genocentre.fr](http://www.genocentre.fr)

#### FIELD OF ACTIVITY

Venue for the organization of conventions, colloquia and meetings.

**KEYWORDS:** Seminars / Conferences / Symposiums / Conventions / Plenary meetings

#### EQUIPMENT

Cutting-edge facilities:

—A 5,700 m<sup>2</sup> convention center comprising a divisible, indoor amphitheater (from 270 to 700 seats) with a 100-300 m<sup>2</sup> stage area, a television studio, 7 modular meeting rooms (from 12 to 400 m<sup>2</sup>), a 400 m<sup>2</sup> multipurpose area and a versatile 700 m<sup>2</sup> plaza. Parking lots nearby.

—Easy access for visitors with reduced mobility -

Genocentre was the first convention center in the Paris/Île-de-France region to receive the "Tourism and Handicap" label of excellence awarded by the French government.

—A building that is fully equipped with video, data and telephone networks for flexible use and interactive links between rooms and with the outside world.

—Top-class audiovisual equipment: video projection, conference translation and video conferencing.

—Furniture and fittings designed for optimal comfort of use, plus high-performance acoustic treatments in all areas.

—Personalized "à la carte" services delivered by a team of professionals who will help you organize your event.

In addition to reserving the appropriate room and the related audiovisual services for you, the Genocentre team will advise you and, if necessary, contact external providers for additional services (catering, transport, accommodation, decoration, fitting out, etc.).



#### ACCESS PROCEDURE

Genocentre is open to scientific, charitable or commercial organizations based in France or abroad.

#### For any further information contact:

Tel +33 1 69 47 34 89

[genocentre@afm.genethon.fr](mailto:genocentre@afm.genethon.fr)



## COLLABORATIVE PLATFORM

## Genopole Plant Process Innovation Platform [GPPi]

**Host laboratory**

Genopole Plant Process  
Innovation Laboratory

**Supervisory bodies**

Genopole - Medicago

**Funding bodies**

Genopole - Medicago

**CSO**

Martin Crespi

**Technical facility manager**

Andéol Falcon  
de Longevialle

**Contact details**

Laboratoire Genopole Plant  
Process Innovation  
Genopole Campus 2  
Bâtiment G1  
2 rue Gaston-Crémieux  
CP 5708  
F-91057 ÉVRY Cedex

**Website**

[www.genopole.fr](http://www.genopole.fr)

**FIELDS OF ACTIVITY**

- VLPEXpress™ high throughput discovery platform.
- Transient expression of recombinant proteins in plant systems.
- Targets: virus-like particles; recombinant antibodies.

**KEYWORDS:** Biomanufacturing / Virus-like particles / Monoclonal antibodies / Molecular farming

**EQUIPMENT**

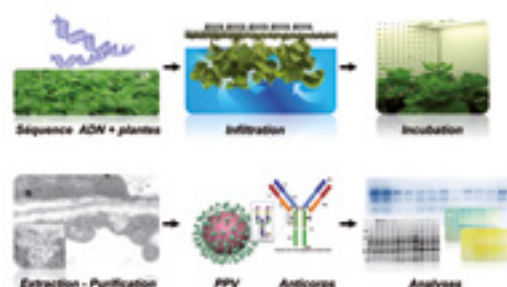
- 1 automated agro-infiltration system (SNC Lavalin).
- 3 growth chambers: 1 GroBank BB XXL3+ (CLF Plant Climatics); 2 Percival AR41L2 (Percival).
- 1 IKA T-25 (Ultra Turrax) disperser (homogenization).
- 1 Nanosight NS200 (Nanosight) nanoparticle analyzer.
- 1 Gel Doc EZ imager (Bio-Rad).
- 1 trans-blot turbo system (Bio-Rad).
- 1 ChemiDoc MP (Bio-Rad).
- PCR Flexigene 96 (Techne).
- Counter-top autoclave.
- Water purification system (Milli-Q).

**ACCESS PROCEDURE**

The facility can be accessed after prior submission of projects to a steering committee.

**Please contact**

Andéol Falcon de Longevialle  
Tel +33 6 76 89 95 73  
[andeol.falcon@genopole.fr](mailto:andeol.falcon@genopole.fr)



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COLLABORATIVE / SERVICE PLATFORM

## Imaging & Cytometry Platform

Functional *in vivo* Imaging

### Host structure

Genethon - French  
Association Law 1901

### Funding bodies

AFM-Téléthon - Généthon -  
Genopole - CRIF - CD91 -  
MENERSR - FRM - UEVE

### CEO

Frédéric Revah

### CSO

Fulvio Mavilio

### Platform manager

Daniel Stockholm

### Contact details

Généthon  
1 bis rue de l'Internationale  
BP 60  
F-91002 ÉVRY Cedex

### Website

[www.genethon.fr](http://www.genethon.fr)

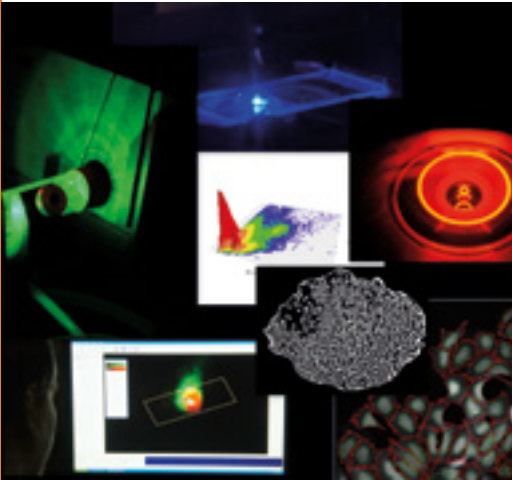
### FIELDS OF ACTIVITY

Expertise and tools for molecular and physiopathological exploration, from the single cell to the entire living organism via imaging and flow cytometry techniques.

—Imaging: morphometric analyses, macroscopy, confocal microscopy, spectral microscopy, multiphoton microscopy, long-term timelapse microscopy, whole-slide imaging, morphological & functional echography.

—Flow Cytometry: cellular and molecular analyses, cell sorting & cloning.

**KEYWORDS:** Imaging / Cytometry / Photonics / Cells / Animal



### EQUIPMENT

#### Photonic imaging

—BioRad Radiance 2000MP multiphoton inverted microscope (Zeiss).

—Leica TCS SP2 upright/inverted spectral confocal microscope.

—Zeiss LSM 510 Meta inverted spectral confocal microscope.

—Leica Macroconfocal.

—Microvision morphometry workstation on a Nikon E600 microscope.

—Microvision fluorescence-mode morphometric workstation with a Leica inverted microscope.

—Microvision fluorescence-mode morphometric workstation with an upright Leica microscope.

—Biostation IM Nikon.

—Digital slide Scanner AxioScan (Zeiss).

#### Flow Cytometry – Analysis and Cell sorting

—ASTRIOS-EQ high-speed cell sorter (Beckman Coulter).

—LSR II analyzer (Becton Dickinson).

—FACSCalibur analyzer (Becton Dickinson).

—FC 500 MCL analyzer (Beckman Coulter).

—ImageStream<sup>x</sup> imaging flow cytometer (Amnis).

#### Echography

—Vevo 770 Echograph (Visual Sonic).

#### ACCESS PROCEDURE

For service provision, training, advice and quotes:

#### Please contact

[info-imagerie-cytometrie@genethon.fr](mailto:info-imagerie-cytometrie@genethon.fr)

### BIOLOGICAL RESOURCES CENTER BIOMANUFACTURING

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▶ MOLECULAR BIOLOGY

▶ ROBOTIZATION - AUTOMATION

▶ STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS

## SERVICE PLATFORM

## Irradiation Research Platform

**Host laboratory**

Laboratory for the genomics and radiobiology of keratinopoiesis

**Supervisory bodies**

CEA - Genopole

**Funding bodies**

Genopole - CEA - CRIF

**Director**

Michèle Martin

**Technical facility managers**

Michèle Martin, Richard Launay, Sandra Moratille

**Contact details**

CEA-Inserm U967 - Institut de Radiobiologie Cellulaire et Moléculaire  
Genopole Campus 2  
Bâtiment G2  
2 rue Gaston-Crémieux  
CP 5722  
F-91057 ÉVRY Cedex

**Website**

[www-dsv.cea.fr](http://www-dsv.cea.fr)

## FIELDS OF ACTIVITY

—Irradiation of biological material.

Examples of use:

- Evaluation of the use of stem cells in cell therapy.
- Preparation of feeder cell layers for stem cell culture.
- Fundamental studies of the damage caused by gamma radiation.
- Identification of mechanisms in radiation-induced cancer.

—Irradiation of non-biological material.

**KEYWORDS:** Skin / Stem Cells / Cell therapy / Radiobiology / Cancer

## EQUIPMENT

—One irradiation room with an IBL 637 medical gamma-ray irradiator (caesium-137 source), doses: 1 to 50 Gy/ min.

—One L2 preparation room (CO<sub>2</sub> incubator, PSM, centrifuge, microscope, water bath, refrigerator and freezer).

—One microscope with Comet software to characterize radiation-induced lesions.

—A highly-trained staff to respond to your needs.

## ACCESS PROCEDURE

The irradiator may be accessed by all members of the Genopole's public- and private-sector scientific community.

**Please contact**

Sandra Moratille  
Tel +33 1 60 87 34 85  
[sandra.moratille@cea.fr](mailto:sandra.moratille@cea.fr)

**Or, if the latter is absent**

Michèle Martin  
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COLLABORATIVE / SERVICE PLATFORM

## Mass Spectrometry Platform

### Host laboratory

Laboratory for Analysis and Modeling in Biology and the Environment (Lambe)

### Supervisory bodies

University of Évry-Val-d'Essonne - CNRS - CEA

### Funding bodies

UEVE - CNRS - CEA - UCP - CRIF - CD91 - MENESR - Genopole

### Director

Jean-Yves Salpin

### Technical facility managers

Pr Florence Gonnet / Dr Régis Daniel

### Contact details

Lambe - Université d'Évry-Val-d'Essonne  
Bâtiment Maupertuis  
Rue du Père-Jarlan  
F-91025 ÉVRY Cedex

### Website

[www.lambe.univ-evry.fr](http://www.lambe.univ-evry.fr)

### FIELDS OF ACTIVITY

- Development of analysis methods via mass spectrometry and liquid chromatography-mass spectrometry (LC-MS).
- Analysis of synthetic polymers and biological macromolecules using mass spectrometry.
- Proteomic analyses (identification of proteins by peptide mass mapping or MS/MS sequencing, screening for mutations/post-translational modifications, semi-quantitative MS analyses, Top-Down protein analyses).
- Characterization of immuno-purified protein complexes: identification of interacting partners.
- Study of non-covalent interactions (protein-protein, polysaccharide-protein, DNA-ligand, protein-peptide and biomolecule- metal cation interactions).
- Analysis and small molecule assay.

**KEYWORDS:** Mass spectrometry / NanoLC-MS/MS / Proteomics / Analysis of complexes / Glycomics / Small molecule assay



### EQUIPMENT

#### Mass spectrometry

- Ion traps: SATURN 3 (Varian) and Esquire 3000 (Bruker).
- Triple quadrupole: API 2000 (Applied Biosystems).
- Q-TOF: QSTAR PULSAR i (Applied Biosystems).
- MALDI-TOF: Voyager DE STR (Applied Biosystems).
- Orbitrap: LTQ Orbitrap XL (Thermo Fisher Scientific) (see photo).
- Source ESI, nano-ESI, DESI, AP-MALDI.
- MALDI - TOF/TOF.
- Ion mobility mass spectrometry.

#### Separation techniques

- HP3D capillary electrophoresis (Agilent).
- GC: Varian.
- HPLC: Waters, Perkin Elmer, Merck, Agilent.
- NanoLC: Ultimate 3000 and LC-Packings (Dionex).

#### Spectrophotometer

- UV-visible spectrophotometer (Varian) and NanoDrop 1000 (Thermi Fisher Scientific).

### ACCESS PROCEDURE

#### Please contact

Dr Véronique Legros - Tel: +33 1 69 47 76 52 / 76 61  
[veronique.legros@univ-evry.fr](mailto:veronique.legros@univ-evry.fr)

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**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

COLLABORATIVE /  
SERVICE PLATFORM



## MicroScope Platform

Certified IBISA National Platform

Certified ISO 9001v2008

### Host laboratory

Genomics Institute

### Supervisory bodies

CNRS - CEA

### Funding bodies

CNRS - CRIF - CD91 -

MENESR - Genopole -

GIS IBISA

### Director

Patrick Wincker

### Technical facility managers

Claudine Médigue,

David Vallenet

### Contact details

Genoscope CNRS/  
UMR8030

Laboratoire d'Analyses

Bioinformatiques

en Génomique et

Métabolisme (LABGeM)

Genopole Campus 2

2 rue Gaston-Crémieux

F-91000 ÉVRY

**Website:** [www.genoscope.cns.fr/agg/microscope/](http://www.genoscope.cns.fr/agg/microscope/)

### FIELDS OF ACTIVITY

- Development of tools for the annotation of bacterial genomes and for comparative genomics and metabolic studies.
- Organization and management of genomic and metabolic data in database structures.
- Prediction and analysis of bacterial genome metabolic networks and models.
- NGS data analysis: projects in evolution (polymorphisms) and transcriptomics (RNA-seq).
- Development of user-friendly Web interfaces for the use of expert analysis and annotation tools (MaGe, Magnifying Genomes).
- An internationally-scaled genomics data analysis service for the microbiology community.
- Training for annotation, genomic and metabolic comparative analysis and transcriptome data analysis with the MaGe interface.

**KEYWORDS:** Bioinformatics platform / Bacterial genome annotation / Functional annotation / Comparative analysis of bacterial genomes / Bacterial metabolism / Metabolic networks

### EQUIPMENT

Today, the platform is integrated within the national life sciences structures *France Génomique* (<https://www.france-genomique.org/>) and the *Institut Français de bio-informatique* (iFb).

—Locally, the MicroScope platform is mutualized within the IT infrastructure of Genoscope: 300 processor cores/ 400 teraocets of storage.

—Access to the CEA supercomputing center located in Bruyères-le-Châtel (CCRT): 3000 processor cores and 10 petaocets of storage made available for the France Génomique national network of platforms.

LABGeM received ISO 9001v2008 and NF-X 50-900 certifications for its research, development and services activities via the MicroScope platform.

### ACCESS PROCEDURE

#### Please contact

Claudine Médigue

Tel +33 1 60 87 84 59

[cmedigue@genoscope.cns.fr](mailto:cmedigue@genoscope.cns.fr)

Requests for the integration of (meta)genomes, transcriptome data or evolution data: [www.genoscope.cns.fr/agg/microscope/about/services.php](http://www.genoscope.cns.fr/agg/microscope/about/services.php)

Access to database and current projects: [www.genoscope.cns.fr/agg/microscope/](http://www.genoscope.cns.fr/agg/microscope/)

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## SERVICE PLATFORM

## PBPK Modeling Platform

**Host structure**

PhinC Development

**Supervisory bodies**Genopole, PhinC  
Development**Funding bodies**Genopole, PhinC  
Development**Director**

Bernard Orlandini

**Platform manager**

Virginie Gualano

**Contact details**PhinC Development  
Genopole Campus 1  
Porte 861  
5 rue Henri-Desbruères  
F-91000 ÉVRY**Website**plates-formes.genopole.fr  
or www.phinc.fr

## FIELD OF ACTIVITY

Computerized pharmacokinetic-pharmacodynamic modeling and simulation platform for the optimization of drug development during lead identification, preclinical testing and phase I and IIa trials.

**KEYWORDS:** Modeling and simulation / PBPK / Lead / Drugs / Preclinical and clinical development

GastroPlus is a simulation software package that permits the construction of specific biomathematical models for therapeutic compounds in accordance with current knowledge in physiology, anatomy, physics and chemistry. Its modeling capacities evolve as new data is obtained (physico-chemical, *in vivo*, animal model, clinical, etc.). With its multidisciplinary and iterative approach, GastroPlus brings vital added value to:

- lead selection or development;
- preclinical interspecies extrapolation;
- the move from preclinical studies to clinical trials: human ADME prediction, selection of first-in-man dose, regimen and route of administration;
- the evaluation of drug or food interactions.

The GastroPlus approach thus optimizes the drug development research path.

## EQUIPMENT

GastroPlus software and modules:

- PBPK Plus
- ADMET Predictor
- Additional Dosage Routes
- Drug Drug Interaction
- Metabolism and Transporter Module
- Ocular Module.

## ACCESS PROCEDURE

**Please contact**

Genopole Research and Global Infrastructure  
Tel +33 1 60 87 35 15  
plates-formes@genopole.fr

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MOLECULAR BIOLOGY  
ROBOTIZATION - AUTOMATION  
STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS

## COLLABORATIVE PLATFORM

## Structural Biology Platform

**Host laboratory**

Structure and Activity of  
Normal and Pathological  
Biomolecules

**Supervisory bodies**

University of Évry-Val-  
d'Essonne - Inserm

**Funding bodies**

UEVE - CRIF - CD91 -  
AFM-Téléthon - CEA -  
MENESR - Inserm - Genopole

**Director**

David Pastré

**Platform manager**

David Pastré

**Contact details**

Université d'Évry-  
Val-d'Essonne  
Bâtiment Maupertuis  
Rue du Père Jarlan  
F-91025 ÉVRY Cedex

**FIELDS OF ACTIVITY**

—NMR & spectrofluorimetry:

- Structure, folding, stability and dynamics of proteins in solution.
- Ligand/protein, protein/protein, protein/nucleic acid interactions.
- Physiopathology of the microtubule cytoskeleton, cell cycle and neuron function.

—Molecular modeling and dynamics.

—AFM (atomic force microscopy):

- Nanometer-scale characterization of biomolecules and complexes.
- Air or liquid media observations of single molecules (DNA or proteins).
- DNA-ligand / protein-protein complexes and partner microtubules.

—Total internal reflection fluorescence microscopy (TIRFm).

—Partnership with SynSight, a company specialized in *in silico* molecular modeling, for drug design and molecule safety prediction.

**KEYWORDS:** NMR / 3D structures in solution / Modelization / Molecular dynamics / Drugs / Protein Moieties / AFM / Molecular imaging

**EQUIPMENT**

—600 MHz NMR spectrometer equipped with a cryoprobe.

—Molecular modeling and molecular dynamics software.

—Spectrofluorometer with fluorescence polarization and temperature control (MD-5020, PTI).

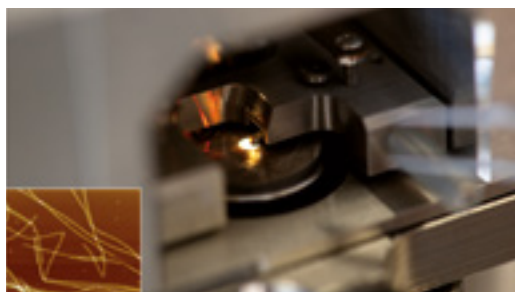
—2 Nanoscope III atomic force microscopes (Digital Instruments).

—Total internal reflection fluorescence microscope (TIRFM, Nikon).

—Multisizer 4 (Beckman Coulter).

—Real-time quantitative PCR (Applied Biosystems).

—OPTIMA XL and XE Ultracentrifuges (Beckman Coulter).



AFM (atomic force microscopy)

**ACCESS PROCEDURE****Please contact**

For NMR and spectrofluorimetry

Marie-Jeanne Clément - Tel +33 1 69 47 76 36  
mclement@univ-evry.fr

For atomic force microscopy

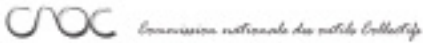
David Pastré - Tel +33 1 69 47 01 79  
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For total internal reflection fluorescence microscope (TIRFm)

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**BIOLOGICAL RESOURCES CENTER**  
**BIOMANUFACTURING**  
**CELL BIOLOGY – MICROSCOPY**  
**FUNCTIONAL EXPLORATION**  
**IT AND BIOINFORMATICS**  
**MOLECULAR BIOLOGY**  
**ROBOTIZATION - AUTOMATION**  
**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

## COLLABORATIVE PLATFORM



## Transcriptomics Platform

Certified IBISA  
National facility and INRA Strategic platform  
Certified ISO 9001v2008

### Host laboratory

Plant Sciences Institute  
Paris-Saclay (IPS2)

### Supervisory bodies

Inra - CNRS - University  
of Évry-Val-d'Essonne -  
University Paris Sud -  
University Paris-Diderot

### Funding bodies

Inra - CNRS - UEVE - CRIF -  
CD91 - MENESR - Genopole

### Director

Martin Crespi

### Platform manager

Dario Monachello

### Contact details

Plant Sciences Institute  
Paris-Saclay (IPS2)  
Genopole Campus 2  
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CP 5708  
F-91057 ÉVRY Cedex

### Websites

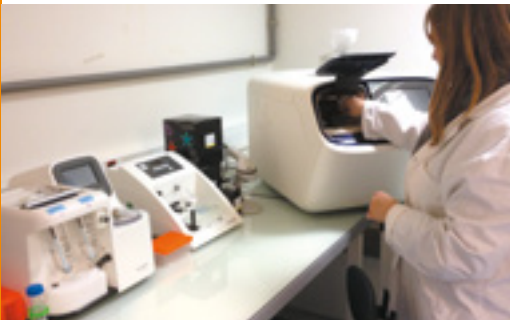
[www.versailles.inra.fr/urgv/microarray.htm](http://www.versailles.inra.fr/urgv/microarray.htm)  
[www.observatoire-vegetal.inra.fr/](http://www.observatoire-vegetal.inra.fr/)

### FIELD OF ACTIVITY

Transcriptomic analyses in plants:

- mRNA-seq and Small RNA-seq.
- Conception, hybridization and analysis of Agilent high-density microarrays:
  - 1) Catma: complete *Arabidopsis thaliana* genome microarray.
  - 2) "Cultivated plants" microarrays.

**KEYWORDS:** Plant transcriptome / High throughput sequencing / Microarrays / Statistical analyses



Séquenceur Ion Proton

### EQUIPMENT

- Ion Proton™ sequencing system (Ion Torrent, Life Technologies).
- Robot Biomek FX dual MC96 & S8 (Beckman Coulter)
- Agilent Hybridization system.
- 2 Roche-NimbleGen hybridization system.
- 1 Nano-spectrophotometer, Nanodrop (BMG Labtech).
- 1 Real-Time PCR, CFX384 (BioRad).
- 1 scanner 1µ InnoScan 900 (Innopsys).
- 2 bioanalyzer (Agilent).
- Qubit® 2.0 Fluorometer (Life Technologies).

### ACCESS PROCEDURE

To use the plant DNA microarray and RNA-seq platform and benefit from the expertise of the IPS2 unit:

### Please contact

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## Transmission Electron Microscopy

### Host laboratory

Pierre-Marie Fourt  
Materials Center at the  
École des Mines de Paris

### Supervisory body

Mines ParisTech

### Funding bodies

Mines ParisTech - CRIF -  
Inserm - ARMINES -  
Genopole

### Director

Jacques Besson

### Platform manager

Mohamed Sennour

### Contact details

École des Mines de Paris  
Centre des matériaux - BP 87  
F-91003 ÉVRY Cedex

### Website

[www.ensmp.fr](http://www.ensmp.fr)

### FIELDS OF ACTIVITY

—Biology:

- Ultrastructural morphology.
- Ultrastructural immunocytochemistry.
- Nanoparticles for protein targeting.

—Material physics:

- Nanomaterials and new alloys.
- Interfaces: structural, damage and properties.
- Protection of materials, multimerials.

**KEYWORDS:** Electron microscopy / Imaging / Tomography / Ultramicrotomy / Ultrastructure / Cellular biology

### EQUIPMENT

#### Transmission Electron Microscopy

—Field emission gun; acceleration voltage: 80–200 kV;  
resolution: 0.24 nm; specimen stage angle:  $\pm 30^\circ$  ( $80^\circ$  in  
nanotomographic mode).

—Imaging in conventional and high-resolution modes  
with a magnification ranging from x50 to x1,000,000  
(20 million on the CCD camera).

—Scanning transmission electron microscopy (STEM) with  
bright-field detector (BF), annular dark field (ADF) and  
high-angle annular dark field (HAADF) modes.

—Local chemical analysis with an energy-dispersive X-ray  
spectrometer coupled to a nanometer probe.

—Energy-filtered imaging system (GIF) coupled to an  
electron energy loss spectrometer (PEELS).

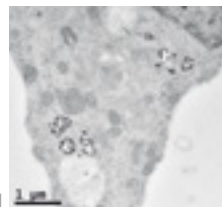
—Slow scan CCD camera (1k x 1k) wide-angle CCD  
cameras (14 million pixels).

—A nanotomography system (in TEM and energy filtered  
TEM modes).

#### Samples preparation

—Ultramicrotomy: LEICA EMTRIM and LEICA  
ULTRACUTR.

—Tint: Lynx and Microscopy Tissue Process.



Mode TEM

### ACCESS PROCEDURE

#### Please contact

##### Material physics

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**BIOLOGICAL RESOURCES CENTER**  
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**CELL BIOLOGY – MICROSCOPY**  
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**MOLECULAR BIOLOGY**  
**ROBOTIZATION - AUTOMATION**  
**STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS**

# FIELD OF ACTIVITY OF THE PLATFORMS AND INFRASTRUCTURES

	BIOLOGICAL RESOURCES CENTER	BIOMANUFACTURING	CELL BIOLOGY - MICROSCOPY	FUNCTIONAL EXPLORATION	IT AND BIOINFORMATICS	MOLECULAR BIOLOGY	ROBOTIZATION - AUTOMATION	STRUCTURAL BIOLOGY - CHEMICAL ANALYSIS
abSYNTH Facility	●							
The Biobanks, Bioprocesses and HTS Platform		●	●	●		●	●	
The Biomanufacturing Center Genopole		●				●		
Business Incubator Technical Facility			●					
Cell Sorting Workstation			●					
Center for Exploration and Experimental Functional Research [Cerfe]			●	●		●		
The Center for Functional Investigation and Experimental Research in Amphibians and Fish [Cerfap]	●		●			●		
DNA and Cell Bank	●							
DNA Extraction and Encapsulation Genopole Facility	●						●	
Evr@ Platform					●		●	
ÉvryRNA Platform					●			
The Évry-Val-d'Essonne REVE high-speed network					●			
The Genocentre					●			
Genopole Plant Process Innovation Platform [GPPi]		●				●	●	
Imaging & Cytometry Platform			●		●	●		
Irradiation Research Platform			●					●
Mass Spectrometry Platform								
MicroScope Platform					●			
PBPK Modeling Platform					●			
Structural Biology Platform			●		●			●
Transcriptomics Platform					●			
Transmission Electron Microscopy			●			●		

# COMPANIES



**AGRICULTURE / ENVIRONMENT**

—Aelred.....	81
—Agdia-Biofords.....	82
—Algentech.....	84
—Anova-Plus.....	88
—Biométhodes.....	92
—Global Bioenergies.....	107
—Magpie Polymers.....	118
—WatchFrog.....	149

**BIOMANUFACTURING /  
PHARMACEUTICAL SERVICES**

—Genethon BioProd.....	103
—GenoSafe.....	105
—Keyrus Biopharma.....	114
—Texcell.....	142
—YNSECT.....	152

**CONSULTANCY / TRAINING**

—Aurgalys.....	90
—Biosupport.....	93
—Groupe IMT.....	108
—Stratégique Santé.....	141

**DIAGNOSTICS**

—Endodiag.....	99
—GenoSplice Technology.....	106
—IntegraGen.....	113
—Prestodiag.....	137
—VitaDX.....	148

**E-HEALTH**

—Archimej Technology.....	89
—Statlife.....	140
—Vigilio.....	147

**INDUSTRIAL BIOTECH**

—Abolis Biotechnologies.....	79
—Novolyze.....	125

**MEDICAL DEVICES**

—Centaure Metrix.....	95
—Novacyt.....	123
—Novian Health.....	124
—OsseoMatrix.....	128
—Theraclion.....	143

**NUTRACEUTICS**

—Algobiotech.....	85
—Laboratoire MelioVie.....	115

**R&D SERVICES AND PRODUCTS**

—Alkion Biopharma.....	86
—BIOCORDERIS France®.....	91
—DiamLite.....	96
—Eukarys.....	100
—Imagene.....	109
—LPS-BioSciences.....	116
—Mabsolys.....	117
—METAFORA biosystems.....	120
—New England Biolabs France.....	122
—Phenocell.....	132
—PhinC Development.....	133
—Polytheragene.....	136
—XenTech.....	150
—Xpertech.....	151

**SCIENTIFIC INSTRUMENTATION**

—AlyXan.....	87
—EDE innov.....	98
—Genomic.....	104
—Metemis.....	121
—Physikron.....	134
—PlasmaBiotics.....	135
—Sebia.....	139

**THERAPEUTICS**

—Abivax.....	78
—Acticor Biotech.....	80
—AISA Therapeutics.....	83
—CECS/I-STEM The Center for Stem Cell Studies.....	94
—DNA Therapeutics.....	97
—GeneSignal.....	101
—Genethon.....	102
—Immune Pharma.....	110
—Inatherys.....	111
—InnaVirVax.....	112
—Metabrain Research.....	119
—Nutrivercell.....	126
—ObeTherapy Biotechnology.....	127
—PEP-Therapy.....	129
—Pharming Group.....	130
—Pharnext.....	131
—Santen SAS (& Novagali Innovation Center)....	138
—Vaxeal Research.....	144
—Vaximax.....	145
—Vaxon Biotech.....	146

## THERAPEUTICS



## ABIVAX

**President**

Philippe Pouletty

**CEO**

Hartmut Ehrlich

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Founded 12/2013

## FIELD OF ACTIVITY

Vaccines and antivirals development.

**KEYWORDS:** Vaccine / Antivirals / Adjuvant / Infectious disease / Health

## BACKGROUND

ABIVAX is based on the merger of three biotech companies: Wittycell (Reims), Splicos (Montpellier) and Zophis (Lyon) and partnerships with the Center for Genetic Engineering and Biotechnology (CIBG) in Cuba. The objective of ABIVAX is to establish itself as a leader in therapeutic vaccine and antiviral drug development to combat infectious and malignant diseases.

ABIVAX owns a strong and innovative pipeline, and a number of therapeutic vaccines and antivirals have already entered clinical testing. In addition, ABIVAX is pursuing business development opportunities to access commercial products. ABIVAX has a strong and experienced Executive Management Team as well as a world-class Board of Directors and a Scientific Advisory Board.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

ABIVAX develops therapeutic vaccines against chronic hepatitis B and antivirals against HIV. ABIVAX possesses other proprietary technologies like immunomodulator adjuvants based on NKT cells agonist lipids and other products and innovative platforms.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

ABIVAX possesses strong industrial property and has as partners the Scripps Research Institute (USA), University of Chicago (USA), Brigham University (USA), Cuban Center for Genetic Engineering and Biotechnology (CIGB).

## COLLABORATIONS SOUGHT

Public and pharmaceutical laboratories working on vaccines or antivirals, searching for collaborations.



42 patents

30 staff members

**Strengths:** a strong and experienced Executive Management Team, an international pharmaceutical industry network, internal skills in molecular modeling, cellular biology, immunology, *in vivo* testing expertise, small molecules screening, GMP production, clinical trials, oncology and virology. Several products are in advanced clinical phases of development in Europe and Asia.

**Innovation assets:** ABIVAX has a critical size, teams, pipeline and patents portfolio allowing it to become rapidly a leader in therapeutic vaccines and antivirals.

## INDUSTRIAL BIOTECH



## Abolis Biotechnologies

**President**

Cyrille Pauthenier

**CEO**

Anthony Tschirhard

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Tel +33 6 95 41 01 87

E-mail [contact@abolis.fr](mailto:contact@abolis.fr)Website <http://abolis.fr>

Founded 04/2014

**FIELD OF ACTIVITY**

Development of designer microorganisms for small molecules production.

**KEYWORDS:** Synthetic biology / Metabolic engineering / Renewable resources**BACKGROUND**

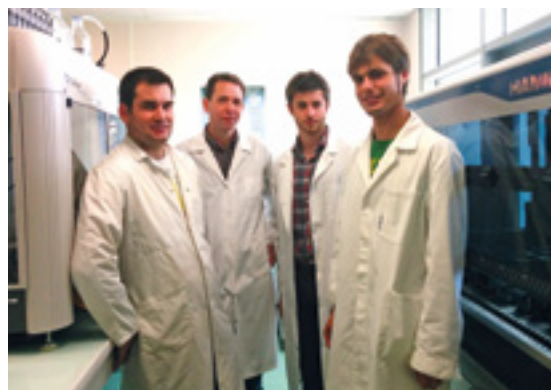
Abolis combines computer-aided design of metabolic pathways with an automated DNA assembly pipeline for rapid prototyping of microorganisms. Its core designing technology is linked to a software developed in Professor Jean-Loup Faulon's lab at the Institute of Systems and Synthetic Biology.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

To respond to the needs of industries, Abolis designs and builds custom-tailored prototype microorganisms capable of producing small chemical molecules by fermentation. Abolis is also developing its own portfolio of designer microorganisms.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Abolis won the Best Technological Potential prize at the 2013 Genopole business plan competition. Abolis was also granted a €200,000 prize with its victory in the Worldwide Innovation Challenge launched by the French State.

**COLLABORATIONS SOUGHT**

Abolis is seeking partnerships with industrials interested in producing small molecules through fermentation in an economically competitive and eco-friendly manner.



**Strengths:** Unique technology for computer aided design of metabolic pathways. Rapid prototyping of microorganisms.

## THERAPEUTICS



## Acticor Biotech

## CEO

Gilles Avenard

## Contact details

Hôpital Bichat – INSERM  
U1148, 46 rue Henri Huchard,  
F-75018 PARIS

## Website

[www.acticor-biotech.com/en](http://www.acticor-biotech.com/en)

Founded 11/2013

## FIELD OF ACTIVITY

The company focuses on developing an antibody acting as a platelet-aggregation inhibitor for the first line treatment of acute ischemic stroke.

**KEYWORDS:** Therapeutic antibody / Treatment of ischemic stroke / Cerebral infarction / Platelet glycoprotein VI / Thrombosis / Antiplatelet agent

## BACKGROUND

Acticor Biotech is a spin-off company of the French National Institute of Health and Medical Research (Inserm). Founded in late 2013, the company's main mission is to develop the anti-GPVI antibody as an antiplatelet agent for use in acute thrombotic pathologies. The Acticor Biotech project stems from academic research led in two Inserm units by Drs. Martine Jandrot-Perrus (U1148) and Christian Gachet (U949), and by Pr. Philippe Billiald from the Institut Paris-Sud d'Innovation Thérapeutique.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

The compound is the product of several years of research led mostly at Inserm (French National Institute of Health and Medical Research). It is an antibody directed against a new target of major interest for the treatment of stroke, the platelet glycoprotein VI (GPVI). Proof of antithrombotic efficacy and innocuity of the drug candidate was established in *ex vivo* and *in vivo* assays in the most pertinent animal models (cynomolgus monkeys and transgenic mice).

Excellent scientific results enabled Inserm Transfert to apply for several patents that are presently delivered in the geographic areas of major interest.

Stroke is the third cause of death in the most advanced countries (causing close to 6 million deaths per year worldwide), the second cause of dementia after Alzheimer disease and the leading cause of adult acquired disabilities (motor, sensory and cognitive disabilities).

Despite undisputed acknowledgement of the public health and economic burdens linked to stroke, today's available treatments do not fulfill the medical needs.

For instance, less than 15% of patients can be treated by thrombolysis, presently the only efficacious treatment of ischemic stroke, and existing antiplatelet drugs are not suitable for use in the acute phase of stroke. Blood clot extension in the first hours following a stroke together with frequent early recurrence strongly call for the development of a novel antiplatelet compound that is not increasing the intracerebral hemorrhagic risk.

Acticor humanized an anti-GPVI antibody fragment (Fab) and begins its pharmaceutical development.

## ACHIEVEMENTS / COLLABORATIONS / KEY FACTS

—2012: laureate of the CETI national contest that supports the Creation and Development of companies developing innovative technologies.

—2014: deal closing with Inserm Transfert for the exclusive worldwide license of a patents portfolio enabling Acticor Biotech to develop its compound for stroke and additional thrombotic diseases.

—2015: capital raise of €590 K in January from Business Angels, Medical Research Association and crowdfunding with the platform Anaxago.

## COLLABORATIONS SOUGHT

Acticor Biotech is looking for out-licensing its product after the phase 2a clinical trials.

**Strengths:** Recognized expertise of the founders and management in the key areas to lead the company and the product development all the way through phase 2 clinical trials.

A "virtual" company which reaches for the best consultants and contractors in order to be highly reactive. A well established science with a strong academic backing.

**Innovation assets:** The platelet glycoprotein VI (GPVI) is a target with a recognized role in atherothrombosis and blood clot formation in pathologic settings whereas it is not involved in physiologic hemostasis, as demonstrated by the patients presenting a GPVI deficit who do not bleed abnormally. The antibody developed by Acticor Biotech is an ideal candidate for an anti platelet drug for emergency situation.



## AGRICULTURE / ENVIRONMENT

**Aelred**

**President**  
Pierre Malvoisin PhD

**Contact details**  
4 rue Pierre Fontaine  
F-91058 ÉVRY Cedex

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E-mail [contact@aelred.fr](mailto:contact@aelred.fr)  
Website [www.aelred.fr](http://www.aelred.fr)  
Founded 02/2009

**FIELD OF ACTIVITY**

Aelred creates and develops new plants of hypericum (St. John's wort) and miscanthus.

**KEYWORDS:** Plant biotechnology / Agronomy / Plant metabolites / Biomass / Green chemicals and energy

**BACKGROUND**

From 2009 to 2013, Aelred provided services to companies and public research laboratories to help them finding and developing new plants by building up mutant libraries and retrieving mutants of interest through reverse genetics technology. AELRED has also created in-house mutant collections of hypericum and miscanthus and now develops new plants from these collections.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Project management service and development of miscanthus better adapted to farmer's constraints of production; development of safer plants of hypericum.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Aelred collaborates to a large "Investissement d'Avenir" project on the development of improved plant biomass resources for construction materials and bio-plastics.

**COLLABORATIONS SOUGHT**

Pharma and cosmetic companies which are interested to develop and commercialize new plant metabolites. Companies wishing to enter the French plant biomass market.

**Strengths:** Know-how of the French value chains (from farmer to end-user) of herbal, cosmetic and biomass plants. Strong links with the French network of plant research institutes; owner of mutant libraries on hypericum and miscanthus.

## AGRICULTURE / ENVIRONMENT



## Agdia-Biofords

### Managing Director

Dr Marcos Amato

### International Sales & Marketing Manager

Salima Berkani

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E-mail [info@agdia-biofords.com](mailto:info@agdia-biofords.com)

### Websites

[www.agdia-biofords.com](http://www.agdia-biofords.com)  
[www.agdia.com](http://www.agdia.com)

Twitter @AgdiaBiofords

Founded 11/1988

### FIELD OF ACTIVITY

Leading the way to healthy crops. Agdia-Biofords provides diagnostic solutions based on immunological and molecular technologies for plant pathogens and GMOs. Our mission is to help the different players of the agricultural industry to obtain high quality productions by providing them with reliable diagnostic tools and high level services.

**KEYWORDS:** Plant pathogen detection / GMO detection / ELISA tests / Quick diagnostic test (lateral flow device) Flashkit® / DNA isothermal amplification kit (AmplifyRP™) / Seed companies / Growers / Plant Research and Diagnostic laboratories.



© AgdiaInc

We also provide testing services for different crops in our laboratories in the United States.

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- International Award 2014 of the Essonne Chamber of Commerce and Industry.
- INRA, CIRAD.
- Winner of the Responsible Innovation Prize (2011).
- Member of Vegepolys (Plant competitiveness cluster).

### COLLABORATIONS SOUGHT

We offer customized solutions to agricultural industry players such as seed companies, growers, plant research and diagnostic laboratories.

### BACKGROUND

Created in 1988 as a consulting company to serve the agro-industry, Biofords became in 2006 the exclusive distributor of the American company Agdia Inc. for Europe, Africa and Middle East. Following a commercial success Biofords became Agdia-Biofords in 2009.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

- Plant pathogens (viruses, bacteria, fungi, viroids and phytoplasma).
- Genetically Modified Organisms (GMOs: corn, cotton, soya, canola, etc.).
- Plant growth hormone quantification (auxins, abscissic acid, etc.).



**Annual turnover 2013/2014:** €1.4M (85% in export)

**Strengths:** Expertise in the agricultural industry. Plant diseases and plant genetics (traits). International sales.

## THERAPEUTICS

## AISA Therapeutics

**President & CEO**  
Dr. Patrizia d'Alessio

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E-mail endocell@wanadoo.fr  
Founded 10/2005

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Entreprises  
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F-91058 ÉVRY Cedex

## FIELD OF ACTIVITY

AISA Therapeutics develops inflammation modulators. Applications concern (i) therapeutics for inflammatory and autoimmune diseases and (ii) anti-stress and anti-ageing nutraceuticals and cosmetics.

**KEYWORDS:** Anti-inflammatory / Cellular anti-senescence / Anti-stress / Vascular endothelium / Nutraceuticals / Cosmetics / Plant compounds

## BACKGROUND

AISA Therapeutics was spun out of a fundamental research on novel anti-inflammatory molecules (René Descartes University 5 Paris Necker-Children's Hospital and later University Paris Sud 11) by Patrizia d'Alessio. She identified and patented four plant molecules by using *in vitro* bio-guided research. In 2007, one of these molecules (AISA 5203-L) gave rise, following pre-clinical evaluation on oral and topic administration, to two new patents covering the treatment of stress and tissue repair in skin and colon.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

The company is developing its hit AISA 5203-L (three patents filed, first one granted in Europe and USA, third one granted in Europe, China and USA. Preclinical studies have revealed the anti-inflammatory effects of AISA 5203-L on the skin and the digestive system, as well as its anti-stress properties (dopamine boost). AISA actively targets the adhesion molecules of the vascular endothelium via a rhoA-dependent mechanism.

Relying on its preclinical and clinical results, AISA Therapeutics has developed new products based on its vigorous scientific approach. In the near future, the first products will be on the market on [www.aisa-care.com](http://www.aisa-care.com).  
—AISA MOLECULUM: the mood soothing virtues of AISA 5203-L the bio natural soft gel capsules guarantee enhanced well-being and the improvement of performance with a subtle energizing effect.

—Three WPE-technology mists : Brume cell regeneration, tissue repair and Total Body Brume. The refreshing and calming virtues of AISA 5203-L reduce blotches and stretch marks. The mist contains bio extracts that guarantee hydration and skin elasticity as well as a visible and persistent anti-ageing effect.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

AISA 5203-L was also tested in humans within the EU project (FP7 Capacities) Ristomed ([www.ristomed.eu](http://www.ristomed.eu)) validating the

anti-inflammatory and anti-stress effects on healthy elderly people aged 65 to 85 years. As a member of the European FP7 consortium RISTOMED, AISA Therapeutics aims at preventing age-related diseases by monitoring and managing healthy food and nutraceutical intake. The expected impacts of AISA 5203-L in lowering circulating levels of the inflammatory markers (inhibition IL-6) and modulating stress (anxiety) have been validated.

AISA forecasts several clinical studies oriented toward the demonstration of its active efficacy in similar populations, such as those present in nurseries.

## COLLABORATIONS SOUGHT

One of the unmet needs of ageing is the imbalance of the microbiome and the consequent co-morbidity of dermatitis / psoriasis and colitis. AISA Therapeutics envisages a pharmaceutical approach for the treatment of the microbiome, thus addressing the link between the inflammation of the colon and the skin.



- 3** European Patents on cell degeneration, stress and tissue repair. The latter also covers China.
- 2** staff members

**Strengths:** a compound that can be exploited in the nutraceutical, pharmaceutical and dermo-cosmetic sectors.

**Innovation assets:** non-toxic anti-inflammatory compound with mood-modulating, anti-stress and anti-ageing properties, candidate for long-term treatments.

## AGRICULTURE / ENVIRONMENT



## Algentech

### President

Alexander Sorokin

### CEO

Isabelle Malcuit

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Founded 03/2009

### FIELD OF ACTIVITY

Development of innovative technologies for nuclear gene targeting and organelle transformation.

**KEYWORDS:** Gene targeting / Organelle Transformation / Genomics / Plant biotechnology / Non-transgenic methods

### BACKGROUND

Founded in 2009, Algentech has deposited four patent families in 31 countries and has signed several industrial contracts with leaders in the agro-biotech sector.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Algentech develops three innovative technologies for the agro-biotech sector, the tobacco industry, biofuel production, the pharmaceutical industry and plant research applications.

Our technologies enable precise targeting of genes in the plant nuclear and organellar genomes.

The nuclear gene targeting technology allows the rapid identification of genes associated with important agronomic traits and the modification of genes for example to improve the nutritional quality of crops. Targeted gene knock-out is also used in tobacco harm-reduction programs and to reduce the cost of production of plant-made proteins.

Chloroplast transformation is mainly applied to the production of high value compounds in plants such as enzymes used in biofuel production, proteins and secondary metabolites for the pharmaceutical industry.

The mitochondria transformation tool is a breakthrough technology used for induction of cytoplasmic-male sterility for production of high-yield hybrid varieties.

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

The company has deposited four patent families in 31 countries and has already signed six industrial contracts with leaders of the agro-biotech sector.

Algentech has recently signed an exclusive service agreement in Asia and the Middle East with a Malaysian company for gene targeting in tropical plants. In addition, two Indian companies joined our client portfolio.



Two contracts of co-development with license option for projects focused on the improvement of the cotton crop were signed recently.

### COLLABORATIONS SOUGHT

Algentech is seeking partnerships with agro-biotech companies, biofuel industry, pharmaceutical companies, seed companies and international research organizations.



- 4 patent families deposited in 31 countries
- 6 industrial contracts signed in 2014, including five with foreign companies
- 6 staff members

## NUTRACEUTICS



## Algobiotech

**President**  
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Founded 03/2014

### FIELD OF ACTIVITY

Research and valorization of microalgae for cosmetic, nutraceutical and therapeutic applications.

**KEYWORDS:** Microalgae / Cyanobacteria / Phycocyanin / Exopolysaccharides / Cosmetics / Nutraceuticals / Novel food

### BACKGROUND

Created in March 2014, Algobiotech develops innovative processes to exploit the bioactive substances derived from microalgae and identifies new strains with high value. Algobiotech conceives new cosmetic and nutraceutical formulations for high-tech and sustainable new products.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

- A range of cosmetic products (skin care).
- A range of food supplements.
- A range of sports nutrition products.
- Method for extracting and stabilizing phycocyanin.
- Method for inducing phycocyanin synthesis.

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- Algobiotech collaborates with INSTM, the National Institute of Marine Science and Technology in Tunisia, for the identification of new strains of microalgae.
- A partnership with the LAMBE (University of Évry-Val-d'Essonne) is underway and focused on the characterization of exopolysaccharides from strains of newly-identified microalgae.

### COLLABORATIONS SOUGHT

- Algobiotech seeks partnerships for the identification, validation, and evaluation of therapeutic activities of microalgae-derived molecules.

2 patents  
2 staff members

**Innovation assets:** Method for extracting and stabilizing phycocyanin.  
Method for inducing phycocyanin synthesis.

## R&amp;D SERVICES AND PRODUCTS



## Alkion Biopharma

**President & CSO**

Dr Franck Michoux

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Founded 12/2011

**FIELD OF ACTIVITY**

Provide cosmetic and pharmaceutical companies with a secured and sustainable supply of high quality plant biomass and active biotechnological ingredients.

**KEYWORDS:** API / Bioreactors / Medicinal plants / Plant biotechnology / Plant stem cells / Recombinant proteins

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

- Agreement with Kew Gardens (UK) for the supply of medicinal plants with anticancer activities.
- Partnership with the Sanger Institute (UK) for the screening of complex anticancer active ingredients.
- Agreement with the botanical garden of Paris for the supply of cosmetic and medicinal plants.

**COLLABORATIONS SOUGHT**

Alkion Biopharma is targeting cosmetic and pharmaceutical companies, looking for a secure and stable supply of plant raw materials and/or plant active biotechnological ingredients.

**BACKGROUND**

Alkion Biopharma develops an exclusive technology generated at the Imperial College London. The company was incorporated in December 2011.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Continuous and stable production of high-yield biomass in bioreactors. This production is independent from the seasons, production location and plant growth characteristics.

Production and purification plant-based active biotechnological ingredients, such as Plant Stem Cells or its Hyper Active extracts designed for cosmetic and pharmaceutical companies.

3 patents

8 staff members

**Strengths:** high yield production of complex active ingredients in a controlled environment. Technology able to respond to industrial scales and requirements.

**Innovation assets:** unique differentiated biomass production technology in bioreactors. This technology can participate in the preservation and propagation of endemic or endangered plant species, as well as the production of recombinant proteins. Alkion Biocosmetics has already signed five contracts with major cosmetic groups in France and abroad.

## SCIENTIFIC INSTRUMENTATION



## AlyXan

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Laurent Courthaudon

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**Founded** 10/2005

## FIELD OF ACTIVITY

AlyXan develops, manufactures and commercializes instruments for continuous and/or onsite analysis of trace elements such as volatile organic compounds.

**KEYWORDS:** Mass spectrometry / Real-time / Thermal desorption / VOC / Continuous measurement

## BACKGROUND

Founded in 2005, AlyXan is now entering the commercial launch phase for its first two products: BTrap, a solution for continuous and/or real-time analysis of volatile organic compounds based on high-resolution mass spectrometry, and TD Flash, an analytical thermal desorption device.

BTraps and TD Flashes have already been sold. An initial distribution agreement was signed in 2013 for TD Flash.

Also, as part of its service provider activities, AlyXan has developed strong relations with prestigious clients including DGA, DCNS, EADS, ENSAM, l'Oréal, Veolia, Michelin, Arcelor, Saint-Gobain and SIAAP among others.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

AlyXan conceives, manufactures and commercializes instruments for the analysis of water and/or gases used at worksites or in laboratories. The company specializes in the analysis of trace elements, particularly to detect and quantify chemical pollutants, aromas, odors, etc.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

The BTrap mass spectrometer was conceived and optimized for onsite real-time measurement of trace elements in complex mixes. The portable system is designed for the analysis of small molecules, for example volatile organic compounds. Two aspects of BTrap are particularly innovative: on one hand the instrument provides particularly precise mass analysis, thus permitting the differentiation of compounds with closely neighboring masses, and on the other it deploys chemical ionization techniques to selectively detect target molecules. Another strong point of the system is its ability to simultaneously detect all components in a sample, whatever their number. BTrap allows continuous, qualitative and quantitative analysis of complex samples with no need for preliminary preparations, over seconds or minutes according to the desired concentration. The instrument is doubly patent-protected: CNRS, Paris Sud University and UPMC.

The analytical thermic desorber TD Flash is an accessory used in gas chromatography. It allows for the desorption of field sample compounds into a tube before they are injected in a chromatography column. The desorption necessitates a refocalization step that the TD Flash does via cryogenic trapping, the instrument's strong point, as cryogenic trapping enables the analysis of the gamut of elements in a sample, whatever their weight or volatility.

## COLLABORATIONS SOUGHT

Industrial entities interested by onsite or deferred dynamic analysis of volatile organic compounds present at very low concentrations in complex mixes. AlyXan is looking for collaborations in the field of medical diagnostics: breath analysis, urine or blood odors.



**Annual turnover:** €150K (2014)

**5** engineers

**6** consultants

**Strengths:** reliable, robust and portable, BTrap stands out in mass spectrometry thanks to its high selectivity, soft ionization permitting improved identification, and quantitative measurement without preliminary preparations.

Renowned expertise in the development of analytical instruments.

**Innovation assets:** BTrap is a multi-element analyzer capable of discriminating between an oxygen atom and a methane molecule in a sample, despite their difference of only 0.036 mass units.

## AGRICULTURE / ENVIRONMENT



## Anova-Plus

**President**

Dr Marc Masson

**CEO**

Carine La

**Vice-President & Nafta Operations**

Dr Mark Walton

**Molecular Biology Lab Manager**

Julien Schmidt

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Guy Blache

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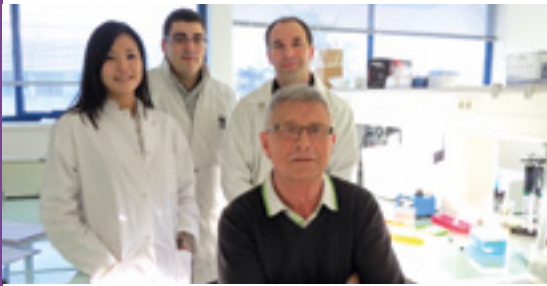
E-mail [contact@anova-plus.com](mailto:contact@anova-plus.com)Website [www.anova-plus.com](http://www.anova-plus.com)

Founded 03/2012

**FIELD OF ACTIVITY**

Anova-Plus develops for agriculture, food production and environment, quick, reliable and quantitative diagnostic kits, to detect on-site microorganisms such as plant pathogens (grape *Phytoplasma*) or marine toxic micro-algae (*Alexandrium minutum*).

**KEYWORDS:** Diagnostic kits / Plant pathology / Fungal diseases / Immunology / Isothermal DNA/RNA amplification / PCR

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Anova-Plus is focused on BtoB partnerships with the main actors of agriculture and distributors seeking reliable QC's and/or traceability tools.

**COLLABORATIONS SOUGHT**

To develop its kits, Anova-Plus favors partnerships with technology suppliers in immunology and isotherm PCR techniques. In the downstream direction, all crop specialists and institutions are welcome to help integrate kits into end-user practices.

**BACKGROUND**

Founded on the conviction that diagnostic kits will improve the efficiency of disease detection in plants, animals, and food production and thus contribute to improving production cycle management, health and the environment.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Anova-Plus is a contracting R&D platform for developing new on-site decision-making tools, based on immunology and/or isotherm DNA/RNA amplification techniques.



**Annual turnover:** €123K

**4/7** staff members

**Strengths:** integrated knowledge of the agricultural sectors, animals, field and specialized crops, molecular biology and diagnostic methods. A BtoB innovative and collaborative approach to secure market access. Synergies within the Genopole campus will allow faster access to innovative techniques and laboratory platforms.

**Innovation assets:** synergic use of immunology and PCR for plant health. North American Subsidiary.



## E-HEALTH



## Archimej Technology

**President & CEO**

Mejdi Nciri

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Founded 2012

**FIELDS OF ACTIVITY**

Archimej Technology is focused on the development and commercialization of solutions based on its proprietary breakthrough technology: Spectroscopy 2.0®.

Spectroscopy 2.0® enables next generation, ultra-compact, high sensitivity and low cost absorption spectrometers for a wide range of industries, empowering existing applications and enabling yet unimagined new ones.

**KEYWORDS:** Absorption spectroscopy / Clinical chemistry / Diagnostics / Medical device / Point of care (POC) / m-Health

**BACKGROUND**

Incorporated in August 2012, Archimej Technology is built around its proprietary technology that fundamentally changes the absorption spectroscopy paradigm by allowing dynamic control of light, while the competition is focused on separating the light spectrum.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Spectroscopy 2.0® is a diffusion-based analysis technology pertinent for a wide range of industries and specific markets, including healthcare, the environmental and food industry or even Visible Light Communication (VLC).

Archimej is today focused on the healthcare industry, in biochemical analysis, with the development of Beta-BioLED: the first connected, mobile and personal blood analyzer for mass market.

In addition to its internal projects, Archimej serves various target industries by developing tailored applications of its proprietary technology and ad-hoc partnerships with key players in each application field.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

- Co-development partnership with industrial chip manufacturer.
- Laureate of Altran Foundation for Innovation Prize (2012) for its Beta-BioLED project.
- Laureate of Scientipôle Initiative (2013) for its Alpha-BioLED project.
- Laureate of Banque Populaire Start-up Prize (2013).
- Laureate of CCIE Innovation Prize (2013).
- Development collaboration with Altran on Beta-BioLED project.
- Finalist of Hello Tomorrow Challenge Prize (2014), Beta-BioLED project.
- Finalist of Nokia Sensing XChallenge Prize (2014), Beta-BioLED project.

**COLLABORATIONS SOUGHT**

- Partnerships with leaders in *in vitro* diagnostics and diagnostic medical devices.
- Partnerships with global NGOs for Beta-BioLED on field trials.
- Collaborations on Environmental and Food analysis applications fields.
- Collaboration with the CEA-LETI for the development of Beta-BioLED test-strip.

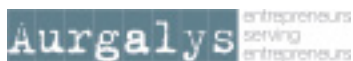


**5** patents  
**9** staff members

**Strengths:** Unparalleled analysis performances for a wide range of application industries. Simple and robust technology suited for extreme conditions field use.

**Innovation assets:** higher sensitivity, higher reach of analysis, smaller size, lower cost.

## CONSULTANCY / TRAINING



## Aurgalys

## CEO

Dr Philippe Berthon

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Founded 03/2008

## FIELD OF ACTIVITY

Financing, Initial Public Offering, Equity research, Valuation, Investor Relations, Strategy.

Aurgalys, specialist in Healthcare and Life Sciences, assists entrepreneurs in their corporate finance operations.

**KEYWORDS:** Corporate finance / Equity Research / Business development / Investor relations / Consulting

## BACKGROUND

Founded by Dr Philippe Berthon in 2008, Aurgalys has a scientific and entrepreneurial know-how to support the development of Life Sciences and Healthcare companies. In 2010, Aurgalys launched Equity Research services with its own fully dedicated analyst, covering listed companies and evaluating private companies upon request. In 2013, Aurgalys became Listing Sponsor Euronext and Investment Advisor (ACIFTE) to support listed companies on stock markets.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

—**Corporate Finance Business Unit** led by Dr. Philippe Berthon: fund raising, mergers & acquisitions, PIPE, alliances, strategy, due-diligence, business development, interim management.

—**Equity Research and Investor relations Business Unit** led by Dr. Mickael Dubourd: financial valuation of publicly-listed companies and private companies using risk-adjusted Net Present Value and/or Discounted Cash Flow methods. Investor relations services consist in the organization of regular meetings with investors in order to put companies in a permanent roadshow.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

—Cellestis, Onxeo (ex-BioAlliance Pharma), Diaxonhit, Evolva/Arpida, NonLinear Tech, Medicen, Nanopowers, DNA Therapeutics, Ose Pharma, Sensorion, etc.

—Aurgalys is an active member of France Biotech, AEE, AACR, Genopole.

—Aurgalys complies with regulations issued by the France Autorité des Marchés Financiers: Investment Adviser (Conseil en Investissement Financier ACIFTE N°B000240 – ORIAS N°730782). Aurgalys is an approved Euronext Paris Listing Sponsor. Aurgalys analysts are SFAF members (Société Française des Analystes Financiers).



**Annual turnover:** €250K

**5** staff members

**Strengths:** corporate finance and consulting:  
entrepreneurs serving entrepreneurs.

## R&amp;D SERVICES AND PRODUCTS



## BIOCORDIS France®

**President & CEO**

Guy Cristian

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Founded 01/1992

**FIELDS OF ACTIVITY**

Maintenance of analysis and measure devices. Calibration and metrology in pressure, air and liquid flow, temperature, mass and electricity.

**KEYWORDS:** Repairs / Verification / Uncertainties / Calibration / Maintenance

**BACKGROUND**

Guy Cristian founded BIOCORDIS in 1991 with the goal of providing the biomedical and scientific communities with a large offer of services. BIOCORDIS obtained ISO 9001/2000 certification for all its activities in 1998 and COFRAC accreditation for mass, temperature and pressure in 2001.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

—Metrology: Check, Calibration, Fitting and Maintenance of biomedical equipment.

—Weighing: Calibration, Check and Consulting - Accreditation COFRAC.

—Laser and Optronics: Instrumentation, Modelling, Development of systems and benches and Safe use of the Artificial Optical Radiations.

—Sale of biomedical and scientific devices.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

BIOCORDIS is a service provider for major manufacturers such as Philips Healthcare, Agilent Technologies, Fluke Biomedical and Welch Allyn, as well as for hospitals such as AP Paris, Hôpitaux de Lyon and others.

**COLLABORATIONS SOUGHT**

We propose repair services, certification audit, COFRAC calibration, performance testing, quality consulting, etc. on biomedical and scientific materials.



**Annual turnover:** €3.1M

**44** staff members

**Strengths:** responsiveness, proximity, multidisciplinary skills. ISO 90001 + COFRAC accreditation (mass + pressure + temperature).

**Innovation assets:** Expert in laser system, optic and software development.

**Other facts:** after-sales partner for major manufacturers.

## AGRICULTURE / ENVIRONMENT



## Biométhodes

**President & CEO**

Gilles Amsallem

**CTO Biotech**

Stéphane Blesa

**VP Operations**

Romain Fouache

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Founded 11/1997

**FIELD OF ACTIVITY**

Ligno-cellulose biorefinery technology for sustainable bioenergy, green chemistry and industrial biotech.

**KEYWORDS:** Biomass / Biofuels / Biorefinery / Specialty enzymes**BACKGROUND****1998-2000:** Development of the company's technology platform.**2000-2005:** R&D collaboration with several major chemicals and pharmaceutical companies (ABEnzymes, GSK, Roquette, Sanofi-Aventis, etc.).**2005-2007:** Development of biocatalysis and bioenergy applications.**2008-2012:** Collaboration between Biométhodes and Virginia Technology/Oak Ridge National Laboratory (US Department of Energy) on the development of the bio refinery platform.**2012-2013:** Building of a pilot plant in Virginia and start of biorefinery activities for green chemistry.**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Biomanufacturing system applied to industrial biotech. Genetic, protein and enzyme optimization. The company has developed and exploited novel technologies (MM® and THR®) for improving industrial enzymes. These technologies are protected by three patent families owned by the company and parts of the work have been published in top-rank scientific journals. Biométhodes owns a patent pertaining to delignification and decrystallization of cellulose for which it has an exclusive and worldwide license from Virginia Tech.

In order to fully exploit any kind of lignocellulosic residue, the company has developed a technological platform, which successfully integrates two crucial steps, chemical pre-treatment and biological hydrolysis. This process allows for the first time an optimal separation of the lignocellulosic biomass into its three various constituents: the lignin, amorphous cellulose and hemicelluloses.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

—Development of the first process for transformation of lignocellulosic biomass into cellulose, hemicellulose, lignin, acetic acid.

—Implementation of production of enzymes systems for the hydrolysis of biomass.

—Biométhodes signed a research contract with the Fraunhofer ICT (Germany) to scale-up the pre-treatment process.

—Biométhodes received a public grant (USA) to develop a cellulosic ethanol biorefinery plant in South Virginia. The total value of this three-year project is \$24M.

—Biométhodes obtained the Chemstart'up award 2011. The company was the global Ideas Winner for France in the CleanTech open competition 2011, and was finalist in the global CleanTech open Ideas competition.

—Awardee of the Global Innovation Contest in 2014.

**COLLABORATIONS SOUGHT**

Joint ventures in industrial chemistry, energy and the environment.

**12** patents**40** staff members**Strengths:** intellectual property - industrial feasibility - well positioned in the USA and Europe.**Innovation assets:** a low temperature, "bio-compatible" biorefinery process allows preservation of the chemical value of the ligno-cellulosic biomass and production of inhibitor-free intermediate perfectly suited for white biotech applications.

CONSULTANCY / TRAINING



## Biosupport

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**Website** [www.biosupport.fr](http://www.biosupport.fr)  
**Founded** 01/2006

### FIELD OF ACTIVITY

Biosupport is a non-profit making organization for sharing personnel between several companies.

**KEYWORDS:** Human resources / Pooling human resources

### BACKGROUND

In 2006, six Genopole companies who, individually, could not afford to recruit for key support positions, decided to create Biosupport so as to mutualize financial, communication and other personnel.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Biosupport is an aggregate of employers, organized as a non-profit association (French law of 1901). Its member biotech and healthcare companies have stable needs for business support functions, but not to the point of justifying a full-time employee. Biosupport was thus created to mutualize these functions among its member companies.

Biosupport provides a range of expertise in six main categories:

- Administration and finance.
- Communication and marketing.
- Environment, health and safety.
- Quality assurance.
- Information technologies.
- Legal affairs.

Biosupport employees are experienced professionals with knowledge and skill-sets specific to the biotech and healthcare sectors.



### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Biosupport has a team of 10 employees available for 30 member companies. In 2013, Biosupport received grants from the Île-de-France Region.



10 staff members

**Strengths:** Biosupport enables the growth of its member businesses by providing them with support personnel having skills specific to the biotechnology environment.

## THERAPEUTICS



## CECS/I-Stem The Center for Stem Cell Studies

**President**

Jean-François Malaterre

**CEO**

Raymond Zakhia

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Founded 10/2009

**FIELD OF ACTIVITY**

Evaluation of the full technological and therapeutic potential of pluripotent stem cells (from all sources) for treating monogenic diseases. The CECS is notably developing substitutive cell therapies for degenerative pathologies and stem cells for use as targets in drug screening.

**BACKGROUND**

CECS (founded in 2009) is a not-for-profit R&D organization dedicated to the development and application of stem-cell-based technologies and treatments in the field of rare genetic diseases. The CECS is partly funded by the French Muscular Dystrophy Association (AFM) as part of the I-STEM Institute (see page 29).

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

In addition to its activities within I-Stem programs, the CECS has developed several therapeutic research themes in the field of muscle diseases (neuroplasticity and therapeutics, progeria, muscle diseases, etc.) and a technological platform for:

- Stem cell biotechnology – biobank (large-scale cell production, genetic engineering and medium-throughput screening). Quality control.
- High-throughput screening.
- Optimization of processes for the transfer of technologies and treatments to the clinic.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

- A collaborative research and development program funded by Oseo.
- Collaborative research contracts (ANR, DIM Stem-Pôle, pharmaceutical companies, etc.).

**COLLABORATIONS SOUGHT**

Industrial collaborations.



**Operating budget:** €4.6M/year

**8** patents

**13** publications

**39** staff members

## MEDICAL DEVICES



## Centaure Metrix

**President & CEO**

Dr Bernard Auvinet

**CSO**

Dr Éric Barrey

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**FIELD OF ACTIVITY**

Centaure Metrix produces and sells diagnostic and therapeutic devices for gait disorders, with applications in medicine (rehabilitation, physical medicine, neurology, myology, geriatrics, rheumatology, etc.) and sports training.

**KEYWORDS:** Medical equipment / Gait / Rehabilitation / Sport / Running

**BACKGROUND**

Founded in 2001 by a scientist and a rheumatologist. A prizewinner in the French Ministry of Research's business plan competition for innovative companies and a member of the Entreprendre network and the Medicen Paris Region competitiveness cluster.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

—**LOCOMETRIX Diagnostics:** solutions for evaluating and quantifying gait disorders and running style and performance; assessment of the risk of falls in the elderly.

—**LOCOMETRIX Feedback Training:** a treadmill-based, active rehabilitation method.

—**LOCOMETRIX Senior:** application to estimate the risk of falling and dementia in elderly people using the iPhone as a gait recorder.

—**LOCOMETRIX Running:** application to assess joint health, comfort and walking or running style using the iPhone as a gait recorder.

—**LOCOMETRIX Podology:** a solution for evaluating the comfort of soles.

—**EQUIMETRIX:** a solution for quantifying locomotor parameters in four-legged animals: limbs and fitness for racing.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Recent publication in *Frontiers in Aging and Neurosciences* demonstrated the predictive interest of the Locometrix walk test to detect future fallers in elderly people (Mignardot JB, Deschamps T, Barrey E, Auvinet B, Berrut G, Cornu C, Constans T, de Decker L. (2014), Gait disturbances as specific predictive markers of the first fall onset in elderly people: a two-year prospective observational study, *Front Aging Neurosci.* 2014 Feb 25;6:22)

Centaure Metrix is actively involved in clinical studies with the Pierre Fabre Group (fibromyalgia, hyaluronic acid), the Institut de Myologie (human, canine and feline muscular dystrophies) and Liege University Medical Center (Alzheimer's disease).

Locometrix is also used in sports evaluation at INSEP and the National Center of Rugby in Marcoussis.

Equimetrix is used in the research project GenEndurance in Arabian horses and also in the Olympic training center in Warendorf (Germany).

**COLLABORATIONS SOUGHT**

**European research partners:** evaluation of fall risks in the elderly, early detection of Alzheimer's disease, clinical evaluation of fibromyalgia.

**Commercial partners:** healthcare companies, health insurers, distributors.

**Annual turnover:** €100K

**1 patent**

**2 staff members**

**Strengths:** European leader in accelerometry-based gait analysis.

Solid scientific and clinical methodological validations and market experience.

**Innovation assets:** rapid results, portable equipment applicable in routine medical practice.

## R&amp;D SERVICES AND PRODUCTS

## DiamLite

**President**  
Benoît Rivollet

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## FIELD OF ACTIVITY

DiamLite manufactures fluorescent micro and nanodiamonds for tracking, labelling and tagging objects, fluids and molecules.

**KEYWORDS:** Diamonds / Fluorescence / Tracking / Security / Labelling

## BACKGROUND

DiamLite was launched in April 2014 to valorize research conducted at the Inserm lab headed by Patrick Curmi and at Mines Paris Tech under the direction of Alain Thorel.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

DiamLite produces micro and nanodiamonds with high brightness and limitless fluorescence for specific applications in the fields of anti-counterfeiting, oil exploitation, bio-imagery and more. DiamLite diamonds can be adapted to specific user needs, not only in terms of size (nano to macro) but also for specific chemical properties via molecule grafting.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

In 2013, DiamLite was a laureate of the French Ministry of Research's innovative business creation competition and of phase 1 of the Horizon 2020's SME Instrument.

## COLLABORATIONS SOUGHT

Partners for the production and development of new applications for fluorescent diamonds.  
Investors.

4 patents  
4 staff members

**Strengths:** A wide range of potential applications.

**Innovation assets:** Patented process, high fluorescence detectable without specific devices.



## THERAPEUTICS



## DNA Therapeutics

**President & CEO**

Jian-Sheng Sun

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Founded 06/2006

**FIELD OF ACTIVITY**

DNA Therapeutics develops targeted drugs against resistant cancer with a lead IMP demonstrating good safety & antitumor activity in patients.

**KEYWORDS:** Cancer / Treatment-related resistance / DNA repair / Signal interference of DNA repair

**BACKGROUND**

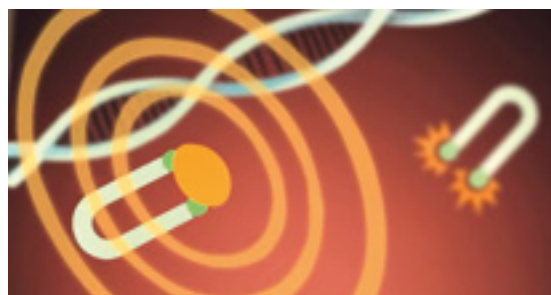
DNA Therapeutics is a clinical stage biopharmaceutical company that was spun out from four French public research institutions (the Institut Curie, CNRS, INSERM and the National Museum of Natural History).

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

DNA Therapeutics develops first-in-class targeted drugs against resistant cancer based on a novel concept that efficiently inhibits DNA repair activity responsible for resistance by acting on DNA damage sensing and signaling - the common upstream steps of all DNA repair pathways.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

As evidenced by preclinical and early clinical data, the ability of Dbait/DT01 to improve the efficacy of existing cancer therapies without additional toxicity makes it a promising targeted drug that can benefit many patients, and extend the market of radiotherapy, chemotherapy and other cancer therapies.

**COLLABORATIONS SOUGHT**

DNA Therapeutics' mission is to fill the gap between the translational research of a new class of DNA repair inhibitors and their late stage drug development. Convinced of the large potential of its technology platform, early stage partnering is part of its business model and strategy for risk sharing, leveraging resources and competences to achieve full market value, as well as shortening time-to-market.



6 patents

8 staff members

**Strengths:** a new class of target therapeutics for advanced stage cancer, efficiency and absence of toxicity in healthy tissues.

**Innovation assets:** unique, patented, breakthrough technology that has been validated in animals and now in patients.

## SCIENTIFIC INSTRUMENTATION



## EDE innov

**President & CEO**  
Rémy Manuel

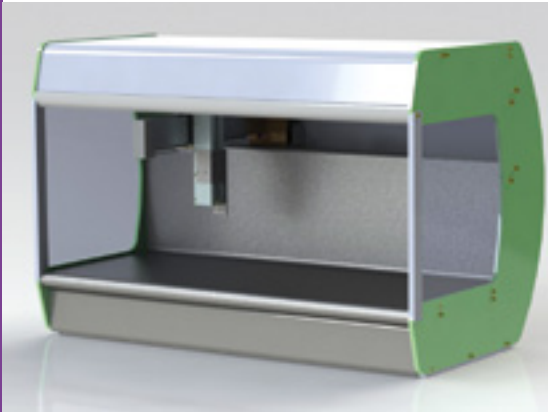
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contact@ede-innov.com  
Website www.ede-innov.com  
Founded 11/2011

## FIELD OF ACTIVITY

Research, design, new development methodologies, feasibility assessments, definition of new products or production means requiring a multidisciplinary approach.

**KEYWORDS:** Mechanical / Robotics / Automation / Instrumentation / Processes / Prototyping / Special machinery / Screening.



## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

EDE innov can take charge of multidisciplinary projects, from initial design to operative deployment (mechanical, electronic, special sensors, industrial computer, robotics).

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

EDE innov works with public and private organizations whatever their size: IBISC (UEVE), CEA Saclay, IRSN, IFSTTAR, Coming, Renault, Danone Research, Faurecia, Soletache-Bachy.

EDE innov also works with SMEs and SMBs: Adres, Cahouet, Cornilleau, CTS Soudage, ETS Comelli, George SA, LMC, Virano, Primadiag, Qualicyt, Sleti, MK Santé+, Tracamatrix, Contrejour, Herb'Expert.

## BACKGROUND

EDE innov was created in late 2011 as an industrial extension of CERMA (Centre d'Etudes et de Recherches en Mécanique et Automatismes), a historical laboratory involved in the creation of Genopole. EDE innov designs, manufactures and implements special machinery, products or new processes, in various industrial sectors such as automobiles, construction, biology automation, bench testing, musical instruments, manufacturing and others.

## COLLABORATIONS SOUGHT

EDE innov is available to any organization with atypical product, production means, analysis, or instrumentation needs.



**Annual turnover:** €270K

**3** staff members

**Strengths:** A tight focus on the needs of the client, multidisciplinary approach.

**Innovation assets:** Flexibility.

## DIAGNOSTICS



## Endodiag

**President**

Cécile Real

**Chief Operating Officer**

Marc Essodaigui

**Laboratory Manager**

Hélène Beny

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Founded 01/2011

**FIELD OF ACTIVITY**

Design, development and commercialization of medical devices and services for the diagnosis of endometriosis.

**KEYWORDS:** Endometriosis biomarkers / Diagnostic / Prognostic / Medical devices / Personalized medicine**BACKGROUND**

Endodiag is an innovative biotechnology company fully dedicated to the development of new solutions to improve the diagnosis of endometriosis. Its management and founding team combines a strong industrial and entrepreneurship experience, over 20 years of pioneering research in the field of endometriosis, and an expertise in the IVD market.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Our first product, **EndoGram®**, is designed to improve and complement current endometriosis diagnostic practice based on laparoscopic surgery. It combines an innovative biopsy punch to simplify and standardize biopsy collection, a CE-marked sample collection kit and a proprietary method to analyse biological specimens. EndoGram® provides gynaecologists with important information regarding each patient's treatment susceptibility and disease aggressiveness.

Our second product **EndoDiag®** is still under development. It's a non-invasive IVD test that will help diagnose endometriosis from a simple blood sample. Based on endometriosis-specific circulating biomarkers it will completely revolutionize the diagnosis of this complex disease by making it easier, cheaper and much faster.

Finally, **EndoTesting®** is a unique pharmacotesting solution combining multiple assays (cell viability, proliferation, apoptosis, migration, cytotoxicity, invasion, etc.) and a large collection of cell lines and human biological samples. It is designed to provide early expert information on the potential efficacy of drug candidates against endometriosis.



1 patent

7 staff members

**Strengths:** 20 years of research, a complementary management team and a target market with unmet needs.

**Innovation assets:** Endometriosis biomarkers.  
A unique sampling device, proprietary cell lines.

## R&amp;D SERVICES AND PRODUCTS



## Eukarys

## President

Philippe Jais

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Founded 06/2010

## FIELDS OF ACTIVITY

Development of products and applications based on the proprietary C3P3<sup>®</sup> platform technology for the synthesis of messenger RNA (mRNA), with a special focus of its uses for synthetic mRNA production and mRNA-replacement therapy of severe human liver disorders.

**KEYWORDS:** Messenger RNA / mRNA / Gene therapy / Cell therapy / Immunotherapy / Vaccine / Cell reprogramming / Bioproduction / C3P3<sup>®</sup> Technology



## BACKGROUND

Eukarys was incorporated following the proof of concept and the filing of the EP10305400.3 European patent application, which protects the C3P3<sup>®</sup> Technology. After having completed the development of its Technology for transient expression in mammalian cells, Eukarys now adapts its Technology for the production of synthetic mRNA and their therapeutic uses.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Eukarys develops C3P3<sup>®</sup>-based reagents for the production of synthetic mRNA and out-licenses this technology for industrial application. The proven and anticipated competitive advantages include the synthesis of native 5'-capped and 3'-polyadenylated mRNA with customized length via easy reaction and purification procedures. Eukarys is also aiming to launch its own mRNA-based compensation therapeutic program for the treatment of Wilson disease, a severe liver monogenic disorder with high unmet medical needs.

Eukarys also partners with several company and academic groups for other *in vitro*, *in cellulo* and *in vivo* applications of the C3P3<sup>®</sup> Technology.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Current academic and industrial collaborations with key players in the mRNA field for mRNA production and mRNA-based human therapeutics.

Several other ongoing collaborations for non-core *in vitro*, *in cellulo* and *in vivo* C3P3<sup>®</sup> Technology development (e.g. DNA vaccination, RNA virus production).

## COLLABORATIONS SOUGHT

Academic and industrial research partners to use our C3P3<sup>®</sup> mRNA Production System for regenerative medicine (reprogramming and differentiation of induced stem cells), cell therapy (scarless ex-vivo cell genome engineering), vaccines against cancers and infectious diseases, immunotherapy of cancer by mRNA loading of dendritic and T-cells, as well as mRNA replacement purposes of monogenic and complex disorders.

Academic and industrial partnerships for non-core *in vitro*, *in cellulo* and *in vivo* applications of the C3P3<sup>®</sup> Technology (e.g. transient expression in mammalian cells for functional genomics and protein production, DNA vaccination, animal transgenics, RNA virus production and others).



4 patents

4 staff members

**Strengths:** a proprietary, patented, granted and disruptive technology with key competitive advantages offering many co-development opportunities.

A strategic core development of the C3P3<sup>®</sup> technology in the highly promising field of mRNA production and mRNA-based therapeutics.

**Innovation assets:** the C3P3<sup>®</sup> platform Technology is a disruptive technology for autonomous mRNA synthesis that operates at high-rate in any biologic system (*in vitro* and *in vivo*), in virtually any eukaryotic cell (plant, animal, yeast and others), for either gene expression or inhibition.

## THERAPEUTICS



## GeneSignal

## CSO

Salman Al-Mahmood

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## Website

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Founded 02/2000

## FIELD OF ACTIVITY

Based on its portfolio of over 90 genes specifically involved in angiogenesis, Gene Signal designs, validates and develops innovative therapeutic solutions for pathologies related to angiogenesis regulation.

**KEYWORDS:** Rejection of corneal grafts / Anti-angiogenics / Antisense oligonucleotide / Retinopathy / Oncology

## BACKGROUND

GeneSignal was founded in 2000 at Genopole. Although GeneSignal International is now based in Switzerland, the company is pursuing its research program in Évry and its development activity in Canada.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

GeneSignal is focusing its development on niche markets. Its first drug candidate (for the prevention of corneal graft rejection) is in phase III clinical development.

The company is evaluating three other drug candidates with applications in dermatology and ophthalmology and is also working on four promising molecules in the field of vascular disease.

## COLLABORATIONS SOUGHT

In order to focus on research, GeneSignal is currently seeking potential licensees for commercializing or co-developing its therapeutic portfolio.



## THERAPEUTICS



## Genethon

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Laurence Tiennot-Herment

**CEO**

Frédéric Revah

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**CSO**

Fulvio Mavilio

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BP 60 - F-91002 ÉVRY CedexWebsite [www.genethon.fr](http://www.genethon.fr)  
Founded 1990**FIELD OF ACTIVITY**

Discovery, development and production of innovative therapies for rare genetic diseases, notably neuromuscular diseases.

**KEYWORDS:** Rare diseases / Biotherapies / Neuromuscular diseases / Gene therapy / Gene-based therapeutics / Vector technology, gene transfer / Pharmaceutical development / Regulatory affairs / Preclinical and clinical development / GMP production of gene transfer products.

Genethon, a non-profit (French law of 1901) biotherapy organization created in 1990, received more than 70% of its financing from the AFM-Téléthon in 2014. Généthon's mission is to bring novel gene therapies to patients with rare diseases.

Genethon is developing therapies for rare neuromuscular diseases, immune system or blood disorders, eye disorders, liver and nervous system diseases.

With financial contributions from AFM-Telethon, Genopole and local governmental authorities (Région Ile de France and Département de l'Essonne), Genethon built its "BioProd" biomanufacturing centre, one of the world's largest facilities for the GMP production of gene therapy products (see page 103).

Genethon's capabilities encompass all the expertise and skills involved in the discovery, preclinical, clinical and technological development, and biomanufacturing of gene therapy vectors:

**Therapeutic Research departments:** design gene therapy approaches for several diseases (see pages 25, 31).

**Preclinical development,** an *in vitro* and *in vivo* drug testing platform, which includes:

- a vivarium hosting up to 4,000 rodents;
- a functional investigation facility;
- an imaging and cytometry platform, for molecular and physiopathological investigation, from the single cell to the whole animal level (see page 66);
- a histology service.

**Technological developments for gene therapy products:** (see page 25)

- bioprocess R&D;
- identification and development of biological markers and theranostics for monitoring neuromuscular diseases (Duchenne muscular dystrophy, in particular).

**GMP biomanufacturing department:** (Genethon BioProd): (see page 103)

—GMP Production, Quality control and Assurance of clinical batches of drug candidates for gene therapy trials.

**Clinical Development and Regulatory Affairs department:** design, implementation and running of clinical trials.

**DNA and cell bank:** national platform for the preparation and conservation of human biological samples. (see page 59).

**Partnerships:**

To accelerate the development of its products, Genethon develops a policy of international collaborations:

- industrial partnerships (GenSight, Audentes Therapeutics, Esteve, etc.);
- ADNA program (strategic industrial collaboration partly-funded by bpifrance and coordinated by the Mérieux Alliance) designed to advance development of personalized medicine;
- coordinator of the Consortium preindustrial PGT, which develops pilot scale bioproduction processes.

Thanks to its "DNA School", Genethon also provides training throughout the year on methods and issues in genomics and DNA science.



**4** new patents filed in 2014

**39** scientific publications in 2014

**226** staff members

**4** international gene therapy clinical trials underway and a portfolio of drug candidates at various stages of preclinical development

Certification as a **pharmaceutical manufacturer**.

**BIOMANUFACTURING /  
PHARMACEUTICAL SERVICES**



## Genethon BioProd

### President

Laurence Tiennot-Herment

### CEO

Frédéric Revah

### Head of the GMP biomanufacturing facility

Alain Schwenck

### Quality director and qualified person

Bruno Dalle

### CSO

Fulvio Mavilio

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Website [www.genethon.fr](http://www.genethon.fr)

### FIELD OF ACTIVITY

GMP production of gene therapy products for clinical trials.

**KEYWORDS:** GMP production of products for gene transfer / Biomanufacturing / Clinical trials

Genethon BioProd is the production site for gene therapy products based on pharmaceutical industry norms, to be used for Genethon's clinical trials.

Located on Genopole's campus in Évry, its construction was the co-financed by AFM-Telethon (€5.5M), Genopole (€8M), Île-de-France Regional Council (€8M) and the Essonne Departmental Council (€7M) for a global building budget of €28.5M.

Thanks to its operational area and production scales, Genethon BioProd is one of the largest biomanufacturing centers worldwide for clinical grade gene therapy products.

The present production capacity is 20 to 30 batches per year; the clinical batches will be used for trials in France and abroad.

Each batch will be sufficient to treat several dozen patients, depending on the disease.



### KEY FIGURES

- 5,000 m<sup>2</sup> dedicated to the biomanufacturing and quality control of gene therapy products.
- Approximately 2,500 m<sup>2</sup> classified and confined laboratories (L3 confinement adapted to viral products and GMO handling).
- 4 production suites of 500 m<sup>2</sup>.
- 2 suites for aseptic filling in Class A isolators.
- Up to 400 l of bioreactor cultures for AAV (2 bioreactors of 200 l each) by suite.
- Up to 100 l of culture for lentiviral vectors by suite.
- 120 m<sup>2</sup> pilot laboratory dedicated to process industrialization.
- 500 m<sup>2</sup> of quality control laboratories in accordance with Quality regulations.
- 15 different HVAC engines to provide clean air to the various production zones.
- Green standards: Genethon BioProd meets HEQ (High Environmental Quality) requirements.



## SCIENTIFIC INSTRUMENTATION



## Genomic

**President & CEO**

Michel Gazeau

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Founded 04/1989

**FIELD OF ACTIVITY**

Development, production and marketing of high throughput automates for biological sample preparation for genetic and biochemical analyses.

**KEYWORDS:** DNA extraction, biological sample preparation / Laboratory grinders / Multi sampler / Molecular diagnostics / Agro-food laboratories / Varietal selection by molecular markers

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

—Development of a new version of the DNA extractor (ExtraGene II), a multigrinder, patented and a multisampler in microplates, patent pending.

—Development of an export plan with the Haute-Savoie Chamber of Commerce and Industry.

—A team of ESSEC students studying entry strategies for the U.S. Market and German markets. Genomic is a Genopole-accredited company; opening an office at the biocluster.

**COLLABORATIONS SOUGHT**

—Laboratories with expertise in biochemistry.

—Well established companies in bio-bank markets, food control laboratories, seed developers and seed breeders the worldwide.

**BACKGROUND**

Founded in 1989. Plus €273,000 in capital in 2005. Won a public tender (Hôpitaux de Paris) for at least 7 ExtraGene DNA extractors in 2008.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

—ExtraGene, a DNA extractor for large volume samples; multi-protocol, open automate range of 6 laboratories grinders/homogenizers for food control, GMO and mycotoxin detection, varietal selection by molecular markers, grinding biopsies at ultra low temperature.

—A multi sampler for powder products.

—A range of standardized kits for biological and medical sample transportation.

**Annual turnover:** €270,000

**8** patents

**4** staff members

**Strengths:** original, patented products responding to needs in analysis speed.

Collaboration with leading laboratories - Focus on products that are not very sensitive to analytical technique developments; high throughput sample preparation; stability and expertise of the technical staff.

**Innovation assets:** anticipating the needs of applied research laboratories and laboratories employing the latest advances in genetics and molecular biology. Although product development remains a focus, it is now time to develop sales abroad.



**BIOMANUFACTURING /  
PHARMACEUTICAL SERVICES**

**GenoSafe**

## GenoSafe

**President**  
Dr Serge Braun

**Business Development  
Director**  
Vincent Zuliani

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Founded 09/2003

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### FIELD OF ACTIVITY

GenoSafe is a full contract research and consulting organization specialized in evaluating the quality, safety and efficacy of innovative biological products. Our goal is to enable our clients to move their products along clinical development rapidly and efficiently. From late research steps to clinical phases, we bring a unique expertise for the completion of customized studies.

**KEYWORDS:** Advanced-therapy medicinal products (ATMP) / Gene therapy / Cell therapy / Vaccination

### BACKGROUND

GenoSafe was incorporated in 2003 and became operational in 2004. Its two shareholders are Genethon (see page 102) and the French Muscular Dystrophy Association (AFM-Telethon).

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

From the research phase through to the clinic, GenoSafe offers true project support in study design, analytical development and product testing in three main areas:

- Preclinical studies (including biodistribution studies for gene transfer products).
- Quality control of gene and cell therapy products for preclinical and clinical use.
- Clinical Development: Follow-up of patients included in clinical trials.
- Customized regulatory advice for the development, manufacturing and control of ATMPs.

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- GenoSafe's European and North-American clientele is composed of biotech firms, pharmaceutical companies and academic labs.
- GenoSafe is a SME partner in various French and European collaborative projects.

### COLLABORATIONS SOUGHT

Clients seeking a CRO to assess the safety, quality and efficacy of their biotherapeutic products, responding to their expectations in terms of Quality of Services (scientific and regulatory) and meeting timelines.



© Christophe Hargoues



**Annual turnover:** €1.8M

**18** staff members

**Strengths:** scientific expertise in complementary fields (molecular biology, immunology, cell culture, virology), customized services, flexibility, ability to meet timelines, GLP and GCP compliance facilities: BSL1, BSL2 and BSL3 labs.

**Innovation assets:** customer support from the research phases through to the clinic.

**Other facts:** The financial situation of Genosafe has been rated "H3+" (very strong) by the Banque de France.

## DIAGNOSTICS



## GenoSplice Technology

**Co-managers**

Pierre de la Grange,  
Marc Rajaud

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Website [www.genosplice.com](http://www.genosplice.com)

Founded 11/2008

**FIELD OF ACTIVITY**

Bioinformatics service provider (gene expression, splicing, SNP, CNV, epigenetics, data integration).

**KEYWORDS:** Bioinformatics / DNA chips / Expression / High-throughput sequencing / RNA-Seq / Splicing

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

- Prizewinner in the French Ministry of Research's 2008 and 2011 business plan competition for innovative companies.
- Funding from BIOCRITT and Oséo. A member of the Medicen Paris Region cluster.
- Collaborations: INSERM, IGR, Pasteur Institute, CNRS, Curie Institute, University of Taiwan, University of Kentucky, University of Cambridge, University of Newcastle, Howard Hughes Institute, St Jude Hospital.

**COLLABORATIONS SOUGHT**

Gene expression, in particular at the exon-scale.

**BACKGROUND**

The company is a spin-off of the European Alternative Splicing Network of Excellence (EURASNET).

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

GenoSplice, with its unique expertise in bioinformatics, is a leader in the analysis of expression data.

It develops and markets high value-added services internationally in the analysis of genomic data gathered through high-speed sequencing and/or DNA microarrays. The company uses proprietary tools to provide its innovative services and maintains long-term collaborative relationships. Each client is unique, just as each analysis process is unique.

GenoSplice's services primarily concern data analysis: gene expression, alternative splicing, microRNA, fusion transcripts, epigenetics, SNP, CNV, translocation, and proteomics.



**Strengths:** scientific expertise in complementary fields, customized services, flexibility, ability to meet timelines, GLP compliance, facilities: BSL1, BSL2 and BSL3 labs.

**Innovation assets:** customer support from the research phases through to the clinic.

## AGRICULTURE / ENVIRONMENT

 GLOBAL BIOENERGIES

## Global Bioenergies

**President & CEO**

Marc Delcourt

**Process designer  
and President of the  
scientific advisory**

Philippe Marlière

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Founded 10/2008

**FIELD OF ACTIVITY**

Global Bioenergies is developing a process to convert renewable resources into hydrocarbons through fermentation.

**KEYWORDS:** Biofuel / Bioenergy / Renewable resources / Isobutene / Butadiene / Propylene / Isoprene / Synthetic biology**BACKGROUND**

Global Bioenergies is developing a fermentation-based process to convert renewable resources into hydrocarbons. It is the only European company in this field and one of only a few worldwide.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

The company focused its efforts first on the biological production of isobutene, a cornerstone molecule in petrochemistry that can be converted into fuels, plastics, organic glass and elastomers. Using its technology, the company has furthermore succeeded in producing propylene and butadiene, other key alkenes for the petrochemical industry.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Global Bioenergies is continuing to improve the yield of its process and currently carrying out tests in its industrial pilot. The company has already replicated its initial successes with propylene and butadiene, two other key alkenes for the petrochemical industry.

Global Bioenergies is listed on the Alternext Paris market (FR0011052257 – ALGBE) and an element of the NYSE Alternext Oseo Innovation Index.



55 staff members

**Strengths:** Bioprocess based on the creation of an unprecedented metabolic pathway; significant environmental and economic interest.

**Innovation assets:** Bioproduction of gaseous hydrocarbons.

## CONSULTANCY / TRAINING

## Groupe IMT

**Executive vice-President**

Patrick Hibon de Frohen

**CEO**

Hervé Galtaud

**Île-de-France****Office manager**

Joëlle Dumas

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Groupe IMT founded  
09/1980

Évry's site founded 03/2014

**FIELD OF ACTIVITY**

Training for employees, youth and job-seekers in technologies, processes and professions for pharmaceutical & cosmetic production, biomanufacturing and biotechnologies.

**KEYWORDS:** Training through practical professional work experience / Job and competency planning / Organizational and financial aid to set up training programs.

**BACKGROUND**

For 35 years, the training institute Groupe IMT has accompanied the pharmaceutical, biopharmaceutical and cosmetic industries in production professions and quality management. With its focus on innovating biotherapy precursors, our office in Évry is a manifestation of IMT's commitment towards the actors of tomorrow's biomanufacturing and biotherapy industries.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

—Secondary education to 3-year higher education degrees in industrial pharmaceutical techniques, biomanufacturing, and maintenance of pharmaceutical and biomanufacturing equipment.

—Wide range of intern/apprenticeships providing specific, hands-on, practical training.

—Expert Workshops and technological meetings co-facilitated by pharmaceutical and biotechnological professionals and equipment & process installation suppliers.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

—The first organization to receive the Leem accreditation for professional qualification in biomanufacturing.

—Reconversion of Sanofi's production operators and technicians to the biomanufacturing and biotechnology sectors (sites: Vitry Aramon, Romainville, Neuville sùr Saône).

—Three level V, IV and III state-approved qualifications, one level II training currently in the approval process of the CPNE (national joint commission for health industry employment).

—The BIO3 institute project (in partnership with the PRES (research and higher learning hub) of the Centre Val de Loire University), accredited by the French *Investissements d'avenir* program - The only training organization to be associated with MabImprove, a "laboratory of excellence" dedicated to monoclonal antibodies and recombinant proteins.

**COLLABORATIONS SOUGHT**

—Entities wishing to take part in the organization and provision of expert workshops on Genopole's flagship topics.

—Entities interested in providing apprenticeships, internships or professional contracts to students currently in secondary or tertiary training programs.

**70 staff members**

**Benefits:** at the forefront of the pedagogical model, a 750 m<sup>2</sup> technical unit, with innovative technological facilities, organized as a pharmaceutical production unit, endowed with industrial and partly industrialized equipment and installations; managed according to the GMPs (Good Manufacturing Practices), pharmaceutical statutory requirements aiming at guaranteeing the patient's safety.

IMT Editions: Scientific reference works (Bio3, Phi 41), technical notebooks, training games.

**Strengths:**

- Team of expert trainers.

- In-company tailor-made training programs and inter-company training sessions to develop your employees' professional skills.

- Part-time training ranging from non-graduate secondary-level training programs to Bachelor's degrees for recruiting and integrating your newly-hired employees.

**Innovation & assets:** Creation of a training program on the technological and statutory constraints of pharmaceutical production for biomedicine and innovative therapy R&D project developers.

**Other facts:** Every year, an average of 750 young people, job-seekers and students follow training programs and/or benefit from professional accompaniment in association with more than 200 industrial sites. Rate of employment within 6 months > 90%. 3,500 employees hired every year in the context of lifelong learning.

## R&amp;D SERVICES AND PRODUCTS

# imagine

## Imagine

### CEO

Sophie Tuffet

### Deputy Director

David de Souza

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Founded 12/1998

### FIELD OF ACTIVITY

- Services and products for DNA and RNA storage at room temperature through encapsulation.
- DNA and RNA extraction services.
- Sale of platforms for preparation and encapsulation of nucleic acids.
- R&D on the preservation of biospecimens at room temperature.

**KEYWORDS:** DNA and RNA storage / Room temperature / Long-term / Industrial process / Gene library

### BACKGROUND

Imagine has developed a worldwide patented, novel technology for the preservation of nucleic acids at room temperature based on encapsulation.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

The Imagine technology is based on encapsulation of purified and desiccated nucleic acids under a controlled atmosphere that protects them from degradation factors in compact, sealed, corrosion-proof metal capsules. The minicapsules are marketed under the brand names of DNAsell® and RNAsell®. It is thus possible to store nucleic acids of any species in a form compatible with any type of current or subsequent analysis at room temperature. Our breakthrough innovation has many advantages over conventional methods (i.e., cryostorage), particularly in terms of stability, safety, operating & maintenance costs, transport and distribution.

Imagine markets services and products for long-term preservation of nucleic acids at room temperature as well as complementary services of nucleic acid extraction and QC analysis. Imagine offers a global solution for nucleic acid preservation and use. Imagine has successfully achieved a R&D program to apply its technology to the preservation of RNA samples at room temperature. For key customers needing to process large numbers of samples, Imagine is amenable to selling and installing complete platforms.

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- Industrialized, high-speed and very high-speed automated platforms for the handling of genetic materials at large-scale (2,500 DNA capsules a day, i.e., 500,000 a year).
- Ensures complete and lasting traceability of each biological sample and meets quality standards (ISO 9001: 2000, NF X50-900).



—Many scientific collaborations, including the Institut Pasteur, the French National Museum of Natural History and the French National Crime Research Institute (IRCGN), University of Marseille, The Bergonié Institute.

### COLLABORATIONS SOUGHT

With its encapsulation facility, Imagine is seeking industrial partners and customers (academic labs, biotech firms and pharmaceutical laboratories) interested in taking advantage of room temperature storage for their biospecimens.



**4** patent families, **3** of which were filed in 2008  
**12** staff members

**Strengths:** the only technology allowing stable and lasting nucleic acid storage at ambient temperature with nearly no maintenance or operating costs.

**Innovation assets:** the minicapsules are traceable and tamper-proof and allow the storage of variable quantities of nucleic acids (i.e., from traces to several µgs).

## THERAPEUTICS



## Immune Pharma

**President**

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**CEO**

Daniel Teper

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Founded 12/2010

## FIELD OF ACTIVITY

The biotech company Immune Pharma SAS is developing therapeutic monoclonal antibodies (mAbs) with applications in the fields of cancer, autoimmune and inflammatory diseases and transplantation.

**KEYWORDS:** Monoclonal Antibodies / mAbs, Fully human / Cancer / Autoimmunity / Transplantation

## BACKGROUND

The biotech company Immune Pharma SAS is developing therapeutic mAbs. It was incorporated in order to leverage the in-depth expertise of its two founders (Daniel Teper, CEO, and Jean Kadouche, President and CSO) in this field.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

- A Fully Human anti-eotaxin 1 mAb in phase 2a clinical trials in Crohn's disease (licensed from ICO Therapeutics Inc.), severe asthma (phases 2a), phase 2 for severe Ulcerative Colitis, in phase 1 for ophthalmology and Bullous Pemphigoid.
- A technology for generating Fully Human mAbs: HuCell®.
- Immunonanoparticles (INPs-mAb) in the treatment of solid tumors, leukemias and lymphomas.
- Dual-epitope mAbs against EGFR receptors. AmiKet (chemo-induced neuropathic pain) in phase 3.
- Azixa (solid tumors) in phase 2, Crolibulin (solid tumors) in phase 1.
- NanomAbs (cancer, multiple) in preclinical.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- Anti-eotaxin 1, licensed from ICO Therapeutics Inc.
- Partnering with the Hebrew University of Jerusalem (Yissum): INPs-mAb, Professor Simon Benita.
- Partnering with the Weizmann Institute (Yeda): dual-epitope mAbs against EGFR receptors, Professor Yossi Yarden.
- A technology for generating fully human mAbs: HuCell®, IP.

## COLLABORATIONS SOUGHT

mAbor technology licensing (fusion proteins, expression systems, drug delivery, cytotoxicity and labeling) with intellectual property, freedom to operate and proof of concept.



- 9 patents
- 3 staff members

**Strengths:** mAbs and drug development experience. Management team, know-how and new targets.

**Innovation assets:** HuCell® Fully Human technology.

**Other facts:** the company's business model and selected targets.

## THERAPEUTICS



## Inatherys

## President &amp; CEO

Coralie Belanger

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Entreprises

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Founded 06/2009

## FIELD OF ACTIVITY

Development of therapeutic monoclonal antibodies for clinical applications in the fields of inflammation and oncology.

**KEYWORDS:** Monoclonal antibodies / Antibody fragments / Inflammation / Orphan disease / Innovative mechanism of action

## BACKGROUND

Inatherys is a spin-off of two research units: INSERM U699 at Bichat hospital (renal immunopathology, receptors and inflammation) and CNRS (UMR 8147– cytokines, immune response and hematopoiesis, associated with the onco-hematology department of Necker hospital). Inatherys' founders have produced, characterized, and patented a portfolio of monoclonal antibodies against innovative targets with a unique mode of action: a drug candidate (INA01) first for incurable leukemia/lymphoma and subsequently for more frequent cancers, and a second drug candidate (INA02) for severe inflammatory diseases refractory to standard therapies.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Inatherys' portfolio currently includes two drug candidates:

—**INA01** is an anti-transferrin receptor (CD71) monoclonal antibody. CD71 regulates cell activation and proliferation. Pre-clinical studies demonstrate that malignant cells (adult T cell leukemia caused by HTLV-1, mantle cell lymphoma and acute myeloblastic leukemia) with high proliferative activity express high densities of CD71. INA01 binding blocks its biological activity, inducing a dramatic iron deprivation of the target cells, leading to inhibition of cell proliferation and to apoptosis.

—**INA02** is a monoclonal antibody targeting the D2 domain of the CD89, which is expressed on many cells involved in inflammation. Monovalent binding of CD89 with INA02 induces durable inhibition of inflammatory disorders.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Very promising preliminary results on efficacy have been obtained with both monoclonal antibodies *ex vivo* on fresh malignant cells from patients with blood cancers or inflammatory diseases, and in murine models injected with or reproducing human diseases. The first administration of INA01 in monkeys showed a good safety profile.

Inatherys' first strategy is to develop INA01 in orphan diseases like leukemia or lymphoma in the advanced phase, refractory to treatments and lacking therapeutic options, and INA02 in severe and resistant asthma (in an industrial partnership). The phase I clinical trial of INA01 is scheduled for 2017.

Subsequently, Inatherys objective is to extend INA01 indications to more frequent cancers and INA02 indications to other frequent severe inflammatory diseases like arthritis and nephritis, resistant to conventional therapies.

In 2011 Inatherys received subsidies from Oséo as the "création - développement" laureate (€290K).

2012: Scientipole Academy award.

2013: Inatherys raised €4 million to start the regulatory development of INA01 up to human phase 1 testing and to continue the preclinical development of INA02

## COLLABORATIONS SOUGHT

Subsequent potential partnerships with pharmaceutical industries.

2 patents with exclusive licensing

3 staff members

**Strengths:** very promising results for both candidate drugs in development. Highly experienced team with complementary skills (clinical development, scientific, management, business and law).

**Innovation assets:** handling of animal models relevant to cancer and inflammatory diseases. Expertise *in vivo* / *ex vivo* validation and development of monoclonal antibodies.

## THERAPEUTICS



## InnaVirVax

## CEO

Joël Crouzet, Ph.D., HDR

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Founded 03/2008

## FIELD OF ACTIVITY

InnaVirVax is a clinical stage biotechnology company developing vaccines for the treatment of infectious diseases, HIV infections and major chronic diseases; in addition a prognostic test for HIV-infected patients is part of the portfolio of projects. The most advanced project is in phase IIa clinical trial and targets the functional cure for HIV patients.

**KEYWORDS:** HIV / AIDS / Functional cure / Chronic diseases / Vaccines / Prognosis

## BACKGROUND

InnaVirVax is a spin-off of the UMR-S 945 Immunity and Infection Laboratory (a joint INSERM - Pierre & Marie Curie University of Paris research unit) at the Pitié-Salpêtrière Medical Center in Paris.

InnaVirVax was founded in 2008 by Professor Patrice Debré, Dr Vincent Vieillard and Dr Joël Crouzet in order to develop new anti-HIV therapies on the basis of a breakthrough discovery.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

—A therapeutic vaccine (VAC-3S) for HIV-infected patients, protecting the immune system from the CD4+ T lymphocyte depletion, that should act in synergy to antiretrovirals, currently in phase IIa clinical trials.

—A VAC-3S companion test, CO-3S, for the monitoring of the immune response of patients to VAC-3S vaccinations.

—A prognostic test (DIAG-3S) for the prediction of immunodepression and the monitoring of HIV patients.

—A therapeutic vaccine (VAC03) for a major chronic disease at the research stage.

—A therapeutic vaccine (VAC02) for a major infectious disease, currently at the research stage.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

—InnaVirVax was an award winner of the French Ministry of Research's 2008 business plan competition for innovative companies. Moreover, InnaVirVax has been an award winner of the "Tremplin Entreprises" from the French Senate in 2011.

—InnaVirVax has obtained a grant-in-aid from the French National Research Agency as part of the BiotecS program on therapeutic HIV vaccines.

—InnaVirVax completed a series A round of funding of €1.1M in mid 2009.

—InnaVirVax completed a series B round of funding of €3.7M early 2012.

—The lead therapeutic candidate of InnaVirVax (VAC-3S) met its phase I/IIa primary endpoint in 2012.

—A phase IIa clinical trial of VAC-3S was initiated in end 2013.

—InnaVirVax is the leader of the 5-years PROTHEVIH programme, including Diaxonhit and two joint units of INSERM, and is to receive €6.3 million support from Bpifrance, the French innovation agency. The main purpose of this program is to pursue the clinical development of VAC-3S.

## COLLABORATIONS SOUGHT

InnaVirVax is seeking industrial partners for its therapeutic projects with the ability to co-develop and to pursue the development of InnaVirVax's projects.



2 patent families from the INSERM and the Paris Public Hospitals Group (AP-HP) for which a worldwide exclusive license was granted to InnaVirVax. Moreover, 2 new patent families were filed with INSERM and licensed to InnaVirVax. Lastly, InnaVirVax has filed one patent application on its own.

13 staff members

**Strengths:** developing the applications for a breakthrough innovation with "first in class" products for VAC-3S, CO-3S and DIAG-3S. VAC02 and VAC03 are stemming for the vaccine platform InnaVirVax is developing.

**Innovation assets:** the company's development products address unmet needs with significant market value.



## DIAGNOSTICS



## IntegraGen

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**Website** www.integragen.com**Founded** 2000**FIELD OF ACTIVITY**

Develop innovative molecular diagnostic tests, responding to major unmet medical needs, based on the company's unique expertise in clinical genomics. IntegraGen's vocation is firstly to establish the link between innovations derived from molecular research and medical practice, by developing biomarkers for autism and oncology specifically intended for clinical use, and subsequently to make its genomics services available to practitioners and researchers thanks to its exceptional technological and scientific know-how.

**KEYWORDS:** Autism / Oncology / Metabolism / Diagnostics / Genetics

**BACKGROUND**

IntegraGen was founded in 2000 on the basis of a locus identification technology for familial, polygenic diseases. The company rapidly built a portfolio of patents protecting its discoveries in the field of genetic predispositions.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

- Unique personalized sequencing services.
- Expert pharmacogenomics services (sequencing and genotyping) to research organizations on a CRO basis.
- Diagnostics: IntegraGen is developing panels of biomarkers likely to indicate an increased risk of disease onset (in autism and oncology), contributing to early molecular diagnosis and treatment.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

- Feb. 2015:** IntegraGen Genomics will now offer advanced statistical support.
- Feb. 2015:** Genoma SA, a subsidiary of the Espirite group, obtains rights to distribute autism genetic predisposition test developed by IntegraGen outside the United States.
- April 2014:** IntegraGen announces collaboration agreement with Pfizer to evaluate Integragen's proprietary Hepatocellular Carcinoma molecular signature.
- March 2014:** IntegraGen and the Gustave Roussy Institute announce the set up of a high throughput clinical sequencing unit: this sequencing unit will be operated by IntegraGen within the Gustave Roussy Institute and will identify somatic genetic alterations within the whole exome of patient tumors, permitting personalized cancer treatment.
- January 2014:** IntegraGen announces a collaboration with investigators from the New EPOC study to validate the oncology biomarker hsa miR 13p, a microRNA whose expression has been shown to be a predictor of progression-free survival in patients with metastatic colorectal cancer treated with anti-EGFR therapy.

**COLLABORATIONS SOUGHT**

In order to develop innovative and clinically useful diagnostic tools, IntegraGen controls the entire Genomic Diagnostics Services development chain:

- Technological leadership and command of state-of-the-art genomics, particularly command of technologies such as high bit-rate sequencing and genotyping and, in more general terms, all technologies relative to analysis of DNA and genetic cell material.
- Integration of academic or private research into the networks as partner or service providers.
- Establishment of networks of clinical practitioners specialized in targeted pathologies where the tools developed serve to improve patient care.
- Control of the biostatistics and bioinformatics validation aspects.
- Perfect knowledge of regulatory aspects.
- Access to reference laboratory markets in Europe and North America.

IntegraGen's vocation is to be number 1 in the genetic test field, thus contributing to diagnostics and improving care for targeted pathologies such as autism and certain forms of cancer.



**Annual turnover in 2013:** €6.03M

**11** patents

**31** staff members

**Strengths:** a full range of genetics platforms.  
Validated diagnostic tools.

**Innovation assets:** launch of a new personalized sequencing service, the first offering of this type in France. IntegraGen is the first French Services Lab equipped with an Illumina MiSeq.

BIOMANUFACTURING /  
PHARMACEUTICAL SERVICES



## Keyrus Biopharma

### President & CEO

Kemal Mebarki

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Founded 1998

### FIELD OF ACTIVITY

Clinical Research Organization, full services in clinical development with management of your projects from the regulatory needs to the follow-up of your product in pharmacovigilance.

**KEYWORDS:** CRO / Clinical research / Project management / Clinical operations / Monitoring / Medical writing / Biometry / Regulatory affairs / Pharmacovigilance / Innovation / Functional outsourcing / Quality assurance

### BACKGROUND

Created in 1998, Keyrus Biopharma is a full service CRO, covering Europe, the Middle East, the Maghreb and North-America and offering advice and expertise to health industries (pharmaceuticals, biotechnology, medical device, nutrition and cosmetics).

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

—Provides comprehensive or on-demand services in all clinical development phases (regulatory affairs, medical writing, project management, monitoring, biometry, pharmacovigilance, etc.).

—Combines use of tools (Oracle Clinical®, Marvin®, BusinessObjects®, SAS®, Oracle® Argus, Qlickview®).

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

—A real and pertinent expertise in project management (many references in biotechnology and medical devices).

—Certified ISO 9001:2008.

—Achievements in areas of advanced research, such as cell and gene therapy.

### COLLABORATIONS SOUGHT

Ability to share risks with companies that develop products entering clinical phases.



**Annual turnover:** €19.5M

**250** staff members

**Strengths:** innovative, responsive and flexible company.

A reference for quality, competitive pricing, experience, high expertise.

**Innovation assets:** innovation team since 2 years.

## NUTRACEUTICS

## Laboratoire MelioVie



**President**  
Jérôme de Zotti

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Founded 2013

**FIELD OF ACTIVITY**

In partnership with research centers and European manufacturers, Laboratoire MelioVie designs, develops and markets a range of original solutions (health food supplements, cosmetics and preventive solutions) made of herbal ingredients and exclusively distributed in pharmacy channels, to protect the health and support the treatments of patients.

**KEYWORDS:** Endemic plant valorization and R&D developments / Health and prevention / Supplementation / Cosmetics.

**BACKGROUND**

Founded in 2013, the first products finalized December 24, 2013: available in pharmacies as of January 2014. Creation of a subsidiary on Reunion Island in March 2014. International business expansion planned in 2015.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Research programs aimed at enhancing plant species, especially rare or endemic, and studying the effects of their active compounds to propose new formulations.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Launch of BioCatalyst™ range in January 2014: 8 products.

**COLLABORATIONS SOUGHT**

Identification of the properties of plants, research programs from plants, production of rare plant species with respect to their environment, new processes to increase the bioavailability of assets.



7 staff members

**Strengths:** development of endemic plants.

Expertise in markets, marketing, sales, innovation, partnerships.

Ability to promote research (e.g., enzyme catalyst) and transform research programs into brands and products.

**Innovation assets:** development of endemic plants

## R&amp;D SERVICES AND PRODUCTS



## LPS-BioSciences

**President**

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Founded 11/2011

**FIELD OF ACTIVITY**

Bacterial endotoxin production, analysis and removal.

—**Human and animal vaccines:** R&D in antigens and adjuvants.—**Diagnostics:** Antigen selection and production.—**Therapeutic Production:** Endotoxin assay and removal for antibody production, hyaluronic acid or other production.—**Food Industry:** Detection of bacterial pathogens.**KEYWORDS:** Endotoxin / Lipopolysaccharide / LPS / Antigen / Structure / Extraction / Removal / Adjuvant / Vaccine**BACKGROUND**

LPS-BioSciences is specialized in bacterial endotoxins. It combines an exclusive proprietary technology for endotoxin production and characterization with the acknowledged international expertise of its founder Martine Caroff, D. Sc. (Director of Research at CNRS). The company received grants and support from OSEO and the Ministry of Research in 2011 for its innovative R&D project on a vaccine adjuvant. The success of the company is now based on the know-how of its researchers in structural analysis (MALDI MS, RMN) and its acquired experience in the fields of vaccines, diagnostics, and the food industry.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Expert in Endotoxins Technology, LPS-BioSciences provides services, products and research, in the field of endotoxins, to companies active in human and animal health, cosmetics, agricultures and the food industry.

Our goal is to offer a consistent range of services and developments to meet the needs of our clients as concerns in endotoxins.

**FastShell:** A range of services designed for industrials and academics who use and analyze bacteria and LPS. The development of exclusive extraction methods in conjunction with years of know-how in structures and biological interactions, enables us to access the information you need from your bacteria.

**RemovShell:** A new range of services under development, designed for industrial companies who are looking to remove endotoxins from therapeutic products. RemovShell enables the respect of the FDA's pyrogen and endotoxins testing regulatory obligations.

**BoostShell:** LPS-BioSciences runs an innovative R&D program in the LPS-vaccine domain. The adjuvant capacity of detoxified lipid A molecules is well known and approved by the FDA to boost vaccine efficiency. Our research goal is to go further and provide a whole detoxified molecule of LPS with more adjuvant effect.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**—**2015:** 3<sup>rd</sup> year of collaboration with CEVA animal health.—**2014:** Partner of the collaborative R&D project BactiDIAG led by BioRad with the CEA Leti and the University Hospital from Nice in the sepsis diagnostic field.—**2013:** Participation as supplier in the Infect ERA European program.—**2012:** Prize winner in the Scientipôle cluster competition.—**2011:** Prize winner in the French national business plan competition for high-tech start-ups.**COLLABORATIONS SOUGHT**

Industrial partnerships:

—Co-development for vaccines, adjuvants.

—Co-development for diagnostic tests (Gram negative pathogens).

—Sub-licensing from LPS extraction patent.

**1** patent (exclusive license agreement).**7** staff members**Strengths:** on-demand, large-scale and highly purified LPS production.

Acknowledged expertise for LPS characterization, analytical device, innovative methods.

**Innovation assets:** methods for endotoxin extraction and purification (without use of toxic solvents). Methods for LPS assay to analyze complex samples.

Methods for LPS detoxification.

**Other facts:** development of a vaccine adjuvant, based on an innovative endotoxin detoxification technology.

## R&amp;D SERVICES AND PRODUCTS



## Mabsolys

**President**  
Dr Hüseyin Firat

**CSO**  
Dr Thierry Guyon

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Founded 03/2015

## FIELD OF ACTIVITY

MABSOLYS is specialized in R&D and services for monoclonal antibodies.

**KEYWORDS:** Monoclonal antibodies / Services delivery / Therapeutics products / Tests / Diagnostics & Theranostics Products / Preclinical development / *In vivo* studies

## BACKGROUND

Subsidiary of Firalis-SA (biomarkers), the company was founded in March 2015, to be the monoclonal antibodies center of excellence in the Group. Its mission is to provide in this area for its partners and customers, comprehensive, integrated, high-value and customized solutions combining responsiveness, involvement, openness, innovation, large skills and strong focus on the results.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

MABSOLYS, through its MAB'Solut Department ([www.mabsolut.com](http://www.mabsolut.com)) offers a comprehensive range of services covering all antibodies development steps, from the antigen definition until the POCs and pre-tox studies in animals:

- Design, optimization and preparation of antigen (hapten coupling, fragmentation...).
- Immunizations, fusions, screening, selection and production of hybridomas.
- Production from hybridomas and mammalian cells (transfected stably or transiently) and purification by FPLC.
- Characterization and *in vitro* functional validation and analytical testings: ELISA simplex or multiplex capillary electrophoresis in reduced or unreduced conditions, Western blott, FPLC / HPLC gel filtration, flow cytometry, endotoxin detection, thermal stability and bioassays (differentiation, PBMC activation, proliferation, apoptosis, ADCC, CDC, phagocytosis...).
- Development and validation of immunoassays and bioassays.
- Molecular biology and engineering for the development of specific antibodies: binding optimization, chimerization, humanization, fragments (scFv ScFV2, dAb), bispecific antibody, mutants library construction.
- Chemical Fragmentation (Fab, Fab'2) and antibodies coupling (biotin, enzymes, fluorophores, toxic molecules...).
- In vivo* studies on small animals (including transgenic animals) for any type of molecule:
  - efficacy, especially in oncology (syngenic, metastatic and xenograft models),
  - pharmacology / biodistribution (PK, PD),

- toxicology (pathology, histocytopathology...),
- development of specific *in vivo* models.

## PRODUITS

The early-stage products pipeline is in progress, it will cover therapeutics and diagnostics / theranostics / biomarkers areas, based on innovative and specific targets.

The first product is a fragment antibody used as vector for a siRNA (coupled to a nanodiamond) in Ewing sarcoma (EuroNanoMed «Diamestar» program).

## PARTENARIATS RECHERCHES

MABSOLYS proposes to participate, with academic laboratories and industrial partners, in all kinds of collaborative R&D programs for therapeutics, diagnostics, biomarkers and theranostics developments involving antibodies.

**Annual turnover:** €800K (forecast)

**Patents** in progress

**7** staff members

**Strengths:** complete coverage of all steps of the development of antibodies, in multiple areas (from therapeutics to diagnostics), based on a strong scientific and technical expertise.

**Innovation assets:** recognized high level expertise in the creation of antibodies targeting a large range of chemical or biological antigens, weakly- even non-immunogenic, particularly small molecules (less than 600 Dalton).

Specific and targeted immunization protocols (for sensitivity and specificity).

**Other facts:** MABSOLYS has CIR accreditation (Crédit d'Impôt Recherche / Research Tax Credit).

## AGRICULTURE / ENVIRONMENT



## Magpie Polymers

**President**

Steve van Zutphen

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Founded 02/2011

**FIELDS OF ACTIVITY**

Magpie Polymers is a proprietary and disruptive filtration technology to recover precious metal from industrial waste and process water. With a technology based on coordination chemistry, Magpie selectively and efficiently recovers dissolved metals while cleaning the water.

Magpie commercializes its polymers beads and its water treatment systems for precious metal refining, surface treatment, micro-electronics and recycling companies.

**KEYWORDS:** Water treatment / Precious metals / Recycling / Pollution / Recover

**BACKGROUND**

There is an increasing need to recover and recycle rare and precious metals. At the same time, industry struggles to reduce metal content in its waste-water and stay in line with ever stricter regulation. Magpie Polymers develops filtration materials for difficult to treat industrial waste-water and selectively recover precious metals. The company is based on research carried out by Steve van Zutphen at the Ecole Polytechnique in 2006 and was founded in 2011.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Magpie produces high-performance filtration resins. When water is filtered through a Magpie cartridge, the metals, such as palladium, platinum and gold, are selectively retained. The metal concentration after treatment is close to the detection limit of modern analysis equipment. The metals captured onto the polymer can easily be recovered.

To comply with the needs of every customer needs, Magpie Polymers has an application and analysis laboratory able to develop custom solutions for water difficult to treat.

Magpie designs and builds filtration systems optimized for the Magpie filtration products.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Since 2012 Magpie is selling its products to several precious metal refining and surface treatment companies across Europe and South-Africa for the recovery of PGM (Platinum Group Metal) in strongly acidic solution.

Today Magpie is growing strongly in these markets including international mining operations.

**3** patents**10** staff members

**Strengths:** simple application: Magpie's technology is used in standard filtration hardware. Removal of toxic and recovery of highly valuable metals is optimized according to the client's requirements: Custom made solution.

**Innovation assets:** an innovative technology that is more selective and efficient than all competing materials for the recovery of precious metals in industrial waste and process water.

## THERAPEUTICS



## Metabrain Research

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**Website**  
www.metabrainresearch.com  
**Founded** 03/2009

## FIELD OF ACTIVITY

Metabrain is a French biotech developing a personalized medicine approach comprising drugs nutraceuticals and associated biomarkers for the growing population suffering from diabetes and age-related disorders like sarcopenia, cognitive impairment and cardiac dysfunction with specific added values for elderly patients. Located in Chilly Mazarin (France, South of Paris), on the historical research facilities of Merck Serono, Metabrain is building up the next generation of Partnering Research Organization combining high level of expertise, scientific leadership, R&D capacities and access to patients to promote early stage innovation at industrial standards. Our company discovered recently the implication of Tryptophan Metabolism as a common path for chronic diseases such as diabetes, obesity and neurodegenerative processes giving rise to comprehensive pathological mechanisms in the context of ageing. Our most advanced program is a small molecule inhibiting "first in class" target at preclinical stage.

**KEYWORDS:** Drug / Nutraceuticals / Biomarkers / Metabolic disorders / Diabetes / Obesity / Sarcopenia / Collaborative innovation



## COLLABORATIONS SOUGHT

- Research alliances in diabetes projects.
- Contract research: medicinal chemistry and *in vitro* and *in vivo* biological profiling.

## BACKGROUND

A group of 30 scientists – all experts in diabetes and metabolic disorders – joined Metabrain Research on the basis of their know-how in drug discovery developed at Merck Serono.



## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Metabrain develops drugs, nutraceuticals and biomarkers targeting tryptophane metabolism to treat and prevent type 2 diabetes and age related complications like Sarcopenia.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- Customers and partners: more than 20 partners from biotech, pharma and academia.
- Biophytis' partner for SARCOB, a leading project in obesity and sarcopenia supported by the Essonne Department Council.

KYNAGEIN for the treatment of type 2 diabetes in partnership with the IHU (University Hospital Institute) Pitié Salpêtrière ICAN (Cardiometabolic and Nutrition Institute).

**4** patents  
**30** staff members

**Strengths:** A research platform fully dedicated to drug discovery programs associated with development expertise in metabolic disorders stemming from the industry standard and building on the fundamental principles of translational medicine based upon an original strategy of research exploring the synergies between metabolic, neuro-muscular diseases, cardiomyopathies and memory troubles.

**Innovation assets:** Pioneer technology amenable to the first personalized medicine approaches for metabolic disorders and their age-related complications.

## R&amp;D SERVICES AND PRODUCTS



## METAFORA biosystems

**President**

Luc d'Auriol

**CEO**

Vincent Petit

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Founded 03/2011

**FIELD OF ACTIVITY**

METAFORA biosystems develops innovative biomarkers of cell metabolism based on nutrient transporter profiling at the cell surface, using unique ligands specific for these metabolic key players.

**KEYWORDS:** Biomarker / Metabolism / Transporters / Toxicology / Stem cells

**BACKGROUND**

METAFORA biosystems was incorporated in Montpellier. Its headquarters are now located in Évry, and R&D programs are conducted between Montpellier and Évry.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

The science and technologies behind METAFORA biosystems are focused on cell physiology and metabolism. The expertise of the company stems from its capacity to generate and commercialize expression profiles of nutrient transporters at the cell surface, for different application areas, notably in drug development either during R&D or during the course of clinical trials. The company's technologies participate in cost saving by allowing an earlier attrition of toxic molecules as well as by refining diagnostics and helping in the definition of new personalized medicine.

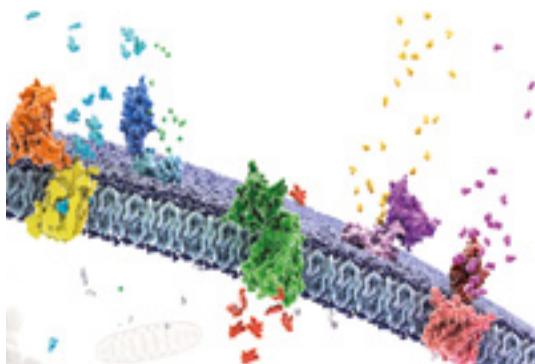
**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

METAFORA biosystems is one of the industrial partners of Stem SAFE, a FUI funded project aiming to develop new tools for ATMP (Advanced Therapeutic Medical Products) securitization. The company won the National Competition for the Creation of Innovative Companies, organized by the French Ministry of Research, in July 2012.

In 2013, METAFORA biosystems collaborated with GE Healthcare to develop a preclinical test that highlights mitochondrial toxicity of compounds on cardiomyocytes. The corresponding results were accepted for publication in the Journal of Biomolecular Screening in April 2014 (Li et al, J Biomol Screen).

**COLLABORATIONS SOUGHT**

METAFORA biosystems seeks industrial and academic partnerships for drug response and drug toxicity biomarkers discovery and development, both in preclinical and clinical settings.



Contract license agreement on **2** patents (CNRS)

**1** proprietary patent

**8** staff members

**1** catalog of RUO products for the life sciences market, available worldwide through a network of leading distributors

**1** IVD test under development for the diagnostics of an orphan disease

**Strengths:** the sole industrial to exploit nutrient transporters as metabolic biomarkers of cell physiology. An easy-to-use-biomarker / a high transferability of the technology / established collaborations with leading academic groups.



## SCIENTIFIC INSTRUMENTATION



## Metemis

**President & CEO**  
Julien Fils

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Founded 06/2014

## FIELD OF ACTIVITY

Design and manufacturing of chemical sensors in liquid state for the environment, biotechnologies & medical markets.

**KEYWORDS:** ISE / Ion selective electrode / Miniaturized sensor / Urea / Proteins / Complex sugar molecules / Heavy metals



© METAFORA biosystems

## RÉALISATION / COLLABORATIONS / FAITS MARQUANTS

METEMIS is working on next-generation sensors with even better performance (better precision, lower limit detection, longer life time, etc.). Its technology and know-how provide sensors from pH to proteins, mainly for biotechnology applications and biomedical such as artificial organs. Metemis is involved in several European and international projects to provide breakthrough sensors.

## COLLABORATIONS SOUGHT

Any company with a need for measuring a chemical concentration in a liquid medium. We make possible chemical measurement in environments where it was previously impossible thanks to the performance and the size of our sensors.

## BACKGROUND

METEMIS is a start-up, a spin-off of CEA-LETI, created in 2014 after ten years of research & development on chemical sensors for firefighters, for the army as well as for portable artificial organs (liver and kidney).

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

METEMIS sensors enable the measurement of specific ion or molecule concentrations (nitrate, phosphate, glucose, urea, proteins, etc.) in any liquid. METEMIS designs and manufactures miniaturized sensors customized to customer needs. High volume manufacturing is possible. Metemis sensors are biocompatible and can be sterilized; they can therefore be easily incorporated in a medical environment.



**2** licences  
**4** staff members

**Strengths:** we are flexible and able to resolve many chemical measurement problems thanks to our sensors.

**Innovation assets:** 2 patents are pending. Several others are planned. Lot of unpatented know-how.

R&D SERVICES AND PRODUCTS

New England Biolabs France



**CEO France**

Éric Beguec

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Founded 03/2011

**FIELD OF ACTIVITY**

New England Biolabs is a private company manufacturing reagents for the life science industry particularly focused on products for genomic research.

**KEYWORDS:**

Enzymes / Molecular Biology / Next Gen sequencing kits / Molecular weight ladders / Quick Cloning Systems / Nucleic Acid Amplification / Competent Cells / Genome Editing / Epigenetic / Glycobiology / OEM & Custom Products Services

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

NEB now offers the largest selection of recombinant and native enzymes for genomic research and continues to expand its product offerings into areas related to Next Gen Sequencing, nucleic acid manipulation, protein expression, glycobiology and epigenetics. NEB serves the academic and industrial research market in addition to customized products for drug discovery and molecular diagnostics.

Thanks to its performing logistics, NEB delivers the products within 48h (for orders processed before 3.30 pm from Monday to Thursday).

Since the beginning of 2015, a freezer programme installed at the NEB France office offers the researchers of the Genopole Campus the possibility to have immediate access to NEB products.

**The Next Generation of DNA Assembly and Cloning**

**NEBuilder HiFi DNA Assembly**

The next generation of DNA assembly and cloning has arrived. With NEBuilder HiFi DNA Assembly, you'll enjoy virtually seamless joining of DNA fragments. More efficient assembly is now possible, even with larger fragments, low inputs, or 3' and 5' end overhangs. Additionally, you'll benefit from NEBuilder HiFi's ability to bridge two dsDNA fragments with a ssDNA oligo. Save time with less screening or re-sequencing, and benefit from the knowing that reagents from NEB were chosen for NEBuilder products.

Request a free sample\* at [info.fr@neb.com](mailto:info.fr@neb.com)

Product	Efficiency (%)	Yield (ng)	Input (ng)	Fragment Size (bp)
NEBuilder HiFi	~90	~100	~10	~1000
Other HiFi products	~70-85	~50-80	~10-20	~1000



**BACKGROUND**

Established in the mid-1970s as a co-operative laboratory of experienced scientists, New England Biolabs (NEB) is a world leader in the production and supply of reagents for the life science industry. NEB is headquartered in Ipswich, Massachusetts, USA, and has seven subsidiary offices including NEB France, which opened in 2011.

550 staff members worldwide

**Strengths:** scientific for Scientific!

NEB is vigorously committed to servicing our customers with best-in-class products, unparalleled technical support and an R&D depth unmatched by organizations many times our size. NEB offers also an OEM/Customization service.

## MEDICAL DEVICES



## Novacyt

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**COO**

Jean-Pierre Crinelli

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Website www.novacyt.com

Founded 07/2006

**FIELD OF ACTIVITY**

Novacyt is a leader in the field of medical diagnosis and has a growing portfolio of products and services for cancer and infectious diseases.

**KEYWORDS:** *In vitro* diagnostics / Automation / Liquid-based cytology / Oncology / Microbiology / Hematology and serology

**HISTORY**

Founded in July 2006 with a capital of € 105,000, Novacyt became an Alternext-listed company in October 2012. In June 2014, Novacyt acquired the English company Lab21, founded in 2005.

**SHAREHOLDERS**

More than 70% of Novacyt's capital is divided between CUP92 (shareholders: Eric Peltier and Jean-Pierre Crinelli) and 13 other main funds. The remaining balance is held by individuals and smaller funds.

**ACTIVITY**

Novacyt is a leader in the field of medical diagnosis. With its proprietary technology platform NovaPrep® and extensive international network, Novacyt provides a very broad, innovative, and growing portfolio of products and services to the fields of oncology and infectious diseases. Novacyt also supplies reagents used in oncology, microbiology, hematology and serology. Novacyt's diagnostic solutions thus comprise two main branches, firstly the sale or provision of an automate and its consumables in the field of cytology, and secondly the sale of reagents for infectious diseases through the Lab21 distributors network and the supply of services through a clinical laboratory in Cambridge.

Novacyt provides its products and services directly in the United Kingdom and in France and through distributors worldwide (more than 300 distributors in more than 100 countries). The company's customers are public and private hospitals and private laboratories.

Over the past 3 years, sales for NovaPrep on the French and international markets have become roughly equal. For Lab21, the international market represents 80% of activity. Since the market launch of NovaPrep in mid-2008, more than 90 instruments have been sold in France or abroad and more than 2 million tests have been performed in daily clinical practice.

Following its success in Russia, Novacyt's strategy is to continue its growth in the BRICS markets, especially in China, where a distribution agreement was signed with Leica Biosystems China.

**TECHNOLOGICAL AND HUMAN RESOURCES**

Novacyt employs 67 people, 9 in France, the rest in the UK. All NovaPrep manufacturing activity is outsourced, in France for the consumables and in Switzerland for the automate. Lab21 has two production/distribution facilities, one in Camberley and another in Bridport. Its clinical laboratory is located in Cambridge. Novacyt has a portfolio comprising 23 patent families. The first patents were filed in 1999. Novacyt's general policy is to file patents in the United States, China, India, Russia, Brazil and three European countries. Novacyt France is ISO 13485-certified as are the two Lab21 production sites. The Lab21 clinical laboratory is ISO 15489 and CPA-certified.



**23** patents family

**9** employees for Novacyt in France and **58** employees for Lab21 in the United Kingdom.

**Strengths:** innovation; industrial processes; marketing and sales; regulatory aspects; sales network.

**Innovation assets:** market knowledge; products fine-tuned to market needs; multidisciplinary team.

## MEDICAL DEVICES



## Novian Health

**President & CEO**  
Julian Itzcovitz, Ph.D.

**General Manager**  
Eugène Bajorinas

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Founded 12/2011

## FIELD OF ACTIVITY

Novian Health is developing image-guided minimally invasive tumor treatments by using interstitial laser therapy techniques.

Launching a European multi-center trial to demonstrate the effectiveness of Novilase® in the ablation of small breast cancers and further on partnering with French luminary institutions to extend the clinical applicability of the Novilase® device.

**KEYWORDS:** Interstitial Laser Therapy (ILT) / Novilase® / Breast Cancer / Minimally Invasive & Ambulatory Treatment

## BACKGROUND

Novian Health SAS is a wholly owned subsidiary of Novian Health Inc., which was founded by internationally renowned breast surgeon Kambiz Dowlat, M.D. The Company is developing proprietary technology for the treatment of tumors by using Interstitial Laser Therapy (ILT). The French branch of Novian Health and the Institut Gustave Roussy are leading a multi-center European clinical trial to demonstrate the safety and effectiveness of Novilase® in ablation of small breast cancers. Other research and development activities are planned involving partnerships with French public & private institutions.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Novilase® is the company's first device that uses controlled heating with an interstitial laser to ablate breast tumors in a minimally invasively procedure which is an alternative to surgery (e.g. lumpectomy). Ultrasound or stereotactic x-ray imaging guidance is used to position the two small probes within the ablation zone. One probe contains the laser fiber to heat the tumor and the other measures temperature at the periphery of the ablation zone. This patented approach provides precise, real-time monitoring and control of the ablation. Novilase® has a proven feasibility based on a 65-patient study done at Rush University Medical Center in Chicago.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

The company has received U.S. FDA 510(k) clearance for the treatment of benign breast tumors and ablation of soft tissue. In addition, FDA IDE and MHRA (U.K.) approvals have been received to begin a multi-center clinical trial to assess the effectiveness of Novilase® in the ablation of malignant breast tumors. In addition, the company is actually running a multi-centric trial in US and UK to assess the effectiveness of the Novilase system for the ablation of malignant breast tumors.

Other research and development projects are planned with luminary French public & private institutions to extend the clinical applicability of the Novilase® device.

## COLLABORATIONS SOUGHT

The company is seeking financial partners to complete European fundraising and enable it to reach key milestones: EU regulatory approval, EU first sales and a robust data set for U.S. regulatory filing.

The company is also seeking strategic partners to co-develop image-guided laser therapies and accelerate European and/or global commercialization post regulatory approvals.

**33** issued patents, registered design and registered utility models (17 EU, 9 US., and 7 international) and multiple pending applications.

**Strengths:** significant market size (\$2 billion EU & US; \$1 billion annual procedures). Robust IP portfolio. Scalable business model based on recurring revenue from sale of disposables. Potential applicability of platform technology to other tumor indications and markets.

**Innovation assets:** the opportunity to be the first minimally invasive treatment option for women with breast tumors. The Novilase® proposed treatment offers patient comfort & recovery, and high efficacy and lower cost compared to surgery.

## INDUSTRIAL BIOTECH



## Novolyze

**Co-founder / CEO**  
Karim-Franck Khinouche

**Co-founder / General Manager**  
Nicolas Braun

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**Founded 2012**

## FIELD OF ACTIVITY

Novolyze develops patented bacterial models to assess, optimize and validate industrial processes used to guarantee the absence of microbial contamination in food & agriculture products.

**KEYWORDS:** Pasteurization / Pathogenic microbiology / Health safety / Validation

## BACKGROUND

Established in 2012, Novolyze develops and deploys solutions for the validation of food safety for food & agriculture companies and equipment manufactures. Novolyze continues to expand, building on its experience with more than 20 projects led in 15 countries since its inception.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

To prevent pathogenic risks in food & agricultural products, cosmetics and pharmaceuticals, Novolyze proposes a range of products developed upon patented bacterial models and innovative marketing methods. In conjunction with its products, Novolyze offers unique services in foodborne pathogen microbiology.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- June 2013:** Winner of the Bpifrance Innovative Business Creation Competition (creation development).
- July 2014:** Laureate of Réseau Entreprendre.
- November 2014:** Member of the «Protein2food» consortium - H2020 program.

- November 2014:** Obtained ISO:9001 (1/3) certification.
- December 2014:** First prize in the non-healthcare biotech category of the Genopole Competition.

## COLLABORATIONS SOUGHT

- Scientific partnerships: laboratories, research centers, SATTs (companies for the acceleration of technology transfers) looking to work with Novolyze in the field of food pathogen microbiology.
- Business partnerships: food & agriculture industries looking to participate in the technical development of products.

**Annual turnover:** €261,000

**Number of patents:** currently under submission

**5** staff members

**Strengths:** Development and validation of patents microbial models. Knowledge of international markets and their stakeholders, advisory committee focused on the company's scientific and strategic development.

**Innovation assets:** Patented bacterial models, innovative business and marketing models recognized by various business competitions.

**Other facts:** Already active on the five continents thanks to an international partner network; launch of an affiliate in the United States.

## THERAPEUTICS



## Nutrivercell

**CEO Founder & Scientific Director**

Loïc Renard

**Managing Director**

Frédéric Zampatti

**Sales Director**

Céline Gasselien

**Galenic Development and Regulatory Affairs Manager**

Audrey Valo

**International Project Manager**

Cynthia Renard

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Website [www.nutrivercell.com](http://www.nutrivercell.com)

Founded 03/2009

## FIELDS OF ACTIVITY

Nutrivercell designs, formulates, develops and markets food supplements with high medical value.

**KEYWORDS:** Nutritional ingredients / Polyphenols / Infectious diseases / Women's health / Inflammation / Nutraceutical / Food supplement / Dietary supplement

## BACKGROUND

Nutrivercell was founded in 2009 with the aim of developing a portfolio of food supplements to improve the conventional medicines efficiency using high quality nutritional ingredients. Nutrivercell formulates original patented nutritional blends to provide MDs (Medical Doctor) with innovative nutritional solutions characterized by a high medical value and a measured physiological effect:

—To aid specific populations that are in a medical context or physiological situations.

—To widen the range of solutions available for patients with the goal of amplifying the efficiency, minimize the side effects or reduce the use of conventional medicines.

—To develop nutritional strategies in the medical practices by offering MDs a pragmatic and scientific vision of nutrition.

The company focuses its development on urinary tract infections and inflammation.

## PRODUCTS / SERVICES / TECHNOLOGY DESCRIPTION

DUAB® was launched in France in late 2010. It reduces the virulence and the resistance of the main bacteria involved in urinary tract infections.

Propolis, which has alone a bacteriostatic effect, also increases the duration of the cranberry anti-adhesive effect from 6 to 12 hours after absorption. DUAB® is now the reference n° 3 on the French Market in the urinary tract infections field. NEOGIL® was marketed in France in September 2013. It is a food supplement developed in partnership with the University of Bordeaux for its potent anti-inflammatory action. Indeed, this patented grape polyphenols and propolis mixture inhibits inflammatory mediators released from human leukocytes and reduces clinical scores in experimental arthritis (*in vivo* and *in vitro*

models). An observational study in human confirms the interest of the product.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

February 2015: end of the observational study of NEOGIL®.

By January 2014, over 5000 pharmacies were selling DUAB® over the counter in France.

March 2013: start of patient inclusion in a clinical study for DUAB® to obtain the "reducing disease risk" claim in accordance with article 14.1a of the EFSA (European Food Security Agency).

February 2013: first international distribution agreement.

## COLLABORATIONS SOUGHT

Partnership with an OTC Nutritional & Pharmaceutical Products specialized in urology/gynecology and/or inflammation, with a view to access international markets.



**Annual turnover:** €1.617 K

**2** patents

**7** staff members

**Strengths:** 2 patents delivered in France protecting DUAB® and NEOGIL® with international extensions in progress.

Strong scientific, medical, supply chain and market access expertise.

**Innovation assets:** preclinical and clinical experimentations developed to assess the efficiency of new nutraceutical associations.

## THERAPEUTICS



## ObeTherapy Biotechnology

## President &amp; CEO

Itzik Harosh

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Founded 01/2000

## FIELD OF ACTIVITY

Drug discovery for the treatment of obesity and metabolic diseases.

**KEYWORDS:** Obesity / Type II diabetes / Lean or starvation phenotype

## BACKGROUND

ObeTherapy Biotechnology's business is based on its innovative approach to identifying novel genes that can be used as therapeutic targets in obesity. The paradigm is diametrically opposed to conventional ethos in this field: instead of looking at what genetically characterizes the obese phenotype, ObeTherapy Biotechnology is focusing on the lean or starvation phenotype.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

ObeTherapy Biotechnology's main goals are to:

- identify new target genes for the treatment of obesity and related pathologies,
- validate these targets by establishing transgenic animal models,
- identify new chemical entities that can modulate the products of these target genes,
- develop these NCEs up to the preclinical phase.

The company's approach has enabled it to identify, validate and patent a family of genes involved in energy supply. These genes are high potential therapeutic targets, since they are non-redundant and are very specific. Drugs that bind to these targets are identified by using a high-throughput screening method patented by ObeTherapy.

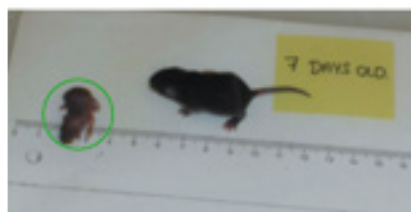
## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

The discovery of new therapeutic molecules and their development up to market launch are performed in close collaboration with the Zambon group (Milan, Italy). In parallel, a new gene candidate and inhibitors have also been recently identified. The establishment of an alliance for this second target is currently under discussion.

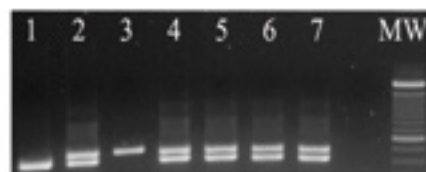
## COLLABORATIONS SOUGHT

ObeTherapy Biotechnology is currently seeking industrial and financial alliances, in order to finalize the preclinical trials on two lead targets.

## First results of KO mice for enteropeptidase target



Litter of KO mice  
Homozygote pup is in green circle



homozygote  
heterozygote  
wild type  
heterozygote  
heterozygote  
heterozygote  
heterozygote  
MW



**7** patents: **4** patents on novel molecules. **2** patents on new target molecules for type 2 diabetes treatment.  
**1** patent for a high-throughput screening method.  
**2** staff members

**Strengths:** one molecule in the preclinical phase and another in "lead optimization".

**Innovation assets:** ObeTherapy looks at targets produced in a lean phenotype.

## MEDICAL DEVICES



## OsseoMatrix

**President & CEO**

Dr Didier Nimal

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Founded 03/2009

**FIELD OF ACTIVITY**

OsseoMatrix designs, manufactures and markets customized bioceramic implants to compensate for bone defects in the cranio-maxillofacial and orthopedic areas.

**KEYWORDS:** Implant / Bioceramics / Synthetic bone / Patient specific / 3D printing / Cranio-maxillofacial and orthopedic bone loss / Porosity programmed

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

Winner of a national contest for the creation of innovative technology companies of the Ministry of Research in the Emerging categories (2008) and Creative development (2010). OsseoMatrix was awarded the Grand Prix Siemens Innovation in September 2011. In 2012 OsseoMatrix coordinated a project of the National Agency of Research (ANR) OrthoFlase (partners CEA, Ecole Mines, CNRS, SISNCOM). Winner of the Worldwide Innovation Challenge of the French Ministry of Industry in March 2014.

**COLLABORATIONS SOUGHT**

International distributors.

**BACKGROUND**

After twenty years with leading international companies on the implantable medical devices market, Dr Nimal Didier has developed a manufacturing technology for implants employing a laser process and calcium phosphate powders.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Combining its expertise in the shaping of materials and the processing of digital scanners, OsseoMatrix offers a set of innovative solutions for the surgical treatment of bone loss: study models, substrates, surgical guides, customized bioceramic implants with programmed porosity.

**Annual turnover:** €446K**5** international patents published**5** staff members

**Strengths:** innovative technology with high potential: patient specific implants, same chemical composition as bone.

**Innovation assets:** programmed porosity.



## THERAPEUTICS



## PEP-Therapy

## CEO

Antoine Prestat

## Scientific Founders

Didier Decaudin

Fariba Némati

Angelita Rebollo

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## Website

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Founded 01/2014

## FIELD OF ACTIVITY

Development of innovative peptides as targeted therapies for the treatment of severe diseases, with an initial focus on cancer. PEP-Therapy develops and operates a unique technological platform of therapeutic Cell Penetrating & Interfering Peptides (CP&IP). These innovative molecules penetrate cells and specifically block relevant protein-protein interactions, thus inhibiting key mechanisms of diseases.

**KEYWORDS:** Cell Penetrating and Interfering Peptides / Targeted therapies / Protein-protein interactions / Cancer – oncology / Companion biomarkers

## BACKGROUND

PEP-Therapy exploits the results of Inserm (French national institute of health), UPMC (leading French Scientific and Medical University) and Institut Curie (largest French Hospital Center dedicated to cancer research). The project benefits from the scientific and medical expertise of these institutions, their unique preclinical models and their capacities in clinical and translational research.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

DPT-C9h is PEP-Therapy's first CP&IP-based product and a novel, targeted approach to cancer therapy. DPT-C9h specifically blocks the Caspase9/PP2A protein-protein interaction,

—thus triggering apoptosis (death) in cancer cells without harm to healthy cells,

—while leaving the other signaling pathways intact limiting the risk of side effects.

The mechanism of action is based on caspase activation, with no effect on the cell cycle, thus allowing for the efficacious use of DPT-C9h in association with chemotherapies.

PEP-Therapy has also pre-validated predictive companion biomarkers for the identification of patients likely to respond well to DPT-C9h treatment.

Following upon the proof of concept for its first product, PEP-Therapy will accelerate the use of its CP&IP platform, both internally and in partnerships with pharmaceutical & biotech companies on other intracellular targets (licensing, co-developments, etc.).

The company is currently developing two additional drug candidates that target mechanisms involved in a range of cancers.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

DPT-C9h has demonstrated proof of concept (Arrouss et al., 2013):

—in patient cells: DPT-C9h induces death of tumoral B cells of patients with chronic lymphocytic leukemia without affecting healthy cells (T, NK, monocytes), demonstrating the specificity of tumor targeting.

—in patient-derived xenograft (PDX) models: DPT-C9h inhibits tumor growth in human uveal melanoma, breast, ovary and lung primary tumors.

Neither toxicity nor immunogenicity has been detected in prolonged *in vivo* treatment.

DPT-C9h offers a novel approach to the treatment of cancer, either alone or in combination with other treatments.

PEP-Therapy is a laureate of the National innovative venture Competition of the French Ministry of Higher Education and Research and Bpifrance.

## COLLABORATIONS SOUGHT

Industrial and financial partners for the development of PEP-Therapy's initial therapeutic products and biomarkers, and for the exploitation of the CP&IP platform.

**Patents:** Portfolio of six international patent families covering the CP&IP technology, the company's first therapeutic products, and associated biomarkers.

**Strengths:** optimized Cell Penetrating Peptide technology; *In vivo* proof of concept using predictive xenograft models (Institut Curie); biomarkers for treatment response prediction.

**Innovation assets:** Optimized Cell Penetrating & Interfering Peptides (CP&IP) technology.

## THERAPEUTICS

# PHARMING

## Pharming Group N.V.

**CEO in France**

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**CSO**

Perry Calias

**Director R&D  
and contact in France**

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Founded 11/2014

**FIELD OF ACTIVITY**

Production of recombinant proteins in the milk of transgenic rabbit.

**KEYWORDS:** Recombinant protein / Protein production / Transgenic rabbit

**BACKGROUND**

Pharming Group N.V. is committed to the development of innovative products for the treatment of unmet medical needs. We focus on the development and production of human therapeutic proteins to provide life-changing solutions to patients.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

—**Vision:** Pharming's vision is to be a leader in developing bio-pharmaceuticals, improving health and meeting patients' needs.

—**Mission:** Pharming's mission is to develop innovative products for significant medical needs based on our own and our partners' proprietary research and technologies. We operate to high ethical, environmental and animal welfare standards.

—**Strategy:** Our strategy is to orchestrate the complete development of innovative therapeutics for significant medical needs. We thereby concentrate on our core competencies and form strategic partnerships in other field.

## THERAPEUTICS



## Pharnext

**President & CEO**

Prof Daniel Cohen

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Founded 04/2007

**FIELD OF ACTIVITY**

Research and development of new therapies and biomarkers based on systems biology by using a proprietary discovery platform. Pharnext is currently focused on CNS (CMT disease, Alzheimer, Parkinson) and metabolic disorders (diabetes type 2).

**KEYWORDS:** Genomics / Network pharmacology / Drug repurposing / Molecule combination / Biomarkers

**BACKGROUND**

Pharnext is an advanced clinical stage biopharmaceutical company founded by Prof Daniel Cohen, a pioneer in genomics, and his main collaborators. The company develops new therapeutics for severe orphan and common neurological diseases.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

The approach is applicable to virtually any disorder and particularly suited to multifactorial diseases. Pharnext is currently focused on neurodegenerative diseases and metabolic diseases:

- CMT disease: successful phase 2 trial completed.
- Alzheimer: phase 1/2a trial in progress.
- Diabetes: lead selections
- 5 other R&D therapeutic programs in progress.
- Biomarkers validated for Alzheimer's disease.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

- Fund raising of €45M in equity from foundation.
- Coordination of ISI project DIPPAL which aims at developing early diagnostic tests and therapeutic approaches for Alzheimer disease (November 2010).
- Proof of concept in human through successful phase 2 study of CMT (January 2013).
- Alzheimer's disease program entered phase 1/2a study (February 2013).

**COLLABORATIONS SOUGHT**

- Industrial partnerships in pharmaceutical and diagnostic sectors on drug candidate and biomarkers programs.
- R&D collaborations with academic and industrial partners on early programs.



31 patent families

35 staff members

**Strengths:** new paradigm in R&D for faster pharmaceutical developments, particularly in multifactorial diseases.

Eminent scientists and breakthrough approach in pharmaco-genomics.

**Innovation assets:** active molecule combinations, repurposing of already approved drugs.

## R&amp;D SERVICES AND PRODUCTS



## Phenocell

**CEO**  
Brigitte Onteniente

**CSO**  
Julien Maruotti

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**Founded** 09/2013

## FIELD OF ACTIVITY

Phenocell is an innovative technology platform that produces and commercializes induced pluripotent stem cell lines (iPSC) from patients with rare diseases (RD; RD-iPSC). iPSC are used to create unique cellular models for orphan drug discovery. RD-iPSC models are the basis for phenotypic assays (PhenoTests) that are implemented for orphan drug discovery programs. The PhenoTests platform serves i) the identification and validation of active compounds for a specific pathology, or ii) the definition of new indications for drug repurposing in an orphan indication. PhenoTests are also valuable tools for toxicity assessments.

**KEYWORDS:** Rare genetic diseases / Pluripotent stem cells / Phenotypic assay / Orphan drug discovery

## BACKGROUND

Phenocell was created with the mission of accelerating research and drug development for rare diseases. The founder, Brigitte Onteniente, is an Inserm Research Director, with a track record of using iPSC for stem cell therapy in neurological disorders. After incubation at the I-Stem Institute, Phenocell has set basis on the Genopole campus in Évry.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Phenocell uses the Nobel-winning technology of reprogramming to serve academic and industrial research teams with cell lines and differentiated cells and tissues directly generated from patients suffering from RD. The PhenoTests platform currently runs with 9 cell types and 12 assays to identify new potential orphan drugs or find an orphan indication to marketed products.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

—**2013-2014:** Phenocell wins the "Emergence" (2013) and "iLAB" (2014) prizes of the Ministry for Higher Education and Research.

—**2014:** Phenocell develops its first «orphan drug indication» program with an industrial partner.

—**2014:** Phenocell products are distributed through the TEBU-Bio company.

## COLLABORATIONS SOUGHT

With our PhenoTest platform, we are looking for industrial partnerships for co-development of orphan drugs, including target identification and validation, drug screening, understanding of drug mechanisms, and *in vitro* toxicology studies.



**Patents:** Portfolio of international patent families

**Strengths:** High added value technology. Unique know-how for using cellular models in phenotypic assays.

**Innovation assets:** using iPSC technology to modelize the diversity of human pathological aspects.

## R&amp;D SERVICES AND PRODUCTS



## PhinC Development

**CEO, co-founder**

Bernard Orlandini

**Co-founders**Virginie Gualano,  
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Founded 10/2008

**FIELD OF ACTIVITY**

Drug development support to biotech and small pharma companies in early phases from preclinical studies to phase IIa trials.

**KEYWORDS:** Early drug development (preclinical, I and IIa phases) / Modeling & simulation / Pharmacometrics / Pharmacokinetics-Pharmacodynamics (PK/PD)

**BACKGROUND**

PhinC was founded at the Genopole biocluster in 2008 by four experienced CRO/pharmaceutical professionals with complementary competencies (pharmacology, biostatistics, pharmacokinetics, biomedical R&D).

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

PhinC uses an integrated and multidisciplinary approach to provide custom-tailored scientific and operational support for companies developing drug candidates. According to your needs, we can provide partial or all-inclusive services in the following fields of activity:

**Scientific and methodological support:** by furnishing supplementary expertise, PhinC provides support to the client's R&D team thus allowing this latter to first conceptualize and then pilot the development of its product. We provide pertinent counseling for fast decision-making and concrete assistance for effective deployment. Our services include the conceptualization and monitoring of preclinical and clinical trials, the development of rationale for first-in-human trials, assistance for appropriate subcontractor selection (CRO and academic) and the constitution of associated regulatory and scientific dossiers.

**Pharmacometrics analyses:** PhinC provides to its clients its multidisciplinary skills in pharmacokinetics (PK), pharmacodynamics (PD), PK/PD, toxicology, physiological based pharmacokinetics (PBPK), PK/QT (cardiac safety), PK population and all related statistical analyses. Through modeling and simulation techniques, PhinC builds predictive pharmacological models allowing the optimization of drug development plans: MBDD approach (Model-Based Drug Development).

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

—Deployment of predictive modeling tools at the non-regulatory, preclinical level via the GastroPlus software package (PBPK studies).

—Setup of an innovative design in TQT trials concerned by the ICH E14 guideline. This design, supported by original statistical evaluation, aims to make clinical trial easier to conduct, more economical but as conclusive as the traditional design (QT regulatory).

**COLLABORATIONS SOUGHT**

Partnership for the implementation of an integrated drug discovery platform to strengthen our drug candidate optimization activity.



**7** staff members

**Strengths:** we offer an integrated, custom-tailored approach to optimize early-phase costs and timelines so that our clients can successfully manage their development. With our innovative PK/PD, biostatistics and modeling and simulation applications, we can provide support at the earliest research phases to adapt and valorize drug development.

## SCIENTIFIC INSTRUMENTATION



## Physikron

**President & CEO**

David Znaty

**Vice-President**

Patrick Vayn

**CSO**

David Scigocki

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Founded 06/2005

## FIELD OF ACTIVITY

Development of new mass spectrometry solutions.

**KEYWORDS:** Tandem mass spectrometry / High-throughput / Low sample requirement / Proteomics

## BACKGROUND

Physikron has developed analytical processes for tandem mass spectrometry (MS-MS) based on concepts from particle physics.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

These processes simultaneously produce several well-separated MS-MS spectra (with no selection of the individual primary mass) from a single MS-MS spectrum containing all the fragments of several different primary masses.

Machines equipped with the Physikron technology can increase by up to 80% the number of proteins identified in a LC run, increase significantly their acquisition throughput and decrease their sample requirement in MS-MS mode without hardware modification.

A higher acquisition throughput is particularly significant for liquid chromatography-coupled systems (LC MS-MS) because existing machines are only able to produce a part of the MS-MS spectra for the different primary masses going through the chromatography line. The system has notable uses in proteomics and medical diagnostics.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Collaboration with an academic laboratory. The technology has been acquired by a major pharmaceutical company.

## COLLABORATIONS SOUGHT

Physikron is looking for co-development and/or licensing partners (mass spectrometers manufacturers, players in medical diagnostics).

**Annual turnover:** €71K in 2013**3** patents**3** staff members**Amount raised to date:** €1.050M (CapDecisif, G1J IdF)

**Strengths:** performance, rapidity, analysis of complex mixtures and sample consumption strongly reduced.

## SCIENTIFIC INSTRUMENTATION

PLASMA BIOTICS



## PlasmaBiotics

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Daniel Vinteler

**R&D**  
Mihaela Cirisan

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**Founded** 03/2011

## FIELD OF ACTIVITY

PlasmaBiotics is centered on the design, the development and the marketing of cold plasma equipment for the disinfection of thermo-sensitive medical devices.

**KEYWORDS:** Disinfection / Cold plasma / Atomic nitrogen / Thermosensitive medical device



## BACKGROUND

PlasmaBiotics masters a unique process patented by the CNRS (National Center for Scientific Research) and the University Paris SUD. The company focuses its research on the evaluation and the optimization of the biological efficiency of nitrogen cold plasma on various materials and for different pathogens.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

PlasmaBiotics develops and markets a range of nitrogen cold plasma generators at ambient temperature and pressure. In first intention, the company targets the markets of storage and thermosensitive medical devices disinfection. End of year 2014, PlasmaBiotics launched in a world premiere a fast unit for endoscope channels drying plasmaTYPHOON. The performances of this product are 10 times higher compared with the existing products on the market.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Since end 2011, PlasmaBiotics has optimized this technology and developed a prototype in partnership with the LPGP laboratory. The microbiological efficiency of the cold

plasma has been validated on several pathogens at Antoine Bécclère hospital, at INRA Avignon as well as in the private laboratories BIO-CLIN and Biotech-Germande.

## COLLABORATIONS SOUGHT

PlasmaBiotics is looking for partners for co-developments for different applications: endoscope storage and disinfection, wound healing, applications in the food-processing industry, the biodefense, etc. PlasmaBiotics is also looking

for partners in Europe for the distribution of plasmaTYPHOON product.



**Annual turnover:** €15K

- 1** exclusive patent license from CNRS
- 2** patents
- 2** staff members

**Strengths:** high efficiency, rapid and easy to use, respectful of all materials, absence of any waste, no toxicity, consumable (nitrogen) extracted from air. Multidisciplinary team in design, sciences, management and innovation financing.

**Innovation assets:** a unique physical-chemical method compatible with thermosensitive materials.

**Company vision:** make healthcare safer with cold plasmas.

## R&amp;D SERVICES AND PRODUCTS



## Polytheragene

**President & CEO**  
Pr Hervé Cheradame

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**Founded** 10/2011

### FIELD OF ACTIVITY

Manufacture and sale of new high performance transfecting agents for gene therapy, high-throughput screening and biomanufacturing. Cosmetic and therapeutic molecules from plant biomass.

**KEYWORDS:** Transfection / Gene therapy / Biomanufacturing / Therapeutic proteins / Vaccine

### BACKGROUND

The association of two complementary teams from the MPI/LAMBE laboratories at the University of Évry and the molecular biophysics laboratory at Orléans led to the development of two patented polymer families for nucleic acid transfection.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

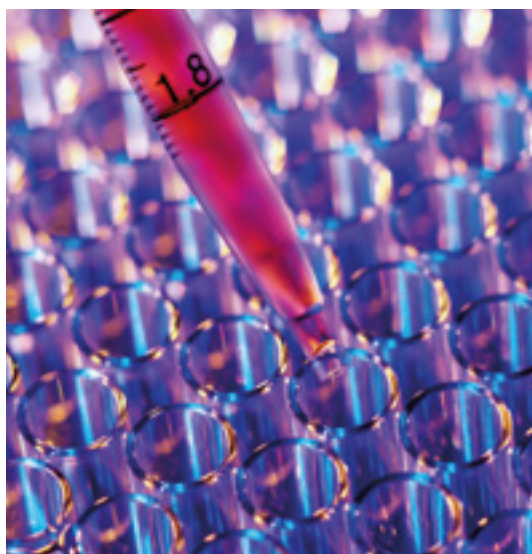
Two families of synthetic agents have been developed. The first is derived from polyethylenimine and the second is formed by amphiphilic triblock copolymers for *in vitro* and *in vivo* applications. These compounds offer better efficacy and lower toxicity than market references.

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

New formulas are currently under development at the MPI lab (UEVE). Common research with biomanufacturers showed the high performances (high efficacy, low toxicity) of these vectors for biomanufacturing in large volumes (higher than 50L) (GMP quality available).

### COLLABORATIONS SOUGHT

We are looking for partnerships and co-development opportunities with biomanufacturers, companies offering high throughput cell screening and biotechnology laboratories developing DNA or RNA vaccines. Companies interested in new molecules of therapeutic or cosmetic interest from plant biomass.



**Annual turnover:** Greater than €100,000  
**1** exclusive license from the university of Évry  
**2** staff members

**Strengths:** high performance synthetic vectors.  
Complementary teams in chemistry and biochemistry.  
**Innovation assets:** ability to develop high efficacy transfecting agents for specific applications (stem cells and cell suspension cultures).

**Other facts:** new formulations for RNA transfer.



## DIAGNOSTICS



## Prestodiag

**President & CEO**

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Founded 03/2012

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Villejuif Bio Park

1 mail du Pr. Georges-Mathé  
F-94800 Villejuif**FIELD OF ACTIVITY**

Prestodiag develops and markets kits for rapid detection of multiple bacteria in complex samples, for food testing, and medical and environmental applications.

**KEYWORDS:** Microbiology / Bacteria / Diagnostics / Biophotonics / Surface Plasmon Resonance imaging (SPRI)

**RÉALISATIONS / COLLABORATIONS / FAITS MARQUANTS**

Prestodiag has won various awards and prizes: Laureate of the competition OSEO-Ministry of Research ("Emergence" category, 2011), Grand Prize Life Sciences at the Tremplin Entreprises French Senate-ESSEC (2012) and winner of the Genopole competition 2012.

A strong collaboration has been set up with the CREAB team at CEA Grenoble (CEA/INAC/SPrAM) to improve our biosensing technology for microbiology.

**COLLABORATIONS SOUGHT**

Prestodiag is looking for partnerships for applications requiring rapid detection and identification of micro-organisms in complex matrices and for various fields: food testing, clinical applications, the environment, cosmetics and the pharmaceutical industry.

**BACKGROUND**

Prestodiag is an early-stage start-up that has developed an innovative technology for simple and rapid detection of pathogenic bacteria in complex matrices, co-developed with the CREAB research team led by Thierry Livache (UMR 5819, CEA-CNRS-UJF, Grenoble, France).

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Prestodiag has developed an instrumental platform composed of a cost-effective label-free optical reader based on Surface Plasmon Resonance imaging (SPRI) and dedicated single-use kits / antibody biochips to monitor the growth of micro-organisms in real-time, within complex samples.

**5** patents**12** staff members

**Strengths:** label-free technology / cost-effective optical device and kits.

Multidisciplinary team / microbiological results validated by food testing industry partners.

**Innovation assets:** label-free and cost-effective technology, providing a microbiological result in hours instead of days, and in one single step. Ability to monitor antibiotics susceptibility of bacteria in real-time.

## THERAPEUTICS

## Santen SAS (& Novagali Innovation Center)

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Founded 08/2000

**FIELD OF ACTIVITY**

Santen is an ophthalmic pharmaceutical company with over 120 years of history.

Based in Osaka, Japan, with a global presence Santen acquired Novagali Pharma in 2011.

Santen SAS has developed its own sales force to commercialize ophthalmic products in France while Novagali Innovation Center is a center of excellence for Santen Group dedicated to research and development of innovative ophthalmic treatments for all segments of the eye.

**KEYWORDS:** Ophthalmology / Technologies / Cationorm®

**BACKGROUND**

As a specialized pharmaceutical company primarily engaged in the ophthalmic field, Santen has established a paramount position in Japan's prescription ophthalmic pharmaceutical market and has expanded into the global market. Santen will continue its dedication to improving the eyesight and health of people worldwide, exercising a spirit of creation and innovation, as well as the scientific knowledge and organizational capabilities that we have nurtured for over 120 years since the founding of our company.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Santen SAS has a sales and marketing organization to commercialize pharmaceutical ophthalmic products in France. Novagali Innovation Center develops innovative ophthalmic treatments for all segments of the eye surface from formulation to registration.

In terms of research activities, within Santen we have concentrated our basic research, non-clinical studies, and drug formulation research at Nara R&D Center, so as to integrate the knowledge of our various sections and create better products. In 2011, Santen purchased Novagali Pharma (today Santen S.A.S.), a French ophthalmic pharmaceutical company that has excellent R&D capability and drug formulation technologies in the dry eye field. This purchase has reinforced Santen's development pipelines, enhancing its international competitiveness in the ophthalmic field.



**28** patents

**64** staff members

**Strengths:** Cationorm®, the first cationic emulsion intended to treat dry eye symptoms and marketed in over 50 countries;  
Novasorb® technology to develop products for the eye surface and the anterior segment;  
a late-stage pipeline with one product in phase III and one product under the process of EU centralized marketing authorization;  
a pilot production unit for industrial-scale transfers, sales force dedicated to ophthalmic products.

**Innovation assets:** development of innovative drugs for all segments of the eye; patented technologies to increase the bioavailability of drugs while improving tolerance.

## SCIENTIFIC INSTRUMENTATION



## Sebia

**President & CEO**

Benoît Adelus

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Founded 10/1967

**FIELD OF ACTIVITY**

Design, manufacture and commercialization of *in vitro* diagnostic systems (instruments and reagents) for medical biology laboratories.

**KEYWORDS:** *In vitro* diagnostics / Clinical biochemistry / Electrophoresis / Instruments / Reagents / Monoclonal gammopathies / Hemoglobinopathies / Diabetes / Chronic alcohol abuse

**BACKGROUND**

Since its incorporation more than 40 years ago, SEBIA has become a global leader in innovative electrophoretic *in vitro* diagnostic systems and particularly in the field of capillary electrophoresis.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Electrophoresis consists in the use of an electrical field to separate the proteins contained in biological samples. The most recent capillary electrophoresis technique is applied in the dedicated automated systems: the CAPILLARYS range (CAPILLARYS 2, CAPILLARYS 2 Flex Piercing and CAPILLARYS 2 Neonat Fast, Capillarys 3) and the MINICAP range (MINICAP and MINICAP Flex Piercing).

The HYDRASYS range (ASSIST, HYDRASYS 2 SCAN, HYDRASYS 2 SCAN FOCUSING) utilizes an agarose gel as a support. The electrophoresis technique is a leading technology in the diagnosis of immune system diseases such as myeloma, hemoglobin abnormalities, HbA1c and the detection of other protein markers.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

SEBIA's R&D efforts are delivering results in two fields:

- The development of fully automated high-throughput systems with networking capabilities with the powerful PHORESIS CORE software, plus a full range of diagnostic tests: proteins, lipoproteins, hemoglobin, HbA1c. SEBIA will introduce the Capillarys 3 program, including several types of complementary instruments (Capillarys 3 TERA, TERA M.C and TERA T.L.A) offering to all kind of laboratories the modularity and flexibility required in today's global organization of lab work.
- SEBIA products are available in 120 countries, through a network of 7 subsidiaries, 3 representative offices (Shanghai, San Paolo and Dubai) and a broad network of distributors. Moreover SEBIA offers high quality products and services throughout the world.

**COLLABORATIONS SOUGHT**

Sebia maintains close links with the medical community, including university labs associated with its research work and disease specialists developing applications. Sebia has also started collaborations with several associations involved in research projects that bring information and support to patients suffering from myeloma and to their families.



**Annual turnover:** €160M

**438** staff members worldwide

**Strengths:** World leader in the IVD field using the electrophoresis technology. Strong innovation capacity. Number 1 company for the diagnosis of monoclonal gammopathies. Major player in the fields of hemoglobin disorders and diabetes through the HbA1c test. High-level scientific and technical support. Education.

**Innovation assets:** 40 years of experience in electrophoresis technology.

A renowned company worldwide for the diagnosis of multiple myeloma.

Fully integrated company, with all the departments concentrated in Lisses (R&D, manufacturing, regulatory affairs, quality assurance, marketing, commercial, after sales service, scientific assistance and logistics).

**Other facts:** export represents more than 80% of Sebia's sales turnover.

## E-HEALTH



## Statlife

### President & CEO

Stéphane Ragusa

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Founded 04/2004

### FIELD OF ACTIVITY

Software for personalized medicine.

**KEYWORDS:** Prevention / Prediction / Risk scores / Epidemiological statistics

### BACKGROUND

Statlife is a result of research on disease risk prediction carried out at the Pierre & Marie Curie University of Paris and INSERM. The company mines epidemiological data from breast cancer screening in France and in the United States (1,000,000 women followed).

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Statlife software permits breast cancer risk prediction for personalized screening: mammography, MRI, etc.

### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Statlife collaborates with breast cancer screening cohorts in France and in the US.

### COLLABORATIONS SOUGHT

Statlife wishes to offer its expertise to pharmaceutical companies looking to better qualify the target populations for their medications.



**Annual turnover:** €400K

**4** patents

**6** staff members

**Strengths:** collaborations involving large, prospective cohorts.

**Innovation assets:** a simple and intuitive predictive method.

## CONSULTANCY / TRAINING



## Stratégie Santé

**President & CSO**

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Founded 09/2011

**FIELD OF ACTIVITY**

Consulting and training in health economics.

**KEYWORDS:** Health Economics and Outcomes Research (HEOR) / Market access / Regulation policies / Vocational training

**BACKGROUND**

- September 2011: creation of the company, primarily as an EIRL, by Sandrine Bourguignon.
- December 2012: Stratégique Santé becomes a SARL and opens up its capital to Delphine Silverio (Financial Director).
- July 2013: establishment at the Genopole campus; recruitment of a Pharmaco-Economist and Virology PhD/ Senior Health Economist.
- October 2014: Stratégique Santé is now composed of 5 consultants and a management assistant

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

- Market Access support for Pharmaceuticals and Medical Devices: CEESP efficiency reports, Cnedmist reports, CEPS negotiation reports.
- Realization and utilization of medico-economic studies: price and reimbursement negotiation, sales pitch for practitioners and health institutions, negotiation with ARS.
- Health economics training programs for everyone in the health sector.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

- CEESP/Cnedmist efficiency reports and health economics evaluations (Markov model) on cardiac insufficiency, chronic lymphocytic leukemia, lung cancer treatment, innovative breast cancer testing devices, active dressings.
- Regional care pathways studies (prostate cancer, multiple sclerosis).

- Training for almost 500 employees in the pharmaceutical sector for health economics and hospital environment.
- Creation of the first health-economic modeling workshop available in France (2 sessions/year: April and October).

**COLLABORATIONS SOUGHT**

- Industrials/biotech companies needing a personalized market access support.
- Companies wishing to upgrade their employees' skills on every topic linked to the health sector, thanks to tailor-made training.



**Annual turnover** (09/2014): €427K

**6** staff members

**Strengths:** Experts in the health sector organization in general, and particularly in health economics; Experienced consultants, with complementary profiles (senior health economists, Ph in virology, pharmacist, senior financial analysts, etc.). Tailor-made guidance and support; high added-value service.

**Innovation assets:** Thanks to our network of experts ("Unity for You"), we offer all services included in the value chain of product development (from clinical trials to marketing) with a single interlocutor for you: Stratégique Santé.

**BIOMANUFACTURING /  
PHARMACEUTICAL SERVICES**

**Texcell**

## Texcell

### President & CEO

Bernard Plichon

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Founded 01/2003

### FIELD OF ACTIVITY

Texcell offers fully GLP- and GMP-compliant viral safety testing and immunomonitoring services.

**KEYWORDS:** Viral safety testing / Viral and prion validation / Immunomonitoring / Immunoprofiling / Healthcare

### BACKGROUND

Texcell is a service company offering GLP- and GMP-compliant viral safety testing and immunology services. With over 20 years of experience in the performance of biosafety and viral validation tests, Texcell has evaluated a large number of products – including some that have received marketing approval from the FDA, the EMEA and the MHW. The company's expertise is acknowledged worldwide and (since 2006) and it has developed commercial relationships with representatives based in Japan, India and South Korea. In 2010, Texcell has taken the majority in a company based in Middletown (Maryland) renamed Texcell North America.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Texcell offers a full catalogue of assays for the characterization of cell banks, the batch release of cell-derived biotechnological products and viral validation studies for evaluating the ability of industrial process steps to eliminate and/or inactivate viruses (over 30 relevant or model viruses are available) and prions.

Texcell acts both as a contract research organization and a central lab for preclinical and clinical trials. Texcell offers an immunology-dedicated technology platform with an exhaustive range of GLP assay development services (optimization and validation) for analyzing the immune response to humoral and/or cell-based mediation.

Today's compound development timelines have to be as short as possible. Viral safety testing, viral validation studies and clinical studies must be continually improved, in order to optimize the therapeutic strategy. The company acts as a true partner for its customers and the staff is committed to offering the right experimental protocols and tools.



**Annual turnover:** €7M (world)

**58** staff members

**Strengths:** an international service company that is responsive and has a close relationship with its customers.

Expertise in virology and immunology.

**Innovation assets:** a specialist in viral and prion safety.

**Other facts:** as an expert provider in virology, Texcell evaluates the viral safety of recombinant proteins, monoclonal antibodies, medical devices and other products of animal or human origin (such as blood-derived products, heparins, hyaluronic acid and collagens). The company also has expertise in immunomonitoring. Texcell develops and validates assays that monitor the immune response to cell-based and/ or humoral mediation in clinical trials (ELISA, flow cytometry, Elispot: neutralizing serums, hemagglutination inhibition assays, bioassays, MSD).

## MEDICAL DEVICES



## Theraclion

**CEO**  
David Caumartin

**CSO**  
François Lacoste

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Founded 08/2004

## FIELD OF ACTIVITY

The development, manufacture and commercialization of medical devices for the non-invasive treatment of tissues with high-intensity, focused ultrasound (HIFU).

**KEYWORDS:** Ultrasound / Thyroid / Breast tumors / Medical instrumentation / Therapy



© Theraclion

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- November 2007: Echopulse® (previously known as Th-One) obtains the CE mark.
- December 2008: Oséo awards €8.5M toward Theraclion's development.
- December 2012: Echopulse® obtains the CE Mark for the breast Fibroadenoma indication.

## COLLABORATIONS SOUGHT

Industrial and financial partners.

## BACKGROUND

- August 2004: Theraclion was founded on the basis of INSERM research and EDAP technology.
- April 2005: Truffle Venture becomes a shareholder, enabling continuation of Theraclion's technical and clinical development.
- February 2013: First Echopulse® sale.
- April 2014: Introduction on the Alternext Paris market (raised €11M).

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Echopulse® is a HIFU-based system for the non-invasive, ambulatory treatment of tissues. It is used to treat certain diseases (notably thyroid nodules and breast fibroadenoma).



**20** patent families

**22** staff members

**Strengths:** innovative, efficient and well-characterized technology.

A significant market for non-surgical ablations with unmet needs; a strong financial partner.

**Innovation assets:** non-invasive tissue treatment.

## THERAPEUTICS



## Vaxéal Research

**President**

Andrew Obolenski

**CSO**

Dr Jérôme Kerzerho

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Website www.vaxéal.net

Founded 2012

## FIELD OF ACTIVITY

Vaxéal, in partnership with leading international research institutes, is developing therapeutic vaccines in combination with immuno-modulatory drugs for the treatment of cancers and infectious diseases.

**KEYWORDS:** Therapeutic vaccines / Peptides / Cancer / Hepatitis C / Immunomodulators

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

**Products:**

—**Oncology:** Advanced therapeutic cancer vaccines in combination with immuno-modulatory drugs enabling the generation of a strong and long lasting protection against tumors in a large spectrum of cancer patients. Vaxéal's innovative combined strategy addresses the importance of tumor-mediated immunosuppression and increase key aspects conditioning a successful anti-tumor immunity.

—**Hepatitis C:** Therapeutic vaccines for both genotype 1 and 6 of hepatitis C virus, combined with inhibitors to optimize cross-reactivity with natural variants, and to improve efficacy of actual treatments at affordable costs.

**Technical Platforms:**

Vaxéal and its partners (CEA, Inserm, HEGP, Ludwig Institute for Cancer Research) have combined their expertise to develop 5 innovative technical platforms for the design, production, formulation, optimization, and preclinical and clinical validation of new vaccine candidates.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Public-private partnership is the heart of Vaxéal's product development strategy.

Vaxéal's initial programs have all reached the pre-clinical stage in major disease segments, and are expected to enter into clinical trials in Europe in 2016 and 2017.

Pre-clinical development of Vaxéal's main cancer vaccine is completed making the strategy ready for a phase I/II clinical trial in 2016.

Vaxéal's HCV program is co-developed with the China Medical City of Taizhou for the Asian market. Vaxéal HCV vaccine is at the end of pre-clinical development and expected to enter in a phase I clinical trials in 2017 with healthy Chinese volunteers.

## COLLABORATIONS SOUGHT

Vaxéal is utilizing collaborations to enter multiple segments of the market. The company is looking for co-development partnerships with both academic and industrial partners developing innovative immunomodulatory drugs.



**Annual turnover:** €500K

**4 patents**

**7 staff members**

**Strengths:** a clinical portfolio unique in the biopharmaceutical sector and protected by numerous patents.

A particularly strong intellectual property position conferring a strong competitive advantage.

A highly experienced team to achieve Vaxéal's goals. Long-term strategic partnerships with main research institutes to optimize Vaxéal's research capabilities.

**Innovation assets:** unique and innovative scientific research relying on advanced proprietary technology platforms.

Innovative therapeutic vaccines addressing unmet medical needs, future health challenges and having a market potential of €7 billion in annual sales each.

**Other facts:** Vaxéal is member of the Vaccines Europe and EBE-Biopharma associations.



## THERAPEUTICS

## Vaximax

**President & CSO**

Shirley Longacre, co-founder  
Erwan Barre, co-founder

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Founded 2010

## VAXIMAX

**FIELD OF ACTIVITY**

Development of a high efficacy vaccine against malaria, designed to protect against both P. Falciparum and P. Vivax.

**KEYWORDS:** Vaccine / Malaria

**BACKGROUND**

Vaximax is developing its vaccine based on research carried out by Shirley Longacre at the Institut Pasteur over the last 20 years. Founded in 2010, the company moved to the Genopole biopark in 2013. Its near term objective is to start the phase I clinical trials of its vaccine candidate.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

Vaximax's vaccine candidate is unique in that it targets both P. Falciparum and P. Vivax, which together cause over 99% of all malaria cases in the world. Thus, Vaximax can target the emerging Asia markets as well as African markets.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

In addition to high performance antigens, Vaximax has developed production and purification methods that can be industrialized and has tested a large number of adjuvants (essential components of vaccines) to identify the most active ones with the selected antigens. Vaximax's data base of pre-clinical data is comprehensive.

Vaximax was selected as a laureate of the 2014 Techninov convention.

**COLLABORATIONS SOUGHT**

Vaximax is open to relevant collaboration in the fields of vaccines and malaria.

**3** patents

**3** staff members

**Strengths:** high efficacy in primates, target of two main malaria parasites, strong business model.

**Innovation assets:** intellectual property, pre-clinical data base, design of its vaccine candidate.

## THERAPEUTICS

VAXON Biotech



## Vaxon Biotech

## President

Jean-Pierre Kinet

## CEO

Kostas Kosmatopoulos

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Founded 02/2004

## FIELD OF ACTIVITY

A biotechnological company developing innovative cancer vaccines (for solid tumors, notably for lung, prostate gastric, breast, renal, liver and colorectal cancers).

**KEYWORDS:** Optimized cryptic peptides / Immunotherapy / Vaccine / Oncology

## BACKGROUND

The company's technology is based on an invention originally patented by Dr Kostas Kosmatopoulos and his research group at Institut Gustave Roussy/Inserm: optimized cryptic peptides, which stimulate the immune system so that it specifically destroys tumor cells.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

The vaccines developed by Vaxon target antigens that are over-expressed in tumor cells and very weakly expressed in normal tissues. The company's four products are Vx-001 (mono-peptide, patients expressing HLA-A2), Vx-006 (poly-peptide, patients expressing HLA-A2), Vbx-016 (poly-peptide, patients expressing HLA-B7) and Vbx-026 (poly-peptide, patients expressing HLA-A24):

—**Vx-001** has entered in 2012 a phase IIb clinical trial in NSCLC, in 8 countries in Europe and final results are expected in Q4 2016. It has obtained orphan drug status for small cell lung cancer (NSCLC) from the EMA (in 2007) and from the FDA (in 2009).

—**Vx-006** started a very large phase II clinical trial in 2014.

—**Vbx-016** is currently in a preclinical development phase that will be completed in Q3 2015.

—**Vbx-026** is in the final phase of lead optimization.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Vaxon Biotech entered late 2011 into an industrial partnership with Celgene.



**10** patent families

**25** patents granted in Europe, U.S, Japan, China, Canada

**5** staff members

**Strengths:** a vaccine in advanced clinical development (Phase II b).

**Innovation assets:** optimized cryptic peptides.

## E-HEALTH



## Vigilio

**President**  
Dr Jean-Éric Lundy  
**CEO**  
Karim Aksas

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Founded 08/2005

## FIELD OF ACTIVITY

Vigilio conceives, develops and markets miniaturized wireless biosensors, doubt-removal software and telemedical devices for domestic and medical-professions use.

**KEYWORDS:** Biosensors / Doubt-removal

## BACKGROUND

Vigilio was created in 2005 by an emergency physician with the support of the medical business incubator Paris- Biotech Santé and the Assistance Publique -Hôpitaux de Paris (AP-HP) university hospital center. It has partnerships with public and private laboratories for collaborative national and international research programs.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

**Vigi'Fall®:** home fall detector. Vigi'Fall® analyzes a combination of accelerometric and posturometric data. Several commercial versions are available for use in homes, in assisted living facilities for seniors, or by isolated workers. May be linked to a 24/7 call center.

**Vigi'Therm®:** wireless communicating thermometer (in development).

**Vigi'Coro®:** asymptomatic heart disease detection (in development).

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Vigilio was the coordinator for the European R&D program Fallwatch (FP7\_Capacities\_SME). Also, in collaboration with AP-HP and the private geriatrics hospital Les Magnolias (Ballainvilliers, France), and with the support of the Essonne Department, Vigilio implemented Vigi91, a prospective interventional clinical trial focused on evaluating falls in the home in people over 75 years old with or without early detection devices.

## COLLABORATIONS SOUGHT

**R&D partnerships:** UJF Grenoble, CNRS Bordeaux, Insa Lyon, CEA Leti, QinetiQ (United Kingdom), etc.

**Commercial partners:** Intervox-Legrand, IBM, Europ Assistance, etc.



**Annual turnover:** €622K

**10** patents

**8** staff members

**Strengths:** Vigilio's goal is to become a national and world leader in fall detection in the elderly.

The company benefits from international partnerships and robust clinical validations of its technologies.

**Innovation assets:** patch-style biosensors, doubt-removal, automated alerts.

**Other facts:** member of the Minalogic competitiveness cluster.

## DIAGNOSTICS



## VitaDX

## CEO

Allan Rodriguez

## CTO

Thibaut Troude

## CSO

Marie-Pierre Fontaine-Aupart

## CMO

Pascal Eschwège

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Founded 04/2015

## FIELD OF ACTIVITY

Marketing of an image processing software in fluorescence for the diagnosis of bladder cancer from cells contained within urine samples.

**KEYWORDS:** Diagnostic / Cancer / Fluorescence / Software / Bladder

## BACKGROUND

The company is based on research led since 2008 as a result of a collaboration between the Institute of Molecular Sciences of Orsay (UMR UPSud and the CNRS) and the University Hospital Centre of Bicêtre (APHP), whose goal is to provide solutions for the early diagnostic of bladder cancer.

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

VitaDX markets an image processing software for scanned microscope slides in fluorescence obtained from samples prepared according to a biological proprietary patented protocol.

This approach is in line with current medical practices by providing, in addition to the expertise of an anatomopathologist on advanced cancers, complementary knowledge on the earlier stages of cancer, to provide a complete response.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

This method used by VitaDX had been tested on 180 patients with a sensitivity of 100 %, even for the early stages of cancer, compared with 20% with the classical method of cell observation through transmission microscopy. VitaDX has won the "I-Lab Emergence" prize of the Astre competition, as well as an innovation aid (AIMA) and received human resources support for technology transfer from the INP (CNRS).

## COLLABORATIONS SOUGHT

VitaDX is always looking for Urology and Anatomopathology departments willing to have a role in the development of the firm, particularly for the realization of the clinical trials to come.

1 patent

**Strengths:** company supported by public and private funding, a unique technology, work produced by the APHP, the CNRS and the University Paris Sud.

An experienced and complementary team, a network of investors with knowledge and contacts within the market targeted by VitaDX.

**Innovation assets:** unmatched performances in terms of sensitivity and specificity.

## AGRICULTURE / ENVIRONMENT



## WatchFrog

**President & CEO**

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Founded 11/2005

**FIELD OF ACTIVITY**

WatchFrog markets *in vivo* biotechnological solutions for environmental risk assessment and the evaluation of the therapeutic, toxic or pollutant potential of all types of chemical, cosmetic or pharmaceutical compounds.

**KEYWORDS:** *In vivo* / Toxicity / Environment / Endocrine / Nervous system

**BACKGROUND**

WatchFrog is a service and contract testing provider for major industrial customers, all of whom are world leaders in their respective fields: water, energy, consumer goods, fine chemicals and pharmaceuticals. WatchFrog has a routine screening platform that meets the quality standards required by its industrial customers.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

—In the environmental sector, WatchFrog offers modular systems for the real-time monitoring of the presence of pollutants in industrial effluent.

—For the environmental, chemical and pharmaceutical sectors, WatchFrog has its own automated screening platform (with a throughput of several hundred samples over a few hours). Moreover, WatchFrog sells routine tests for the screening of endocrine-disrupting properties of chemical compounds under the European Union's REACH legislation and Water Framework Directive.

—WatchFrog can also create dedicated disease models for the pharmaceutical industry.

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

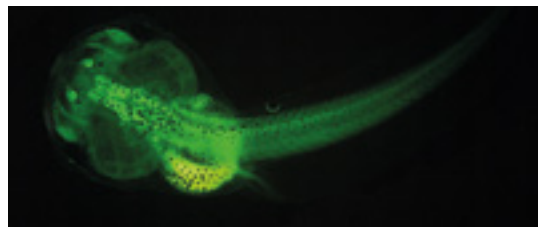
—Collaboration agreement with the Environmental Protection Agency (USA EPA) as part of the TOXCAST program for prioritizing the toxicity testing of large numbers of chemicals.

—Participation in two projects of the French National Research Program on Endocrine Disruptors (PNPRE).

—Coordination of a hospital effluent monitoring station. This project is accredited by the Medicen Paris Region and DREAM clusters; the goal is to develop a tool for the on-site monitoring of toxicants in hospital effluents.

**COLLABORATIONS SOUGHT**

In view of the flexibility of WatchFrog's technology, we are looking for new industrial partners to take up new challenges in lead optimization or environmental risk evaluation.



**Annual turnover:** €950K

**2** patents

**14** staff members

**Strengths:** miniature, industrializable vertebrate models.

A technology platform that complies with international quality standards for the production of aquatic material and molecular screening.

**Innovation assets:** real-time monitoring of environmental risks on industrial sites.

**Other facts:** the creation of custom disease models.

## R&amp;D SERVICES AND PRODUCTS



## XenTech

**President & CSO**  
Jean-Gabriel Judde  
**COO**  
Pascal Leuraud

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Founded 04/2006

## FIELD OF ACTIVITY

XenTech is an innovative biotech company specialized in the preclinical evaluation of cancer drugs and the identification of biomarkers and therapeutic targets.

**KEYWORDS:** Oncology / Preclinical expertise / Predictive models / Biomarkers / Companion tests / New therapeutic targets / Patient-derived tumor xenografts

## BACKGROUND

XenTech was founded in 2006 by researchers from the Institut Curie having over 15 years of experience in preclinical pharmacology in oncology. This spin-off company dedicated to biomarker discovery and preclinical evaluation of anticancer therapies is known worldwide for its expertise in the field of patient-derived tumor xenografts (PDX). Located on the Genopole Campus, its experimental models are housed at the CERFE (see page 57).

## DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

XenTech develops an innovative experimental platform based on one of the world's largest collections of patient-derived tumors xenografts (PDX). The collection is representative of the major types of cancer (breast, lung, colon, prostate) but also includes less common tumors (melanoma, ovarian cancer, renal cancer, pancreatic cancer, glioma, hepatoblastoma).

XenTech's platform is of considerable value for translational research in oncology, notably for drug screening and the identification of biomarkers useful for precision oncology.

XenTech participates in the development of novel cancer therapies by offering its services, models and expertise in preclinical oncology to stakeholders in oncology research.

## CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

- Partnership with the world's biggest pharmaceutical companies involved in oncology.
- Partnerships with major Cancer Centers.
- Member of CAP (Cancer Anti-invasive Program), Oséo's Strategic Industrial Innovation Program that aims at developing a new therapeutic approach for invasive cancers.

In 2012, and for the second consecutive year, XenTech was elected in the Deloitte Technology Fast 500, which is a ranking of the 500 fastest growing technology companies in Europe.

## COLLABORATIONS SOUGHT

- Collaborative partnership with the pharmaceutical industry on drug response biomarkers and new therapeutic targets discovery programs.
- Collaborative partnership with hospital structures to pursue development of the preclinical platform.
- Research fee-for-service contracts with pharmaceutical companies, biotech and academic groups for evaluating antitumor efficacy of their drug candidates.



**Annual turnover:** €3M  
**28** staff members

**Strengths:** a unique panel of breast cancers preclinical models.  
World-renowned experimental platform and scientific expertise.

## R&amp;D SERVICES AND PRODUCTS



## Xpertech

**Managing director**

Gilles Morvan

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Founded 01/2013

**FIELD OF ACTIVITY**

Engineering services for laboratories and sterile production units. Xpertech assists its customers with the management and efficient use of technical equipment.

**KEYWORDS:** Services / Studies / Calibration / Qualification / Maintenance

**BACKGROUND**

With many years of experience in engineering for the laboratories and the pharmaceutical industry, the Xpertech team develops methodologies and a sharp know-how for the improvement of tools and equipment in compliance with GMP and 12 CFR part 11 regulations.

**DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY**

—Specific assistance in projects with single use processes and aseptic filling.

—Technical expertise for BSL2 & BSL3 laboratories (design, manufacturing, SOP, GLP, fluids, waste).

—GLP & maintenance of XSED® software [www.xsed.eu](http://www.xsed.eu).

**CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS**

—In 2014, Xpertech launched its the fullweb XSED® software, which allows laboratories to continuously monitor their equipment and comply with GLP standards.

—With Xpertech, each customer benefits from a specifically assigned engineer for the maintenance of all technical equipments.

**COLLABORATIONS SOUGHT**

—Laboratories and industrials wanting to improve their equipment.

—Service providers who wish to collaborate in opening foreign offices.



**Annual turnover:** €140K contracted in Feb 2014, 70% in export.

**Patent:** 1 in progress

**Staff members:** 1 permanent & 2 consulting engineers

**Strengths:** Extensive technical experience in laboratory equipment & BSL3 requirements. Experiences and methodology for proactive actions.

**Innovation assets:** XSED® expert system for equipment diagnostics.

**Other facts:** network of 4 experienced external consultants available for Xpertech missions.

**BIOMANUFACTURING /  
PHARMACEUTICAL SERVICES**



## YNSECT

### President and Co-founder

Antoine Hubert

### COO and Co-founder

Jean-Gabriel Levon

### Legal and Financial

### Director and Co-founder

Alexis Angot

### Director of upstream R&D and Co-founder

Fabrice Berro

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Founded 09/2011

### FIELD OF ACTIVITY

Ynsect is a pioneer in «insect biotech». The company develops technologies for the high-scale production and transformation of insects, so as to provide high quality and high value products, in the field of nutrition and green chemistry.

**KEYWORDS:** Insect / Biotechnology / Biorefinery / Protein / Chitin / Nutrition / Green chemistry



### CUSTOMER REFERENCES / COLLABORATIONS / HIGHLIGHTS

Ynsect conducts important research such as the DESIRABLE program, funded by the ANR and integrating AgroParisTech, INRA, CNRS, CEA, and IRSTEA. The company is working with several industrial partners and is building a first-of-its-kind demoplant. Finally, Ynsect has won numerous innovation competitions, including the People's choice award at the CleanTechOpen 2014 competition and the French Global Innovation Competition 2030.

### COLLABORATIONS SOUGHT

- Applied research and partnerships with industrial stakeholders.
- Meetings with investors.
- R&D partnerships, especially in H2020 frame.

### BACKGROUND

Ynsect was created in late 2011 at the initiative of four associates. The company started its research activities in the Agoranov incubator in 2012 then joined Genopole in March 2014. In February 2014, Ynsect closed a €1.8M series A funding, led by Emertec Management and Demeter Partners. In November, it closed a €5.5M series B funding led by New Protein Capital, a Singapore-based company.

### DESCRIPTION OF THE PRODUCTS / SERVICES / TECHNOLOGY

Ynsect develops products and services through its Entoraffinerie™ technology platform. It consists of an insect biorefinery, which combines an insect production unit, and a downstream process unit. The first products resulting from this platform are high quality protein and oils for animal nutrition, and chitin derivatives for fine chemicals and biomaterials.



**Strengths:** technology, team, academic and industrial network, IP.

**Innovation assets:** Insect engineering, downstream process for protein and chitin.

**Other facts:** Entoraffinerie™, high-tech insect high-scale production, downstream processing, especially enzymatic purification of chitin.



# INDEX OF CONTACTS

• Adelus Benoît.....	139	• Courthaudon Laurent.....	87
• Aksas Karim.....	144	• Courtieu Bernard.....	113
• Alessio (d') Patrizia.....	83	• Crespi Martin.....	27, 40, 65, 72
• Al-Mahmood Salman.....	101	• Crinelli Jean-Pierre.....	123
• Almorice Étienne.....	118	• Cristian Guy.....	91
• Amato Marcos.....	80	• Crouzet Joël.....	112
• Ammi Chantal.....	35	• Curmi Patrick.....	96
• Amsallem Gilles.....	92	• Dalle Bruno.....	103
• Angot Alexis.....	152	• Daniel Régis.....	68
• Auriol (d') Luc.....	120	• Davesne Frédéric.....	61
• Autier Valérie.....	119	• Decarreux Marie-Noëlle.....	20, 55
• Auvinet Bernard.....	95	• Decaudin Didier.....	129
• Avenard Gilles.....	80	• Delaplace Franck.....	32, 61, 62
• Artigue Hajer Khelifa.....	85	• Delcourt Marc.....	107
• Bajorinas Eugène.....	124	• Deleuze Jean-Francois.....	38
• Barre Erwan.....	145	• Dequier Emmanuel.....	12, 23, 51, 54
• Barrey Éric.....	95	• Dumas Joëlle.....	108
• Beguec Éric.....	122	• Ehrlich Hartmut.....	78
• Belanger Coralie.....	111	• Eschwège Pascal.....	148
• Bendahmane Abdel.....	40	• Essodaigui Marc.....	99
• Beny Hélène.....	99	• Evène Éric.....	133
• Berkani Salima.....	80	• Falcon de Longevialle Andéol.....	27, 65
• Berro Fabrice.....	152	• Faulon Jean-Loup.....	31, 52, 79
• Berthon Philippe.....	90	• Felices Mathieu.....	133
• Besson Jacques.....	73	• Fils Julien.....	121
• Billat Véronique.....	44	• Fontaine-Aupart Marie-Pierre.....	148
• Blache Guy.....	88	• Fouache Romain.....	92
• Blesa Stéphane.....	92	• Fournet Catherine.....	12
• Bouchafa-Bruneau Samia.....	32	• Galtaud Hervé.....	108
• Bourguignon Sandrine.....	141	• Galy Anne.....	25, 31
• Braun Nicolas.....	125	• Gaspard Jean-Pierre.....	64
• Braun Serge.....	105	• Gasselini Céline.....	126
• Burgo Andréa.....	71	• Gauvreau Denis.....	12
• Calias Perry.....	130	• Gazeau Michel.....	104
• Caroff Frédéric.....	116	• Gazin Claude.....	43
• Caroff Martine.....	116	• Giannetti Bruno.....	130
• Caumartin David.....	143	• Girard Mathilde.....	53
• Charpentier Guillaume.....	42	• Gloter Arnaud.....	36
• Chémali Nicole.....	12	• Gonnet Florence.....	68
• Cheradame Hervé.....	136	• Grange (de la) Pierre.....	106
• Cirisan Mihaela.....	135	• Gualano Virginie.....	70, 133
• Clément Marie-Jeanne.....	71	• Guellaen Erwann.....	56
• Cohen Daniel.....	131	• Guyon Thierry.....	117
• Cohen José.....	114	• Hamard Laurence.....	44
• Colotte Marthe.....	60	• Harosh Itzik.....	127

• Hérisson Joan.....	30, 52	• Obolenski Andrew.....	144
• Hibon de Frohen Patrick.....	108	• Onteniente Brigitte.....	132
• Hodges Michael.....	40	• Orlandini Bernard.....	70, 93, 133
• Hubert Antoine.....	149	• Otmane Samir.....	61
• Hüseyin Firat.....	117	• Paslier (Le) Marie-Christine.....	39
• Itzcovitz Julian.....	124	• Pastré David.....	41, 71, 73
• Jais Philippe.....	100	• Pauthenier Cyrille.....	79
• Judde Jean-Gabriel.....	147	• Peltier Éric.....	123
• Kadouche Jean.....	110	• Peschanski Marc.....	10
• Képès François.....	24	• Petit Vincent.....	120
• Kerzerho Jérôme.....	144	• Petit-Teixeira Élisabeth.....	26
• Khinouche Karim-Franck.....	125	• Piat Félix.....	137
• Kinet Jean-Pierre.....	146	• Plichon Bernard.....	142
• Kosmatopoulos Kostas.....	146	• Pouletty Philippe.....	78
• La Carine.....	88	• Prestat Antoine.....	129
• Lacoste François.....	143	• Ragusa Stéphane.....	140
Lameignère Éric.....	12	• Rajaud Marc.....	106
• Launay Richard.....	67	• Real Cécile.....	99
• Legros Véronique.....	68	• Rebollo Angelita.....	129
• Lemkine Gregory.....	149	• Renard Cynthia.....	126
• Leuraud Pascal.....	150	• Renard Loïc.....	126
• Levon Jean-Gabriel.....	152	• Revah Frédéric.....	59, 66, 102, 103
• Longacre Shirley.....	145	• Rimac Laurence.....	64
• Lundy Jean-Éric.....	147	• Rivollet Benoît.....	96
• Malaterre Jean-François.....	94	• Rodriguez Allan.....	148
• Malcuit Isabelle.....	84	• Saker-Delye Safaa.....	59
• Mallem Malik.....	61	• Salpin Jean-Yves.....	33, 68
• Malvoisin Pierre.....	81	• Salanoubat Marcel.....	37
• Manuel Rémy.....	97	• Schmidt Julien.....	88
• Marlière Philippe.....	107	• Schwenck Alain.....	103
• Martin Michèle.....	34, 56, 67	• Scigocki David.....	134
• Martinat Cécile.....	29	• Sennour Mohamed.....	73
• Martinez Jérôme.....	138	• Silverio Delphine.....	141
• Maruotti Julien.....	132	• Sorokin Alexander.....	84
• Masgnaux Jean-Hughes.....	42	• Stockholm Daniel.....	66
• Masson Marc.....	88	• Sun Jian-Sheng.....	97
• Mavilio Fulvio.....	25, 59, 66, 102, 103	• Tahi Fariza.....	62
• Mebarki Kemal.....	114	• Tambourin Pierre.....	12, 63
• Médigue Claudine.....	69	• Teper Daniel.....	110
• Mercey Thibaut.....	137	• Tiennot-Herment Laurence.....	102, 103
• Michoux Franck.....	86	• Tounekti Naceur.....	12
• Monachello Dario.....	72	• Troude Thibaut.....	148
• Moratille Sandra.....	67	• Tschirhard Anthony.....	79
• Morvan Gilles.....	151	• Tuffet Sophie.....	60, 109
• Mullis Graham.....	123	• Vaigot Pierre.....	56
• Nciri Mejdî.....	89	• Vallenet David.....	69
• Nemati Fariba.....	129	• Valo Audrey.....	126
• Nimal Didier.....	128	• Vayn Patrick.....	134

• Vinteler Daniel.....	135	• Znaty David.....	134
• Walton Mark.....	88	• Zotti (de) Jérôme .....	115
• Wincker Patrick.....	28, 37, 69	• Zuliani Vincent .....	105
• Zakhia Raymond.....	53, 94	• Zutphen van Steve.....	118
• Zampatti Frédéric.....	126		

# INDEX OF LABORATORIES, INFRASTRUCTURE AND COMPANIES

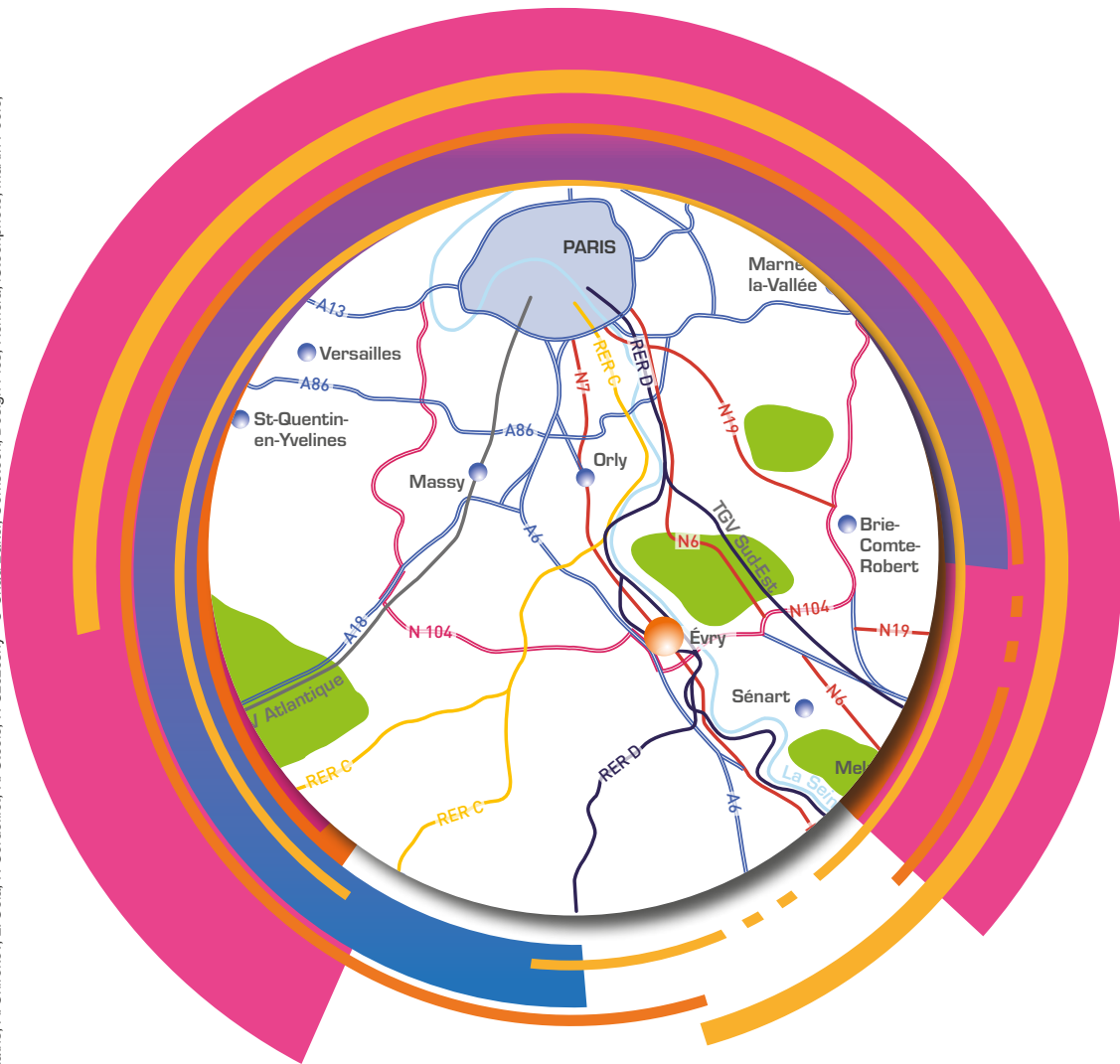
• ABIVAX.....	78	• GeneSignal.....	101
• Abolis Biotechnologies.....	79	• Genethon.....	102
• The abSYNTH Facility.....	52	• Genethon BioProd.....	103
• Acticor Biotech.....	80	• Genethon R&D Division.....	25
• Aelred.....	81	• GenHotel European Research Laboratory for Rheumatoid Arthritis.....	26
• Agdia-Biofords.....	82	• The Genocentre International Convention Center.....	64
• AISA Therapeutics.....	83	• Genomic.....	104
• Algentech SAS.....	84	• Genopole Plant Process Innovation.....	27
• Algobiotech.....	85	• Genopole Plant Process Innovation Platform - [GPPi].....	65
• Alkion Biopharma.....	86	• GenoSafe.....	105
• AlyXan.....	87	• Genoscope - CNS, CEA/Genomics Institute.....	28
• Anova-Plus.....	88	• GenoSplice Technology.....	106
• Archimej Technology.....	89	• Global Bioenergies.....	107
• Aurgalys.....	90	• Groupe IMT.....	108
• The Biobanks, Bioprocesses and HTS Platform.....	53	• Imagenes.....	109
• BIOCORDIS France®.....	91	• Imaging & Cytometry Platform.....	66
• The Biomanufacturing Center Genopole.....	54	• Immune Pharma SAS.....	110
• Biométhodes.....	92	• Inatherys.....	111
• Biosupport.....	93	• InnaVirVax.....	112
• Business Incubator Technical Facility.....	55	• Institute for Stem Cell Therapy and Exploration of Monogenic Diseases [I-Stem].....	29
• CECS /I-STEM The Center for Stem Cell Studies.....	94	• Institute of Systems and Synthetic Biology [ISSB].....	30
• Cell Sorting Workstation.....	56	• IntegraGen.....	113
• Centaure Metrix.....	95	• Irradiation Research Platform.....	67
• Center for Exploration and Experimental Functional Research [Cerfe].....	57	• INTEGRARE Integrated genetic approaches and new therapies for rare diseases.....	31
• The Center for Functional Investigation and Experimental Research in Amphibians and Fish [Cerfap].....	58	• IT for Integrated Biology and Complex Systems [Ibisc].....	32
• DiamLite.....	96	• Keyrus Biopharma.....	114
• DNA and Cell Bank.....	59	• Laboratory for Analysis and Modeling in Biology and the Environment [LAMBE].....	33
• DNA Extraction and Encapsulation Genopole Facility.....	60	• Laboratory for the Genomics and Radiobiology of Keratinopoiesis.....	34
• DNA Therapeutics.....	97	• Laboratory for Innovation, Technology, Management and Economics [LITEM].....	35
• EDE innov.....	98	• Laboratory for Mathematics and Modeling - Évry [LaMME].....	36
• Endodiag.....	99	• Laboratoire MelioVie.....	115
• Epigenomics Program.....	24	• LPS-BioSciences.....	116
• Eukarÿs.....	100		
• Evr@ Platform.....	61		
• ÉvryRNA Platform.....	62		
• Évry-Val-d'Essonne REVE high-speed network.....	63		

• Mabsolys .....	117	• Polytheragene .....	136
• Magpie Polymers.....	118	• Prestodiag .....	137
• Mass Spectrometry Platform .....	68	• Santen SAS (& Novagali Innovation Center).....	138
• Metabolic Genomics CEA / Genomics Institute.....	37	• Sebia .....	139
• Metabrain Research.....	119	• Statlife.....	140
• METAFORA biosystems.....	120	• Stratégique Santé .....	141
• Metemis.....	121	• Structure and Activity of Normal and Pathological Biomolecules .....	41
• MicroScope Platform.....	69	• Structural Biology Platform .....	71
• National Genotyping Center [CNG] CEA / Genomics Institute.....	38	• Study and Research Center for the Intensification of Diabetes Treatment [CERITD].....	42
• New England Biolabs France.....	122	• Texcell.....	142
• Novacyt.....	123	• Theraclion .....	143
• Novian Health .....	124	• Transcriptomics Platform.....	72
• Novolyze.....	125	• Transmission Electron Microscopy.....	73
• Nutrivercell.....	126	• Tumor Functional Genomics and Epigenetics.....	43
• ObeTherapy Biotechnology .....	127	• Unit for Integrated Biology in Adaptations to Exercise [UBIAE].....	44
• OsseoMatrix .....	128	• Vaxeal Research.....	144
• PBPK Modeling Platform.....	70	• Vaximax.....	145
• PEP-Therapy .....	129	• Vaxon Biotech.....	146
• Pharming Group N.V.....	130	• Vigilio .....	147
• Pharnext.....	131	• VitaDX .....	148
• Phenocell.....	132	• WatchFrog.....	149
• PhinC Development.....	133	• XenTech.....	150
• Physikron .....	134	• Xpertech.....	151
• Plant Genome Polymorphism Research Unit [EPGV].....	39	• YNSECT.....	152
• Plant Sciences Institute Paris-Saclay [IPS2] .....	40		
• PlasmaBiotics.....	135		



**FIELD OF ACTIVITY  
OF THE COMPANIES**

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# FIELD OF ACTIVITY OF THE COMPANIES

## Biopharmaceuticals

	VALUE CHAIN IN DRUG DISCOVERY				THERAPEUTICS DOMAIN							Agro biotech	Environment	Bioproduction / Green chemistry	Bioinformatics & informatics	Scientific Material / Medical devices	Industrial biotech	Dermocosmetology	Services	e-&mHealth
	Target discovery / validation	Drug discovery	Drug delivery	Diagnostics	Autoimmune	Cancer	Infectious	Metabolic disorders	Ophthalmology	Nutraceuticals	Other or unspecified									
Abivax		●				●	●				●									
Abolis Biotechnologies														●						
Agdia Biofords												●	●							
AguaSmart													●							
AISA therapeutics		●			●						●								●	
Algentech SAS												●								
Alkion Biopharma												●		●						
AlyXan														●						
Anova-Plus												●	●							
Archimej Technology				●																●
Aurgalys																				●
BIOCORDERIS France®																				●
Biométhodes												●		●						
Biosupport																				●
CECS I-Stem	●	●			●	●		●	●											●
Centaure Metrix																				●
DNA Therapeutics		●																		
EDE innov																				●
Endodiag				●																●
Eukarÿs			●												●					
GeneSignal	●	●									●									
Généthon	●	●			●	●		●	●											
Généthon BioProd					●	●		●	●											
Genomic																				●
GenoSafe	●	●			●	●		●	●			●								●
GenoSplice technology	●															●				
Global Bioenergies												●		●						●
Groupe IMT																				●
Imagene																				●
Immune Pharma SAS		●			●	●														
Inatherys		●			●	●														
InnaVirVax		●		●	●	●														
IntegraGen	●			●				●												●
Keyrus Biopharma					●	●		●	●						●					●
Laboratoire MelioVie																			●	●
LPS-Biosciences		●		●				●												●
LTKfarma		●			●	●														
MABLife		●			●	●					●									●
MAGPIE Polymers													●	●						
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Theraclion																				●
Univercell Biosolutions				●																●
Vaxeal Research		●																		
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WatchFrog	●												●							●
XenTech	●	●																		
Xpertech																				●
YNSECT												●		●						●