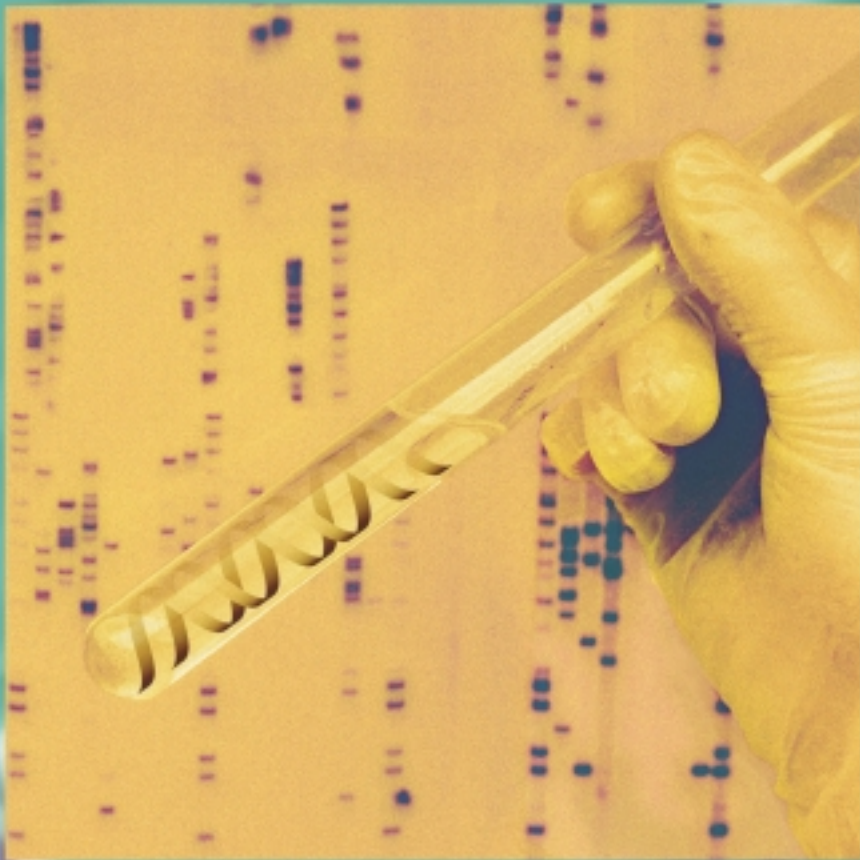


# Genopole®

The genetic and biotech campus



# Genopole® at the heart of the genetic revolution

**By creating Genopole® in Evry, 25 miles south of Paris, France has given Europe a “genetic valley” entirely dedicated to genomic research and to the development of biotechnology companies.**

Located in the Ile-de-France region, Genopole® is the first French campus to be entirely dedicated to genetics, genomics and biotechnologies. Created in 1998 at the initiative of the French government, regional authorities and the Association française contre les Myopathies (French Neuromuscular Dystrophy Association), Genopole® is based upon an original concept: it houses high-level academic research laboratories and innovative biotechnology companies on a single site. Genopole® helps to promote the development of large-scale biological activities and to make France a major competitor in the world of science and industry. In just four years, Genopole® has already become a reference site: today, the campus is home to some twenty or so research laboratories –directed by internationally recognized scientists–, close to forty biotechnology companies and the University of Evry-Val-d’Essonne. The latter works very closely with research centres to provide students with high-level teaching in the subjects of genetics, genomics and related sciences. Genopole® is directed by Pierre Tambourin, who is also the Executive Manager of the national network of genopoles.



## To create and drive a centre for genomic research

Working closely with major national public research institutions and the universities of the Ile-de-France region, Genopole® houses public research structures specializing in genetics, genomics and related sciences.



## To support a centre for the teaching of life sciences

In collaboration with the University of Evry-Val-d’Essonne, Genopole® helps to provide high-level teaching in genomics, gene therapy and bioinformatics, to create mixed research teams and to establish links with other French university centres.

## To foster the development of biotechnologies

The Genopole® site is home to many biotechnology companies. It helps entrepreneurs to start up new companies, particularly during the first round of the financing phase, and provides them with assistance during their first few months of creation.



## To promote the site and genomics

Genopole® manages the infrastructures of the campus, fosters knowledge on genomics, leads the national network of genopoles and contributes to the ethical debate on genetics and genomics related issues.



# Network's strength

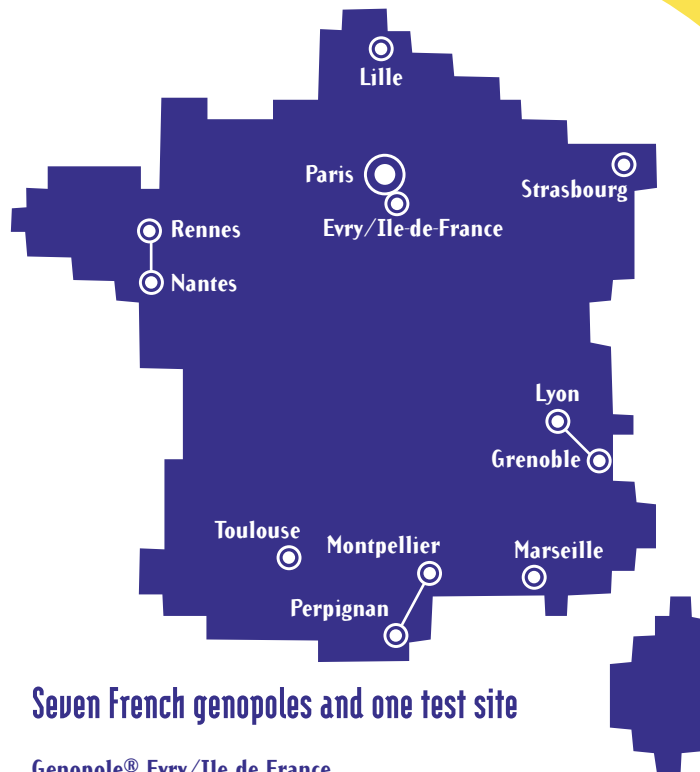
The national network of genopoles, the Genoscope and the National genotyping centre form the National Consortium of Genomic Research (CNRG) created in December 2001. Their mission is to participate in the national research in genomics and functional genomics by offering to the french scientific community heavy technological equipments required to be competitive at the international level.

The goal of the French genopole network is to encourage large-scale development of unifying and cross-disciplinary research projects in biological science as well as the creation of new biotechnology companies.

Seven genopoles have been designated as part of the "Genomics" programme introduced by the French Research Ministry in 1999. Another genopole is being approved: Rennes-Nantes - Genopole Ouest (2002-2004).

In liaison with other academic sites specializing in genomics, these genopoles cover the entire country and are actively involved in the creation of a European innovation zone of scientific research and innovation. In the framework of company creation and industrial development, national and regional collaborations have been initiated with the incubators and regional delegates of Research and Technology. The national network of genopoles coordinates the resources allocated to the genopoles and the managers of the five technological platforms dedicated to unifying, cross-disciplinary projects and to industrial development: "structural biology", "functional exploration", "bioinformatics", "transcriptomics" and "proteomics".

In addition, specific operations are dedicated to scientific and technical information and communication, such as the organization of scientific and industrial conferences and the creation or development of Web sites dedicated to these genopoles.



## Seven French genopoles and one test site

### Genopole® Evry/Ile de France

- Comprising Institut Pasteur in Paris, Ecole Normale Supérieure, Institut Curie, Ecole Supérieure Physique-Chimie Industrielle de la Ville de Paris, Necker-Cochin Hospital, Bichat Hospital, Universities of Paris V, Paris Sud-Orsay and Paris VI, CNRS/Gif-sur-Yvette
- Fostering the development of large scale biological activities in the fields of genetics, genomics and post-genomics; high-level university teaching and a multi-disciplinary pool of skills in both the public research sector and the biotechnology industry; gene therapy; sequencing; genotyping; bioinformatics.

**Lille-Genopole:** multifactorial genetic diseases and therapeutic innovations; genomics and post-genomics technologies applied to age-related diseases.

**Marseille-Genopole:** immunology; developmental biology; medical sciences. Pioneer in the field of the transcriptome.

**Montpellier-Languedoc-Roussillon-Genopole** (in collaboration with Perpignan): biodiversity of the genomes of higher plants, parasites, animals and humans. Only site in France, along with Genoscope, concentrating on the genomics of rice and other tropical crops.

**Rhône-Alpes-Genopole** (Lyon-Grenoble): from gene to understanding the complexity of life. Two major platforms in european excellence clusters: mice imaging facility for functional genomics and proteomics/structural biology.

**Strasbourg-Genopole:** from gene to drug, with emphasis on the structure and function of proteins and genetic engineering in mice.

**Toulouse-Genopole:** identification of the genes involved in diseases and those associated with interactions between bacteria and higher organisms; genome mapping of plants and animals. Specific features: development of bio-chips and work on "ethics and society".

**Rennes-Nantes (Genopole Ouest):** test site at the stage of approvalmarine genomics, agronomics and health.

# Genomics and post-genomics

**The genomic era started in Evry back in 1992 when the Généthon laboratory published the first map of the human genome.**

Genopole® currently houses around twenty academic research laboratories working on complementary disciplines: biology, bioinformatics, mathematics, physics, chemistry, engineering sciences, human and social sciences, etc. The governing institutions are the CNRS (French Centre for Scientific Research), Inserm (French Institute of Health and Medical Research), the CEA (French Atomic Energy Agency), Inra (French Institute for Agronomic Research) and the Universities of Evry-Val-d'Essonne and Paris VII.

## Pooled resources

Genopole® sets up infrastructures that are available to all the partners working on the campus. The following facilities are operational: the Genocenter, a large conference centre, a transcriptome service and a high-speed network. In the process of being installed, an electron and scanning microscope and an irradiator for cells and small animals. An experimental functional research centre, a national DNA repository and a central library are scheduled to be set up within the next three years.



Genopole® has also launched initiatives specifically targeting scientists: post-doctoral research fellowships and incentive grants for particular subjects (financed by the Ile-de-France regional council) to attract scientists liable to become future leaders of high-level research teams.

## Gene therapy

The Généthon laboratory, created in 1990 at the initiative of the French Neuromuscular Dystrophy association and under the scientific direction of Olivier Danos, is working on the design, construction and testing of new vectors to be used in genetic therapy. These studies concern rare genetic diseases such as cancer or diabetes...



## Sequencing

Genoscope, the National Sequencing Centre, directed by Jean Weissenbach, is, among other projects, part of the international consortium that developed the "Human Genome Project", which in February 2001 published the almost complete sequence of the human genome. Genoscope is responsible for sequencing chromosome 14 and is now preparing for the "post-genome" period, providing the scientific community with new tools for the identification of genes.

## Genotyping

The National Genotyping Centre, directed by Mark Lathrop, is dedicated to isolating and characterizing the genes involved in hereditary human diseases. The tools and techniques employed in the National Genotyping Centre are also applied to animals.

## Agronomics

Génoplante, the result of partnerships between the public sector –Inra, CNRS, Cirad (French Centre for international cooperation in the field of agronomic research), IRD (French Research Institute for Development)– and the private sector (Aventis, Biogemme and Bioplante), is a national plant genomics project with a budget of 200 million Euros over 5 years.

The agronomic research unit, directed by Michel Caboche, is developing tools to analyse the genomes of higher plants as part of a wider research programme. A resource centre extending their work is in operation since spring 2002.

## Bioinformatics

A large effort is being devoted to bioinformatics, essential for storing, utilising and understanding the data produced on genomes. Created in 1995, Infobiogen –the national centre for computer science applied to molecular biology– provides the scientific community with powerful analytical tools and access to an extensive range of data bases and training modules. There are several bioinformatics, biomathematics and genetic epidemiology teams working around Infobiogen, directed by Guy Vaysseix, representing some 150 bioinformatics experts on the Evry site.



## Other research areas

Genopole® is also developing research in functional genomics, molecular neurogenetics, prostate diseases, mechanics and robotics, micro- and nano-technologies, etc.

Evry

# teaching

## Innovative training programmes

**Working closely with the University of Evry-Val-d'Essonne, Genopole® fosters the development and transfer of knowledge resulting from academic research in the field of biology.**

In 1998, the University of Evry-Val-d'Essonne created a DEUG (two-year university degree) in life sciences, with a specialization in molecular biology. It also set up an Institute for training in biological engineering and computing and a university diploma in applied genetics.

In 2000, new courses were introduced: a BSc-MSc degree in cellular biology and physiology, two post-graduate courses in "Structures and dynamics of biomolecules" and "Application of mathematics to biology" and a PhD programme in genetics called "From genomes to organisms".

A diploma in functional genomic engineering is offered in collaboration with the University of Paris-VII. Another, in computing applied to biology has started at the beginning of the 2001 academic year, along with a master's degree in bioinformatics.

Two post-graduate courses on the creation of start-ups and local economic development are currently being prepared: one in private and public economic law and the other in management.

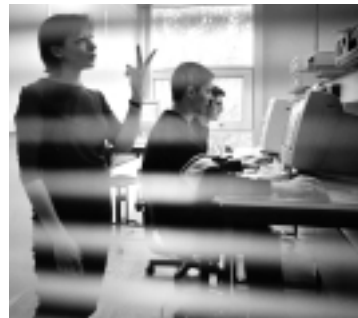


# Entreprises

## A booming biopark

**One of Genopole®'s missions is to boost the emergence of biotechnology-related industries in France, through the creation of a biopark associating scientists with industry.**

The conceptual structure of the Genopole® site is to provide biotechnology "start-ups" with the rare opportunity to settle on a scientific and industrial campus, thus offering a level of coherence to which few other sites can lay claim. At present, the Genopole® biopark is made up of almost forty companies specialized in a very diverse range of biotechnology-related businesses: directed evolution (Nautilus), biopharmaceutics (Genset, UroGène), radio-immunotherapy (Monoclonal Antibodies Therapeutics), cell therapy (Neurotech), diagnostics (ABC pharmaco-genomics (Genset), functional genomics (GenOdyssee), plant genomics (Aventis Cropscience, Rhobio), bioinformatics (Sysra, Genomining), drug delivery (Novagali), etc.



### From day one to round one

Genopole® has developed a system designed to assist scientists wishing to set up biotechnology companies. This system provides assistance from day one (when the initial idea is conceived) to the first round of financing, and even beyond. In the intervening 6 to 24 months, Genopole® will provide assistance to the entrepreneur, helping to attract investors, negotiate with institutions and contribute to the elaboration of a business plan.

### Genopole® 1<sup>er</sup> jour

The Genopole® 1<sup>er</sup> jour pre-seed fund is intended to finance the formulation of a project and to support the creation of a new company. The fund is worth a total of 1.2 million euros.



### The expert committee

Genopole®'s investment and support decisions are always based on the opinion of a committee of independent experts with scientific and industrial backgrounds.

### Business incubation

Incubation consists of assisting the entrepreneur and his project from day one to round one, when the company has not yet been financed. Genopole® provides scientific and economic validation of the project, an audit of intellectual property, technical and logistical aid, communications and access to the Genopole® label, legal and tax assistance along with training. After the company has been created and

a "business plan" has been prepared, Genopole® assists the creators in their first contacts with start-up funds or venture capitalists.

### An incubator for biotechnology companies

The Genopole® incubator provides laboratory space pre-fitted with office space, common facilities (animal house, centrifuges, central washroom, cold room, warm room, etc.) and reception, secretarial and office services, etc.



## Europe

Genopole® is involved in "Quality of Life", the European Union's fifth framework programme for research and technological development. A consortium was built between Genopole® and the European incubators of Oxford, Munich, Jerusalem and Sardinia with the goal of establishing the best practices of incubation and the methods of international collaboration in this field. At the same time, Genopole® is also developing contacts with other European counterparts (bioparks, biocentres, biovalleys), located notably in Ireland, Spain and Germany.

All these activities make it a well known player in the European research and biotechnology community with active involvement in establishing a European research zone.

## A reference site

**Barely three years after its creation, Genopole® is already recognized by senior European and international counterparts.**

Through the quality of its scientists and the dynamic drive of the established companies, Genopole® has rapidly become a very attractive campus. A proven tool in the quest for excellence, international cooperation represents a strategic development key for Genopole®.



## Cooperation with other countries

Moving further beyond than Europe, Genopole® is also forging partnerships with major international players. Thus, Genopole® is working closely with American bioparks, such as the Chicago Technology Park (Illinois), as part of a twinning project between the cities of Paris and Chicago. A partnership was signed in November 2001 with the Quebec Biotechnology Innovation Centre (QBIC). Genopole® has also been approached by Asian bioparks seeking collaborative projects.



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