GENOPOLE

INNOVATION TODAY, EVERY DAY



INNOVATE IN INDUSTRIAL BIOTECHNOLOGY


0.5
1
1.5
2
mL
2.5



STIMULATE INNOVATION

At Genopole, we seek to sound new knowledge, for the development of innovations that will contribute to human well-being, as concerns health and the environment.

The main fields of activity developed on-site are:

- industrial biotechnology,
- computational genomics, and
- innovative therapies.

LINKING SCIENCE... ...TO BIOECONOMY

A pioneer in synthetic biology, Genopole is increasingly attracting researchers and industrials active in that field and the progress being made is enabling a large range of industrial applications.

Abolis ... Altar ... Cearitis ... Evaldepol FabMid ... Fermentation Bioproduction Platform ... Gourmey ... Mass Spectrometry Platform ... Metabolic Genomics Laboratory (*including the systems and synthetic biology unit*) ... NextProtein ... Proteinea ... Pymabs ... Structural Biology Platform ... Structurys ... Synhelix ... Synovance ... Watchfrog ... Ynsect

BIOTECH COMPANY

ABOLIS

FIELD OF ACTIVITY

Development of custom-order microorganisms able to produce molecules of interest in health, nutrition, cosmetics, chemistry and agriculture.

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PRODUCTS / SERVICES / TECHNOLOGY

With its synthetic biology platform, Abolis reliably provides businesses with the existing or novel molecules they need while maintaining sustainability (bio-based and biodegradable materials) and significantly reducing the environmental impact of molecular production.
Abolis contributes to all project phases: from initial study, to intellectual property protection and on through to industrialization.

INNOVATION

Europe counts few actors in metabolic engineering; the technology provided by Abolis gives its clients a head start for their CSR strategies.

ALTAR

BIOTECH COMPANY

ALTAR

FIELD OF ACTIVITY

We develop and operate proprietary technologies that bring microbes to performance suitable for utilization in commercial applications. Our customers use microorganisms to produce food, feed, flavors & fragrances, cosmetics, fuels, chemicals or health products.

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PRODUCTS / SERVICES / TECHNOLOGY

Altar conceives and operates fluidic automated systems for the continuous culture of microbial suspensions.
The company's technology is used mainly in the setting of adaptive evolution experiments aimed at improving microorganism performance via natural selection. It enables the continuous culture of microbial suspensions under algorithm-controlled conditions for as long as is needed.
Altar makes its technology and know-how available through collaborative projects or research services.

INNOVATION

ALE is used to study molecular evolution and adaptive changes in microbial populations over a long-term period of time and under specific growing conditions.

BIOTECH COMPANY

CEARITIS

FIELD OF ACTIVITY

Cearitis proposes biocontrol solutions to fight against pests to protect crops.

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PRODUCTS / SERVICES / TECHNOLOGY

Cearitis proposes natural, complete protection of cultures, with a mechanism of attraction and repulsion. This system takes the form of an autonomous trap and a solution, which attracts flies which have previously been deviated from the cultures, by the repellent solution sprayed on the trees.

INNOVATION

Complementarity skills of co-founders.
The competitive advantages of Cearitis are significant and the solution has a unique process.

BIOTECH COMPANY

EVALDEPOL

FIELD OF ACTIVITY

EvalDepol provides services and laboratory tests for soil remediation and water and air treatment.

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PRODUCTS / SERVICES / TECHNOLOGY

EvalDepol performs laboratory feasibility tests for polluted soils and sites treatment. The company also develops new numerical tools and methods for polluted site management. It has developed an online software KiWi-Maps, helping in environmental data management. It is also working on machine learning to build algorithms based on Artificial Intelligence for site diagnosis.

INNOVATION

Expertise and innovation.
Engineer-PhD specialized in environmental processes.

BIOTECH COMPANY

FABMID

FIELD OF ACTIVITY

We develop a cutting-edge DNA vector to reduce the cost and improve efficiency of cell and gene therapy.

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PRODUCTS / SERVICES / TECHNOLOGY

To improve cell and gene therapy, our DNA vector is both easy to produce in small or large quantities and has all the advantageous properties of a vector: compared to other viral and non-viral vectors, it has high cell transfection efficiency, low toxicity or immunogenicity, high selectivity and high stability. It can be used for transient or stable transfection. As a result, it helps reduce the cost and length of gene therapy R&D programs, as well as manufacturing costs.

INNOVATION

A robust technology with singular qualities, highly valuable for research and scalable for industrial production.

BIOTECH COMPANY

GOURMEY

FIELD OF ACTIVITY

Gourmey is developing a method for the sustainable production of meat from cell culture.

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PRODUCTS / SERVICES / TECHNOLOGY

Gourmey is developing a platform for the sustainable production of meat from poultry cell cultures (duck and chicken). Its first product is an ethical duck foie gras, without force-feeding. Gourmey has unveiled a first prototype of cultured foie gras, having successfully reproduced the effect of force-feeding at the cellular level.

INNOVATION

A scalable production platform and massive gains in terms of environmental impact.
A realistic marketing strategy focused on a first premium market.

BIOTECH COMPANY

NEXTPROTEIN

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CEO, Co-founder

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COO, Co-founder

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FIELD OF ACTIVITY

The French start-up nextProtein uses black soldier fly larvae to convert food & agriculture by-products into ingredients for animal feed with the objective of accelerating the advent of sustainable agriculture.

PRODUCTS / SERVICES / TECHNOLOGY

nextProtein uses European Union-approved biowaste and propriety technologies to farm black soldier fly larvae and produce components to be valorized into animal proteins, particularly for the rapidly-growing aquaculture industry. The purpose of this more sustainable food production model is to furnish a response to the predicted worldwide shortage of proteinaceous nutrition while protecting oceans, reducing food waste and contributing to the circular economy.

In 2020 nextProtein obtained €10.2 million in Series A financing to increase production and continue innovating in the sector. The start-up is furthermore the first company in its sector to receive EU-wide marketing authorization for its products produced outside of European borders.

INNOVATION

The company's 2025 objective is to increase its production capacity to 100,000 metric tons, i.e., approximately 10% of the worldwide insect protein market.

PROTEINEA

BIOTECH COMPANY

PROTEINEA

FIELD OF ACTIVITY

Production as a service (PaaS) platform capable of producing recombinant proteins & enzymes cheaper and on a scale.

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CTO, Co-founder

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PRODUCTS / SERVICES / TECHNOLOGY

We are integrating biology with engineering and molecular sciences to build the next-gen bio-manufacturing platform. Proteinea has developed a patent-pending technology, called InsectaPro, for using insects as mini-bioreactors to produce recombinant proteins on a scale at a significantly lower cost. It's robust, scalable, and significantly more advantageous than conventional bioreactors.

We have a production as a service model (PaaS), in which we secure partnerships with companies to sustainably produce (biobased and biodegradable) their protein/enzyme of interest in order to significantly reduce their environmental impact produce their products at a large-scale and competitive cost coupled with high quality.

INNOVATION

Using insects as mini-bioreactors to produce recombinant proteins on a scale at a significantly lower cost.

BIOTECH COMPANY

PYMABS

FIELD OF ACTIVITY

R&D services in the field of transient expression of recombinant proteins in plants.

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PRODUCTS / SERVICES / TECHNOLOGY

Benefiting from Medicago's high-throughput discovery platform (VLPExpress), Pymabs provides proofs of concepts for antibody expression in the setting of therapeutics. Its services range from antibody development to *in vitro* testing.

INNOVATION

Speedy development and rapid transfer from R&D to bioproduction.

BIOTECH COMPANY

STRUCTURYS BIOTECH

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FIELD OF ACTIVITY

Structurys develops anti-biofilms, anti-biofouling and anti-biocorrosion surface treatments for industrials as an alternative to polluting and costing biocide maintenance.

PRODUCTS / SERVICES / TECHNOLOGY

Structurys offers industrial solutions of surface treatments with preventive anti-biofilms, anti-biofouling and anti-biocorrosion effects.

INNOVATION

Reliable and durable preventive solutions.
Based on a biomimetic approach validated in nature.

BIOTECH COMPANY

SYNHELIX

FIELD OF ACTIVITY

Large-scale DNA synthesis, providing flexibility and effectiveness in bioproduction.

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PRODUCTS / SERVICES / TECHNOLOGY

SynHelix team is devoted to the development of the most robust and scalable DNA synthesis technology using a specifically engineered high-perfomance enzyme with the advantages of:

- One-step generation of long fragments with no maximum length.
- Up to 10000-fold more quantity generated.
- High-fidelity synthesis of any sequence, regardless of GC content.
- Products that are already 99% pure requiring no downstream purification for most applications.
- GMP compatible process.

INNOVATION

We are conceiving the first automated DNA synthesis bioreactor to allow any loss, from academic research to industrial production, to generate any DNA construct without constraints of sequence, length or quantity, with the best achievable purity.

BIOTECH COMPANY

SYNOVANCE

FIELD OF ACTIVITY

Sustainable Bioproduction, Strain development, Synthetic Biology, Circular Economy, Green Chemistry, Novel Proteins

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PRODUCTS / SERVICES / TECHNOLOGY

We produce chemicals and proteins from industrial biomass waste. Our solutions are sustainable, do not pollute the environment and will divert hundreds of tons of waste from landfills.
Our revolutionary Synthetic Genomic platform for engineering robust industrial strains bypasses the bottlenecks encountered in traditional strain development pipelines. Our tailor-made genomes enable customized bioproduction.
We have additionally invented new methods for biomass treatment and recycling waste.

INNOVATION

Our platform includes proprietary genome design tools and several new Molecular Biology and genome engineering/editing methods for DNA assembly and cloning.
New methods for lignocellulose treatment.

LABORATOIRE WATCHFROG

BIOTECH COMPANY

LABORATORY WATCHFROG

FIELD OF ACTIVITY

Watchfrog is the first privately owned laboratory exclusively dedicated to endocrine disruptors. Tests are compatible with all types of samples: cosmetics, chemicals, food industry, packaging, baby care, water and environment.

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PRODUCTS / SERVICES / TECHNOLOGY

Watchfrog provides endocrine testing using alternative methods. Just after hatching, 2-3 millimeter miniature, translucent, aquatic larvae of fish and amphibians represent an in vitro test solution to achieve ethical and regulatory goals. With the contribution of expert partners (toxicologist, regulatory affairs), Watchfrog helps you identifying your risks, your challenges, taking into account your specific context to provide you with the most adapted solutions. Watchfrog tests cover the main endocrine axes targeted by regulatory criteria:

- Estrogen (including Steroidogenic mechanisms): Rapid Estrogen ACTivity In Vivo assay (REACTIV), OECD validation in progress (expected 2023).
- Androgen: Rapid Androgen Disruption Adverse-outcome Reporter (RADAR) assay, OECD validation in progress (expected 2022).
- Thyroid: Xenopus Eleutheroembryonic Thyroid Assay (XETA) OECD TG 248 (2019).

INNOVATION

Use of exclusive aquatic embryonic models (tadpoles or fish fry) which harbor a fluorescent genetic construct allowing a fast and quantitative measurement of the endocrine activity of a sample.

BIOTECH COMPANY

YNSECT

FIELD OF ACTIVITY

Ÿnsect, a pioneering company in the «insect» industry, is breeding and processing insects thanks to its large-scale production and processing technologies to provide high quality and value-added products, particularly for pets, fish of aquaculture, plants and human nutrition.

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PRODUCTS / SERVICES / TECHNOLOGY

Thanks to its technological platform: YnFarm™, which has an insect production and downstream processing units, Ynsect breeds the Tenebrio molitor beetle. Ynsect has the world's largest private R&D centre on the subject and its highly robotised industrial demonstrator began production in 2016.
The first products are :

- **Ynmeal**, an ingredient naturally rich in highly digestible proteins (>70%). Formulated with larvae in a powder form, it is perfectly suitable for the nutrition of farmed fish and shellfish.
- **Ynoil**, a light oil, rich in PUFA, extracted by a mechanical process from larvae. It's perfectly adapted to the farmed fish and shellfish.
- **Ynfrass**, a natural fertilizer developed with the dejections. It significantly increases biomass and yield compared to the chemical fertilizers.

INNOVATION

Multidisciplinary teams, technology, premium ingredients, technology leader, carbon negative, 1st vertical farm worldwide.

LABORATORY

METABOLIC GENOMICS LABORATORY

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FIELD OF ACTIVITY

UMR 8030 « Metabolic Genomics » is the basic research structure of the Genoscope - National sequencing center, department of the Institut de Biologie François Jacob (CEA/DRF).

PRODUCTS / SERVICES / TECHNOLOGY

Biodiversity of (meta)genomes through bioinformatics/biostatistics analysis and exploration of the chemical reactions catalyzed by microorganisms:

- Dynamics and evolution of genomes, taxonomic assignation
- Functional annotation and in-depth experimental elucidation of the metabolism of prokaryotes
- Discovery of new biocatalysts for synthetic chemistry and synthetic biology
- Development of bacterial strains producing compounds of interest for industrial biotechnology from CO2, derived C1 molecules and biomass
- Engineering novel cellular components to elaborate safe GMOs (xenobiology)

INNOVATION

A flagship project, involving the sequencing bioinformatics analysis team, is underway to explore the biodiversity of ocean life (Tara Oceans).

SHARED-USE PLATFORM

FERMENTATION BIO-PRODUCTION PLATFORM

FIELD OF ACTIVITY

The platform is equipped with increasingly-sized fermentors enabling the progressive upscaling needed for the development of microbial (bacteria or yeasts) processes for the production of compounds of interest, such as therapeutics, biofuels or biomaterials.
Thanks to a range of mini-fermentors from 350 to 1000 mL, the platform is able to test several aerobic or anaerobic (bacteria or yeasts) protocols in parallel to determine the production conditions necessary for optimal yield of the compound of interest before progressive upscaling toward the 2 and 5-liter Biostat B fermentors and thereafter to the industrial >20-liter Biostat C fermentor.

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INNOVATION

Equipment and expertise for fermentor bioproduction of compounds of interest (therapeutics, fuels, materials, etc.) using bacteria or yeasts in aerobic or anaerobic conditions.

SHARED-USE PLATFORM

MASS SPECTROMETRY PLATFORM

FIELD OF ACTIVITY

- Development of analysis methods via mass spectrometry and liquid chromatography-mass spectrometry (LC-MS).
- Analysis of synthetic polymers and biological macro molecules 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 com plexes: identification of interacting partners.
- Study of non-covalent interactions (protein-protein, polysaccharide-protein, DNA-ligand, protein-peptide and biomoleculemetal cation interactions).
- Analysis and small molecule assay.

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INNOVATION

Expertise and know-how for the characterization of products from synthetic biology processes using techniques at the forefront of mass spectrometry.

SHARED-USE PLATFORM

STRUCTURAL BIOLOGY PLATFORM

FIELD 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.
- Partnership with Synsight, a company specialized in *in silico* molecular modeling, for drug design and molecule safety prediction.

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INNOVATION

Expertise and know-how for the study and characterization of products from synthetic biology using advanced structural biology techniques such as NMR spectroscopy.

THE IDEAL LOCATION FOR BIO-TECHNOLOGY

Genopole, located just south of Paris, is France's leading biocluster and specialized particularly in life sciences. Its mission is to give impetus today to innovations that will help us live better and healthier tomorrow. Toward this, Genopole supports the creation and development of businesses in biotechnology and research in genomics and postgenomics.

Genopole is putting in place a strategy of expansion based on the development of personalized medicine and innovations in sustainable development.

4 ORIENTATIONS HAVE BEEN DEFINED

FOR SCIENCE...

Genopole supports research for 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 and genetic biomarkers.



FOR BUSINESS CREATION...

Genopole proposes an accompaniment offer, unique in France, for creators of biotech start-ups. This accompaniment is organized into three structures: the Shaker, the Booster and the Growth Hub.
The latter seeks to ensure the development of mature companies and to keep them at the site, thus stimulating job growth.



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.



To enable, nourish, valorize and support innovation, Genopole offers a unique and fertile ecosystem to its young talents, biotech companies and laboratories.



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Genopole benefits from the support of

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Essonne LE DÉPARTEMENT — TERRE D'AVENIRS —
Grand Paris Sud
AFM TELETHON