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Biotechnology & Environment :

16 French biotechs committed to climate change

By [Laura MATABISHI-BIBI](#)

As climate emergency threatens human health, can industrial biotechnology be an invaluable weapon in the fight against climate change? Biotechs are mobilizing to transform tomorrow's uncertainties into opportunities by finding solutions to problems through innovative products, services and processes.

Here is an overview of the emerging trends developed by French environmental startups that could have a positive impact on climate change on agriculture, chemical and energy production.

❏ **Food production**

A third of all human-caused greenhouse gas (GHG) emissions is linked to food [1]. The alternative protein industry has the potential to reduce GHG emissions from agricultural industry explaining the booming of climate tech startups [2]. Alternative protein products include plant-based products, cultivated meat, and fermentation-derived products.

● **Plant-based products**

Research shows that GHG emissions from animal-based food such as beef and dairy are almost double that of plant-based meat [3]. Using plants as alternatives to animal-based products is a challenge that startups are tackling :

- [Umiami](#), founded in 2020, is a pioneer foodtech in the plant-based fillet sector that offers alternatives to meat and fish products
- [Core Biogenesis](#), founded in 2020 in Strasbourg, is building a plant-based bioproduction facility to express recombinant proteins
- [Algama foods](#), a French start-up created in 2013, harvests the potential of algae as an alternative to animal protein

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- **Cultivated meat**

Obtained by taking stem cells from animals and growing them in a cell culture instead of a slaughtered animal, this innovative method reduces the use of land and water as well as the pollution and eutrophication associated with traditional farming [4]. [Gourmey](#), a French cell-based poultry startup working on lab-grown foie gras and [Vital meat](#), a cultivated meat startup based out of Nantes, are pioneers in the development of this technology.

- **Fermentation-derived products**

Traditional fermentation has been around for centuries as a way to preserve and increase the nutritional value of foods, without using chemicals or additives.

- [Funqu'it](#) a startup from Dijon, created in 2022, offers a sustainable source of protein thanks to the fermentation of mushrooms
- [Nutropy](#) is a start-up founded in 2020 from Evry which develops French cheese alternatives by programming yeast to produce bioidentical milk ingredients
- [Yeasty](#) is a french start-up founded in 2021 at Evry producing nutritious and sustainable super-ingredients through the natural power of yeast

- **Agriculture**

The production of insect protein requires 5 times less water, compared to edible protein from beef [5]. Insects can be farmed for consumption in their entirety or to be used in powder form as flour. [Ynsect](#), a Parisian startup created in 2011, was founded in order to breed insects and transform them into premium ingredients for animal and plant nutrition. [Innovafeed](#), is another French biotechnology company that makes insect protein for animal feed.

Another way to improve agriculture is to boost the plant yield, as proposed by two french start-ups : [Micropep](#), an innovative plant biotech developing proteins capable of adjusting the natural capacities of plants without modifying their DNA and [Alkion Bio Innovations](#), created in 2017, which develops a technology for biostimulating plant genes in a bioreactor, without genetic modification.

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❑ Chemicals

Chemical-based products have an armful impact on the environment by contributing to the CO₂ emission. Textile dyeing is estimated to be responsible for about 20% of the ocean pollution and 52% of the fashion industry's carbon impact [6]. Reduce the environmental footprint is the objective of biotechs as [Pili](#), a Toulouse start-up created in 2015, which produces sustainable dyes and pigments by using industrial fermentation and green chemistry or [Ever dye](#) a biotech which produce a dye without chemical inputs and 15 times less energy-intensive.

❑ Energy production

The energy sector is also tackling the climate change, accounting for more than two-thirds of global GHG emissions. [Spark cleantech](#) develops an alternative to hydrogen production by using methane plasmolysis. In 2015, [Sweetch energy](#) is born at Rennes is order to use the power of osmotic energy to produce clean electricity from salt water.

References:

- [1] Crippa *et al.*, *Food systems are responsible for a third of global anthropogenic GHG emissions*. 2021. Nature foods.
- [2] Hannah Matthews, *How Alternative Proteins Help to Solve Environmental Challenges*. 2021. Institute for the environment.
- [3] Xu *et al.*, *Global greenhouse gas emissions from animal-based foods are twice those of plant-based foods*. 2021. Nature foods
- [4] Chodkowska *et al.*, *Sustainable Future Protein Foods: The Challenges and the Future of Cultivated Meat*. 2022. Foods.
- [5] Oonincx DG *et al.*, *Environmental impact of the production of mealworms as a protein source for humans - a life cycle assessment*. 2012. Plos One
- [6] *The impact of textile production and waste on the environment (infographic)*. 2022. European parliament

GENXMAP - Cell to data

By [Katia VILLION](#)



Partner of the first edition of the Forum BiotechnoSUD organised last October, GENXMAP is a start-up, created in 2020 in Marseille. [Raheleh Shayan](#) and [Julien Le Carrer](#) have founded the start-up when lack of local and fast services in genomics and transcriptomics domain was observed.

GENXMAP provides services in Genomics, Transcriptomics, Bioinformatics, biostatistics and project studies, from Cell to Data. They propose a wide range of solutions like :

1. Nucleic acid purification with high quality from any sample type (FFPE, Blood, Cell suspension and tissue, Plant, microbiome and liquid biopsies, etc..) ready for any downstream application
2. Biomarker analysis and genotyping via different strategies
3. DNA and RNA Library preparations for Whole Genome, Whole Exome, metagenomics, or bulk RNA sequencing
4. Bioinformatics and biostatistics analysis

These services are supplied for the Clinical and Research Institutes, Hospitals, Pharmatech, Biotech and food industries [1].

GENXMAP is composed of a dynamic team that offers qualified, accurate and efficient solutions. Moreover, they simplify organisation, optimise processes and accelerate lead times. Altogether, they develop fast and reproducible services, taking care of the different steps of a project from Cell to Data, via an “End-to-End solution”. Their strength is to be polyvalent and being able to adapt to various projects.

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More precisely, they offer 3 types of services :

- Wet Lab, with regular or on-demand services in Genomics and Transcriptomics in different level of complexity
- Dry Lab, with project studies, data analysis via bioinformatics or biostatistics in collaboration with experts
- R&D with Research and Development Engineering Platform

Recently, the start-up announced their new solution service in single-cell RNA sequencing and spatial transcriptomics. Single cell RNA sequencing allows to investigate the gene expression in a single cell resolution while spatial transcriptomics allows to localize and analyze the transcriptome within the cells and tissue [2].

Don't hesitate to contact them for any collaboration in the Basic and Clinical Research field !

The Newsletter team warmly thank [Nils Collinet](#) and [Raheleh Shayan](#) for having answered our questions.

References :

[1] <https://www.genxmap.com/about-us>

[2] <https://shoutout.wix.com/so/73OEYK1lk?languageTag=en>

Meet our NEW Bureau!

Réseau Biotechno is a consortium of associations interested in the biotechnology sector wishing to connect young researchers and their future employers, while guiding them on the possible career options and introducing them to the national and international ecosystems. Our programs include our monthly Webinar and Newsletter and yearly forums all over France. Discover our new bureau of this year !



[Radi Khodr](#) - President

Hey there! Having traveled from Lebanon to Paris where I earned my master's degree in R&D Biotechnology at Sorbonne Université, I moved to Strasbourg to start my PhD on the discovery of enzymes that break down chemical compounds called PFAS using droplet-based microfluidics. Elected President, I am looking forward to valorize the communication and collaboration between biotech enthusiasts all over France and to offer everyone in the ecosystem a very pleasant experience. I am very fond of lebanese cuisine and I can convince you that cooking isn't very far from scientific experiments. My goal to spread a little bit of my lebanese spices wherever I go!



[Dina Rafeh](#) - Vice President

Hey, it's Dina. My friends call me Dandoun. I come from Lebanon, and I have moved to France for the sake of pursuing my master's degree. At the moment, I'm working as a Biotechnology Sales Specialist in the industrial world. As a young scientist that recently joined the private sector, I recently have been elected to be the Vice president at Réseau Biotechno to help support every young scientist in France looking to do this career transition. I am very eager to network with all biotech enthusiasts and I'm looking forward to organizing the Paris Forum. Lots of exciting stuff is on the way!



[Serena Petracchini](#) - General Secretary

Hi I am Serena from the hills of Lazio, Italy. I am a postdoctoral researcher at Institut Pasteur, where I also obtained my PhD in microbiology. I am working on Bacterial Toxins where I investigate host-pathogen interactions. I joined Réseau Biotechno upon realization of how challenging it could be for PhD students to find their path toward career after PhD studies. Thanks to the Réseau newsletter, I participated to a Biotechno event which I found very helpful, and this is how decided to join. I realized that I could help other members or students in Réseau using the experience I got from other student and cultural associations, and now I am the general secretary of reseau, involved in internal communication between members of the bureau and associations!



[Darawan Tabtim-on](#) - Treasurer

Hi! I am Dara. I am originally from Bangkok, Thailand. I am currently a first-year PhD student studying mononuclear phagocytes and their contribution to cutaneous immunity in the Immunity and Cancer Unit, Institut Curie. I joined Réseau Biotechno to have something fun outside of the lab! A little bit of fun fact, I just bought an oven, and I'm overly (and probably obsessively) excited about it! I baked a lot these past weeks. It's kind of like doing an experiment but in my own kitchen!

The **REAL** section (for **Read** – Analyze – **Listen**) highlights our recommendations of the month.



What you can **READ** this month ?

- [*Des gènes, des synapses, des autismes*](#) by Thomas Bourgeron

In his new book “Des gènes, des synapses, des autismes” Thomas Bourgeron shares his fascinating research uncovering genes associated with autism, and what it teaches us both about how the brain works and about the diversity of autistic persons.



What you can **ANALYZE** this month ?

- [*Career: Tales of the Unexpected*](#) by N.A Santiago, S. Konecki, L. Porter and H. Virk for eLife Magazine

In short story format, four scientists share an unexpected event that changed the path of their scientific careers !



What you can **LISTEN** to this month ?

- [*Podcast "Le déclic"*](#) by Elodie Chabrol in partnership with Bpifrance

Tune in to this podcast (in French language) to discover the diverse world of Deeptech ! Greentech, legaltech, femtech, edtech...listen to the stories of 10 researchers who founded a startup based on their research results.



SPECIAL EVENT OF THE MONTH

31th May: Webinar “An insight into Data Science”

Continuing our webinar series, this month you can meet 3 speakers:

- **Ludovic Gardy** – Research Engineer at CNRS
- **Afaf Saaidi** – Data Science consultant at Capgemini Engineering
- **Jérôme Wojcik** – Chief Data Officer at EVbiome

Wondering what exactly is a data scientist in the biotechno/biopharma field ?
Come and meet the speakers and ask your questions about how to develop a career in the data science !



www.reseau-biotechno.com

Follow us  

An insight into data science

Réseau Biotechno is pleased to invite you to discuss what it means to be a data scientist in the biotechno/biopharma field. Come meet our speakers and ask your questions about the path and the skills that will make evaluate your professional career towards this environment.


Wednesday
31st of May, 18h30


Online

REGISTER



LUDOVIC GARDY
 Research Engineer
CNRS



AFAF SAAIDI
 Data science consultant
CAPGEMINI ENGINEERING



JEROME WOJCIK
 Chief Data Officer
EVbiome



May
 10th

Round-table : “L’après-thèse : public, privé ou entrepreneuriat?” by Association Nan’Thèse ADBS
Wednesday 10th, 1:30 to 3:30 pm
Where ? In Nantes

Click [here](#) for registration



May
 22nd -24th

Pint of science event
Where? In several town all over the world

Pint of Science is a worldwide science festival which brings researchers to your local pub/cafe/space to share their scientific discoveries with you.

Have you booked your tickets yet ?

Click [here](#) for more information!



May
 23rd -25th

WorkInHealth Foundation Career Fair by EIT health
Where ? Online

This Career Fair will gather recruiters, students, and graduates, offering a unique opportunity to share future recruiting prospects, seek out emerging talent and identify European healthcare community needs.

Register [here](#)



May
 23rd

Les belles rencontres de l’innovation
Tuesday, 23rd May- from 4:00 pm to 8:30 pm
Where ? In Strasbourg

Whether you work in health science as a researcher or in company or as student, come and meet with people from the same field as you to make collaboration, discover the new innovation and much more

For more information and registration, click [here](#)

