



FLASH NEWS

No. 47-2021 – THE BIOTECH INDUSTRY INTELLIGENCE REPORT

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3641 - A new process to transform used plastic bottles into vanilla flavouring.

Scientists from the School of Biological Sciences at the University of Edinburgh, United Kingdom, have discovered how to break down polyethylene terephthalate (PET) into terephthalic acid then transform it into vanillin using modified *Escherichia coli*. With this process – which is similar to that used to brew beer – they were able to transform 79% of the acid into vanilla flavouring. The scientists are now looking to increase the plastic conversion levels and scale their process so large quantities of plastic can be recycled. The team is also looking into producing other molecules using the same process.

Info: Extracted from vanilla beans but mainly produced synthetically from petroleum products, vanillin is used extensively in the food, cosmetics and pharmaceutical industries. The flavouring can also be used to produce cleaning products and herbicides.

Publication: Microbial synthesis of vanillin from waste poly(ethylene terephthalate). Journal: Green Chemistry. DOI: 10.1039/D1GC00931A.

More information: <u>Ed.ac.uk</u>, <u>The Guardian.com</u> En savoir plus : <u>Ca m'interesse.fr</u>, <u>Neon Maq.fr</u>, <u>Le Point.fr</u>, <u>Science Post.fr</u>, <u>L'Usine Nouvelle.com</u>

3642 - Discovery of a new class of aromatic enzymes in plants and identification of a defence mechanism.

Plant Advanced Technologies (PAT) a plant-based biotech company specialising in the production of innovative and rare active ingredients for the cosmetic, pharmaceutical and agrochemical markets, the Laboratoire Agronomie et Environnement (LAE) at the University of Lorraine, and the Laboratory of Plant Gene Expression at Kyoto University, Japan, took part in a study to '*investigate*' a new class of plant defence molecule equipped with synthesis mechanisms unknown to date. Their work led to the discovery of a new class of enzymes identified in plants producing highly original self-resistance mechanisms (O-prenylated substances). '*This discovery will allow us to increase the portfolio of molecules we are able to produce'*, said Frédéric Bourgaud, Chief Research and Innovation Officer at PAT and co-author of the article. '*We are already studying the use of these enzymes in the industrial processes of Plant Advanced Technologies PAT, notably within our wholly-owned subsidiary CELLENGO, a producer of rare high-added-value molecules through industrial fermentation technologies.*'

Publication: Parallel evolution of UbiA superfamily proteins into aromatic O-prenyltransferases in plants. Journal: PNAS. DOI: 10.1073/pnas.2022294118.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>

3643 - A new protein synthesis method.

Previously, scientists were unable to act on protein folding pathways and could only step in at the end of this process, retaining solely the correctly folded proteins. Now, researchers at the Schulich Faculty of Chemistry at Technion, Israel, have managed to develop a new methodology to expose just two cysteines simultaneously and thus ensure the formation of the desired disulphide bond.

<u>Publication</u>: General synthetic strategy for regioselective ultrafast formation of disulfide bonds in peptides and proteins. Journal: Nature Communications. DOI: 10.1038/s41467-021-21209-0.

En savoir plus : Diplomatie.gouv.fr

3644 - Discovery of a new fungal enzyme that could help optimise the production of biofuels and biobased chemicals.

Researchers at the University of York, United Kingdom, in collaboration with the Department of Energy's Great Lakes Bioenergy Research Center at the Wisconsin Energy Institute and the University of Wisconsin, United States, have discovered that an enzyme produced by a fungus called *Parascedosporium putredinis* NO1 can act as a catalyst to cause a biochemical reaction that breaks down lignocellulose.

Publication: A multi-omics approach to lignocellulolytic enzyme discovery reveals a new ligninase activity from *Parascedosporium putredinis* NO1. Journal: PNAS. DOI: 10.1073/pnas.2008888118.

More information: York.ac.uk

3645 - Chemical ligation catalysed by enzymes: a new way to synthesise proteins is gaining momentum.

Vladimir Torbéev, research director at the Institut de science et d'ingénierie supramoléculaires (ISIS, CNRS), listed the advantages and potential applications of this synthesis pathway, which uses organic synthesis methods to prepare short peptides then join them up to obtain larger molecules. This opens the door to creating chains of several hundred units. Chemical ligation could be used to create new proteins on demand – which could then be used to make biopharmaceuticals (antibodies) – or reproduce natural proteins to study how they operate under various conditions (how they adopt their 3D form, self-assemble, catalyse reactions, interact and transport other molecules into cells, for example). In the biotechnology field, they could be used to introduce unconventional functions into peptide chain structures, or even to invent new proteins. In an interview, Vladimir Torbéev explained that teams at the University of Strasbourg, the CNRS, INSERM and the University of California, United States, had recently developed an artificial enzyme that helps ligate short peptides, making it possible to produce proteins similar to those that exist in nature and totally new ones. Now they have demonstrated the catalytic activity of the enzyme specially designed to ligate peptides, they are researching how to boost its catalytic efficiency to synthesise new proteins.

Publication: Acyl Transfer Catalytic Activity in De Novo Designed Protein with N-Terminus of α-Helix As Oxyanion-Binding Site. Journal: Journal of the American Chemical Society. DOI: 10.1021/jacs.0c10053.

En savoir plus : CNRS.fr

3646 - Discovery of a series of enzymes in the stomach of bovids capable of breaking down different types of plastic.

Researchers at the <u>University</u> of Natural Resources and Life Sciences in Vienna, Austria, have shown that enzymes discovered in the rumen of bovids can break down three types of polyester: polyethylene terephthalate (PET), polybutylene adipate terephthalate (PBAT) and polyethylene furanoate (PEF), commonly used to produce bottles, textiles and bags, and so on. The enzymes degraded these substances within one to three days when kept at a temperature of about 40°C to match that of a cow's stomach. Having found that there are several types of enzymes in the digestive systems of ruminants, the team will start trying to identify the most important bacteria among the thousands present in the rumen, followed by the enzymes they produce. However, Ramani Narayan of Michigan State University, said: *'It has to be proven that the enzymatic activity is the same or better than what is commercially being implemented today. If they were to fast-track to an engineering process, then there is a lot of work that needs to be done in terms of what is the yield of the product, what is the productivity and so on, to compare with existing enzyme technology.'*

<u>Publication</u>: Together Is Better: The Rumen Microbial Community as Biological Toolbox for Degradation of Synthetic Polyesters. Journal: Frontiers in Bioengineering and Biotechnology. DOI: 10.3389/fbioe.2021.684459.

More information: <u>NewScientist.com</u> En savoir plus : <u>Daily Geek Show.com</u>, <u>Le Parisien.fr</u>, <u>Netcost Security.fr</u>

2. RESEARCH PROJECTS & PROGRAMMES

Project launches

3647 - Official launch of the Horizon Europe programme in France.

With a total budget of €95.5 billion for 2021-2027, this programme aims to 'strengthen the scientific and technological infrastructure of the European Union, boost its competitiveness (including industrial competitiveness), deliver on the Union's strategic policy priorities and contribute to tackling global challenges, including sustainable development objectives' across four 'pillars'.



Source: Industrie & Technologies.com

The first pillar, concerned with funding frontier research, will have a budget of \in 25 billion. The second pillar, whose goal is to support extensive collaborative projects, will receive a budget of \in 53.5 billion. The third pillar, which also includes funding from the European Institute of Innovation and Technology and the *'European innovation ecosystem'* will have a budget of \in 13.6 billion. Last up is the *'cross-disciplinary'* pillar, designed to support *'activities to attract a new talent pool, encourage workers to move around and guard against brain drain from the EU'*. It will receive a budget of \in 3.4 billion. This programme will operate on the basis of *'open and competitive'* calls for tenders.

Info: The official launch was marked by a <u>webinar</u> and followed by the publication of a series of themed webinars presenting the specific goals of each pillar.

En savoir plus : Horizon Europe.gouv.fr, Industries & Technologies.com, Euractiv.fr

3648 - Launch of the VOLCAN project (VOL avec Carburants Alternatifs Nouveaux, or flying with new alternative fuels).

The aim of the project, which involves Airbus, Safran, Dassault Aviation, the French aeronautics, space and defense research lab ONERA, TotalEnergies and the French Ministry of Transport, is to fly single-aisle aircraft and commercial aircraft, as well as helicopters, with 100% Sustainable Aviation Fuel (SAF) by the end of this year. The study will give Airbus the opportunity to characterise and analyse the impact of SAF on an A320neo test aircraft and its on-ground and in-flight emissions. For its part, Safran will focus on compatibility studies related to the fuel system and engine adaptation for commercial aircraft and helicopters and their optimisation for various types of 100% SAF. ONERA will support Airbus and Safran in analysing the compatibility of the fuel with aircraft systems and will be in charge of preparing, analysing and interpreting test results on the impact of 100% SAF on emissions and contrail formation. Dassault Aviation will contribute to the material and equipment compatibility studies and verify 100% SAF biocontamination susceptibility. TotalEnergies will provide the different types of SAF used by this project. The study will support efforts currently under way at Airbus and Safran to ensure the aviation sector is ready for the large-scale deployment and use of SAF as part of the wider initiative to decarbonise the industry. It will also contribute to the ultimate goal of achieving 100% SAF certification in single-aisle commercial aircraft and the next generation of business jets.

More information: Press release

3649 - Launch of the SmartDigiCat chair to develop safer, more eco-friendly optimised catalytic processes.

Created by the higher education establishment <u>Centrale Lille</u> and led by the <u>Vaalbio</u> team at the <u>Unité de catalyse</u> <u>et chimie du solide</u> (UCCS), together with Cristal laboratory, the French national institute for research in digital science and technology (INRIA) and Solvay, Horiba and TeamCat Solutions, the goal of this industrial chair is to combine high-throughput catalytic screening, theoretical chemistry, human sciences and artificial intelligence to develop new catalytic processes that draw on biobased raw materials. The chair has a total budget of €2 million, €300,000 of which from Lille European Metropolis (a public authority), and will run for three years.

En savoir plus : Formule Verte.com

Inaugurations

3650 - Inauguration of the BioResourceLab, specially designed to recover organic waste.

Located at the Écopôle Suez/Grand Narbonne, Aude, France, and up and running since last January, the Suez group's international research and innovation centre has been designed to turn organic waste into bioresources. The 1,000 m² complex (250 m² of labs and a 350 m² testing centre) aims to improve existing processing technologies and solutions and explore new ways to recover organic waste and produce different forms of bioenergy, biofuels, biomaterials and alternative fertilisers, as well as green chemistry molecules. The work that will be conducted there will be developed in partnership with education and research institutes in the education district, especially INRAE and its Laboratoire de Biotechnologies de l'Environnement, which is based in Narbonne. Collaborations will also be set up with start-ups and technology suppliers to test and develop innovative solutions. The BioResourceLab will share the knowledge acquired with the scientific, institutional and normative communities, and could provide theoretical and operational training, in particular with the SupAgro Montpellier agricultural institute and the Universities of Montpellier, Hérault, and Perpignan, Pyrénées-Orientales.

More information: Press release En savoir plus : Communiqué de presse, L'Usine Nouvelle.com, Formule Verte.com, La Dépêche.fr

Ongoing projects

3651 - After-Biochem project: transforming the sugar industry's co-products and other nonfood biomass feedstock into biobased products.

Launched in May 2020, this European project led by Afyren, a company specialising in the production of biobased molecules of interest via fermentation, will open the door to the industrial production of seven organic acids by fermenting the co-products of sugar beet production. During its first year, the partners announced the launch of construction work on a biorefinery named Afyren Neoxy in Carling Saint-Avold, France. Within the scope of the project, Afyren signed a long-term procurement agreement with Südzucker, the leading European sugar producer, to secure the plant's sugar beet co-product supply. In the same year, Afyren also published the results of a life cycle analysis (LCA). Carried out by the sustainable development consultancy Sphera, the LCA showed that 'Afyren's biobased acids have on average a carbon footprint 81% lower than equivalent petroleum-based products.' Looking to the future, the partners announced that the project's second year would focus on finalising construction of its unit and accelerating its recruitment campaign to ensure the operating system and the manufacturing team are ready by the end of this year. Afyren hopes to begin producing its organic acids in early 2022. The partners will also work on strengthening the project's value chain to ensure it can be replicated.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

3652 - Aeronautics: take off for the first long-haul flight propelled by Sustainable Aviation Fuel produced in France.

Air France-KLM, TotalEnergies, Groupe ADP and Airbus announced the completion of the first long-haul flight between Charles de Gaulle airport in Paris, France, and Montreal, Canada, powered by Sustainable Aviation Fuel (SAF). The first SAF to be produced in France was made from used cooking oil by the broad energy group. It made up 16% of the fuel used during this flight. The SAF was certified ISCC-EU by the International Sustainability & Carbon Certification System, an independent body that guarantees sustainability, and reduced the flight's carbon emissions by 20 tonnes. The flight illustrates the four partners' shared ambition to decarbonise air transport and develop a French SAF production industry – a prerequisite for its increased use at French airports.

Recap: French legislation currently requires all flights departing from France to incorporate 1% of this kind of biofuel from 2022. Under the European Green Deal, biofuels must make up 2% by 2025 and 5% by 2030.

More information: Press release En savoir plus : Communiqué de presse, Environnement Magazine.fr, Formule Verte.com, Ze Green Web.com, L'Usine Nouvelle.com

3653 - Aeronautics: a successful first flight for a helicopter partially powered by biofuel.

In Germany, Airbus, Safran Helicopter Engines, TotalEnergies and ADAC Luftrettung, a German not-for-profit specialising in helicopter rescue, successfully flew an Airbus H145 utility helicopter equipped with Arriel 2E engines with a blend of 60% standard kerosene and 40% second-generation biofuel produced by TotalEnergies. According to ADAC Luftrettung, the use of biofuels could reduce its carbon emissions by around 33%, equivalent to 6,000 tonnes of carbon emitted over the course of its 50,000 missions each year, which cover around 3.3 million kilometres. Encouraged by this first successful test flight, Safran Helicopter Engines intends to 'fly helicopters on 100% biofuel by 2023'.

En savoir plus : L'Usine Nouvelle.com, La République des Pyrénées.fr

3654 - Aeronautics: a successful first international flight powered by over 97% renewable fuel for Global Bioenergies and Swift Fuel.

On 15 June this year, the French company which develops substitutes for petroleum products derived from renewable resources, and Swift Air GmbH, a specialist in 'green' fuel for aircraft, successfully flew a piston engine aircraft powered by a lead-free, 97% plant-based fuel produced by Global Bioenergies. The Avgas (short for aviation gasoline) used for this flight between Saarbrücken, Germany and Reims airport, France, is an environmentally friendly alternative to the 100LL fuel usually sold for this aircraft type.

The two partners described this first international flight as 'the first step towards a biobased aviation fuel market'.

Info: The jet fuel market for piston aircraft accounts for 100 million litres per year in Europe and 900 million litres in the United States.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>France TV Info.fr</u>, <u>20 minutes.fr</u>, <u>Natura Sciences.com</u>, <u>L'Usine</u> <u>Nouvelle.com</u>

3655 - First enzymatically recycled bottles produced.

A consortium comprising Carbios, L'Oréal, Nestlé Waters, PepsiCo and Suntory Beverage & Food Europe announced that it had successfully produced the first food-grade polyethylene terephthalate (PET) bottles made entirely of plastic recycled by enzymes. Using the enzymatic recycling technology for PET developed by Carbios, each consortium member successfully produced sample bottles for one of its flagship products, including Biotherm®, Perrier®, Pepsi Max® and Orangina®. The brands will now work together to scale up this innovative process to help satisfy the global demand for sustainable packaging materials. With this in mind, Carbios is planning

to inaugurate its industrial demonstrator next September and will go on to commission an industrial unit with an annual capacity of 40,000 tonnes by 2025.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Premium Beauty News.com</u>, <u>Emballages Magazine.com</u>, <u>Formule</u> <u>Verte.com</u>, <u>Plastiques & Caoutchoucs.com</u>, <u>L'Usine Nouvelle.com</u>

3656 - Utilising industrial off-gases: LanzaTech and BASF reach their first milestone.

The New Zealand-based company specialising in carbon recycling inspired by biotechnology and the German chemicals company announced that they had reached a first important milestone in their project to develop a bioprocess to use the carbon contained in industrial off-gases as a feedstock for the production of chemicals. The two partners have succeeded in producing n-octanol at laboratory scale from carbon monoxide and hydrogen – the main components of emissions from the steel industry, for example – *'with the help of special bacteria'*. In just a few months, the companies managed to develop a suitable strain of bacteria to produce n-octanol. These bacteria are not only capable of using varying ratios of carbon monoxide, hydrogen and carbon dioxide, but are also tolerant of many different impurities, meaning the off-gases do not need to be scrubbed first. They also developed an innovative process concept to enable continuous product generation and purification. This collaboration is paving the way for the production of chemicals such as n-octanol through gas fermentation.

Next step: the teams will focus on optimising the bacteria and technology design to deliver an increasingly efficient production process.

More information: Press release

3657 - Danimer Scientific: a new grant for a research project on pennycress oil as a potential feedstock for PHA production.

The American biodegradable materials producer announced that it had received a Small Business Innovation Research (SBIR) grant to fund a research project to study the possibility of using pennycress oil as a feedstock to produce polyhydroxyalkanoate (PHA). Conducted in partnership with the University of Minnesota's Forever Green initiative, the project will also determine whether pennycress oil can be used as an alternative to supplement the canola (rapeseed) oil currently used as a feedstock by Danimer Scientific to produce its bioplastic Nodax®. Within the scope of the project, the researchers will compare pennycress oil extracted from wild seeds with plants domesticated as winter cover crops.

More information: Press release

3658 - Global Bioenergies: successful scale-up of its biological isobutene production process, relocation of most of its production units to Pomacle, and launch of a value chain in 2022.

Over the last few months, the French biotechnology company has developed a new version of its isobutene process, which is now divided into two consecutive stages. The first stage, which spans the entire chain up to the isobutene precursor, can now be conducted using existing tollers' fermentation capacities, representing very high fermentation volumes. Only the second step, during which the precursor is converted into isobutene, needs to be carried out in a specific explosion-proof reactor (ATEX), such as those built by Global Bioenergies at its 500-litre pilot plant in Pomacle, near Reims, France, and the 5 m³ demonstrator in Leuna, Germany. Following a first successful full-scale test of the first stage in Pomacle in the 180 m³ industrial fermentor belonging to ARD, and a successful pilot-scale test of the second stage, Global Bioenergies has decided to transfer key equipment from its Leuna plant to the ARD site in Pomacle, including the 5 m³ fermentor which will be assigned to the second stage in lockstep with the large ARD fermentor used for the first stage. The new version of the process can therefore be run on a large scale at optimised cost at a single location by a single team. Following the equipment transfer and the final technical adjustments, which are forecast for the second half of 2021, Global Bioenergies intends to launch a value chain so it can produce over 10 million natural longwear make-up units from the first half of 2022. See article No. 3688 in this issue on the launch of LAST, its proprietary make-up brand.

3659 - METabolic EXplorer: sale of the first batches of PDO produced at the METEX NØØVISTA plant.

The French biotech firm announced the successful industrial scale-up of the PDO-BA technology on the site of its METEX NØØVISTA subsidiary in Carling Saint-Avold, France. It also revealed that it had begun producing PDO for industrial and cosmetic applications. Following the validation of the fermentation technology at 100% capacity upstream, an operational threshold of 30% of nominal purification capacity was set downstream. These procedures allowed validation of each stage of the purification technology in relation to the effluent discharge limits and the transfer of knowledge from the METEX technical teams to the METEX NØØVISTA teams. The priority of producing PDO in compliance with industrial- and cosmetics-grade specifications has now been achieved and the first commercial batches have already been delivered.

En savoir plus : Communiqué de presse, Formule Verte.com

3660 - 3BCAR agrees to fund five new innovative bioeconomy projects in 2021.

The 3BCAR Carnot institute has chosen these projects for their scientific prowess and innovation potential, and because they promise to kick-start innovation in the bioenergy, biomolecule and biobased materials fields. Here are the chosen projects for 2021:

- FONZY: chemo-enzymatic functionalisation of cellulose.
- NEOZYM: extension of the catalytic promiscuity of natural and artificial metalloCAZymes to create nonnatural reactivity.
- SOLEXOL: SOLvant d'EXtraction des Oléagineux (solvents to extract natural compounds from oleaginous material).
- NUTRIPOU: from the optimised production to the characterisation of the nutritional potential of yeast and microbial single-cell proteins.
- COLORANTH: optimised extraction of anthocyanins from distillery grape marc and improvement of their functionality as colourants and antioxidants.

The results of these projects, which will begin in 2021, will be implemented on an industrial scale.

En savoir plus : <u>3BCAR.fr</u>

3661 - FAME investigates a new process to convert human excrement into dietary proteins or PHA.

To prepare for future long-term stints on the Moon and manned flights to Mars, the <u>FAME</u> team at Toulouse Biotechnology Institute, France, has since April 2021 been testing a process to convert urine and faeces into dietary proteins or bioplastic with the help of bacteria. The project, supported by the CNES and Alexis Paillet, a project manager at <u>Spaceship FR</u> who is contributing his experience in 'space exploration', involves using a three-litre fermentor fed with *Cupriavidus necator* bacteria, powdered urea and volatile fatty acids (which could be produced by fermenting human faeces and food waste with other bacteria in space) as a carbon source. These well-fed bacteria store up to 80% of their mass as dietary proteins. Once ground up, these proteins can be either eaten directly by the astronauts, or converted into pellets, or even given to fish farmed on the Moon. In addition, over the course of their work, the researchers realised that *Cupriavidus necator* could also make and store plastic biopolymers called PHAs if it had the appropriate carbon-to-nitrogen ratio in its diet.

En savoir plus : Spacegate.cnes.fr

3662 - A new process to create functionalised materials with enzymes embedded into plastics.

Researchers at the Fraunhofer Institute for Applied Polymer Research (IAP) working on the Biofunctionalization/Biologization of Polymer Materials BioPol project have developed a way to use enzymes on the surface of plastics as well as to embed them directly into plastics without damaging them in the process. The researchers used highly porous inorganic carriers to stabilise the enzymes. Although this limits their mobility, they remain active and can withstand much higher temperatures. However, the researchers found that there is no one-size-fits-all stabilisation process as the carrier and the technology best adapted to the embedding process are enzyme-specific. The researchers have mainly used proteases as their enzyme of choice so far, but are continuing tests on other enzymes. Now that they have produced the first functionalised plastic pellets, films and injection moulds, they have established that the enzymes embedded into these products remain active. A patent application has been submitted for this new process.

Next step: Test and optimise the process for everyday use in various applications.

More information: Chemeurope.com

3663 - How can we measure the biodegradability of blended substances?

At the request of French cosmetics group L'Oréal, experts from <u>GEPEA</u> laboratory and <u>CAPACITÉS</u> have developed an alternative way to measure the biodegradability of an entire mixture. The method is based on a study of the transformation of carbon in a substance by microorganisms. When it comes to biodegradation, the best-case scenario is that the carbon is transformed through the release of CO_2 and by being partially integrated into the microbial biomass. In determining the amount of residual CO_2 and the fraction of carbon integrated into the biomass, Capacités's specialists are able to assess the biodegradation of a cream. This assessment is followed up by ecotoxicological testing to measure the impact of the residual waste carbon upon its release into the environment. New measurement equipment, designed to automate the tests, is already being trialled. It will soon be sent to Eurofins in Nancy, France, where tests will be performed for L'Oréal, which is funding the operation. This fieldwork testing phase is necessary before the commercial launch in 2022.

Info: This new approach is being carefully examined by the European Chemicals Agency (ECHA).

En savoir plus : Communiqué de presse, Capacites.fr

Project status

3664 - Bio4Solutions chair: supporting the transition from an 'agrochemical' to 'agroecological' farming model.

This <u>chair</u>, created within the Ensaia agricultural engineering school at the University of Lorraine, France, has trained 45 people since January 2020. In addition, to respond to the rapid expansion of the biological pest control market, it is working to develop new alternatives to conventional chemical pesticides. With this in mind, Plant Advanced Technologies (PAT), a company specialising in identifying and producing plant-based active ingredients, has teamed up with BASF and INRAE's laboratory. The goal of the first partnership is to produce new fungicides for the agriculture sector. The second intends to develop ways to produce efficient molecules that are both ecologically acceptable and financially viable for farmers. The Bio4Solutions chair also intends to test the efficiency of biological pest control products in the field. It is working on this project with applied agricultural research organisation Arvalis, which is performing some of these field tests.

En savoir plus : Formule Verte.com

3665 - REFUCOAT project: developing recyclable, biobased, single-layer food packaging.

The project, funded by the Bio-Based Industries Joint Undertaking (BBI-JU) and involving 12 multidisciplinary partners from 5 European countries, has not only developed promising fully biodegradable polyglycolic acid (PGA) and polyhydroxyalkanoate (PHA) polymers for food packaging but has also demonstrated the benefit of using bacteriophages in active coatings. The project partners were able to harness microorganisms to upcycle agri-food

waste, enabling them to develop biodegradable PHA coatings for food packaging. They also developed a goldbased catalytic process to convert monoethylene glycol to PGA for greener production of this biopolymer. Last, the team demonstrated the benefit of harnessing the bacteria's natural viral enemies to form innovative active barriers to extend product shelf life. Preliminary data showed an encouraging inhibition of salmonella proliferation thanks to the bacteriophages. While the team continues to research single-layer, biobased packaging that meets market requirements, the partners have prepared a policy brief with specific recommendations to encourage policymakers to make the current plastic value chain more eco-friendly.

More information: BBI.europa.eu

3666 - ReSolve project: developing biobased alternatives to replace toxic solvents used in the chemical industry.

Funded by the BBI-JU, this European project which ended last November researched safer, biobased alternatives to two dangerous solvents used in large quantities in European industry: toluene and N-Methyl-2-pyrrolidone (NMP). Drawing on their complementary expertise, the 12 partners' research teams managed to synthesise 2,2,5,5-tetramethyloxolane (TMO), a non-polar solvent with similar properties to toluene, for use in adhesive film production. James Clark, a professor at the University of York, United Kingdom, said: *'This bio-based solvent has the potential to replace not only toluene but also other hazardous solvents. It displays similar performance in chemical reactions as toluene. The solubility of certain substances even improved in certain applications where TMO was tested.' The researchers also synthesised a safer, biobased alternative called dihydrolevoglucosenone (Cyrene™) to replace NMP. Cyrene™ is produced by treating sawdust with acid and efficiently replicates NMP properties without being detrimental to health. The safety of the new solvents was evaluated with <i>in silico* models to predict biological behaviour and *in vitro* bioassays to assess actual chemical behaviour before getting into the development stage. Technoeconomic and sustainability assessments were conducted to optimise process designs for industrial production and understand the actual impact on nature. On the back of this project, the biotech company Circa Group began building a plant in France to produce 1,000 tonnes of biobased Cyrene™ per annum.

Info: In addition to TMO and Cyrene[™], the researchers tested other promising solvents formulated with carbohydrates to replace NMP, toluene and other dangerous solvents. Their methodology could also be reproduced to develop sustainable and recyclable biobased polymers.

More information: BBI.europa.eu

3667 - Zelcor project: publication of an electronic reference book on the cascading use of biorefinery side streams.

Given the complexity and diversity of scientific and technical fields relevant to the structure of lignins and humins, their extraction process in biorefineries and their use, the participants in the European <u>Zelcor</u> project have developed a reference tool for efficient exploitation and transmission within the consortium. Together with the <u>I2M</u> <u>Bordeaux unit</u>, the research units <u>FARE</u> and <u>IJPB</u> designed an <u>electronic reference book</u>, available in French, in open access, to make it easier to understand the cascading use strategy for biorefineries developed by the project, as well as view significant achievements. This electronic book comprises standardised concept graphics, validated by Zelcor specialists, depicting all the most important results and gains obtained by the project.

Recap: Coordinated by INRAE and AgroParisTech and involving all the units of the 3BCAR Carnot institute (IJPB, FARE and Toulouse Biotechnology Institute), Zelcor's goal was to convert the waste produced by biorefineries (lignins and humins) into high-value products of interest for the fine chemistry, materials and cosmetics industries. The project ended this year.

En savoir plus : <u>3BCAR.fr</u>

Microalgae

3668 - A first industrial-scale test for Fermentalg's Carbon Sink.

The French expert in microalgae Immunrise, awarded 'innovative new company' status by the French government and specialising in research and development into biological pest control solutions formulated with marine microorganisms, and the Pot-au-Pin Énergie initiative, which specialises in the production of biomethane from agricultural feedstock, announced the signature of an experimentation agreement for the first pre-industrial demonstrator of the Carbon Sink developed by Fermentalg and Suez. Located on the anaerobic digestion site in Cestas, France, and with a capacity of 10 m³, this pre-industrial unit will be commissioned in the third quarter of 2021 and will run for 12 months. The partners are already planning to ramp up to semi-industrial scale at the end of this experimental period, with a 150 m³ Carbon Sink. Industrial scale will follow, with a 2,000 m³ unit. This scale will be sufficient to capture all the CO₂ produced by the Pot-au-Pin Énergie anaerobic digestion site. The site's biomethane production accounts for 27% of the consumption of the 4,700 homes in Cestas that are connected to the gas distribution network and 18% of the inter-municipal community.

Info: Backed by the Nouvelle-Aquitaine region, Bpifrance realised that this collaborative project for strategic innovation presented technological breakthroughs and had promising industrial targets in the scope of the PIA investment programme. This is why it was chosen as a PSPC-Régions project (strategic projects to drive competitiveness funded by the French state) and will be awarded funding of €1.1 million divided between grants and repayable advances shared by the French government and the Nouvelle-Aquitaine region.

En savoir plus : Communiqué de presse, Formule Verte.com

3. STRATEGIC INTELLIGENCE: BUSINESSES & MARKETS

3669 - Carbios

The French expert in the enzymatic recycling of plastics announced that the <u>World Economic Forum</u> had selected it as a Technology Pioneer from among hundreds of other candidates. On the back of this appointment, deputy CEO of Carbios Martin Stephan will be invited to attend the World Economic Forum's upcoming events and debates. The company will also contribute to the Forum's initiatives over the next two years, working alongside world leaders to help resolve key issues faced by industry and society.

Info: Technology Pioneers – chosen according to criteria such as innovation, leadership and business relevance – are growth-stage companies that are developing and innovating via new technologies with a significant impact on business, society, and the environment, such as artificial intelligence, the internet of things and blockchain.

More information: <u>Press release</u> En savoir plus : Communiqué de presse, Les Echos.fr

Carbios announced that it had acquired the entirety of the SPI Fund's 37.29% stake in Carbiolice. SPI is managed by Bpifrance Investissement. The \in 17.9 million transaction closes five years' of formative collaboration with the SPI Fund. Now it holds 100% of Carbiolice's capital, Carbios has strengthened its ability to develop its activities in the biodegradation of polymers other than PLA. This acquisition also reaffirms its ambition to position itself as the world leader in biological technologies, to reimagine the end of life of plastics and synthetic fibres. The transaction values Carbiolice at around \in 48 million.

> More information: <u>Press release</u> En savoir plus : Communiqué de presse, Formule Verte.com

3670 - Carbiolice

The French Ministry for the Ecological Transition has awarded the French start-up that developed Evanesto® – a revolutionary enzymatic technology that makes plant-based plastic 100% compostable – the Greentech Innovation

label. 'Joining the very selective community of Greentech Innovation label holders is a fantastic recognition of how our French innovation is fuelling the green transition', said Nadia Auclair, CEO of Carbiolice. 'Among other things, it means we can benefit from the support of all the partners in the initiative. Thanks to the Ministry's recognition, we will be more visible to its many partners, including grandes écoles, major groups and competitiveness clusters.' See article No. 3730 of this edition to find out more about the Greentech Innovation label.

Info: Carbiolice was one of the 45 start-ups chosen in 2021.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Formule Verte.com</u>

3671 - Fabbri Group

The food packaging specialist announced that its <u>Nature Fresh</u> clingfilm had won first prize at the Biopolymer Innovation Award. This compostable film, which is mainly used to package fresh products, was designed based on two solutions developed by BASF: <u>ecovio®</u>, a plastic made from a blend of 100% biobased and biodegradable PLA, and <u>ecoflex®</u>, a 100% biodegradable copolyester.

Info: Backed by not-for-profit <u>Polykum</u> and awarded by an independent jury, the Biopolymer Innovation Award is presented to pioneering products or applications in the biodegradable plastics field. It rewards biodegradable polymer applications and products as well as technological innovations for the production, transformation, composting or recycling of biodegradable plastics.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

3672 - IFP Energies nouvelles (IFPEN) & Naturamole

As part of its programme to support innovation in SMEs and start-ups, IFPEN announced that it would help biotech firm Naturamole develop a high-yield process to purify natural lactone and succeed in the difficult task of achieving a high degree of purity from an active ingredient from renewable sources. In due course, this natural lactone will be sold to produce flavours, fragrances and cosmetics. The molecule of interest was rendered pure to over 95% – in one step – over the course of the various tests, with a purification yield of 80%.

En savoir plus : Communiqué de presse, Formule Verte.com

3673 - Lactips

The French company specialising in soluble plastic announced that it had been selected to join the Green20 programme led by the French Tech movement (France's national start-up scheme). In partnership with the Ministry for the Ecological Transition, this programme selects 20 star companies with the potential to grow on a European or even international scale and supports their development. Lactips also announced that it had obtained the Greentech Innovation certification from the Ministry for the Ecological Transition. This certification champions innovative start-ups and SMEs whose business activity is firmly rooted in the green transition. The idea is to promote new products, uses and services for citizens. Last, Lactips announced that it had signed up to the United Nations Global Compact. '*The world's largest voluntary corporate sustainability and civic involvement initiative*' currently counts over 9,500 businesses and 3,000 signatories that are not part of the corporate world, located in over 160 countries. See article No. 3729 of this edition to find out more about the French Tech movement.

Recap: Lactips is also a member of the Solar Impulse programme.

En savoir plus : Communiqué de presse, Formule Verte.com

3674 - Club des bioplastiques

The <u>association</u>, which represents the entire French bioplastics industry (biobased and biodegradable resins), has decided to change its name to the Association française des compostables biosourcés (AFCB, the French

association for biobased compostables). This name change does away with any confusion over the prefix 'bio', which can refer to the biobased content of a product, its manufacture using raw materials from organically farmed sources, or its biodegradability. It will also help it clarify its purpose, as the association focuses on any compostable and biodegradable matter that represents an alternative to conventional recycling, which is financially, ecologically and technically challenging.

En savoir plus : Info Chimie.fr

3675 - Lesaffre

Biospringer by Lesaffre, Lesaffre's food taste and pleasure business unit, announced that it had made fresh investments to increase the production capacities of its yeast extracts unit in Cedar Rapids, United States, by 50%. It wants to support the growing market trend for fermented natural-origin ingredients. The expansion will also support the production of yeast-based products for major multinationals and businesses specialising in the biopharmaceutical, diagnostics, edible organic ingredients, probiotics and organic agriculture sectors. This specific business unit and its expertise are managed by Procelys by Lesaffre, the Lesaffre entity focusing on the biotechnology industries. Procelys by Lesaffre supplies efficient fermentation nutrients, specially designed to optimise the production of biomass and metabolites for the good of humans and animals. These components are used in a whole range of applications, such as medicinal products, biological diagnostic tests, cosmetics, organic ingredients for food and feed, probiotics and renewable pesticides, and so on.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>

3676 - Michelin

The French group presented a high-performance racing tyre containing 46% sustainable materials (biobased or recycled) at the world summit on sustainable mobility Movin'On 2021. The tyre will kit out the GreenGT Mission H24 hydrogen-powered prototype: a car developed for endurance racing. Michelin explained that this percentage of sustainable materials was achieved mainly by increasing the natural rubber content and adding recycled carbon black recovered from end-of-life tyres, as well as using orange and lemon rind, sunflower oil, pine resin and recycled steel. Michelin's new product successfully combines a high percentage of sustainable materials with exceptional performance.

<u>Recap:</u> Michelin plans to use 100% sustainable materials in all its tyres by 2050. To achieve its goal, the group has set itself an objective of using 40% sustainable materials in all its tyres by 2030.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Auto Infos.fr</u>

3677 - POET

The American biofuels producer announced that it had acquired all the bioethanol assets of the American company Flint Hills Resources. The acquisition includes six bioprocessing facilities located in Iowa and Nebraska and two terminals in Texas and Georgia, enabling POET to increase its production capacity by 40%, with a combined annual capacity of 3 billion gallons (11.3 billion litres).

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

3678 - Sulapac

The Finnish start-up specialising in sustainable materials announced that it had developed a new biobased material to package water-based cosmetics. The material biodegrades without leaving any permanent microplastics behind. This new barrier material – the subject of a patent application – will make up the inside of a new 50 ml cosmetic jar, itself made from biobased materials.

3679 - Syngulon

The Belgian <u>company</u>, which develops microbial fermentation technologies for biobased products, announced that Syngulon Bacteriocins had received the Solar Impulse Efficient Solution label. This antibiotic-free microbial selection formulated with bacteriocins has been designed to boost fermentation production.

More information: Solar Impulse.com

3680 - The Renewable & Low-Carbon Fuels Platform

Launched by Advanced Biofuels Coalition, Copa-Cogeca, eFuel Alliance, ePURE – European renewable ethanol, EBB-European Biodiesel Board, EWABA, Fediol, FuelsEurope, Nordic Blue Crude AS and UPEI, the Renewable & Low-Carbon Liquid Fuels Platform has been designed to act as a forum for the main organisations involved in the liquid fuel value chain. It will provide a platform for exchanging views and best practices on the energy transition and the decarbonisation of all transport methods. The platform members will also share their views on the drafting of regulations needed to lower the use of carbon in the mobility sector. Given that it is '*imperative that EU policymakers grant equal policy recognition and an adequate level of support to all forms of renewable energy sources in transport*', the members of this coalition are urging the European institutions to draw up a regulatory framework that values and supports all low-carbon technologies.

More information: Fuels Europe.eu

3681 - Total Cray Valley & Gevo

On the back of the first successful phase of their project to transform fusel oils into renewable isoamylene via catalysis, Total's polymers division and the American biofuels producer announced that they would be extending the joint development agreement signed in 2020. The partners are now planning to move forward to demonstration scale.

More information: <u>Press release</u> En savoir plus : <u>Info Chimie.fr</u>, <u>Formule Verte.com</u>

3682 - TotalEnergies

The French group announced that its Ordinary and Extraordinary Shareholders' Meeting had voted nearunanimously to change the company's name. Total is now TotalEnergies, its identity affirming its strategic transformation into a broad energy company.



More information: <u>Press release</u>, <u>TotalEnergies.com</u> En savoir plus : <u>Communiqué de presse</u>, <u>TotalEnergies.com</u>, <u>Eur</u>ope1.fr, France TV Info.fr, Les Echos.fr

3683 - TWB

TWB has teamed up with the innovative start-ups in its consortium to propose two new service offerings. The first offering, developed with <u>Altar</u>, involves adapting microorganisms to the requirements of industrial companies via natural selection. This powerful, fully automated tool can be used to conduct experiments via continuous culture to provide reliable, replicable solutions on an industrial scale. The second, formalised with the start-up <u>iMEAN</u>, delivers a modelling programme that can streamline strain engineering in industrial biotechnologies. The aim is to generate

predictions in terms of metabolic engineering and drastically reduce research time as well as costs by targeting the sticking points hindering scale-up. TWB wants to continue deploying integrated offerings in the coming years to keep boosting its services and propose a complementary offering that meets the requirements of its clients.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Formule Verte.com</u>

3684 - Unilever

The Dutch-British group specialising in food, cosmetics and household goods asked its shareholders to vote on its climate plan. Under the plan, the group has committed to reducing to zero the carbon emissions produced within its own operations by 2030, followed by those across its value chain by 2039. To reach its objectives, Unilever will among other things look for greener raw materials. The group will have to change the formulation and concentration of some products such as washing powders, and the procurement sources for its food branch. Unilever will also have to investigate new sustainable packaging materials for its products.

More information: <u>Reuters.com</u> En savoir plus : L'Usine Nouvelle.com

New joint ventures

3685 - CarbonWorks

Joint owned by the Suez group and Fermentalg, the French expert in microalgae, this joint venture has been created to accelerate the development and launch of Carbon Capture and Utilization (CCU) solutions through microalgal photosynthesis. CarbonWorks, which will benefit from the expertise and assets resulting from the partnership begun between Suez and Fermentalg in 2015, will develop products intended largely for the biological pest control and food and feed markets. Such developments will take place in a short recycling loop in keeping with the values of the circular economy. The joint venture's first industrial demonstrator will be commissioned in the third quarter of 2021 on the Pot-au-Pin Énergie site in Cestas, France. The 10 m³ demonstrator will capture the CO₂ emitted by the Pot-au-Pin Énergie anaerobic digestion unit and convert it into biological pest control products (natural fungicide for vines).

Info: At its creation, CarbonWorks had assets of over €5 million and a cash position of €1 million, and plans to open up its capital to new shareholders through a Series A fundraising operation in the near future. CarbonWorks is also planning to accelerate its development with the help of various national and European programmes to encourage innovation.

En savoir plus : Formule Verte.com, Environnement Magazine.fr, L'Usine Nouvelle.com

3686 - Qore

Created by the American group <u>Cargill</u>, which specialises in supplying edible ingredients and trading raw materials, and the German group <u>HELM</u>, an expert in the marketing and distribution of commodity chemicals and generic drugs, Qore will produce and sell renewable 1,4-butanediol (BDO). The joint venture will concentrate more specifically on the production of QIRA[™] through the fermentation of plant-based sugars, a process developed by Genomatica. This BDO, which will reduce greenhouse gas emissions by 93% compared with fossil-based sources, can be used to make polyester fibres, biodegradable plastics, polyurethane coatings, sealants and artificial leathers. In the scope of their agreement, the partners also plan to invest \$300 million (around €246 million) to build a commercial-scale facility in the United States. The future facility will most likely be built near Cargill's biotechnology campus in Eddyville, Iowa, and will be capable of producing 65,000 tonnes of QIRA[™] each year. Entry into service is scheduled for 2024.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

Commercial launches

3687 - EarthFirst Films by PSI

The American <u>company</u> specialising in the manufacture of bioplastic films announced that it was on the verge of launching a new polyhydroxyalkanoate (PHA) home-compostable packaging film. Made using Danimer Scientific's NODAX® PHA, it has been designed for applications across food, beverages, grocery retail, takeway food and stadium food services. The new film can also be used in other sectors that use packaging. Although the PHA materials have already been certified, the film must be subject to biodegradation and home composting tests before full certification.

Info: This new packaging is the first in a range of new advanced home-compostable film solutions the American company plans to launch over the coming 12 to 18 months.

More information: Press release

3688 - Global Bioenergies

The French industrial biotechnology company announced the launch of LAST®, its proprietary make-up brand. The new range is long-lasting, transfer- and water-resistant and contains over 90% natural ingredients. This is down to the use of sustainable isododecane (a derivative of isobutene) produced by Global Bioenergies, as well as a selection of natural ingredients added to the formulations. There are currently 18 products in all, divided into three categories: mascaras, brow mascaras and eyeshadows. The new products can be purchased on the <u>colors that</u> last website. They will eventually be sold directly in beauty stores, first in France then in Great Britain. Global Bioenergies intends to make 300,000 make-up units this year but is already planning to produce over 10 million in 2022 and in the region of 200 million in 2023. In addition to producing isododecane for the LAST® range, Global Bioenergies is also planning to produce the ingredient for products made by third parties, therefore supplying its biobased ingredient to other make-up brands.

Info: A range of liquid lipsticks that also combine long-lasting wear with natural ingredients is currently in development and will join the range in the second half of 2021.

More information: Press release 2, Press release 1

En savoir plus : <u>Communiqué de presse 2</u>, <u>Communiqué de presse 1</u>, <u>Zegreenweb.com</u>, <u>L'Usine Nouvelle.com</u>, <u>Bourse direct.fr</u>

3689 - METEX NØØVISTA & Royal DSM

The METabolic Explorer subsidiary which specialises in the development and scale-up of sustainable, competitive fermentation processes, and Royal DSM, a global science-based company involved in nutrition, health and sustainable living, jointly announced the successful start of commercial production of their new cosmetic-grade PDO. Produced in a French facility, TILAMAR® PDO with NØØVISTA is 100% natural and produced from non-GMO feedstock. It is Europe's first cosmetics-grade PDO.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>

Fundraising

3690 - AMSilk

The German <u>company</u> specialising in the production of biobased silk materials via the bacterial fermentation of plant-based raw materials announced that it had completed a new €29 million Series C fundraising operation. The

operation was led by <u>Novo Growth</u>, the growth equity arm of Novo Holdings, with participation from new investors Cargill and E.R. Capital Holdings as well as existing investors MIG Verwaltungs AG and ATHOS KG. It will use the new funds to accelerate the ongoing scale-up of its industrial projects, drive the internationalisation of its commercial activities, and continue to expand its customer base into new markets.

More information: <u>AMSilk's press release</u>, <u>Novo Growth's press release</u> En savoir plus : <u>Mode In Textile.fr</u>, <u>Formule Verte.com</u>

3691 - eureKARE

The new <u>investment firm</u> or *'start-up studio'* has just secured an initial €50 million Series A fundraising round to fund European biotechnology projects in the synthetic biology and microbiome fields. Founded by Alexandre Mouradian, who is behind the <u>Spinoza Foundation</u>, and Alan Howard, co-founder of the British hedge fund <u>Brevan</u> <u>Howard</u>, eureKARE is supported by private investors and major Swiss, German, British and North-American families who have invested somewhere in the region of €5 million. eureKARE covers all of Europe as well as the United Kingdom and Switzerland and will invest in seed projects after having identified and built up projects in academia before supporting them within its biotech studio. To develop the projects of these promising start-ups, eureKARE plans to invest between €2 and €4 million over three to four years.

Info: eureKARE is already planning to increase its clout to several hundred million euros.

More information: <u>Press release</u> En savoir plus : Les Echos.fr, Biotech Finances.com

3692 - Caisse d'épargne

The French bank announced the creation of its first fund reserved for the financing of large-scale projects in the renewable energies field. Boasting €1.5 billion and used in collaboration with <u>Natixis</u> and <u>BPCE Energeco</u> (subsidiaries of the BPCE group), the purpose of this new fund is to finance major operations (over €100 million) of any kind in France in the following industries:

- Offshore and onshore wind power
- Solar power
- Energy storage
- Hydroelectricity
- Hydrogen
- Anaerobic digestion

With this new fund, Caisse d'épargne has an investment capacity of €3 billion, enabling it to accelerate the development of projects in the renewable energies field.

En savoir plus : Fédération Caisse d'Epargne.fr, Green Univers.com

3693 - Carbios

The French leader in the enzymatic recycling of plastics carried out a capital increase of ≤ 114 million, exceeding the initial target of ≤ 105 million. The fundraising operation, which was oversubscribed at 207%, led to the issue of 3 million new shares. It also marked the entry of L'Occitane into the company's capital: the cosmetics brand subscribed to the transaction for ≤ 10 million, and now holds 2.36% of Carbios' shares. Following the transaction, Bold (the corporate venture arm of L'Oréal), Michelin Ventures and Copernicus Wealth Management now respectively hold 5.91%, 4.36% and 5.90% of the shares, while the free float amounts to 80.89% of the share capital. Carbios is planning to use 65% of the amount collected (i.e. a little over ≤ 65 million) to build a facility with a production capacity of 40,000 tonnes per year to use its recycling technology to fully recycle polyester (PET). Carbios said that the reminder would come from other funding sources.

Info: This capital increase is the second biggest biotechnology fundraising operation in Europe and the biggest in chemistry and plastics for the current year. It is also the biggest capital increase with a public offering carried out by the Growth arm of Europext Paris.

En savoir plus : Emballages Magazine.com, Environnement Magazine.fr, Formule Verte.com, Les Echos.fr, Info Chimie.fr

3694 - Demeta

The French green chemistry company, which develops next-generation catalysts for the production and sale of materials and molecules with high added value, announced that it had secured a direct investment of \in 2.4 million from the <u>European Innovation Council (EIC) Fund</u> in the scope of the <u>EIC Accelerator</u> programme. This funding will enable Demeta to accelerate the qualification, industrialisation and commercialisation of NexTeneTM, a family of high-performance materials with a small carbon footprint.

Info: Laura Vari now sits on Demeta's board of directors, representing the EIC Fund, making Demeta one of the first companies in Europe to have the European Commission represented on its board.

More information: <u>Press release</u> En savoir plus : Communiqué de presse, Formule Verte.com

3695 - Kyanos Biotechnologies

The Toulouse-based <u>start-up</u> specialising in the production and use of microalgae announced that it had completed a €2.6 million finance round with Zsolt Popsé, Régis Nouaille, the PIA investments for the future programme run by ADEME, Bpifrance's French Tech Bridge, and Pass Rebond Occitanie. These fresh funds pave the way for Kyanos to continue developing its breakthrough technology with a view to increasing its production capacities and setting up a pre-industrial pilot facility to ultimately cultivate its microalgae on a large scale in artificial pools.

Info: Kyanos Biotechologies is the first company in the world to grow and sell *Aphanizomenon flos-aquae* (AFA), a blue-green algae that can only be sourced from Lake Klamath in the United States. AFA is often touted as one of the most promising foods of the future because it is rich in nutrients and is 60% protein. Kyanos Biotechnologies has also developed an urban microalgae-based decontamination system that can improve air quality by removing fine particles and nitrogen oxides. The system has been on trial in Toulouse, France since September 2020.

En savoir plus : <u>Communiqué de presse</u>, <u>La Dépêche du Midi.fr</u>, <u>Formule Verte.com</u>, <u>Environnement Magazine.fr</u>, <u>Les Echos.fr</u>

3696 - METabolic EXplorer (METEX)

The French biotechnology firm announced that it had increased its capital by \notin 56.6 million, reflected in the issue of 13,829,528 new shares. The Société de Projets Industriels (SPI) fund, run on behalf of the French government by Bpifrance, contributed \notin 46.5 million to this fundraising operation, becoming Metex's reference shareholder with 25.9% of the capital. The SPI fund sold its shares in the subsidiary Metex Nøøvista to Metabolic Explorer for \notin 31.5 million and added a subscription of \notin 15 million to make this investment. The capital increase, the gross product of which is therefore \notin 25.1 million, will go towards developing the amino acid fermentation production site in Amiens, France, recently purchased from the Japanese group Ajinomoto, to transform it into a point of reference for industrial biotechnologies in Europe. To do so, Metex will earmark \notin 4 million for additional funding for Metex Nøøvista further to the re-evaluation of the activity, the need for working capital and the results of the subsidiary, and \notin 21.1 million to finance the investment plan required to transform the site.

More information: Press release En savoir plus : Communiqué de presse, Communiqué de presse 2, Formule Verte.com, L'Usine Nouvelle.com

3697 - Micropep Technologies

The Toulouse-based <u>company</u> specialising in biological pest control, which has developed a technology platform to accurately improve the traits of plants without changing their DNA by spraying miPEPs (natural peptides that regulate the micro-DNA of plants), announced that it had closed a €8.5 million Series A fundraising round. For this

latest round, Micropep attracted the interest of <u>Supernova Invest</u>, the fund created by the French alternative energies and atomic energy commission (CEA), <u>FMC Ventures</u>, <u>Sofinnova Partners</u> and <u>IRDI Capital</u> <u>Investissement</u>. It intends to use these new funds to scale up production of its biological peptide-based solutions and ramp up its research into alternatives to herbicides.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>, <u>L'Usine Nouvelle.com</u>

3698 - Modern Meadow

The American <u>company</u> which has developed a technology to obtain collagen via a yeast-based fermentation process announced that it had raised \$130 million (\in 109 million) through a Series C fundraising round. The operation was conducted by <u>Key Partners Capital</u> with the participation of <u>Astanor Ventures</u>, <u>Horizons Ventures</u> and <u>Cape Capital</u>, and is expected to enable Modern Meadow to invest in research & development in the materials science and biotechnology fields.

More information: <u>Press release</u>, <u>The Business of Fashion.com</u> En savoir plus : <u>News Chastin.com</u>

3699 - RWDC Industries

The <u>start-up</u> specialising in the manufacture of biopolymers, particularly polyhydroxyalkanoates (PHAs) produced via microbial fermentation of plant-based sugars or oils, announced that it had closed a two-stage Series B fundraising round, bringing in \$133 million (€109 million). This funding round was co-managed by global venture capital firm <u>Vickers Venture Partners</u>, the leading energy and resources company <u>Flint Hills Resources</u>, the pension fund of Switzerland's largest retail company <u>CPV/CAP Pensionskasse Coop</u> and International SA (a fund linked to <u>Interogo Holding AG</u>. Long-standing investors Eversource Retirement Plan Master Trust (the Eversource Energy pension fund) and WI Harper Group (a pioneer of US-Asia cross-border VC investing) also took part in the operation. The new funds will enable it to '*substantially*' increase its production capacity so it can meet the growing demand for biobased plastics. To achieve its goal, RWDC plans to repurpose an idled factory in Athens, United States, transforming it into its new production facility. The additional funds will also go towards funding R&D projects.

More information: Press release

New investments

3700 - NatureWorks

As part of its plan to increase production of Ingeo[™] PLA, the American company announced that it had received the go-ahead from the Thailand Board of Investment for construction of a future production unit with an annual capacity of 75,000 tonnes. The unit will be located in the Nakhon Sawan Biocomplex (NBC) in Nakhon Sawan province, Thailand. The new complex – the first of its kind in Thailand – will produce lactic acid, lactide (a lactic acid derivative), and polymers, making it the 'first polylactide facility designed to be fully integrated'. The American producer, which will build and operate all three facilities, also announced that it had completed the front-end engineering phase for the future units. Entry into service is scheduled for 2024.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

3701 - Roquette Ventures

The investment firm, which supports the emergence of pioneering technologies in the food, nutrition and health fields, announced that it had made a seed round investment in the British <u>company</u> Magellan Life Sciences Ltd, a specialist in synthetic biology that has developed a fermentation-based brazzein production process with its

proprietary XSeed technology platform. This next-gen protein sweetener tastes a lot like sugar and does not have a bitter or metallic after-taste. Its sweetening power is 1,000 times higher than that of sucrose, and it can be used in food and beverages. Three business angels and the international investment fund SOSV also took part in the operation, which will enable Magellan Life Science to expand its R&D team and scale its process to accelerate the commercial launch of this new product. The investment amount was not announced.

Info: Magellan Life Sciences' technologies are based on a library of molecules that use cell signalling properties. The British company focuses on prokaryotic cells, such as bacteria and archaebacteria.

> More information: <u>Food and Beverages News.com</u> En savoir plus : <u>Reussir.fr</u>, <u>Process Alimentaire.com</u>

New partnerships

3702 - ADEME & INRAE

ADEME and INRAE, two of France's public institutions, announced that they had signed an '*ambitious, well-structured*' five-year partnership. The aim is to:

- Plan ahead: by looking towards the future to inform the relevant parties of the different scenarios affecting changes to resources and their uses, against the backdrop of climate change.
- Break down barriers: by encouraging increasingly holistic approaches to soils, forests, biomass, agriculture, food and health, while accounting for the contingencies and vulnerabilities to which resources are subjected, and food production and the protection of ecosystems when it comes to the production of biomass and energy.
- Act local: by developing strategies (tools, forward planning, projects, methods, participatory initiatives, etc.) on a local scale that are adapted to the relevant challenges and the parties involved.
- Shed light on drivers for the green transition: by preparing economic and social strategies. For example, the idea is to better understand the behaviour of stakeholders and consumers, develop participatory methods, assess the consequences and the costs of inaction, and so on.

In line with the UN's 2030 Agenda Sustainable Development Goals and the latest recommendations of the IPCC, this partnership will help kick-start the development of strategies and industries to manage local resources and implement a sustainable bioeconomy. The partnership will take shape through programmes for research, development and innovation, expert assessments and actions to support public policy, the development of information tools, co-funding for doctoral research, and the development of initiatives to add value and improve communication.

En savoir plus : Communiqué de presse

3703 - Beiersdorf & Sabic

The German group specialising in hygiene and beauty products announced that it had signed an agreement with the Saudi chemicals manufacturer to use its certified renewable polypropylene (PP) from its Trucircle[™] portfolio to manufacture packaging for its Nivea Naturally Good face care range. According to Beiersdorf, using this PP, which is manufactured from tall oil, a by-product of the paper and forestry industry, will save 76 g of CO₂ per pot – a reduction of 60% compared with a pot made from fossil-based resources. Products packaged in these new pots will be available in around thirty countries worldwide from June.

Info: Following a market analysis of alternative plastics, Beiersdorf decided to reject any material made from a food source such as sugar cane or corn.

More information: <u>Press release</u> En savoir plus : <u>Emballages Magazine.com</u>, <u>Premium Beauty News.com</u>

3704 - ETB & Trinseo

The <u>expert</u> in biobased processes and the American <u>chemicals company</u> announced that they had signed a letter of intent to ramp up the development of viable, renewable solutions to produce biobased 1,3-butadiene. Under the agreement, the two partners will research developing the exclusive, patented process perfected by ETB. The process can be used to produce biobased 1,3-butadiene from ethanol in one single step using polyfunctional catalyst technology. Initially, the companies will try to demonstrate the viability of sustainable ethanol-based synthetic rubber in support of 'green tyre' production. Simultaneously, Trinseo, with ETB's support, will conduct a feasibility study to explore the construction of a pilot plant in Europe with a purity target of 99.7%. The study should be completed by the end of this year.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

3705 - International Flavors & Fragrances (IFF) & DSM

The American <u>company's</u> Health & Biosciences division announced that it had entered into an agreement for the commercialisation of biobased services and products from Dutch chemicals company DSM. Under the terms of the agreement, which covers the use of 'advanced yeasts' to produce first-generation ethanol, the eBoost® product range developed by DSM will be integrated into IFF's XCELIS® Ethanol Solutions platform. The agreement also concerns a collaboration between IFF's R&D team and DSM's scientists to ramp up the ongoing development of IFF's high-performance yeast products.

Info: DSM's most recent yeast, eBoost® GTX, is currently undergoing US plant trials. It delivers low glycerol, high ethanol yield and up to 70% glucoamylase replacement.

More information: Press release

3706 - Lactips

The French company specialising in soluble bioplastics formulated with milk proteins announced that it had entered into several partnerships for the manufacture and commercialisation of its new product applications. One of these partnerships is with the French <u>company</u> Plastiques Venthenat, which specialises in the extrusion of highly technical plastic films, to transform Lactips plastic pellets into rolls of films. It also signed an agreement with manufacturer of ecological disinfectants <u>Oopya</u>, which uses the water-soluble films made with Lactips pellets to create the packaging for its single-dose disinfectant salt sticks. In addition, through its partnership with Givaudan, Lactips helped develop plastic-free beads to perfume linen. These beads biodegrade completely in water. Last, Lactips announced that, with its proprietary injectors and moulds, it had designed a plastic-free, compostable golf tee that quickly biodegrades in nature and the aquatic environment, offering an alternative to plastic, metal, wood or bamboo tees.

Info: Lactips has also developed soluble and printable temporary labels. The configurations for manufacturers and environmental tests are still being validated. This new application is tipped for launch in 2022.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Formule Verte.com</u>

3707 - Sederma & Alganelle

The <u>subsidiary</u> of the British group Croda, which specialises in the development of active ingredients for the cosmetics industry, and the French <u>company</u> Alganelle, which specialises in the microalgae field, entered into a partnership to produce new cosmetic active ingredients from microalgae. Alganelle's microalgae platform will be used to produce one of Sederma's ingredients, currently under development. A patent will be published at the end of August this year.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>, <u>Premium Beauty News.com</u>

3708 - Technip Energies & Neste

Technip, the French engineering specialist, announced that it had won two new contracts to develop the renewable fuel production platform of the Finnish expert in renewable fuels. The first contract covers Engineering, Procurement services and Construction Management (EPCM) for the modification of Neste's existing renewables production refinery in Rotterdam, the Netherlands, so it can produce Sustainable Aviation Fuel (SAF). The modifications – an investment of approximately €190 million – will mean Neste can produce up to 500,000 tons of SAF per annum as part of the existing capacity. The second contract covers Front-End Engineering and Design (FEED) for a possible new world-scale renewable products refinery in Rotterdam. This contract is part of Neste's preparations to enable a final investment decision by its board of directors, planned for late 2021 or early 2022.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>

3709 - Terrial & Afyren Neoxy

The subsidiary of the Avril and Suez groups announced that it had entered into an exclusive partnership with the Afyren and Bpifrance joint venture for the supply of potassium: a major ingredient in fertiliser. A specialist in the production of fully biobased organic acids for industry, Afyren recovers the co-product of such production, which is rich in potassium. The potassic co-product will be obtained via a natural fermentation technique using sugar beet co-products. Certified for organic farming and of premium quality, it will be delivered in powder form to Terrial, which will then incorporate it into its various mixtures and formulations. The products will add to its range, with innovative formulations for vegetable farming, viticulture, arboriculture and large-scale farming. The new partnership concerns a significant annual delivery, building up progressively throughout 2022 and 2023.

More information: <u>Press release</u> En savoir plus : Communiqué de presse, Le Journal des Entreprises.com

3710 - TotalEnergies & Veolia

Broad energy group TotalEnergies and water and waste treatment specialist Veolia announced that they had joined forces to ramp up the development of microalgae production from CO₂, the goal being to produce next-gen low-carbon biofuels. In the scope of their four-year research programme, the French partners will set up a test platform on the site of La Mède in Bouches-du-Rhône, France, to compare various novel microalgae cultivation systems and identify the most efficient ones. Veolia will contribute its expertise in the water industry to optimise management of the aquatic cultivation environment and develop algal biomass as an efficient solution to capture CO₂. For its part, TotalEnergies, in step with the business lines of La Mède, will contribute its expertise in biomass, refining and the production of advanced biofuels as well as carbon capture and development technologies.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Formule Verte.com</u>

3711 - Unilever & Arzeda

The Dutch-British group and the American company specialising in protein design have entered into a strategic three-year partnership to develop, with a little help from artificial intelligence, new enzymes that could improve the sustainability and performance of Unilever's cleaning and laundry products. The new enzymes – which could halve the number of ingredients used – will be used to make products in the OMO (Persil), Sunlight and Surf ranges.

More information: <u>Press release</u> En savoir plus : <u>TradingSat.com</u>

Takeovers

3712 - Arkema

The French <u>chemicals company</u> announced that it wanted to buy <u>Agiplast</u>, a leader in the regeneration of highperformance polymers, in particular speciality polyamides and fluoropolymers. With this acquisition, Arkema will be the first fully integrated high-performance polymer manufacturer to offer both biobased and recycled materials to address the challenges of resource scarcity and end-of-life products. This acquisition slots neatly into Arkema's sustainable growth and CSR strategy, particularly its transition to a circular economy. The deal is expected to close in June 2021.

> More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>

3713 - Ecocert & Certisys

The organic certification body announced that it had bought out its Belgian counterpart <u>Certisys</u>, which holds 60% of the market share in its home country. With this purchase, the French group will strengthen its position in Europe and gain access to the Benelux market. It also gives Certisys the opportunity to consolidate its position as a leader in Belgium and ramp up its development in Benelux. The Belgian group will be able to expand its range of services by offering Ecocert's unique catalogue of sustainable and organic certifications.

En savoir plus : Communiqué de presse, Les Echos.fr

3714 - De Sangosse

The French group, which develops biosolutions to protect and feed plants, announced the purchase of <u>Fertiplus</u> and its international subsidiaries Fertiplus Agrosciences, Bioveg and Synagro, which design, develop, produce and sell plant nutrition solutions globally, with a strong emphasis on biostimulants. With this purchase, the De Sangosse group will be able to accelerate its strategic CAP 2025 plan by consolidating its active ingredients in abiotic biostimulants. It will also help it strengthen its presence in the major agricultural regions, specifically Asia, Africa and South America. This purchase will enable Fertiplus France to boost the sale of its product portfolio on the global market and draw on the resources of the De Sangosse group to move forward with development of its own products. The financial particulars have not been released.

En savoir plus : Communiqué de presse, Formule Verte.com

3715 - Lesaffre

The French group specialising in yeasts, animal nutrition and fermentation announced the purchase of the American company <u>Advanced Biological Marketing (ABM)</u>, which specialises in the development of bionutrition products for field crops in the American Midwest. The acquisition is an important step in the development of <u>Agrauxine</u> by Lesaffre, a Lesaffre business unit that has been developing biobased solutions to improve plant health and nutrition for over 15 years. It will now be able to achieve an impressive balance in terms of market access and biocontrol and biostimulation product ranges. Agrauxine will also continue with ABM's projects, which include two new biocontrol technologies that are tipped for commercialisation in America in the coming years. The acquisition price was not announced.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Formule Verte.com</u>

3716 - METabolic EXplorer (METEX)

The French biotechnology firm announced that it had acquired 100% of the shares of the European subsidiary of Japanese company Ajinomoto Co., Inc.: Ajinomoto Animal Nutrition Europe (AANE). The latter will now officially be named METEX NØØVISTAGO, part of METEX's commercial and industrial transformation strategy. The new organisation will incorporate the Group's well-established R&D and pre-industrial demonstration expertise upstream and, downstream, the manufacturing infrastructure, sales force and distribution networks of METEX NØØVISTAGO. This makes it the number one integrated European maker of naturally derived functional ingredients produced by fermentation for animal nutrition and cosmetics.

Recap: The new organisation has a production capacity of over 100 kt per annum on the METEX NØØVISTAGO site in Amiens, France, for the amino acids and 6 kt on the METEX NØØVISTA site in Carling Saint-Avold, France, for 1,3 propanediol (PDO) and butyric acid (BA).

En savoir plus : Communiqué de presse, Formule Verte.com

3717 - Seppic

The Air Liquide group <u>subsidiary</u>, a leader in the production of speciality health and beauty ingredients, announced the purchase of <u>Extraction Purification Innovation France (EPI France)</u>, a company specialising in the development and manufacture of natural-origin active ingredients for the cosmetic and nutricosmetic markets. The acquisition will give Seppic the opportunity to strengthen its expertise and know-how in botanical extraction and its position as a supplier of high-quality ingredients for the beauty market. It will also enable it to master the entire research, development and scale-up process, from the extraction of raw materials to the active ingredients. The acquisition price was not announced.

More information: <u>Press release</u> En savoir plus : <u>Communiqué de presse</u>, <u>Formule Verte.com</u>

Human resources

3718 - Association Chimie Du Végétal (ACDV)

The ACDV announced the appointment of Sophie Marquis as its new Executive Officer. Sophie has a degree in agricultural engineering from AgroParisTech, and spent seven years working for the Association générale des producteurs de maïs (AGPM, French association of maize farmers). During her time there she was responsible for bioeconomy matters and new uses for biomass. Sophie also worked in the chemicals industry for 12 years and was responsible for communications at Borelis L.A.T. then Nufarm. She will report to the President and the board, and her main responsibilities will include signing up new members, coordinating the corporate network, and implementing the policy and initiatives of the ACDV, while supporting the President, François Monnet, with his initiatives to promote the association. She replaces Mariane Flamary who has taken up a position as Executive Officer of the Union des syndicats des industries des produits amylacés (Usipa).

En savoir plus : Communiqué de presse, Formule Verte.com, Emballages Magazine.com

3719 - Circa Group

The Norwegian specialist in the conversion of biomass co-products into advanced chemicals announced that it had appointed Tone Leivestad as Chief Financial Officer starting 1 September this year. Former Head of CFO Advisory/Consulting at both KPMG Norway and Accenture Norway, she has considerable experience in finance, consulting and industry. She replaces Peter Gome, who had held the position for five years, and set up the fundraising process.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

3720 - METabolic EXplorer (METEX)

The French company announced that Benjamin Gonzalez, Founder and Chief Executive Officer of METEX, was appointed Chairman of METEX NØØVISTAGO on 28 April 2021. At the most recent meeting of the board of directors, METEX decided to appoint David Demeestere as Deputy Managing Director of the Group's Industrial Operations. David was previously the Chairman of Ajinomoto Animal Nutrition Europe (AANE), and is also taking over general management of METEX NØØVISTAGO.

En savoir plus : <u>Communiqué de presse</u>

3721 - Modern Meadow

The American biotech firm announced the appointment of Anna Bakst as CEO. Anna has 25 years' experience in building and leading teams for American fashion houses and served as chair of the board of directors until she was appointed CEO. She replaces Andras Forgacs, who will continue to serve on the board.

More information: <u>Press release</u> En savoir plus : <u>Formule Verte.com</u>

3722 - Usipa

The Union des syndicats des industries des produits amylacés (French trade union association for the starch products industry), announced the appointment of Mariane Flamary as Executive Officer. Mariane holds a degree from Science Po (a prestigious French university for political studies) and another in law, as well as a master in logistics. She worked at the Compagnie national des commissaires aux comptes (French national association of auditors) then Syntec Etudes & Conseil. She had been the Executive Officer of the Association chimie du végétal (ACDV) since 2018. She replaces Thomas Gauthier, who will move on to lead the Fédération française des spiritueux.

En savoir plus : Formule Verte.com

MARKETS

In France

3723 - Clean beauty: state of play and scope for growth between now and 2023.

Given that natural and organic cosmetics are on track to become a real mass market and something that all parties involved in the hygiene and beauty market – both manufacturers and distributors – ignore at their peril, the private market research institute Xerfi has published a <u>study</u> (in French, behind a paywall) titled *'Natural and organic cosmetics join the mass market. How competition and market perspectives are expected to evolve between now and 2023'*. Against this booming backdrop, the study's authors wanted to identify the market's real potential for growth between now and 2023, and the go-to development drivers employed by the various parties involved. Their report includes a full overview of the different parties involved in the organic and natural cosmetics market (specialised brands and distribution channels) and describes the position of the main brands by product segment, by certification, and by channel. In addition to an analysis of the main factors driving demand for cosmetics market. It also describes the strategies employed by organic and natural brands and the hygiene and beauty industry leaders to cash in on consumers' enthusiasm for clean beauty and changes to their spending habits.

Info: In 2020, the sale of natural and organic cosmetics pulled in €972 million in turnover, recording growth of 8%. By 2023, sales of these kinds of products could leap by 12% per year in value to hit €1.4 billion. They could achieve a market share of 8.5% at the end of the period, compared with 6.4% now.

En savoir plus : Formule Verte.com, Industries Cosmetiques.fr

3724 - French citizens endorse compostable biobased plastic.

According to a survey conducted by Nieldsen IQ for the Association française des compostables biosourcés (AFCB, the French association for biobased compostables) and Novamont France, 90% of French citizens are in favour of compostable biobased materials as alternatives to plastic. 86% of those asked want incentives to be offered to businesses that use sustainable materials, and 78% think the use of compostable biobased bags should be made compulsory.

3725 - New map of plant-based chemistry stakeholders.

Published by the Association Chimie du Végétal (ACDV), this <u>map</u> inventories the biorefineries, facilities, R&D laboratories and biotechnology sites that process plant-based feedstock. With 310 sites listed across France, this document serves as a reminder that the biobased products sector is an industrial reality and a source of country-wide (re)industrialisation. Every region in France is now represented, from sites that are diversifying or reconverting, to brand new plants created in response to breakthrough technologies (in particular biotechnologies). The map can be used to find new facilities that exclusively use plant-based feedstock (often agricultural co-products) to produce their final product.

En savoir plus : Communiqué de presse, Formule Verte.com, L'Usine Nouvelle.com

3726 - Single-use plastics: French citizens are ready to cut back.

According to a survey conducted by OpinionWay for SodaStream, a company specialising in the manufacture of kit to make sparkling drinks, 83% of the people asked believe that reducing single-use plastic should be a priority. A full 62% think it is '*easy*' to do without all single-use plastic packaging. This increases to 66% when asked about single-use plastic bottles.

En savoir plus : <u>Agro Media.fr</u>

3727 - Publication of the 'Panorama du BioGNV 2020'.

Announced by Guillaume Larroque, the new president of the Association Française du Gaz Naturel Véhicule (<u>AFGNV</u>) and president of TotalEnergies Marketing France, this 16-page <u>booklet</u> (in French) is a detailed and wellresearched presentation of the development of bioNGV in France. It describes the trajectory of a fuel that is very popular – especially with local authorities, mass distribution and road transport – and which has experienced considerable growth over the last five years.

En savoir plus : Afgnv.org, Gaz Mobilité.fr, Techniques de l'Ingénieur.fr

3728 - Publication of an opinion column titled 'How to turn France into a leader in bioengineering'.

The signatories of the column (in French) observe that 'although France was a pioneer in bioengineering – an area at the crossroads between life sciences and engineering – back in the late 1970s, it has not invested in it', and go on to list the reasons for this failure. Believing that 'letting ourselves fall behind the leaders would deprive us not only of the considerable economic gain associated with this new industry but also render us worryingly dependant [on other countries]' and above all convinced that France has real strengths in this field, they think 'France should step up its game and develop a world-leading bioengineering industry, as it did with other industries of the future such as artificial intelligence and quantum theory.' To achieve this goal, they are advocating for the implementation 'of a plan to turn France into a leader within five years in five key fields: synthetic biology, cellular therapy, gene therapy, protein engineering and equipment (robotics, instrumentation and bioinformatics)'.

En savoir plus : Les Echos.fr

4. PUBLIC POLICIES & REGULATIONS

3729 - Launch of the French Tech Green20 project and announcement of the 20 start-ups chosen.

Presented by Barbara Pompili, minister for the ecological transition, and Cédric O, secretary of state for the digital economy and electronic communications, the aim of this new programme is to mentor 20 greentech start-ups that have the potential to become green transition technology leaders. Chosen on the basis of their environmental impact as well as their ability to develop guickly and on a large scale, these greentech start-ups are contributing innovative solutions to a range of challenges, from combatting air pollution to energy efficiency improvements to urban reforestation. The 20 businesses will receive the same support as ones involved in the French Tech Next40/120 programme: access to a network of French Tech correspondents in over 60 public service organisations and increased visibility. The Greentech Innovation teams at the Ministry for the Ecological Transition will also share their own support initiatives with the chosen startups.



Source: economie.gouv.fr

Info: The new programme is the first phase of the global initiative *French Tech For The Planet*, which was launched in late 2020 with the aim of turning the green transition into an essential arm of French Tech.

En savoir plus : Communiqué de presse, Economie.gouv.fr, La French Tech.com, L'Usine Digitale.fr, Les Echos.fr

3730 - Greentech Innovation: announcement of 45 new SMEs and start-ups.

<u>Forty-five</u> innovative SMEs and start-ups involved in the green transition were chosen further to the seventh Greentech Innovation call for expressions of interest. They were selected for their contributions in the following areas:

- sustainable agriculture
- construction and sustainable cities
- water, biodiversity and biomimetics
- the circular economy
- energy efficiency
- renewable energies and carbon neutrality
- sustainable mobility
- sustainable digital development
- risk prevention and environmental health

The successful businesses will be awarded the Greentech Innovation label and will enjoy networking opportunities with Greentech Innovation's national network of incubators, helping them finalise their projects and facilitate scaleup and commercialisation. They will have access to training courses on business matters such as commercial development, digital marketing, project management for start-ups, recruitment and financial aspects. The Greentech Innovation initiative now counts 215 innovative businesses in the green transition fields.

Info: The Greentech Innovation initiative aims to identify and help foster start-ups' innovative solutions to accelerate the green transition by supporting them through the first phase of their development. It differs from the French Tech For The Planet initiative in that it provides support for businesses that have already found their market and are now looking to develop further with the help of international markets and investors.

En savoir plus : Communiqué de presse, Greentech Innovation, Environnement Magazine.fr

3731 - France Relance: the funding desk opens again.

Hot on the heels of the success of the funding desk for the digitalisation and automation of industry, or the *investment in the transformation towards the industry of the future*' run by the Agence de services et de paiement (ASP, French services and payments agency) in 2020, the government has decided to release an additional €175 million this year. Bruno Le Maire, minister for the Economy, Finance and the Recovery, Olivier Dussopt, deputy minister for Public Accounts, and Agnès Pannier-Runacher, deputy minister for Industry, signed a <u>decree</u> marking the reopening of this funding desk, which will enable industrial SMEs and intermediate-sized companies to receive contributions towards their investments in the technologies of the industry of the future in 2021. Businesses can download an application form from the ASP <u>website</u> and submit their application online between 3 May and 30 June.

Info: The <u>Solutions industrie du futur</u> platform is now online, ready to put businesses in touch with suppliers of solutions for the industry of the future. It is part of the plan of France's 'industrial solutions of the future' sector-specific strategy committee, certified by the Conseil National de l'Industrie on 9 April 2020. The idea behind this platform is to create an ecosystem that encourages French businesses to move towards the industry of the future.

En savoir plus : Communiqué de presse

3732 - The anti-waste law and publication of the 3R decree: Reduce-Reuse-Recycle.

Published by the Ministry for the Ecological Transition, this <u>decree</u> is the first stage of the *loi anti-gaspillage pour une économie circulaire* (AGEC, preventing waste for a circular economy) which was passed in February 2020 and provides for the elimination of single-use plastic packaging by 2040. The new road map, which covers the period from 2021 to 2025, concerns all products and all types of plastic packaging, whether household, industrial or commercial, and includes those categorised as biodegradable or biobased. It sets three objectives, defined on the basis of the <u>Quel potentiel 3R d'ici 2025 ?</u> study (in French), conducted with input from all the stakeholders involved, including economic actors, industrial technical centres, NGOs, consumer associations and local authorities:

- The first objective is to reduce single-use plastic packaging by 20% by late 2025, at least half of which by encouraging reuse.
- The second objective focuses on a reduction of 100% of 'pointless' single-use plastic packaging, such as the plastic blisters around batteries and light bulbs, by late 2025.
- The third objective targets 100% recycling of single-use plastic packaging by 1 January 2025. To achieve this target, single-use plastic packaging on the market must be recyclable, not present a problem for recycling or sorting centres, and be free of substances or elements that could limit the use of the recycled material.

At this stage, the new decree does not provide for checks or sanctions against manufacturers as '*it is limited by French and European law, which provides for the free circulation of articles and goods*'. In addition, on account of the absence of accurate data on the volumes of plastic used in industry and commerce each year, the Ministry has tasked the ADEME (French agency for the environment and energy management) with setting up an 'observatory for packaging reuse' to track the progress made. As such, a first quantitative mid-stage review of the 3R decree is planned for 31 December 2023.

En savoir plus : Communiqué de presse, France TV Info.fr, La Dépêche.fr, L'Express.fr, Les Echos.fr

In Europe

3733 - Horizon Europe: the European Commission has adopted the main work programme for 2021-2022.

The Commission has adopted the main <u>Horizon Europe</u> work programme, which sets out the specific areas and objectives earmarked for funding amounting to €14.7 billion in total. These investments will contribute to ramping up the digital and green transitions, as well as securing a sustainable recovery in the wake of the coronavirus pandemic and strengthening the resilience of the European Union (EU) when faced with future crises. In total, around €5.8 billion will be invested in research and innovation to support the European Green Deal and the EU's commitment to transforming Europe into the first climate-neutral continent by 2050. The means invested will support

projects that drive scientific research on climate change and propose solutions to reduce greenhouse gas emissions and enable us to adapt to climate change.

Recap: Horizon Europe is the EU's research and innovation programme, following on from Horizon 2020. It has a budget of €95.5 billion for 2021-2027.

En savoir plus : EC.europa.eu

3734 - Will legislation applicable to genetically modified organisms (GMOs) be relaxed to allow the use of certain organisms produced via new genomic techniques (NGTs)?

According to a <u>study</u> published by the European Commission at the request of the Council, products stemming from new breeding techniques (NBTs) have the potential to contribute to a more sustainable food system as part of the objectives of the European Green Deal and the Farm to Fork Strategy. The study's authors found that the current GMO legislation, adopted in 2001, is not fit for purpose for certain NGTs and their products, and needs to be updated in light of scientific and technological progress. The study will be discussed with EU ministers and member states at the Agriculture and Fisheries Council in May, then with the European Parliament and all interested stakeholders. In the coming months, the European Commission plans to carry out an impact assessment, including an extensive public consultation, to explore the policy options concerning the regulation of plants derived from certain NGTs.

Recap: NGTs are a set of techniques developed after 2001 – for instance mutagenesis – to alter the genome of an organism. This mutation, which is referred to as 'directed', can be used to provoke genetic variations in a plant with the help of molecular 'scissors' known by their technical term CRISP/Cas9.

More information: <u>Press release</u>, <u>executive summary</u>, <u>Ec.europa.eu</u> En savoir plus : <u>Communiqué de presse</u>, <u>synthèse de l'étude</u>, <u>France Inter.fr</u>, <u>Euractiv.fr</u>, <u>L'Info Durable.fr</u>, <u>Actu</u> <u>Environnement.com</u>

3735 - Biomethane: does the European Commission need to change the way it calculates CO₂ emissions?

While the European Commission (EC) prepares to revise its CO₂ emission standards for cars and vans, some European deputies, who believe that '*biomethane belongs to the most promising alternative fuels to decarbonise transport in a swift and cost-competitive way*', have signed a petition to convince the EC to change its approach to measuring emissions. The signatories believe that the current system, which involves measuring tailpipe emissions, is still too favourable of fossil fuels to the detriment of renewable energies. To right the situation, the deputies are urging the EC to opt for well-to-wheel analysis, which estimates the emissions produced throughout the vehicle's lifetime, including fuel emissions. They claim that this new calculation method would pave the way to a more favourable environment for biomethane. It could, for instance, encourage vehicle manufacturers to improve their cars and vans equipped with internal engines so they can run on bioNGV. The increased use of this biofuel would help Europe achieve its decarbonisation targets.

More information: Press release En savoir plus : Gaz Mobilite.fr

5. AWARDS & EVENTS

AWARDS

SEPTEMBER 2021

17th Conference on Renewable Resources & Biorefineries (RRB)
6-8 September 2021. Aveiro (Portugal).	More information: Website
Commercializing Industrial Distanting low	
13-14 September 2021. San Diego (United States).	More information: Website
13 th European Congress of Chemical Engineering and 6 th Europ	ean Congress of Applied
Biotechnology	
20-23 September 2021. Online.	
	More information: Website
Plant Based Summit	
22-23 September 2021. Reims (France).	
	More information: Website
Genome Engineering and Synthetic Biology	
22-24 September 2021. Online.	
	More information: Website
OCTOBER 2021	
Furonean Forum for Industrial Biotechnology and the Bioecond	omy (FEIB)
5-7 October 2021 Vienna (Austria)	
5^{-1} October 2021. Vienna (Austria).	

In-Cosmetics Global

5-7 October 2021. Barcelona (Spain).

More information: Website

More information: Website

Cosmetic 360

13-14 October 2021. Paris (France).

More information: <u>Website</u>

Annual Biocontrol Industry Meeting

19-20 October 2021. Basel (Switzerland).

More information: Website

DECEMBER 2021

COSM'ING

7-8 December 2021. Saint-Malo (France)

More information: Website