



FLASH NEWS

No. 46-2021 – THE BIOTECH INDUSTRY INTELLIGENCE REPORT

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1. FRACTIONATION & CONVERSION

3566 - Deciphering the workings of the enzyme *Fatty Acid Photodecarboxylase* (FAP).

FAP – a natural photoenzyme present in microscopic algae such as chlorella – presents a new opportunity for the sustainable production of biofuels from fatty acids that are naturally produced by living organisms, and as such it is essential we understand its workings. FAP also shows a lot of promise for the production of high-added-value compounds for fine chemistry, cosmetics and pharmacy. To decipher the workings of this enzyme, researchers from the [Bioscience and Biotechnology Institute](#) of Aix-Marseille (CEA/CNRS/University of Aix-Marseille), the [Institute for Structural Biology](#) (CEA/CNRS/Grenoble Alpes University), the [Laboratory for Optics and Biosciences](#) (CNRS/École polytechnique-Institut Polytechnique de Paris/Inserm), the [Advanced spectroscopy laboratory for Interactions, Reactivity and the Environment](#) (CNRS/Lille University), the [Institute for Integrative Biology of the Cell](#) (CEA/CNRS/Paris-Saclay University), the SOLEIL [synchrotron](#), the European [synchrotron](#) (ESRF), the [Langevin Institute](#) (ILL), the Max-Planck institute in Heidelberg (Germany), Moscow State [University](#) (Russia) and the [SLAC National Accelerator Laboratory](#) (United States) pooled bioengineering work, optical and vibrational spectroscopy and static and kinetic crystallography performed with synchrotrons or an X-ray free electron laser, as well as quantum chemistry calculations. This multidisciplinary study showed that when FAP is exposed to the light and absorbs a photon, an electron is stripped from the fatty acid produced by the algae in 300 picoseconds. This fatty acid is then dissociated into a hydrocarbon precursor and carbon dioxide (CO₂). Most of the CO₂ generated is then turned into bicarbonate (HCO₃⁻) in 100 nanoseconds. This activity uses light but does not prevent photosynthesis: the flavin molecule in the FAP, which absorbs the photon, is bent. This conformation shifts the molecule's absorption spectrum towards the red, meaning it uses photons not employed for the microalgae's photosynthetic activity.

The combined interpretation of the results of various experimental and theoretical approaches by the international consortium has yielded a detailed, atomic-scale picture of FAP at work.

[Publication](#): Mechanism and dynamics of fatty acid photodecarboxylase. Journal: Science. DOI: 10.1126/science.abd5687.

En savoir plus : [Communiqué de presse](#), [Industrie & Technologies.com](#)

3567 - Discovery of new fungal enzymes.

Scientists from INRAE, the Technical University of Denmark, the CNRS and Aix-Marseille University have discovered and characterised new enzymes: AA7 dehydrogenases from fungi that stimulate and maintain the activity of oxidative enzymes called *lytic polysaccharide monoxygenases* (LPMOs). Simple, versatile and efficient, the AA7 dehydrogenases accelerate and stabilise bioprocesses that break down cellulose and chitin, and improve the conversion yields of this biomass into bioenergy. This discovery paves the way for the development of new enzymatic cocktails that use LPMOs and their corresponding AA7 dehydrogenase enzymatic partners to break down cellulose and chitin. In the longer term, the aim is to develop industrial bioprocesses that are less costly and energy-hungry so biomass from agricultural waste and the forestry and agri-food industries can be repurposed.

[Publication](#): Discovery of fungal oligosaccharide-oxidising flavo-enzymes with previously unknown substrates, redox-activity profiles and interplay with LPMOs. Journal: Nature Communications. DOI: 10.1038/s41467-021-22372-0.

En savoir plus : [Communiqué de presse](#)

3568 - A new tool to change any given gene in living cells by illuminating the cells with blue light.

In their paper, scientists from the [Laboratory of Biology and Modelling of the Cell](#) (ENS de Lyon/CNRS/Lyon 1 University) describe a unique photoactivatable protein they have named *LiCre*, for Light-inducible Cre. The first step was to identify the helical domains of Cre proteins that would have interesting functional properties if they could 'move' in response to light. The second step was to attach known photoreceptor proteins to these domains to induce molecular movements when they are illuminated. With a powerful experimental system using the yeast

Saccharomyces cerevisiae, the authors tested over a hundred of these 'collages', just one of which showed very weak activity in the dark, and high activity when illuminated. This chimeric protein, *LiCre*, combines a modified version of the Cre protein with a protein found in oats. The scientists demonstrated that *LiCre* exceeds the efficacy of previous systems based on the association of two fragments. Specifically, they used *LiCre* to trigger cellular activities via light, such as growth and the production of vitamins. The system is efficient both in microorganisms and human cells. The tool is simple to use as it is based on one single protein. This 'optogenetic' tool opens up many opportunities, in particular the study of the function of genes in specific cells in a living organism by lighting up just these cells for a given period of time. It could also make it possible to improve the accuracy of certain gene therapies, by combining them with photostimulation using fibre optics. Last, some manufacturers could use *LiCre* to control the activity of a bioreactor in real time and without any additional chemical activity.

Publication: A single-chain and fast-responding light-inducible Cre recombinase as a novel optogenetic switch. Journal: eLife. DOI: 10.7554/eLife.61268.

En savoir plus : [Communiqué de presse](#)

3569 - One step closer to a new generation of filters made of cotton and enzymes.

Researchers at North Carolina State University (United States) have showed they can change hydrogen peroxide into oxygen and water by coating cotton yarns with catalase. To do so, they applied thin layers of chitosan to stick the catalase to a cellulosic yarn. This created a sustainable and flexible biocatalytic yarn that combines enzymatic, catalytic functionality with protective chitosan coatings and the structural functionality of textiles. According to the researchers, this new class of textile matrices could have numerous small- and large-scale applications, including in controlled flow reactors and reactive filtration.

Next step: Study whether it is possible to design textile filters with carbonic anhydrase (which has the ability to transform carbon dioxide into water-soluble bicarbonate of soda) that could serve as a carbon-capture technology.

Publication: Biocatalytic Yarn for Peroxide Decomposition with Controlled Liquid Transport. Journal: Advanced Materials Interfaces. DOI: 10.1002/admi.202002104.

More information: [News.ncsu.edu](#)
En savoir plus : [Mode In Textile.fr](#)

2. RESEARCH PROJECTS & PROGRAMMES

Project launches

3570 - The CBE JU is set to replace the BBI JU.

The European Commission approved the Circular Bio-based Europe Joint Undertaking (CBE JU) programme – successor to the BBI JU – in a legislative proposal. The new public-private partnership between the European Union and the Bio-based Industries Consortium (BIC) is expected to build on the success of the BBI JU while stepping up its contribution to the EU's climate targets for 2030, in line with the European Green Deal. As such, the CBE JU will scale up technologies leading to industrial deployment, thus attracting investments and creating jobs, while reaching towards the goals of the Strategic Innovation Research Agenda 2017 (SIRA). In addition, the partnership will involve a wider range of stakeholders, including the primary sector, regional authorities and investors, to prevent market failures and unsustainable biobased processes.

The project, part of the [Horizon Europe](#) framework programme, is expected to mobilise up to €2 billion, divided equally between public and private partners.

The European Parliament and Council will now study the proposal and consult with the Economic and Social Committee to finalise it. The regulation should be adopted towards the end of the year.

Recap: The BBI JU funded 11 flagship projects between 2014 and 2020. These 'state-of-the-art biorefineries', the first of their kind, were chosen for their high replicability potential and because the business models can be applied to other biobased industries. France is leading the programme with three flagship projects (Farmÿng, ReSolute and AfterBioChem) in the country. It is followed by the Netherlands, which is hosting two projects. These projects involve 117 beneficiaries including some SMEs from all over Europe as lead investors, but also attract companies from the world over that are now investing in the European Union. The BBI JU beneficiaries have in total received €228 million in grants, leveraging €1.3 billion in private investments to support the design and construction of the biorefineries.

More information: [Press release](#), [Press release 2](#)
En savoir plus : [Formule Verte.com](#), [Info Chimie.fr](#)

3571 - Launch of an in-flight emissions and performance study for a commercial aircraft using 100% sustainable aviation fuel.

As aircraft are currently only certified to fly with a maximum 50% blend of sustainable aviation fuel (SAF) and kerosene, aircraft manufacturer Airbus, engine builder Rolls Royce, German aerospace research centre DLR and SAF producer Neste have launched a study into the effects of pure SAF on the in-flight emissions and performance of commercial aircraft. These biofuels come from oilseed crops, recycled oils, algae, sugars and wood residue. A first flight, designed to check the compatibility of SAF with the aircraft's systems, took place in Toulouse on an A350-900 equipped with Rolls Royce Trent XWB engines, and 'went very well'. It will be followed by in-flight emissions tests starting in April and resuming in the autumn. A DLR Falcon plane will be used to measure engine emissions, particularly of CO₂, the main greenhouse gas. The ground tests will measure particulate-matter emissions in the immediate area, while the in-flight tests will assess the volume and composition of vapour trails. The study is also expected to help bring forward future certification of SAF, authorising aircraft to fly with over 50% SAF.

More information: [Press release](#)
En savoir plus : [Novethic.fr](#), [Air Journal.fr](#), [20 Minutes.fr](#), [L'Usine Nouvelle.com](#)

3572 - A bioprocess techno-economic analysis (TEA) calculator is launched for products made from fermentation.

Launched by the American biotech firm DMC Biotechnologies, this [online calculator](#) assesses the economic feasibility and potential of products made from fermentation. It will help users (from academics to start-ups to investors) make commercially relevant decisions about technology development and deployment. The calculator, which connects key process and financial metrics to production costs and financial return, helps businesses understand the factors that control the success of their technologies. TEA can be used throughout the technological development lifecycle. At the R&D stage, researchers can use it to identify technical metrics that have the greatest impact on profitability. During process development, engineers can use TEA to compare the financial impact of different process configurations and conditions. TEA integrates the information from all these development stages and supplies a basis from which to make informed decisions.

Publication: The bioprocess TEA calculator: An online techno-economic analysis tool to evaluate the commercial competitiveness of potential bioprocesses. Journal: Metabolic Engineering DOI: 10.1016/j.ymben.2021.03.004.

More information: [Press release](#)
En savoir plus : [Formule Verte.com](#)

3573 - UPLIFT project: improving the circularity of plastic packaging in the food and drink sector.

The overall concept of this European [project](#) is to biologically depolymerise both bio- and fossil-based plastic packaging waste and convert it into easily recyclable, more sustainable polymers, via a biorefinery-based process. UPLIFT will address the entire plastic packaging value chain, from monomer production and packaging material manufacture to end-of-life solutions such as reusing and recycling, not forgetting the socio-economic, quality,

regulatory and standardisation issues affecting current practices. The project seeks to boost the development and validation of novel enzymatic and microbial processes for the sustainable use of plastics in food and drink packaging applications. The partners hope to reach industrial demonstration scale between 2025 and 2030.

UPLIFT has 15 participants from 8 European countries and is led by AALBORG University, Denmark. The project was launched on 1 March 2021 for a duration of 48 months and has a total budget of €7,640,653, €7,517,180 of which was received through the European Union's research and innovation programme, Horizon 2020.

More information: [Press release](#)

Ongoing projects

3574 - Biolmpulse project: development of a new biobased adhesive resin.

As partners of the Biolmpulse project, Toulouse Biotechnology Institute (TBI) and TWB (which is also coordinating all the research for the project) are hoping to prepare a next-generation microorganism strain that can synthesise the biobased molecule the project hopes to produce, primarily by exploring the use of second-generation biomass. As one of the project's service providers, the LGC (a chemical engineering laboratory and INP Toulouse, UPS and CNRS joint research unit) is contributing its process engineering skills for the purification stages. TWB is combining expertise in modelling, the design of metabolic pathways, analytics and the engineering of strains and culture processes, and using its automated platforms to develop an original and efficient strain. It is also working on a novel system to trace the molecule via biological labelling.

The TBI team's role is twofold: optimise the enzymes involved in biosynthesis of the target using engineering, modelling and protein design techniques, and characterise the production strains through metabolic flux analysis. Last, the LGC team is responsible for developing the processes that will be used to extract and purify the target molecule and carry out a systemic review to optimise the sequencing of operations within the production process. An initial progress review is planned for May this year and a *'first pilot should be up and running in the second half of 2021'*, according to Quentin Faucet, CEO of ResiCare.

Recap: Biolmpulse was launched in 2019 for a six-year duration by Michelin, through its subsidiary ResiCare. It has a total budget of €28.1 million, €11.5 million of which was received from the French agency for the environment and energy management (ADEME) under the PIA investment programme. Biolmpulse is handling the development of the process to biologically produce the molecule up to the applicative performance of the resin.

En savoir plus : [Bioimpulse.fr](#), [Industrie & Technologies.com](#)

3575 - The BioTfuel project produces advanced biofuels on a semi-industrial scale for the first time.

This world-first on a semi-industrial scale validates the torrefaction-gasification-Fischer-Tropsch synthesis chain for the flexible production of alternative sustainable aviation fuel, synthetic biodiesel and bio-naphtha (a renewable feedstock for the chemical industry) from lignocellulosic biomass. Stable and continuous gasification of various woody biomasses pre-treated by torrefaction was performed over several weeks on the pre-industrial units, meaning biobased synthesis gas (syngas) could be converted into Fischer-Tropsch products. Several renewable feedstocks from biomass waste have already been qualified. The programme is currently working on validating additional feedstocks and optimising operating conditions. The aim is to position BioTfuel® technology as the leading solution for the production of sustainable aviation fuels, making it possible to cut greenhouse gas emissions by more than 90%.

Recap: Avril, Axens, the CEA, IFP Energies Nouvelles, Thyssenkrupp Industrial Solutions, Total and Bionext are involved in this project, which was launched in 2010 and has a budget of €190 million, €33.2 million of which is provided by the public sector.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3576 - The EUR BioEco project website goes live.

This [project](#) – a successful tenderer to the second research universities call for proposals in 2018 – is dedicated to the creation of the ‘Biotechnology for a biobased economy’ Research University in Toulouse. Its goal is to implement collaborative and strategic research and training actions to make Toulouse a centre of excellence in biotechnology for the bioeconomy. The project is structured around the creation of an International Master’s Degree, a PhD programme, an international science challenge, summer schools and e-learning modules.

More information: Bioeco.univ-toulouse.fr

En savoir plus : Insa-toulouse.fr

3577 - TeFuProt project: using the technofunctional properties of plant proteins to make biobased materials.

Having observed that the potential of proteins is largely untapped by the chemicals industry, 18 partners decided to use their technofunctional properties for industrial applications. The partners’ long-term aim is to replace petrochemical-based products with ones from renewable feedstocks and create added value through the use of vegetable proteins. To do so, the researchers looked into rapeseed press-cakes and their functional properties, such as the ability to form foams, gels and films, and retain water. The protein fractions of the rapeseed press-cake can be used as additives for paints, varnishes, adhesives, lubricants, building materials, detergents and polymers. After six years of research and experimentation, the project has developed a series of promising, innovative solutions, some of which are already available as prototypes. The project partners have developed biodegradable films as a packaging material for detergent pods, for example, or as plant-based coverings, as well as fibreboard from production residues, and binding agents modified with rapeseed protein. The prototypes also include flame-retardant insulating foams for the construction industry and moulded foams for packaging, as well as dye transfer inhibitors in eco-friendly laundry detergents. And that’s not all: they can also be used as thickening components for lubricants, binders for lubricating lacquers and additives in universal cleaning agents for wood surfaces.

More information: [Press release](#)

3578 - Amoéba: a new approval application for its biocide in the United States and launch of an extensive new field trial campaign in 2021.

At the end of last year, Amoéba decided to ‘voluntarily withdraw its application for approval’ of its biocidal active substance, the living amoeba *Willaertia magna* C2c Maky, and biocidal products containing it, as the United States Environmental Protection Agency (EPA) had requested additional scientific information. Amoéba, which produces a biological biocide and a biological pest control product, recently announced that it had submitted a new application, with the additional studies requested by the EPA.

Amoéba plans to start selling its biocide in the United States from the second half of 2022 if the new application is approved.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

Amoéba announced that, counting its own trials, its lysate of the amoeba *Willaertia magna* C2c Maky will be the subject of over 200 field trials worldwide (Europe, the Americas and Asia) in 2021. This extensive campaign will deepen knowledge about the active substance, compare several formulations, expand knowledge on the spectrum of activity and generate, in Europe, results to improve future marketing authorisation applications for formulated biocontrol products. Amoéba also announced that it had expanded its collaborations with its partners Philagro and Stähler and other companies in the plant protection sector (BASF, Bayer, Evergreen, Garden Care, Gowan and Kwizda). The first two will continue with their experiments on vines as well as other crops, while the other six will test Amoéba’s active substance in various countries and on a wide spectrum of crops, including vines, cereals and vegetables.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3579 - Carbios and Michelin move one step closer to a 100%-sustainable tyre.

The French tyre maker has tested and validated the enzymatic recycling technology for PET plastic waste developed by Carbios for use in its tyres. Conventional thermomechanical recycling processes for complex plastics do not achieve the high-performance grade required for pneumatic applications. However, the monomers resulting from Carbios' process, which uses coloured and opaque plastic waste (bottles, flasks, etc.), once repolymerized to produce PET, attained a high-tenacity fibre that meets Michelin's requirements. The fibre obtained is of the same quality as a technical fibre made of virgin petroleum-based PET processed at the same prototype facilities. This high-tenacity polyester is particularly suitable for tyres, due to its breakage resistance, toughness and thermal stability. Every year, 1.6 billion car tyres are sold worldwide. The PET fibres used in these tyres, by all manufacturers taken together, represent 800,000 tonnes per year. Eventually, perhaps 3 billion plastic bottles could be recycled into technical fibres for Michelin tyres each year.

Validation of these tests is a new step towards a 100% sustainable tyre, something Michelin hopes to achieve in 2050, and gave Carbios the opportunity to confirm the potential of its recycled PET for all types of application.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#)

3580 - New funding for the Centre d'études et d'expertise en biomimétisme (Ceebios).

The Ceebios (centre of excellence for biomimetics) has received €2.2 million in funding under the PIA investment programme, through the call for proposals for '*Support and transformation of sectors: pooling resources to assist sectors and digital platforms for sectors*', run by Bpifrance on behalf of the French government. This grant will enable it to accelerate the development of the technical and digital aspect of the Bio-inspired Materials Open Innovation Generator (BiOMIg) platform, which intends to step up sustainable innovation inspired by the living world in the materials field, with applications in the major industrial sectors (transport, construction, cosmetics, health and energy, for example). BiOMIg proposes to ramp up, amplify and systematise biomimetics in the development of materials by providing scientific expertise for all sectors. In concrete terms, this platform will make it possible to:

- Systematically screen thousands of potential biological models, primarily from the collections of the MNHN – France's national natural history museum – and carry out a physical/chemical analysis of them with the help of artificial intelligence and advanced measuring devices. This will lead to a new database of living materials that can be searched by industrial companies without any prior knowledge of biology.
- Help the application sectors' manufacturers produce prototypes of new bio-inspired materials, with the assistance of a digital platform that provides methodological support for biomimetics eco-design as well as a prototyping platform.

As BiOMIg's main goal is the collaborative development of sustainable innovation inspired by the living world, Ceebios is creating – in parallel to this technical infrastructure – a consortium of manufacturers and public and private research leaders. The consortium will steer the themes the platform will work on, and will have priority access to the results for the development of bio-inspired applications. It already has some big names among its founding members, such as L'Oréal, Rte, Mäder and the Big Bang Project, as well as the University of Pau and Pays de l'Adour (UPPA).

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

Project status

3581 - Zelcor project: demonstrating the feasibility of transforming lignocellulosic biorefinery side streams into high-added-value products.

This project, which officially ended on 28 February, explored a large number of value chains, the most promising of which were the production of aqueous antiviral dispersions of colloidal lignin, substituents for oil-based aromatics and phenolic antioxidants. The Zelcor project also converted lignocellulosic waste from bioethanol production into

nanomaterials, presenting a realistic zero-waste scenario for the development of 2G biorefineries. By exploring new biological conversion tools, the teams involved in the project also managed to identify 16 new enzymes of interest for the industry, including one that makes lignin soluble. Last, the work conducted as part of this project led to the publication of 20 scientific papers.

En savoir plus : [Formule Verte.com](https://www.formuleverte.com)

3. STRATEGIC INTELLIGENCE: BUSINESSES & MARKETS

3582 - Afyren

According to the [report](#) (in English) published following a life cycle analysis (LCA) of its products by the sustainable development consultancy [Sphera](#) using a standardised method (ISO 14040-14044), 'Afyren's biobased acids have on average a carbon footprint 81% lower than equivalent petroleum-based products.' Sphera had conducted an initial environmental study on Afyren's products via a LCA in 2018-2019, based on pre-industrial data on the Afyren process. The LCA was updated in 2020 and prefigures the environmental assessment of the future biorefinery in Carling. The study was initially a 'gate-to-gate' analysis: from procurement of the biomass used in the Afyren process to the products leaving the plant. It was then expanded to account for upstream processes and deliver a 'cradle-to-gate' analysis. Looking to the future, Afyren announced that other assessments via the European project AFTER-BIOCHEM (2020-2024) would complement the LCA of its carboxylic acids. A critical review will be performed for this LCA, as recommended by ISO standards. A set of metrics – all based on the LCA – will be developed to assess the performance of products derived from the new biorefinery compared with their fossil-based alternatives.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](https://www.formuleverte.com)

3583 - Amyris

The American biotechnology company announced that it had achieved '*the largest industrial-scale fermentation-based cannabigerol (CBG) production run by any producer to date.*' Amyris used its Spanish partner's 225,000 litre fermenters to do so. The production run is intended for skincare products.

[Info] The CBG produced by Amyris meant it was able to realise revenue for the first time from this molecule alone in the fourth quarter of 2020.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](https://www.formuleverte.com)

3584 - Biovitis

The [French company](#) specialising in the production and sale of microorganisms for applications in agri-food, agronomics, the environment, health and well-being, announced that it had changed its name '*but not its course*', and that it was now operating under the name of Greencell. The company has already launched its range of Greenalvia biocontrol and biostimulant products – sustainable alternatives to fertilisers and phytosanitary products – under its new identity. The group will also soon start to sell, under the Mycoepur brand, solutions to treat industrial or municipal effluent to render it odourless and suitable for irrigating green spaces. The French company also plans to sell solutions to remediate polluted soil and sites.

En savoir plus : [Formule Verte.com](https://www.formuleverte.com), [Capital.fr](https://www.capital.fr)

3585 - Delpharm & Roquette

The [French company](#) specialising in the development of pharmaceutical products and drug manufacture announced that, thanks to a collaboration with Roquette, a specialist in biobased ingredients and plant-based proteins, it was able to develop its new softgel capsule with a plant-based shell. The vegetarian gel meets the requirements for both nutraceutical supplements and pharmaceutical softgel capsules. It draws on Roquette's LYCAGEL™ pea starch softgel technology and is composed of hydroxypropyl pea starch, carrageenan and other functional ingredients. Despite this original composition, the first industrial batches produced on Delpharm's Evreux site showed that this new capsule has manufacturing characteristics similar to those of animal-derived ingredients. It can therefore be produced in existing facilities.

More information: [Press release](#)

En savoir plus : [Emballages Magazine.com](#), [Formule Verte.com](#)

3586 - DMC Biotechnologies

The American speciality chemicals company announced that it had managed to successfully produce at commercial scale its amino acid L-Alanine in an 85m³ fermentor at EW Biotech in Leuna, Germany. Matt Lipscomb, CEO of DMC, said: *'We have reached commercial scale with unprecedented speed and capital efficiency when compared to any other company in the sector.'* L-Alanine is used in household cleaning products, human nutrition and pharmaceutical applications.

Recap: With its expertise in metabolic engineering, the American company has developed a way to produce amino acids by fermenting sugars.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](#)

3587 - Global Bioenergies

The industrial biotechnology company announced that it had moved some of its support functions to premises in the Châtelet neighbourhood of Paris. These offices will also accommodate the Group's new sales, marketing and communication teams, to prepare for the launch of the cosmetics range scheduled for this year.

In addition to the launch of this range of products under its own brand, Global Bioenergies is working to scale up its process, with the ultimate aim of supplying this key ingredient to the entire industry. The new industrial trajectory, which could use existing fermentation capacities to minimise construction costs, will be clarified shortly.

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3588 - Lancôme

The cosmetics and luxury products brand announced the launch of its sustainability programme 'Caring Together for a Happier Tomorrow'. The programme, which provides the framework for all its social inclusion and sustainability goals, has three main pillars:

- Caring for the environment with Bring the World to Bloom. With this programme, Lancôme promises to protect, preserve and restore biodiversity for future generations through various actions (reducing the environmental footprint by developing innovative formulations, procuring sustainable raw materials, employing regenerative agriculture practices that have a positive impact, and producing innovative packaging).
- Caring for consumers with Live Responsibly. The aim of this programme is to ensure that, by 2023, 50% of its products are refillable or rechargeable in order to curb waste. But Lancôme also wants to give consumers the means to recycle and increase points of sale designed with the environment in mind.
- Caring for women, with Write Her Future. This programme, conducted in partnership with the NGO Care, aims to help women emancipate themselves by giving them access to education, mentoring and entrepreneurship. Around 23,000 women from 13 countries have already benefited from this programme, and Lancôme hopes to reach 50,000 by 2022.

More information: [Global Cosmetics News.com](#), [You Tube.be](#)

3589 - L'Oréal

The French cosmetics group announced that its Research & Innovation division had begun a drastic transformation by steering its methods towards Green Sciences (Biosciences). This change will help it grow ingredients sustainably and extract the best nature has to offer with the help of its high-tech processes, to offer consumers increasingly safe, effective and environmentally friendly products. L'Oréal has set itself a goal for 95% of its ingredients to be derived from renewable plant sources, abundant minerals, or circular processes by 2030, and 100% of its formulae will be respectful of the aquatic environment. To achieve this transition, L'Oréal has rallied the full range of Green Sciences resources: recent advances in agronomics, new developments in biotechnology, green chemistry, formulation science and modelling tools. The Group is also counting on strategic partnerships with universities, start-ups and its own raw material suppliers.

[Info] By 2020, 80% of the Group's raw materials were easily biodegradable, 59% were renewable, 34% were natural or of natural origin, and 29% of the ingredients used in the formulae were developed according to the principles of green chemistry.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#), [La Croix.com](#), [Societe.com](#), [Premium Beauty News.com](#), [Boursorama.com](#), [Les Echos.fr](#)

3590 - LVMH

As part of its new environmental performance roadmap, named Life 360, the world leader in luxury has committed to eliminating fossil-based virgin plastic in packaging by 2026 and using only recycled or biobased plastic. By 2023, all new products will be part of a '*circular creativity approach to further reduce their environmental footprint, with the use of recycled materials and biobased fibres, and the design of innovative materials.*' In the framework of this new programme, the group also wants to trace materials from their origin through all the transformation stages, to achieve 100% traceability of procurement chains by 2030. It is also planning to stop sourcing raw materials from areas of very high risk of deforestation or desertification. LVMH has committed to using materials certified to standards guaranteeing the preservation of ecosystems and water resources by 2026. Last, the group announced its goal to achieve a carbon footprint compatible with the Paris Agreement, by reducing greenhouse gas emissions linked to the energy consumption of the sites and boutiques by 50% by 2026, thanks to a 100% renewable energy policy.

En savoir plus : [Challenges.fr](#), [Novethic.fr](#), [Fashion Network.com](#)

3591 - Michelin

The French group has signed a letter of intent with the Pays de la Loire region, the Vendée *département*, La Roche-sur-Yon municipal area, the SyDEV (a utilities provider) and Vendée Energie (a renewable energies company) to transform its former tyre production site in La Roche-sur-Yon in Vendée, France, into an innovation cluster dedicated to new energy technologies. This public-private project aims to set up an ecosystem that will create jobs and business in sustainable energy and 'manufacturing of the future', based on the following five pillars:

- manufacturing-artisanship: developing the manufacturing or craft businesses of the future,
- research-development/demonstrators: developing profitable applications,
- training-research: developing skills geared toward energy and the manufacturing of the future,
- start-up/incubator: developing support for young, innovative companies,
- services-engagement: developing services that meet the needs of the cluster, the companies operating there and regional players.

The next step will be to put in place governance of this future cluster, which will be responsible for choosing the businesses to be accommodated on the 20-hectare site, 6.5 hectares of which have buildings built on them.

[Info] The first project implemented on the site will be the installation of a multi-energy distribution centre in the second half of this year. The facility will cost €3.5 million, and only distribute energy produced locally. It will supply hydrogen, BioNGV and green electricity for vehicles needing a quick charge.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#), [Les Echos.fr](#), [L'Usine Nouvelle.com](#), [La Tribune.fr](#), [Le Journal des Entreprises.com](#)

3592 - Mitsubishi Chemical Corporation

The Japanese company announced that it was planning to close its synthetic ethanol production facilities at the Mie plant in Japan and terminate the production and sale of synthetic ethanol by February 2022. It also announced that it had entered into an agreement with Japan Alcohol Trading to distil fermented ethanol on its behalf from April 2022.

More information: [Press release](#)

3593 - Novozymes

The Danish biotechnology company specialising in enzymes announced that it had acquired the data sciences platform and R&D team of the American company [Biota](#), a pioneer in industrial genomics using microbiome insights. This acquisition will enable Novozymes to strengthen its microbiome R&D capacities as well as the existing solutions of its human health division, One Health. The operation should also act as a major catalyst for several of its key businesses, such as animal health, agriculture and household cleaning products. Biota will retain a commercial licence to apply the data science platform for genomic diagnostics. The acquisition price was not disclosed.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](#)

3594 - Royal DSM & Amyris

The Dutch chemicals company announced that it had entered into an agreement with the American biotech firm to finalise the acquisition of its flavour and fragrance (F&F) intermediates business. The business – currently consisting of seven products (four already generating meaningful sales and EBITDA, two just launched and one in the pipeline) – is expected to bring Amyris \$500 million. Under the terms of the agreement, Amyris, which will receive an upfront consideration of \$150 million, will share in the EBITDA growth of some products (mainly those just launched or under development) over the 2021-2024 period. This clause is expected to bring it earnout of between \$100 and \$150 million. The remainder will be paid through a 15-year R&D agreement between the two parties, under which Amyris has agreed to continue developing, scaling and producing the ingredients in the F&F portfolio.

This transaction will enable the Dutch group to expand its offer in the field of biobased aromatics for applications in the F&F and cosmetics industries.

[Recap] In 2017, DSM acquired the production plant for farnesene (Amyris' platform molecule obtained via sugar fermentation) on the Brotas site in Brazil before buying the farnesene technology in 2020.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](#)

3595 - Sappi

The South African paper manufacturer announced the construction of a pilot furfural unit equipped with a technology developed by Sappi to produce furfural from hemicellulose sugars (co-products of the wood-based paper pulp production process). The unit, which will be installed on the site of Saiccor Mill, a Sappi subsidiary, near Durban,

South Africa, will be commissioned in 2022. The financial particulars have not been released. In the long term, Sappi hopes to build a commercial unit on an international scale.

Recap: Furfural is a platform chemical employed to access other compounds used to design products such as films, bottles and other packaging, as well as resins and adhesives.

En savoir plus : [Formule Verte.com](https://www.formuleverte.com)

3596 - TWB

TWB announced that five new members had joined its consortium this year:

- [Awiwell](#), which is developing processes to identify and produce bacterial communities for farm animals.
- [BioEB](#), which has developed a proprietary process called Leebio™ that separates the three main components of lignocellulosic biomass under favourable environmental conditions and using minimal energy.
- [Clarins](#), which designs, manufactures and sells top-end cosmetics formulated with plants and products of natural origin.
- [Dyveo](#), a nutraceutical laboratory that produces pure food supplements, without excipients or additives, with the best concentration of active ingredients.
- [Lesaffre](#), a leading global company in the fermentation of microorganisms (yeasts and bacteria) for baking, taste, health & nutrition, and biotechnology.

On 1 January 2021, the TWB consortium had 53 public and private members (9 large companies, 2 intermediate companies, 5 small or medium-sized enterprises, 21 microenterprises, 7 investment funds and research development bodies, and 9 public-sector members, of which the 3 TWB supervisory bodies: INRAE, INSA and the CNRS).

More information: [Toulouse White Biotechnology.com](https://www.toulousewhitebiotechnology.com)

En savoir plus : [Toulouse White Biotechnology.com](https://www.toulousewhitebiotechnology.com)

Commercial launches

3597 - SP Group & NUREL Biopolymers

The [French group](#) and the [Spanish company](#) have developed a new biobased multilayer film which is compostable and particularly well-adapted to use as packaging for 'complex' foods such as salmon. Designed by SP Group with INZEA biopolymers, this new material acts as a very good oxygen barrier and has superior sealing and transparency properties. This new packaging solution, which can be added to organic waste in standard composting facilities, complies with OK COMPOST as per ISO-EN 13432 and ASTM 6400 standards, meaning it fully biodegrades after three months.

More information: [Nurel.com](https://www.nurel.com)

3598 - The Coca-Cola Company

The American group announced that this summer it would sell 2,000 of its brand new, fully biobased, recyclable bottles on the website of Hungarian retailer Kifli. It wants to measure the packaging's performance and shopper response to the format. Developed by Danish start-up The Paper Bottle Company (Paboco) and scientists at Coca-Cola's R&D centre in Brussels, this new container has an external renewable paper shell with a recyclable plastic lining and cap. The bottle, which is suitable for

both flat and fizzy drinks, will be used for the non-sparkling plant-based drink AdeZ, launched by Coca-Cola in 2018. If the test is conclusive, the bottle will be sold more widely.

Ultimately, the American group wants to develop a bottle that can be fully recycled, just like paper.



Source: coca-cola.eu

Recap: The Coca-Cola Company is aiming to collect and recycle one bottle or can for each bottle sold by 2030. In Western Europe, the American company will try to collect 100% of its packaging by 2025. The group also aims to reduce the use of virgin packaging materials and hopes to make 100% of its packaging recyclable.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](#), [Le Parisien.fr](#), [LSA Conso.fr](#), [L'Usine Nouvelle.com](#)

3599 - Unilever, LanzaTech & India Glycols Ltd

The three partners announced the launch of the world's first surfactant made from industrial carbon emissions instead of fossil fuels. The new product will be used in an OMO (Persil) laundry capsule and launched in China on 22 April 2021. The product will not be any more expensive for consumers.

More information: [Press release](#)

Fundraising

3600 - Bio-lutions

The German [start-up](#), which has developed novel biobased, compostable and biodegradable packaging materials, announced that it had closed a new €2.7 million pre-series B funding round. Carried out with its shareholders, this transaction will enable it to increase the production capacity of its site in Germany. Bio-lutions also announced that a second series B funding round would take place later this year.

More information: [Press release](#)

3601 - Circa Group

The Norwegian specialist in the conversion of waste biomass into advanced chemicals began trading on the Euronext Growth Oslo stock exchange and successfully completed a private placement of 575 million Norwegian kroner (about €56 million). The transaction, led by Pareto Securities and Sparebank 1 Markets attracted the interest of investors BNP Paribas Energy Transition Fund, Delphi Fondene and the Fourth Swedish National Pension Fund, as well as its manufacturing partner Norske Skog. These additional funds will go towards construction of a commercial plant equipped with its unique, patented Furacell™ technology to produce Levoglucosenone (LGO), a platform biomolecule that can be used to manufacture numerous chemicals, including the biobased solvent Cyrene™. The new unit, which has already received a grant of around €12 million from the European Horizon 2020 programme as part of the [ReSolute](#) project, will be located in France and have a production capacity of 1,000 tonnes per year.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](#)

3602 - PILI

The company specialising in the production of biobased and biodegradable colours announced that it had completed a new €4 million funding round, bringing the total amount invested since its creation to €10 million. These new funds, obtained from its long-standing investors (including SOSV, Elaia and seasoned entrepreneurs), a

German Business Angel network, and the French recovery plan for strategic industrial businesses, will enable it to step up the production of biobased pigments and test the formulations in inks and industrial paints. By using renewable, locally sourced feedstocks, these processes can drastically reduce the CO₂ emissions of the dyestuff industry and curb the use of fossil fuels (oil, coal). They can also help reduce the heavy reliance of several industrial sectors on imports from Asia, while creating a European offering.

Info: PILI will start sending samples of biobased textile colourants for customer qualification tests in 2022.

More information: [Press release](#)
En savoir plus : [Mode In Textile.fr](#), [Chastin.com](#)

3603 - Sofinnova Partners

After a first stage in 2018 which enabled it to collect around €275 million, the venture capital firm announced that it had closed its healthcare Sofinnova Crossover fund at €445 million. The amount raised positions it as one of the biggest investment funds in Europe focused on biotech and medtech companies. Sofinnova hopes to invest in ten or so other biotech and medtech firms in total. The planned contribution costs will range from €15 to €45 million, averaging out at around €25 to €30 million.

More information: [Press release](#)
En savoir plus : [Le Lézard.com](#), [L'Usine Nouvelle.com](#)

New investments

3604 - BASF

The German chemicals company announced plans to invest up to €4 billion by 2030, €1 billion of which by 2025, to reduce its greenhouse gas emissions and achieve 'carbon neutrality' in 2050 for the entirety of its global business activities. BASF also announced that between now and 2030, it wanted to 'reduce its greenhouse gas emissions by 25% compared to 2018 levels'. To do so, BASF will 'increase its use of renewable energies' and 'accelerate ... the deployment of new CO₂-free processes for the production of chemicals.'

More information: [Press release](#)
En savoir plus : [Le Monde de l'Energie.com](#), [TradingSat.com](#), [Info Chimie.fr](#)

3605 - BASF Venture Capital & Bota Bio

The German chemicals company's investment fund has invested in [Bota Bio](#), a Chinese company specialising in synthetic biology which has developed a fermentation process using computation that can be used to develop microorganisms. The process optimises the green feedstock transformation process. The biotechnological platform can be used to produce sustainable compounds for industrial applications, such as the manufacture of sweeteners, vitamins or crop protection products. Bota Bio will use the investment to fund its development and increase its production capabilities.

More information: [Press release](#)
En savoir plus : [TradingSat.com](#), [Formule Verte.com](#)

3606 - Braskem

The Brazilian specialist in biopolymers announced that it would invest \$61 million (€50.6 million) to increase the green ethanol production capacity of its Triunfo site in Rio Grando do Sul, Brazil. Green ethanol is derived from sugar cane and is a feedstock used to produce renewable resins. With this investment, the site will be able to produce 260,000 tonnes per year by the fourth quarter of 2022 instead of the 200,000 tonnes it currently produces. According to Braskem, the expansion will avert the emission of 185,000 tonnes of CO₂.

Recap: Braskem hopes to achieve carbon neutrality by 2050.

More information: [Press release](#)
En savoir plus : [Formule Verte.com](#)

3607 - Corbion

The Dutch company announced that it was launching concurrent expansion projects on four existing sites to increase its total production capacity for lactic acid and its derivatives. The investments, which concern the sites in Gorinchem (the Netherlands), Rayong (Thailand), Campos (Brazil) and Montmeló (Spain), are expected to produce a combined additional output equivalent to a new production site without actually having to build one.

Recap: Corbion had already announced plans to increase the production capacity of its plant in Blair, United States. The company still intends to commission a new lactic acid plant on the Rayong site in Thailand in 2023.

More information: [Press release](#)
En savoir plus : [Formule Verte.com](#)

3608 - LanzaJet & Shell

The subsidiary of New Zealand-based group LanzaTech which specialises in the production of sustainable aviation fuel (SAF) announced that the Anglo-Dutch oil and gas company had joined its group of long-standing investors (LanzaTech, Suncor Energy, Mitsui & Co, British Airways and All Nippon Airways). The newcomer will help LanzaJet continue its global growth and accelerate commercialisation of its Alcohol-to-Jet (AtJ) technology to scale the production of SAF. The investment of an undisclosed amount comes as LanzaJet continues building its first commercial-scale facility in Soperton, United States. The new unit – which is expected to produce 10 million gallons of SAF and renewable diesel (close to 38 million litres) – will be commissioned in 2022.

Recap: AtJ technology uses a catalytic process to produce synthetic paraffinic kerosene from ethanol from any sustainable resource, including the ethanol produced via the carbon recycling process developed by LanzaTech.

More information: [Press release](#)
En savoir plus : [Formule Verte.com](#)

New partnerships

3609 - ABPDU & TeselaGen Biotechnology

The [Advanced Biofuels and Bioproducts Process Development Unit](#) (ABPDU) of Lawrence Berkeley National Laboratory (United States) and the [American company](#), which has developed an artificial intelligence-enabled operating system to produce bioproducts more quickly and easily, announced they had entered into a partnership to test and perfect tools to collect the large amounts of multimodal data needed to optimise the large-scale fermentation-based production of various renewable bioproducts. To do so, ABPDU will deploy the TeselaGen® operating system that connects biologists, laboratory technicians and bioinformaticians so they can design and build experiments, standardise and organise data, and, finally, test them. ABPDU will use this system's data acquisition capacities to organise the complex data flows generated throughout the fermentation process.

More information: [Press release](#)

3610 - Avantium & Resilux

The Dutch renewable chemistry specialist announced it had entered into a conditional procurement agreement with the Belgian rigid plastic packaging supplier [Resilux](#). The agreement covers the sale of 100% biobased and recyclable polyethylene furanoate (PEF) resin which will be produced in the new commercial furandicarboxylic acid (FCDA) plant Avantium plans to build. The Dutch company had previously signed five conditional offtake agreements, enabling it to secure the sale of over 50% of the production capacity of its future plant. This new

agreement marks an important step towards a positive investment decision for the construction of the future plant, which could be brought into service in 2023.

More information: [Press release](#)

3611 - BASF

The German chemicals company announced it had entered into two new distinct partnership agreements to strengthen its position as a leader in the biosurfactants market. The first agreement concluded with the Japanese biosurfactants supplier Alliance Carbon Solutions (ACS) aims to strengthen their strategic alliance. BASF is now its majority shareholder. The new partnership covers exclusive technology cooperation, a commercial agreement and product development for sophorolipids, a class of glycolipids. The financial particulars have not been disclosed. BASF also entered into an exclusive technology cooperation agreement with the British start-up Holiform, which should enable the partners to concentrate on the development and manufacture of non-fossil-based, fermentation-derived sustainable ingredients to produce other classes of glycolipids. These ingredients have potential for industrial formulator applications as well as household and personal care products.

More information: [Press release](#)
En savoir plus : [Formule Verte.com](#)

3612 - Biolie & Unipex

The [French](#) biotechnology firm, which developed a patented enzyme extraction technology to extract the main active ingredients from various plant-based sources, and the [French](#) distributor of speciality ingredients signed a distribution agreement for two ranges developed by Biolie: a range of natural ingredients for cosmetics, including original and unique vegetable oils, botanical extracts and the RAINB'OIL family, a range of organic coloured natural oils. These ingredients can be integrated into any type of galenic, for skin and hair care or hygiene and are certified and approved by Cosmos.

The agreement, which covers the entire French territory, came into effect on 22 March this year.

More information: [Press release](#)
En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3613 - Carbios

The French company specialising in the enzymatic recycling of plastics announced the signature of a non-exclusive, non-binding letter of intent with one of the world's largest PET producers. Under this agreement, Carbios and the unnamed PET producer plan to build a 100% PET recycling production unit on one of the PET producer's sites employing the enzymatic technology developed by Carbios. The unit is expected to produce around 40,000 tonnes of recycled PET each year, with the plant starting to generate revenue in 2025. This agreement confirms Carbios' plans to build a flagship unit using its PET recycling technology. It will conduct studies to select the most suitable site, technically and economically, for construction of this first industrial and commercial unit.

More information: [Press release](#)
En savoir plus : [Communiqué de presse](#), [Les Echos.fr](#)

3614 - Clariant & Pertamina

The Swiss speciality chemicals company and the Indonesian oil and gas company announced that they were looking into building a cellulosic ethanol production unit in Indonesia. This follows a three-year partnership, the aim of which was to determine whether the Sunliquid technology developed by Clariant could transform regionally sourced biomass into second-generation biofuel, and '*excellent results demonstrating once again the flexibility and efficiency of our Sunliquid technology platform for different lignocellulosic feedstocks*'.

More information: [Press release](#)

3615 - Coty & LanzaTech

The [American](#) group specialising in beauty and personal care products announced that it had signed a partnership agreement with the New Zealand-based company to launch a new generation of fragrances made using sustainable ethanol obtained via the patented carbon-capture and recycling technology developed by LanzaTech. In this context, the teams of the two groups, as well as production partners, worked for two years to develop a very pure sustainable ethanol suitable for use in fragrances. Coty will incorporate this ethanol into its fragrance manufacturing process. The goal is for the majority of its fragrance portfolio to use this ethanol by 2023. According to the American company, using a new generation of sustainable ethanol produced via carbon capture consumes barely any water and reduces the requirement for agricultural land for sugar cane or sugar beet-derived ethanol. In addition, according to a screening life cycle analysis carried out with independent sustainability consultancy Quantis, the use of ethanol obtained via carbon capture shows a significantly reduced overall environmental impact.

More information: [Press release](#)

En savoir plus : [Premium Beauty News.com](https://www.premiumbeautynews.com)

3616 - DMC Biotechnologies

The American speciality chemicals company announced that it had entered into a manufacturing agreement for the commercial production of its L-Alanine amino acid with [Conagen](#), an American biotechnology firm that has developed enzymatic bioconversion and biological fermentation technology. The partnership combines the production expertise of Conagen with DMC's bioprocesses technology, and follows on from the demonstration of L-Alanine production on a commercial scale (see article No. 3586 of this issue).

More information: [Press release](#)

En savoir plus : [Formule Verte.com](https://www.formuleverte.com)

The American biotechnology firm and the Thai company [SCG Chemicals](#) entered into an agreement for the commercialisation of the L-Alanine and branched chain amino acids (BCAAs) developed by DMC in the Association of Southeast Asian Nations (ASEAN), which includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

More information: [Press release](#)

3617 - Mars Wrigley & Danimer Scientific

The American maker of treats and snacks and the American producer of sustainable and biodegradable materials entered into a two-year agreement to develop biodegradable packaging made from natural ingredients that can be composted in the home as well as in industrial compost facilities. The new packaging will be made from the Nodax® polyhydroxyalkanoate (PHA) developed by Danimer Scientific using natural fermentation processes with vegetable oils (soy and rapeseed). It biodegrades in soil, fresh water and marine environments. The two partners plan to add this new material to flexible and rigid packaging for smaller or single packs *'that are more likely to be littered and typically less likely to be recycled.'* Skittles, the rainbow-coloured chewy sweets, will be the first to test the new packaging, which will hit the shelves in late 2021 or early 2022 in the United States. The American agri-food group will then look into extending the packaging across its portfolio of brands and categories.

Info: Mars Wrigley's goal is for 100% of its packaging to be reusable, recyclable or compostable by 2025.

More information: [Press release](#)

En savoir plus : [Emballages Magazine.com](https://www.emballagesmagazine.com), [L'adn.eu](https://www.ladn.eu), [Process Alimentaire.com](https://www.processalimentaire.com)

3618 - Novasep & Bonumose

The French specialist in purification services and technologies for the industrial biotechnology markets and the American [start-up](#), which has developed a patented enzymatic technology platform for continuous production of high purity rare sugars from plant-based feedstocks (starch) announced that they had entered into a new partnership. This collaboration covers the development, design, manufacture, installation and start-up of a complete process line to produce high purity rare sugars such as Tagatose and Allulose in Virginia, United States.

More information: [Press release](#)

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3619 - Origin Materials & Packaging Matters

The [Californian company](#), which has developed a patented technology platform to transform cellulose from wood residues into sustainable materials, and the American packaging [manufacturer](#) have entered into an agreement to develop advanced, recyclable, carbon-neutral packaging solutions. The project will draw on Origin Materials' expertise in furandicarboxylic acid (FDCA), the precursor to polyethylene furanoate (PEF). Initially, Origin Materials will supply sustainable and recyclable PET to the existing Packaging Matters facilities. As the companies make headway with the development of suitable PEF applications, some or potentially all of the supply will transition to sustainable PEF with a carbon-negative footprint. The partnership will also facilitate the creation of additional novel polymers with performance characteristics that meet the needs of Packaging Matters' customers and consumers, while delivering new types of biobased and recyclable packaging.

More information: [Press release](#)

3620 - Total Corbion PLA & NextChem

The 50/50 joint venture between Total and Corbion announced it had signed an agreement for the front-end engineering design stage for its future polylactic acid (PLA) production unit with NextChem, the subsidiary of industrial engineering specialist Marie Technimont. The plant, in Grandpuits, France, is expected to produce 100,000 tonnes of plastic each year, making it the first plant of its kind in Europe. Entry into service is scheduled for 2024.

[Info] With the new plant in Grandpuits and its other facility in Thailand, which can produce 75,000 tonnes of PLA each year, Total Corbion PLA could overtake NatureWorks to become the world's leading PLA producer.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](#), [Emballages Magazine.com](#)

Takeovers

3621 - Amyris

The American biotech firm announced that it had entered into an agreement for the acquisition of luxury beauty brand Costa Brazil. The acquisition will help it ramp up its growth and market leadership in clean beauty and expand its family of brands, which already includes Biossance, Pipette, Rose Inc., JVN and Terasana.

More information: [Press release](#)

En savoir plus : [Formule Verte.com](#)

3622 - METabolic Explorer (METEX)

The French biochemicals manufacturer announced it had signed a purchase agreement with Ajinomoto Co., Inc., for the purchase of 100% of the shares of its European subsidiary, Ajinomoto Animal Nutrition Europe (AANE). This signature follows the start of exclusive negotiations announced on 26 February, and the unanimous favourable opinion of the employee representative bodies of both METEX and AANE.

Upstream, the new METEX organisation will incorporate the Group's well-established R&D and pre-industrial demonstration expertise and, downstream, the manufacturing infrastructure, sales force and distribution networks of AANE and METEX NØØVISTA, transforming it into the European leader in the production of naturally derived functional ingredients via fermentation.

Given the signing of a mutually binding share purchase agreement and the absence of conditions precedent, the transaction should be completed in the coming weeks.

More information: [Press release](#)
En savoir plus : [Communiqué de presse](#)

Activity reports

3623 - Amoéba

The specialist in biological biocides did not generate any revenue during the 2020 financial year, compared with €122,000 in 2019. As at 31 December 2020, its operating loss stood at €6,156k compared with a loss of €5,506k as at 31 December 2019 and its net loss was €8,157k, compared with a loss of €7,250k as at 31 December 2019. As at 31 December 2020, the company's shareholders' equity amounted to €2 million compared with €4.2 million as at 31 December 2019, and its cash position amounted to €4,975k compared with €4,761k as at 31 December 2019. On the financial year end date, Amoéba had sufficient net working capital to meet its obligations and cash requirements over the next 12 months, and considered it could respect commitments made up to September 2023.

Upon publication of its results for the financial year, Amoéba looked back on *'a year mainly marked by the development acceleration of the biocontrol application for plant protection and the regulatory dossiers follow up for the biocontrol and biocide application.'* Amoéba also presented its plans for the future.

More information: [Press release](#)
En savoir plus : [Communiqué de presse](#)

3624 - Amyris

During the 2020 financial year, the American biotech firm generated revenue of \$173 million (€143.6 million): an increase of 13% on the 2019 financial year. The gross margin was 56% (\$11 million more than the margin recorded in 2019). The adjusted EBITDA was -\$95 million (\$8 million up on the previous year). The adjusted net loss stood at \$151 million, a \$16 million improvement on 2019.

Looking to the future, Amyris expects 2021 to be a *'record year with underlying total revenue in the \$240 million range and reported total revenue of around \$400 million, when including the potential impact of the strategic transactions.'*

More information: [Press release](#)
En savoir plus : [Formule Verte.com](#)

3625 - Carbios

As at 31 December 2020, the French company specialising in the enzymatic recycling of plastics announced an operating loss of €6.82 million (compared with a loss of €4.54 million as at 31 December 2019) and a net loss of €6.15 million (compared with a loss of €3.75 million as at 31 December 2019). Its shareholders' equity amounted to €45,135k in 2020, compared with €22,005k at the end of 2019. This can mainly be explained by the capital increase of €27,000k carried out in July 2020. As at 31 December 2020, its net cash position amounted to €29 million, which should enable it to push forward with current developments beyond the next 12 months.

On the occasion of the publication of its annual financial results, Carbios looked back at the highlights of the 2020 financial year and the post-closing events.

More information: [Press release](#)
En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3626 - Global Bioenergies

As at 31 December 2020, the Global Bioenergies operating revenue amounted to €3.27 million, compared with €3.49 million in 2019, and its net loss stood at €11.1 million, compared with a loss of €12.7 million in 2019. The EBITDA stood at -€9.8 million (up 6.6% on the previous year). As at 15 March 2021, the gross cash position was €15.2 million.

On the occasion of the publication of its annual financial results, Global Bioenergies looked back on the highlights of the 2020 financial year and recent events. According to Marc Delcourt, CEO of Global Bioenergies: *'2020 was a tough year, but we forged ahead as always.'*

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3627 - METabolic EXplorer (METEX)

Over the course of the 2020 financial year, METEX generated revenue of €50,000, compared with €350,000 as at 31 December 2019. However, the biochemicals manufacturer specified that *'given the Group's strategic development plan, based primarily on industrialisation and marketing of 1.3 propanediol (PDO) and butyric acid (BA) as well as expansion of its product portfolio via its ALTANØØVTM technology platform, its turnover is not a relevant indicator of activity at this stage.'* As at 31 December 2020, its overall net loss stood at €9.7 million compared with a loss of €8.4 million at the end of 2019, while its operating expenses stood at €12.5 million compared with €10.4 million at the end of 2019. On the same date, the Group had a consolidated gross cash position of €18.2 million compared with €26.6 million as at 31 December 2019.

On the occasion of the publication of its annual financial results, METEX looked back at *'significant industrial, commercial and technological progress achieved in 2020 despite the health crisis'* and reviewed its perspectives for 2021, the year of the *'acceleration of this transformation'*.

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#)

3628 - Plant Advanced Technologies (PAT)

In 2020, the company specialising in the production of plant-based biomolecules generated annual revenue of €1.26 million, an increase of 7% on 2019. PAT also reviewed the highlights of the previous year.

Looking to the future, the group hopes to get certain projects back on track in 2021 and remains confident it can attain its growth targets. It also confirmed its continuing commitment to its road map: maintaining efforts to contain costs and preserve cash; deploying its marketing strategy focused on adopting a product catalogue and indirect distribution; and continuing internal research and collaborative efforts to prepare for the launch of new products.

En savoir plus : [Communiqué de presse](#), [Formule Verte.com](#), [Le Journal des Entreprises.com](#)

3629 - TWB

Despite the health crisis and the complete closure of its facilities for over two months, TWB generated revenue of €7.3 million in 2020, compared with €8.4 million in 2019, and conducted 61 R&D projects, of which 30 new ones. In total, 214 projects have been conducted since the creation of TWB in 2012. In 2020, TWB received a €7 million grant to support its activities over the next five years. The grant also rewards its model of excellence in France. TWB obtained a further €1.4 million in response to the latest national EquipEx+ (PIA3) call for proposals to support the acquisition of scientific equipment that meets the highest international standards. In 2020, TWB moved into new premises on the INSA Toulouse campus, doubling its floor area. At the same time, TWB is continuing its development and capitalising on its experience to move into fields of application which present new challenges that industrial biotechnologies can solve, including biopharmaceuticals, biocontrol, biostimulation and biomaterials.

For Olivier Rolland, Managing Director of TWB: *'The short-term goal is to generate revenue of €8 million in 2021, €5.5 million of which from industrial contracts.'*

More information: [Toulouse White Biotechnology.com](#), [Press release](#), [2020 annual report](#)

En savoir plus : [Toulouse White Biotechnology.com](#) [Communiqué de presse](#), [rapport d'activités 2020](#), [Formule Verte.com](#), [La Dépêche.fr](#), [La lettreM.fr](#)

Human resources

3630 - SAS Pivert

The French company Pivert, which specialises in innovative green chemistry processes and products, announced it had appointed Denis Chereau to the position of CEO. Mr Chereau holds a PhD in microbiology from the University of Bourgogne, France, and began his career in 1986 as technical director of the start-up Lyven. After a stint at Amylum as operations director, he moved to the United States in 2002 to join Tate&Lyle, becoming director of its Nesle site in France in 2004. He was appointed director of Tereos' Markolsheim site in 2008, before joining the Improve platform in 2013.

He is replacing Matthieu Chatillon as CEO of Pivert. Mr Chatillon is moving on to take up the position of innovation director at Avril Spécialités Animales.

En savoir plus : [Formule Verte.com](#)

MARKETS

In Europe

3631 - What lies ahead for the biobased coatings market?

Given growing ecological worries and increasing consumer awareness of eco-friendly products, Akzo Nobel, Covestro and PPG Industries are expecting further opportunities for the biobased paints and coatings markets. According to Mary Ellen Shivetts of PPG: '*Biobased coatings are an emerging market with approximately 5% market share.*'

More information: [European Coatings.com](#)

3632 - What will the European bioeconomy look like in 2050?

Further to the European Commission's 2020 Strategic Foresight Report, which mentioned the potential of the sustainable bioeconomy to transform Europe's agricultural and industrial base and create new jobs while enhancing our natural resources and ecosystems, experts from the European Commission's Joint Research Centre have developed four foresight scenarios for the European Union's bioeconomy in 2050. Each scenario describes the world, Europe and the bioeconomy in 2050, but with political and strategic differences, and examines the contributions to the objectives of the EU's bioeconomy strategy and selected United Nations Sustainable Development Goals. The Commission plans to explore these scenarios further, to facilitate and strengthen strategic and systemic reflections among key stakeholders of the European bioeconomy.

More information: [Press release](#), [report](#)

4. PUBLIC POLICIES & REGULATIONS

In France

3633 - Public consultation on biobased products and sustainable fuels.

Launched by France's Ministry for the Economy, Finance and Recovery, the aim of this [public consultation](#) is to create a strategy to encourage the development of industrial biotechnologies in France and the manufacture of biobased products, in particular those that can replace petrochemical-based products. The strategy includes fuels from sustainable sources: biofuels, fuels produced using renewable energy and alternatives to hydrocarbons (such as CO₂), and biogas for use as a fuel. The goal is to develop a French manufacturing sector that is competitive both at home and abroad (in particular in the aerospace field), creates jobs and is kind to the environment. It will also take care to implement sustainable deployment conditions from an environmental point of view by working simultaneously on demand for biobased products and the development of France's offering. The consultation is open until 14 May 2021.

En savoir plus : [Entreprises.gouv.fr](https://entreprises.gouv.fr)

3634 - Publication of an order that will lead to new sustainability and emissions criteria for renewable energies produced from biomass.

This new [order](#), which transposes the section concerning the sustainability criteria for biomass energy taken from the European renewable energies directive, known as RED II, expands the sustainability criteria for feedstocks, the reduction of greenhouse gas emissions and energy efficiency to the various sectors involved in the production of energy from biomass: biofuels, bioliquids and biomass fuels, production of electricity, heat and cold, production of solid fuels and production of biogas. The sustainability criteria apply to all the stages of the chain, right up to product consumption: extraction or growth of the feedstock, processing, transport, distribution and use. All the parties involved in this chain must be able to prove they have met these environmental criteria. The criteria vary, however, depending on when facilities entered into service. The order specifies that the biomass energy from waste and residue from agriculture, aquaculture, fishing and silviculture only have to meet the criteria for the reduction of greenhouse gas emissions. Electricity, heating and refrigeration produced from solid municipal waste, however, are not subject to the criteria for the reduction of greenhouse gas emissions. The new text will come into force on 1 July this year.

En savoir plus : [Actu Environnement.com](https://actu-environnement.com)

3635 - Public consultation on the proposed decree concerning criteria for the sustainability and reduction of the climate impact of biomass energy.

Launched by the French Ministry for the Ecological Transition, this [consultation](#) concerns the proposed decree for the transposition of the section on sustainability criteria for biomass energy taken from the European renewable energies directive, known as RED II. The directive expands the implementation of criteria for the sustainability and reduction of greenhouse gas emissions to the production of gas, electricity, heating and refrigeration from gaseous or solid combustibles produced from biomass. The consultation is open until 18 May 2021.

Recap: Until now, only biofuels and bioliquids were concerned by these requirements.

En savoir plus : [Actu Environnement.com](https://actu-environnement.com)

3636 - The French Senate launches a fact-finding mission on the role anaerobic digestion has to play in the energy mix.

On the basis that anaerobic digestion is key to several fundamental issues (the environment and waste management, energy policy and the future of France's agricultural sector), but we also need to look for and measure the effects and consequences of its rapid development in recent years, this fact-finding mission hopes to:

- Produce, using a rational, scientific approach, an exhaustive energy assessment of anaerobic digestion, looking at the value of inputs, for example,
- Study the impact of anaerobic digestion on agricultural practices,
- Examine the economic aspects to appreciate its effect on France's meat and dairy sectors,
- Review the applicable regulatory framework.

Twenty-three senators of all political parties are involved in this fact-finding mission, which was created on the initiative of the Senate's 'ecology, solidarity and the regions' group and is chaired by Pierre Cuypers. The mission will continue until the summer.

En savoir plus : [Sénat.fr](https://www.senat.fr), [Terres et Territoires.com](https://www.terres-et-territoires.com), [Actu Environnement.com](https://www.actu-environnement.com)

3637 - Publication of an order expanding the installation of ethanol conversion boxes that enable vehicles to run on Superethanol-E85.

According to this [order](#), petrol vehicles (private cars and vans) of 15hp and over that were registered on or after 1 January 2001 and are compatible with SP95-E10 can now be equipped with an E85 box approved by the French government. This kind of box can also be installed in vehicles equipped with particulate filters. According to La Collective du Bioéthanol (the French beet and sugar association and the agricultural alcohol producers' association), this decision could concern around 10 million petrol cars. The new provisions came into force on 1 April this year.

Recap: Since 2017, ethanol conversion boxes have been compatible with all European emission standard Euro 3 petrol cars, SP95-E10 compatible, up to 14hp.

En savoir plus : [Communiqué de presse](#), [Challenges.fr](https://www.challenges.fr), [Le Figaro.fr](https://www.lefigaro.fr)

3638 - France's Council of State confirms the exclusion of all palm-oil derived products from the biofuels list.

In a notice issued on 24 February this year, the French Council of State cancelled the memorandum dated 19 December 2019 issued by the French directorate general of customs and excise which stated that palm fatty acid distillates (PFAD), by-products of palm oil production, were an approved feedstock for biofuel production.

En savoir plus : [France TV Info.fr](https://www.france.tv/info), [Formule Verte.com](https://www.formuleverte.com), [Actu Environnement.com](https://www.actu-environnement.com)

In Europe

3639 - The European Union sets a new carbon emissions reduction target.

Following bitter negotiations, MEPs and the European Union Member States agreed to adopt a net greenhouse gas emissions reduction target for the EU of 'at least 55%' by 2030, compared with 1990 levels. This agreement will be formally integrated into a 'climate law', which is under preparation. The text also reaffirms the drive to become climate neutral by 2050, which will apply collectively to all twenty-seven Member States, but will not be imposed on each individual State, contrary to the Parliament's wishes.

The MEPs and the States also agreed to create a European scientific advisory board on climate change. It will be made of 15 senior scientific experts of different nationalities and will have a four-year mandate.

En savoir plus : [Le Monde.fr](https://www.lemonde.fr), [Actu Environnement.com](https://www.actu-environnement.com)

3640 - Belgium: a step towards banning biofuels formulated with soy and palm oil.

According to a royal order made by the federal minister of climate and the environment, Zakia Khattabi, biofuels formulated with soy and palm oil will be banned in transport from mid-2022. The federal government also plans to reduce demand for fuel by concentrating on electric transport and rail travel.

En savoir plus : [Rtbf.be](https://www.rtbf.be), [La Libre.be](https://www.lalibre.be)

5. AWARDS & EVENTS

AWARDS

EVENTS

MAY 2021

14th Bio-based Materials Conference

18-20 May 2021. Online.

More information: [Website](#)

Lignofuels

26-27 May 2021. Helsinki (Finland).

More information: [Website](#)

JUNE 2021

BIO International Convention

10-11 & 14-18 June 2021. Online.

More information: [Website](#)

JULY 2021

Metabolic Engineering

11-15 July 2021. Online.

More information: [Website](#)

SEPTEMBER 2021

17th Conference on Renewable Resources & Biorefineries (RRB)

6-8 September 2021. Aveiro (Portugal).

More information: [Website](#)

Commercializing Industrial Biotechnology

13-14 September 2021. San Diego (United States).

More information: [Website](#)

13th European Congress of Chemical Engineering and 6th European 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

European Forum for Industrial Biotechnology and the Bioeconomy (EFIB)

5-7 October 2021. Vienna (Austria).

More information: [Website](#)

In-Cosmetics Global

5-7 October 2021. Barcelona (Spain).

More information: [Website](#)

Cosmetic 360

13-14 October 2021. Paris (France).

More information: [Website](#)

DECEMBER 2021

COSM'ING

7-8 December 2021.

More information: [Website](#)