In the context of the eleventh edition of BIOSPAIN

Genome editing techniques can help address the challenges facing agriculture and the planet

- Ensuring food security and mitigating the impacts of climate change will not be possible without innovation in agriculture.

- Through food waste and the insect industry, proteins are being produced in a more sustainable manner.

- Biotechnology enables the transformation of certain types of waste into raw materials for industry, avoiding their disposal in landfills and reducing the footprint of processes and products.

Barcelona, September 28, 2023 - In a context of limited raw materials, pollution, and climate change, genome editing techniques such as CRISPR can help address the increasingly significant and complex challenges faced by agriculture and the planet. This was evident during the International Biotechnology Meeting BIOSPAIN 2023, held from September 26 to 28 at the Fira de Barcelona – Montjuïc, organized by the Spanish Association of Biotechnology Companies (AseBio), in collaboration with Biocat, the Barcelona City Council, and the Government of Catalonia.

Genome editing techniques are used to alter the genetic material of an organism and achieve specific genetic changes. In this regard, as explained during the conference in the session 'New Genomic Techniques: How will the European legislative proposal shape their future in the EU for crops? And beyond...', Richard Borreani, the Public Affairs and Sustainability Manager of Bayer Crop Science, highlighted that in agriculture, genetic editing allows for specific changes in crop genomes comparable to those that could occur through natural selection.

"Climate change is exerting significant pressure on the food production system, so ensuring food security and mitigating its effects will not be possible without innovation in agriculture, which includes the use of new techniques like genetic editing," Borreani detailed.

Furthermore, these techniques enable improvements in crop yield, resistance to extreme weather conditions (including drought), resilience against diseases and pests, as well as reducing food waste and meeting consumer demands for greater variety, improved taste, and appearance.

Sustainable Protein Production

Therefore, biotechnology is playing a significant role in transforming the food industry. Additionally, it is enabling the production of proteins sustainably through food waste, without waste and with virtually zero carbon footprint. "By applying existing techniques and technology, extractions can be performed without the use of organic solvents, obtaining significant quantities of nutrients that can be incorporated into the food chain without the need for additional land or resources because they are already generated in food. This is one of the technological advancements of recent decades that allows us to significantly reduce the carbon footprint of processes," explained Miguel Ángel Cubero, CEO of Ingredalia, during the session 'Revolutionizing Future Food: Biotechnology and Next Frontier,' which he participated in.

Likewise, in the same session featuring Cubero, Ana Isabel González, CEO of Protiberia, explained how proteins can be produced sustainably through the insect industry. "The production process of insect-based proteins involves controlled breeding of insects, such as the Tenebrio molitor or mealworm, under controlled temperature and feeding conditions. Once they reach the desired size, the insects are harvested and processed using methods like dehydration and grinding to obtain insect protein in the form of flour or powder," González commented. This insect protein can be used in food, animal feed, or various products, offering a sustainable source of high-quality protein.

Cleaner and Sustainable Energy Sources

Throughout the conference, the transformative power of biotechnology in the transition to cleaner and more sustainable energy sources was also emphasized. Whether through the bioengineering of microorganisms for biofuel production or the application of enzymes and genetically modified organisms in biomass conversion, the sector is paving the way for a greener and more promising energy future.

"Biotecnología is a tool to drive the circular economy because it allows us to transform certain types of waste into new raw materials for industry, avoiding their disposal in landfills and reducing the footprint of processes and products. It is a model change that Repsol has already adopted because the circular economy is a cornerstone of our strategy for net-zero emissions (we have developed more than 160 circular projects with strategic partners). Our industrial complexes are transforming, evolving. And biotechnology is expected to play an important role in that evolution," said Vicente Bernal, Senior Scientist of Circular Economy at Repsol Technology Lab.

Finally, in the session 'Shaping Bioeconomy in Europe,' the functioning of the bioeconomy sector was analyzed by Víctor Guallar, CSO, and Co-Founder of Nostrum Biodiscovery. He explained that the sector uses biological resources, processes, and principles to provide sustainable solutions in various sectors. The goal, as he commented, is to minimize environmental impact and maximize resource efficiency through the use of renewable biomass.

"The bioeconomy is undergoing rapid transformation thanks to revolutionary advances in biotechnology and sustainable practices. Cutting-edge technologies like genetic editing and synthetic biology are enabling the development of new biological products and processes. Additionally, advances in renewable energy sources and waste management are driving the shift towards a circular bioeconomy model. These innovations hold immense potential for reducing our dependence on fossil fuels, minimizing waste, and promoting a greener and more sustainable future. Finally, the innovation and data processing potential offered by AI and supercomputing techniques will accelerate progress, fully harnessing the benefits of new biotechnologies," concluded Guallar.

'AseBio Journalism Awards'

BIOSPAIN 2023 has reintroduced the 'AseBio Journalism Awards,' open to all journalists who have produced a piece on one of the program's topics, such as agri-food, industrial

transformation, health, or financing, among others. Candidates and media outlets interested in participating can consult the competition rules here and submit their works to ajimenez@asebio.com. The names of the winners will be announced through the association's communication channels, and the awards will be presented at a ceremony in November.

About AseBio

AseBio brings together 300 entities and represents the entire Spanish biotechnology sector. Its mission is to lead the transformation of the country by positioning science, innovation, and especially biotechnology as drivers of economic growth and social well-being. Among its members are companies, associations, foundations, universities, technology centers, and research institutions that directly or indirectly engage in biotechnology-related activities in Spain.

About Biocat

Biocat is the institution that promotes the life sciences and health ecosystem in Catalonia and works to maximize its economic and social impact. Biocat focuses its strategy on positioning the BioRegion of Catalonia as one of the main European hubs, providing innovative capacity to researchers and professionals through programs to enhance talent and entrepreneurship. It accelerates technology transfer and business growth by supporting technology transfer offices (OTRIs) and startups, fostering the attraction of investors and investment in the ecosystem. Established in 2006 by the Government of Catalonia and the Barcelona City Council, Biocat also drives far-reaching strategic policies and projects aimed at enhancing the country's competitiveness.

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