VIB, nestled in the heart of Flanders, Belgium, is dedicated to pioneering life sciences research across a myriad of disciplines. The scientific journey, however, does not stop with the publication of academic papers; VIB is committed to translating this knowledge into concrete solutions for patients and agriculture.

Over 1,900 scientists from more than 75 countries work at VIB, which is distributed across ten research centers embedded in the five Flemish universities: Ghent University, KU Leuven, VUB, University of Antwerp, and Hasselt University. VIB's research covers several areas in the life sciences, notably bioinformatics, cancer, inflammation and immunity, microbiology, neuroscience, plant biology, proteomics, structural biology, systems biology, and computational biology.

To address the increasing demand for specialized infrastructure, VIB partnered with PMV to build a new incubator that was officially opened in April 2024 and is strategically located at Tech Lane Ghent Science Park campus 'Eiland'. The state-of-the-art VIB Bio-Incubator houses VIB's headquarters and with a capacity to accommodate 10 to 15 biotech companies, it aims to be a beacon of growth and opportunity in the sector. The incubator acts as a launchpad for biopharmaceutical and agro-biotech ventures, supporting both local biotech start-ups and international biotech companies looking to enter the European market.



© VIB - VIB's premises in Ghent

VIB researchers continue to push the frontiers of life sciences

Researchers from the team of Bart De Strooper (VIB-KU Leuven Center for Brain & Disease Research) revealed how brain cells die in Alzheimer's disease (AD). One of the key challenges in understanding AD has been connecting its defining hallmarks –

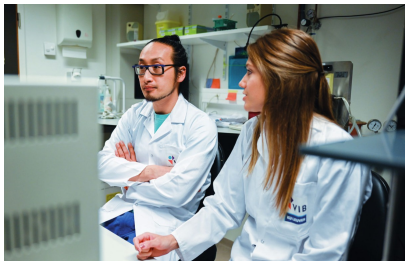
amyloid plaques, tau tangles, and death of neurons – to each other. The De Strooper lab created a new model by implanting both healthy human and mouse neurons into the brains of AD mouse models. Using this model, the team revealed a critical breakthrough: neurons initiate a programmed form of cell death called necroptosis when exposed to amyloid plaques and tau tangles. In a landmark achievement, the research team also managed to prevent neuron death, suggesting new pathways for future treatments.

In a technological breakthrough, the lab of Rouslan Efremov (VIB-VUB Center for Structural Biology) tackled two major bottlenecks of time-resolved cryo-electron microscopy (trEM), a technique that helps observe different stages of protein processes. The researchers developed a microfluid device that encapsulates proteins in small droplets in which a reaction is initiated. A laser then creates tiny bubbles to spray the samples onto the imaging grids. With the help of their new microfluid device, the team could successfully study the protein reaction with a time resolution of 5 ms while consuming less than 100 nanoliters of protein solution. This is a massive, almost tenfold improvement over the earlier trEM technologies, while the low sample consumption makes the new trEM device potentially applicable for studying scarce proteins.

Meanwhile, the team of Dirk Elewaut (VIB-UGent Center for Inflammation Research) and Gert Van Isterdael (VIB Flow Core Ghent) used flow cytometry – a technique to detect and measure the composition of a population of cells – to gain a better understanding of drug delivery in inflammatory conditions. Drugs are transported through the body in various ways, one of which is with liposomes, nanoscopic sphere-shaped structures. In a mouse model of arthritis, the researchers found that specific immune cells (myeloid cells) play a key role in liposome transport. These myeloid cells engulf the liposomes and carry them to inflamed areas. This new insight into how drugs are transported in the body could significantly enhance the effectiveness of treatments for various inflammatory conditions.



© VIB - Participants receiving tailored advice and feedback during the biotope basecamp speed networking event.



© VIB - Ken Matsumoto, a post-doctoral scientist at LMMO VUB, and Lise Finotto, a cancer researcher at the VIB-KU Leuven Center for Cancer Biology

Translating science

At the end of 2023, VIB launched the spin-off Tanai Therapeutics, dedicated to developing first-in-class treatments for obesity. The company acquired additional funding in 2024. On a global scale, obesity and overweight conditions account for an estimated four million deaths annually. As such, addressing obesity presents an unprecedented opportunity with societal impact.

Entering the obesity treatment arena, Tanai Therapeutics adopts an entirely new therapeutic approach. Unlike current treatments that replicate GLP-1 hormone effects, like semaglutide, Tanai Therapeutics is exploring targeted fat-loss methods that conserve muscle mass.

Other spin-offs attracted both funding and attention. Aphea.Bio secured 70 million euros in a Series C round, supported by the Bill & Melinda Gates Foundation, among others. The funding will allow the company to advance its research and development in biologicals, scale product launches, expand market reach, and commercialize product offerings.

Dualyx raised 40 million euros in a Series A financing round, enabling the company to progress its lead autoimmune program as well as its pipeline of Treg candidates. To date, Dualyx has observed promising results on its DT-001 program, offering a game-changing treatment option for a broad range of autoimmune diseases.

MRM Health attained additional financing from existing investors while welcoming the Belgian Sovereign Wealth Fund, SFPIM, to the table. To complement this, the company was also awarded two million euros in funding from the Flemish Agency for Innovation and Entrepreneurship, VLAIO. The funds will be allocated towards expanding its clinical and preclinical pipeline and accelerating its preclinical program in Parkinson’s Disease.

ExeVir announced that it was awarded a two-year R&D grant of 1.6 million euros by

VLAIO. The grant will allow the company to conduct preclinical research toward both preventive and therapeutic solutions for dengue.

Also, after a successful first year, the biotope by VIB program launched its third and fourth calls in 2023. The need for a tailored incubator program could once again be illustrated by an impressive number of applications from 37 different countries, showing that the biotope by VIB model has garnered a solid reputation across borders. In 2024 two cohorts of eleven start-ups joined the program.

Sustainable science in society

The VIB Grand Challenges program, which aims to fund interdisciplinary projects with high societal impact, supported three new projects that kicked off in December 2023: BIOPET aims to revolutionize pet food sustainability by producing animal lipids from yeasts; BE.amycon is setting up a Belgian consortium to tackle amyloidosis, a rare disease caused by abnormal protein deposits; and Pointillism 2.0 builds on the original project by validating biomarkers to improve immune therapy predictions.

The VIB Conference Series continues as a strong international brand. A scientific organizing committee, with both internal and external experts, defines the program of each conference. Starting in 2023, great efforts were made to improve the events' sustainability by collaborating with eco-friendly caterers and reducing printed materials, which fits into a greater sustainability mission. To further support its sustainability efforts, VIB appointed a sustainability officer to guide the institute toward more sustainable operations and goals, for example, by promoting eco-friendly mobility and prioritizing clean energy.

Redoubling its dedication to diversity, equity, and inclusion (DE&I), VIB has taken specific, measurable, and sustainable actions to counter systemic barriers, explicit and unconscious biases, and inequities. As part of this effort, it has hired a dedicated Diversity, Equity, and Inclusion officer to lead its work in creating a more inclusive, diverse, and safe workplace.

As an institute that evolves and adapts, VIB stays true to its original mission, creating significant impact by enabling scientific research and contributing to society. VIB researchers engage in groundbreaking work across diverse fields to transform their discoveries into impactful benefits for society.

