The Universitair Ziekenhuis (UZ) Brussel, located on the Brussels Health Campus in Jette, is a leading academic hospital affiliated with the Faculty of Medicine and Pharmacy of the Vrije Universiteit Brussel (VUB).

Founded in 1977, UZ Brussel currently has 721 hospital beds and employs nearly 5,000 people, serving patients from Belgium and abroad. Each year, the hospital records more than 30,000 admissions, 445,000 consultations (excluding emergency visits) and 75,000 emergency department visits. Under its spatial development plan, the hospital will expand its infrastructure by an additional 67,000 m² of healthcare facilities by 2029.

The hospital and the Faculty of Medicine and Pharmacy are physically connected by a walkway and form an integrated research ecosystem. Clinicians and scientists collaborate in 23 active research groups, strengthening the links between patient care, education and scientific discovery.



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Collaboration with VUB

“As a university hospital, we have a teaching mission and conduct scientific research,” explains Prof. Dr Karine Breckpot, Director of Research at the Faculty of Medicine and Pharmacy and Chair of UMCOR (University Medical Center Research Council).

“Research is coordinated through the University Medical Center (UMC), which is organised into 10 thematic clusters. Research policy is shaped by the UMC Research Council and supported by UMC Research Management. Clinical studies benefit from the Clinical Trial Center and the Medical Ethics Committee.”

Between 2020 and 2025, this collaboration resulted in 121 doctoral degrees and strong participation in several European research projects, including:

–**ENACT**: Environmental Effect on Health Care and Wellbeing and Active Interventions. UMC Coordinator: Prof. Dr Jean-François Argacha

–**ERIS** (European Research Institute on Simulation) consortium. UMC Coordinator: Prof.

Dr Carlo De Asmundis

–**ESCORT**: AI Enabled Healthcare Services during Cross-Border Medical Emergencies and Regular Patient Services. UMC Coordinator: Prof. Dr Ives Hubloue

-EUAR14: H2020: Immune-Image: Specific Imaging of Immune Cell Dynamics Using Novel Tracer Strategies. UMC Coordinator: Prof. Dr Tony Lahoutte

-EUFEDER12: FEDER Project – ONCO.CARE. UMC Coordinator: Prof. Dr Bart Neyns

–**EUnetCCC & JANE2**: The European Comprehensive Cancer Centre Network & Joint Action on Networks of Expertise on Cancer. UMC Coordinator: Prof. Dr Bart Neyns

–**EURL-PH-DIPE**: European reference laboratory network for public health in the field of Diphtheria and Pertussis. UMC Coordinator: Dr Eveline Van Honacker and Prof. Dr Deborah De Geyter

-IRON-BETA: Unraveling the iron metabolism of pancreatic β-cells. UMC Coordinator: Prof. Dr Willem Staels

-JA PCM: Joint Action Personalised Cancer Medicine. UMC Coordinator: Dr Isabel Houbracken and Prof. Dr Bart Neyns

–**PREDICTOM**: Prediction of Alzheimer's Disease Using an AI Driven Screening Platform. UMC Coordinator: Prof. Dr Sebastiaan Engelborghs.

In addition, UZ Brussel researchers have secured two major grants from the Research Foundation – Flanders (FWO) to support advanced research infrastructure. One supports the development of FLASH radiotherapy technology for cancer treatment, led by Prof. Dr Mark De Ridder and Prof. Dr Thiery Gevaert. The other funds the acquisition of a 7-tesla MRI scanner, led by Prof. Dr Johan De Mey.

Furthermore, researchers at UZ Brussel obtained two major support packages for heavy-duty research infrastructure from the Flemish Research Foundation. One supports the development of Flash radiation technology for cancer treatment (led by Prof. Dr Mark De Ridder and Prof. Dr Thiery Gevaert), while the other funds the acquisition of a 7-tesla MRI scanner (led by Prof. Dr Johan De Mey).



Ablation procedures with a new Pulsed Field Ablation catheter. © UZ Brussel

UZ Brussel refines atrial fibrillation treatment

Since 2026, UZ Brussel has been performing ablation procedures using a new pulsed field ablation (PFA) catheter to treat patients with paroxysmal atrial fibrillation. This heart rhythm disorder is caused by abnormal electrical signals that disrupt the heart's normal rhythm. The new catheter enables physicians to map the relevant areas of the heart accurately, treat them with short electrical pulses and assess the results during the same procedure.

Atrial fibrillation is one of the most common heart rhythm disorders. It causes the upper chambers of the heart to contract irregularly, reducing the heart's efficiency in pumping blood throughout the body. Patients may experience palpitations, shortness of breath, fatigue and reduced exercise capacity. Atrial fibrillation is becoming increasingly common, partly because of population ageing and the growing prevalence of risk factors such as high blood pressure, diabetes and heart disease.

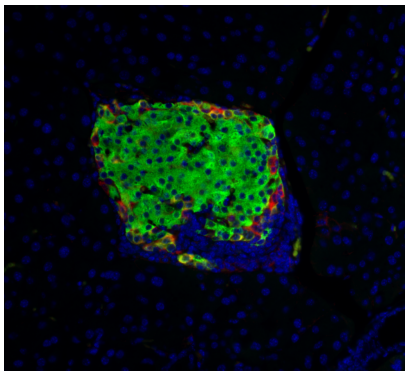
"We can now accurately map the anatomy of the heart, perform the ablation and assess the outcome in a single procedure. This makes the intervention more efficient and provides the treating team with detailed information during the procedure, enabling more precise treatment," says electrophysiologist Prof. Dr Gian Battista Chierchia. "For patients with recurrent heart rhythm disorders, more targeted treatment may make an important difference to their daily functioning and quality of life."

Promising strategy to slow type 1 diabetes development

An international research team led by scientists from VUB-UZ Brussel and KU Leuven has demonstrated that a combined approach targeting both the immune system and insulin-producing beta cells can delay the development of type 1 diabetes more effectively than either treatment alone.

Type 1 diabetes develops when the immune system attacks and destroys the insulin-producing beta cells in the pancreas. In recent years, immunotherapies have made important progress in delaying the onset of clinical diabetes in people at increased risk. However, their effects are often temporary, and responses vary considerably between individuals. The researchers therefore investigated whether protecting the beta cells themselves could improve the effectiveness of immunotherapy.

In the study, NOD mice, a well-established animal model of type 1 diabetes, received a low dose of anti-CD3, GLP1-E2 or a combination of the two before developing diabetes. To investigate why the combination was more effective, the researchers analysed the pancreases of the treated animals. Their findings revealed that GLP1-E2 and anti-CD3 had different but complementary effects.



The insulin-producing beta cells are shown in green. In the bottom right, the cluster of blue nuclei represents immune cells attempting to attack the beta cells. © UZ Brussel

The combination treatment was clearly more effective than either treatment alone. By 30 weeks of age, 77% of untreated mice had developed diabetes, compared with 66% of those treated with anti-CD3 alone and 61% of those receiving GLP1-E2 alone. In mice receiving the combination treatment, the proportion fell to 38%. The onset of diabetes was also significantly delayed. Some of the protective effect persisted even after GLP1-E2 treatment had been discontinued. “This opens up interesting possibilities for future preventive treatments,” says endocrinologist Prof. Dr Nico De Leu.



Willem Staels (l.) and Nico De Leu. © UZ Brussel

Discovery: young pancreatic cells can't survive without iron

An international team of scientists led by researchers from the Vrije Universiteit Brussel (VUB) and UZ Brussel has made an important discovery about how the body maintains healthy blood glucose levels. The researchers found that developing beta cells, the insulin-producing cells in the pancreas, require substantial amounts of iron to mature and become functional. Without this essential mineral, the cells die prematurely, potentially contributing to the development of diabetes over time.

Beta cells in the pancreas act as highly sensitive sensors, continuously monitoring blood glucose levels. When blood glucose rises after a meal, these cells produce insulin, enabling the body to regulate its blood sugar. This process requires considerable energy, generated by the cells' mitochondria, their internal powerhouses. The research shows that iron plays a crucial role in keeping these cellular powerhouses functioning as beta cells develop.

"At a particular stage of beta-cell development, the cells become especially vulnerable," explains Annelore Van Mulders of the VUB Beta Cell Neogenesis Research Group. "At this stage, young beta cells open their 'doors' wide to iron through a specific receptor. When we blocked the supply of iron, the cells were unable to mature and died."

According to paediatric endocrinologist Prof. Dr Willem Staels, the discovery could pave the way for new therapeutic approaches. "We knew that excess iron can harm the pancreas, but until now, we did not know that iron is actually indispensable during its development. Our results show that iron is essential for transforming an immature cell into a healthy, functional beta cell. By providing beta cells with the right amount of iron at the right stage of development, scientists may eventually be able to produce healthier, more robust cells from stem cells."

Societal cost of dementia

Dementia is estimated to cost Belgian society €4.14 billion per year, equivalent to an

average annual cost of €21,200 per person living with dementia. Almost 60% of this total is attributable to unpaid care, according to an international study co-authored by Prof. Dr Sebastiaan Engelborghs.

The study forms part of the European Cost of Illness in Neurology in Europe (COIN-EU) project, led by the European Academy of Neurology. The international research team combined data from 45 European cost-of-illness studies with prevalence estimates from the Global Burden of Disease study. For Belgium, the researchers estimated that approximately 196,000 people were living with dementia in 2019. The annual societal cost was equivalent to approximately 1.1% of Belgium's gross domestic product (GDP).

Of the total cost in Belgium, approximately €2.48 billion was attributable to informal care. This includes unpaid assistance provided by partners, family members, friends and other caregivers, ranging from help with washing, dressing, eating and taking medication to shopping, transport and administrative tasks. Direct costs, including professional medical and non-medical care, were estimated at €1.67 billion. Productivity losses accounted for only a small proportion of the total.

"Almost 60% of the societal cost of dementia in Belgium is borne outside professional care, mainly by partners, children and other relatives who provide support and supervision. Their contribution deserves not only recognition but also sustained, structural support," says Prof. Engelborghs.

Breast reconstruction using two surgical robots

In 2026, UZ Brussel also reached a new milestone in reconstructive breast surgery. An interdisciplinary team led by Prof. Dr Moustapha Hamdi performed a bilateral breast reconstruction using the patient's own abdominal tissue, combining two surgical robots in a single operation for the first time. According to the available scientific literature, this combination of techniques had not previously been used in a single procedure.

The milestone marked the launch of a structured clinical programme for this type of reconstruction at UZ Brussel, building on the hospital's existing expertise in robot-assisted microsurgery.



Bilateral breast reconstruction using autologous abdominal tissue. © UZ Brussel

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