Awardees 2026

The Pfizer Research Prize 2026 was awarded to the researchers behind five outstanding projects.

Oncology

Dr. Miaomiao Sun, Dr. Maciej Bialasek, PD Dr. Dr. Tobias Weiss
University Hospital Zurich; University of Zurich; Cellis AG Zurich; Warsaw University of Life Sciences

Rémi Vernet, Dr. Eugenio Fernandez, Prof. Nicolas Mach
University of Geneva; Geneva University Hospitals

Infectious Diseases / Immunology

PD Dr. Dr. Bojana Müller-Durovic
University of Basel; University Hospital of Basel

Dr. Teofila Seremet Caplanusi, PD Dr. Jeremy Di Domizio, Antoine Girardin
Lausanne University Hospital CHUV; University of Lausanne

Digital Health

Prof. Dr. Lucas Spierer, Frederik Plourde
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Oncology

Macrophages as drug carriers for the treatment of glioblastoma

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Glioblastoma is the most common and most aggressive primary brain tumor in adults. Patients have a poor prognosis, in large part because of inadequate drug delivery. In addition, glioma tumor cells are able to create a tumor-promoting microenvironment through recruitment of peripheral immune cells, particularly macrophages. Miaomiao Sun, Maciej Bialasek and Tobias Weiss leveraged this tumor mechanism to overcome the challenge of suboptimal drug delivery by developing a novel macrophage-based drug delivery strategy.

From different mouse and human glioblastoma models, the prize winners engineered macrophages to carry a so-called ferritin-conjugated cytotoxic payload (MMAE), and evaluated their ability to transfer the drug into glioblastoma cells. Macrophages are large, mobile cells of the immune system that remove pathogens and damaged cells. A ferritin–drug conjugate is a way of packaging a drug by attaching it to ferritin, a protein that naturally occurs in the human body. In other words: The young scientists used macrophages and a carrier structure to deliver the anti-cancer drug directly to the specific tumor cells in the brain.

The results are very promising: In preclinical glioblastoma models, macrophage-drug conjugate (MDC) therapy showed strong anti-tumor efficacy, prolonged survival, and favorable immune responses. In addition, the MDC therapy achieved a reprogramming of the immunosuppressive tumor microenvironment by activation of T-lymphocytes and B-lymphocytes and reduction of immunosuppressive regulatory T-cells. The cytotoxic effect was limited to tumors and thus demonstrated an excellent safety profile.

This new innovative macrophage-based cell therapy selectively and safely delivers potent drugs directly into cancer cells, showing robust antitumor effects and a durable anti-tumor immune response. The combined cytotoxic and immunomodulatory effects offer a promising new therapeutic strategy and a clinical implementation could have the potential to improve treatment outcomes for patients with glioblastoma.

Sun M, Bialasek M*, Weiss T et al. Adoptive cell therapy with macrophage-drug conjugates facilitates cytotoxic drug transfer and immune activation in glioblastoma models. Sci. Transl. Med. 2025; 17, eadr4058. DOI:10.1126/scitranslmed.adr4058.*
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Oncology

Inactivated tumor cells and capsules – a combined immunotherapy against cancer

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Despite major progress in cancer treatment, many patients with advanced solid tumors lack effective therapy. Available cancer vaccines often cannot simultaneously provide a wide range of tumor-specific antigens as well as a very strong adjuvant signal to efficiently trigger the immune system. Rémi Vernet, Eugenio Fernandez, and Nicolas Mach wanted to change this dilemma and developed a personalized cancer vaccine which combines these two unmet needs: tumor-specific antigens and strong immunostimulatory signals.

In a first step, they inactivated tumor cells from the patients to obtain cancer-specific antigen targets. The antigen was combined with biocompatible capsules containing genetically engineered cells which continuously release granulocyte-macrophage colony-stimulating factor. This factor emerged as one of the most potent adjuvants in generating anti-tumor immunity. The pre-clinical model confirmed that this combination, called MVX-ONCO-1, created the optimal conditions to enable effective antigen presentation and immune activation.

Next, the prize winners and their team conducted a clinical single-arm study with 34 patients with advanced refractory solid tumors. MVX-ONCO-1 was applied through six immunizations over nine weeks. The vaccine comprised the irradiated autologous tumor cells combined with two macrocapsules containing the cells engineered to produce the stimulating factor. More than half of the patients with advanced cancers showed signs of clinical benefits, including partial response, stable disease, and prolonged survival. Furthermore, MVX-ONCO-1 was safe and well tolerated.

This is the first-in-human personalized cancer immunotherapy that combines a patient's irradiated tumor cells with encapsulated cells releasing macrophage stimulating factor. The innovative approach addresses tumor heterogeneity by utilizing each patient's unique antigenic profile. It is an important step on the way to individualized cancer vaccines and future combination therapies.

Vernet R, Fernandez E*, Mach N et al. A first-in-human phase I clinical study with MVX-ONCO-1, a personalized active immunotherapy, in patients with advanced solid tumors. Cancer Res Commun. 2024; 4 (8): 2089-2100. doi: 10.1158/2767-9764.CRC-24-0150.*
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Infectious Diseases / Immunology

Epstein-Barr virus hijacks metabolism to transform B-cells

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The Epstein-Barr virus (EBV) is a type of herpes virus that causes a very common and highly contagious infection. Some cases lead to mononucleosis (in German: Pfeiffersches Drüsenfieber) and rare cases lead to B-cell lymphoma, a cancer which can affect lymph nodes (Hodgkin lymphoma), blood, and bone marrow, among other tissues. B-cell lymphomas arise from transformed B-cells. Until now, it was unclear how infected B-cells meet the bioenergetic demands to start the multiplication and eventually the transformation of the cells to cancer.

Bojana Müller-Durovic investigated whether EBV enforces a specific metabolic pathway in freshly infected B-cells that is required for cell-cycle entry and cell division. Her ultimate question: Could these mechanisms be therapeutically blocked? The prize winner and her team used a range of state-of-the-art biotechnological methods, such as metabolic flux analysis, stable-isotope tracing, CRISPR editing, modified viruses, and humanized mouse models. The results of her study showed that EBV induces a specific enzyme (IDO1) which hijacks host tryptophan metabolism. This activates the production of the co-enzyme NAD^+ that is necessary for mitochondrial energy metabolism and transformation of B-cells. Could this pathway be interrupted by blocking IDO1? In fact, the researcher was able to pharmacologically inhibit IDO1 in mice, which significantly impaired B-cell transformation into cancer cells.

The present investigation showed that EBV reprograms newly infected B-cells by inducing IDO1, which fuels NAD^+ synthesis and powers the B-cell energy metabolism. This early boost is essential for cell-cycle initiation and B-cell transformation. Pharmacological blockade of IDO1 prevents the growth of lymphoma. The IDO1 inhibition thus proves to be the first virus-specific, metabolism-based strategy for preventing EBV-associated malignancies and offers a new therapeutic approach to fight lymphoma.

Müller-Durovic B et al. A metabolic dependency of EBV can be targeted to hinder B cell transformation. Science. 2024;385(6650):eadk4898. Published July 5, 2024.

Infectious Diseases / Immunology

A molecular map enables personalized skin treatment

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Skin diseases like eczema, psoriasis, and lupus are caused by an overactive immune system that induces inflammation. Today, new treatments are available that effectively target these types of inflammation. However, some patients do not respond. Either because of a wrong diagnosis or because the chosen treatment does not match the specific kind of inflammation in their skin. Dermatologists are often challenged by the lack of accessible tools to help identify the dominant type of inflammation in their patients' skin.

Teofila Seremet Caplanusi, Jeremy Di Domizio, and Antoine Girardin took matters into their hands and developed a practical immunological tool that assists doctors in making an accurate diagnosis and in selecting an appropriate treatment. Their new method analyzes gene expression patterns, also known as "molecular signatures", from a small skin sample and places them onto a map of different immune pathways. The information is based on seven gene expression units corresponding to major immune pathways: Th17, Th2, Th1, type I interferons, neutrophilic, macrophagic, and eosinophilic responses. The researchers created this map by comparing different molecular signatures across many inflammatory skin diseases in hundreds of patients, and were able to match each signature to the corresponding immune pathway responsible for the inflammation in each case.

Especially in patients who do not respond to treatment, identifying the dominant immune signal in their skin provides new insights into their specific disease progression pathways. This new molecular map can help clinicians to identify the underlying inflammatory pathway in well-known skin conditions as well as in difficult cases like widespread rashes or unspecific symptoms. It further provides a scientific way to match each patient with the treatment that best fits their specific type of inflammation.

The work of the prize winners allows to enter a new era of precision medicine in dermatology, thanks to enabling a deeper understanding of the immune pathways behind skin inflammation. For the first time, clinicians now have a tool to individually identify the specific active immune pathway in each case. Thereby, this molecular map not only helps to make an accurate diagnosis but also to match each patient to the most effective, targeted therapy.

Seremet T, Di Domizio J*, Girardin, A* et al. Immune modules to guide diagnosis and personalized treatment of inflammatory skin diseases. Nat Commun 2024; 15, 10688. https://doi.org/10.1038/s41467-024-54559-6.*
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Digital Health

A digital health solution to reduce unhealthy cravings

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According to the WHO, nearly 60% of European adults were overweight or obese in 2022, which the organization describes as having reached “epidemic dimensions.” Excessive weight has been recognized as a major public health concern and a significant contributor to death and disability. Obesity is a key risk factor for numerous diseases such as cardiovascular disease, type 2 diabetes mellitus, hypertension, coronary heart disease, and some cancers. At the same time, the fight against obesity is challenging. Current solutions like diets, cognitive behavioral therapy, or GLP-1 drugs show more than 90% failure or dropout rates.

Lucas Spierer and Frederik Plourde wanted to break new ground in the battle against the unhealthy kilos. They developed a clinically validated digital therapeutic (Bewe SA-System) that reduces unhealthy cravings and overeating behaviors by recalibrating the brain's reward system via playful cognitive training. Delivered as a mobile app, the solution embeds neuroscience-based tasks into engaging video games, enabling effortless behavioral change without self-control or medication.

To verify the functionality of this system, the University of Fribourg completed four randomized controlled trials with over 500 participants. The results are astonishing: The patients showed a replicated 25% reduction in unhealthy food consumption, a 20% decrease in cravings, and sustained weight loss.

This digital tool introduces a new class of digital therapeutics by combining neuroscience, gamification, and clinical utility. Furthermore, it provides a new solution for the high health care burden associated with overweight and obesity.

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