FreeNovation – A funding program of the Novartis Research Foundation

FreeNovation 2021: Can your project idea change biomedical research?

- Lipid therapeutics and signaling
- Collagen: Homeostasis and dysregulation in disease
- Bacteria as drugs

Submit your application by 17th April 2021!

Exploring New Avenues in Research Funding

Many scientific breakthroughs have occurred not because success was predictable, but thanks to the pioneering spirit of people who gave free rein to their creativity. But there is little room for free creativity and bold, untried ideas these days. This is why the Novartis Research Foundation promotes offbeat project proposals with its FreeNovation program. It calls on researchers in Switzerland to submit proposals that are hard to fund by conventional programs.

This kind of research funding by a Swiss foundation is unique in the field of life sciences in Switzerland. With this program, the Novartis Research Foundation wants to encourage unconventional thinking and further enhance the attractiveness of Switzerland as a research location.

An opportunity for people and ideas

Researchers with a doctorate or equivalent that are engaged at a Swiss institute, university, university hospital, or university of applied sciences are eligible to apply. The projects will be selected by a top-class review panel under the leadership of Prof. em. Gerd Folkers, ETH Zürich, President of the Novartis Research Foundation.

To ensure that both unusual ideas as well as younger scientists without a research track-record have a place in this funding program, the selection process is anonymized: What counts is the originality of the research approach and its potential to achieve something new. Ideas that involve interdisciplinary research are encouraged. Results from preliminary studies are not a prerequisite. Scientific risk-taking is encouraged.

The results of the funded projects shall be published and made available to the public without patent protection. FreeNovation is all about exploring new avenues, venturing into new dimensions, and further strengthening Switzerland's research landscape.

For the 2021 call for proposals, the Novartis Research Foundation is making available up to a total of CHF 2.7 million for a maximum of 15 projects. Each project can be funded with up to CHF 180,000. This will allow the researchers to pursue their objectives over a period of 18 months.

Guidelines for Applicants and the link to submit proposal are available on www.freenovation.ch

Lipid therapeutics and signaling

The great importance of lipids in biology is well recognized, but their chemical complexity and the characterization of their mechanisms of action pose a major challenge. For 10 years, lipidomics has made great progress and lipids can now be much better identified and annotated in databases. Nevertheless, much is still open or remains contradictory. To fulfill their function as signaling molecules, lipids bind to specific receptors or are metabolized by enzymes, but the question of biological relevance often remains unanswered: Is the binding specific and what exactly is the physiological effect? How can we know if this molecule is the natural ligand or just a surrogate? Many receptors, be they GPCRs, nuclear receptors, or enzymes, respond to a variety of lipids. Which interactions are biologically relevant? Some findings that have been published in prestigious journals remain controversial.
Much remains to be discovered, such as how lipids are transported and how they are synthesized and metabolized in the organism. What opportunities could arise if fundamentally new insights were gained in this area? The potential of such research seems wide open. For example, certain lipids have an anti-inflammatory effect and others a pro-inflammatory effect, or they regulate energy metabolism and cell proliferation.
Who has original ideas for unraveling the mysteries of lipids? How can we better understand their physiological role? And what new therapeutic approaches could result from this for immune regulation, Parkinson's, cancer or other diseases?

Collagen: Homeostasis and dysregulation in disease

Collagen is the most abundant protein in the human body, making up to ~30% of the whole-body protein content. It is the main constituent of connective tissues like bone, cartilage or skin and plays an important role in corneas, blood vessels and muscles. The production, post-translational modifications, secretion and assembly of extracellular collagen is a tightly controlled process. Which mechanisms control collagen protein turnover or fibril cross-linking throughout our life? What is the role of the long protrusions called fibropositors beyond collagen secretion? What is the role of bacterial and/or immune response released collagenase in collagen homeostasis?
Genetic defects or nutritional deficiencies can affect collagen production and cause disease. Excessive deposition of collagen leads to fibrotic lesions, for example in the lung or liver. What do we know about the role of collagen in fibrotic tumor stroma or scleroderma? How different is the collagen synthesized in fibrotic tissue compared to normal collagen? Could such differences lead to the novel disease biomarkers?
Due to its glue-like properties, collagen is used for tissue regeneration or as substrate in cell culture. While its use in food or cosmetics is not in focus here, what about novel collagen-based fillers or gels boosting tissue regeneration? How can the biomechanical material properties of collagen grafts be optimized for different tissues or healing phases? Which combinations of collagen with drug molecules are more efficient to deliver drugs to the site of action?
Despite its abundancy throughout our body and its multiple usage over the centuries, a better understanding of collagen synthesis, homeostasis and dysregulation in diseases would enable innovative biomedical applications. What are your pioneering ideas on collagen?

Bacteria as drugs

Bacteria are all around us and in our bodies. On the one hand, we live in symbiosis with them because we could not exist without them, and on the other hand, we fight them because they make us sick. Bacteria are used for a variety of purposes in industry. In the medical field, for example, in the production of antibiotics and other drugs, which are then chemically isolated and administered in pure form.
Could bacteria also be used directly as drugs? Bacteria are already known to be useful as high producers of natural fatty acids in the gut. Could bacteria also produce certain novel active substances, proteins or genes directly where they are needed in the body? Or how might they serve as vectors to transport biological or chemical material to the target, for example in gene therapy? How would such bacterial drugs be administered? Through the skin, orally, or by inhalation? And how could such bacteria be programmed to control their effects? Are there reliable mechanisms that can be turned on and off from the outside? Which bacteria would be suitable for such purposes? And what diseases could perhaps be cured with this kind of cell therapy for which there is no hope today?
Who has ideas to turn bacteria into therapies or cures?