



What we do and do not fund

We do not fund

- Applied research, such as biotechnological and pharmaceutical development (e.g. development of assays for diagnostic purposes or drug screening; optimization or screening of substances/compounds for therapeutic use; development of drug delivery systems or vaccines)
- Studies on the course of diseases or the treatment of symptoms
- Botanical and prokaryotic investigations unless they are of general biological importance
- Education; we can support only research. Therefore, fellowships cannot be used during the course and rotation phase of PhD programmes, but only for the duration of the PhD project.

Examples of project proposals we did not fund

Diagnostics

In this project, specific substances will be explored to develop and validate *in vitro* and *in vivo* novel non-invasive agents for optical imaging, to monitor cancer progression, and differentiation into different cancer forms. Notably, these probes can be further evaluated for therapeutic applications.

Drug delivery

The major challenge of cancer therapy is to achieve specific, efficient, and safe systemic delivery of therapeutic molecules into the tumour microenvironment. This proposal wants to investigate multifunctional nanoparticles as delivery vehicles. The project aims to investigate basic aspects such as nanoparticle size and concentration, cell targeting, and cellular uptake.

Drug screening

Currently, a number of pathways and regulators have been identified that might constitute drug targets for clinical therapy. Among them receptor X is a negative regulator of cell differentiation and the pharmacological modulation of this receptor represents a promising therapeutic approach. To this end, we want to screen compound libraries aiming at the identification of lead substances that can modulate receptor X function.

Drug development

Novel drugs and drug combinations against disease X are urgently needed. Therefore, I aim to 1. determine the activity of 8 anti-X drugs in an *in vitro* system, 2. determine the activity of 3 anti-X drug combinations, 3. determine the activity of a new combination of 3 drugs.

Disease course or treatment of symptoms (clinical studies)

The aim of the project is to evaluate whether treatment with substance X improves cognitive function in patients with disease Y. Control subjects will include patients with syndrome AB who are receiving substance X for this condition. The objectives are: To study in patients with disease Y and in control patients the effect of substance X on: 1) cognitive and motor functions, analysed by psychometric tests; 2) the molecular alterations involved in cognitive disorders; 3) the brain abnormalities, analysed by means of fMRI and EEG.

We fund

The Boehringer Ingelheim Fonds supports only experimental projects in **basic** biomedical research, including *in silico* projects that aim at elucidating basic biological phenomena of human life and acquiring new scientific knowledge.

This can be projects that

- Try to solve the molecular structure and function of cellular proteins using, for example, microscopic or biophysical methods
- Analyse basic cellular, molecular, or genetic mechanisms in human cells or model organisms which might be relevant for the human system
- Try to elucidate basic mechanisms of developmental biology
- Analyse basic mechanisms of tumour biology, either on the level of individual cancer cells or in model organisms
- Try to understand the basic functions and principles of the immune system
- Study basic mechanisms of infection, analysing infectious agents that are relevant for humans
- Try to understand the brain in humans (e.g. with fMRI, EEG) and in model organisms, or projects elucidating the multiple functions of the nervous system
- Use bioinformatics approaches to answer any of the above-mentioned problems

Examples of projects we funded

Cell biology

- Mechanisms of cytokinesis in budding yeast
- Live imaging and mathematical modelling of inner nuclear membrane protein targeting reveal its molecular requirements in mammalian cells

Molecular biology and genetics

- *In vivo* and transcriptome-wide identification of RNA-binding protein target sites
- Monitoring homology search during DNA double-strand break repair *in vivo*

Structural biology

- RNA polymerase I structure and transcription regulation

Neurobiology

- High-throughput imaging of neuronal activity in *Caenorhabditis elegans* chemotaxis
- Spontaneous activity in the development of neural circuits
- Balance and stability of synaptic structures during synaptic plasticity

Biomedical basics of disease

- IL-33 signalling contributes to the pathogenesis of myeloproliferative neoplasms
- Transcription regulates telomere dynamics in human cancer cells

Immunology

- Individual intestinal symbionts induce a distinct population of ROR γ + regulatory T cells

Infection biology

- Heterochromatin protein 1 secures survival and transmission of malaria parasites

Biophysics

- Single-molecule study of the intrinsically disordered FG-repeat nucleoporin 153