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## Master thesis (m/f/d)

### Characterization of novel drug candidates for the treatment of cutaneous pain

As part of a collaborative project with the German Diabetes Center (Deutsches Diabetes Zentrum (DDZ)), a position for a master thesis is available starting in **March/ April 2024** at in the Institute of Pharmaceutical Biology and Biotechnology.

We are looking for a highly motivated, talented and enthusiastic candidate with a strong background in human cell culture. The candidate will work closely with a team of experienced post-docs and with PhD students.

### Job description

Chronic cutaneous pain in patients with type II diabetes severely reduces the quality of life. To date, no efficacious treatments for diabetic or chemotherapy-induced neuropathy are available, reflecting the urgent need for novel drug treatment strategies. Here, endophytic fungi from plants might serve as an underexplored and valuable source for a huge variety of secondary metabolites with putative novel bioactivities.

We have recently engineered a human 3D full-thickness skin model (link to our latest publication <https://doi.org/10.3389/fimmu.2023.1276151>). The goal of this thesis is to explore an exciting new research areas that implicate non-neuronal skin cells, particularly keratinocytes, in cutaneous nociception and peripheral diabetic or chemotherapy-induced neuropathies.

### Aims of this master thesis in detail:

- Characterization of the effects of high glucose or advanced glycation end products on primary keratinocytes in vitro and in situ in the full-thickness engineered skin model via FACS, qPCR and confocal imaging techniques.
- Exploring anti-inflammatory effects of drug candidates of inflammatory pathways and cytokine secretion in keratinocytes.
- Verification of results in co-cultures of non-neuronal cells and sensory neuronal surrogates.

### Qualifications

Experiences in cell culture, practical experience with primary cells is a plus, qPCR, FACS, imaging techniques and molecular biology methods are a clear benefit. Effective time management and a high degree of self-organization is expected.

Please send your application as a single PDF file to [nicole.teusch@hhu.de](mailto:nicole.teusch@hhu.de).

Applications should include a short letter of motivation, your CV, your grade certificates from your bachelor and your master course of study and a short abstract of your bachelor thesis.