

# Master's thesis in collaboration with Neurology, Virology and the Fraunhofer

**Aim:** Establishment of an innervated 3D skin model for postherpetic neuralgia (PHN).

**Background:** PHN is a debilitating chronic pain condition that can follow shingles, caused by the varicella-zoster virus (VZV), the same virus that causes chickenpox. After the initial infection, VZV remains dormant in the spinal ganglia and can reactivate years later, leading to the painful shingles rash. In up to 15% of individuals, pain persists long after the skin rash heals, resulting in PHN. Despite its significant impact, the mechanisms causing PHN remain unclear. Nerve damage, altered neuronal signaling, and immune responses may play a role.

Our project aims to create the first innervated *in vitro* skin model for PHN to further investigate pain pathophysiology. For this, experts from Neurology, Virology, and Tissue Engineering team up and we are looking forward to welcome you as our new team member!

## Tasks:

- Generation of 3D human skin model
- Cultivation and differentiation of induced pluripotent stem cells
- VZV-infection of human-derived sensory-like neurons (iSN)
- Innervation of 3D skin models with VZV-infected iSN
- Multilevel model characterization

**Techniques:** Cell culture, viral infection, calcium imaging, immunocytochemistry

**Requirements:** We seek a motivated student (m/f/d) of Biomedicine or Life Sciences with cell culture experience to join our enthusiastic research team!

**Start:** From June

**Duration:** Nine months

**Team of supervisors:** Dr. Franziska Karl-Schöller, Prof. Dr. N. Üçeyler, Prof. Jochen Bodem, Prof. Florian Groeber-Becker. Please feel free to contact Dr. Franziska Karl-Schöller if you have questions about the project.

**Contact:** Application documents (CV and motivation letter) to Dr. Franziska Karl-Schöller (Karl\_F@ukw.de)