2 PhD Positions in Pain Neuroscience

From spine to brain or brain to spine? Understanding bottom-up and top-down pain augmentation in experimental and clinical pain

Positions	2 PhD positions, funded by the Swiss National Science Foundation (SNSF)
Duration	4 years
Location	Balgrist University Hospital, University of Zurich
Start	April 1st, 2027 (negotiable)

The project

Pain can be amplified along the whole neuraxis, as signals ascend from the spinal cord to the brain and as the brain modulates spinal processing from the top down. Which of these routes drives sensitization, and how they interact, is still poorly understood. The answer matters for many of people with chronic pain.

In this SNSF-funded project, you will use combined corticospinal fMRI, which images the brain and cervical spinal cord at the same time, to study pain sensitization in two populations: healthy volunteers undergoing experimental pain models, and patients with clinical neck pain. The aim is to differentiate augmentation starting in the spinal cord vs. the brain.

What you will do

- Design and performe corticospinal fMRI experiments combined with experimental pain paradigms
- Use a neurophysiological reflex measure to assess spinal nociceptive processing in humans
- Recruit and test healthy volunteers and patients with neck pain
- Further develop and apply analysis pipelines for simultaneous brain and spinal cord fMRI
- Present your findings at international conferences and publish them in peer-reviewed journals

Your profile

- An MSc in **neuroscience, psychology, engineering** or another relevant discipline
- Curiosity about how the nervous system generates and amplifies pain
- Good communication skills in English and the ability to work both independently and in a team
- Experience with functional MRI, thorough knowledge of experimental design and statistics, and German language skills are a plus

What we offer

- A fully funded 4-year position with salary according to SNSF guidelines
- A cutting-edge, interdisciplinary project at the interface of pain neuroscience, neuroimaging and clinical research
- Access to state-of-the-art MRI facilities and close collaboration with clinicians at a leading university hospital for the musculoskeletal system
- Structured doctoral training at the University of Zurich, in one of Europe's most vibrant neuroscience communities
- A supportive team, and life in Zurich, a city consistently ranked among the best in the world for quality of life

How to apply

Send one PDF containing a motivation letter (max. 1 page), your CV, your MSc and BSc transcripts, and the contact details of two referees to:

Prof. Dr. med. Petra Schweinhardt, PhD M Chiro Med, Integrative Spinal Research, Department of Chiropractic Medicine, Balgrist University Hospital, University of Zurich, Zurich, Switzerland, petra.schweinhardt@balgrist.ch

Application deadline December 1st, 2026. Informal enquiries beforehand are welcome.