

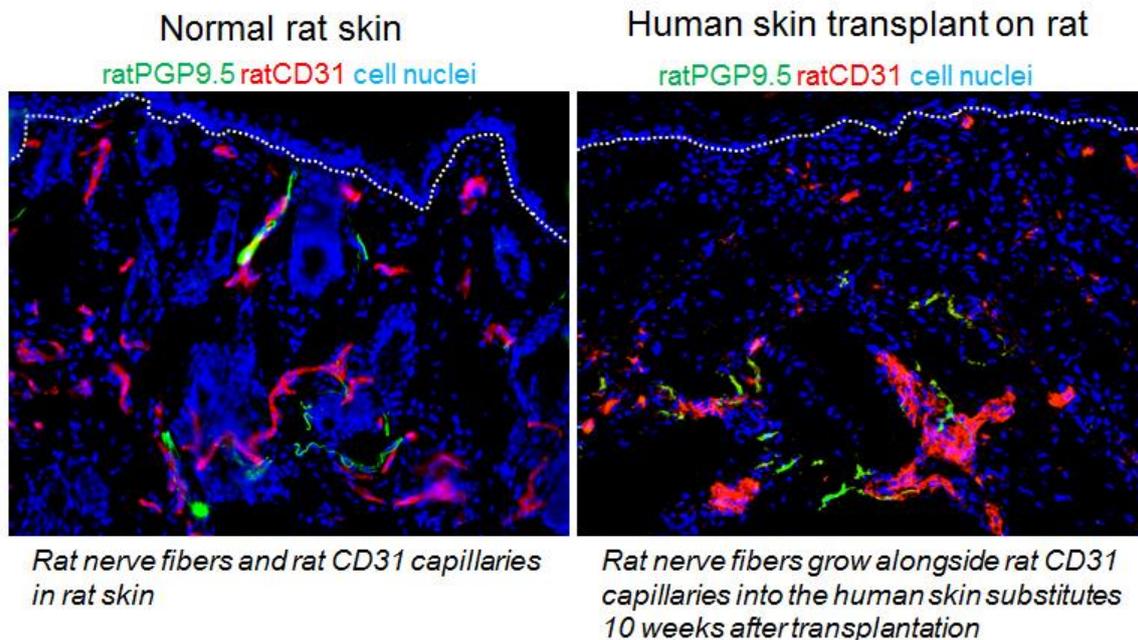
## SkinTERM ESR 11:

### Role of innervation on prevascularization and regeneration in bioengineered human skin

Open PhD position at the [Tissue Biology Research Unit of the University of Zurich](#) (Switzerland) on the role of innervation on prevascularization and regeneration of human skin. The position is part of the Innovative Training Network "SkinTERM" (Skin Tissue Engineering and Regenerative Medicine), an EU Horizon 2020 Marie Skłodowska-Curie Actions funded project ([www.SkinTERM.eu](http://www.SkinTERM.eu)). This network will train a new generation of entrepreneurial, multidisciplinary and intersectorially scientists able to drive this research area further towards clinical translation in Europe. The ESR11 project will be performed in collaboration with the Durham University (Durham, United Kingdom), Radboud university medical center (Nijmegen, The Netherlands), and Paul Hartmann AG (Germany).

#### Project description:

The skin is a highly sensitive organ, perceiving temperature, touch and pain as it is densely innervated by (un-)myelinated nerve types and free nerve endings. After deep skin injury, cutaneous nerve regeneration occurs by sprouting of nerve fibers from the adjacent uninjured area, but it is often compromised. Importantly, the phenomenon of crosstalk between blood vessels and nerves (neurovascular link) was observed in wound healing processes. Thus, the main objective is to study the interaction between a newly formed vascular plexus and nerve cells.



Unpublished data by Klar et al., 2019. For further reading see Biedermann et al., *Pediatr Surg Int.* 2014 Feb;30(2):165-72. doi: 10.1007/s00383-013-3446-x

The project is divided into three specific objectives:

1. **Studying the interaction between newly formed vascular plexus and nerve cells.** Human prevascularised skin substitutes containing nerve cells will be bioengineered to investigate the neurovascular link influence on the vascular plexus development *in vitro* and *in vivo* on athymic rats by using whole mount staining and confocal microscopy.

2. **Investigating the effect of skin appendages on vascular plexus and neuronal guiding.** Hair proto-follicles will be incorporated into skin grafts to study their instructive potential for vascular plexus formation and nerve fiber regeneration both *in vitro* and *in vivo* employing e.g. light sheet fluorescence microscopy.
3. **Studying the effect of dermal scaffolds onto vascular plexus and nerve regeneration.** Prevascularised skin substitutes including nerve cells will be prepared using various scaffolds to investigate the role of extracellular matrix components on nerve cell guiding and vascularization both *in vitro* and *in vivo*. Neurometer measurements will be performed to analyze which ECM components facilitate the sensory nerve conduction threshold *in vivo*.

#### Eligibility criteria for ESR positions in H2020 MSCA-ITNs:

- The candidate must not have resided or carried out his/her main activity (e.g. work, studies, etc.) in Switzerland for more than 12 months in the 3 years immediately before the recruitment date.
- The candidate must hold a Master's degree, be in the first four years of his/her research career and not have a doctoral degree.

#### Project specific requirements:

- MSc in Life Science/Biology/Biomedical sciences/(Bio-)chemistry/or similar
- Expertise in the following areas is highly recommendable: cell culture (primary cells/cell lines), immunofluorescence assays, (immune)histology, (confocal) microscopy, and animal research
- Independent and creative
- Passion for science and innovation
- Proficient in written and spoken English
- Team player
- Permission to work with animals is a benefit
- Willing to move to Switzerland and work for a prolonged period abroad as part of the planned secondments (The Netherlands, Germany, United Kingdom)
- **Note that this ESR position requires additional application for the BioMed PhD program at the Life Science Zurich Graduate School of UZH.**

#### Our offer:

- Working in an innovative, well-equipped and scientifically stimulating environment
- Unique training opportunities - the student will be embedded in a PhD program at UZH as well as the ITN network 'SkinTERM'
- Initial employment contract for 3 years according to a standard public service salary (SNSF Switzerland). If applicable, a family allowance as specified in the [Horizon 2020 Marie Skłodowska-Curie actions Work Programme 2018-2020](#).



Marie Skłodowska-Curie Grant  
Agreement No. 955722

**How to apply:**

**Application deadline:** Please send your application **before January 14<sup>th</sup>, 2022 (CET)**.

**Application:** Upload all documents via the [APPLY](#) link. Your application should include the following documents:

- Motivation letter for the PhD position
- CV
- Letters of recommendation (at least two)
- Copies of diplomas, including grades

**Selection procedure:** The selection round will be an online interview with the representatives of the host institutions and of the secondments. The interview will include a scientific presentation by the candidate on a subject relevant for the ESR project. Candidates will be selected based on:

- Outstanding academic ability
- Requested skills and experience for the ESR project of interest
- Motivation of the application for the ESR position of interest
- The level to which SkinTERM addresses their training needs and contributes to their future careers

**Intended starting date:** Successful applicants are expected to start **March, 2022**.

**Contact:** For more information on the SkinTERM project and application procedure please contact [danique.hof@radboudumc.nl](mailto:danique.hof@radboudumc.nl).

For more information on this specific ESR11 project please contact [Thomas.Biedermann@kispi.uzh.ch](mailto:Thomas.Biedermann@kispi.uzh.ch).