

Postdoc Position in Single-Cell Analysis of the Oral Epithelial Stem Cell Niche

The junior research group of Dr. Kai Kretzschmar at the Mildred Scheel Early Career Centre for Cancer Research (MSNZ) Würzburg is seeking a postdoctoral fellow to work in on oral epithelial stem cells and their niches during the healthy and diseased state using combination of bioinformatics/computational approaches including single-cell and spatial mRNA sequencing. The MSNZ is a joint venture of the University and University Hospital Würzburg and was initiated by generous funding from the German Cancer Aid. It offers a collaborative, creative and motivating environment to towards developing and driving cutting-edge research projects. The main laboratories are located at the Institute for Virology and Immunobiology on the medical campus in Würzburg-Grombühl with fully equipped and modern laboratories, state-of-the-art technology, competitive funding and access to core facilities. In the project "OralNiche", funded by an ERC Starting Grant (ID 101042738), Dr. Kretzschmar and his team aim to characterise the stem cell niches in adult oral mucosal sites (e.g., gums, palate and tongue) and understand why oral cancers are so heterogeneous and site-specific. To achieve this, the group uses genetic lineage tracing, 3D whole-mount imaging as well as single-cell and spatial mRNA sequencing. Furthermore, the team applies compound and genetic screens on patient-derived organoids to better understand therapy responses and identify novel therapeutic targets.

Your duties:

- Developing the bioinformatics/computational parts of the project, including analysis and visualisation of single-cell and spatial transcriptomics and imaging data as well as development of new bioinformatics tools
- Advising and assisting experimental scientists in designing, performing and analysing experiments
- Supervising student projects including master's thesis and internship project
- Managing sequencing data and other digital data
- Drafting progress reports and manuscripts for publication
- Presenting your results at meetings and conferences

Your application will be assessed based on the following requirements:

Essential requirements:

- Master's degree in life sciences, bioinformatics, computer sciences or related disciplines
- PhD in bioinformatics, stem cell biology, biology, biomedicine, biochemistry or related disciplines
- Minimum one first author research article published in or submitted to an international peer-reviewed journal
- Extensive programming skills in R and Python
- Robust experience in analysis of single-cell transcriptomics data
- Fluency in written and spoken English
- Ability to work independently and collaboratively within the group

Positively assessed criteria:

- Experience in analysis of spatial transcriptomics and imaging data
- Experience in web-based data visualisation using Shiny apps and other tools
- Experience in wet-lab work (i.e., organoid cultures, molecular biology, library preparation for RNA sequencing)

The position is initially limited for two years with the option to be extended for up to two more years. Employment is based on TV-L scale E13 (100%) and fully funded by the European Union. Candidates intending to apply for competitive postdoctoral fellowships (e.g., EMBO, HFSP, MSCA) are particularly encouraged. We welcome applications from suitably qualified people regardless of ethnic background, gender or disability. To promote gender equality in science, applications by female candidates are especially welcome. Preference will be given to people with disabilities in the case of otherwise equal aptitude.

If you would like to know more about the project, please get in touch with Dr. Kai Kretzschmar (kai.kretzschmar@uni-wuerzburg.de).

Applications should be written in English and comprise a motivation letter with a description of scientific achievements and academic goals (2 pages max.), curriculum vitae (including a publication list), copies of degree certificates and transcripts as well as the contact details of at least two independent academic references (one of the referees should be the primary supervisor of the PhD thesis, with full address, email and telephone number).

Please submit your complete application documents by **19 February 2023** in a single PDF file (10 MB max.) via email to oralniche@msnz-wuerzburg.de.

References

Seubert, A.C., Krafft, M., and **Kretzschmar, K.** (2021). Generation and Characterisation of murine oral epithelial organoid cultures. *Journal of Visualized Experiments* 173:e62529, doi: 10.3791/62529.
Kretzschmar, K.[#], Boonekamp, K.E., Bleijs, M., Koomen, M., Chuva de Sousa Lopes, S.M., Giovannone, B. and Clevers, H.[#] (2021). *Troy/Tnfrsf19* marks epidermal cells that govern interfollicular epidermal renewal and cornification. *Stem Cell Reports* 16:2379–2394, doi: 10.1016/j.stemcr.2021.07.007. ([#]co-corresponding authors)
Driehuis, E., **Kretzschmar, K.**[#] and Clevers, H.[#] (2020). Establishment of patient-derived cancer organoids for drug screening applications. *Nature Protocols* 15:3380–3409, doi: 10.1038/s41596-020-0379-4. ([#]co-corresponding authors)