Postdoctoral position (E13 TV-L, 100%) – Host-pathogen interactions & biomechanics
to be filled as soon as possible.

The **Cluster of Excellence "Controlling Microbes to Fight Infections"**(CMFI) in the Interfaculty Institute of Microbiology & Infection Medicine (IMIT) at the University of Tübingen is looking to fill one postdoctoral position (E13 TV-L, 100%) as part of Junior Group Leader Dr. Effie Bastounis' research group. The earliest starting date for this position will be on 20.05.2021. The position is funded for a period of three years at least. The available position focuses on using and further developing an organotypic device for applying shear stresses onto host endothelial cells during infection with intracellular bacterial pathogens. The goal is to understand the mechanism whereby fluid shear stresses impact: (1) pathogen adhesion onto host cells; (2) pathogen internalization into host cells; and (3) the ability of the intracellular pathogens to spread from cell to cell.

Specific research project
During infection with the food-borne intracellular bacterial pathogen *L. monocytogenes,* large infected domains in epithelial cell monolayers are forced to extrude to form 3D mounds due to the collective and cooperative onslaught triggered by their uninfected neighbors. This mechanical competition between uninfected and bacterially-infected cells is driven by innate immunity signals and appears to limit pathogen dissemination through the epithelium (Bastounis et al, Dev Cell, 2021). The project seeks to investigate how signaling and cytoskeletal dynamics correlate with changes in host cell mechanics during intracellular bacterial spread through epithelial monolayers. We also want to understand the contribution of extracellular mechanical cues (extracellular matrix stiffness, shear flow and mechanical strains) in promoting or obstructing this biomechanical battle in favor of the host.

Requirements

- Ph.D. in biomedical engineering/bioengineering or related life sciences or engineering field
- Experience with microscopy, image processing and programming (*e.g.* MATLAB, python)
- Experience with *in vitro* mammalian cell cultures systems
- Excellent communication and initiative skills
- Ability to team up with others to conduct interdisciplinary studies

Responsibilities

- Participate in and execute research projects (e.g. setting up lab equipment, collecting and analysing data, writing papers, and presenting at conferences)
- Participate in routine laboratory tasks (e.g. planning/preparations for experiments, lab maintenance and procedures)
- Work with PI on strategy and project planning development and assist on mentoring of students
- Assist on organization and management of (inter)national collaborations

We offer work environment that is strongly stimulating with state-of-the-art infrastructure and various facilities (check https://uni-tuebingen.de/forschung/forschungsschwerpunkte/exzellenzcluster-cmfi/cmfi/) which will provide the successful applicant with unique opportunities to develop a strong interdisciplinary portfolio in microbiology, microscopy, cell biology and biomechanics.

For further information about the position, please contact Effie Bastounis by e-mail and visit our website https://www.bastounislab.org. Applications with a short cover/motivation letter, CV/biosketch, diploma(s) and at least two contacts for references should be sent via email to ebastoun@stanford.edu or office@cmfi.uni-tuebingen.de. The University aims to increase the proportion of women in research and teaching and urges suitably qualified women scientists to apply. Qualified international researchers are expressly invited to apply. Disabled persons with equal aptitude will be given preferential consideration.