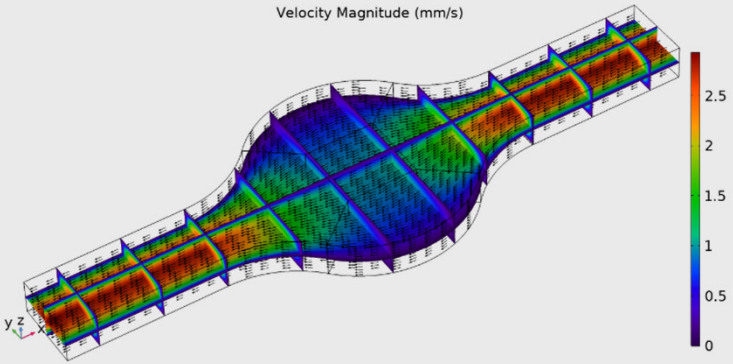
Technische Universität Braunschweig

Bachelor- / Student- / Master thesis

pvz Zentrum für Pharmaverfahrenstechnik

Institut für Mikrotechnik

CFD Simulation of a 3D-Printed Fluidic Unit for In-vivo-like Cell Cultures



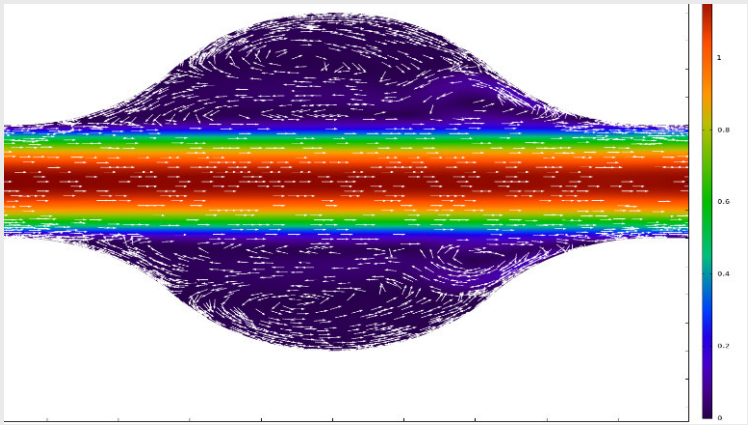
Description

Epithelial gut cells in a living body are permanently stimulated by fluid-flow-induced shear stress and mechanical strain. In the EpiStretch project, we develop a device that will contribute to infection studies on cells with in-vivo-like biomechanical conditions.

The aim of this student work is to simulate the flow field and the shear stress inside this cell culture device. The simulation model is used to find optimized designs for the flow device.

You will:

- Gain knowledge about state-of-art implementation of fluid flow in cell cultures and contribute to a recent interdisciplinary research project
- Apply **computational fluid dynamics (CFD)** models to virtually test and optimize nozzle designs of the flow unit regarding to
    - Flow field homogeneity
    - Shear stress requirements



You should:

- Be self-motivated, creative and able to work independently
- Have a background in engineering and CFD / Fluid Dynamics

Start: by arrangement

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