Cells of complex multicellular organisms respond to biochemical and physical stimuli of their immediate surrounding (1). Microstructured surface topographies influence the cell’s behavior (contact guidance) (2).

The aim of this project is to build up a migration assay on microstructured elastomer substrates with different cell lines with or without NF1-gene defect (Neurofibromatosis type 1) with a focus on comparing the cell lines with respect to changes in their motility and their morphology in reaction to the groove microstructures.

Cell lines: HP 176 (control), HP 186 (+/-), HP 187B (-/-)

Groove width: 8 µm (structure 6), 10 µm (structure 7)
Distance between the grooves: 5 µm

Analysis of the wettability of PDMS-substrates by measuring the contact angle
- Untreated PDMS
- Plasma-treated PDMS
- Plasma- + fibronectin-treated PDMS

Contact angle:
< 90° = wettable (hydrophilic)
> 90° = not wettable (hydrophobic) (3)

For further experiments plasma-treated PDMS were used

Slight difference in the cell morphology

Differences in orientation and migration flows

Tendency of the cells with gene-defect being different in behaviour and morphology in contrast to healthy ones

Literature:
3. Kröss.de