



# Automated tracking and characterization of cell dynamics for classifier models

I. Belyaev, N. Al Zaben, A. Marolda, A. Medyukhina, K. Huenniger, O. Kurzai, M. T. Figge

**Project Aim** 

Automated characterization of cells based on interpretable features, in order



to construct classifier models based on dynamic cell properties.

## State of the art

### Results





# Area distribution Experiment 20170403 $f_{0}$ $f_{0$

# Focus on



#### Protrusion formation

- High contribution to shape indexes
- Important for cell communication SteVen Gurke, João F. V. Barroso, Hans-Hermann Gerdes // Histochem Cell Biol (2008) 129:539–550

Raw image

Stable cell detection Exact segmentation

Discrimination based on instantaneous size



### Discussion









#### Extracellular vesicles

- Additional dynamic descriptor of cells
- Stain-free detection

#### Neutrophil trails

- Kihong Lim *et al.,* Science 349, aaa4352 (2015)
- Dynamic formation and topology of trail networks as population descriptor

# Create and analyze a classifier model, based on morphokinetic descriptors.



#### WP 11: "Automated tracking and characterization of cell dynamics for classifier models"

