Fellow R10: Machine learning algorithms for diagnostic procedures based on imaging the shapes of single molecules or molecular complexes.

Closed position

Supervisor: Prof. S. Rizzoli
Institution: Universitätsmedizin Göttingen (**UMG**), Göttingen, Germany
Duration: 36 months
PhD program: Göttingen Graduate School for Neurosciences, Biophysics and Molecular Biosciences
Research group: Department of Neuro and Sensory Physiology
Secondments (short visits) at: Georg-August-Universität Göttingen (**UGOE**, Germany), Politechnika Gdańska (**PG**, Poland) and company **Beamagine** (Spain).
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Objectives

To develop new methods of imaging and machine learning (ML) image analysis that will enable the automated analysis of cellular and human samples for diagnostic procedures, relying on one–step nanoscale expansion (ONE) microscopy. We propose to apply ONE microscopy to study molecular aggregates composed of several proteins (i.e.: alpha-synuclein, ASYN) in cerebrospinal fluid samples from Parkinson's disease patients, and to explore ML approaches for classifying molecular aggregates, which represents a promising approach towards an improved diagnosis.

What is offered

To work within an interdisciplinary environment, receiving training from leading experts in super-resolution microscopy in a full-time Ph.D. position for 36 months, in which living and mobility costs will be fully covered with a gross salary of 33,114.20 € per year.

Required skills

- **M.Sc. degree in neuroscience**, **cell biology** or related field from outside Germany.
- Strong interest and experience **physical sciences**, **biomaterials** or **deep learning**.
- Experience with **microscopy** and **fluorescence imaging**.
- Excellent communication and writing skills in **English**.
- Intrinsic **motivation and a high level of independence**, capacity to contribute your ideas to the project.
- Team player and openness for collaboration within our research group, within the project, and beyond.

Additional skills

- Experience in MATLAB and programming is desirable.
- Ability to work in an interdisciplinary environment.

- Effective communication skills.
- Adaptability and problem-solving skills.
- Clinical knowledge.