PhD Project 2. Prodromal RBD

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Project description: RBD is characterized by abnormal muscular activity and dream enactment in REM sleep. In its isolated form (iRBD), it is recognized as a prodromal alpha-synucleinopathy (i.e. Parkinson's disease, dementia with Lewy bodies and multiple system atrophy). Prodromal RBD is a more recent concept and refers to subjects who have subtle abnormal video or EMG findings, but do not meet criteria for RBD. Few studies have shown that both manifestations (EMG and video) are progressive, and some patients convert to full-blown RBD. Micro-sleep fragmentation identified with machine learning may be a marker of progression from prodromal RBD to RBD. However, progression rates and latencies into iRBD or even Parkinson's disease, dementia with Lewy bodies and multiple system atrophy have not been defined so far. A better definition and characterization of prodromal RBD would allow improved understanding of the earliest stages of alpha-synucleinopathies. With longitudinal follow-up, including yearly assessment of several biomarkers, and advanced statistics methods, we aim to define new biomarkers to monitor progression and to indicate early conversion into further disease stages. We believe that this novel approach can revolutionize the approach to prodromal RBD.

Responsibilities and qualifications: During the first 3 years, patients with prodromal and isolated RBD will be recruited and followed-up, including advanced biomarker assessment. In the 4th year of PhD, the student will be involved in the PSG data analysis of the cohort as well as the generation and execution of a statistical algorithm for the definition of new prodromal and isolated RBD progression and early-conversion biomarkers. The research will be conducted in a truly multi-disciplinary environment consisting of the medical doctors, engineers and somnologists.

Requirements for project 2:

- Medical degree;
- Knowledge of advance statistics and intermediate programming (please provide relevant certificates) or willingness to acquire this knowledge by achieving 30 ECTS on Digital Science from the University of Innsbruck (https://www.uibk.ac.at/disc/teaching/digital-science/) in addition to the regular Ph.D. courses;
- Command of German.