

## **Doctoral School of Information and Biomedical Technologies Polish Academy of Sciences**

### **Title**

Analysis of metabolic profiles of biofluids in selected diseases.

### **Supervisors, contact, place of research**

Supervisor: Beata Toczyłowska, PhD, Associate prof., IBIB PAN, Ks. Trojdena 4

e-mail: [beata.toczyłowska@ibib.waw.pl](mailto:beata.toczyłowska@ibib.waw.pl)

Co-supervisor: Igor Zukov, PhD (IBB)

Co-supervisor: Anna Słowikowska, PhD, M.D.

### **Project description**

The subject of the PhD thesis is measuring and analyzing NMR spectra of body fluids (e.g. serum, cerebrospinal fluid, synovial fluid, urine) and their lipid extracts in a selected disease. The studies may concern early diagnosis of the disease or assessment of the impact of applied therapies. Selection of the studied disease to establish a PhD student with a supervisor. Spectrum analysis includes the assignment of NMR signals to metabolites, their quantitative measurement and metabolomic analysis of the obtained data [1-3].

### Reference

1. Podlecka-Pietowska A, Kacka A, Zakrzewska-Pniewska B, Nojszewska M, Zieminska E, Chalimoniuk M, Toczyłowska B (2019) Altered Cerebrospinal Fluid Concentrations of Hydrophobic and Hydrophilic Compounds in Early Stages of Multiple Sclerosis-Metabolic Profile Analyses. *J Mol Neurosci*. doi:10.1007/s12031-019-01336-6
2. Zieminska E, Toczyłowska B, Diamandakis D, Hilgier W, Filipkowski RK, Polowy R, Orzel J, Gorka M, Lazarewicz JW (2018) Glutamate, Glutamine and GABA Levels in Rat Brain Measured Using MRS, HPLC and NMR Methods in Study of Two Models of Autism. *Front Mol Neurosci* 11. doi:ARTN 418 10.3389/fnmol.2018.00418
3. Toczyłowska B, Jamrozik Z, Liebert A, Kwiecinski H (2013) NMR-based Metabonomics of Cerebrospinal Fluid Applied to Amyotrophic Lateral Sclerosis. *Biocybern Biomed Eng* 33 (1):21-32. doi:Doi 10.1016/S0208-5216(13)70053-6