

**Physical-chemistry methods
for study of protein-protein
interactions involved in
neurodegenerative diseases**

JOZEF HRITZ

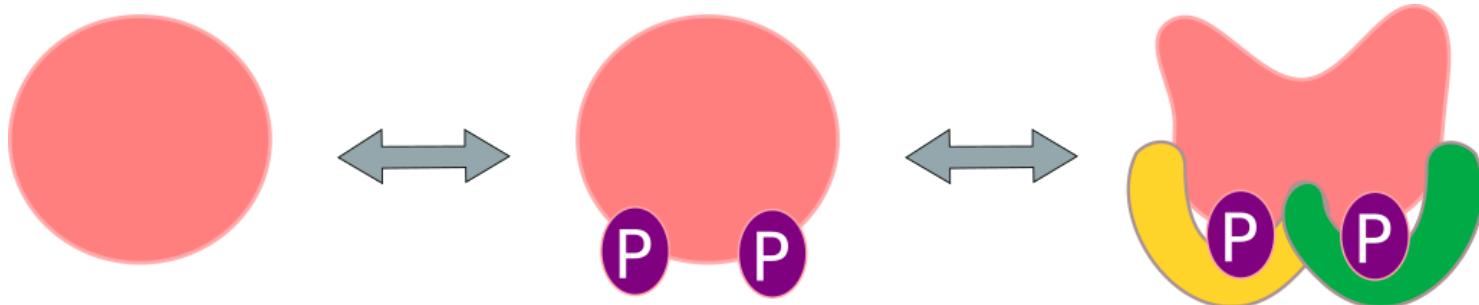
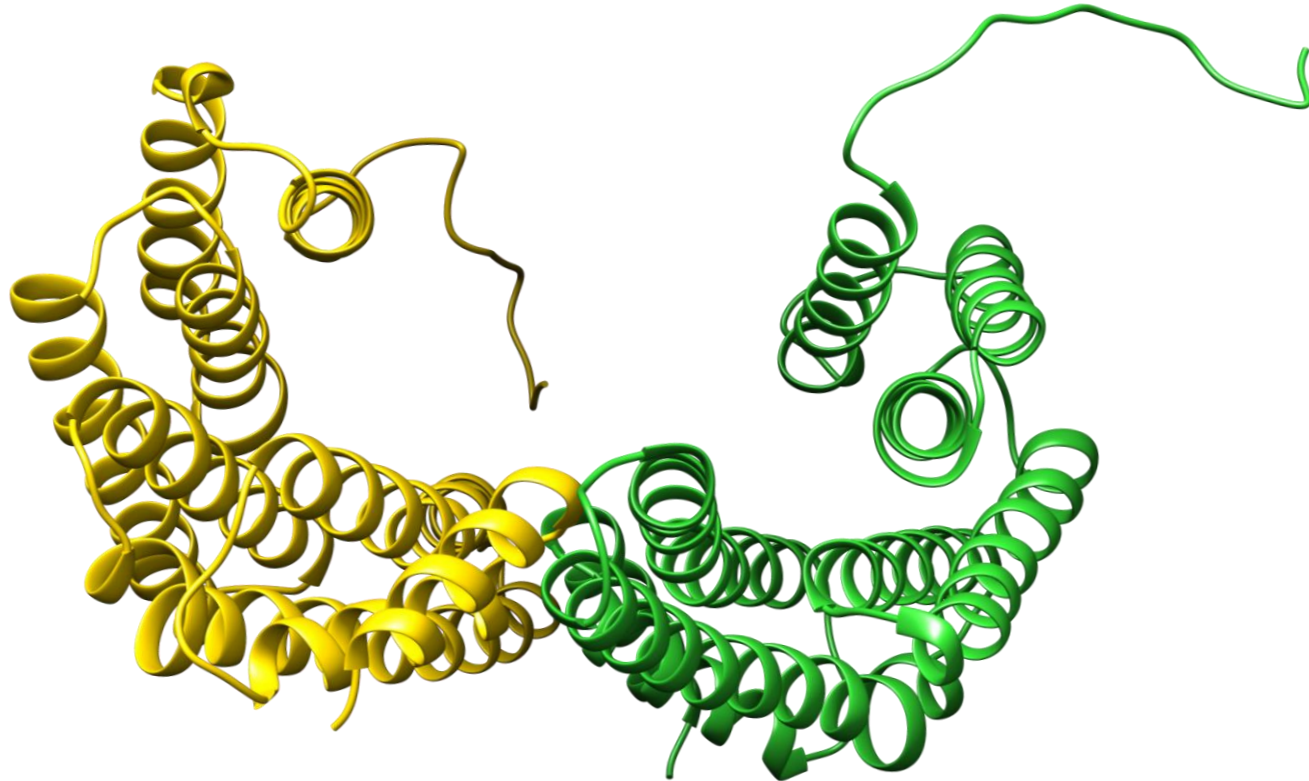
jozef.hritz@ceitec.muni.cz

CEITEC MU, Structural Biology, building A4, office:2.11

Biophysical Chemistry



RESEARCH OBJECT: 14-3-3/complexes



NMR: REGULATORY DOMAIN

Biophysical Chemistry 223 (2017) 25–29



Contents lists available at ScienceDirect

Biophysical Chemistry

journal homepage: <http://www.elsevier.com/locate/biophyschem>



Phosphorylation of the regulatory domain of human tyrosine hydroxylase 1 monitored using non-uniformly sampled NMR



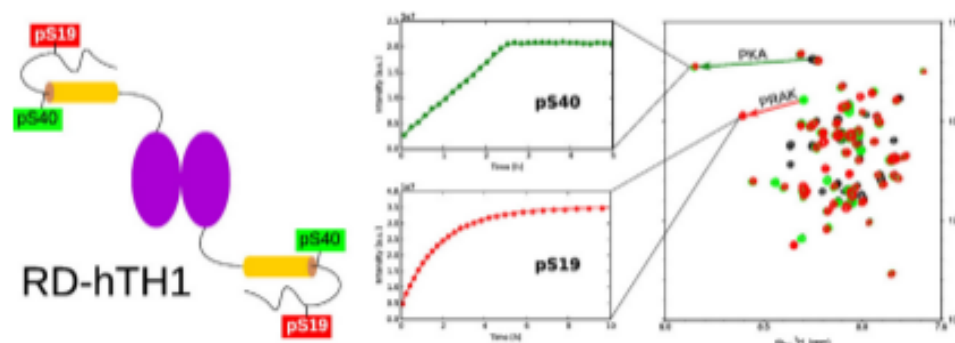
Petr Louša, Hana Nedožrálová, Erik Župa, Jiří Nováček, Jozef Hritz *

CETEC MU, Masaryk University, Kamenice 753/5, 625 00 Brno, Czech Republic

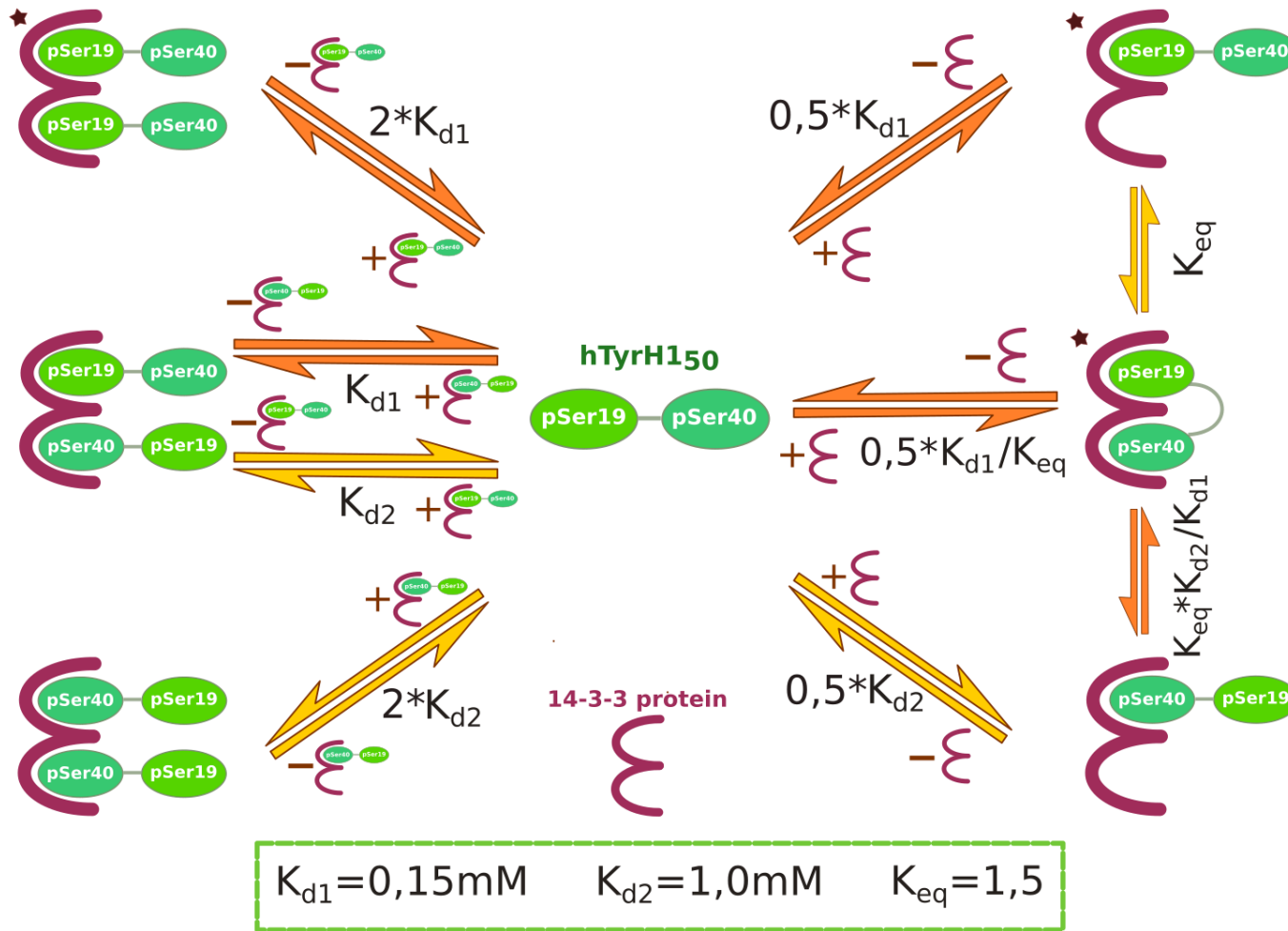
HIGHLIGHTS

- Disordered part of regulatory domain of human tyrosine hydroxylase 1 was assigned.
- Transient alpha-helices are present next to phosphorylation sites S40 and S19.
- The secondary structure does not change after phosphorylation.
- The phosphorylation kinetic rates were measured efficiently using time resolved NMR.

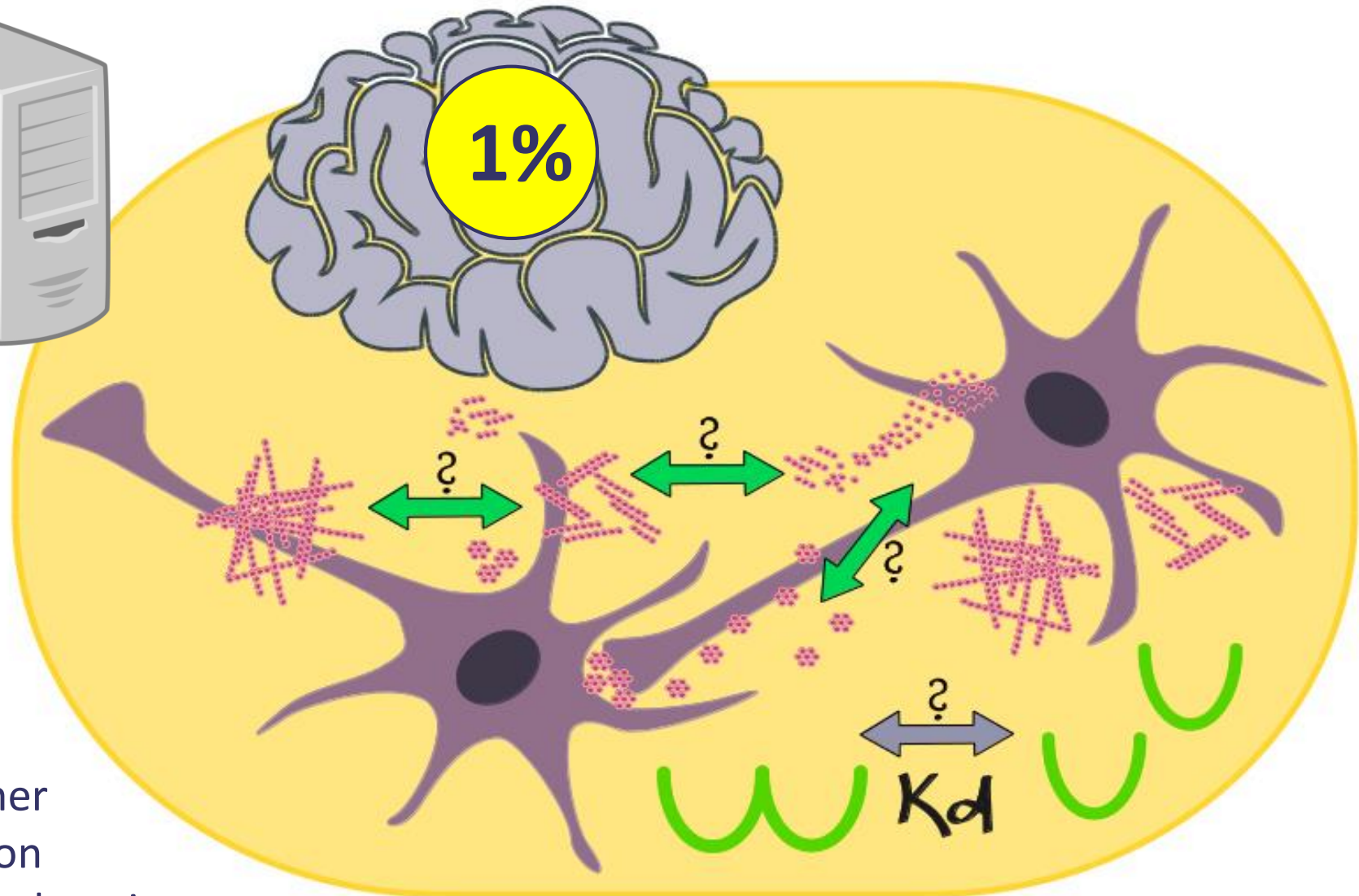
GRAPHICAL ABSTRACT



14-3-3: BINDING MODES

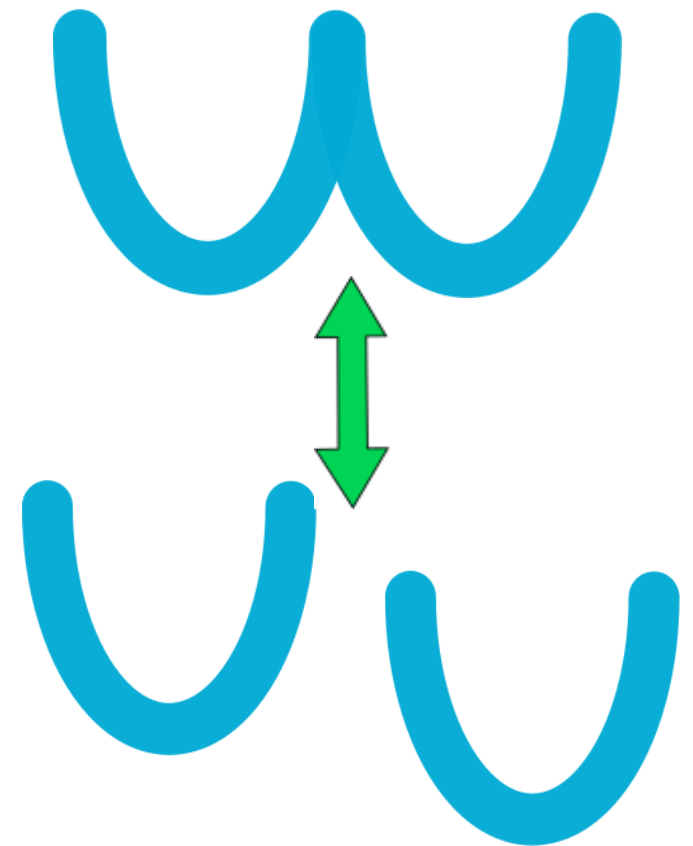
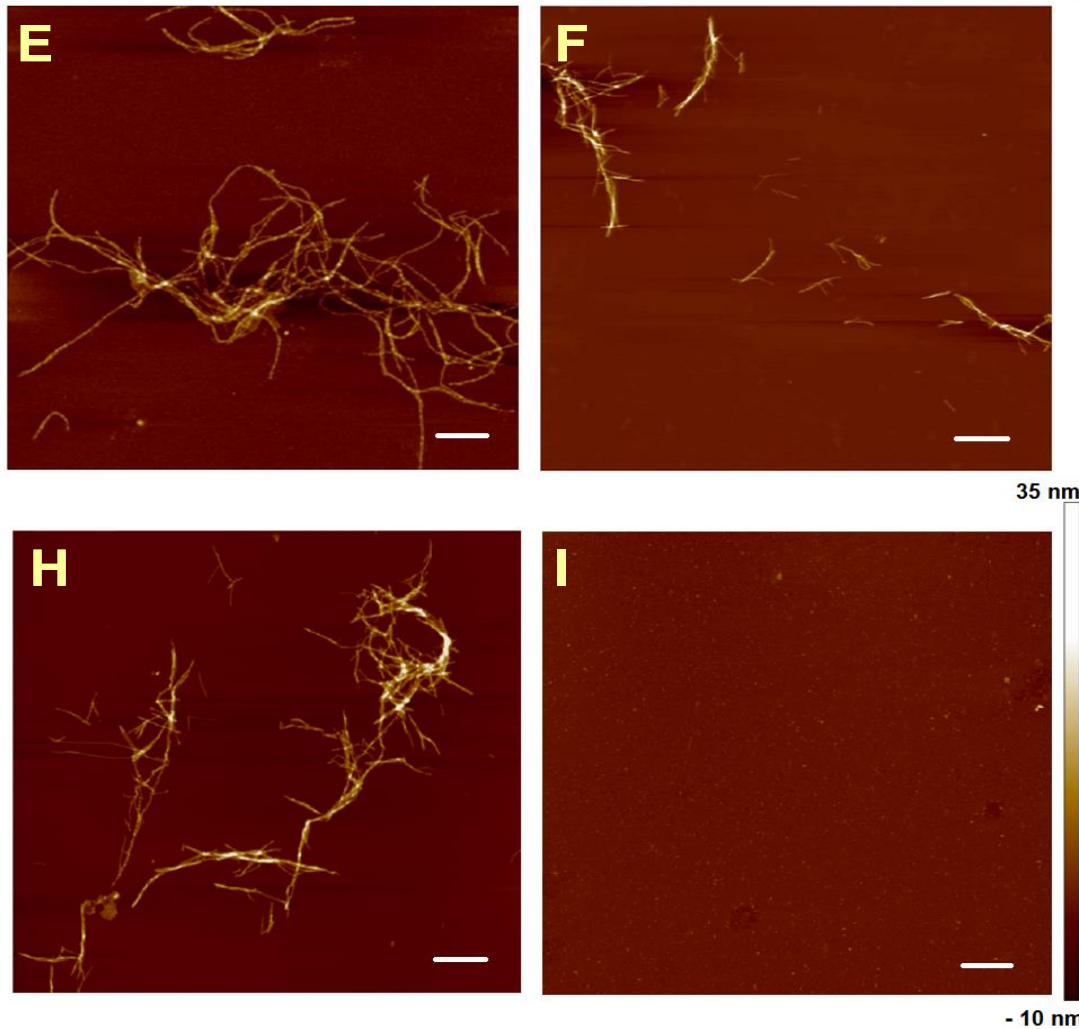


14-3-3: NEURODEGENERATION



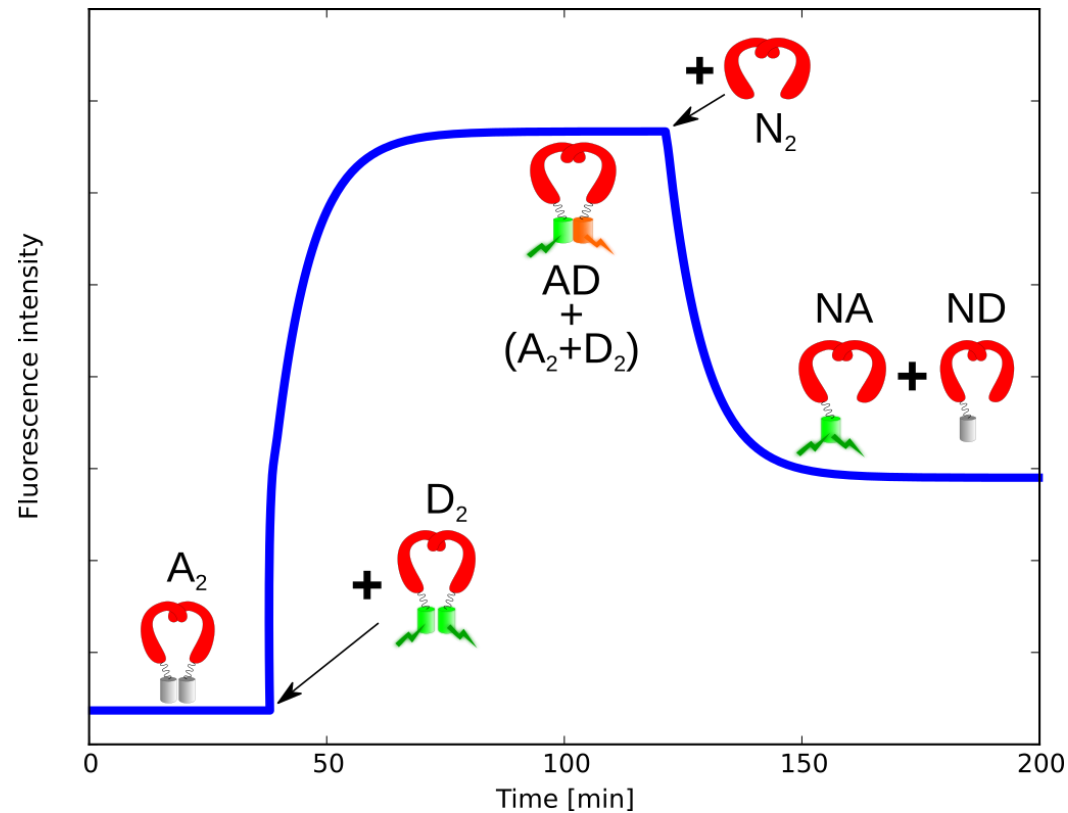
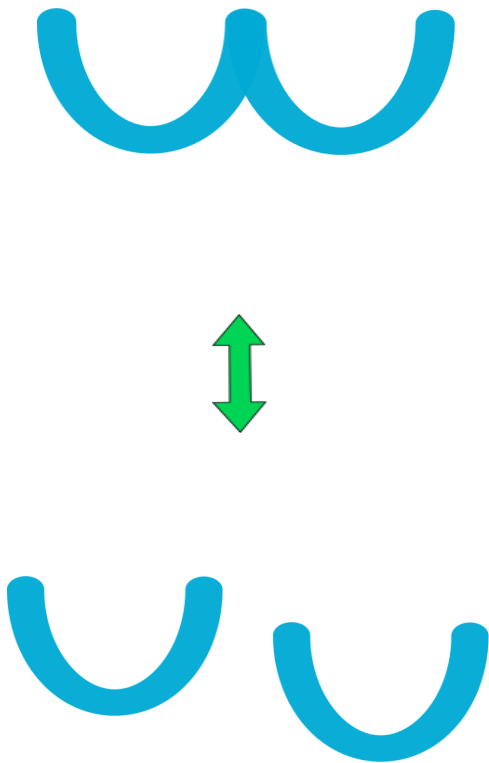
Alzheimer
Parkinson
Lateral sclerosis

ALZHEIMER DISEASE: 14-3-3+A β



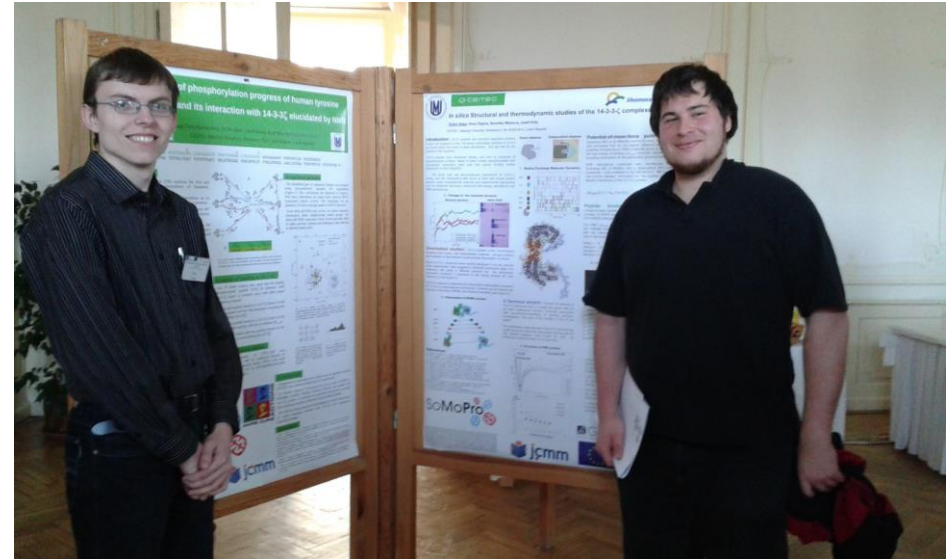
**BIOPHYSICAL
CHEMISTRY**

14-3-3 KINETIC ASSAY: FRET



- Experimental Biophysical Chemistry – fluorescence assays
- Computational Biophysical Chemistry – structural and free energy calculations of dimer/monomer equilibria

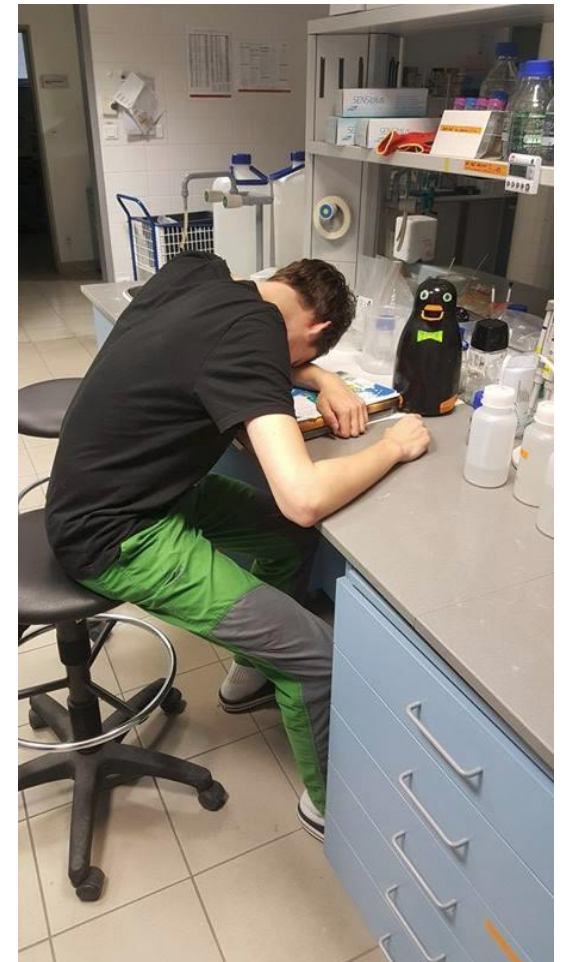
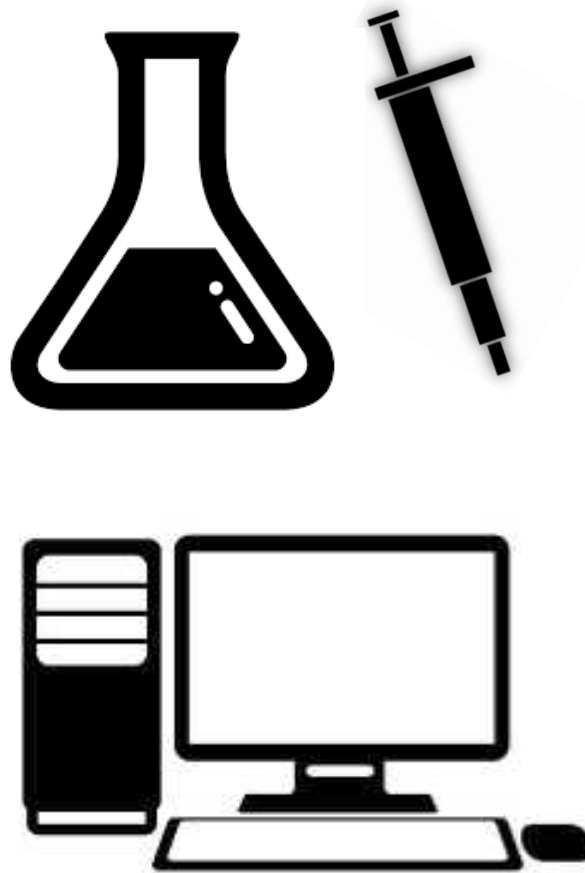
HANDS ON EXPERIENCE CONFERENCES AND INTERNSHIPS



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SUITABLE CANDIDATES OPEN POSITIONS



jozef.hritz@ceitec.muni.cz