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## CURRENT TECHNOLOGICAL BACKGROUND ASSIGNED FOR THE CRYSTALLOGRAPHY OF PROTEINS IN NATIONAL CENTRE FOR BIOMOLECULAR RESEARCH

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The National Centre for Biomolecular Research (NCBR) is an independent unit at Masaryk University. NCBR is situated in the University Campus Bohunice, which is a complex of buildings used by Faculty of Medicine, Faculty of Science and Faculty of Sports. The NCBR is concerned with several areas of biological and chemical research, one of them is protein crystallography.

It is known that for the crystallography a crystal is needed. The devices used for the crystallisation available at NCBR, which allow an automatic screening of crystallisation experiments, are: Automatic liquid handling system Tecan Evo 150 and Crystallisation robot Mosquito. Tecan Evo 150 is used mainly for pipetting/mixing of crystallisation solutions into 96 well screening plates (reservoir). Mosquito is used for pipetting of a protein and crystallisation solutions in nanoliter volumes into 96 well screening plates (mainly a sitting drop).

For tracing and observing of a crystalline structure Rigaku Desktop Minstrel UV with the Gallery 160 crystal hotel and optical spectroscopy Leica with CCD camera are used. Rigaku machines consist of a plate hotel, where all plates are stored, and the imager is able to take pictures of every drop not just in visible area but also in UV area of light. This is a very helpful method how to distinguish between protein and inorganic salt crystals. The optical spectroscopy with polarization filter is used for observing any inside defect of crystal.

With a co-operation of Biotechnological Department of ASCR the crystals are tested for observing any diffraction and all diffraction data are collected on a synchrotron in Grenoble (ESRF).

During the talk, several examples from the field of carbohydrate binding proteins will be given [1-5]:

1. Pokorná, M.; Cioci, G.; Perret, S.; Rebuffet, E.; Kostlánová, N.; Adam, J.; Gilboa-Garber, N.; Mitchell, E.P.; Imberty, A.; Wimmerová, M.; *Biochemistry* **45** (24), (2006), 7501 - 7510.
2. Kostlanova, N.; Mitchell E.P.; Lortat-Jacob H.; Oscarson S.; Lahmann M.; Gilboa-Garber N.; Chambat G.; Wimmerova M.; Imberty A.; *Journal of Biological Chemistry* **280**, (2005), 27839 – 27849.
3. Wimmerova M.; Mitchell E.; Sanchez J.F.; Gautier, C.; Imberty A.; *Journal of Biological Chemistry* **278**, (2003), 27059 – 27067.
4. Šulák, O.; Cioci, G.; Delia, M.; Lahmann, M.; Varrot, A.; Imberty, A.; Wimmerová, M.; *Structure* **18**, (2010), 59 - 72.
5. Lameignere, E.; Malinovská, L.; Sláviková, M.; Duchaud, E.; Mitchell, E.P.; Varrot, A.; Šedo, O.; Imberty, A.; Wimmerová, M.; *Biochemical Journal*, **411**, (2008), 307 - 318.

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### History and Presence of Protein Crystallography at the Institute of Molecular Biology, Slovak Academy of Sciences

### HISTÓRIA A SÚČASNOS KRYŠTALOGRAFIE BIELKOVÍN NA ÚMB SAV

Jozef Ševčík

Ústav molekulárnej biológie SAV, Bratislava

Contribution will be published in next issue.