

## PERSONAL INFORMATION

**Mária Pukáncsik, PhD**

-  Budapest University of Technology and Economics  
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**2015- Postdoctoral Research Fellow**

HAS-BME Momentum Magneto-Optical Spectroscopy Research Group, Budapest University of Technology and Economics, Faculty of Natural Sciences, Department of Physics  
Development and Validation of Novel Methods for Malaria Diagnosis

**2010-2014 Senior Scientist**

TargetEx Biosciences Ltd.

Target based drug discovery: Detection of the agonist/antagonist stimulated GPCR activity in highly sensitive cell-based assays

Technical experience:

- GPCR stable cell line generation
- Recombinant protein production in insect and mammalian expression systems (SF-900, CHO-K1 cells)
- Functional analysis of GPCRs ( measuring of agonist/antagonist effect):
  - intracellular Ca<sup>2+</sup> level determination using the fluorescent indicator Fluo-4-AM and the luminescent indicator Aequorin
  - intracellular Ca<sup>2+</sup> level determination using X-Celligence instrument

**2008-2010 Junior Research Fellow**

Hungarian Academy of Sciences, Institute of Enzymology, Laboratory of Genom metabolism

## WORK EXPERIENCE

## EDUCATION

**2005-2010 Ph.D. in Molecular Cell Biology**

Eötvös Loránd University, Graduate School in Biology, Structural Biochemistry Programme

 Thesis: *“Structural and functional analysis of the uracil-DNA degrading factor”*

Technical experience:

- Recombinant protein production in bacterial expression system (E. coli cells)
- Protein purification and Chromatographic techniques (Ni-chelate affinity, FPLC, ionexchange)
- Spectroscopic techniques (UV-Vis, fluorescent and CD spectroscopy)
- Gel-electrophoresis (SDS-PAGE, TBE-PAGE, EMSA, agarose gelelectrophoresis)
- DNA manipulation (cloning, mutagenesis, PCR, plasmid preparation, genomic DNA isolation)
- Immunoassay (Western blot, Far western blot, Immunoprecipitation, Immunoaffinity chromatography)
- Uracil detection (ARP (Aldehyde Reactive Probe), HPLC-MS (in collaboration))
- Thermofluor assay

**2004-2010 MSc degree in Biomedical Engineering**

Semmelweis University – Budapest University of Technology and Economics

 Thesis: *“The role of uracil-DNA signalling in Drosophila melanogaster development”*
**1999-2005 MSc degree in Bioengineering**

Budapest University of Technology and Economics, Faculty of Chemical Engineering, Department of Bioengineering, on the field of advanced biotechnology

 Thesis: *“Analysis of protein interaction by immunological methods”*
**PERSONAL SKILLS**


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**Languages**

- mother tongue: Hungarian
- other languages:
  - Intermediate state examination in English
  - Intermediate state examination in German

**Computer skills**

- Good command of Microsoft Office tools, Origin, EndNote, Zotero, Swiss-PdbViewer, Pymol, Clone95

**Driving licence**

- High confidence in data base research and internet browsing: ClustalW, Expasy, UniProt, NCBI B category

**ADDITIONAL INFORMATION**


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**International traineeship**

- Traineeship in Cardiovascular Mechanics and Biofluid Dynamics Research Unit at Ghent University, Belgium (supported by IAESTE Hungary), 2005

**Invited presentations at conferences**

- 2nd P-CUBE User Meeting, University of Zurich, Institute of Biochemistry, 2011  
*„Structural analysis of a novel uracil-DNA specific protein”*
- Straub Meeting of the Biological Research Center, Hung. Acad. Sci., Szeged, Hungary, 2009  
*„Structural and functional characterization of a novel uracil-DNA degrading protein”*

**Research visits**

- Hiroshima Synchrotron Radiation Center, Hiroshima University, 2010  
*VUV-CD (Vacuum-Ultraviolet Circular Dichroism Spectroscopy) analysis of UDE truncated mutants*
- EMBL, Grenoble, France, 2010.  
*High-Throughput screening for soluble proteins using ESPRIT technology*
- Oxford Protein Production Facility and Division of Structural Biology, Wellcome Trust Centre for Human Genetics, 2008.  
*Protein crystallization*

**International workshops,  
conferences**

- Department of Medical Biochemistry & Biophysics Karolinska Institutet, Stockholm, Sweden, 2008, *Workshop in protein production for structural genomics*
- Department of Medical Biochemistry & Biophysics Karolinska Institutet, Stockholm, Sweden, 2008, *Practical course on Biophysical characterization of proteins*
- EMBO Workshop on Integrated Approaches in Structural Enzymology, EMBL Hamburg, 2007 „*Structural analysis of a new nuclease*”
- Alexander von Humboldt Workshop on Structure-Based Approaches Towards Disease Control, Mátraháza, Hungary 2007
- 31st FEBS Congress, Istanbul, Turkey, 2006

**Awards**

- Postdoctoral fellowship of Hungarian Academy of Sciences(2015)
- BUTE Conference of Scientific Students' Association, Biochemistry and Biotechnology section, 1<sup>st</sup> place (2004)

**Patent**

- United States Patent and Trademark Office. 2005: USA. No.: 11/160040, 2005; *Uracil-DNA nuclease: protein enzyme possessing nuclease activity specific for uracil containing nucleic acid, process for its preparation and methods of use.*

**PUBLICATIONS**

- Dobi K., Flachner B., **Pukáncsik M.**, Máthé E., Bognár M., Szaszko M., Magyar Cs., Hajdú I., Lőrincz Zs., Simon I., Cseh S., Dormán Gy. ; Combination of pharmacophore matching, 2D similarity search and in vitro biological assays in the selection of potential 5-HT6 antagonists from large commercial repositories *Chem Biol Drug Des.* 2015 Mar 30. doi: 10.1111/cbdd.12563. [25823681]
- **Pukáncsik M**, Orbán Á, Matsuo K, Gekko K, Hart D, Kézsmárki I and Vértessy BG; Secondary structure prediction of protein constructs using random incremental truncation and vacuum-ultraviolet CD spectroscopy. (<http://arxiv.org/abs/1401.7362>)
- Muha V, Horváth A, Békési A, **Pukáncsik M**, Hodoscsek B, Merényi G, Róna G, Batki J, Kiss I, Jankovics F, Vilmos P, Erdélyi M and Vértessy BG; Uracil-containing DNA in *Drosophila*: stability, stage-specific accumulation, and developmental involvement. *PLoS Genet.* 2012 Jun 7;8(6):e1002738. doi: 10.1371/journal.pgen.1002738; [22685418]
- Bekesi A#, **Pukancsik M**#, Haasz P, Felföldi L, Leveles I, Muha V, Hunyadi-Gulyas E, Erdei A, Medzihradzsky KF and Vértessy BG; Association of RNA with the uracil-DNA-degrading factor has major conformational effects and is potentially involved in protein folding., *FEBS J.* 2011 Jan;278(2):295-315. doi: 10.1111/j.1742-4658.2010.07951.x; [21134127] (#: shared first authors)
- **Pukáncsik M**, Békési A, Klement E, Hunyadi-Gulyás E, Medzihradzsky KF, Kosinski J, Bujnicki JM, Alfonso C, Rivas G and Vértessy BG; Physiological truncation and domain organization of a novel uracil-DNA-degrading factor., *FEBS J.* 2010 Mar;277(5):1245-59. doi: 10.1111/j.1742-4658.2009.07556.x; [20121948]
- Békési A, **Pukáncsik M**, Muha V, Zagyva I, Leveles I, Hunyadi-Gulyás E, Klement E, Medzihradzsky KF, Kele Z, Erdei A, Felföldi F, Kónya E and Vértessy BG; A novel fruitfly protein under developmental control degrades uracil-DNA. *Biochem Biophys Res Commun.* 2007 Apr 13;355(3):643-8;[17306761]