

CURRICULUM VITAE

Personal

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Workplace: Institute of Biochemistry
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Employment

2012 - present Project Leader, Institute of Biochemistry, BRC HAS
2008 - 2012 Project Leader, Bay Zoltán Research Foundation, BayGen Institute, Szeged, Hungary
Bioenergy, Microbial Genomics
2006 - 2007 Post-Doctoral Fellow, Craig Venter Institute, Rockville, Maryland, USA
Synthetic Biology & Bioenergy
2004 - 2005 Young Investigator, Institute of Biophysics BRC HAS, Szeged, Hungary
Bioenergy, Microbial Gas Metabolism

Education

June 2005 Ph.D., Biology, University of Szeged, Szeged, Hungary
Thesis Topic: Insights into the assembly of NiFe hydrogenases
Advisor: Prof. Kornél L. Kovács
June 2001 MSc, Biology, University of Szeged, Szeged, Hungary
February 2002 MSc, Biology High School Teacher, University of Szeged, Szeged, Hungary
June 2008 MSc, Business Administration, University of Szeged, Szeged, Hungary

Professional affiliations

- Hungarian Biochemistry Association
- Hungarian Society for Microbiology
- European Federation of Biotechnology
- Biogas Association of Hungary

Professional activity

Scientific Journal Reviewer

- Journal of the Science of Food and Agriculture
- Journal of Industrial Microbiology & Biotechnology

Publications and citations (see details in Appendix 1.)

- Cumulative Impact Factor: 92.96
- Total Citations: 263
- Independent Citations: 205

Honors, awards

- Award of the Hungarian Republic (2001)
- Young Biotechnologist Prize (2002)
- The best presentation prize at the annual conference (2009) of the Hungarian Society for Microbiology
- Le Prix de la Recherche - best manuscript in the field of plant biology in France (2011)

Research experience

Research Leader

Bay Zoltán Research Foundation, BayGen Institute

2008-Present

Szeged, Hungary

Areas of Expertise: Microbial Genomics, Metagenomics, Next-Generation Sequencing, Industrial Biotechnology, Microbial Aerobic and Anaerobic Fermentation, Microbial Physiology, Microbiology, Metabolic Engineering, Mutagenesis Techniques, Phototrophic Prokaryotes

Responsibilities:

- Microbial Genomics Projects (sequencing, assembly)
- Metagenomics Projects (plant-bacterium interactions, enzyme discovery, environmental profiling)
- NGS platform operation (ABi SOLiD system, Ion Torrent)
- Algae-based hydrogen production, hydrogen metabolism in algae and phototrophic prokaryotes
- Mentor and supervise lab technicians and interns.
- Provide technical resources to colleagues and other departments.
- Proposal and manuscript writing, management of projects

Post-Doctoral Fellow

J. Craig Venter Institute, Synthetic Biology & Bioenergy

2006- 2007

**Rockville, Maryland,
USA**

Research areas: Heterologous expression studies, hydrogenase enzymes, enzyme biosynthetic processes, Anaerobic Bacterial Fermentation, Microbiology, Microbial Physiology, Biochemistry, Metabolic Engineering, Molecular Biology, Genetic Engineering.

Responsibilities:

- Activity tests of novel hydrogenases, functional heterologous studies of enzymes
- Implementation of metabolic engineering strategies in *Thiocapsa roseopersicina* for improved production of biohydrogen
- Set up a novel activity test system for high throughput testing of hydrogenase activity in vivo and in vitro
- Perform small-scale (serum bottle) fermentation processes.
- Design and execute experiments to develop metabolically engineered *Thiocapsa* strains via genetic engineering and molecular biology techniques including manipulation of chromosomal DNA, PCR amplification, site-directed mutagenesis, cloning, *E. coli* conjugation, plasmid isolation.

- Execute various analyses, for phenotypic characterization, protein and enzyme assays, protein expression pattern, RNA level experiments (qPCR)

Background

Molecular Biology, Genetics, Genomics, Metagenomics, Prokaryotic Genomics, Biotechnology and Biological Engineering, Microbiology, Biochemistry, Gas Chromatography, FPLC protein purification, Thermodynamics, BioInformatics

Skills

Experimental Techniques

- Experience in key molecular biology techniques (gene overexpression, gene inactivation (gene disruption, integrational mutagenesis, gene shuffling), manipulation of plasmid and genomic DNA, PCR, qPCR techniques)
- Experience in culturing aerobes/anaerobes, operating fermentation processes under aerobic/anaerobic conditions, and performing experiments in aerobic/anaerobic system.
- Perform bacterial fermentations in different scales, operation modes (batch and fed-batch modes) to improve production of desired products.
- Achieve proficiency in operation of downstream processing and separation units such as chromatography units (HPLC, GC, GC-MS, FPLC).
- Experienced in analytical techniques (protein, enzyme and spectrophotometric assays, two-dimensional electrophoresis, SDS-PAGE, and DNA Gel Electrophoresis).
- Implemented metabolic engineering strategies in *Thiocapsa* and *Rhodobacter* strains for improved production of biohydrogen.
- Special experience in the field of NGS (Next-Gen Seq) : ABi SOLiD system, Ion Torrent System, generation of in vitro fragment libraries, DNA sequencing, evaluation of data, bioinformatic analysis
- Adaptation of SOLiD system for metagenomic purposes, sequence analysis of various environmental samples (biogas plants, animal gut, rhizosphere)

Supervisory, Training and Managing Skills

- Supervised and trained 6 master students on projects related to bacterial gas metabolism and molecular investigations of hydrogenase enzymes.
- Supervised and trained 2 PhD students (in progress)
- Managed and organized research laboratory.
- Managed and organized service facility (NGS platform).
- Supervised graduate and undergraduate students on operation of several equipment in the laboratory (PCR, qPCR, fluorimeter, GC, UV-Visible spectrophotometer, etc.).

Other Skills

- Experienced experimental design used in biological engineering with knowledge on statistical methods and software.
- Developed verbal and written communication skills through conference oral and poster presentations and published peer-reviewed manuscripts and patents.