

# Curriculum Vitae

Attila Ambrus, Ph.D.

## Education:

- Secondary School Erdey-Grúz Tibor Chemical Technical College, Debrecen, Hungary, 1987-1991
- M.Sc. *Chemist, Diploma work: Ligand exchange kinetics of HCN and  $Tl(EDTA)CN^{2-}$  by Dynamic  $^{205}Tl$  and  $^{13}C$  NMR Spectroscopy, supervisor: Prof. István Bányai, Dept. of Physical Chemistry, Kossuth Lajos University, Debrecen, Hungary, 1991-1996*
- M.A. *English-Hungarian Vocational Translator in Chemistry, Kossuth Lajos University, Debrecen, Hungary, 1991-1996*
- M.A. *High School Chemistry Teacher, Kossuth Lajos University, Debrecen, Hungary, 1993-1998*
- Advanced Certificate *The Principles of Protein Structure (accredited 1-year course), University of London, Birkbeck College, London, UK, 1996-1997, with scholarship from the George Soros Foundation*
- Ph.D. *Structural Biochemistry, Department of Biochemistry and Molecular Biology, University of Debrecen, Debrecen, Hungary, 1996-2001, supervisor: Prof. László Fésüs, summa cum laude, thesis: Structural investigation of transglutaminases*
- Language proficiency mother tongue: *Hungarian*  
*Russian:* 10 years of study, state exam of Hungary (basic level, type C)  
*English:* 14 years of study, state exam of Hungary (advanced level [highest level in Hungary], type C), M.A. degree in English language, 5 years of employment in the USA
- Computer skills *Computer operator certificate (1997, Kossuth Lajos University, basic level)*

## Post-doctoral positions:

University of Arizona, Department of Biochemistry and Molecular Biophysics, Tucson, AZ, USA, 2001-2002, *advisor: Prof. William R. Montfort*

University of Arizona, Department of Pharmacology and Toxicology, Tucson, AZ, USA, 2003-2006, *advisors: Prof. Danzhou Yang/Prof. Laurence Hurley*

## Faculty positions:

University of Debrecen, Department of Biochemistry and Molecular Biology, Debrecen, Hungary, Research Associate and Lecturer, 2000-2003

Semmelweis University, Department of Medical Biochemistry, Budapest, Hungary, Research Associate and Lecturer, 2006-2011

Semmelweis University, Department of Medical Biochemistry, Budapest, Hungary, Assistant Professor, 2011-present

Hungarian Academy of Sciences, Budapest, Hungary, Senior Research Fellow, 2017-present

Teaching responsibilities:

Inorganic Chemistry	Erdey-Grúz Tibor Chemical Technical College, Debrecen, Hungary (6-month teaching practice), 1998
Medical Biochemistry	Medical Biochemistry I-II, practice group leader in Hungarian and English, University of Debrecen, 1997-2000 Medical Biochemistry I, practice group leader in Hungarian and English, Semmelweis University, Budapest, Hungary, 2006-2016 Medical Biochemistry I (new curriculum), seminar group leader in Hungarian and English, Semmelweis University, Budapest, Hungary, 2017-
Medical Chemistry	practice group leader in Hungarian and English and lecturer in English, Semmelweis University, Budapest, Hungary, 2006-2016
Biochemistry	Biochemistry I-II, lecturer in Hungarian and English in the Faculty of Pharmacy at Semmelweis University, 2011-
Ph.D. courses	Biochemistry of Apoptosis, 1 lecture, University of Debrecen, 2000 Principles in Drug Discovery, Design, and Development, 1 lecture, University of Arizona, 2004 Neurochemistry, 1 lecture, Semmelweis University, 2006 Structural Biology, course leader and lecturer for 4 lectures, Semmelweis University, 2008 Molecular Enzymology, course leader at Semmelweis University, lecturer: Prof. Frank Jordan, Rutgers University, USA, 2011

Undergraduate student researchers:

Zoltán Klimaj (2008–2010), Mattias Nilsson (2008–2013; Students' Research Conference: II. Prize - 2010), Mária Kozma (2008; High School Research Competition with topic from the lab: national III. prize - 2007), Tommy Ivanics (2009–2010), Krisztina Trimmel (2011), Zsuzsanna Zenkő Réti (2011), Daniel Oren (2014-2016), Gareth Ogdon (2014-2014), Omer Shpack (2014-2016), Zsófia Zámbo (2014-2016), Jeremiah Thomas (2015-2017), Dávid Bui (2016-2017), Marcell Sinkalovics (2018-2019), Réka Nonn (2019- )

M.Sc./B.Sc. thesis:

Mattias Nilsson, 2013; Zsófia Zámbo, 2016; Jeremiah Thomas, 2017; Rubina Krisztina Vass, 2019

Post-docs:

Dr. Ágnes Hubert (2015-2017); Dr. Olivér Ozohanics (2018 - )

Guidance of Ph.D. graduate students at the University of Arizona:

Clifford Whatcott (2-month rotation, 2004), Justin Dietrich (3-month rotation, 2005), Ding Chen (Ph.D. project supervision, 2003-2006), Tiffanie Bialis (NMR project supervision, 2004-2006)

Ph.D. graduate students at Semmelweis University:

Dr. Eszter Szabó (2015 - ), Dr. Bálint Nagy (2015 - ), Zsófia Zámbo (2016 - ), Réka Mizsei (2014- ), Éva Nemes-Nikodém (2018 - , co-supervision with Prof. László Tretter)

Other past and present responsibilities at Semmelweis University:

Lecturer of Biochemistry in the Faculty of Pharmacy at Semmelweis University (2011–present)

Internal ISO auditor at the Department of Medical Biochemistry (2007 – 2011)

Head of Instrument Control at the Department of Medical Biochemistry (2007 – 2013)

Decorations, honors, and grants (where PI):

15<sup>th</sup> place (finalist) of Hungary in the National High School Competition in Chemistry (OKTV), 1991

9<sup>th</sup> place (finalist) of Hungary in the National Chemical Technical Colleges Competition (OSZTV), 1991

George Soros Scholarship, 1996-1997

János Bolyai Research Fellowship, Hungarian Academy of Sciences, 2006-2009 and 2011-2014

Young Investigator Research Grant, Gedeon Richter Pharmaceutical Plc., 2007-2008

IUBMB-Sigma-Aldrich Travel Award, 10<sup>th</sup> IUBMB Conference, Salvador da Bahia, Brazil, 2007

Young Investigator Research Grant, Semmelweis University, 2008-2009

Bolyai Plaque, Hungarian Academy of Sciences, 2010

EMBO Short-term Fellowship, 1 month, Univ. of Pittsburgh, PA, USA, 2011

The Protein Society Finn Wold Travel Award, IX. European Symposium of The Protein Society, Stockholm, Sweden, 2011

Fulbright Fellowship, 3 months, Rutgers University, Newark, NJ, USA, 2012

Occasional Lecturer Fund, Fulbright Commission, 2012

MedInProt Grant (co-PI), Hungarian Academy of Sciences, 2015

Erasmus Grant, 2 weeks, Helmholtz-Zentrum Berlin, Germany, 2015

Erasmus+ Grant, 5+5 months/2+2 weeks mobilities, Rutgers University, Newark, NJ, USA, 2016-2018

Merit Prize, Semmelweis University, 2016-2018

European Union's Horizon 2020 Research and Innovation Programme grant, 2016-2017

European Union's Horizon 2020 Research and Innovation Programme grant, 2018-2019

Erasmus+ Grant, 60+60+10 days mobilities, Rutgers University, Newark, NJ, USA, 2018-2020

### Study tours:

Torvergata University, Rome, Italy, 2 weeks, 1997

Institute of Molecular Biotechnology, Jena, Germany, 1 month, 1998

University of Ferrara, Ferrara, Italy, 2 weeks, 1998

NMR laboratory, University of Debrecen, Debrecen, Hungary, 1999-2000

University of Arizona, Department of Chemistry, Tucson, AZ, USA, 8 months, 2000-2001

Stanford Synchrotron Radiation Laboratory, Menlo Park, CA, USA, 3 days, 2002

West Coast Bruker Headquarter, San Francisco/Fremont, CA, USA, 6 days, 2003

Bruker BioSpin West Coast Regional Users Meeting, San Diego, CA, USA, 2 days, 2005

University of New Castle upon Tyne, MRI Center, New Castle, UK, 2 days, 2008

Swedish NMR Centre, University of Gothenburg, Gothenburg, Sweden, 4 days, 2010

Bruker BioSpin AG, Fällanden/Zürich, Switzerland, 3 days, 2010

University of Pittsburgh, Pittsburgh, PA, USA, 1 month, 2011

Advanced Photon Source (APS) at Argonne National Laboratory, Chicago, IL, USA, 3 days, 2011

Rutgers University, Department of Chemistry, Newark, NJ, USA, 3 months, 2012

Helmholtz-Zentrum Berlin, Germany, 2 weeks, 2015

Rutgers University, Department of Chemistry, Newark, NJ, USA, 1 week, 2017

University of Arizona, Department of Chemistry and Biochemistry, Tucson, AZ, USA, 2 weeks, 2017

University of Arizona, Department of Chemistry and Biochemistry, Tucson, AZ, USA, 3 weeks, 2018

### Selected posters (of >40 posters; first-authored: (F), co-authored: (C); last-authored: (L)):

Sixth International Transglutaminase Conference, Lyon, France, 2000 (F)

XIX. International Conference on Magnetic Resonance in Biological Systems, Florence, Italy, 2000 (C)

Annual meeting of the American Crystallographic Association, San Antonio, TX, USA, 2002 (C)

16<sup>th</sup> Symposium of the Protein Society, San Diego, CA, USA, 2002 (C)

Frontiers in Biomedical Research Forum, Tucson, AZ, USA, 2004, 2005, 2 posters in 2006 (2F, 2C)

Gordon Conference, Molecular Therapeutics of Cancer, New London, NH, USA, 2005 (C)

97<sup>th</sup> AACR Annual Meeting, Washington DC, USA, 2006 (C)

47<sup>th</sup> ENC, Pacific Grove, CA, USA, 2006 (C)

10<sup>th</sup> IUBMB Conference, Salvador da Bahia, Brazil, 2007 (F)

9<sup>th</sup> ICBEM Conference, Budapest, Hungary, 2010 (F)

16<sup>th</sup> European Bioenergetics Conference (EBEC) Conference, Warsaw, Poland, 2010 (F)

IX. European Symposium of the Protein Society, Stockholm, Sweden, 2011 (F)

Trends in Biomolecular Structure: from Chemistry to Function, Ljubljana, Slovenia, 2013 (F)

IBRO Workshop 2014, Debrecen, Hungary, 2014 (F)  
19<sup>th</sup> EBEC Conference, Riva del Garda, Italy, 2016 (2L)  
30<sup>th</sup> Anniversary Symposium of the Protein Society, Baltimore, MA, USA, 2016 (L)  
SMARTER 5 Conference, Bayreuth, Germany, 2016 (L)  
Understanding Biology Through Structure Conference, Santa Fe, NM, USA, 2017 (L)  
2<sup>nd</sup> Annual World Preclinical Congress Europe, Lisbon, Portugal, 2017 (L)  
9<sup>th</sup> Joint BER II and BESSY II User Meeting, Helmholtz Zentrum Berlin, Berlin, Germany, 2017 (L)  
20<sup>th</sup> EBEC Conference, Budapest, Hungary, 2018 (L)  
10<sup>th</sup> Joint BER II and BESSY II User Meeting, Helmholtz Zentrum Berlin, Berlin, Germany, 2018 (L)  
AsCA 2018/CRYSTAL 32 Conference, Auckland, New Zealand, 2018 (L)

Selected lectures/seminars (of >20):

German-Hungarian Conference on Proteomics, Debrecen, Hungary, 2002  
University of Arizona, Tucson, AZ, USA, 2005  
National Institute of Chemistry, Ljubljana, Slovenia, 2007  
10<sup>th</sup> IUBMB Conference, Salvador da Bahia, Brazil, 2007  
University of Ulm, Ulm, Germany, 2007  
University of Pittsburgh, Pittsburgh, PA, USA, 2011  
Rutgers University, Newark, NJ, USA, 2012  
University of Arizona, Tucson, AZ, USA, 2012  
Simmelweis Symposium, Budapest, Hungary, 2012  
Helmholtz-Zentrum Berlin, Berlin, Germany, 2015  
Annual Conference of the Hungarian Biochemical Society, Szeged, Hungary, 2016  
Rutgers University, Newark, NJ, USA, 2017  
University of Arizona, Tucson, AZ, USA, 2017  
20<sup>th</sup> EBEC Conference, Budapest, Hungary, 2018

PDB coordinates:

1N68	Copper bound to the multicopper oxidase CueO
1PF3	Crystal structure of the M441L mutant of the multicopper oxidase CueO
1XAV	Solution structure of the biologically relevant G-quadruplex in the human c-myc promoter
2HY9	Structure of the intramolecular human telomeric G-quadruplex in potassium solution: a novel adenine triple formation

5NHG	Crystal structure of the human dihydrolipoamide dehydrogenase
5J5Z	Crystal structure of the D444V disease-causing mutant of the human dihydrolipoamide dehydrogenase
6HG8	Crystal structure of the R460G disease-causing mutant of the human dihydrolipoamide dehydrogenase
6H05	Cryo-electron microscopic structure of the dihydrolipoamide succinyltransferase (E2) component of the human alpha-ketoglutarate (2-oxoglutarate) dehydrogenase complex [residues 218-453]
6I4P	Crystal structure of the disease-causing G194C mutant of the human dihydrolipoamide dehydrogenase
6I4Z	Crystal structure of the disease-causing P453L mutant of the human dihydrolipoamide dehydrogenase
6I4Q	Crystal structure of the human dihydrolipoamide dehydrogenase at 1.75 Angstrom resolution
6I4T	Crystal structure of the disease-causing I445M mutant of the human dihydrolipoamide dehydrogenase
6I4U	Crystal structure of the disease-causing G426E mutant of the human dihydrolipoamide dehydrogenase
6I4R	Crystal structure of the disease-causing R460G mutant of the human dihydrolipoamide dehydrogenase at 1.44 Angstrom resolution
6I4S	Crystal structure of the disease-causing R447G mutant of the human dihydrolipoamide dehydrogenase

#### Conference Organization:

9<sup>th</sup> International Conference on Brain Energy Metabolism, Mitochondrial-Cytosolic Interactions: From Energetics to Pathogenesis, July 7-10, 2010, Semmelweis University, Budapest (organizing committee member)

20<sup>th</sup> EBEC Conference, August 25-30, 2018, Semmelweis University, Budapest (organizing committee member)

#### Memberships:

Protein Society, 2001 –

Public-Body member of the Hungarian Academy of Sciences, 2006 –

NMR Work Commission of the Hungarian Academy of Sciences, 2006 –

Hungarian Biochemical Society, 1996 –

International Society for Magnetic Resonance (ISMAR), 2010 –

European Society for Neurochemistry, 2013 –  
American Chemical Society (ACS, by invitation), 2010 –

Reviewer for:

Analytical Biochemistry

Protein Expression and Purification,

Biochimie

Comparative Biochemistry and Physiology A

Journal of Photochemistry and Photobiology B: Biology

FEBS Letters

Preparative Biochemistry and Biotechnology

Biochimica et Biophysica Acta (BBA)

Cellular and Molecular Life Sciences

Human Molecular Genetics

MethodsX

Invention:

Danzhou Yang, Laurence H. Hurley, Jixun Dai, Attila Ambrus, Ding Chen, “Folding Pattern and Structure of the G-quadruplex in the Human Telomeric Sequence Formed under Physiological Condition.” Invention Disclosure/Provisional Application for Patent, University of Arizona, Tucson, AZ, USA, submitted: March 30, 2006

Conference abstracts:

1. Yang D, Ambrus A, Chen D, Dai J, Jones RA, Bialis T, Human telomeric intramolecular G-quadruplex structure in potassium solution, Abstracts of Papers of the American Chemical Society, 232, 14-MEDI, 2006

2. Dai J, Ambrus A, Punchihewa C, Carver M, Chen D, Jones RA, Yang D, Molecular structures and polymorphism of human telomeric G-quadruplexes in K<sup>+</sup> solution: A potential drug target for cancer therapeutics, 99<sup>th</sup> Annual Meeting of the American Association for Cancer Research, San Diego, CA, USA, 2008; Proceedings of the American Association for Cancer Research, 49, 758, 2008; Cancer Research, 68:(9) p. 3194

3. Adam-Vizi V, Ambrus A, Tretter L, Inhibition of the alpha-ketoglutarate dehydrogenase-mediated reactive oxygen species generation by lipoic acid, Front. Syst. Neurosci. Conference Abstract: 12<sup>th</sup> Meeting of the Hungarian Neuroscience Society, 2009, doi: 10.3389/conf.neuro.01.2009.04.136

4. Ambrus A, Tretter L, Adam-Vizi V, Inhibition of the alpha-ketoglutarate dehydrogenase-mediated reactive oxygen species generation by lipoic acid, 16<sup>th</sup> EBEC Conference, 2010, Warsaw, Poland; BBA – Bioenergetics, 1797, 57-57. Suppl. S, 2010

5. Nagy B, Hubert A, Szabo E, Zambo Z, Adam-Vizi V, Ambrus A, Isolation and crystallization of the pathological mutants of human dihydrolipoamide dehydrogenase, 19<sup>th</sup> EBEC Conference, 2016, Riva del Garda, Italy; BBA-Bioenergetics 1857, e42
6. Szabo E, Mizsei R, Zambo Z, Torocsik B, Weiss MS, Adam-Vizi V, Ambrus A, Crystal structure of the D444V disease-causing mutant of human dihydrolipoamide dehydrogenase, 19<sup>th</sup> EBEC Conference, 2016, Riva del Garda, Italy; BBA-Bioenergetics 1857, e100
7. Szabo E, Mizsei R, Zambo Z, Torocsik B, Weiss MS, Adam-Vizi V, Ambrus A, Crystal structure of the D444V disease-causing mutant of human dihydrolipoamide dehydrogenase, 30<sup>th</sup> Anniversary Symposium of the Protein Society, Baltimore, MD, USA, 2016; Protein Science (25, S1): 162-162, 2016