

Mihály Kovács
HUN-REN-ELTE Motor Pharmacology Research Group

Professor, Head of Department of Biochemistry
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Education, degrees, work history

MSc in Biology (ELTE, 1998)
PhD in Structural Biochemistry (ELTE/University of Leicester, 2002)
Postdoctoral training (National Institutes of Health (NIH, USA), 2002-2005)
PI, Associate research professor (ELTE, 2005-2015)
Habilitation in Biology (ELTE, 2008)
DSc in Biological Sciences (Hungarian Academy of Sciences (MTA), 2012)
Full professor (ELTE, 2015-)

Prizes, fellowships

EMBO Fellowship (Max-Planck-Inst. for Medical Research, Heidelberg, 1998)
Hungarian State Eötvös Fellowship (University of Leicester, 2000)
EMBO Fellowship (University of Leicester, 2001)
NIH Visiting Fellowship (NIH, 2002-2005)
Lenfant Biomedical Fellowship Award (NIH, 2004-2005)
Fellows Award for Outstanding Research (NIH, 2004)
Fellows Award for Research Excellence (NIH, 2004)
Bolyai Fellowship (ELTE-MTA, 2006-2009; 2010-2013)
Sigma-Aldrich Award, 1st Prize (Sigma-Aldrich Hungary, 2008)
Talentum Prize (MTA, 2009)
Ignaz L. Lieben Prize (Austrian Academy of Sciences, 2011)
Faculty of 1000 Evaluation (2012)
Orloff Science Award (NIH, 2013)
NHLBI Director's Award (National Heart, Lung and Blood Institute, NIH, USA, 2013)
Bolyai Certificate (MTA, 2014)
Academy Prize (MTA, 2017)

Research grant support

Total support as PI: 6.045 M EUR
NIH (USA) Global Health Research Initiative
EMBO-HHMI (European Molecular Biology Organization – Howard Hughes Medical Institute) Startup Grant
OTKA / NKFIH K, OTKA-Norway Fund, ERC_HU, KDP grants
Human Frontier Science Program Research Grant
MTA Momentum Program
PI, EU Marie Curie International Outgoing Fellowship
PI, EU Marie Curie Reintegration Fellowship
PI, MTA Postdoctoral Fellowship
GINOP 2.2.1
MTA HunProtExc Excellence Program
SzintPlusz Excellence Program
HUN-REN TKI Research Group

Teaching, mentoring, advisorship

BSc level: Biochemistry and molecular biology

MSc level: Gene technology, Motor proteins, Protein science

PhD level: Transient enzyme kinetics

BSc theses: 15, MSc theses: 41, PhD theses: 10, Postdoctoral work: 8 colleagues

Prizes, fellowships of mentees

EMBO Fellowship, Danish State Fellowship

Promising Scientist of ELTE, Innovative Scientist of ELTE, ELTE Publication Prize

ELTE TTK Student Excellence Award (6)

Prizes at National Student Conferences (4)

ÚNKP (New National Excellence Program) Fellowships (6)

Cooperative Doctoral Program (NKFIH) (2)

Conference Poster Prizes (2)

Jedlik Ányos Fellowship, Joseph Cours Fellowship, Kuffler Fellowship

Marie Curie International Outgoing Fellowship, Marie Curie Reintegration Fellowship

Prize of the Hungarian Biochemical Society (2)

MTA Premium Postdoctoral Fellowship, QP Award (MTA), Talentum Award (MTA)

Junior Prima Prize (2)

Public assignments

Society memberships: Hungarian Biochemical Society, European Society for Muscle Research, American Society for Cell Biology, Biophysical Society (USA), Public Body of MTA

Conference organization, chairmanship: Biophysical Society (USA) Meetings, Hungarian Biochemical Society Meetings, European Muscle Conference, Hungarian Molecular Life Sciences Conferences, FEBS3+ Conference, FEBS Congress

Journal article reviews: Journal of Biological Chemistry, Biophysical Journal, FEBS Journal, EMBO Journal, Nucleic Acids Research, Proc. Natl. Acad. Sci. USA, Elife

Member, Fellows Advisory Committee (NHLBI, 2003-2005)

Member, Board of Supervisors (Hungarian Biochemical Society, 2011-2014)

Member, Scientific Committee for Biochemistry, Molecular Biology, Genetics and Cell Biology (MTA, 2013-2022)

Vice Chair, Student Scientific Research Council in Biology (ELTE, 2012-2020)

Co-chair, Motility Subgroup (Biophysical Society, USA, 2012)

Member, National Student Scientific Research Council of Hungary, Biology section (2014-2018)

Secretary General, Hungarian Biochemical Society (2016-2020)

Vice President, Hungarian Biochemical Society (2021-)

Representative, General Assembly of the Hungarian Academy of Sciences (2016-2022)

Member, Doctoral Council in Biology (ELTE, 2016-)

Member, Faculty Quality Control and Strategic Committee (ELTE, 2016-)

Program leader, Structural Biochemistry Doctoral Program (ELTE, 2016-)

Head of Department of Biochemistry, Institute of Biology (ELTE, 2019-)

Chair, MTA Division of Biology, Committee in Molecular Biology, Genetics and Cell Biology (2024-)

Member, Academia Europaea (2024-)

Grant review and board memberships

National Scientific Research Fund, Hungary (OTKA) (2009-)

Hungarian Academy of Sciences (MTA) (2011-)

National Excellence Program (2012)

Board Member, OTKA (2013)

Board Member, National Research, Development and Innovation Office (NKFIH) (2016-2018)

Member, Board of Trustees, Bolyai Fellowship, MTA (2016-)

Chair, NKFIH Board for Molecular Biology (2020-2023)

Selected recent publications

- Rauscher AÁ, Gyimesi M, Kovács M*, Málnási-Csizmadia A* (2018): Targeting myosin by blebbistatin derivatives: optimization and pharmacological potential. *Trends Biochem. Sci.* 43: 700-713.
- Seol Y, Harami GM, Kovács M*, Neuman KC* (2019): Homology sensing via non-linear amplification of sequence dependent pausing by RecQ helicase. *Elife* 8: e45909.
- Horváth Á, Gyimesi M, Várkuti B, Kepiro M, Szegvári G, Lőrincz I, Hegyi G, Kovács M*, Málnási-Csizmadia A* (2020): Effect of allosteric inhibition of non-muscle myosin 2 on its intracellular diffusion. *Sci. Rep.* 10: 13341.
- Gyimesi M, Horváth ÁI, Túrós D, Suthar SK, Péntes M, Kurdi C, Canon L, Kikuti C, Ruppel KM, Trivedi DV, Spudich JA, Lőrincz I, Rauscher AÁ, Kovács M, Pál E, Komoly S, Houdusse A, Málnási-Csizmadia A (2020): Single residue variation in skeletal muscle myosin enables selective targeting: a small-molecule inhibitor ameliorates spastic gait disorder. *Cell* 183: 335-346.
- Harami GM, Kovács ZJ, Pancsa R, Pálkás J, Baráth V, Tárnok K, Málnási-Csizmadia A, Kovács M (2020): Phase separation by ssDNA binding protein controlled via protein-protein and protein-DNA interactions. *Proc Natl Acad Sci USA* 117: 26206-26217.
- Gyimesi M, Rauscher AÁ, Suthar SK, Hamow KÁ, Oravecz K, Lőrincz I, Borhegyi Z, Déri MT, Kiss ÁF, Monostory K, Szabó PT, Nag S, Tomasic I, Krans J, Tierney PJ, Kovács M, Kornya L, Málnási-Csizmadia A (2020): Improved inhibitory and ADMET properties of blebbistatin derivatives indicate that blebbistatin scaffold is ideal for drug development targeting myosin-2. *J Pharm Exp Ther* 376: 358-373.
- Harami GM, Pálkás J, Seol Y, Kovács ZJ, Gyimesi M, Harami-Papp H, Neuman KC, Kovács M (2022): The topoisomerase III α -RMI1-RMI2 complex orients human Bloom's syndrome helicase for efficient disruption of D-loops. *Nature Communications* 3: 1-14.
- Annus T, Müller D, Jezsó B, Ullaga G, Németh B, Harami GM, Orbán L, Kovács M*, Varga M* (2022): Bloom syndrome helicase contributes to germ line development and longevity in zebrafish. *Cell Death & Disease* 13: Article number 363.
- Kovács ZJ, Harami GM, Pálkás J, Kuljanishvili N, Hegedüs J, Harami-Papp H, Mahmudova L, Khamisi L, Szakács G, Kovács M (2024): DNA-dependent phase separation by human SSB2 (NABP1/OBFC2A) protein points to adaptations to eukaryotic genome repair processes. *Protein Science* 33: e4959.
- Harami GM, Pálkás J, Kovács ZJ, Jezsó B, Tárnok K, Harami-Papp H, Hegedüs J, Mahmudova L, Kucsma N, Tóth S, Szakács G, Kovács M (2024): Redox-dependent condensation and cytoplasmic granulation by human ssDNA binding protein 1 delineate roles in oxidative stress response. *bioRxiv*, <https://doi.org/10.1101/2023.07.25.550517>

Full list of publications

[PubMed](#)

[Google Scholar](#)

[MTMT](#)