CURRICULUM VITAE

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Work address:

Institute of Genetics
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POSITION: *Senior Scientist, Group Leader*

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Nationality

Hungarian

Education, Positions and Research Experience

20011 –present	**Principal Investigator** **Laboratory of Embryonic and Induced Pluripotent Stem Cells** Developmental Genetics Unit Institute of Genetics **HUN-REN Biological Research Centre** **H-6726 Szeged, Temesvari krt. 62.** **Hungary** Research Field: (a) Integrated approach to elucidate the role of PcG protein Rybp in promoting neural and cardiac lineage commitment of mouse ES cells (b) Generation and utilization of induced pluripotent stem cells and organoids in human for disease modelling.
2011	Ph.D., Genetics (F162198, awarded 2011 June) Thesis title: Gaining insights into the *in vivo* function of RYBP/DEDAF, a recently discovered polycomb protein: utilization of the mouse-as a genetically tractable mammalian model organism.

University of Szeged, Szeged, **Hungary**

2008 – 2011 **Stem Cell Group Leader**
BioTalentum Ltd
2100 Godollo, Hungary
Aulich L.u. 26
Research Field: (a) Induced pluripotent stem cells for cardiomyocyte generation in mouse (b) Platform of mouse and human embryonic stem cell-derived cardiomyocyte test systems for drug development (c) Systems biology approaches to understand cell pluripotency (d) Function of RYBP (Ring1 and YY1 binding protein) in cardiac lineage commitment.

2007 – 2008 **Research and Teaching Specialist**
Department of Pharmacology & Systems Therapeutics
Mount Sinai School of Medicine
New York, NY, USA
Research Field: Conditional and conventional gene targeting and transgenic approaches for analyzing the function of fibrillins during mouse embryonic development.
Advisor: Dr. Francesco Ramirez

2001 – 2007 **Postdoctoral Research Associate**
Department of Molecular Genetics, Albert Einstein College of Medicine, Bronx, USA.
Research Field: Role of the Mxi1 associated polycomb group protein RYBP in mouse embryonic development and neoplastic growth, (a) gene inactivation of the mouse Rybp locus, (b) phenotypic analyses of the homozygous peri-implantation lethal and exencephalic heterozygous Rybp mice, (c) conditional ectopic overexpression of Rybp in transgenic mouse.
Advisor: Dr. Nicole Schreiber-Agus

1999 – 2000 **Postdoctoral Research Fellow**
Amgen Research Institute, Princess Margaret Hospital, Toronto, Canada.
Research Field: Function of lipid phosphatases in mouse embryonic development and neoplastic growth, (a) differential expression screening approaches for identifying genes downstream of the PTEN tumor suppressor, (b) conditional and conventional gene targeting approaches for analyzing the function of the Sac1 protein in the mouse.
Advisor: Dr. Tak W. Mak

1995 - 1999 **Postdoctoral Research Fellow**
Samuel Lunenfeld Research Institute, Mt Sinai Hospital, Toronto, Canada.
Research Field: (a) development of novel gene targeting strategies for *in vivo* mutagenesis using ES cell technology, (b) analyzing the function of the N-*myc* oncoprotein in mouse embryonic development and glioblastomas: applying novel gene targeting strategies to analyze the phenotype of a variety of different N-myc domain deletion mouse mutants. Via ES cell mediated gene targeting, making mouse mutants lacking either the transactivation domain or

	the casein kinase phosphorylation site in the N-myc gene and studying *in vivo* consequences of these deletions. Advisor: Dr. Andras Nagy
1989 - 1994	**Graduate Student** Dr Univ., Cell Biology (awarded Jun 1995; equivalent to Ph.D) Jozsef Attila University, Szeged, **Hungary** Thesis work: Institute of Genetics, Biological Research Center, Hungarian Academy of Sciences, Szeged, Hungary. Thesis title: Studying the function of heat-shock proteins in stress and multidrug tolerance on mouse Reubert hepatoma and human transformed cell lines. Advisor: Dr. Aniko Venetianer
1985 – 1989	**Undergraduate Student** MSc, Genetics Jozsef Attila University, Szeged, **Hungary.** Advisor: Dr. Gyorgy Borbely Thesis title: Characterisation of heat and cadmium stress response in Cyanobacteria.

Grants

2025-2029	**ADVANCED OTKA**: Human stem cell-based blood-brain barrier models for translational biomedical investigations Participating Scientist
2024-2027	**ERA-NETNEURON (B3phrenia)**: Disfunction of the blood brain barrier in schizophrenia: molecular underpinnings of vulnerability and resilience Participating Scientist
2022-2026	**OTKA K22 (143666)**: Barrier maturation in stem cell models of cerebrovascular endothelium, HUNGARIAN NATIONAL RESEARCH FUND (NKFIH) Participating Scientist (Work Package Leader)
2016-2021	**GINOP- 2.3.2-15-2016-00001:**Investigating the effect of a polycomb protein in neural development by using mouse embryonic stem cell models, HUNGARIAN NATIONAL RESEARCH FUND (NKFIH) Participating Scientist, Work Package leader
2016-2021	**GINOP-2.3.2-15-2016-00039:**Investigating the pathogenesis of rare human cardiac diseases, HUNGARIAN NATIONAL RESEARCH FUND (NKFIH) Participating Scientist, Work Package leader
2008-2012	**ES2HEART**: Platform of mouse and human embryonic stem cell-derived cardiomyocyte test systems for drug development, NKTH – JEDLIK, NKFP_07_1-ES2HEART-HU Participating Scientist

2008-20012	**PartNERS**: Comparative embryonic stem cell research in mammalians, **EU FP7** Marie Curie Actions Industry-Academia Partnerships and Pathways (IAPP), PIAP-GA-2008-218205 Participating Scientist
2008-2012	**Plurisys**: Systems biology approaches to understand cell pluripotency, **EU FP7** Medium Scale Collaborative project, HEALTH-F4-2009-223485 Participating Scientist
2009-2012	**FP7-PEROPLE-IRG**; Marie Curie Actions (MC), International Reintegration Award (PIRG04-GA-234390) Principal Investigator Title: "Induced pluripotent stem cells for cardiomyocyte generation in mouse "
2009-2012	**InduHeart**:, Induced Pluripotent Stem Cells For Cardiomyocyte Generation In Mouse, **EU FP7** Marie Curie People, FP7-PEOPLE-2009-RG Principal Investigator
2009-2013	**InduStem**: Comparative stem cell research in mouse and humans, **EU FP7** Marie Curie Industry-Academia Partnerships and Pathways, PIAP-GA-2008-230675 Participating Scientist
2010-2013	**MOBILITY - Marie Curie Actions** (MC), Hungarian/European Reintegration Award (MB08-C 80205) Title "Generation of induced pluripotent stem cells in rabbit" Principal Investigator
2014-2016	**TAMOP** 4.2.6. – coordinator at the Institute of Genetics, HUN-REN BRC
2016-2020	**National Research, Deevelopment and Innovation Office** GINOP-2.3.2-15-2016-0001 Title: "Investigating of neural lineage commitment in mice: a developmental stury of a negative regulator acting at the chromatin level " Principal Investigator
2016-2020	**National Research, Development and Innovation Office** GINOP-2.3.2-15-2016-00039 Title: "Investigating the effect of a polycomb protein in neural development by using mouse embryonic stem cell models", NKFIH Principal Investigator

Bibliography

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2. Venetianer,, A., **Pirity, M**., Hever-Szabo, A. (1994) The function of heat-shock proteins in stress tolerance. *Cell Biol. Int.* 18: 605-615

3. **Pirity, M**., Hever-Szabo, A., Venetianer, A. (1996) Overexpression of P-glycoprotein in heat- and/or drug-resistant hepatoma variants. *Cytotechnology* 19: 207-214

4. Hever-Szabo, A., **Pirity, M**., Szathmari, M., Venetianer, A. (1998) P-glycoprotein is overexpressed and functional in severely heat-shocked hepatoma cells. *Anticancer Res.* 18: 3045-3048

5. Nagy, A., Moens, C., Ivanyi, E., Pawling, J., Gertsenstein, M., Hadjantonakis, A-K., **Pirity, M**., Rossant, J. (1998) Multipurpose gene alterations from a single targeting vector: dissecting the role of *N-myc* in development. *Current Biol*. 8: 661-664

6. **Pirity, M.,** Hadjantonakis, A-K., Nagy, A. (1998) Embryonic stem cells: creating transgenic animals. Animal Cell Culture Methods. *Methods in Cell Biology.* J.P. Mather and D. Barnes Eds. 57: 279-293

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10. **Pirity, M**., Locker, J., Schreiber-Agus, N. (2005) Rybp/DEDAF is required for early post-implantation and for central nervous system development. Mol. Cell. Biol. 16:7193-7202

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* Joint first co-authorship