

Andrii Domanskyi, PhD, Senior Research Scientist, Adj. Prof. in Molecular Genetics**Personal details**

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I am a neuroscientist with over 16 years of combined industrial and international academic experience in *in vivo*, *ex vivo*, and *in vitro* models of neurodegenerative diseases and chronic pain, providing me with a profound understanding of pre-clinical drug discovery and development. I have expertise in transgenic technologies, including somatic transgenesis with viral vectors and CRISPR/Cas9, as well as project management.

Currently, I hold the position of Senior Research Scientist at Orion Corporation, where my responsibilities include implementing pre-clinical *in vivo* models of Parkinson's disease, ALS, and osteoarthritis-related chronic pain. I am also responsible for designing genetic tools and supervising creation of transgenic animals. Moreover, I oversee research activities, including electrophysiology experiments, on primary rodent neuronal cultures and tissue explants. Throughout my career, I have been actively involved in evaluating several in-licensing cases, establishing and managing collaborations with CROs and academic partners, participating in the preparation of numerous grant applications with academic collaborators, and effectively leading pre-clinical research projects.

Prior to transitioning to the industry, I served as a group leader at the University of Helsinki. During this period, I successfully established a novel drug screening assay for alpha-synuclein aggregation in dopaminergic neurons, and my group was among the few research teams worldwide capable of achieving this milestone. Furthermore, I have eight years' international postdoc experience in the field of molecular and cellular neuroscience and molecular genetics.

Education*Adjunct Professor (Docent) in Molecular Genetics*

October 2017 Faculty of Biological and Environmental Sciences, University of Helsinki, Helsinki, Finland

PhD in Molecular Biology/Physiology

March 2007 Faculty of Medicine, University of Helsinki, Helsinki, Finland

MSc in Applied Mathematics and Physics with Honors

June 2000 Faculty of Molecular and Biological Physics, Moscow Institute of Physics and Technology

Work*Senior Research Scientist*

March 2020-present	Orion Corporation, Orion Pharma, Turku, Finland • Implementation and analysis of <i>in vivo</i> rodent models of pathological protein aggregation in neurodegenerative diseases, and osteoarthritis-related chronic pain • Primary cultures of midbrain, hippocampal, cortical, sensory, and spinal cord neurons for calcium imaging and electrophysiology • Virus-mediated somatic transgenesis <i>in vivo</i> and <i>in vitro</i> in BSL2-class laboratories • Management of early-stage preclinical project • Planning and implementation of research projects with academic partners and CROs • Evaluation of in-licensing cases • Supervision of MSc and PhD students • Preparation of grant applications, ethical permits for animal work, and biosafety evaluation documents for virus vectors
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Principal Investigator, Academy Research Fellow

Sept 2015-March 2020	Institute of Biotechnology, HiLIFE, University of Helsinki, Helsinki, Finland
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	• Implementation and analysis of <i>in vivo</i> and <i>in vitro</i> models of pathological protein aggregation in Parkinson's disease • Construction and production of <i>in vivo</i> grade lentiviral vectors • Development and validation of reporter cell lines for drug screening • Management of academic research projects • Development and teaching of university courses for MSc and PhD students • Virus-mediated somatic transgenesis, including CRISPR-Cas9, shRNA, miRNA and protein expression, <i>in vivo</i> and <i>in vitro</i> in BSL2-class laboratories • Supervision of BSc, MSc and PhD students and postdoctoral scientist • Preparation of grant applications, ethical permits for animal work, and biosafety evaluation documents for virus vectors
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Visiting Postdoctoral Scientist

Sep 2015	Optogenetics and Transgenic Technology Core Facility, National Institute on Drug Abuse (NIDA), Baltimore, MD, USA • Design and implementation of CRISPR-Cas9 gene editing <i>in vivo</i> and <i>in vitro</i>
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Senior Postdoctoral Scientist

May 2014-Aug 2015	Institute of Biotechnology, HiLIFE, University of Helsinki, Helsinki, Finland • Implementation and analysis of <i>in vivo</i> and <i>in vitro</i> genetic and toxin-induced models of Parkinson's disease • Preparation, culturing and analysis of primary neurons and neural stem cells • Virus-mediated somatic transgenesis <i>in vivo</i> and <i>in vitro</i> in BSL2-class laboratories • Supervision of BSc, MSc and PhD students • Preparation of grant applications, ethical permits for animal work, and biosafety evaluation documents for virus vectors
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Postdoctoral Scientist

July 2007-April 2014	German Cancer Research Center (DKFZ), Heidelberg, Germany • Implementation and analysis of <i>in vivo</i> and <i>in vitro</i> genetic and toxin-induced models of Parkinson's disease • Creation and analysis of transgenic mice • Supervision of BSc and MSc students • Preparation of grant applications and ethical permits for animal work
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PhD Student

Aug 2000-June 2007	Institute of Biomedicine, University of Helsinki, Helsinki, Finland • Protein purification and biochemical analysis of protein-protein interactions and enzymatic (ATPase) activity • Immunohistochemical analysis of transgenic mice and embryos • Culturing and analysis of mammalian cells • Supervision of BSc and MSc students
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Technical skills**Creation and characterization of transgenic animals and tools for somatic transgenesis**

- Inducible tissue-specific gene knockout *in vivo* using Cre(ERT2)/LoxP and CRISPR/Cas9 gene editing
- Design, creation, behavioral and molecular characterization of transgenic mice
- Design of lentiviral, HSV, and AAV vectors for *in vitro* and *in vivo* somatic transgenesis
- Production of *in vivo* grade lentiviral vectors
- Stereotaxic, i.v., i.t., intraarticular, and intraplantar injections of lentiviral, HSV, and AAV vectors to adult and early postnatal rodents in BSL2-class laboratories

In vivo

- Stereotaxic brain injections of stem cells, fluorescent retrograde tracers, neurotoxins, pre-formed fibrils, lentiviral and AAV vectors in BSL2-class laboratories
- Intra-brain infusion of drugs and neurotrophic factors using osmotic mini-pumps

- Surgical and drug-induced models of osteoarthritis and inflammatory pain in rodents

In vitro

- Mammalian, bacterial, and insect cell culture, including primary and human iPSC-derived cultures of CNS and sensory neurons, and stem cells
- CRISPR/Cas9 gene editing, stable and transient transfections, and reporter gene assays
- Immunohistochemistry, immunofluorescent and confocal microscopy

Biochemical methods

- Nucleic acid purification, detection, and quantification (*in situ* hybridization, northern and Southern blotting, quantitative real-time PCR)
- Molecular cloning (with classical and recombineering methods), PCR and mutagenesis
- Laser-assisted microdissection of fluorescently labeled cells from brain sections
- Production of recombinant proteins in bacteria, mammalian, and insect cells
- Protein purification and detection (immunoprecipitation, affinity chromatography, electrophoresis, immunoblotting, immunohistochemistry, immunofluorescence)
- Protein-protein and protein-DNA interactions (co-immunoprecipitation, GST pull-down, EMSA)

Computer skills

- Electronic lab book and animal management software
- DNA sequence analysis and gene editing software (VectoNTI, ApE, SnapGene)
- High throughput microRNA expression profiling data analysis (R/Bioconductor; qbase+)
- mRNA microarray data analysis (GeneSpring GX)
- Statistical analysis (GraphPad Prism, SigmaPlot, Excel)

Linguistic skills

- Ukrainian: native
- English: fluent
- German, Finnish, Lithuanian: intermediate

Miscellaneous

- University pedagogy training and >5 years of experience in teaching University courses to MSc and PhD students
- Supervision of >20 MSc and PhD students
- Successful grant applications to the Academy of Finland and other Finnish national funding agencies
- Guest Associate Editor (Frontiers in Cellular Neuroscience), Review Editor (Frontiers in Aging Neuroscience), ad-hoc reviewer for > 10 scientific journals
- 8 invited seminars and oral presentations in Finland and abroad

Publications (list of publications is available upon request)

ORCID ID: 0000-0002-4755-5981
ResearcherID: H-3437-2012
h-index: 22 (Google Scholar)
Total number of citations: 1872 (Google Scholar)