

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Nechiporuk, Alex	POSITION TITLE Assistant Professor
eRA COMMONS USER NAME (credential, e.g., agency login): Nechiporuk	

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
2 nd Moscow Medical University, Moscow, Russia	B.S.	05/1991	Biology
UCLA, Los Angeles, CA	M.S.	09/1996	Biomathematics
University of Utah, Salt Lake City, UT/ Children's Hospital, Boston, MA	Ph.D.	08/2002	Human Genetics
University of Washington, Seattle	Postdoc	02/2008	Developmental Biology

A. Personal Statement

The long-term goal of my research is to establish zebrafish as an *in vivo* model system for analysis of collective cell migration in the context of embryonic development and cancer. I will achieve this goal by isolating various factors that regulate collective cell migration in the lateral line system in zebrafish and then testing the role of these factors in cancer cells. My laboratory has the necessary expertise and collaborative support in place to perform the proposed research. I have carried out a number of studies on lateral line in zebrafish, results of which have been recently published (Nechiporuk and Raible, *Science*, 2008; McGraw et al., *Development*, 2011). One of these publications (McGraw et al., 2011) describes isolation and characterization of *Lef1* mutant strain in zebrafish, which is a principal focus of Aim 1 of this proposal.

My track record demonstrates that I can take intellectual risks, develop new collaborations, develop new approaches, and change directions when a new challenge or opportunity arises. During my graduate work, I developed zebrafish as a model system to study regeneration. During my post-doctoral fellowship, I studied development of the lateral line in zebrafish. Now I propose to use my knowledge of the zebrafish as a model system, specifically its lateral line system, to establish it as a model for studying collective cell migration during development and cancer.

Because my lab has limited expertise in the cancer biology and transcriptome analyses, we have established collaborations with the experts in these fields, Drs. Melissa Wong (associate professor in the Department of Dermatology and Knight Institute member at OHSU), Lisa Coussens (professor and chair, department of Cell and Developmental Biology), Dr. Kevin Billingsley (Division of Surgical Oncology at OHSU) and Richard Goodman (professor and Director of the Vollum Institute). The Wong and Coussens lab have an extensive expertise studying colorectal and breast cancer models. Experiments associated with Aim 2 will be performed in close collaboration with Dr. Wong's laboratory. In addition, both Drs. Wong and Coussens will advise us on experimental design and data analyses associated with the experiments proposed in Aim 2. The Goodman lab has an expertise in deep sequencing technologies and whole-genome analyses. They will provide support with RNA-Seq data analyses (Aim 1). Tumor specimens will be supplied by our collaborator, Dr. Kevin Billingsley. In summary, I have been successful and productive in multiple areas of zebrafish-related research; I also have an expertise, leadership, and collaborative support to successfully carry out the proposed research.

B. Positions and Honors

Positions and Employment

1991 –1996 Research Technician, Cedars-Sinai Medical Center, Los Angeles, CA
1995 – 1996 Graduate Student, UCLA, Los Angeles, CA
1996 – 2002 Graduate Student, University of Utah, Salt Lake City, UT/Children’s Hospital, Boston, MA
2003 – 2008 Research Fellow, University of Washington, Seattle, WA
2008 – present Assistant Professor, Oregon Health & Science University

Other Experience and Professional Memberships

2000 – present Member, Society for Developmental Biology
2011 – present Member, American Society for Cell Biology
2009 – present Reviewer, NSF Animal Developmental Systems cluster
2010 – present Member of the Oregon Health & Science University IACUC committee
2011 – mail reviewer, NDPR study section, NIH
reviewer for *PLoS ONE*, *Developmental Dynamics*, *Developmental Cell*, *Development*, *BMC Developmental Biology*, and others.

Awards and Honors

1996 American Society of Human Genetics. Best oral presentation in a predoctoral category
2004 – 2007 Individual NRSA Award (NICHD)
2006 Northwest developmental biology meeting. Best oral presentation in postdoctoral category.
2007 – 2013 Pathway to Independence Award (NICHD)
2010 – 2012 Basil O’Connor Award (March of Dimes)

C. Selected peer-reviewed publications

(Publications selected from 29 peer-reviewed publications)

Most relevant to the current application (in chronological order)

1. **Nechiporuk A**, Raible DW. (2008). FGF-dependent mechanosensory organ patterning in zebrafish. *Science*. 2008 Jun 27;320(5884):1774-7. PMID: 18583612.
2. Mo W, Chen F, **Nechiporuk A**, Nicolson T. (2010) Quantification of vestibular-induced eye movements in zebrafish larvae. *BMC Neurosci*. 2010 Sep 3;11(1). PMID: 20815905.
3. Hillary F. McGraw, Catherine M. Drerup, Maya D. Culbertson, Tor Linbo, David W. Raible, **Alex V. Nechiporuk**. (2011). Lef1 is required for progenitor cell identity in the zebrafish lateral line primordium. *Development*, 138:3921-3930. PMID: 21862556.

Additional recent publications of importance to the field (in chronological order)

4. Poss KD, Shen J, **Nechiporuk A**, McMahon G, Thisse B, Thisse C, Keating MT. (2000). Roles for Fgf signaling during zebrafish fin regeneration. *Dev Biol* 222(2):347-58. PMID: 10837124
5. **Nechiporuk A** & Keating MT. (2002). A proliferation gradient between proximal and *msxb*-expressing distal blastema directs zebrafish fin regeneration. *Development* 129: 2607-2617. PMID: 12015289
6. Poss KD, **Nechiporuk A**, Hillam AM, Johnson SL, Keating MT. (2002). Mps1 defines a proximal blastemal proliferative compartment essential for zebrafish fin regeneration. *Development* 129:5141-5149. PMID: 12399306
7. Poss KD, Keating MT, & **Nechiporuk A**. (2002). Tales of regeneration in zebrafish. *Dev Dyn* 226: 202-10. PMID: 12557199
8. Poss KD, **Nechiporuk A**, Stringer KF, Lee C, Keating MT. (2004). Germ cell aneuploidy in zebrafish with mutations in the mitotic checkpoint gene mps1. *Genes Dev*. Jul 1;18(13):1527-32. PMID: 15231734

9. **Nechiporuk A**, Poss KD, Johnson SL, Keating MT. (2003). Positional cloning of a temperature-sensitive mutant *emmental* reveals a role for Sly1 during cell proliferation in zebrafish fin regeneration. *Dev Biol* 15;258:291-306. PMID: 12798289
10. **Nechiporuk A**, Linbo T, Raible DW. (2005). Endoderm-derived Fgf3 is necessary and sufficient for inducing neurogenesis in the epibranchial placodes in zebrafish. *Development*. Aug;132(16):3717-30. PMID: 16077091
11. **Nechiporuk A**, Linbo T, Poss KD, and Raible DW. (2007). Specification of epibranchial placodes in zebrafish. *Development*. 134:611-23 PMID: 17215310
12. Obholzer N, Wolfson S, Trapani JG, Mo W, **Nechiporuk A**, Busch-Nentwich E, Seiler C, Sidi S, Söllner C, Duncan RN, Boehland A, Nicolson T. (2008). Vesicular glutamate transporter 3 is required for synaptic transmission in zebrafish hair cells. *J Neurosci*. 2008 28(9):2110-8. PMID:18305245.
13. McGraw HF, **Nechiporuk A**, Raible DW. (2008). Zebrafish dorsal root ganglia neural precursor cells adopt a glial fate in the absence of neurogenin1. *J Neurosci*. Nov 19;28(47):12558-69. PMID: 19020048.
14. Maya D, Culbertson, Zachary R. Lewis, **Alex V. Nechiporuk**. (2011). Chondrogenic and gliogenic subpopulations of neural crest play distinct roles during the assembly of epibranchial ganglia. *PloS ONE*, 6(9):e24443. Epub 2011 Sep 9.
15. Gokhan Dalgin, Andrea B Ward, Le T Hao, Christine E Beattie, **Alex Nechiporuk**, and Victoria E Prince. (2011). Zebrafish *mnx1* controls cell fate choice in the developing endocrine pancreas. *Development*, Nov;138(21):4597-608. PMID:21989909.

D. Research Support

Ongoing Research Support

5R00HD055303 (Nechiporuk, PI)
NIH/NICHD
(no cost extension)

05/01/2007-02/28/2013

Development of epibranchial placodes and ganglia in zebrafish

The goal of this study is to define the cellular bases of EB placode formation; define the role of Fgf signaling in segregation of EB placode precursors from the Pax2a subdomain; and initiate a new genetic screen to reveal recessive mutations responsible for EB placode/ganglia development.

University start up funds (Nechiporuk, PI)
OSU

unlimited duration

Completed Research Support

3R00HD055303-04S1 (Nechiporuk, PI)
NIH/NICHHD

09/30/2009-09/29/2010

ARRA: Development of ephibranchial placodes and ganglia in zebrafish

Purchase of a Thermo Scientific Revco cryostat and three monitoring/dosing stations for additional tanks.

Medical Research Foundation of Oregon (Nechiporuk, PI)

03/01/2009-02/28/2010

The goal of this proposal is investigate the genetic basis of a novel mutation that affects development of the lateral line primordium in zebrafish.

5-FY09-116 (Nechiporuk, PI)

02/01/2009-01/31/2012

March of Dimes Basil O'Connor Research Scholarship
(no cost extension)

Fgf-dependent innervation of lateral line in zebrafish

The goal of this study is to test whether Fgf functions as guidance cue during establishment of afferent innervation in the zebrafish lateral line system.

Program Director/Principal Investigator (Last, First, Middle): **Nechiporuk, Alex**