

CURRICULUM VITAE

Nan Zhang

NAN ZHANG, Ph.D

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EDUCATION

University of Massachusetts at Amherst Ph.D in Animal Biotechnology & Biomedical Sciences	2012
China Agricultural University B.S in Veterinary Medicine	2006

RESEARCH EXPERIENCE

Northwestern University, Chicago, IL Postdoctoral Research Scientist	2014-Present
<ul style="list-style-type: none">Investigating Zinc regulation during fertilization in mammalian oocytesImaging hardware manager	
Columbia University, New York, NY Postdoctoral Research Scientist	2012-2014
<ul style="list-style-type: none">Investigating how transcription processing affect embryo development in mouse	
University of Massachusetts Amherst, Amherst, MA Ph.D Student	2006-2012
<ul style="list-style-type: none">Investigating molecular mechanisms of fertilization and infertility caused by agingDirecting undergraduate students to finish internship projectsLab financial manager and imaging hardware manager	
China Agricultural University, Beijing, China Undergraduate Student	2001-2006
<ul style="list-style-type: none">Research internship in State Key Laboratories for Agro-biotechnology: involved in the project of generation of transgenic rabbit by ICSISenior student research training in National Animal TSE lab: learning of subcloning, protein expression and purification.Junior student research training in Molecular Histology and Embryology Lab: learning of histology technology	

TEACHING EXPERIENCE

Course Instructor:

REPR_SCI 440: Reproductive Technologies Laboratory, Northwestern University, Fall 2016

REPR_SCI 406: Human Reproductive Development, Northwestern University, Fall 2016

Teaching Assistant:

ANIML SCI 521: Reproduction Physiology, University of Massachusetts, Fall 2006, Fall 2010 and Fall 2011

- Around 50 students in this class, I was mainly responsible for teaching labs, proctoring exams

Supervisor for Senior Honor Internship:

Supervise senior students to finish their research project, University of Massachusetts, 2007-2012

- I have supervised many honor students including Savannah Lloyd, Robert Agreda, Haiyan Ramirez, Eydis Lima

Teaching Assistant:

Frontiers in Reproduction, Marine biological laboratory, Spring 2009, Spring 2011

- Around 30 students in this class, I was responsible for teaching Calcium Imaging and lab preparation

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such as making reagents, gametes collection

Teaching Assistant:

ANIML SCI 385: Introductory Biotechnology Lab, University of Massachusetts, Spring 2007

- Around 30 students in this class, I was mainly responsible for teaching labs, proctoring exams.

Lecturer:

Women's Health Science Program (WHSP)

- Around 24 students in this class; Lab demonstration of Zinc spark and Calcium oscillations during fertilization to 24 students, June 2014

SKILLS

Molecular Biology/Biochemistry:

- PCR, qPCR, Western blotting, Molecular cloning, Protein expression and purification, Generation of antibody, Mutagenesis, RNA extraction, Genome and transcriptome sequencing

Cell Biology:

- Immunohistochemistry, Confocal microscopy, Transfection, Cell culture, Calcium imaging

Embryology:

- Collection of gametes, Embryo transplantation, IVF, Microinjection, ICSI

Animal Experience:

- Creation and husbandry of transgenic mouse

Data Analysis:

- Expert on MsOffice, Prism, MacVector, ImageJ, Photoshop, LSM510 (confocal)

HONORS AND AWARDS

Excellence in Science Reward from American Association for the Advancement of Science (AAAS)	2012
Scholarship of China Agricultural University	2002-2005
Excellent Student of China Agricultural University	2003

COMMUNITY SERVICE EXPERIENCE

Baystate Medical Center/ Heart and Vascular Department Tech Aid	09/2009-06/2010 (Total. 140 hours)
Cooley Dickinson Hospital / Emergency Department Tech Aid	06/2009-09/2009 (Total. 60 hours)
China Agricultural University Veterinary Hospital Register Desk	01/2006-07/2006 (Total. 60 hours)

PROFESSIONAL SOCIETIES

2015-present	Henry Journal of Stem Cell Biology, Research & Therapy, Editor
2014-present	SIGMA XI THE SCIENTIFIC RESEARCH SOCIETY, Full membership
2015	Minisymposium of Reproductive Biology at Northwestern University, Organizing committee
2014-present	Society for the Study of Reproduction, full membership
2014-present	The Endocrine Society, full membership
2014-present	Libertas Academica, Guest editor of infectious Diseases: Research and Treatment journal supplement
2013-present	Society for developmental biology, full membership

REVIEWER FOR SCIENTIFIC JOURNALS AND CONFERENCES

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Journal of Assisted Reproduction and Genetics

Judge of Sigma Xi meetings: Cellular & Molecular Biology Student Research Showcase

Journal of Molecular Human Reproduction

Journal of Clinical Medicine Insights: Reproductive Health

Northwestern Computational Research day: Visualization Challenge

SSR (Society for the Study of Reproduction) 2016 Annual Meeting: Systems Biology of Reproduction

2016 International Conference on Intelligent Computation

PUBLICATIONS

1. **Zhang N**, Duncan FE, Que EL, O'Halloran TV and Woodruff TK (2016). The fertilization-induced zinc spark is a novel biomarker of mammalian embryo quality and early development. *Scientific Reports*. 2016. 6:22772, doi:10.1038/srep22772
2. Duncan FE*, Que EL*, **Zhang N***, Feinberg EC, O'Halloran TV and Woodruff TK (2016). "The zinc spark is an inorganic signature of human egg activation." *Scientific Reports*. 2016. 6: 24737. * Authors contribute equally.
3. **Zhang N**, Yoon SY, Parys JB, Fissore RA. Effect of M-phase kinase phosphorylations on type 1 inositol 1,4,5-trisphosphate receptor-mediated Ca responses in mouse eggs. *Cell Calcium*. 2015. PubMed PMID: 26259730
4. **Zhang N**, and Fissore RA (2014). "Role of caspase-3 cleaved IP3 R1 on Ca(2+) homeostasis and developmental competence of mouse oocytes and eggs." *J Cell Physiol* **229**(11): 1842-1854.
5. Wakai T, **Zhang N**, Vangheluwe P, Fissore RA. 2013. Regulation of endoplasmic reticulum Ca(2+) oscillations in mammalian eggs. *J Cell Sci* 126(Pt 24):5714-5724.
6. **Zhang N**, Wakai T, Fissore RA. 2011. Caffeine alleviates the deterioration of Ca²⁺ release mechanisms and fragmentation of in vitro-aged mouse eggs. *Molecular Reproduction and Development* 78(9):684-701.
7. Coward K, Ponting CP, **Zhang N**, Young C, Huang CJ, Chou CM, Kashir J, Fissore RA, Parrington J. 2011. Identification and functional analysis of an ovarian form of the egg activation factor phospholipase C zeta (PLCzeta) in pufferfish. *Molecular Reproduction and Development* 78(1):48-56.
8. Wakai T, Vanderheyden V, Yoon SY, Cheon B, **Zhang N**, Parys JB, Fissore RA. 2011. Regulation of inositol 1,4,5-trisphosphate receptor function during mouse oocyte maturation. *J Cell Physiol*, **227**, 705-717.
9. Wakai T, **Zhang N** and Fissore RA. 2008. Caffeine prevents a loss of calcium oscillatory response associated with postovulatory aging of mouse oocytes. *Reprod.Fertil.Dev.* 21, 217-217.

CONFERENCE PRESENTATIONS

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| Gordon Research Seminars, Holderness, NH | 07/2015 |
| "The zinc spark is a non-invasive marker of mammalian egg and embryo quality" | |
| Columbia University Neurodevelopment meeting, New York, NY | 5/2013 |
| "SETX's functional role in mouse embryonic development" | |
| Columbia University CBRG meeting, New York, NY | 2/2013 |
| "SETX's functional role in mouse embryonic development" | |
| VASCI Graduate Student Networking Meeting, Amherst, MA | 10/2011 |
| "Functional role of C-terminal of IP ₃ R1 on Ca ²⁺ homeostasis during oocytes maturation and MII arrest" | |
| 3rd NE Regional Mammalian Developmental Biology Meeting, Farmington, CT | 09/2011 |
| "Caffeine alleviates the deterioration of Ca ²⁺ release mechanisms in <i>in vitro</i> aged mouse eggs" | |
| VASCI Retreat, Amherst, MA | 05/2009 |
| "In vitro aging of mouse oocytes compromises type 1 inositol 1,4,5-trisphosphate receptor function" | |
| Gordon Research Seminars, Holderness, NH | 07/2015 |
| "The zinc spark is a non-invasive marker of mammalian egg and embryo quality" | |

POSTER MEETINGS

SSR 2016 Annual Meeting: Systems Biology of Reproduction, San Diego, CA	07/2016
“The zinc spark is a non-invasive marker of mammalian egg and embryo quality”	
Gordon Research Conference, Holderness, NH	07/2015
“The zinc spark is a non-invasive marker of mammalian egg and embryo quality”	
11th Annual Lewis Landsberg Research Day, Chicago, IL	04/2015
“The zinc spark is a non-invasive marker of mammalian egg and embryo quality ”	
Columbia University Taub Institute Annual Retreat, Palisades, NY	09/2013
“Mouse models for ALS4 and AOA2”	