

Lei Lei PhD

Associate Professor, Scientific Director

Center for Female Reproductive Longevity and Equality, The Buck Institute for Research on Aging

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Education and Training

Education

09/1997-06/2001 BS, Biology, College of Biological Sciences, China Agricultural University, Beijing, China
09/2001-06/2006 PhD, Physiology (Reproductive Endocrinology), College of Biological Sciences, China Agricultural University, Beijing, China

Postdoctoral Training

09/2006-05/2009 Postdoctoral Fellow, Ovarian Biology, Feinberg School of Medicine, Northwestern University, Chicago, Illinois
06/2009-08/2015 Postdoctoral Associate, Germ Cell/Stem Cell Biology, Department of Embryology, Carnegie Institution for Science, Baltimore, Maryland

Academic, Administrative, Research Appointments

Academic Appointments

09/2015-06/2019 Assistant Professor, Department of Cell and Developmental Biology, University of Michigan Medical School, Ann Arbor, MI
07/2019-present Associate Professor, Center for Female Reproductive Longevity and Equality, The Buck Institute for Research on Aging, Novato, CA

Research Interests

Reproductive aging; Ovarian aging; Ovarian organogenesis; Germ cell fate determination;
Ovarian somatic cell trans-differentiation

Grants

Current Grants

1R01GM126028-01A1: *Mouse oocyte fate determination via polarized cytoplasmic transport within germline cysts*
NIH-NIGMS-US

Lei, Lei, PI 02/2019-01/2024

Past Grants

Beattie Awards in Stem Cell Biology, University of Michigan Medical School

Lei, Lei, PI 05/2017-04/2019

Young Investigator's Achievement Award, Howard and Georgeanna Jones Foundation

Lei, Lei, PI 07/2016-12/2017

IDEA Stem Cell Award, University of Michigan Medical School

Lei, Lei, PI 01/2016-01/2017

Honors and Awards

International

2014 Endocrine Society Travel Award to Gordon Research Conference

National

2016 Young Investigators Achievement Award, Jones Foundation for Reproductive Medicine

Institutional

2002 "An Li-Fang" scholarship

2006 Top-ten Excellent Ph.D. Thesis of China Agricultural University

2016 IDEA Stem Cell Award

2017 Beattie Awards in Stem Cell Biology

Memberships in Professional Societies

2015-2019 Member, Reproductive Science Program, University of Michigan Medical School

2015-present Full Member, Society for Developmental Biology

2015-present Regular Member, Society for the Study of Reproduction

Editorial Positions, Boards, and Peer-Review Service Study Sections

International

2016 Society for the Study of Reproduction, 2016 Annual Meeting, Abstract reviewer

2019 Society of the Study of Reproduction, 2019 Annual meeting, Abstract reviewer

National

2017-2019 NIH Early Career Reviewer

2018 CMIR study section (Ad Hoc)

Editorial Boards

2018-present Review Editor, Frontiers in Endocrinology

2018-present Reviewing Editor, Biology of Reproduction

Journal Reviewer

2003-present Nature Medicine, PNAS, PLoS One, PLoS Genetics, Scientific Reports, Reproduction, Molecular Human Reproduction, Development, Developmental Biology, Journal of Cellular Physiology, Journal of Molecular Cell Biology, Biology of Reproduction, Fertility and Sterility, International Journal of Molecular Sciences, FASEB Journal, Acta Veterinaria et Zootechnica Sinica, Acta Laboratorium Animalis Scientia Sinica,

2006-present Stem Cell Reports, Developmental Biology, Reproductive Sciences (Ad Hoc)

2016-present eLife Early Career Reviewer

Teaching Activity

Institutional

Mammalian Reproductive Physiology, Stem Cells to Regenerative Biology, Developmental Genetics, Medical Embryology, Quantitative Physiology

Committee and Administrative Services

Institutional

2016-2018	CDB Seminar Committee, Member
2016-2019	CMB Admission Committee, Member
2017-2018	CDB Executive Committee, Member
2017-2019	CDB Admission Committee, Member
2018-2019	CDB Outreach and Community, member
2018-2019	CDB Rotation Advisory Committee, Chair

Volunteer

2011	Co-organizer, 30th Carnegie Symposium, Baltimore, Maryland
2013	Session chair, HHMI Science Meeting, Bethesda, Maryland
2016	Poster judge, Society for Developmental Biology 75 th Annual Meeting, Boston, Massachusetts
2017	Poster judge, Cell and Molecular Biology Program 36 th Annual Symposium, Ann Arbor, Michigan
2018-2019	Member, Natural History Museum, University of Michigan, Faculty advisory committee

Extramural Invited Presentations

1. Cold Spring Harbor Germ Cell Meeting, October 2012, New York
2. National Institute of Biological Sciences, June 2013, Beijing, China
3. Institute of Zoology, Chinese Academy of Sciences, State Key Laboratory of Reproductive Biology, June 2013, Beijing, China
4. Gordon Research Conferences, Mammalian Reproduction, August 2014, New London, NH
5. Cold Spring Harbor Germ Cell Meeting, October 2014, New York
6. Magee-Womens Research Institute, January 2015, Pittsburgh, PA
7. Gordon Research Conference, Germinal Stem Cell Biology, May 2015, Hong Kong, China
8. Reproductive Science Program Seminar, University of Michigan, October 2015, Ann Arbor, MI
9. 53rd Annual Midwest Regional Meeting of the Society for Developmental Biology, October 2015, Ann Arbor, MI
10. Department of Biochemistry and Molecular Biology, Wayne State University, November 2016, Detroit, MI
11. Society for Developmental Biology 75th Annual Meeting, August 2016, Boston, MA
12. International Research Conference on Regulation of Germ Cell Development in vivo and in vitro, July 2017,

Fukuoka, Japan

13. Center for Organogenesis, the University of Michigan Medical School, April 2017, Ann Arbor, MI
14. 117th International Titisee Conference, April 2018, Black Forest, Germany
15. Gordon Research Conference, Mammalian Reproduction, August 2018, Barga, Italy
16. Michigan Alliance for Reproductive Technology and Sciences, May 2019, Lansing, MI
17. Northwestern University, Center for Reproductive Science, November 2019, Chicago, IL
18. State Key Laboratory of Reproductive Medicine, October 2020, Nanjing, China

Other

1. Invited discussion leader, Gordon Research Conference on Germinal Stem Cell Biology, May 2019, Hong Kong, China

Bibliography

Peer-Reviewed Journals and Publications

1. **Lei L**, Guo Y, Yang W, Xie H, Wang H, Xia G: The mechanism of the effects of recombinant human gonadotropins on ovulation in mice. *Progress in Natural Science* 12(8): 857-860, 2002.
2. Bu S, Xia G, Tao Y, **Lei L**, Zhou B: Dual effects of nitric oxide on meiotic maturation of mouse cumulus cell-enclosed oocytes in vitro. *Mol. Cell. Endocrinol.* 207(1-2): 21-30, 2003. PM12972180
3. Zhang M, Tao Y, Xia G, Xie H, Hong H, Wang F, **Lei L**: Atrial natriuretic peptide negatively regulates follicle-stimulating hormone-induced porcine oocyte maturation and cumulus expansion via cGMP- dependent protein kinase pathway. *Theriogenology* 64(4): 902-916, 2005. PM16054495
4. Zhang M, Tao Y, Zhou B, Xie H, Wang F, **Lei L**, Huo L, Sun Q, Xia G: Atrial natriuretic peptide inhibits the actions of FSH and forskolin in meiotic maturation of pig oocytes via different signalling pathways. *J. Mol. Endocrinol.* 34(2): 459-472, 2005. PM15821110
5. Tao JY, Fu Z, Zhang ML, Xia G, **Lei L**, Wu ZL: Nitric oxide influences the meiotic maturation of porcine oocytes cultured in hypoxanthine-supplemented medium. *J Anim Physiol Anim Nutr (Berl)* 89(1-2): 38- 44, 2005. PM19112714
6. Tao Y, Fu Z, Xia G, **Lei L**, Chen X, Yang M: Inducible nitric oxide synthase expression and luteal cell DNA fragmentation of porcine cyclic corpora lutea. *Asian-Australasian Journal of Animal Sciences* 18 (5): 626-631, 2005.
7. Fu M, Chen X, Yan J, **Lei L**, Jin S, Yang J, Song X, Zhang M, Xia G: Luteinizing hormone receptors expression in cumulus cells closely related to mouse oocyte meiotic maturation. *Front. Biosci.* 12(5): 1804-1813, 2006. PM17127422
8. Jin S, Zhang M, **Lei L**, Wang C, Fu M, Ning G, Xia G: Meiosis activating sterol (MAS) regulate FSH- induced meiotic resumption of cumulus cell-enclosed porcine oocytes via PKC pathway. *Mol. Cell. Endocrinol.*

- 249(1-2): 64-70, 2006. PM16500744
9. Wang F, Shen Y, Song X, Xia G, Chen X, Zhou B, **Lei L**: cDNA cloning, genomic structure and expression analysis of the bovine lanosterol 14 α -demethylase (CYP51) in gonads. *Biol. Pharm. Bull.* 29 (3): 430-436, 2006. PM16508140
 10. **Lei L**, Zhang H, Jin S, Wang F, Fu M, Wang H, Xia G: Stage-specific germ-somatic cell interaction directs the primordial folliculogenesis in mouse fetal ovaries. *J. Cell. Physiol.* 208(3): 640-647, 2006. PM16741957
 11. **Lei L**, Jin S, Gonzalez G, Behringer RR, Woodruff TK: The regulatory role of Dicer in folliculogenesis in mice. *Mol. Cell. Endocrinol.* 315(1-2): 63-73, 2010. PM19799966
 12. **Lei L**, Jin S, Mayo KE, Woodruff TK: The interactions between the stimulatory effect of follicle-stimulating hormone and the inhibitory effect of estrogen on mouse primordial folliculogenesis. *Biol. Reprod.* 82(1): 13-22, 2010. PM19641178
 13. Jin S, **Lei L**, Shea LD, Zelinski MB, Stouffer RL, Woodruff TK: Markers of growth and development in primate primordial follicles are preserved after slow cryopreservation. *Fertil. Steril.* 93(8): 2627-2632, 2010. PM20074723
 14. Jin SY, **Lei L**, Shikanov A, Shea LD, Woodruff TK: A novel two-step strategy for in vitro culture of early-stage ovarian follicles in the mouse. *Fertil. Steril.* 93(8): 2633-2639, 2010. PM20004373
 15. Antenos M, Lei L, Xu M, Malipatil A, Kiesewetter S, Woodruff TK: Role of PCSK5 expression in mouse ovarian follicle development: Identification of the inhibin α - and β -subunits as candidate substrates *PLoS ONE* 6(3): e17348, 2011. PM21408162
 16. **Lei L**, Spradling AC: Female mice lack adult germ-line stem cells but sustain oogenesis using stable primordial follicles. *Proc. Natl. Acad. Sci. U.S.A.* 110(21): 8585-8590, 2013. PM23630252
 17. **Lei L**, Spradling AC: Mouse primordial germ cells produce cysts that partially fragment prior to meiosis. *Development* 140(10): 2075-2081, 2013. PM23578925
 18. **Lei L***, Spradling AC*: Mouse oocytes differentiate through organelle enrichment from sister cyst germ cells. *Science* 352(6281): 95-99, 2016. PM26917595
 19. Ikami K, Nuzhat N, **Lei L***: Organelle transport during mouse oocyte differentiation in germline cysts. *Curr Opin Cell Biol* 44: 14-19, 2017. PM28038435
 20. Lu K, Jensen L, **Lei L**, Yamashita YM: Stay Connected: A Germ Cell Strategy. *Trends Genet* 17: 30152, 2017. PM28947158

Non-Peer-Reviewed Journals and Publications

1. **Lei L***, Spradling AC*: Back to basics: Unraveling the mystery of mammalian germ cell connectivity using lineage analysis. *The Node* 0: 0, 2016.

Book Chapters

1. Lei L*, Spradling AC*: Single-Cell Lineage Analysis of Oogenesis in Mice. ***Methods in Molecular Biology: Germline Stem Cells (Second Edition)***, Michael Buszczak Springer Press, 2017. 10, 125-138
2. Larose H, Shami AN, Abbott H, Manske G, Lei L*, Hammoud SS*: Gametogenesis, a journey from inception to conception. ***Current Topics in Developmental Biology: Organ Development***, Wellik D Elsevier, 2018.
3. Pepling M*, Lei L*: Germ cell nests and germline cysts. ***Encyclopedia of Reproduction, Volume 3- Gametogenesis, Fertilization and Early Development***, Yan W, McCarrey J Elsevier, 2018.