

# Curriculum Vita

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Assistant Professor

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## Appointment

**2019.2-present:** Assistant Professor, PI, University of California, Riverside, School of Medicine, CA, USA

**2015.10-2019.1:** Assistant Professor, PI, University of Nevada, Reno School of Medicine, Reno, NV, USA

**2011.7-2015.9:** Assistant Professor, Co-PI, Institute of Zoology, Chinese Academy of Sciences, Beijing, China

## Education

**2006-2011:** Ph.D - (Developmental biology) Institute of Zoology, Chinese Academy of Sciences, Beijing, China

**2001-2006:** M.D – (Medicine) Chongqing Medical University, Chongqing, China

## Honors & Awards:

2019: 2019 Highly Cited Researcher (Cross-field) by Web of Science

2013: Fellow of Youth Innovation Promotion Association, Chinese Academy of Science

2011: Dean's Outstanding Award of Chinese Academy of Sciences

## Grants:

### Ongoing:

NIH/NICHHD (R01 HD092431) PI: Dr. Chen 2017.08-2022.06

Project title: Sperm tsRNAs and their RNA modifications in diet-induced epigenetic inheritance

Role: (PI)

NIH/NIEHS (R01 ES032024) PI: Dr. Chen/Zhou 2020.09-2025.06

Decoding the signature of sperm RNA & RNA modification of environmental stressors on the intergenerational transmission of metabolic phenotypes

Role (Contact PI)

NIH/NICHHD (P50 HD098593) PI: Dr. Yan 2019.05-2024.04

Mechanism underlying the transduction of epimutations from the soma to the male germline

Role (Co-investigator)

USDA/NIFA (Grant No. 2019-05349) PD: Dr. Prezotto 2020.06-2023.05

Impact of Paternal Nutrition on Reproductive Neuroendocrine-Ovarian Function in Female Offspring

Role (Co-PD)

## Academic membership and services

**2017-present:** Editorial Board Member of *Biology of Reproduction*

**2018-present:** Editorial Board Member of *Cell Discovery*

**2021:** Guest editor for *PLoS Genetics*

**2016-present:** Regular member of the Society for the Study of Reproduction (SSR)

**2019-present:** Full member of the Society of Developmental Biology (SDB)

**Ad hoc grant reviewer** for NIH study sections, Wellcome trust, European Science Foundation etc.

**Ad hoc reviewer for journals:**

*Nature Cell Biology, Nature Genetics, Nature Methods, Nature Structural & Molecular Biology, Nature Communications, Cell Research, Molecular Cell, Developmental Cell, Cell Reports, Science Advances, PNAS, EMBO J, EMBO Rep, Molecular Psychiatry, Elife, PloS Biology, PloS Genetics, Development, BMC Biology, Philosophical Transactions B, Seminars in Cell & Developmental Biology, FASEB J, RNA Biology, Cell Discovery, Journal of Biological Chemistry, Cell Mol Life Sci, Bioessays, Scientific Reports, Journal of Endocrinology, Biology of Reproduction, Human Reproduction, Molecular Human Reproduction, Reproduction, Fertility & Sterility, etc.*

**Seminars and invited talks:**

**July 2021** Gordon Research Conference on fertilization and activation of development, Holderness, NH, USA  
**July 2021** Sex, Gender, and Epigenetics: From Molecule to Bedside, Fiesole, Italy  
**May 2021** 8th Annual Helmholtz Diabetes Conference, Munich, Germany  
**May 2021** The GECKO Conference 2020: Epigenetic Inheritance across species, Copenhagen, Denmark  
**Mar 2021** Seminar at Baylor College of Medicine, TX, USA  
**Feb 2021** Seminar at California Institute of Technology, CA, USA  
**Feb 2021** Seminar at New York University, NY, USA  
**May 2020** Seminar at University of Kansas Medical Center, USA  
**April 2020** Seminar at The Hospital for Sick Children, University of Toronto, Canada  
**Mar 2020** Keystone Symposia on Skirting Mendel: Non-Classical Mechanisms of Phenotypic Variation, Inheritance and Disease, Whistler, British Columbia, Canada.  
**Feb 2020** AAAS 2020 Annual Meeting, Seattle, USA  
**Dec 2019** Ohana epigenetic inheritance symposium, Boston, USA  
**Aug, 2019** Cancer Research UK Manchester Institute, University of Manchester, UK  
**Aug, 2019** Symposium for Epigenetic Inheritance: impact for biology and society, Zurich, Switzerland.  
**July, 2019** SDB 78th Annual Meeting, Boston, MA, USA  
**July, 2019** SSR 2019 Annual Meeting, San Jose, CA, USA  
**June, 2019** Phyllis and Mark Leppert Foundation for Fertility Research, Salt Lake City, USA  
**May, 2019** Gordon Research Conference on Germinal Stem Cell Biology, HongKong, China  
**Mar, 2019** 58th Annual Society of Toxicology Meeting, Baltimore, USA  
**Feb, 2019** SUFU 2019 Winter Meeting, Miami, USA  
**Nov, 2018** 5th Conference on the Frontiers of Reproductive Biology, Beijing, China  
**Oct, 2018** 3rd International Symposium of Epigenetic Mechanism and Human Health, Shenzheng, China  
**Sep, 2018** Epigenetics in Cognition- Developmental and Evolutionary perspective, Erice, Sicily, Italy.  
**Apr, 2018** Genetics, Genomics, and Bioinformatics seminar at UC Riverside, CA, USA  
**Apr, 2018** Reproductive & Developmental Biology Laboratory (RDBL) seminar, NIEHS/NIH, NC, USA  
**Mar, 2018** Reproduction&Development: Revealing the Origin of Life, Wellcome Genome Campus, Hinxton, UK  
**Nov, 2017** Cold Spring Harbor Asia: RNA Modifications & Epitranscriptomics, Suzhou, China  
**Oct, 2017** *The Rank Prize Funds* Mini-Symposium on Maternal and Paternal Intergenerational Programming Effects, Grasmere, UK  
**Oct, 2017** Invited seminar at PDN department, University of Cambridge, UK  
**June, 2017** Gordon Research Conference: Programming and Reprogramming the Vertebrate Germline, HongKong, China

Feb, 2017 CMBAG seminar at The Scripps Research Institute, San Diego, USA  
 Oct, 2016 The 4<sup>th</sup> SKLRB Symposia in Reproductive Biology, Beijing, China.  
 Sep, 2016 2016 tRNA Conference, Jeju, Korea  
 Aug, 2016 Mammalian Reproduction - Gordon Research Conference, Waterville Valley, NH, USA  
 June, 2015 SSR 2015 Annual Meeting, San Juan, Puerto Rico, USA  
 May, 2015 Non-Coding RNA: New Mechanisms and Approaches, Boston, USA  
 Oct, 2014 The 3<sup>rd</sup> SKLRB Symposia in Reproductive Biology, Beijing, China.  
 Sep, 2012 EMBO Workshop - Cell Biology of Early Mouse Development, Cambridge, UK.  
 May, 2012 The 2<sup>nd</sup> SKLRB Symposia in Reproductive Biology, Beijing, China.  
 Oct, 2010 International Symposia of Channelopathy & New Strategies of Drug Discovery, Changchun, China.  
 May, 2010 The 1<sup>st</sup> SKLRB Symposia on Frontiers in Peri-implantation Biology, Beijing, China.

## Publications:

### (I) First author/Corresponding author (\*Co-first authors; #Corresponding authors)

- Shi J\*, Zhang Y\*, Tan D\*, Zhang X\*, Menghong Y\*, Ying Zhang\*, Franklin R\*, Shahbazi M, Mackinlay K, Liu S, Kuhle B, James ER, Zhang L, Qu Y, Zhai Q, Zhao W, Zhao L, Zhou C, Gu W, Murn J, Guo J, Carrell DT, Wang Y, Chen X, Cairns BR, Yang XL, Schimmel P, Zernicka-Goetz M, Cheloufi S#, Zhang Y#, Zhou T#, **Chen Q#**. PANDORA-seq expands the functional small RNA repertoire by overcoming RNA modifications. *Nature Cell Biology* (accepted)
- Gu W#, \*, Shi J\*, Liu H\*, Zhang X\*, Zhou JJ, Li M, Zhou D, Li R, Lv J, Wen G, Zhu S, Qi T, Li W, Wang X, Wang Z, Zhu H, Zhou C, Knox KS, Wang T, **Chen Q#**, Qian Z#, Zhou T#. Peripheral blood non-canonical small non-coding RNAs as novel biomarkers in lung cancer. *Molecular Cancer*. (2020) Nov 12;19(1):159.
- Zhang X, Trebak F, Souza LA; Shi J, Zhou T, Kehoe PG, **Chen Q#**, Feng Earley Y#. Small RNA modifications in Alzheimer's disease. *Neurobiology of Disease* (2020) Nov;145:105058.
- Zhang X, **Chen Q#**. A twist between ROS and sperm-mediated intergenerational epigenetic inheritance. *Molecular Cell* (2020) <https://doi.org/10.1016/j.molcel.2020.04.003>
- Zhang Y#, **Chen Q#**. Human Sperm RNA code senses dietary sugar. *Nature Reviews Endocrinology* (2020) doi:10.1038/s41574-020-0331-2
- Zhang Y, Shi J, Rassoulzadegan M, Tuorto F, **Chen Q#**. Sperm RNA code programmes the metabolic health of offspring. *Nature Reviews Endocrinology* (2019) DOI:10.1038/s41574-019-0226-2
- Zhang Y, **Chen Q#**. The expanding repertoire of hereditary information carriers. *Development* (2019) 146: dev170902 doi:10.1242/dev.170902
- Shi J, Zhang Y, Zhou T#, **Chen Q#**. tsRNAs: the Swiss army knife for translational regulation. *Trends in Biochemical Sciences* (2019); 44, 185-189
- Liu Y, **Chen Q#**. 150 years of Darwin's theory of intercellular flow of hereditary information. *Nature Reviews Molecular Cell Biology* (2018) 19, 749–750
- **Chen Q\***, Shi J\*, Tao Y, Zernicka-Goetz M#. Tracing the origin of heterogeneity and symmetry breaking in the early mammalian embryo. *Nature Communications* (2018) May 8;9(1):1819
- Zhang Y\*, Zhang X\*, Shi J\*, Tuorto F\*, Li X\*, Liu Y, Liebers R, Zhang L, Qu Y, Qian J, Pahima M, Liu Y, Yan M, Cao Z, Lei X, Cao Y, Peng H, Liu S, Wang Y, Zheng H, Woolsey R, Quilici D, Zhai Q, Li L, Zhou T, Yan W, Lyko F, Zhang Y#, Zhou Q#, Duan E#, **Chen Q#**. Dnmt2 mediates intergenerational transmission of paternally acquired metabolic disorders through sperm small non-coding RNAs. *Nature Cell Biology* (2018) May;20(5):535-540.

-Highlighted in: *Nat Rev Endocrinol*. 2018 Aug;14(8):446-447.

- Shi J<sup>#</sup>, Ko EA, Sanders KM, **Chen Q<sup>#</sup>**, Zhou T<sup>#</sup>. SPORTS1.0: a tool for annotating and profiling non-coding RNAs optimized for rRNA- and tRNA- derived small RNAs. **Genomics Proteomics & Bioinformatics** (2018) Apr;16(2):144-151
- Zhang Y, Shi J, **Chen Q<sup>#</sup>**. tsRNAs: new players in mammalian retrotransposon control. **Cell Research**. (2017) Nov;27(11):1307-1308
- Shi J, Zhang X, Liu Y, **Chen Q<sup>#</sup>**. Epigenetic information in gametes: gaming from before fertilization. **Physics of Life Reviews**. (2017) Mar; 20:146-149.
- Zhang X\*, Cozen AE\*, Liu Y, **Chen Q<sup>#</sup>**, Lowe TM<sup>#</sup>. Small RNA Modifications: Integral to Function and Disease. **Trends in Molecular Medicine**. (2016) (12):1025-1034.
- **Chen Q<sup>#</sup>**, Yan W<sup>#</sup>, Duan E<sup>#</sup>. Epigenetic inheritance of acquired traits through sperm RNAs and sperm RNA modifications. **Nature Reviews Genetics**. (2016) (12):733-743.
- Shi J\*, Zhang Y\*, **Chen Q<sup>#</sup>**. Molecular carriers of acquired inheritance: absence of evidence is not evidence of absence. **Environmental Epigenetics**. (2016) 2 (2): dvw014
- **Chen Q<sup>#</sup>**, Yan M\*, Cao Z\*, Li X\*, Zhang Y\*, Shi J\*, Peng H, Zhang X, Zhang Y, Duan E<sup>#</sup>, Zhai Q<sup>#</sup>, Zhou Q<sup>#</sup>, Sperm tsRNAs contribute to intergenerational inheritance of an acquired metabolic disorder. **Science** (2016) Jan 22;351(6271):397-400.  
-Editorial & Interview by: *Science*. 2016 Jan 1;351(6268):13.  
-Highlighted in: *Nat Rev Genet*. 2016; 17(3):128.  
-Highlighted in: *Cell Metab*. 2016; 23(3), 401-402.  
-Highlighted in: *Cell Res*. 2016;26(4):395-6.  
-Highlighted in: *FASEB J*. 2016;30(5):1691-3  
-Highlighted in: *Biol Reprod*. 2016;94(4):73.  
-Highlighted in: *Science Bulletin*, 2016; 61(6) 428-429.
- Shi J\*, **Chen Q<sup>#</sup>**, Li X\*, Zheng X\*, Zhang Y, Qiao J, Tang F, Tao Y<sup>#</sup>, Zhou Q<sup>#</sup>, Duan E<sup>#</sup>. Dynamic transcriptional symmetry-breaking in pre-implantation mammalian embryo development revealed by single-cell RNA-seq. **Development**. (2015) 15;142(20):3468-77.  
-Highlighted in: *Development* 2015 142: e2002
- Zhang Y\*, **Chen Q<sup>#</sup>**, Zhang H\*, Wang Q\*, Rong L, Jin Y, Wang H, Ma T, Qiao J, Duan E. Aquaporin-mediated excessive intrauterine fluid is a major contributor in hyper-estrogen induced aberrant embryo implantation. **Cell Research**. (2015) Jan,25(1):139-42.
- Zhang S, Kong S, Wang B, Cheng X, Chen Y, Wu W, Wang Q, Shi J, Zhang Y, Wang S, Lu J, Lydon JP, DeMayo F, Pear WS, Han H, Lin H, Li L, Wang H, Wang YL, Li B, **Chen Q<sup>#</sup>**, Duan E<sup>#</sup>, Wang H<sup>#</sup>. Uterine Rbpj is required for embryonic-uterine orientation and decidual remodeling via Notch pathway-independent and -dependent mechanisms. **Cell Research** (2014), 24:925-942.  
-Cover Story  
-Highlighted in: *Cell Res*. (2014); 24:1031-2
- Zhang Y, Zhang Y, Shi J, Zhang H, Cao Z, Gao X, Ren W, Ning Y, Ning L, Cao Y, Chen Y, Ji W, Chen Z<sup>#</sup>, **Chen Q<sup>#</sup>**, Duan E<sup>#</sup>. Identification and characterization of an ancient class of small RNAs enriched in serum associating with active infection. **Journal of Molecular Cell Biology** (2014), 6:172-174.  
-Cover Story & Editor's Recommendation
- **Chen Q<sup>#</sup>**, Zhang Y\*, Elad D, Jaffa AJ, Cao Y, Ye X<sup>#</sup>, Duan E<sup>#</sup>. Navigating the site for embryo implantation: Biomechanical and molecular regulation of intrauterine embryo distribution. **Molecular Aspects of Medicine** (2013) 34:1024-42.
- Peng H, Shi J, Zhang Y, Zhang H, Liao S, Li W, Lei L, Han C, Ning L, Cao Y, Zhou Q, **Chen Q<sup>#</sup>**, Duan E<sup>#</sup>. A novel class of tRNA-derived small RNAs extremely enriched in mature mouse sperm. **Cell Research** (2012), 22: 1609-1612.  
-Highlighted in: *Cell Res*. (2013);23:18-19.
- **Chen Q**, Duan EK. Aquaporins in sperm osmoadaptation: an emerging role for volume regulation. **Acta**

- *Pharmacol Sin* (2011), 32: 721-4
- **Chen Q\***, Peng H\*, Lei L\*, Zhang Y, Kuang H, Cao Y, Shi QX, Ma T, Duan E#. Aquaporin3 is a sperm water channel essential for postcopulatory sperm osmoadaptation and migration. *Cell Research* (2011), 21: 922-933.
- **Chen Q\***, Zhang Y\*, Peng H, Lei L, Kuang H, Zhang L, Ning L, Cao Y, Duan E#. Transient  $\beta$ 2-Adrenoceptor activation confers pregnancy loss by disrupting embryo spacing at implantation. *Journal of Biological Chemistry* (2011), 286: 4349-4356.
- **Chen Q\***, Zhang Y\*, Lu J, Wang Q, Wang S, Cao Y, Wang H, Duan E. Embryo-uterine cross-talk during implantation: the role of Wnt signaling. *Molecular Human Reproduction* (2009), 15: 215-221.
- **Chen Q**, Peng H, Zhang Y, Lei L, Cao Y, Duan E. Embryo implantation: a time for recalling and forwarding. *Chinese Sci Bull* (2009),54: 4083-93.
- Kuang H\*, **Chen Q\***, Zhang Y, Zhang L, Peng H, Ning L, Cao Y, Duan E#. The cytokine gene, CXCL14, restricts human trophoblast cell invasion by suppressing gelatinase activity. *Endocrinology* (2009), 150: 5596-5605.
- Kuang H\*, **Chen Q\***, Fan X, Zhang Y, Zhang L, Peng H, Cao Y, Duan E#. CXCL14 inhibits trophoblast outgrowth via a paracrine/ autocrine manner during early pregnancy in mice. *Journal of Cellular Physiology* (2009), 221: 448-457.

## (II) Co-authored publications:

- Wang J., Xie X., Shi J., He W., **Chen Q.**, Chen L., Gu W., and Zhou T., Denoising autoencoder, a deep learning algorithm, aids the identification of a novel molecular signature of lung adenocarcinoma. *Genomics, Proteomics & Bioinformatics* (2020) doi: 10.1016/j.gpb.2019.02.003.
- Qian J, **Chen Q**, Ward SM, Duan E, Zhang Y. Impacts of Caffeine during Pregnancy. *Trends Endocrinol Metab.* (2019) Dec 6. pii: S1043-2760(19)30226-7.
- Wang J, Wang L, Feng G, Wang Y, Li Y, Li X, Liu C, Jiao G, Huang C, Shi J, Zhou T, **Chen Q**, Liu Z, Li W, Zhou Q. Asymmetric Expression of *LincGET* Biases Cell Fate in Two-Cell Mouse Embryos. *Cell* (2018) Dec 13;175(7):1887-1901.e18
- Dumin L, Kwok B, Kukadia P, McAvera R, Corrigan RD, Ward SM, Zhang Y, **Chen Q**, Koh SD, Sanders KM, Mutafova-Yambolieva VN. An ex vivo bladder model with detrusor smooth muscle removed to analyze biologically active mediators released from the suburothelium. *J Physiol.* 2018 Oct 5. doi: 10.1113/JP276924.
- Huang L, Meng TG, Ma XS, Wang ZB, Qi ST, **Chen Q**, Zhang QH, Liang QX, Wang ZW, Hu MW, Guo L, Ouyang YC, Hou Y, Zhao Y, Sun QY. Rad9a is involved in chromatin decondensation and post-zygotic embryo development in mice. *Cell Death & Differentiation.* (2018) doi:10.1038/s41418-018-0181-9
- Zhou T, Xie X, Li M, Shi J, Zhou J, Knox K, Wang T, **Chen Q**, Gu W. Rat BodyMap transcriptomes reveal unique circular RNA features across tissue types and developmental stages. *RNA* 2018; doi: 10.1261/rna.067132.118.
- Qian J, Zhang Y, Qu Y, Zhang L, Shi J, Zhang X, Liu S, Kim BH, Hwang SJ, Zhou T, **Chen Q**, Ward SM, Duan E, Zhang Y. Caffeine consumption during early pregnancy impairs oviductal embryo transport, embryonic development and uterine receptivity in mice. *Biology of reproduction.* 2018 DOI: 10.1093/biolre/i0y155
- Qiao J, Zhao H, Zhang Y, Peng H, **Chen Q**, Zhang H, Zheng X, Jin Y, Ni H, Duan E, Guo Y. GPR39 is region-specifically expressed in mouse oviduct correlating with the Zn<sup>2+</sup> distribution. *Theriogenology.* 2017 Jan 15; 88:98-105.
- Deng Z., Lei X., Zhang X., Zhang H., Liu S., **Chen Q.**, Hu H., Wang X., Ning L., Cao Y., Zhao T., Zhou J., Chen T., Duan E. mTOR signaling promotes stem cell activation via counterbalancing BMP-mediated suppression during hair regeneration. *J Mol Cell Biol.* 2015 Feb;7(1):62-72
- Wang H, Wan H, Li X, Liu W, **Chen Q**, Wang Y, Yang L, Tang H, Zhang X, Duan E, Zhao X, Gao F, Li W\*. Atg7 is required for acrosome biogenesis during spermatogenesis in mice. *Cell Res.* 2014 24(7):852-69.
- Lei X, Deng Z, Zhang H, Zhao H, Zhou J, Liu S, **Chen Q**, Ning L, Cao Y, Wang X, Zhang X, Duan E. Rotary

suspension culture enhances mesendoderm differentiation of embryonic stem cells through modulation of Wnt/ $\beta$ -catenin pathway. *Stem Cell Rev.* 2014 Aug;10(4):526-38.

- Fu Z, Wang B, Wang S, Wu W, Wang Q, Chen Y, Kong S, Lu J, Tang Z, Ran H, Tu Z, He B, Zhang S, **Chen Q**, Jin W, Duan E, Wang H, Wang YL, Li L, Wang F, Gao S, Wang H. Integral proteomic analysis of blastocysts reveals key molecular machinery governing embryonic diapause and reactivation for implantation in mice. *Biol Reprod.* 2014 Mar 13;90(3):52.
- Wang Q, Lu J, Zhang S, Wang S, Wang W, Wang B, Wang F, **Chen Q**, Duan E, Leitges M, Kispert A, Wang H. Wnt6 is essential for stromal cell proliferation during decidualization in mice. *Biol Reprod.* 2013 Jan 3;88(1):5.
- Zhang H, Zhang Y, Zhao H, Zhang Y, **Chen Q**, Peng H, Lei L, Qiao J, Shi J, Cao Z, Duan E, Jin Y. Hormonal regulation of ovarian bursa fluid in mice and involvement of aquaporins. *PLoS One.* 2013 May 22;8(5):e63823.
- Zhang Q, **Chen Q**, Lu X, Zhou Z, Zhang H, Lin HY, Duan E, Zhu C, Tan Y, Wang H. CUL1 promotes trophoblast cell invasion at the maternal-fetal interface. *Cell Death Dis.* 2013 Feb 21;4:e502.
- Peng H, Zhang Y, Lei L, **Chen Q**, Yue J, Tan Y, Duan E. Aquaporin 7 expression in postimplantation mouse uteri: a potential role for glycerol transport in uterine decidualization. *Fertil Steril.* 2011 Mar 15;95(4):1514-7.e1-3.
- Zhang L, Guo W, **Chen Q**, Fan X, Zhang Y, Duan E; Adam12 Plays a Role during Uterine Decidualization in Mice. *Cell and Tissue Research* 2009 Dec;338(3):413-21.
- Peng H, **Chen Q**, Tan Y. Frequent ejaculation associated free radical and lactic acid accumulation cause noninfectious inflammation and muscle dysfunction: a potential mechanism for symptoms in Chronic Prostatitis/Chronic Pelvic Pain Syndrome. *Med Hypotheses.* 2009;73(3):372-3.
- Kuang H, Zhang L, Peng J, **Chen Q**. Premature ovarian failure, menopause and ovarian cancer, three nodes on the same string: Pten and other potential genes on the go. *Med Hypotheses* 2009;73(6):961-2.
- Zhang Y, Peng S, Kuang H, **Chen Q**, Liu S, Zhang L, Duan E: Expression and regulation of Dickkopf2 during periimplantation in mice. *J Reprod Dev* 2009;55:17-22.
- Peng S, Li J, Miao C, Jia L, Hu Z, Zhao P, Li J, Zhang Y, **Chen Q**, Duan E: Dickkopf-1 secreted by decidual cells promotes trophoblast cell invasion during murine placentation. *Reproduction* 2008;135:367-375.