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Education and Professional Experience

- 2016-present *Assistant Professor*, University of Minnesota Duluth
2008-2016 *Research Fellow*, University of Michigan, Ann Arbor
Research Associate, Howard Hughes Medical Institute (2008-2010)
2002-2008 **Ph.D.** *Molecular, Cellular and Developmental Biology*, Iowa State University, Ames
1999-2002 **M.S.** *Plant Biology*, Graduate University of Chinese Academy of Sciences, China
1995-1999 *Research Scientist*, Yangtze River Institute of Fisheries, CAFS, China
1991-1995 **B.S.** *Cell and Developmental Biology*, Wuhan University, China

Publications

1. **Deng H**, Carlson, Klinedinst SL, Bodmer R, Kerppola TK. Interaction between Drosophila Tinman and Pannier regulates their chromatin binding affinities. *Submitted*.
2. **Deng H**, Kerppola TK (2017) Visualization of the genomic loci that are bound by specific multiprotein complexes by bimolecular fluorescence complementation (BiFC) analysis on Drosophila polytene chromosomes. *Methods Enzymol.* 589:429-455.
3. **Deng H**, Kerppola TK (2014) Visualization of the Drosophila dKeap1-CncC interaction on chromatin illuminates cooperative, xenobiotic-specific gene activation. *Development* 141:3277-3288.
4. **Deng H** (2014) Multiple roles of Nrf2-Keap1 signaling: Regulation of development and xenobiotic response using distinct mechanisms. *Fly* 8:1.
5. **Deng H**, Kerppola TK (2013) Regulation of Drosophila metamorphosis by xenobiotic response regulators. *PLoS Genet* 9:e1003263.
6. Li Y, Cai W, Wang C, Yao C, Bao X, **Deng H**, Girton J, Johansen J, Johansen KM (2013) Domain requirements of the JIL-1 tandem kinase for histone H3 serine 10 phosphorylation and chromatin remodeling in vivo. *J Biol Chem* 288:19441-19449.
7. Wang C, Cai W, Li Y, **Deng H**, Bao X, Girton J, Johansen J, Johansen KM (2011) The epigenetic H3S10 phosphorylation mark is required for counteracting heterochromatic spreading and gene silencing in Drosophila melanogaster. *J Cell Sci* 124:4309-4317.
8. **Deng H**, Cai W, Wang C, Lerach S, Delattre M, Girton J, Johansen J, Johansen KM (2010) JIL-1 and Su(var)3-7 interact genetically and counteract each others' effect on position effect variegation in Drosophila. *Genetics* 185:1183-1192.
9. Johansen KM, Cai W, **Deng H**, Bao X, Zhang W, Girton J, Johansen J (2009) Polytene chromosome squash methods for studying transcription and epigenetic chromatin modification in Drosophila using antibodies. *Methods* 48:387-397.
10. Bao X, Cai W, **Deng H**, Zhang W, Krencik R, Girton J, Johansen J, Johansen KM (2008) The COOH-terminal domain of the JIL-1 histone H3S10 kinase interacts with histone h3 and is required for correct targeting to chromatin. *J Biol Chem* 283:32741-32750.
11. Cai W, Bao X, **Deng H**, Girton J, Johansen J, Johansen KM (2008) Pol II mediated transcription at active loci does not require histone H3S10 phosphorylation in Drosophila. *Development* 135:2917-2925.

12. **Deng H**, Bao X, Cai W, Blacketer M, Belmont AS, Girton J, Johansen J, Johansen KM (2008) Ectopic histone H3S10 phosphorylation causes chromatin structure remodeling in *Drosophila*. *Development* 135:699-705.
13. **Deng H**, Bao X, Zhang W, Girton J, Johansen J, Johansen KM (2007) Reduced levels of Su(var)3-9 but not Su(var)2-5 (HP1) counteract the effects on chromatin structure and viability in loss-of-function mutants of the JIL-1 histone H3S10 kinase. *Genetics* 177:79-87.
14. Bao X, **Deng H**, Johansen J, Girton J, Johansen KM (2007) Loss-of-function alleles of the JIL-1 histone H3S10 kinase enhance position-effect variegation at pericentric sites in *Drosophila* heterochromatin. *Genetics* 176:1355-1358.
15. Zhang W, **Deng H**, Bao X, Lerach S, Girton J, Johansen J, Johansen KM (2006) The JIL-1 histone H3S10 kinase regulates dimethyl histone H3K9 modifications and heterochromatic spreading in *Drosophila*. *Development* 133:229-235.
16. Rath U, Ding Y, **Deng H**, Qi H, Bao X, Zhang W, Girton J, Johansen J, Johansen KM (2006) The chromodomain protein, Chromator, interacts with JIL-1 kinase and regulates the structure of *Drosophila* polytene chromosomes. *J Cell Sci* 119:2332-2341.
17. Lerach S, Zhang W, Bao X, **Deng H**, Girton J, Johansen J, Johansen KM (2006) Loss-of-function alleles of the JIL-1 kinase are strong suppressors of position effect variegation of the w^{m4} allele in *Drosophila*. *Genetics* 173:2403-2406.
18. **Deng H**, Zhang W, Bao X, Martin JN, Girton J, Johansen J, Johansen KM (2005) The JIL-1 kinase regulates the structure of *Drosophila* polytene chromosomes. *Chromosoma* 114:173-182.
19. Lerach S, Zhang W, **Deng H**, Bao X, Girton J, Johansen J, Johansen KM (2005) The JIL-1 kinase, a member of the MSL complex, is necessary for proper dosage compensation of eye pigmentation in *Drosophila*. *Genesis* 43:213-215.
20. Bao X, Zhang W, Krencik R, **Deng H**, Wang Y, Girton J, Johansen J, Johansen KM (2005) The JIL-1 kinase interacts with lamin Dm0 and regulates nuclear lamina morphology of *Drosophila* nurse cells. *J Cell Sci* 118:5079-5087.
21. Zou G, Pan G, Wang D, **Deng H**, Luo X (2004) Genetic diversity of artificial gynogenetic Silver Carp and RAPD analysis of incorporation of heterologous genetic materials in gynogenetic progeny. *Acta Hydrobiological Sinica* 28:180-185.
22. **Deng H**, Yu M (2002) Molecular markers of wheat and their application to genetic breeding of wheat. *World Sci-Tech R&D* 24:37-43.
23. Zhang S, Wang D, **Deng H**, Yu L (2002) Mitochondrial DNA variations of Silver Carp and Grass Carp in populations of the middle reaches of the Yangtze river revealed by using RFLP-PCR. *Acta Hydrobiological Sinica* 26:142-146.
24. Zhang S, **Deng H**, Wang D, Yu L (2001) Population structure and genetic diversity of Silver Carp and Grass Carp from populations of Yangtze river system revealed by RAPD. *Acta Hydrobiological Sinica* 25:324-330.
25. Zhang S, Zhang Y, Zheng X, Chen Y, **Deng H**, Wang D, Wei Q, Zhang Y, Nie L, Wu Q (2000) Molecular phylogenetic systematics of twelve species of Acipiformes based on mtDNA ND4L-ND4 gene sequence analysis. *Science in Chinese (series C)* 43:129-137.
26. Long H, **Deng H**, Zhou S (2000) Studies on the isoenzyme differentiation of European Eel and Japanese Eel. *Journal of Hubei Agricultural College* 20:68-71.
27. Zhang S, **Deng H**, Yan Y, Wang D, Wu Q (2000) Random amplified polymorphic DNA (RAPD) and genetic diversity of Chinese Sturgeon (*Acipenser sinensis*). *Oceanologia et Limnologia Sinica* 31:1-7.
28. Zhang S, **Deng H**, Wang D, Wu Q (1999) Systematic relationships among seven species of

- Acipenseriformes informed from Random Amplified Polymorphic DNA. *Progress in Natural Science (Chinese Ed.)* 9:818-823.
29. Zhang S, Yan Y, **Deng H**, Wang D, Wei Q, Wu Q (1999) Genome size, ploidy characters of several species of sturgeons and paddlefishes with comment on cellular evolution of Acipenseriformes. *Acta Zoological Sinica* 45:200-206.
 30. Liu J, Huang X, Yu Q, Zhou R, Guo Y, Liu L, Zhang S, **Deng H**, Wang D (1999) The cytogenetic evidences for confirming the existence of sex chromosomes in *Mastacembelus aculeatus* (Osteichthyes, Perciformes). *J Wuhan Univ (Nat. Sci. Ed.)* 45:185-190.
 31. Zhang S, **Deng H** (1999) The preliminary evidence for low genetic diversity in Chinese Sturgeon (*Acipenser sinensis*) revealed by protein electrophoresis. *Zoological Research* 20:93-98.
 32. Zhang S, **Deng H**, Wang D, Zhang Y, Wu Q (1999) Mitochondrial DNA length variation and heteroplasmy in Chinese Sturgeon (*Acipenser sinensis*). *Acta Genetica Sinica* 26:489-496.
 33. **Deng H**, Zhang S, Wang D, Pan G (1998) Genetic analyses of gynogenetic silver carp by means of RAPD and protein electrophoresis. *Freshwater Fisheries* 28:10-13.
 34. **Deng H**, Zhang S, Wang D (1998) Use of RAPD to identify ten freshwater fishers. *Freshwater Fisheries* 21:8-10.

Book Editing

Nrf2 and its Modulation in Inflammation, *Progress in Inflammation Research*, Springer 2018 (in press)

Oral Presentations

- 2017 Detoxification and Development: Two Roles of One Protein Complex.
University of Minnesota Developmental Biology Center annual retreat, Hastings, MN
- 2014 Novel molecular mechanisms and biological functions of the Keap1-Nrf2 signaling.
International Forum for Interdisciplinary Sciences and Engineering, Wuhan, China
- 2012 Regulation of Drosophila development by Nrf2-Keap1 oxidant signaling.
Center for Organogenesis, University of Michigan, Ann Arbor, MI
- 2007 Remodeling of interphase chromatin structure caused by ectopic histone H3S10ph.
47th American Society for Cell Biology Annual Meeting, Washington DC
- 2006 JIL-1 histone H3S10 kinase regulates heterochromatin spreading and gene silencing in Drosophila. 47th Annual Drosophila Research Conference, Houston, TX

Awards

- 2015 - Best Poster Award, the 53rd Midwest Regional Society of Developmental Biology Meeting
- 2011 - Postdoctoral Fellowship Award, University of Michigan Center for Organogenesis
- 2003 - Graduate College Scholarship, Iowa State University
- 2002 - Graduate Pace Award, Iowa State University
- 2000 - Excellent Graduate Student Scholarship, Chinese Academy of Sciences

Membership in Professional Societies

American Society for Cell Biology
Genetics Society of America
American Heart Association

Service to the Community

- Volume editor for the book series *Progress in Inflammation Research*, Springer
- Peer Reviewer for *Cancer Research*, *Chemical Communications*, *Journal of Cellular Biochemistry*, *PLoS One*, *Molecular and Cellular Biochemistry*, *BMC Systems Biology*, *Life Sciences*.

Course Teaching

BIOL 3100 Cell Biology
BIOL 4199 Frontiers in Cell Biology
BIOL 5232 Molecular Biology Laboratory

Research Supports

- 2018 NIH R21 (1R15GM128143-01)
- Epigenetic regulation of chromatin by the Keap1-Nrf2 xenobiotic response signaling in *Drosophila*
- 2016 Start-up Funding, University of Minnesota Duluth
- 2011 Postdoctoral Fellowship, University of Michigan Center for Organogenesis
- Regulation of organogenesis in *Drosophila* by oxidant signaling

Research Accomplishment

Current Researches:

1) *Imaging protein complexes on chromatin*. We have developed a new imaging technique based on biomolecular fluorescence complementation (BiFC) assay. This method for the first time enables direct visualization of genomic loci bound by protein complexes, and can be used to identify genes that are specifically bound and regulated by a protein complex in *Drosophila* (*Development* 2014). This method can also be combined with fluorescence recovery after photobleaching (FRAP) assay to analyze chromatin binding affinities of protein complexes (*manuscript in preparation*).

2) *Novel molecular mechanisms and biological functions of Keap1-Nrf2 signaling*. Keap1-Nrf2 signaling, a central regulator of oxidative/xenobiotic responses, have essential however complicated roles in many diseases including cancer. Using *Drosophila* as the model system, my studies have revealed a novel developmental function for these factors in the regulation of endocrine axis (*PLoS Genet* 2013), and a distinct mechanism through which the Keap1-Nrf2 complex binds to and activates selective genes (*Development* 2014). These findings provide more insights into how protein interactions coordinate the transcriptional responses to different signals (*Fly* 2014). Our recent translational studies in cultured mammalian cells and rodent models suggested that this new mechanism is likely conserved in human (*manuscript in preparation*).

Previous Researches:

- Novel gene targeting mechanisms of PRC1 complex (unpublished postdoctoral research)
- Regulation of chromatin structure by JIL-1 kinase and H3S10ph in *Drosophila* (Ph.D. research)
- Agrobacterium-mediated transgenic analyses in potato (M.S. research)
- Molecular systematics and population genetics of sturgeons and carps