

BIOGRAPHICAL SKETCH

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NAME: Ge, Xiyu

eRA COMMONS USER NAME (credential, e.g., agency login): XIYU_GE

POSITION TITLE: Postdoctoral Fellow

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

INSTITUTION AND LOCATION	DEGREE (if applicable)	START DATE MM/YYYY	COMPLETION DATE MM/YYYY	FIELD OF STUDY
East China Normal University, Shanghai	BS	09/2013	06/2017	Biotechnology
University of Illinois Urbana- Champaign, Urbana, Illinois	PHD	08/2017	12/2022	Molecular & Integrative Physiology
Stanford University, Palo Alto, California	Postdoctoral Fellow	02/2023	present	Endocrinology

A. Personal Statement

As a postdoctoral research fellow, I'm enthusiastic about understanding the mechanisms of regulation of complex biological networks, and I'm experienced in applying interdisciplinary approaches to study research questions. During my doctoral training at University of Illinois Urbana-Champaign, I worked under the mentorship of Dr. Lori Raetzman, and my doctoral research focused on discovering the effects of intrinsic and extrinsic signals on the developing pituitary gland, during which I gained expertise in animal dissection, cell/tissue culturing, as well as molecular biology techniques including western-blot, qRT-PCR, immunohistochemistry, and in situ hybridization. My work in this project led to a publication in *Reproductive Toxicology*, where we identified reproductive-related gene expression changes and activation of aryl hydrocarbon receptor in the pituitary in response to prenatal phthalate exposure.

In addition to my work in molecular biology, I have also gained significant expertise in bioinformatics through my time as a research assistant mentored by Dr. Matthew Hudson. I applied bioinformatic tools, including Genome Analysis Toolkit, to identify de novo variants from Whole Genome Sequencing data from patient's blood samples possibly related to Hypoplastic Left Heart Syndrome (HLHS). My work on this project provided me extensive amount of experience in Next Generation Sequencing data processing and working with high-performance computing environment. Besides, it also led to a publication at *Nucleic Acids Research*.

My current work as a postdoctoral fellow at Stanford University under the guidance of Dr. Joy Wu involves single cell profiling of the bone marrow microenvironment in order to investigate the role of parathyroid hormone receptor in bone biology. The proposed research will provide me opportunities to apply my interdisciplinary skills in both molecular biology and bioinformatics to identify the differences in subpopulations of bone marrow stromal and hematopoietic cells at single cell resolution between wild type and parathyroid hormone receptor conditional knockout mice, and eventually discover the mechanism of the regulation of bone marrow microenvironment by parathyroid hormone. In addition, I plan to utilize the resources I have for my career development to improve my abilities in grant writing, lab management, mentoring skill and so on, and eventually achieve my long-term goal as an independent investigator committed to understand regulation of complex biological networks.

1. Ge X, Weis K, Flaws J, Raetzman L. Prenatal exposure to the phthalate DEHP impacts reproduction-related gene expression in the pituitary. *Reprod Toxicol*. 2022 Mar;108:18-27. PubMed Central PMCID: PMC8882145.

2. Xie X, Kendzior MC, Ge X, Mainzer LS, Sinha S. VarSAn: associating pathways with a set of genomic variants using network analysis. *Nucleic Acids Res.* 2021 Sep 7;49(15):8471-8487. PubMed Central PMCID: PMC8421213.

B. Positions and Honors

Positions and Scientific Appointments

- 2023 - Postdoctoral Fellow, Stanford University, Palo Alto, CA
2017 - 2022 Graduate Research Assistant, University of Illinois Urbana-Champaign, Urbana, IL

Honors

- 2023 Best Thesis Award, University of Illinois Urbana-Champaign
2022 Outstanding TA Award, University of Illinois Urbana-Champaign
2021 Graduate Student Travel Award, University of Illinois Urbana-Champaign
2021 First Place- Oral Presentation, Illinois Symposium on Reproductive Sciences
2021 Early Career Forum Award, Endocrine Society
2018 Early Career Investigator in Precision Medicine Scholarship, Mayo Clinic
2017 Ulliot Fellowship, University of Illinois Urbana-Champaign
2015 National Collage English Speaking Competition, 3rd prize, Shanghai Division, NESC
2014 - 2016 East China Normal University Scholarship, ECNU

C. Contribution to Science

1. During my graduate career, my research contributions involves both molecular biology and bioinformatics. As part of my thesis project, I focused on identifying impacts of prenatal phthalate exposure on the reproductive functions, specifically on the pituitary gland, in the offspring. I discovered the expression of gonadotropin genes were affected differently between males and females, and the aryl hydrocarbon receptor was activated by prenatal phthalate exposure. These findings led to my first-authored publication at *Reproductive Toxicology*.

In addition, my expertise in bioinformatics allowed me to make contributions to the development of a VarSn- a bioinformatic tool that associates pathways with a set of genomic variants using network analysis, which was published at *Nucleic Acids Research*.

- a. Ge X, Weis K, Flaws J, Raetzman L. Prenatal exposure to the phthalate DEHP impacts reproduction-related gene expression in the pituitary. *Reprod Toxicol.* 2022 Mar;108:18-27. PubMed Central PMCID: PMC8882145.
 - b. Xie X, Kendzior MC, Ge X, Mainzer LS, Sinha S. VarSAn: associating pathways with a set of genomic variants using network analysis. *Nucleic Acids Res.* 2021 Sep 7;49(15):8471-8487. PubMed Central PMCID: PMC8421213.
2. I also contributed to multiple collaborative projects include: 1) investigating the changes in gonadotropin expressions in the pituitary gland in female mice treated with kainic acid injection that led to temporal lobe epilepsy, and 2) the development of CRISPR base editors hyABE- a hyperactive ABE base editor that offers significantly improved A-to-G editing efficiency, and hyA&C-BE_{max}- optimized dual-base editor with markedly improved simultaneous A/C conversion efficiency compared to previous developed dual-base editors.
 - a. Xue N, Liu X, Zhang D, Wu Y, Zhong Y, Wang J, Fan W, Jiang H, Zhu B, Ge X, Gonzalez RVL, Chen L, Zhang S, She P, Zhong Z, Sun J, Chen X, Wang L, Gu Z, Zhu P, Liu M, Li D, Zhong TP, Zhang X. Improving adenine and dual base editors through introduction of TadA-8e and Rad51DBD. *Nat Commun.* 2023 Mar 3;14(1):1224. PubMed Central PMCID: PMC9984408.
 - b. Cutia CA, Levertton LK, Ge X, Youssef R, Raetzman LT, Christian-Hinman CA. Phenotypic differences based on lateralization of intrahippocampal kainic acid injection in female mice. *Exp Neurol.* 2022 Sep;355:114118. PubMed PMID: 35597270.

D. Scholastic Performance

Scholastic Performance

YEAR	COURSE TITLE	GRADE
EAST CHINA NORMAL UNIVERSITY		
2013	Advanced Mathematics B1	3.7
2013	Inorganic and Analytical Chemistry	3.7
2014	Advanced Mathematics B2	4.0
2014	Organic Chemistry and Experiments	4.0
2014	Botany	3.3
2014	College Physics C	3.7
2014	Linear Algebra B	3.7
2014	Zoology	3.3
2015	Neurobiology	3.7
2015	Experiment of Cell Biology	3.3
2015	Biological Photography	3.7
2015	Molecular Biology	3.7
2015	Microbiology and Experiment	3.7
2015	Immunology	3.7
2015	Biological Electronic Microscopy Technique	3.3
2015	Biodiversity	4.0
2015	Enzyme Engineering	3.7
2015	Fermentation Engineering	3.6
2015	Specialized English	4.0
2015	Biomaterials	4.0
2015	Base of Coevolution Theory	3.7
2015	Animal Physiology	4.0
2015	Immunological Technology	4.0
2015	Biochemical Experiments	4.0
2015	Cell Biology	4.0
2015	Genetics and Experiment	3.8
2016	Modern Biotechnology Theory and Application	3.3
2016	Cell Engineering	4.0
2016	Biochemistry	4.0
2016	Modern Molecular Biology Principle and Technology	4.0
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN		
2017	Advanced Biochemistry	4.0
2017	Advanced Molecular Genetics	4.0
2018	Sys & Integrative Physiology	4.0
2018	Frontiers in Physiology	4.0
2018	Bioinformatics	4.0
2018	Cell & Membrane Physiology	4.0
2018	Scientific Writing	3.67

For East China Normal University: letter grade with corresponding GPA for those classes will be calculated as follow: the students in that classes with a passing score will be ranked according to their numerical score and their letter grade determined as follow:

M ≤ 10%, A, 4.0; 10% < M ≤ 30%, A-, 3.7; 30% < M ≤ 45%, B+, 3.3; 45% < M ≤ 60%, B, 3; 60% < M ≤ 80%, B-, 2.5; 80% < M ≤ 90%, C+, 2; 90% < M ≤ 100%, C, 1.5; Passed after retest, D, 1; Fail, F, 0.

For University of Illinois Urbana-Champaign: Illinois is on a four-point grading system (Student Code, 3-103) that includes both plus (+) and minus (-) grades. Grades are evaluated in terms of grade points, as displayed below:

A+, 4.00; A, 4.00; A-, 3.67; B+, 3.33; B, 3.00; B-, 2.67; C+, 2.33; C, 2.00; C-, 1.67; D+, 1.33; D, 1.00; D-, 0.67; F, 0.00; ABS, 0.00.