Northwestern University Feinberg School of Medicine

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To Whom It May Concern:

I would like to offer my mentorship to MSSRP or RTP students to work on their thesis projects in my lab. Training of future physician scientists is one of the key missions of modern medical school. As a medical school faculty carrying out research in reproductive sciences, I am particularly interested in the training of future obstetrician, gynecologist, or urologist. My lab research focuses on important regulators of reproductive development. We have established animal models for infertility and we are in the process of identifying the underlying pathways and components for fertility regulation.

However to extend our research knowledge from animal models into human , we need researchers with strong background in medicine, MSSRP and RTP students are in great positions to carry out those translational research.

I have worked with several fellows when I was at University of California-San Francisco and understand how they think, how they progress and what they would like to get out of the research experience. The energy, enthusiasm and unique perspectives they brought into the lab are also very impressive. Since joining Northwestern faculty, I have mentored one MSTP student for a rotation project and a HPME medical student for summer research. The medical student (Terrance Lee) presented his poster in 2007 summer medical student poster session and published a first-author paper in highly respected reproduction journal. I am more than happy to continue to provide the opportunities in my lab for your fellows. I am looking forward to talking to your fellows and please let me know if I could be of any help in your recruitment as well.

I have included my research description, possible projects and past trainee in Mentor-Form-MSSRP as well as my current biosketch. Please feel free to contact me if you have any other questions.

Sincerely yours,

Eugene Y. Xu

Characterization of conserved regulators for key steps of reproductive development—stem cell and meiosis

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General description of research

Germ cells are unique in that they are the only cell type in our bodies that is both totipotent and immortal. How germ cells in early embryos are formed and further developed into sperm and eggs remain one of the central questions in biology and a better understanding of this question could impact directly on our strategy in developing the diagnostic methods and treatment of diseases such as cancer, infertility and many other reproductive syndromes affecting men and women's health. The overall goal of my research program is to understand the genetic and developmental mechanisms of mammalian germline development, in particular how key events such as maintenance/differentiation of germline stem cells and entry into meiosis are regulated in mammals. The pathways that develop germ cells appear to be conserved broadly, at least in outline, in organisms as diverse as insects and mammals. We proposed that there exists conserved core machinery that regulates the germ cell development and we wish to define the components of this underlying machinery through a combined evolutionary, genomic and genetic approach. Currently, we are characterizing mutants disrupting murine homologs of highly conserved stem cell factors—Pumilio to understand the stem cell regulation in reproductive and other tissues. To understand meiotic regulation, we are studying a meiotic animal model disrupting the most conserved member of DAZ gene family. DAZ gene deletions account for 10 to 15% of male infertility in azoospermic and oligospermic men and study of DAZ-related gene could improve our understanding of the genetic lesions responsible human infertility.

Possible MSSRP or RTP student projects:

1. Identifying RNA targets of highly conserved stem cell factor--Pumilio proteins
2. Determining interaction of meiotic regulator--Boule and other conserved RNA binding proteins
3. Identifying RNA targets of Boule protein
4. Determining the role of Pumilio protein in stem cell regulation
5. Determining the role of Pumilio in stress and/or aging.

Past trainees under my supervision:

Postdoctoral fellows
Yanmei Chen (Sept 2006—present)—postdoctoral fellow
Jun Wei (Sept 2006—April 2007)—visiting scholar
Yin Wang (Sept 2006—May 2007)—postdoctoral fellow
Chirag Shah (May 2006--)--postdoctoral fellow
Nick Salmon (Jan 2005 —April 2006)--Serono Reproductive Endocrinology Fellow
Edmundo Bonilla (Sept 2004—Aug 2006)--visiting UC-Mexus postdoctoral fellow,

Thesis research for Graduate students or medical students:

- Mike VanGompel (May 2007—present)—IGP graduate student

Rotating graduate student or medical student supervision:

- Oneil Bhalala (NU MSTP May 2007—June 2007)
- Mike VanGompel (NU IGP Sept 2006—December 2006), joined the lab
- Nick Angeloni (NU IGP 2006, June 2006—December 2006)
- Miranda Bernhardt (NU IGP 2005, March 2006 –June 2006)
- Ben Williams Brugmann (NU IGP 2005, Jan 2006 –March 2006)

Undergraduate supervision

- Wynter Rice (Truman State College, June 2007—Aug 2007, SROP program 2007)
- Terrance Lee (Northwestern University HPME undergraduate, Sept 2006—Sept 2007)
- Vicotoria Massey (University of Connecticut, SROP program summer student 2006)
- Dianne de Leon (Northwestern University on Weinberg College Summer 2006 Research Grant awardee, June 2006—Sept 2006)
- Victoria R. Massey (University of Connecticut, SORP program, 19 June 2006- Aug 10 2006)
- Kevin Chang (Berkeley, June 2005—Aug 2005)
- Paul Chan Lee (Berkeley, 2004 Sept –April 2004)
- Janet Lo (UC-Berkeley, June 2003 –Dec 2003, summer student)

High School student supervision

Ani Jacacian (June 2004—Aug 2004), high school summer student

Research area (check all that apply):

(X) Basic Science
(X) Translational Science
() Clinical Science
() Other _____

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Eugene Y. Xu, PhD	Assistant Professor
eRA COMMONS USER NAME XUEUGENE	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Anhui Normal University; Anhui, China.	B.S.	1985	Biology
Institute of Genetics, Chinese Academy of Sciences, Beijing, China	M.S.	1988	Medical Genetics
University of Chicago	PhD.	1996	Genetics
Howard Hughes Medical Institute, Indiana University	Postdoc	1999	Developmental Biology
Univerisity of California-San Francisco	Postdoc	2002	Human and mouse genetics

Academic Appointments

1996-99	NSF/Sloan Postdoctoral Fellow Howard Hughes Medical Institute Indiana University, Bloomington, Indiana.
1999-2002	NIH NRSA Fellow Department of Obstetrics, Gynecology and Reproductive Sciences, University of California at San Francisco
2002-2004	Assistant Research Geneticist Department of Obstetrics, Gynecology and Reproductive Sciences, University of California at San Francisco
2004-2005	Assistant Adjunct Professor Department of Obstetrics, Gynecology and Reproductive Sciences, University of California at San Francisco
2005-Current	Assistant Professor, Department of Obstetrics and Gynecology, Northwestern University Feinberg School of Medicine, Chicago

Honors and Awards

XVII North American Testis Workshop Travel Award (2003); First Prize Poster Award of Center for Reproductive Science (UCSF) Retreat (April 2002); Travel Award 2001 American Society of Reproductive Medicine Conference (Oct 2001) National Research Service Awards (1999-2002)
Alfred Sloan/NSF Postdoctoral Fellow (1996-1998); N.I.H. Genetics Training Grant Recipient (1994-1996); Excellent Student Awards (1988-1989); Graduate with High Distinction (1985)

Publications

1. Lee, T., C. Shah and **E. Y. Xu** Gene trap mutagenesis: A functional genomics approach towards reproductive research Mol Hum Reprod (In Press)
2. **Xu, E. Y.**, R. Chang, Nicholas A. Salmon and R. A. Reijo Pera (2007) A genetrap mutation of a murine homolog of the Drosophila stem cell factor *Pumilio* results in smaller testes but does not affect litter size or fertility Molecular Reproduction and Development. Jan 11
3. Salmon, N. A., Renee Reijo Pera and **E. Y. Xu** (2006) A gene trap knockout of the abundant sperm tail protein, Outer Dense Fiber 2(ODF2), results in preimplantation lethality *Genesis* Oct31 44(11):515-2

4. Joyce Y. Tung, C. Marc Luetjens, Joachim Wistuba, **E. Y. Xu**, Renee A. Reijo Pera, Jörg Gromoll (2006) Evolutionary comparison of the reproductive genes, *DAZL* and *BOULE,* in primates with and without *DAZ* Genes, Development and Evolution Jan 20, 1-11
5. Y.-M. Kuo, J. Duncan, S. Westaway,H. Yang, G. Nune, **E. Y. Xu**, S. Hayflick, and J. Gitschier (2004) Deficiency in pantothenate kinase 2 in a mouse model for Hallervorden-Spatz Syndrome leads to retinal degeneration and azoospermia Human Molecular Genetics 14(1):49-57
6. **Xu, E. Y.**, D. Lee, A. Klebes, P. J. Turek, T. Kornberg and R. Reijo Pera Human *BOULE* rescues the meiotic defects in infertile flies (2003) *Human Molecular Genetics* Vol 12(2) P169-175.
7. C. Marc Luetjens, **E. Y. Xu**, Renee A. Reijo Pera, Axel Kamischke, Eberhard Nieschlag, Jörg Gromoll (2004) Association of meiotic arrest in infertile men and lack of BOULE protein expression. J Clin Endocrinol Metab. 89(4):1926-33
8. **Xu, E. Y.**, F. Moore, R. Reijo Pera, A gene family required for human germ cell development evolved from an ancient meiotic gene conserved in all metazoans. *PNAS* (2001) Vol 98, 7414-7419.
9. Wu, C.-I. And **E. Y. Xu** The evolution of X-inactivation—the germline first hypothesis. (2003) *Trends in Genetics* 19(5): 243-7.
10. Li, K., **E. Y.Xu**, J.Cecil, R.R. Turner, T. L. Megraw and T.C. Kaufman Drosophila centrosomin protein is required for male meiosis and assembly of the flagellar axoneme. *J. Cell Biology* Vol 141(2) 455-467, 1998.
11. Wu, C.-I., H. Hollocher, D.J. Begun, C. F. Aquadro, **Y. Xu** and Mao-Lien Wu. Sexual isolation in Drosophila melanogaster: A possible case of incipient speciation. *PNAS* **92**: 2519-2523, 1995.
12. Zeng, Yi-tao, X. Qiu and **Y. Xu**. Application of DNA RFLP analysis in prenatal diagnosis of DMD. *Journal of Chinese Medicine*, **8**:(107-563), 1988.
13. Zeng Yi-tao, M. Zhang, M. Chen, **Y. Xu**, and X. Qiu. A study on RFLP of Xp21 region in a large DMD family. *Journal of Shanghai Medicine*, **11**: 378-322, 1988.

Research Support—ongoing research

NIH/NICHD U01 HD045871-01 — 12/01/2003—11/30/2008
Functional Genomic Approach to Male Contraception — $149,000
Role: PI
Overlap: None

NIH/NICHD R01 — Pending
Meiotic regulation by conserved RNA binding proteins
Role: PI
Overlap: None

NIH/NICHD PO1 — Pending
Uterine Leiomyoma Research Program
Role: Co-PI
Overlap: None