Division Data Summary

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<th>Research and Training Details</th>
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<tr>
<td>Number of Faculty</td>
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<td>Number of Research Fellows</td>
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<td>Number of Support Personnel</td>
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<td>Direct Annual Grant Support</td>
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<td>Peer Reviewed Publications</td>
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<th>Clinical Activities and Training</th>
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<td>Number of Clinical Staff</td>
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<td>Number of Clinical Fellows</td>
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Significant Accomplishments

**Fetal Programming and Environmental Exposures**

S.K. Dey, PhD, Jeff Whitsett, PhD, and Susan Fisher, PhD, University of California San Francisco, organized “Fetal Programming and Environmental Exposures: Implications for Prenatal Care and Pre-Term Birth,” a meeting jointly sponsored by the New York Academy of Science and Cincinnati Children’s. Held in New York City, the meeting drew 140 researchers and clinicians to discuss factors affecting prenatal development and how to better deal with those factors.

**Funding and Research**

All five of our division’s full-time faculty members are funded by at least one external grant, and three of the five have more than one external grant. Three out of five are also funded by one internal grant. Overall, the division is supported by five NIH, five private, and two internal grants.

Although preterm birth and prematurity are worldwide problems, the underlying mechanisms are still unknown. Uterine decidual senescence via the mammalian target of rapamycin complex 1 (mTORC1) signaling is a novel approach to understanding the cause of preterm birth. We found that decidual senescence could be reversed by administering either a very low dose of rapamycin (an inhibitor of mTORC1 signaling) or Celebrex, a COX-2 inhibitor (an anti-inflammatory). This work was highlighted by the American Association for the Advancement of Science (AAAS) in *Cell Signaling, Biology of Reproduction*, and *Cell Cycle*.

Report on our Adjunct Professors Abroad
Report on our Adjunct Professors Abroad

The Division of Reproductive Sciences has two adjunct professors stationed at universities abroad. Yasushi Hirota, MD, PhD, is based at the National Institute of Genetics of Japan in Shizuoka, Japan. He published two papers in FY12, along with members of Dey's lab, in the Proceedings of the National Academy of Science USA and Developmental Cell. He also received a research award from the Japan Society of Reproductive Medicine and an outstanding presentation award from the 64th Annual Congress of the Japan Society of Obstetrics & Gynecology.

Hirota also received three new grants in FY12: a grants-in-aid for scientific research (KAKENHI) from the Japan Society for the Promotion of Science; a research grant from the Mochida Memorial Foundation for Medical and Pharmaceutical Research; and a research grant from the Kanae Foundation for the Promotion of Medical Science. This year, Hirota was named to the editorial board of the journal Molecular Human Reproduction.

Hyunjung (Jade) Lim, PhD, is based at Konkuk University in Seoul, South Korea. She published three papers in FY12: two in Molecular Human Reproduction and one in Molecular Biology Reports. She was awarded a center grant on Fertility Preservation Network as principal investigator of Project 4, which will run for five years and look into the development of molecular cell biological markers for oocyte and ovarian tissue cryopreservation.

Division Highlights

SK Dey, PhD

Keynote Speaker at the ICRS 2011 Symposium in St. Charles, IL. His talk was titled, “Annual Kang Tsou Memorial Lecture.” (July 6-10, 2011)

SK Dey, PhD

Invited session leader at the Nature Medicine Herrenhausen Symposium on Reproductive Biology in Seeon, Germany. He led the Funding and Training session. (October 4-7, 2011)

SK Dey, PhD

Keynote Speaker at the 2nd International Symposium on Reproductive Medicine in Seoul, Korea. His talk was titled, “Endocannabinoid signaling in early pregnancy: Lessons from mouse models.” (October 28, 2011)

SK Dey, PhD

Participated in the NIH-sponsored 6th Collaborative Team Meeting on Interdisciplinary Research on Blastocyst Implantation held in Rockville, MD. (February 21 and 22, 2012)

SK Dey, PhD

Gave an invited talk at the 2012 Annual Society for Gynecologic Investigation (SGI) Meeting in San Diego, CA (March 20-24). His talk was titled, “Premature Decidual Senescence Provokes Preterm Birth.”

SK Dey, PhD

Invited to give an endowment lecture at the Magee-Womens Research Institute in Pittsburgh, PA, for their annual Research Day in Reproductive Biology and Women’s Health (May 25, 2012). His lecture was titled, “Premature Decidual Senescence Provokes Preterm Birth.”
Takiko Daikoku, PhD
Invited to Northwestern University in Chicago, IL to give a lecture titled, “PTEN, mTORC1, COX-2 and Endometrial Cancer.” (April 5, 2012)

Jeeyeon Cha, Graduate Student MD/PhD
Selected to give an oral presentation at the Society of Gynecologic Investigation 59th Annual Scientific Meeting in San Diego, CA. Title: “Increased mammalian target of rapamycin complex-1 (mTORC1) signaling is a major contributor to preterm birth.” (March 21-24, 2012)

Hosu Sin, PhD
Awarded the Japan Society for Reproductive Medicine/MSD Scientific Award for her paper entitled, “Features of constitutive gr/gr deletion in a Japanese population.”(December 8, 2011)

Satoshi Namekawa, PhD
Selected to give a talk at The Institute of Cancer Research in Sutton, UK, titled, “A link between DNA damage response pathway and epigenetic programming.” (July 19, 2011)

Satoshi Namekawa, PhD
Selected to give a talk at the EMBO Conference on 50 Years of X-inactivation Research in Cambridge, UK titled, "Sex Chromosome Inactivation in Male." (July 20-24, 2011)

Satoshi Namekawa, PhD
Selected to give a talk at the Gordon Research Conference on Mammalian Gametogenesis and Embryogenesis in Waterville Valley, NH, titled "Meiotic Sex Chromosome Inactivation: Mechanism and Evolution." (August 21-26, 2011)

Satoshi Namekawa, PhD
Invited to give a talk at the Cold Spring Harbor Asia: Developmental Control of Sex, Growth and Cellular Fate conference in Suzhou, China, titled, “Sex chromosome inactivation in male germ cells-Mechanism and evolution.” (October 11-15, 2011)

Satoshi Namekawa, PhD
Invited to give a talk at The second SKLRB Symposia on Frontiers in Reproductive Biology in Beijing, China titled, "Regulatory Mechanism of Sex Chromosome in Germ Cells: Chromosome-wide Inactivation and Activation." (May 6-11, 2012)

Satoshi Namekawa, PhD
Selected to give a talk at the 14th Annual Midwest DNA Repair Symposium in Cincinnati, OH titled, "DNA Damage Response on the Sex Chromosomes in Germ Cells: Chromosome-wide Inactivation and Activation." He was also a session chair. (May 19-20, 2012)
Satoshi Namekawa, PhD


Satoshi Namekawa, PhD

Invited to give a talk at the University of Cincinnati in Cincinnati, OH for a Physiology seminar titled, "Journey of the sex chromosomes through reproduction and evolution." (June 12, 2012)

New Hires

September - Sandi Newman, Grant Specialist
March - Macarena Vargas Vargas, PhD, as a Postdoctoral Fellow in S.K. Dey’s lab
March - Monica Cappelletti, PhD, as a Postdoctoral Fellow in Reproductive Sciences and Immunology (joint between S.K. Dey, PhD, and Senad Divanovic, PhD).
April - Kazuteru Hasegawa, PhD, as a Postdoctoral Fellow in Satoshi Namekawa’s lab
May - Tyler Broering, Research Assistant II for Satoshi Namekawa’s lab
June - Dustin Sams, Research Assistant II for S.K. Dey’s lab
June - Jake Burlew, SURF Student, for S.K. Dey’s lab
June - Kris Alavattam, SURF Student, for Satoshi Namekawa’s lab

Promotions

Takiko Daikoku, PhD, to Research Associate Professor
Sandi Newman to Financial Analyst I

Division Publications

7. Hirota Y, Burnum KE, Acar N, Rabinovich GA, Daikoku T, Dey SK. Galectin-1 markedly reduces the

Faculty, Staff, and Trainees

**Faculty Members**

**Sudhansu K. Dey, PhD**, Professor

Leadership Division Director; Lova Riekert Chair

Research Interests Pregnancy and implantation; reproductive cancers

**Takiko Daikoku, PhD**, Associate Professor

Research Interests Reproductive cancers; blastocyst implantation

**Sanjoy Das, PhD**, Professor

Research Interests Uterine decidualization; environmental estrogens

**Satoshi Namekawa, PhD**, Assistant Professor

Research Interests Epigenetics of germ cells; X chromosome inactivation

**Yuya Ogawa, PhD**, Assistant Professor

Research Interests Molecular mechanisms of X chromosome inactivation

**Yasushi Hirota, MD, PhD**, Adjunct

Research Interests Human reproduction; endometrial biology; implantation (Home Institution: National Institute of Genetics of Japan)

**Hyunjung "Jade" Lim, PhD**, Adjunct

Research Interests Embryo Implantation (Home Institution: Konkuk University, Korea)

**Trainees**

- Jeeyeon Cha, BS, University of Cincinnati, Medical School
- Daesuk Chung, PhD, University of Colorado
- Fei Gao, PhD, Vanderbilt University
- Kazuteru Hasegawa, PhD, National Institute of Genetics
- Yosuke Ichijima, PhD, Harvard University
- Xinghong Ma, PhD, Mayo Clinic, Minneapolis, MN
- Ho-Su Sin, PhD, Kanazawa University, Japan
Division Collaboration

**Division of Biomedical Informatics** » Anil Jegga, PhD
- Title: Bioinformatics Approach to Preimplantation Embryo Development with Respect to Endocannabinoid Signaling
- Collaboration with: SK Dey

**Division of Developmental Biology** » Steve Potter, PhD
- Title: Hox Genes in Female Reproduction
- Collaboration with: SK Dey

**Division of Endocrinology** » Stuart Handwerger, PhD
- Title: Role of Endocannabinoid in Uterine Decidualization
- Collaboration with: SK Dey

**Division of Molecular Immunology** » Senad Divanovic, PhD
- Title: Role of Endocannabinoid in Preterm Birth
- Collaboration with: SK Dey

**Division of Neonatology and Pulmonary Biology** » Jeff Whitsett, PhD
- Title: Role of KLF5 in Uterine Biology and Implantation
- Collaboration with: SK Dey

**Division of Biomedical Informatics** » Anil Jegga, PhD
- Title: Molecular signaling analysis of decidual cell polyploidy development
- Collaboration with: Sanjoy Das

**Division of Endocrinology** » Stuart Handwerger, PhD
- Title: Analysis of molecular signaling axis for Hoxa-10 and H19 during uterine decidualization in human
- Collaboration with: Sanjoy Das

**Division of Experimental Hematology & Cancer Biology** » Paul R. Andreassen
- Title: Role of DNA damage response pathways in spermatogenesis
- Collaboration with: Satoshi Namekawa

**Division of Developmental Biology** » Rashmi S. Hegde, Richard A. Lang, PhD, and Visual Systems Group
Title: Role of tyrosine phosphatases in spermatogenesis
Collaboration with: Satoshi Namekawa

Division of Allergy and Immunology » Artem Barski, PhD
Title: Analysis of germline epigenome
Collaboration with: Satoshi Namekawa

Division of Pulmonary Biology » Machiko Ikegami, MD, PhD
Title: DNA methylation analysis of lung cancer suppressor genes
Collaboration with: Yuya Ogawa, PhD

Grants, Contracts, and Industry Agreements

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