

CRepHS Newsletter

3rd Quarter
FY 2024

MESSAGE FROM THE DIRECTOR

Dear CRepHS personnel and associates,

Our newsletter is once again packed with news of scientific accomplishments and stable growth of teams and research support. To top it off, we are also thrilled to be launching a new master's program!

The Master of Science in Reproductive Sciences program will begin accepting applications this September for the first cohort to begin in fall 2025. We are looking forward to providing a rewarding educational journey under the guidance of our expert scientists and clinicians for the ever-evolving field of ReproSci.

I hope you enjoy hearing about the growth as much as I do.

Sarah



Sarah K. England, PhD

Alan A. and Edith L. Wolff Professor of Medicine
Vice Chair of Research and Professor,
Department of Obstetrics and Gynecology

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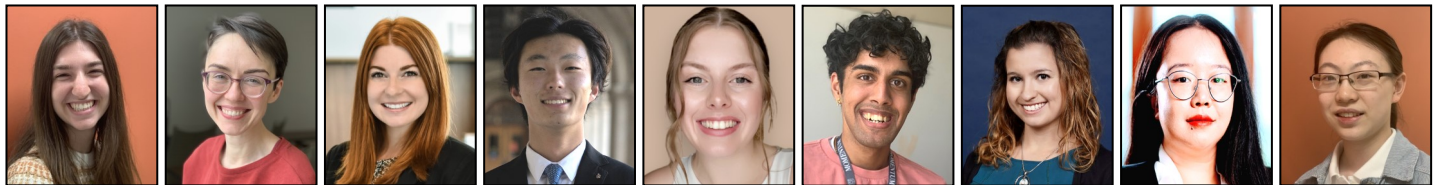
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Next issue: August 2024

PERSONNEL UPDATE

NEW TEAM MEMBERS *(as of date of publication)*



Drexler

Kierzek

Lehr

Li

Plough

Premanand

Schab

Zhang

Zhong

RIKKI DREXLER (she/her)
Clinical Laboratory Technician, GynOnc Tissue Bank

MICHELINA KIERZEK, PHD (she/her)
Postdoctoral Research Associate, Santi Lab

JORDYN LEHR (she/her)
Clinical Research Coordinator II, Wang Lab

ETHAN LI (he/him)
Undergraduate Research, Santi Lab

MAKENZIE PLOUGH (she/her)
Research Technician I, Amargant i Riera Lab

MADHAV PREMANAND (he/him)
Clinical Laboratory Technician, DCR/GynOnc

ANGELA SCHAB, PHD (she/her)
Postdoctoral Research Associate, Mullen Lab

MANDI ZHANG (she/her)
Grant Specialist I, Ob/Gyn


YAO ZHONG (she/her)
Research Assistant, Zhao lab

JOBS

We seek people from diverse backgrounds to join us in a supportive environment that encourages boldness, inclusion and creativity.

- [Bioinformatics Research Assistant – Wang Lab](#)
- [Histology Technician I – Histocore](#)
- [Postdoctoral Research Associate – Gomez-Lopez Lab](#)

Find more information and other jobs at

<https://jobs.wustl.edu/> 

HAPPY RETIREMENT!



Wendy Zhang retired on Feb. 8th. She was a Senior Research Technician in the Khabele Lab.

PERSONNEL Spotlight

Nardhy Gomez-Lopez, PhD
Professor



The Center for Reproductive Health Sciences warmly welcomed Nardhy Gomez-Lopez, PhD, and her lab in the fall of 2023. With her wealth of expertise in scientific investigation and a passion for education, we are pleased to have Dr. Gomez-Lopez settling in at WashU to further pursue excellence in her research career.

Dr. Gomez-Lopez's career began in Mexico City, Mexico, where she earned her master's and doctoral degrees from the National School of Biological Sciences, IPN. From there, she continued to develop her knowledge and training in physiology of pregnancy and reproductive immunology by completing two post-doctoral fellowships, at the University of Alberta, Canada, and the University of Adelaide, Australia, respectively.

Before being launched into professorship with the WashU departments of Obstetrics & Gynecology and Pathology & Immunology, she served as the Deputy Project Site Manager for Translational Research, overseeing several labs (including her own) at the Perinatology Research Branch of the National Institutes of Health (NIH/National Institute of Child Health and Human Development) for almost 12 years at the Detroit Medical Center/Wayne State University.

"I always dreamed of working at the NIH," states Dr. Gomez-Lopez. "I kind of transformed myself from just being in the lab doing my thing, to being more translational. When I started working with clinicians, that gave me a completely different view. I was talking to the patient, seeing the family, seeing the downstream consequences of having a premature baby, and seeing how science could prevent that."

Currently, as an investigator with a dedicated team, Dr. Gomez-Lopez is excited about answering the main question in her lab from an immunological perspective: Why do mothers deliver preterm babies? They also focus on understanding what happens in normal pregnancies. As for how things operate within the Gomez-Lopez Lab, she states, "My family is in Mexico or different places in the world, so I like my lab to run like a family. We meet regularly to address questions and tasks at hand, supporting each other. It is important to me that each of them feels fulfilled with their work."

In addition to growing her team, Dr. Gomez-Lopez's goals over the next several years include becoming fully established at WashU alongside being awarded a few grants. She will also maintain her roles as an editor in her free time for various journals, including the Journal of Immunology, Science Translational Medicine, and Journal of Reproductive Immunology. Additionally, she plans to add more DEI volunteer work overtime. ■

There's No Place Like Home

"Since the moment I visited WashU and St. Louis, I felt like I belonged."

-Dr. Nardhy Gomez-Lopez

Nardhy and her husband, Bogdan Panaitescu, M.D., and dog Mylo, have a home in University City.

UPCOMING OPPORTUNITIES

REPRODUCTIVE & ENGINEERING JOURNAL CLUB

Summer Journal Club is being offered by the departments of Ob/Gyn and Engineering. This is a reproduction-focused club in which all are welcome to attend.

The Reproductive & Engineering Journal Club takes place: June 14, 21, 28; July 5, 12, 19, 26; August 2, 9, 16, 23, 30; Fridays, 9 to 10 a.m. Attendance is hybrid via Zoom and in-person (BJCIH 10th floor).

To learn more, contact [Adrienne Scott](#) or [Lindsey Kent, PhD](#).



FUNDING

- [The CRepHS Travel Award](#): This award aims to provide support for expenses for conferences where students or trainees are presenting their research. Applications are accepted on a rolling basis.
- [ICTS Clinical and Translational Research Funding Program \(CTRFP\)](#): This grant funding program awards projects that promote the translation of scientific discoveries into improvement in human health.
- The “[Pilot & Feasibility Program](#),” from the WashU Nutrition Obesity Research Center, provides research support to test innovative hypotheses involving nutrition and obesity in the prevention, pathogenesis, pathophysiology, and therapy of disease.
- [Grants from the Elsa U. Pardee Foundation](#) fund research directed toward identifying new treatments or cures for cancer.
- [The QuikSTART Grant program](#) from the Center for Drug Discovery (CDD) and the Siteman Cancer Center is designed to advance the translation of new discoveries in cancer disease biology into small molecule therapeutics for the benefit of patients.



View more
funding relevant
to researchers in
OBGYN by
[clicking here](#).

UPCOMING OPPORTUNITIES

MASTER OF SCIENCE IN REPRODUCTIVE SCIENCES

A biosciences degree focused on human reproductive biology.



The Master of Science in Reproductive Sciences (MSRS) is a two-year, full-time, in-person program beginning in the academic year 2025-26.

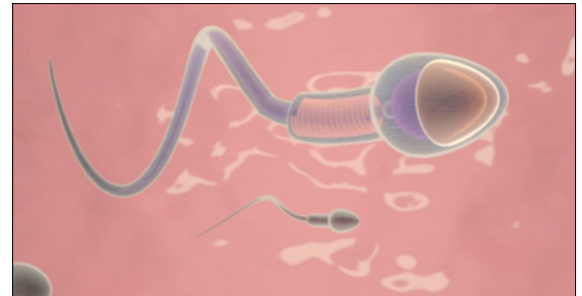
The MSRS degree will offer two concentrations: Research and Clinical Embryology.

- The “Research” concentration, launching in fall 2025, is for applicants seeking master’s level research training that can be used toward a career in academic research (translational), industry research, government research or administration, or teaching.
- The “Clinical Embryology” concentration is launching in fall 2026. Students will enter the IVF clinic on day 1, and will gain the hands-on skills and experience needed for ELS* certification.

This new master’s program is administered by the Center for Reproductive Health Sciences, Dept. of Ob/Gyn, with teaching led by highly accomplished scientists and clinicians. More information will be available soon via reproductivesciences.wustl.edu.

**ELS – Embryology Laboratory Scientist certification offered by the American Association for Bioanalysts Board of Registry.*

“HUMAN REPRODUCTIVE PHYSIOLOGY” COURSE



The Center for Reproductive Health Sciences is excited to be hosting a new course titled “Human Reproductive Physiology” (4 credit hours) this fall on the Medical Campus.

Students will learn from both basic science and clinician experts working at the cutting edge of research and practice. Three learning modules covering the following lecture topics will take place throughout the semester: Development to Reproduction; Embryogenesis and Gestation; Parturition and Beyond. Clinical topics will be incorporated throughout the course (e.g., infertility and ART, contraception, preterm birth, labor dystocia, infection, etc.).

To learn more, visit the [Education & Resources page](#) on the [CRepHS website](#). Enroll through courses.wustl.edu (M94 ReprSci 5000, L41 Bio 4073).

Questions about the HRP course or the master’s program in Reproductive Sciences?

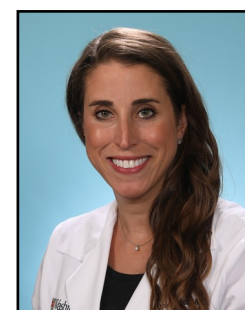
Contact Dr. Erin Reinl, [Program Director](#), or Julie Emmerich, [Program Coordinator](#).

SCIENTIFIC ACCOMPLISHMENTS

(from fiscal quarter three)

AWARDS, APPOINTMENTS, & SPECIAL EVENTS

- On the weekly [Science Podcast](#) in January, producer Kevin McLean talks with researcher **Nardhy Gomez-Lopez, PhD**. The two discuss [signaling between fetus and mother during childbirth](#) and how understanding this crosstalk may one day help predict premature labor. **Dr. Gomez-Lopez** was also featured in a NIH NICHD media advisory: <https://www.nichd.nih.gov/newsroom/news/011024-placenta-atlas> ([click here](#) to see the paper).
- **Lindsey Kent, PhD**, and **Sarah England, PhD**, received a 2024 Pilot and Feasibility award in February from the Center for the Investigation of Membrane Excitability Diseases (CIMED). The award is for their proposal on uncovering a novel role for NALCN in myometrial cell proliferation.
- **Farners Amargant i Riera, PhD**, was invited to speak at the Institute for Reproductive and Developmental Sciences at the Kansas University Medical Center (KUMC). Dr. Amargant i Riera presented to KUMC faculty, trainees and staff in February.
- In February, **Magdaleena Mbadhi, MBBS, MMed**, postdoctoral research associate in the **Frolova Lab**, and **Eileen Xu** presented their research at the [Society for Maternal Fetal Medicine \(SMFM\)](#) annual Pregnancy Meeting:
 - ◆ “Sphingolipid profile in human uterus at term.” Magdaleena Naemi Mbadhi, Kaci Martin, Ruth Gill, Nandini Raghuraman, Kumar Saurabh, Antonina I. Frolova.
 - ◆ “Effects of universal intrauterine pressure monitoring on labor outcomes among patients with obesity.” Eileen Xu, Nandini Raghuraman, Katherine H. Bligard, Jeannie C. Kelly, Ebony B. Carter, Alison G. Cahill, Antonina I. Frolova.
- On March 1st, **Maggie Mullen, MD, MSCI**, became an awardee of the 17th annual Clinical and Translational Research Funding Program (CTRFP). The CTRFP grant, through the Washington University Institute of Clinical and Translational Sciences (ICTS), will fund her project titled, “Optimizing a Biomarker of Response to Therapy in High-grade Serous Ovarian Cancer.” Dr. Mullen’s project is further explained at <https://icts.wustl.edu/icts-announces-2024-2025-ctrfp-awardees/>.



Maggie Mullen, MD, MSCI

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SCIENTIFIC ACCOMPLISHMENTS

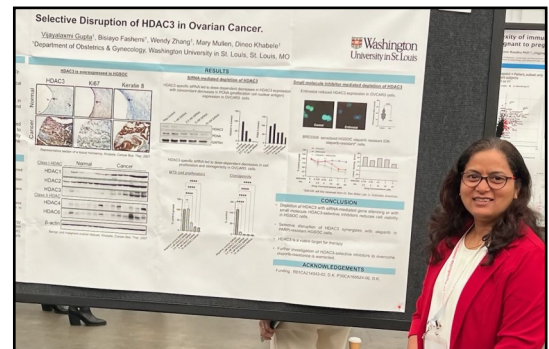
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AWARDS, APPOINTMENTS, & SPECIAL EVENTS *...continued*

- At the annual Society for Reproductive Investigation ([SRI](#)) meeting in March in Vancouver, Canada, **Wang Lab** members **Zichao Wen** and **Wenjie Wu** each received an SRI Early Career Investigator Award at the meeting.

Additionally, **CRepHS labs** had the following research presented at the SRI meeting:

- “Activation of Vasopressin Receptor 1A Enhances Myometrial Smooth Muscle Cell Excitability by Inhibiting the Potassium Channel SLO2.1.” Juan J Ferreira, Lindsey N. Kent, Ana L Gonzalez-Cota, Xiaofeng J. Ma, Shweta Bhagwat, Sarah K England, Celia M Santi.
- “Bacterial Vaginosis Toxins Affect Sperm Function.” Shweta Bhagwat, Juan Ferreira, Ronald McCarthy, Ping Li, Christy Armstrong, Andrea Verhagen, Vaka Reddy, Sydney Morrill, Lloyd Robinson, Warren G Lewis, Amanda L. Lewis, Celia M. Santi.
- “Unsupervised Machine Learning for Cell Type Identification in Human Myometrial Tissue: A Novel Approach Using Morphological Features.” Xiaofeng Ma, Lindsey N. Kent, Ruth Gill, Antonina Frolova and Sarah England.
- “LB-F-18 - Age-Associated Increase in Ovarian Stiffness Impairs Follicle Development and Oocyte Quality.” Sara Pietroforte, Farners Amargant i Riera.
- “Metabolic Changes in Myometrial Cells Following Oxytocin Exposure.” Kevin K Prifti, Ruth M Gill, Kaci T Martin, Antonina I Frolova.
- “Effects of Maternal Obesity on Offspring Cerebral Glucose Transporter Expression.” Tyler L King, Kevin K Prifti, Erin L Reinl, Ruth M Gill, Sarah K England, Antonina I Frolova.
- “Oxytocin Receptor Trafficking Requires N-linked Glycosylation.” Kaci T Martin, Erin L Reinl, Melissa G Gibson, Kevin K Prifti, Sarah K England, Antonina I Frolova.
- “Selective Disruption of HDAC3 in Ovarian Cancer.” Vijayalaxmi G Gupta, Bisiayo Fashemi, Wendy Zhang, Andrew Wilson, Fiona Yull, Marta Crispens, Mary Mullen, Dineo Khabele.
- “Noninvasive Uterine Maturation Biomarkers Modeled through Electromyometrial Imaging and Spike Propagation Graph Analysis.” Zichao Wen, Peinan Zhao, Yuelin Li, Yiqi Lin, Hansong Gao, Xinyu Zhang, Yuan Nan, Yong Wang.
- “Alya Purple: Patient-Specific Multi-Scale, Multi-Physics Simulations of Human Uterine Contractions and Peristalsis during Pregnancy and the Menstrual Cycle.” Yiqi Lin, Jazmin Sierra, Sicheng Wang, Constantine Butakoff, Wenjie Wu, Yuan Nan, Mariano Vazquez, Yong Wang.
- “Ex-Vivo Validation of Diffusion Basis Spectrum Imaging in Placenta.” Zhexian Sun, Wenjie Wu, Sicheng Wang, Hansong Gao, Qing Wang, Yong Wang.



Viju Gupta, PhD

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SCIENTIFIC ACCOMPLISHMENTS

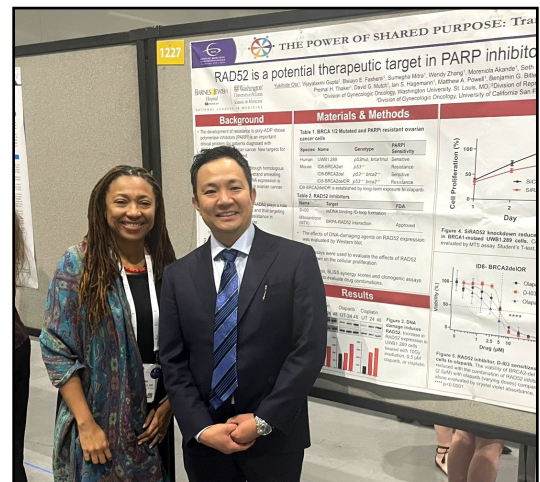
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AWARDS, APPOINTMENTS, & SPECIAL EVENTS ...continued

- In March, [CRepHS](#) was well represented at the 29th Annual Graduate Research Symposium, hosted by the Washington University in St. Louis Graduate Student Senate on the Danforth Campus. Postdoctoral Research Associates **Juan Ferreira, PhD** (Santi Lab) and **Sara Pietroforte, PhD** (Amargant i Riera Lab) participated as judges, and PhD Graduate Students **Kevin Prifti** and **Kaci Martin** (Frolova Lab) presented posters at the event.



- Sarah England, PhD**, presented the following talks: “Molecular mechanisms underlying uterine activity” Charles Baugh Distinguished Scientist Seminar Series at University of South Alabama in January. “Chronodisruption and Pregnancy Outcomes” Society for Reproductive Investigation 71st Annual Meeting in Vancouver in March. “Fireside Chat – Women’s History Month” Association of Black Biomedical Graduate Students at Washington University in March. “Making your career distinctive: Pores, Pregnancy, and Pivoting.” keynote talk at the 19th Annual Postdoc Symposium at Washington University School of Medicine in March.



Drs. Khabele and Ota at the Society of Gynecologic Oncology’s annual meeting.

- Yuki Ota, MD, PhD**, mentored by **Dr. Khabele**, presented his research at a poster session at the Society of Gynecologic Oncology (SGO)’s [Annual Meeting on Women’s Cancer](#)® meeting in March. The abstract’s title: “RAD52 is a potential therapeutic target in PARP inhibitor resistant BRCA-deficient ovarian cancer.”
- Maggie Mullen, MD, MSCI**, was awarded the [Foundation for Women’s Cancer Move4Her](#) Research Grant for her project titled, “Targeting COPS5 to overcome platinum chemotherapy resistance.” Dr. Mullen states, “It is an absolute honor to be supported by the Move4Her participants and the Foundation for Women’s Cancer. Thanks to this award we will be able to pursue groundbreaking research that has the potential to improve the lives of women with ovarian cancer through the development of a novel targeted therapy. We cannot thank you enough for believing in our research and for being champions of progress!”

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SCIENTIFIC ACCOMPLISHMENTS

(from fiscal quarter three)

AWARDS, APPOINTMENTS, & SPECIAL EVENTS *...continued*

- The City of St. Louis Department of Health hosted National Medical Association leadership on March 21st for a discussion on regional maternal child health. **Dineo Khabele, MD**, served as a panelist at this meeting to address better access to maternal child health in Missouri. [Learn more here.](#)
- **Farners Amargant i Riera, PhD**, Assistant Professor of Obstetrics and Gynecology, received a [Pilot and Feasibility Award](#) from the Washington University Diabetes Research Center (DRC). The new grant provides funding through March 31, 2025, for her research titled “Diabetes-associated mechanism of female subfertility: role of the ovarian stroma.”
- **Eileen Xu** (Xinyuan Xu; **Frolova Lab**) matched into OBGYN residency at WashU and begins residency in Summer 2024. See more at <https://obgyn.wustl.edu/match-day-2024/>.
- Congratulations to **Tyler King, DO**, fellow in the lab of **Toni Frolova, MD, PhD**, for being accepted to the Neonatal Hemodynamics Fellowship at University of Iowa beginning in July.



Farners Amargant i Riera, PhD

PUBLICATIONS*

- Akinjiyan FA, Ibitoye Z, **Zhao P**, Shriver LP, Patti GJ, Longmore GD, Fuh KC. [DDR2-regulated arginase activity in ovarian cancer-associated fibroblasts promotes collagen production and tumor progression.](#) Oncogene. 2024 Jan;43(3):189-201. doi: 10.1038/s41388-023-02884-3. Epub 2023 Nov 23. PMID: 37996700; PMCID: PMC10786713.
- Sarullo K, Barch DM, Smyser CD, Rogers C, Warner BB, Miller JP, **England SK**, Luby J, Swamidass SJ. [Disentangling Socioeconomic Status and Race in Infant Brain, Birth Weight, and Gestational Age at Birth: A Neural Network Analysis.](#) Biol Psychiatry Glob Open Sci. 2023 May 22;4(1):135-144. doi: 10.1016/j.bpsgos.2023.05.001. PMID: 38298774; PMCID: PMC10829562.
- Xu Y, Miller D, Galaz J, **Gomez-Lopez N**. [Immunophenotyping of Leukocytes in Amniotic Fluid.](#) Methods Mol Biol. 2024;2781:155-162. doi: 10.1007/978-1-0716-3746-3_14. PMID: 38502451.
- Garcia-Flores V, Romero R, Tarca AL, Peyvandipour A, Xu Y, Galaz J, Miller D, Chaiworapongsa T, Chaemsaitong P, Berry SM, Awonuga AO, Bryant DR, Pique-Regi R, **Gomez-Lopez N**.

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*Labs in bold.

SCIENTIFIC ACCOMPLISHMENTS

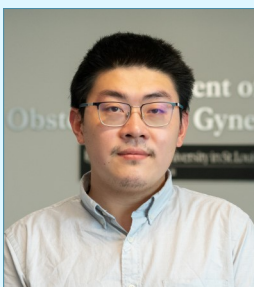
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PUBLICATIONS* *...continued*

[Deciphering maternal-fetal cross-talk in the human placenta during parturition using single-cell RNA sequencing.](#) Sci Transl Med. 2024 Jan 10;16(729):eadh8335. doi: 10.1126/scitranslmed.adh8335. Epub 2024 Jan 10. PMID: 38198568.

- Wang Q, Schindler SE, Chen G, McKay NS, McCullough A, Flores S, Liu J, Sun Z, Wang S, Wang W, Hassenstab J, Cruchaga C, Perrin RJ, Fagan AM, Morris JC, **Wang Y**, Benzinger TLS. [Investigating White Matter Neuroinflammation in Alzheimer Disease Using Diffusion-Based Neuroinflammation Imaging.](#) Neurology. 2024 Feb;102(4):e208013. doi: 10.1212/WNL.000000000208013. Epub 2024 Feb 5. PMID: 38315956; PMCID: PMC10890836.
- Fang Y, Reinl EL, Liu A, Prochaska TD, Malik M, **Frolova AI**, **England SK**, Imoukhuede PI. [Quantification of surface-localized and total oxytocin receptor in myometrial smooth muscle cells.](#) Heliyon. 2024 Feb 13;10(4):e25761. doi: 10.1016/j.heliyon.2024.e25761. PMID: 38384573; PMCID: PMC10878913.
- Mohanty G, Sanchez-Cardenas C, Paudel B, Tourzani DA, Salicioni AM, **Santi CM**, Gervasi MG, Pilsner JR, Darszon A, Visconti PE. [Differential role of bovine serum albumin and HCO₃- in the regulation of GSK3 alpha during mouse sperm capacitation.](#) Mol Hum Reprod. 2024 Feb 29;30(3):gaae007. doi: 10.1093/molehr/gaae007. PMID: 38341666; PMCID: PMC10914453.
- Garcia-Flores V, Miller D, Galaz J, **Gomez-Lopez N**. [Dissociation of Placental Tissues for Single-Cell Techniques.](#) Methods Mol Biol. 2024;2781:143-154. doi: 10.1007/978-1-0716-3746-3_13. PMID: 38502450.
- Jung E, Romero R, Suksai M, Gotsch F, Chaemsaitong P, Erez O, Conde-Agudelo A, **Gomez-Lopez N**, Berry SM, Meyyazhagan A, Yoon BH. [Clinical chorioamnionitis at term: definition, pathogenesis, microbiology, diagnosis, and treatment.](#) Am J Obstet Gynecol. 2024 Mar;230(3S):S807-S840. doi: 10.1016/j.ajog.2023.02.002. Epub 2023 Mar 21. PMID: 38233317.

*Labs in bold.



BEST PAPER AWARD

Sicheng Wang, PhD, Staff Scientist in the **Wang Lab**, is the winner of the inaugural CRepHS Best Paper Award!

[Read the winning paper here.](#)

Email audreyj@wustl.edu for more info.



COLLABORATIONS

(from fiscal quarter three)

CRepHS COLLABORATION MEETINGS



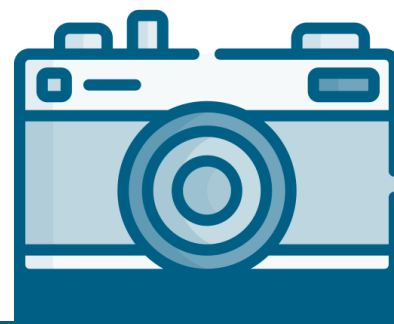
On January 19th: A **Baby Shower** for (L-R) Drs. Toni Frolova, Maggie Mullen, and Erin Reinl.



On March 29th: **Game Table Tournament**. Thanks to the Wellness Champion Fund from WashU Human Resources, the CRepHS breakroom received a new game table. A bit of friendly competition helped determine the champions (Table Tennis: **Yong Wang, PhD**, Professor; Foosball: **Kevin Prifti**, PhD student in the Frolova lab; Air Hockey: **Sue Boss-Miller**, Clinical Lab Supervisor).



On February 29th: A **Chinese New Year Celebration** complete with decorations, appetizers, desserts, chats on culture, and more!



We welcome new faces and collaborations! The next meeting takes place this summer. Contact [Audrey Johnston](#) to learn more.

SOCIAL CONNECTIONS



X (formerly Twitter)

[@DKhabeleMD](#)

[@Englandsk785](#)

[@FarnersRiera](#)

[@FrolovaToni](#)

[@MaggieMullenLab](#)

[@nardhygomez](#)

[@santi_lab](#)

[@WashU_OBGYN](#)

[@yongwangwashu](#)



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SUBMIT YOUR PUBLICATION

CRepHS is currently soliciting papers for our new quarterly **“BEST PAPER AWARD!”** Email audreyj@wustl.edu for more info.



SUBMIT YOUR NEWS

News for consideration is always welcome! Please share it with Audrey Johnston, MBA.

CONTACT CRepHS

Visit our website at reproductivesciences.wustl.edu or email questions and feedback related to CRepHS to audreyj@wustl.edu.

About CRepHS

The [Center for Reproductive Health Sciences](#) (CRepHS) aims to improve the overall health of women and men by making reproductive health a priority in investigative and translational science. As the basic science division of Washington University School of Medicine’s [Department of Obstetrics and Gynecology](#), CRepHS’ research productivity is accomplished through highly collaborative interdisciplinary lab environments.

The Center’s current research emphasis includes basic biology of reproductive health; multiple approaches to developmental biology with concentrations in cell biology, animal models, and genetics; studies of healthy human development; developmental endocrinology; neurosciences; translational imaging; medical device development; reproductive cancers; and population health research.