CSDB
Collaborative Specialization in Developmental Biology

UNIVERSITY OF TORONTO

Volume 15, Issue 3 May 2022

Greetings everyone!

Writing this as warmer and sunnier weather hits us, forecasting brighter times ahead. In particular, I am very excited about our first **in-person** Retreat in over 2 years and our return to The Old Mill this **May 31st**. A detailed schedule is included, and the day will involve talks from students and postdoctoral fellows in CSDB labs, a roundtable session where various topics of interest to our students will be discussed, coffee and lunch breaks for discussion and a joint poster/social session. In a lead-up to the Retreat, our next student-invited seminar will be given by **Dr. Elena Ezhkova** on **May 25th**. Students – attendance at these events is a key part of your program!

A reminder that I am aiming to incorporate postdoctoral researchers into our program – please encourage postdocs in your lab to contact Cindy and join our e-mail list. I would like to develop events where postdocs take leadership roles AND get to bolster their "teaching" portfolio at the same time. This will add to a regular, monthly series of events we are developing for 2022/23.

In the past few months Drs. **Chloe Rose** (PhD, Ciruna lab) and **Negar Nasirzadeh** (PhD, Brill lab) have graduated. Congratulations, and all the best on your next endeavours! A warm welcome to new members of CSDB: **Matthew Chang** (PhD, Protze lab), **Samantha Steiner-Mayman** (MSc, Ciruna lab), **Leo Xu** (MSc, Harris lab), **Veronica Castle** (MSc, Fernandez-Gonzalez lab) and **Rowan Naidoo** (MSc, Harris lab).

Best,

Ian

PS – a special thanks to **Jonathan Palozzi** for putting together this month's featured interview of our CSDB alum **Wendy Cao**.

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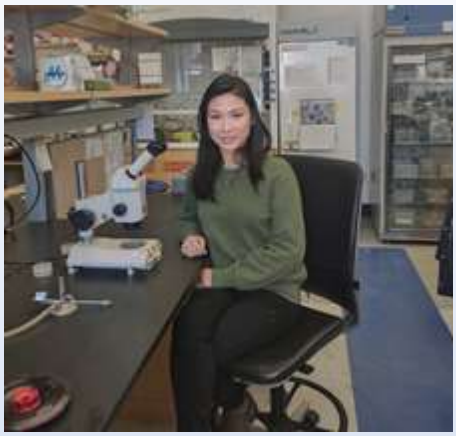
CSDB ALUMNI PROFILE: Dr. Wendy Cao



When grad school gets tough, it's helpful to remember what lays on the other side. I caught up with Dr. Wendy Cao, a recent graduate of the CSDB program, for her thoughts on life after grad school.

Dr. Cao has a deep appreciation of model organisms and developmental biology. Her love started in undergrad, where she learned first worked with worms in the Claycomb lab. Knowing she was dedicated to model organism research, Dr. Cao was determined learn more about Drosophila development. To this end, she joined the Lipshitz lab where she aimed to understand the molecular mechanisms of the maternal to zygotic transition. In a detailed proteomic study, Dr. Cao found distinct temporal patterns of protein expression in the early Drosophila embryo (Cao et al. 2020). In her thesis, Dr. Cao described the precise temporal regulation of some of these proteins, such as the translational repressor Smaug, by various E3-ubquitin ligase complexes. She also identified the novel F-box protein Bard which is required for Smaug's degradation (Cao et al. 2022). For her impressive work, Dr. Cao received the prestigious Barbara Vivash award for an outstanding thesis in the Department of Molecular Genetics.

Upon completing her thesis, Dr. Cao wished to continue in academia. She moved to the Hobert lab at Columbia where she returned to her first model organism love, the worm. There she is studying the early embryonic development of the pharyngeal nervous system, and using cutting-edge imaging technology to visualize nerve development and synapse formation in real time. With these advanced tools in a streamlined biological system, she will be able to probe deeper into the genetic mechanisms underpinning neurodevelopment.

Dr. Cao remembers her time in Toronto fondly and credits the CSDB program with shaping her career as a scientist to this day. She loves how the program fostered a strong interdepartmental network, something she notes, in hindsight, is a unique strength of Toronto. The structure of the CSDB program, with its course, talks, and retreats, brought people from across the University of Toronto together over a shared interest in development. This thematic connection welded closer scientific and collaborative bonds than could be wrought within any one given department. This fostered in Dr. Cao a scientific curiosity to keep asking interesting biological questions, and further encouraged her pursuit of academic science to this day. The CSDB program wishes Dr. Cao the best of luck in the Hobert lab, and we look forward to seeing where science takes her!

-Jonathan Palozzi

Publications:

Cao, W.X., Karaiskakis, A., Lin, S., Angers, S., Lipshitz, H.D. (2022) THe F-box protein Bard (CG14317) targets the Smaug RNA-binding protein for destruction during the Drosophila maternal-to-zygotic transition. Genetics 220(1)

Cao, W.X., Kabelitz, S., Gupta, M., Yeung, E., Lin, S., Rammelt, C., Ihling, C., Pekovic, F., Low, T.C.H., Siddiqui, N.U., Cheng, M.H.K., Angers, S., Smibert, C.A., Wühr, M., Wahle, E., Lipshitz, H.D. (2020) Precise temporal regulation of post-transcriptional repressors is required for an orderly Drosophila maternal-to-zygotic transition. Cell Reports 31, 107783

ANNUAL SCIENTIFIC RETREAT 2022
TUESDAY, MAY 31ST
Old Mill Inn, Toronto, Ontario

9:00 am	Breakfast and Registration
Session 1	**Chair: Tony Harris**
9:30 am	**Gordana Scepanovic** (Fernandez-Gonzalez lab) *p38-mediated cell growth is critical for rapid embryonic wound closure*
9:55 am	**Evelyne Collignon** (postdoc, Ramalho-Santos lab) *RNA m^6A methylation orchestrates transcriptional dormancy during paused pluripotency*
10:20 am	**Denise Rebello** (Ciruna lab) *Investigating the role of collagen 11a2 in vertebral development and congenital scoliosis*
10:45 am	Coffee Break
Session 2	**Chair: Ashley Bruce**
11:00 am	**Katy Rothenberg** (postdoc, Fernandez-Gonzalez lab) *Rap1 controls the adhesion and cytoskeletal rearrangements that drive rapid embryonic wound repair*
11:25 am	**Sabrina Chau** (Meneghini lab) *Mitochondrial-driven innate immunity protects budding yeast from lethal viral pathogenesis*
11:50 am	**Masha Brooun** (postdoc, Culotti/McNeill labs) *New insights into the axis formation of basal metazoan Hydra*
12:15 pm	Lunch
1:15 pm	**Round table discussions** (3 x 20 minutes, pick your tables!) Coffee and desserts
Session 3	**Chair: Brian Ciruna**
2:15 pm	**Haoyu Wan** (Bruce lab) *Investigating actin and microtubule cytoskeletal interactions in the yolk cell during zebrafish epiboly*
2:40 pm	**Jonathan Palozzi** (Hurd lab) *A novel programmed mitophagy drives mtDNA quality control in the Drosophila ovary*
3:05 pm	**Ho-Sung Rhee** (CSB) *Genomic mechanisms of gene regulation in the mammalian nervous system*
3:30–5:30 pm	**Poster Session and Social Mixer** (light food and refreshments) **Prizes** for best posters and/or seminar presentations

Selected Publications

Aghazadeh Y, Sarangi F, Poon F, Nkennor B, McGaugh EC, Nunes SS, **Nostro M** (2022) *GP2-enriched pancreatic progenitors give rise to functional beta cells in vivo and eliminate the risk of teratoma formation* **Stem Cell Reports** Apr 12;17(4):964-978.

Baghdadi MB, **Kim TH** (2022) *Analysis of mouse intestinal organoid culture with conditioned media isolated from mucosal enteric glial cells* **STAR Protoc** Apr 28;3(2):101351.

Espinosa KG, Geissah S, Groom L, Volpatti J, **Scott IC,** Dirksen RT, Zhao M, **Dowling JJ** (2022) *Characterization of a novel zebrafish model of SPEG-related centronuclear myopathy* **Dis Model Mech** May 1;15(5):dmm049437.

Hunt E, Rai H, **Harris TJC** (2022) *SCAR/WAVE complex recruitment to a supracellular actomyosin cable by myosin activators and a junctional Arf-GEF during Drosophila dorsal closure* **Mol Biol Cell** Apr 27:mbcE22030107.

Jaura R, Yeh SY, Montanera KN**, Ialongo A,** Anwar Z, Lu Y, Puwakdandawa K, **Rhee HS** (2022) *Extended intergenic DNA contributes to neuron-specific expression of neighboring genes in the mammalian nervous system* **Nat Commun** May 18;13(1):2733.

Martin CJ, Calarco JA (2022) *Approaches for CRISPR/Cas9 Genome Editing in C. elegans* **Methods Mol Biol** 2468:215-237.

Pang W, Chehaitli H, **Hurd TR** (2022) *Impact of asymptomatic COVID-19 carriers on pandemic policy outcomes* **Infect Dis Model** Mar;7(1):16-29.

Simões S, Lerchbaumer G, Pellikka M, Giannatou P, Lam T, Kim D, Yu J, **Ter Stal D, Al Kakouni K, Fernandez-Gonzalez R, Tepass U** (2022) *Crumbs complex-directed apical membrane dynamics in epithelial cell ingression* **J Cell Biol** Jul 4;221(7):e202108076.

Song M, Yuan X, Racioppi C, **Leslie M, Stutt N,** Aleksandrova A, Christiaen L, Wilson MD, **Scott IC** (2022) *GATA4/5/6 family transcription factors are conserved determinants of cardiac versus pharyngeal mesoderm fate* **Sci Adv** Mar 11;8(10):eabg0834.

Thulasiram MR, Ogier JM, **Dabdoub A** (2022) *Hearing Function, Degeneration, and Disease: Spotlight on the Stria Vascularis* **Front Cell Dev Biol** Mar 4;10:841708.

Varma R, Poon J, Liao Z, Aitchison JS, Waddell TK, Karoubi G, **McGuigan AP** (2022) *Planar organization of airway epithelial cell morphology using hydrogel grooves during ciliogenesis fails to induce ciliary alignment* **Biomater Sci**Jan 18;10(2):396-409.

Veitch S, Njock MS, Chandy M, Siraj MA, Chi L, Mak H, Yu K, Rathnakumar K, Perez-Romero CA, Chen Z, Alibhai FJ, Gustafson D, Raju S, Wu R, Zarrin Khat D, Wang Y, Caballero A, Meagher P, Lau E, Pepic L, Cheng HS, Galant NJ, Howe KL, Li RK, Connelly KA, Husain M, **Delgado-Olguin P, Fish JE** (2022) *MiR-30 promotes fatty acid beta-oxidation and endothelial cell dysfunction and is a circulating biomarker of coronary microvascular dysfunction in pre-clinical models of diabetes* **Cardiovasc Diabetol** Feb 24;21(1):31.

Wang H, **Zúñiga-Pflücker JC** (2022) T*hymic Microenvironment: Interactions Between Innate Immune Cells and Developing Thymocytes* **Front Immunol** Apr 8;13:885280.

Willis AR, **Reinke AW** (2022) *Factors That Determine Microsporidia Infection and Host Specificity* **Exp Suppl** ;114:91-114.

Willis AR, Tamim El Jarkass H, **Reinke AW** (2022) *Studying Inherited Immunity in a Caenorhabditis elegans Model of Microsporidia Infection* **J Vis Exp** Apr 6;(182).

Wood V, Sternberg PW, **Lipshitz HD** (2022) *Making biological knowledge useful for humans and machines* **Genetics** Apr 4;220(4):iyac001.

Wu NC, Cadavid JL, Tan X, Latour S, Scaini S, Makhijani P, McGaha TL, Ailles L, **McGuigan AP** (2022) *3D microgels to quantify tumor cell properties and therapy response dynamics* **Biomaterials** Apr;283:121417.