

# Kyle M. Loh

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## Research Overview

We are charting a developmental roadmap encompassing how dozens of different human cell-types arise from pluripotent stem cells. By applying this knowledge, we endeavor to create pure populations of specific human cell-types from pluripotent stem cells, thereby creating a foundation for regenerative medicine and to model various human diseases. Regarding the latter, we are currently focusing on which human cell-types are infected by deadly biosafety level 4 viruses and the cellular effects of such viruses.

## Training & Appointments

2021-Current Guest Researcher, Center for Biological Threats & Special Pathogens, Robert Koch Institute  
2018-Current Assistant Professor and The Anthony DiGenova Endowed Faculty Scholar, Stanford University  
*Department of Developmental Biology and Institute for Stem Cell Biology & Regenerative Medicine*  
2016-2018 Siebel Investigator and Instructor, Stanford University  
2011-2016 Ph.D., Developmental Biology, Stanford University (Advisor: Prof. Irving Weissman)  
2010-2011 Intern, Genome Institute of Singapore, A\*STAR (Advisor: Prof. Bing Lim)  
2007-2010 B.A., Cell Biology & Neuroscience *summa cum laude*, Rutgers University (Advisor: Dale Woodbury)  
2008-2009 Intern, Harvard Stem Cell Institute (Advisors: Prof. Kevin Eggan and Prof. Douglas Melton)  
2006-2007 Undergraduate, County College of Morris

## Fellowships & Awards

2023 Best Short Presentation, Gordon Research Conference on Vascular Cell Biology  
2019 Packard Fellowship for Science and Engineering (22 selected from across the U.S.)  
2019 Pew Biomedical Scholar (22 selected from across the U.S.)  
2019 Human Frontier Science Program Young Investigator (9 teams selected worldwide)  
2018 The Anthony DiGenova Endowed Faculty Scholar at Stanford University  
2018 Forbes 30 Under 30  
2018 Donald and Delia Baxter Foundation Faculty Scholar  
2018 Fannie and John Hertz Foundation Thesis Prize (1 selected from across the U.S.)  
2017 NIH Director's Early Independence Award (DP5) (11 selected from across the U.S.)  
2016 Siebel Investigatorship  
2016 A\*STAR Investigatorship (declined) (2 selected worldwide)  
2015 Harold Weintraub Graduate Award, Fred Hutch Cancer Research Center (13 selected worldwide)  
2011 Hertz Foundation Graduate Fellowship (15 selected from across the U.S.)  
2011 U.S. National Science Foundation Graduate Research Fellowship  
2010 Davidson Laureate Fellowship (3 selected from across the U.S.)  
2010 A\*STAR Singapore International Pre-Graduate Award (for 1-year research internship abroad)  
2007-2010 Rutgers University School of Arts & Sciences Excellence Award  
2008 Harvard Stem Cell Institute Internship Program  
2007 Research & Development Council of New Jersey Scholarship (for community college)

## Publications (Research Articles)

\*Co-first authors; \*\*Co-second authors; †Co-senior/corresponding authors

Updated November 2023

1. Azizoglu DB, Perez K, Zheng SL, Rahman S, Rim EY, Anbarchian T, Fish M, **Loh KM**, Red-Horse K, Nusse R (2023). Liver size is predetermined in the neonate by adding lobules at the periphery. *bioRxiv*.
2. Vijayakumar S\*, Sala R\*, Kang G\*, Chen A, Pablo MA, Adebayo AI, Cipriano A, Fowler JL, Gomes DL, Ang LT, **Loh KM**†, Sebastiano V† (2023). Monolayer platform to generate and purify primordial germ-like cells in vitro provides insights into human germline specification. *Nature Communications* 14: 5690.
3. Shah PP\*, Keough KC\*, Gjoni K\*, Santini GT, Abdill RJ, Wickramasinghe NM, Dundes CE, Karnay A, Chen A, Salomon REA, Walsh PJ, Nguyen SC, Whalen S, Joyce EF, **Loh KM**, Dubois N, Pollard KS†, Jain R† (2023). An atlas of lamina-associated chromatin across twelve human cell types reveals an intermediate chromatin subtype. *Genome Biology* 24: 16.
4. Genuth NR, Shi Z, Kunimoto K, Hung V, Xu AF, Kerr CH, Tiu GC, Oses-Prieto JA, Salomon-Shulman REA, Axelrod JD, Burlingame AL, **Loh KM**, Barna M (2022). A stem cell roadmap of ribosome heterogeneity reveals a function for RPL10A in mesoderm production. *Nature Communications* 13: 5491.
5. Gonzalez-Perez D, Das S, Antfolk D, Ahsan HS, Medina E, Dundes CE, Jokhai RT, Egan ED, Blacklow SC, **Loh KM**, Rodriguez PC, Luca VC (2022). Affinity-matured DLL4 ligands as broad-spectrum modulators of Notch signaling. *Nature Chemical Biology* 19: 9-17.
6. Roodgar M, Suchy FP, Nguyen LH, Bajpai VK, Sinha R, Vilches-Moure JG, Van Bortle K, Bhadury J, Metwally A, Jiang L, Jian R, Chiang R, Oikonomopoulos A, Wu JC, Weissman IL, Mankowski JL, Holmes S, **Loh KM**, Nakauchi H†, VandeVoort CA†, Snyder MP† (2022). Chimpanzee and pig-tailed macaque iPSCs: Improved culture and generation of primate cross-species embryos. *Cell Reports* 40: 111264.
7. Ang LT\*, Nguyen A\*, Liu KJ\*, Chen A\*\*, Xiong XC\*\*, Curtis M, Martin RM, Raftry BC, Ng CY, Vogel U, Lander A, Lesch BJ, Fowler JL, Holman AR, Chai T, Vijayakumar S, Suchy FP, Nishimura T, Bhadury J, Porteus MH, Nakauchi H, Cheung C, George SC, Red-Horse K, Prescott JB†, **Loh KM**† (2022). Generating human artery and vein cells from pluripotent stem cells highlights the arterial tropism of Nipah and Hendra viruses. *Cell* 185: 2523-2541.  
*Featured in [Nature Methods](#) and [Stanford Medicine News](#)*
8. Chang CY\*, Shipony Z\*, Lin SG, Kuo A, Xiong X, **Loh KM**, Greenleaf WJ, Crabtree GR (2021). Increased ACTL6A occupancy within mSWI/SNF chromatin remodelers drives human squamous cell carcinoma. *Molecular Cell* 81: 4964-4978.
9. Raftrey B, Williams M, Rios Coronado PE, Fan X, Chang AH, Zhao M, Roth R, Trimm E, Racelis R, D'Amato G, Phansalkar R, Nguyen A, Chai T, Gonzalez KM, Zhang Y, Ang LT, **Loh KM**, Bernstein D, Red-Horse K (2021). Dach1 Extends Artery Networks and Protects Against Cardiac Injury. *Circulation Research* 129:702-716.
10. Martin RM\*, Fowler JL\*, Cromer MK, Lesch BJ, Ponce E, Uchida N, Wiebking V, Nishimura T, Porteus MH†, **Loh KM**† (2020). Genome edited orthogonal safeguards to improve the safety of human pluripotent stem cell-based therapies. *Nature Communications* 11: 2713.
11. Roth JG\*, Muench KL\*, Asokan A, Mallett VM, Gai H, Verma Y, Weber S, Charlton C, Fowler JL, **Loh KM**, Dolmetsch RE, Palmer TD (2020). Copy Number Variation at 16p11.2 Imparts Transcriptional Alterations in Neural Development in an hiPSC-derived Model of Corticogenesis. *eLife* 9: e58178.
12. Cui KW\*, Engel L\*, Dundes CE, Nguyen TC, **Loh KM**†, Dunn AR† (2020). Spatially controlled stem cell differentiation via morphogen gradients: a comparison of static and dynamic microfluidic platforms. *Journal of Vacuum Science & Technology A* 38: 033205.
13. Wilkinson AC, Ishida R, Kikuchi M, Sudo K, Morita M, Crisostomo RV, Yamamoto R, **Loh KM**, Nakamura Y, Watanabe M, Nakauchi H, Yamazaki S (2019). Long-term *ex vivo* haematopoietic-stem-cell expansion allows nonconditioned

transplantation. *Nature* 571:117-121.

14. George BM, Kao KS, Kwon HS, Velasco BJ, Poyser J, Chen A, Le AC, Chhabra A, Burnett CE, Cajuste D, Hoover M, **Loh KM**, Shizuru JA, Weissman IL (2019). Antibody conditioning enables MHC-mismatched hematopoietic stem cell transplants and organ graft tolerance. *Cell Stem Cell* 25, 185-192.
15. Ang LT, Tan AKY, Autio MI, Goh SH, Choo S, Lee KL, Tan J, Pan B, Lee JJ, Lum JJ, Lim Y, Yeo K, Wong J, Oh L, Chia P, Chen A, Chen QF, Weissman IL, Loh KM†, Lim B† (2018). A roadmap for human liver differentiation from pluripotent stem cells. *Cell Reports* 22, 2190–2205.
16. Allen WE\*, DeNardo LA\*, Chen MZ\*, Liu CD, **Loh KM**, Fenno LE, Ramakrishnan C, Deisseroth K†, Luo L† (2017). Thirst-associated preoptic neurons encode an aversive motivational drive. *Science* 357: 1149-1155.
17. Brown K\*, **Loh KM\***, Nusse R (2017). Live imaging reveals that the first division of differentiating human embryonic stem cells often yields asymmetric fates. *Cell Reports* 21: 301-307.
18. Nichane M, Javed A, Sivakamasundari V, Ganesan M, Ang LT, Kraus P, Lufkin T, **Loh KM†**, Lim B† (2017). Isolation and expansion of Sox9<sup>+</sup> mouse embryonic lung progenitors that generate both airway and alveolar lineages. *Nature Methods* 14, 1205-1212.  
*Featured in [Stanford Medicine News](#)*
19. **Loh KM\***, Chen A\*, Koh PW, Deng T, Sinha R, Tsai JM, Barkal AA, Shen KY, Jain R, Morganti RM, Ng SC, Fernhoff NB, George BM, Wernig G, Salomon RAE, Chen Z, Vogel H, Epstein JA, Kundaje A, Talbot WS, Beachy PA, Ang LT†, Weissman IL† (2016). Mapping the pairwise choices leading from pluripotency to human bone, heart, and other mesoderm cell types. *Cell* 166: 451-67.  
*Featured in the [NIH Director's Blog](#), [Stanford Medicine News](#), [San Jose Mercury News](#) and [Fierce Biotech](#); accompanying [Cell Press Video Abstract](#) (one paper selected per issue); and [Preview](#) by Kyba (2016), *Cell Stem Cell* 19: 146-8.*
20. Cheng H, Ang HYK, Farran CAEL, Li P, Fang H, Liu T, Kong SL, Chin ML, Lim EKH, Li H, Huber H, **Loh KM**, Loh YH, Lim B (2016). Reprogramming mouse fibroblasts into engraftable myeloerythroid and lymphoid progenitors: induction and underlying mechanisms. *Nature Communications* 7: 13396.
21. Masaki H, Kato-Itoh M, Umino A, Sato H, Ito K, Yanagida A, Hirabayashi M, Sasaki E, Yamaguchi T, **Loh KM**, Weissman IL, Nakauchi H (2016). Inhibition of apoptosis overcomes stage-related compatibility barriers to chimera formation in mouse embryos. *Cell Stem Cell* 19: 587-592.
22. Koh PW\*, Sinha R\*, Barkal AA, Morganti RM, Chen A, Weissman IL†, Ang LT†, Kundaje A†, **Loh KM†** (2016). An atlas of transcriptional, chromatin accessibility, and surface marker changes in human mesoderm development. *Scientific Data* 3: 160109.
23. Durruthy-Durruthy J, Briggs SF, Awe J, Ramathal CY, Karumbayaram S, Lee PC, Heidmann JD, Clark A, Karakikes I, **Loh KM**, Wu JC, Hoffman AR, Byrne J, Reijo Pera RA, Sebastiano V (2014). Rapid and efficient conversion of integration-free human induced pluripotent stem cells to GMP-grade culture conditions. *PLoS ONE* 9: e94231.
24. **Loh KM\***, Ang LT\*, Zhang J\*\*, Kumar V\*\*, Ang J, Auyeong JQ, Lee KL, Choo SH, Lim CY, Nichane M, Tan J, Noghabi MS, Azzola L, Ng ES, Durruthy-Durruthy J, Sebastiano V, Poellinger L, Elefanty AG, Stanley EG, Chen Q, Prabhakar S, Weissman IL, Lim B (2014). Efficient endoderm induction from human pluripotent stem cells by logically directing signals controlling lineage bifurcations. *Cell Stem Cell* 14: 237-52.  
*Featured in [A\\*STAR Research](#)*
25. Chan CK\*, Lindau P\*, Jiang W\*, Chen JY, Zhang LF, Chen CC, Seita J, Sahoo D, Kim JB, Lee A, Park S, Nag D, Gong Y, Kulkarni S, Luppen CA, Theologis AA, Wan DC, DeBoer A, Seo EY, Vincent-Tompkins JD, **Loh K**, Walmsley GG, Kraft DL, Wu JC, Longaker MT, Weissman IL (2013). Clonal precursor of bone, cartilage, and hematopoietic niche stromal

cells. *Proc Natl Acad Sci USA* 110: 12643-8.

26. Ichida JK\*, Blanchard J\*, Lam K\*, Son EY\*, Chung JE, Egli D, **Loh KM**, Carter AC, Di Giorgio FP, Koszka K, Huangfu D, Akutsu H, Liu DR, Rubin LL, Eggan K (2009). A small molecule inhibitor of TGF- $\beta$  signaling replaces Sox2 in reprogramming by inducing *Nanog*. *Cell Stem Cell* 5: 491-503.

## **Publications (Review and Other Articles)**

27. **Loh KM**, Ang LT (2024). Building human artery and vein endothelial cells from pluripotent stem cells, and enduring mysteries surrounding arteriovenous development. *Seminars in Cell and Developmental Biology* 155(Pt C):62-75.
28. Zheng SL, **Loh KM** (2022). Creating artificial signaling gradients to spatially pattern engineered tissues. *Current Opinion in Biotechnology* 78: 102810.
29. Dundes CE, **Loh KM** (2020). Bridging naïve and primed pluripotency. *Nature Cell Biology* 22: 513-515.
30. Fowler JL, Ang LT†, **Loh KM**† (2019). A critical look: challenges in differentiating human pluripotent stem cells into desired cell-types and organoids. *WIREs Developmental Biology* 9: e368.
31. **Loh KM**, Palaria A, Ang LT (2019). Efficient differentiation of human pluripotent stem cells into liver cells. *Journal of Visualized Experiments* 148: e58975.
32. Nichane M, **Loh KM** (2018). Obliterating obstacles to an odyssey. *Cell Stem Cell* 23: 313-15.
33. Tan AKY, **Loh KM**, Ang LT (2017). Evaluating the regenerative potential and functionality of human liver cells in mice. *Differentiation* 98: 25-34.
34. **Loh KM**\*, van Amerongen R\*, Nusse R (2016). Generating spatial form and cellular diversity: Wnt signaling and the evolution of multicellular animals. *Developmental Cell* 38: 643-655.
35. **Loh KM**, Lim B, Ang LT (2015). Ex uno plures: molecular designs for embryonic pluripotency. *Physiological Reviews* 95: 245-295.
36. **Loh KM**, Lim B (2015). Equilibrium established. *Nature* 521: 299-300.
37. Roberts RM, **Loh KM**, Amita M, Bernardo AS, Adachi K, Alexenko AP, Schust DJ, Schulz LC, Telugu BP, Ezashi T, Pedersen RA (2014). Differentiation of trophoblast cells from human embryonic stem cells: to be or not to be? *Reproduction* 147: D1-D12.
38. Clevers H, **Loh KM**, Nusse R (2014). An integral program for tissue renewal and regeneration: Wnt signaling and stem cell control. *Science* 346: 1248012.
39. **Loh KM**, Lim B (2013). Rejuvenating Tithonus. *EMBO Reports* 14: 583-4.
40. **Loh KM**, Lim B (2013). Close encounters with full potential. *Nature* 502: 41-42.
41. Heng DJC, **Loh KM**, Ng HH (2012). Investigating the *bona fide* differentiation capacity of human pluripotent stem cells. *Cell Research* 22: 6-8.
42. **Loh KM**, Lim B (2012). Actors in the cell reprogramming drama. *Nature* 488: 599-600.
43. **Loh KM**, Lim B (2011). A precarious balance: pluripotency factors as lineage specifiers. *Cell Stem Cell*.  
Featured in *Editorial* “Our top 10 developments in stem cell biology over the last 30 years” by Armstrong et al., 2012; *Stem Cells* 30: 2-9.
44. **Loh KM**, Lim B (2010). Recreating pluripotency? *Cell Stem Cell* 7: 137-9.

## **Publications (Books and Newspapers)**

Updated November 2023

45. **Loh KM**, Lim B, Ang LT (2015). Stem cell genomics: developmental competence. *Principles and Practice of Genomic Medicine (2nd Edition)* by Oxford University Press.

46. **Loh KM\***, Soh BS\*, Tam WL, Lim B (2010). Molecular principles underlying the pluripotency and differentiation of embryonic stem cells. *Stem Cells: From Bench to Bedside (2nd Edition)* by World Bioscience.

47. **Loh KM**, Lim B (2010). Fears are based on biological myths. *The Straits Times* newspaper (Nov 8, 2010 issue).

## Patent Applications

1. Compositions comprising neurons and methods of using the same. Provisional application 63/579,830.
2. Generating populations of human blood and blood vessel progenitors from pluripotent stem cells. Provisional application 63/471,931.
3. Metabolic selection for glycogen-storing cells *in vitro*. Provisional application 63/445,956.
4. Generating populations of human blood and blood vessel progenitors from pluripotent stem cells. PCT/US2021/026024.
5. Generation of primordial germ cells and methods of using the same. PCT/US2021/034925.
6. Orthogonal safety switches to eliminate genetically engineered Cells. PCT/US2021/018882.
7. Use of polyvinyl alcohol for cell culture of immune cells. PCT/US2020/065103.
8. Producing mesodermal cell types and methods of using the same. PCT/US2016/020488.
9. Methods of differentiating stem cells into liver cell lineages. PCT/SG2015/050359.
10. Methods of differentiating stem cells into one or more cell lineages. PCT/SG2013/000453.

## Teaching

**STEMREM201A (Stem Cell Biology & Regenerative Medicine)**: Autumn 2015-2017 (Lecturer), 2018-2023 (Co-Director)  
Leader of revised course to teach the principles of stem cell and developmental biology to Stanford Ph.D. students, M.D. students and undergraduates. Created new curriculum that challenges students to reconstruct the historical experiments that led to major discoveries in stem cell and developmental biology. In each lecture, students are posed a question—for instance, how to discover what initiates symmetry breaking in the gastrulating embryo—and are asked to devise step-by-step the experiments they would perform to address this question, before being shown how the very same question was solved by pioneers in the field. Presented or prepared 10 out of 17 total lectures and led 3 discussion sections (2018-onwards).

**STEMREM200 (Stem Cell Intensive)**: Autumn 2018-2020 (Co-Director), 2021-2023 (Lecturer)  
Co-leader of revised course to immerse incoming Stanford Ph.D. students in stem cell research. Organized curriculum and laboratory sessions. Presented 1 lecture.

**HUMBIO157 (The Biology of Stem Cells)**: Spring 2017 (Lecturer), 2019 (Co-Director)  
Co-leader of course to teach principles of stem cell biology and regenerative medicine to Stanford undergraduates (2019). Presented 3 lectures on pluripotency, lineage decisions and blood stem cells (2017, 2019).

**DBIO210 (Logic and Circuitry of Multicellular Development)**: Spring 2019-2022 (Lecturer)  
Presented 1 lecture on early embryonic development and led 2 discussion sessions for Stanford Ph.D. students.

**STEMREM202 (Stem Cells & Regenerative Medicine)**: Winter 2017-2022 (Lecturer)  
Presented 1 lecture on pluripotent stem cell differentiation for Stanford Ph.D. students.

**BIO160 (Developmental Biology)**: Winter 2020 (Lecturer)  
Presented 3 lectures on pluripotent and blood stem cells for Stanford undergraduates.

## **IMMUNOL223 (Biology & Disease of Hematopoiesis): Winter 2020–2022 (Lecturer)**

Presented 1 lecture on embryonic blood development and led 1 discussion session for Stanford Ph.D. students.

### **Oral Presentations**

*\*Held virtually*

- 2024 Toronto Aging Biology Symposium (Toronto, Canada)—*pending*  
47th Association for Research in Otolaryngology Annual Midwinter Meeting (Anaheim, CA, USA)—*pending*  
International Society for Stem Cell Research (ISSCR), Cincinnati International Symposium (Cincinnati, OH, USA)—*pending*  
University of California Davis, Department of Biomedical Engineering (Davis, CA, USA)—*pending*  
Kloster Seeon Meeting Angioscience (Seeon, Germany)—*pending*  
86th Annual Meeting of the Japanese Society of Hematology (Kyoto, Japan)—*pending*
- 2023 Gordon Research Conference on Vascular Cell Biology (Ventura, CA, USA)  
Bill and Melinda Gates Foundation, B Cell Therapy Meeting (Seattle, WA, USA)  
RIKEN BDR-CuSTOM Joint Organoid Symposium (Kobe, Japan)  
Cold Spring Harbor Asia Human Development Meeting (Awaji, Japan)  
Pew Biomedical Program Retreat (San Juan, PR, USA)  
Neurogenesis Workshop, Amaranth Foundation (San Francisco, CA, USA)  
University of Georgia (Athens, GA, USA)  
Thymune Therapeutics, Inc. (Cambridge, MA, USA)  
International Society for Stem Cell Research (ISSCR) Meeting 2023 (Boston, MA, USA)  
Davidson Institute Summit (Reno, NV, USA)  
Juvenile Diabetes Res. Foundation Northern California Center of Excellence (San Francisco, CA, USA)\*  
Samsara Biocapital (Palo Alto, CA, USA)  
San José State University (San Jose, CA, USA)  
Cold Spring Harbor Cell State Conversion Meeting (Cold Spring Harbor, NY, USA)  
Vascular Biology 2023, North American Vascular Biology Organization (Newport, RI, USA)  
Bill and Melinda Gates Foundation, B Cell Therapy Meeting (Seattle, WA, USA)\*  
University of Virginia (Charlottesville, VA, USA)  
Juvenile Diabetes Res. Foundation Northern California Center of Excellence (San Francisco, CA, USA)\*
- 2022 Society for Laboratory Automation & Screening International Conference (Boston, MA, USA)\*  
U.S. Centers for Disease Control and Prevention, Viral Special Pathogens Branch (Atlanta, GA, USA)  
International Society for Stem Cell Research (ISSCR) Meeting 2022 (San Francisco, CA, USA)\*  
DSO National Laboratories (Singapore, Republic of Singapore)  
Institute of Molecular and Cell Biology, A\*STAR (Singapore, Republic of Singapore)  
Infectious Diseases Laboratories, A\*STAR (Singapore, Republic of Singapore)  
University of California San Francisco (UCSF), Jonah Platt Seminar (San Francisco, CA, USA)  
Cold Spring Harbor Asia Human Development Meeting, Pre-Meeting Webinar (Awaji, Japan)\*  
Cincinnati Children's Hospital Medical Center (Cincinnati, OH, USA)  
San José State University (San Jose, CA, USA)  
Regenerative Medicine Seminar Series (ReMS), Stanford University (Stanford, CA, USA)  
University of Toronto, From Single-Cells to Tissue Symposium (Toronto, Canada)  
Spinal Muscular Atrophy Foundation (San Diego, CA, USA)\*  
Stanford Diabetes Research Center Annual Diabetes Research Forum (Stanford, CA, USA)  
Amaranth Foundation (San Francisco, CA, USA)\*

- Stanford Ludwig Center for Cancer Stem Cell Research and Medicine (Stanford, CA, USA)
- 2021 Kyoto University, Department of Medicine (Kyoto, Japan)\*  
 Single Ventricle Investigator Meeting, Additional Ventures (Palo Alto, CA, USA)\*  
 Chan-Zuckerberg Biohub, Infectious Disease Initiative (San Francisco, CA, USA)\*  
 Gladstone Institutes, Institute of Cardiovascular Disease (San Francisco, CA, USA)\*  
 National Resilience, Inc. (La Jolla, CA, USA)\*  
 Regenerative Medicine Seminar Series (ReMS), Stanford University (Stanford, CA, USA)\*  
 Memorial Sloan Kettering Cancer Center, Developmental Biology Program (New York City, NY, USA)\*  
 Juvenile Diabetes Res. Foundation Northern California Center of Excellence (San Francisco, CA, USA)\*  
 Stanford Ludwig Center for Cancer Stem Cell Research and Medicine (Stanford, CA, USA)
- 2020 Stanford University, Siebel Stem Cell Institute Workshop (Stanford, CA, USA)  
 Stanford-Gladstone Institute Retreat (Redwood City, CA, USA)  
 Sana Biotechnology, Inc. (Cambridge, MA, USA)  
 Stanford Center for Childhood Brain Tumors (Stanford, CA, USA)\*  
 Additional Ventures Single Ventricle Seminar Series (Palo Alto, CA, USA)\*  
 Stanford University, Pediatric Endocrinology Seminar Series (Stanford, CA, USA)\*  
 Medical University of Graz (Graz, Austria)\*  
 Genentech, Inc. Regeneration Symposium (South San Francisco, CA, USA)\*  
 Juvenile Diabetes Res. Foundation Northern California Center of Excellence (San Francisco, CA, USA)\*
- 2019 UC Berkeley, Siebel Stem Cell Institute Workshop (Berkeley, CA, USA)  
 Merck & Co., Inc. (South San Francisco, CA, USA)  
 Regenerative Medicine Seminar Series (ReMS), Stanford University (Stanford, CA, USA)  
 3rd Stanford Center for Definitive and Curative Medicine Symposium (Stanford, CA, USA)  
 Genentech, Inc. (South San Francisco, CA, USA)  
 Erasmus University Medical Center (Rotterdam, Netherlands)  
 EMBL Barcelona, Spain (Barcelona, Spain)  
 3D Tissue Culture and Organoids Symposium (Okinawa, Japan)  
 Bay Area Stem Cell Conference (Pacific Grove, CA, USA)  
 3rd Stanford-RIKEN Center for Integrative Medical Sciences Symposium—*organizer* (Stanford, CA, USA)  
 VenRock (Palo Alto, CA, USA)  
 5AM Ventures Speaker Series (San Francisco, CA, USA)  
 International Society for Stem Cell Research (ISSCR) Meeting 2019 (Los Angeles, CA, USA)  
 Stanford University, Urology Research Seminar (Stanford, CA, USA)  
 Nanyang Technological University, LKC Medical School (Singapore, Republic of Singapore)  
 Calico Life Sciences, LLC (South San Francisco, CA, USA)  
 Juvenile Diabetes Res. Foundation Northern California Center of Excellence (San Francisco, CA, USA)  
 Stanford Institute for Stem Cell Biology & Regenerative Medicine (Stanford, CA, USA)  
 Augmented Cell Engineering Symposium, University of Tokyo (Tokyo, Japan)  
 42nd Molecular Biology Society of Japan Annual Meeting (Fukuoka, Japan)  
 Stanford Ludwig Center for Cancer Stem Cell Research and Medicine (Stanford, CA, USA)
- 2018 Stanford University, Siebel Stem Cell Institute Workshop (Stanford, CA, USA)  
 Stanford University, Vision (Ophthalmology) Seminar Series (Stanford, CA, USA)  
 Stanford University, Diabetes Research Center Seminar Series (Stanford, CA, USA)  
 Dutch Society for Stem Cell Research (Utrecht, Netherlands)

- Hubrecht Institute/Princess Máxima Center for Pediatric Oncology, Netherlands (Utrecht, Netherlands)  
 2nd Stanford-RIKEN Center for Integrative Medical Sciences Symposium, Japan (Yokohama, Japan)  
 Kyoto University, Center for iPS Cell Research and Application (Kyoto, Japan)  
 Weill Cornell Medicine (New York City, NY, USA)  
 Memorial Sloan Kettering Cancer Center, Developmental Biology Program (New York City, NY, USA)  
 Frontiers in Organoid Medicine Symposium, Cincinnati Children's Hospital (Cincinnati, OH, USA)  
 University of Southern California (Los Angeles, CA, USA)
- 2017 Regenerative Medicine Seminar Series (ReMS), Stanford University (Stanford, CA, USA)  
 San José State University (San Jose, CA, USA)  
 RIKEN Center for Integrative Medical Sciences, Japan (Yokohama, Japan)  
 Stanford University, Center for Definitive and Curative Medicine (Stanford, CA, USA)  
 UC Los Angeles, Department of Biological Chemistry Center (Los Angeles, CA, USA)  
 Fred Hutchinson Cancer Research Center, Clinical Research Division (Seattle, WA, USA)  
 1st Stanford-RIKEN Center for Integrative Medical Sciences Symposium (Stanford, CA, USA)  
 Stanford University, Center for Cell Biology (Stanford, CA, USA)  
 3rd CIRM Annual Stem Cell Genomics Retreat (Stanford, CA, USA)  
 UC Los Angeles, Broad Stem Cell Research Center (Los Angeles, CA, USA)  
 Stanford Institute for Stem Cell Biology & Regenerative Medicine (Stanford, CA, USA)  
 Duke University, Regeneration Next Initiative (Durham, NC, USA)  
 The Rockefeller University (New York City, NY, USA)  
 Fred Hutchinson Cancer Research Center, Basic Sciences Division (Seattle, WA, USA)  
 UC Berkeley, Siebel Stem Cell Institute Workshop (Berkeley, CA, USA)
- 2016 University of Pennsylvania, Institute for Regenerative Medicine (Philadelphia, PA, USA)  
 San José State University, California Inst. for Regen. Medicine Internship Reception (San Jose, CA, USA)  
 NIH Progenitor Cell Biology Consortium HSC Focused Workshop 2016 (Boston, MA, USA)  
 Stem Cell Society Singapore Symposium 2016, Singapore (Singapore, Republic of Singapore)  
 Cincinnati Children's Hospital Medical Center (Cincinnati, OH, USA)  
 A\*STAR Investigatorship Symposium, Singapore (Singapore, Republic of Singapore)  
 International Society for Stem Cell Research (ISSCR) Meeting 2016 (San Francisco, CA, USA)  
 UC Santa Cruz, Department of Biomolecular Engineering (Santa Cruz, CA, USA)  
 Carnegie Institute of Washington, Department of Embryology (Baltimore, MD, USA)
- 2015 Genome Institute of Singapore, A\*STAR (Singapore, Republic of Singapore)  
 Institute of Molecular and Cellular Biology, A\*STAR (Singapore, Republic of Singapore)  
 Stanford Institute for Stem Cell Biology & Regenerative Medicine (Stanford, CA, USA)  
 Stem Cell Research Briefing Session for U.S. Senator Ron Wyden (Portola Valley, CA, USA)  
 UC Berkeley, Siebel Stem Cell Institute Workshop (Berkeley, CA, USA)
- 2014 University of Cambridge Stem Cell Institute (Cambridge, UK)  
 Cambridge Centre for Trophoblast Research Annual Meeting (Cambridge, UK)  
 Center for Genomic Regulation (Barcelona, Spain)  
 Stanford Reproductive and Stem Cell Biology Symposium 2014 (Stanford, CA, USA)
- 2013 Stem Cell Society Singapore Symposium 2013 (Singapore, Republic of Singapore)

## Public and Professional Activities

*Updated November 2023*



2022 Annual Meeting Planning Committee, The Pew Charitable Trusts  
 2022-Current Catalyst Advisory Board, Additional Ventures Foundation  
 2020, 2023 Abstract Review Committee, International Society for Stem Cell Research (ISSCR)  
 2020-Current Scientific Advisory Board, Californians for Cures Foundation  
 2015-2018 Scientific Advisory Board, Americans for Cures Foundation

**Ad hoc manuscript reviewer:** *Nature, Cell, Nature Genetics, Cell Stem Cell, Nature Cell Biology, Proc Natl Acad Sci USA, eLife, Cell Reports, PLoS Biology, Stem Cells, Stem Cell Reports, Stem Cell Research, Genome Biology, FASEB J, iScience, Nature Communications, ACS Biomaterials Science & Engineering, Development Growth and Differentiation, Review Commons, Cell Reports Methods*

**Grant or award reviewer:** Stanford Maternal and Child Health Research Institute, Genome British Columbia, European Research Council, UK Medical Research Council, Genentech, Inc., Additional Ventures Foundation, Canada Natural Sciences and Engineering Research Council, Dutch Research Council (NWO), Nanyang Technological University, Stanford Diabetes Research Center, Stanford Cancer Institute, L'Oréal Singapore For Women In Science National Fellowship, Davidson Institute for Talent Development, Hertz Foundation, US National Science Foundation

**Scientific consultant or advisor:** Merck Research Laboratories, Sana Biotechnology, VenRock, Versant Ventures, Dimension II, Stately Bio, 48Bio

## Outreach and Diversity Activities

2023 *Stanford Community College Outreach Program (CCOP):* Co-principal investigator of a Packard Foundation DEI Seed Grant that partially funds CCOP, a Stanford program that has provided hundreds of local community college students with research and mentorship opportunities. Successfully nominated trainee leaders of CCOP for the Stanford President's Award for Excellence Through Diversity and Stanford Postdoc Justice, Equity, Diversity, and Inclusion Champion Award.

2023 *Stanford ADVANCE Undergraduate Institute:* "Why consider research?" outreach panel for minority students applying to Ph.D. programs.

2023 *Juvenile Diabetes Research Foundation:* Outreach panel for a general audience about Type 1 diabetes.

2021, 2023 *Davidson Institute for Talent Development:* In-person and virtual classes on stem cell and developmental biology for 5- to 18-year-old students.

2021-2023 *Stanford EXPLORE Lecture:* Summer lecture for high school students.

2021. *Simons Foundation-National Society of Black Physicists:* Outreach panel for minority students applying for Ph.D. fellowships.

2020-2023 *Stanford Developmental Biology Ph.D. Program Outreach Panel:* Outreach panel for prospective Ph.D. applicants, often from underrepresented backgrounds.

2019, 2023 *Thinks & Drinks:* Delivered science outreach presentations for adults in San Francisco.

2018, 2021 *Stanford SIMR Program:* Mentorship of high school interns, often drawn from underrepresented backgrounds.

2015-2018 *Americans for Cures:* Scientific advisor for public outreach efforts to explain stem cell research to the general public using YouTube videos.

## Institutional Service

*Stanford Institute for Stem Cell Biology & Regenerative Medicine*

2022-2022 Executive Committee (formerly Steering Committee), STEMREM Ph.D. Program  
 2020-2022 1<sup>st</sup> Year Ph.D. Student Mentorship Program, STEMREM Ph.D. Program  
 2020 COVID19 Research Recovery Committee, Lokey Stem Cell Research Building

- 2019-Current Graduate Student Awards Committee, STEMREM Ph.D. Program (*founder, committee chair*)
- 2019-Current Organizer, Stanford ISCBRM-RIKEN IMS Annual Symposium
- 2018-2022 Retreat Committee, Institute for Stem Cell Biology & Regenerative Medicine (*founder, committee chair*)
- 2017-Current Admissions Committee, STEMREM Ph.D. Program

*Stanford Department of Developmental Biology*

- 2021-Current Organizer, Dept. of Developmental Biology, Stanford Frontiers in Biology Seminar Series
- 2019-Current 1<sup>st</sup> Year Ph.D. Student Mentorship Program, Developmental Biology Ph.D. Program
- 2018-Current Admissions Committee, Developmental Biology Ph.D. Program

*Other Service*

- 2022-2023 Faculty Search Evaluation Committee, Stanford Department of Biology
- 2022-Current Ad Hoc Member, Limited Submission Grant Review Committee, Stanford Office of the Vice Provost and Dean of Research
- 2021-2022 Faculty Search Committee, Stanford BASE Initiative
- 2020-Current Co-Leader, Immunology, Transplantation and Stem Cells in Diabetes Affinity Group, Stanford Diabetes Research Center
- 2018-Current NIH T32 Training Grant-affiliated Faculty, T32GM007790 (Stanford Genetics and Developmental Biology Training Program); T32HL120824 (Stanford Program in Translational and Experimental Hematology); T32GM119995 (Stanford Graduate Training in Stem Cell Biology and Regenerative Medicine)