Ryan Risgaard

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EDUCATION

2020 – Present **Medical Scientist Training Program**, M.D./Ph.D. Trainee
University of Wisconsin School of Medicine & Public Health (Madison, Wisconsin)

2016 – 2019 **B.S., Biochemistry**
B.S., Neurobiology
University of Wisconsin–Madison (Madison, Wisconsin)
College of Letters and Science

RESEARCH EXPERIENCE

2021 – Present **Graduate Student**, Dr. André Sousa Laboratory, Waisman Center,
University of Wisconsin-Madison

Researching the fundamental molecular and cellular mechanisms that govern human brain development and evolution.

2016 – 2020 **Research Assistant**, Dr. Xinyu Zhao Laboratory, Waisman Center,
University of Wisconsin-Madison

Assisted with research projects studying reactivation of the *FMR1* gene as a therapeutic target of Fragile X Syndrome. Conducted mouse behavior analysis, transcriptomic sequencing, molecular biology experiments, high-throughput drug screening, and neural cell culture.

2016 **Lab Assistant**, UW Human Stem Cell Gene Editing Service, Waisman Center,
University of Wisconsin-Madison

Aided in molecular cloning, stem cell line generation and maintenance for the Waisman Center's Human Stem Cell Gene Editing Service.

RESEARCH PUBLICATIONS

Link to publications: https://pubmed.ncbi.nlm.nih.gov/?term=Risgaard+Ryan
* co-first author

Doll HM*, **Risgaard RD***, Thurston H, Chen RJ, Sousa AMM. Evolutionary Innovations in the Primate Dopaminergic System. *Curr Opin Genet Dev*. 2024; doi: 10.1016/j.gde.2024.102236. PMID: 39153332

Gao Y*, Dong Q*, Arachchilage KH*, **Risgaard RD**, Sheng J, Syed M, Schmidt DK, Jin T, Liu S, Knaack S, Doherty D, Glass I, Levine JE, Wang D, Chang Q, Zhao X, Sousa AMM. Multimodal analyses reveal genes driving electrophysiological maturation of neurons in the primate prefrontal cortex. *bioRxiv.* 2024; doi: 10.1101/2023.06.02.543460. PMID: 37398253

Morrow CS, Tweed K, Farhadova S, Walsh AJ, Lear BP, Roopra A, **Risgaard RD**, Klosa PC, Arndt ZP, Peterson ER, Chi MM, Harris AG, Skala MC, Moore DL Autofluorescence is a biomarker of neural stem cell activation state. *Cell Stem Cell.* 2024; doi: 10.1016/j.stem.2024.02.011. PMID: 38521057

Lear BP, Thompson EAN, Rodriguez K, Arndt ZP, Khullar S, Klosa P, Lu R, Morrow CS, **Risgaard R**, Peterson ER, Teefy B, Bhattacharyya A, Sousa AMM, Wang D, Benayoun B, Moore DL. Age-maintained human neurons demonstrate a developmental loss of intrinsic neurite growth ability. *bioRxiv*. 2023; doi: 10.1101/2023.05.23.541995. PMID: 37292613

Klarić TS, Gudelj I, Santpere G, Novokmet M, Vučković F, Ma S, Doll HM, **Risgaard R**, Bathla S, Karger A, Nairn AC, Luria V, Bečeheli I, Sherwood CC, Ely JJ, Hof PR, Sousa AMM, Josić D, Lauc G, Sestan N. Human-specific features and developmental dynamics of the brain N-glycome. *Science Advances*. 2023. doi: 10.1126/sciadv.adg2615. PMID: 38055821

He C, Kalafut NC, Sandoval SO, **Risgaard RD**, Sirois CL, Yang C, Khullar S, Suzuki M, Huang X, Chang Q, Zhao X, Sousa AMM, Wang D. Brain and Organoid Manifold Alignment (BOMA), a machine learning framework for comparative gene expression analysis across brains and organoids. *Cell Reports Methods*. 2023; doi: 10.1016/j.crmeth.2023.100409. PMID: 36936070

Ma S*, Skarica M*, Li Q, Xu C, **Risgaard RD**, Tebbenkamp ATN, Mato-Blanco X, Kovner R, Krsnik Z, De Martin X, Luria V, Marti-Perez X, Liang D, Karger A, Schmidt DK, Gomez-Sanchez Z, Qi C, Gobeske KT, Pochareddy S, Debnath A, Hottman CJ, Spurrier J, Teo L, Boghdadi AG, Homman-Ludiye J, Ely JJ, Daadi EW, Mi D, Daadi M, Marin O, Hof PR, Rasin MR, Bourne J, Sherwood CC, Santpere G, Girgenti MJ, Strittmatter SM, Sousa AMM, Sestan N. Molecular and cellular evolution of the primate dorsolateral prefrontal cortex. *Science*. 2022; doi: 10.1126/science.abo7257. PMID: 36007006

Hunt JFV, Li M, **Risgaard RD**, Ananiev GE, Wildman S, Zhang F, Bugni TS, Zhao X, Bhattacharya A. High throughput small molecule screen for reactivation of FMR1 in Fragile X Syndrome human neural cells. *Cells*. 2022; 11(1):69. doi: 10.3390/cells11010069. PMID: 35011630

Men Y, Ye L, **Risgaard RD,** Promes V, Zhao X, Paukert M, Yang Y. Astroglial FMRP Deficiency Cell-autonomously Upregulates miR-128 and Disrupts Developmental Astroglial mGluR5 Signaling. *Proc Natl Acad Sci.* 2020; 202014080. doi: 10.1073/pnas.2014080117. PMID: 32958647

Li M, Shin J, **Risgaard RD**, Parries M, Wang J, Chasman D, Liu S, Roy S, Bhattacharyya A, Zhao X. Identification of FMR1-regulated molecular networks in human neurodevelopment. *Genome Research*. 2020; 30(3): 361-374. doi:10.1101/gr.251405.119. PMID: 32179589

PROFESSIONAL PRESENTATIONS

2023 **Risgaard RD**, Ma S, Skarica M, Schmidt DK, Gomez-Sanchez Z, Debnath A, Hottman CJ, Sestan N, Sousa AMM. *Molecular and cellular evolution of interneurons in the primate dorsolateral prefrontal cortex.*

Presented research poster at the Waisman Center's 50th Anniversary Scientific Symposium & Poster Fair. Awarded an honorable mention for best poster competition.

2022 **Risgaard R**, Hunt JFV, Li M, Ananiev G, Wildman S, Zhang F, Bugni TS, Zhao X, Bhattacharyya A. *Development of Human Neural Progenitor Cell Models and High-Throughput Small Molecule Screening for Reactivation of FMR1 in Fragile X Syndrome Human Neural Cells.*

Presented a virtual abstract and poster at the annual conference of the International Society for Stem Cell Research (ISSCR).

2019 Li M, **Risgaard R**, Hunt J, Zhao H, Ananiev G, Musser M, Ness K, Maglaque D, Saha K, Bhattacharyya A, Zhao X. *Using Human Neural Progenitor Cell Models to Conduct Large-Scale Drug Screens for Fragile X Syndrome.*

Presented research poster at the 14th annual Wisconsin Stem Cell Symposium.

2019 Li M, **Risgaard R**, Hunt J, Zhao H, Ananiev G, Musser M, Ness K, Maglaque D, Saha K, Bhattacharyya A, Zhao X. *Using Human Neural Progenitor Cell Models to Conduct Large-Scale Drug Screens for Fragile X Syndrome.*

Co-prepared and presented research poster on FMR1 drug screen project for the 2019 Midwest Fragile X Research Exchange.

2019 Li M, **Risgaard R**, Hunt J, Zhao H, Ananiev G, Musser M, Ness K, Maglaque D, Saha K, Bhattacharyya A, Zhao X. *Using Human Neural Progenitor Cell Models to Conduct Large-Scale Drug Screens for Fragile X Syndrome.*

Presented research poster at the UW-Madison 2019 Undergraduate Research Symposium.

2018 **Risgaard R**, Li M, Hunt J, Zhao X. *High Throughput Drug Screening of FMR1 Gene Reactivation in Human Neural Cells.*

Poster presentation at UW-Madison's Introductory Biology Research Poster Seminar. Presented methodology and preliminary data from FMR1 drug screen project with Dr. Xinyu Zhao's laboratory.

CONFERENCE ATTENDANCE

2024 Evolution and Development of Nervous Systems (University of Zadar, Croatia)

2023 Waisman Center 50th Anniversary Scientific Symposium & Poster Fair

2023 Wisconsin Stem Cell Symposium, Seventeenth Annual

2022 ISSCR 2022 (Annual Meeting of the *International Society for Stem Cell Research*)

2021 Neuroscience 2021 (Annual Meeting of the *Society for Neuroscience*)

2021 Wisconsin Neurosurgery Exposure and Microsurgical Skills Conference

2021 Miami Brain Symposium, Fourth Annual

2019 Neuroscience 2019 (Annual Meeting of the *Society for Neuroscience)*

2019 Wisconsin Stem Cell Symposium, Fourteenth Annual

2019 Midwest Fragile X Research Exchange

RESEARCH AWARDS

2024 Morse Society Scholars Graduate Research Fellowship

2023 Wisconsin Distinguished Graduate Fellowship

2021 University of Wisconsin School of Medicine & Public Health MSTP Research Travel Award

2018 William F. Vilas Merit Award (University of Wisconsin-Madison)

2018 Autism Science Foundation Undergraduate Summer Research Fellowship

2018 Mary Shine Peterson Undergraduate Biochemistry Research Award

2018 National Fragile X Foundation Summer Scholar Research Award

2017 WIScience Summer Scholars Award

2016 Thedacare Regional Medical Center Healthcare Scholarship