

# JING-PING LIN, Ph.D.

NCBI Bibliography: [link](#)

My research aims to dissect the neuroglial regulatory network in the central nervous system (CNS), focusing on developmental, inflammatory, and degenerative disorders. Currently, I am investigating how white matter dynamics impact glial homeostasis using preclinical models of multiple sclerosis (MS). By integrating 3D histopathology, spatial omics, and tool development in marmosets and mice, my research will offer unique insights into the mechanisms driving brain myelinopathy.

## EDUCATION

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| <b>Ph.D.</b> 2018 | <b>Department of Cell &amp; Developmental Biology, University of Michigan Medical School, Ann Arbor, MI, USA.</b> <ul style="list-style-type: none"><li>Dissertation: "From scavenger to metabolic coordinator: novel roles of LRP1 in CNS myelin development and repair"</li></ul> |
| <b>M.S.</b> 2010  | <b>Department of Plant Pathology and Microbiology, National Taiwan University, Taipei, Taiwan.</b> <ul style="list-style-type: none"><li>Thesis: "Cloning and characterization of focal adhesion kinases and their roles in zebrafish embryonic development"</li></ul>              |
| <b>B.S.</b> 2008  | <b>Department of Plant Pathology and Microbiology, National Taiwan University, Taipei, Taiwan.</b>  |

## RESEARCH EXPERIENCES

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| <b>Research Fellow</b><br>2021 – present                  | <b>National Institute of Neurological Disorders and Stroke (NINDS), Bethesda, MD, USA</b> <ul style="list-style-type: none"><li>Advisor: Dr. Daniel S. Reich</li><li>Developed single-cell and spatial omics approaches to identify glial segregation across brain regions of healthy marmoset (Lin et al., <i>Nat Commun</i> 2022) and discovered novel glial populations in chronic active lesions of MS (coauthor, <i>Nature</i> 2021).</li><li>Revamped marmoset experimental autoimmune encephalomyelitis (EAE) immunization protocol to help develop cortical lesion imaging tool (coauthor, <i>Cereb Cortex</i> 2021) and identify imaging/glial markers for the onset of MS-like lesions (Lin et al., <i>bioRxiv</i> 2023)</li></ul>  |
| <b>Visiting Fellow</b><br>2018 – 2021                     |   |
| <b>Graduate Student Research Assistant</b><br>2013 – 2018 | <b>Department of Cell &amp; Developmental Biology, University of Michigan Medical School, Ann Arbor, MI, USA.</b> <ul style="list-style-type: none"><li>Advisor: Dr. Roman Giger</li><li>Developed an unbiased myelin repair assay to uncover the novel role of lipid phosphatase FIG4 in remyelination (coauthor, <i>Hum Mol Genet</i> 2018)</li><li>Implemented primary culture assay to identify how PI(3,5)P2 regulates myelin membrane trafficking (coauthor, <i>eLife</i> 2016) and to uncover a novel role of LRP1 <i>in vivo</i> in regulating cholesterol metabolism and peroxisome biogenesis during oligodendrocyte maturation (Lin et al., <i>eLife</i> 2017)</li><li>Created an image processing pipeline to identify functional correlation between peroxisome subcellular localization and myelination (Lin et al., <i>eLife</i> 2017)</li></ul> |
| <b>Translational Research Assistant</b><br>2010 – 2012    | <b>National Clinical Trial &amp; Research Center, Taipei, Taiwan</b> <ul style="list-style-type: none"><li>Advisor: Dr. Kun-Feng Chen</li><li>Discovered that the level of Bcl-2 determines IAP inhibitor (LCL161) drug resistance in hepatocellular carcinoma (Chen*, Lin*, Shiau* et al., <i>Biochem Pharmacol</i> 2012).</li><li>Found a new targeted therapy by combining LCL161 (Phase II clinical trial, with Novartis) with SC-2001 (novel Bcl-2 inhibitor) treatment to overcome resistance in liver cancer.</li></ul>  |
| <b>Graduate Student Research Assistant</b><br>2008 – 2010 | <b>Institute of Zoology, National Taiwan University, Taipei, Taiwan</b> <ul style="list-style-type: none"><li>Advisor: Drs. Shyh-Jye Lee and Tang-Long Shen</li><li>Cloned zebrafish <i>fak1a</i> and <i>fak1b</i> genes and characterized their functions</li><li>Developed live imaging method to track leading cell migrating rate, velocity, polarity, and cellular protrusions during zebrafish embryo gastrulation (coauthor, <i>Open Biol</i> 2020)</li></ul>  |

## PREPRINTS & MANUSCRIPTS IN PREPARATION

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- Fagiani F, Pedrini E, Martire MS, Gastoldi G, Bulcke VC, [Lin JP](#), Maric D, Brambilla E, Ruffini F, Peri C, Calabresi PA, Maggi P, Panina-Bordignon P, Martino G, Reich DS, Absinta M. "Spatially-restricted inflammation-induced senescent-like glia in multiple sclerosis and patient-derived organoids." *Accepted Nat Commun* 2025
- Mironova YA, Dang B, Heo D, Xu YK, Hsu AY, von Bernhardt EJ, Molina-Castro GC, Kim AA, Muir E, [Lin JP](#), Reich DS, Bergles DE. "Myelin is repaired by cell autonomous differentiation of oligodendrocyte progenitors." *In revision* 2025

## PUBLICATIONS

- [Lin JP\\*](#), Brake A, Donadieu M, Lee A, Smith G, Hu K, Nair G, Kawaguchi R, Sati P, Geschwind DH, Jacobson S, Schafer DP, Reich DS\*. "A 4D transcriptomic map for the evolution of multiple sclerosis-like lesions in the marmoset brain." *Science* 2025 Feb [PMID40014701](#) [DOI](#) (\*co-corresponding author)
- Stillman JM\*, Lopes FM\*, [Lin JP](#), Hu K, Reich DS, Schafer DP. "Lipofuscin-like autofluorescence within microglia and its impact on studying microglial engulfment." *Nat Commun* 2023 Nov [PMID37923732](#) [PMC10624656](#) [DOI](#) (\*equal contribution)
- [Lin JP](#), Kelly HM, Song Y, Kawaguchi R, Geschwind DH, Jacobson S, Reich DS. "Transcriptomic architecture of nuclei in the marmoset CNS." *Nat Commun* 2022 Sep [PMID36130924](#) [PMC9492672](#) [DOI](#)
- Absinta M, Maric D, Gharagozloo M, Garton T, Smith MD, Jin J, Fitzgerald KC, Song A, Liu P, [Lin JP](#), Wu T, Johnson KR, McGavern DB, Schafer DP, Calabresi PA, Reich DS. "A lymphocyte-microglia-astrocyte axis in chronic active multiple sclerosis." *Nature* 2021 Sep [PMID34497421](#) [PMC8719282](#) [DOI](#)
- Donadieu M, Kelly H, Szczupak D, [Lin JP](#), Song Y, Yen CCC, Ye FQ, Kolb H, Guy JR, Beck ES, Jacobson S, Silva AC, Sati P, Reich DS. "Ultrahigh-resolution MRI reveals extensive cortical demyelination in a nonhuman primate model of multiple sclerosis." *Cereb Cortex* 2021 Jan [PMID32901254](#) [PMC7947170](#) [DOI](#)
- Hung IC, Chen TM, [Lin JP](#), Tai YL, Shen TL, Lee SJ. "Wnt5b integrates Fak1a to mediate gastrulation cell movements via Rac1 and Cdc42." *Open Biol* 2020 Feb [PMID32097584](#) [PMC7058935](#) [DOI](#)
- Mironova YA, [Lin JP](#), Kalinski A, Huffman L, Lenk GM, Havton LA, Meisler MH, Giger RJ. "Protective role of the lipid phosphatase Fig4 in the adult nervous system." *Hum Mol Genet* 2018 Jul [PMID29688489](#) [PMC6030899](#) [DOI](#)
- [Lin JP](#), Mironova YA, Shrager P, Giger RJ. "LRP1 regulates peroxisome biogenesis and cholesterol homeostasis in oligodendrocytes and is required for proper CNS myelin development and repair." *eLife* 2017 Dec [PMID29251594](#) [PMC5752207](#) [DOI](#)
- Mironova YA, Lenk GM, [Lin JP](#), Santos L, Seyfried T, Min SH, Abrams CS, Corey JM, Vaccari I, Bolino A, Kawaguchi R, Coppola G, Havton LA, Lee SJ, Twiss J, Shrager P, Meisler MH, Giger RJ. "PI(3,5)P2 biosynthesis regulates oligodendrocyte differentiation by intrinsic and extrinsic mechanisms." *eLife* 2016 Mar [PMID27008179](#) [PMC4889328](#) [DOI](#)
- Chen KF\*, [Lin JP\\*](#), Shiao CW\*, Tai WT, Liu CY, Yu HC, Chen PJ, Cheng AL. "Inhibition of Bcl-2 improves effect of LCL161, a SMAC mimetic, in hepatocellular carcinoma cells." *Biochem Pharmacol* 2012 Aug [PMID22580047](#) [DOI](#) (\*equal contribution)

## GRANTS

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| NMSS career transition award<br>TA-2203-39387<br>2023 Jul – present | • Awarded \$606,065 over five years by the National Multiple Sclerosis Society (NMSS) to support a two-year advanced postdoctoral training and 3-year research support as faculty |
| Foundation for the National<br>Institutes of Health (2023)          | • Awarded \$65,000 by the Edna Williams Curl & Myron R. Curl Endowment for Multiple Sclerosis   |

## HONORS & FELLOWSHIPS

- 2024 – Best Young Investigator Oral Presentation Finalist, ACTRIMS Forum 2024, West Palm Beach, FL
- 2023 – ACTRIMS Educational Grant
- 2022 – NINDS Director's Award, Diversity Achievement, NIH, Bethesda, MD
- 2022 – Young Investigator Award, 2022 Marmoset Bioscience Symposium, La Jolla, CA

## HONORS & FELLOWSHIPS (Cont.)

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- 2019 – Selected participant for the Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Young Scientist Summit in Clinical Neuroimmunology, Savannah, GA
- 2012 – Bradley Merrill Patten Fellowship awardee
- 2008 – Academic Achievement Award from National Taiwan University
- 2007 – Undergraduate Research Fellowship from National Science Council of Taiwan

## TALKS

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2025 Abstract selected	Gordon Research Conference Glial Biology, Ventura, CA “4D marmoset brain map reveals MRI and molecular signatures for onset of MS-like lesions”
2024 Featured talk	10 <sup>th</sup> Tykeson Fellows Conference, Aurora, CO “4D marmoset brain map reveals MRI and molecular signatures for onset of MS-like lesions”
2024 Abstract selected	ACTRIMS Forum 2024, West Palm Beach, FL “Spatiotemporal profiling of senescence-associated secretory phenotype at the brain barriers in a marmoset model of multiple sclerosis”
2023 Invited	Single Cell and Spatial User Group Meeting, NIH, Bethesda, MD “The onset of multiple sclerosis-like lesions in marmoset brain through the lens of longitudinal MRI, digital histopathology, and spatial transcriptomics.”
2023 Invited	NIAID Rocky Mountain Laboratories–NINDS joint research symposium, Hamilton, MT “A 4D transcriptomic map for the evolution of multiple sclerosis-like lesions in the marmoset brain.”
2023 Talk	Adelson Medical Research Foundation’s Program in Neurodegenerative Diseases–Multiple Sclerosis (APND-MD) monthly webinar, virtual “The profile of aged oligodendrocytes in marmoset brains”
2023 Invited	Laboratory of Immunology Seminar Series, NEI, NINDS, NIH, Bethesda, MD “Census ‘matters’ — transcriptomic architecture of nuclei in the marmoset CNS”
2022 Invited	2022 Marmoset Bioscience Symposium, Young Investigator Award, La Jolla, CA “Census ‘matters’— glial cells are shaped by their neighbors.”
2022 Abstract selected	9 <sup>th</sup> Glia in Health & Disease, Cold Spring Harbor, NY “A 4D transcriptomic map for the evolution of multiple sclerosis-like lesions in the marmoset brain.”
2021 Talk	APND-MD monthly webinar, virtual “Mapping the evolution of white matter lesions in EAE marmoset through the lens of transcriptome”
2021 Invited	Neuroimmunology Retreat, Center for Translational and Computational Neuroimmunology & Columbia University Multiple Sclerosis Center, virtual “Microenvironment impacts the molecular architecture and interactivity of resident cells in marmoset brain.”
2020 Talk	APND-MD monthly webinar, virtual “The diversity of brain cells and where to find them: a marmoset atlas with single-nucleus resolution”
2020 Abstract selected	Marmoset Bioscience Symposium, virtual “The diversity of brain cells and where to find them: a marmoset atlas with single-nucleus resolution.”

## CONFERENCE PRESENTATIONS

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2023 Poster	52 <sup>nd</sup> Annual Society for Neuroscience Meeting, Washington DC “A 4D transcriptomic map for the evolution of multiple sclerosis-like lesions in the marmoset brain.”
2022 Poster	The Translational Neuroimmunology Conference: From Bench to Bedside and Back, FASEB Science Research Conference (SRC), Asheville, NC “A 4D transcriptomic map for the evolution of multiple sclerosis-like lesions in the marmoset brain.”
2019 Poster	Neural Environment in Disease: Glial Responses and Neuroinflammation, Keystone, CO “Single-nucleus RNA sequencing identifies spatially diverse clusters of glial cells in adult common marmoset brain and spinal cord.”