John Yu-Luen Lin

Current position: Senior Lecturer of Biochemistry and Molecular Biology, University of Tasmania

Phone: 61-3-6226-4898 Mobile: 61-423-186-808

Email: john.lin@utas.edu.au

Website: https://www.utas.edu.au/health/research/groups/tasmanian-school-of-medicine/lin-group

Mailing address: University of Tasmania, Private Bag 34, Hobart, Tasmania 7001, Australia

Physical address: University of Tasmania, MS2 Building, 17 Liverpool Street, Hobart, Tasmania 7000, Australia

POSITIONS

- University of Tasmania, Hobart, Tasmania, Australia, 2017-Current
  Senior Lecturer of Biochemistry and Molecular Biology, Tasmanian School of Medicine
- University of Tasmania, Hobart, Tasmania, Australia, 2014-2016
  Lecturer of Biochemistry and Molecular Biology, Tasmanian School of Medicine
- University of University of California, San Diego, La Jolla, California, 2012-2014
  Assistant project scientist of Professor Roger Tsien's laboratory, Department of Pharmacology.

EDUCATION AND TRAINING

- University of California, San Diego, La Jolla, California, 2006-2012
  Post-doctoral training. Mentor: Professor Roger Y. Tsien, Department of Pharmacology.
- Sanford-Burnham Medical Research Institute, San Diego, California, 2005-2006
  Post-doctoral training. Mentor: Assistant Professor Gary Tong, Department of Neuroscience.
- University of Auckland, Auckland, New Zealand, 1996-2005
  Ph.D. in Physiology. Mentors: Professors Janusz Lipski and Associate Professor Gregory Funk, 2000-2005.
  Area of Specialization: Neurophysiology
  Bachelor of Technology (1st class honours), 1996-2000, Program in Biomedical Science.

OTHER COURSES / WORKSHOP / TRAININGS

- HDR Supervisory workshops: 2020, Hobart, Tasmania
- Inclusion, Equity and Diversity Planning Workshop: 2019, Hobart, Tasmania
- Tasmania Aboriginal culture Awareness Training: 2018, Hobart, Tasmania
- Laser safety training and certification: 2016, Hobart, Tasmania
- San Diego Laboratory Management Course: 2010, San Diego, CA, USA
- Center for Teaching Development Diversity Workshop: 2010, UCSD, San Diego, CA, USA
- SfN short course: Visualizing large-scale patterns of activity in the brain: optical and electrical signals: 2006, Atlanta, GA, USA
- The NEURON simulation environment: 2006, UCSD, CA, USA
- Summer Course in Neurobiology: 2004, Woods Hole, MA, USA
- IBRO School of Neuroscience Asia / Pacific region: 2001, Hong Kong, China.

GRANTS AND FELLOWSHIPS

- Australia National Health and Medical Research Council (NHMRC) Ideas Grant: 2024 – 2027 lead PI (AU$906,335.26)
- Lundbeckfonden BRAIN Initiative Supplementary Grant: Co-PI 2022-2024
- Australia National Health and Medical Research Council (NHMRC) Ideas Grant: 2021 – 2023 lead PI (AU$631,634)
- Australia National Health and Medical Research Council (NHMRC) Ideas Grant: 2020 – 2022 lead PI (AU$496,955)
- Australia National Health and Medical Research Council (NHMRC) Projects Grant: 2019 – 2021 lead PI (AU$432,127)
- Lundbeckfonden BRAIN Initiative Supplementary Grant: 2018 - 2020 Co-PI
- US NIH BRAIN Initiative R21 grant: 2018 – 2020 – Co-PI (US$300,000)
- Australian Research Council (ARC) Future Fellowship: 2016 – 2020 Sole PI (AU$680,540)
- US NIH BRAIN Initiative R21 grant: 2016 – 2018 – Co-PI (US$300,000)
- Australia National Health and Medical Research Council (NHMRC) Project Grant: 2016 – 2019 Sole PI (AU$391,012)
- US NIH BRAIN Initiative U01 grant: 2014 – 2018 – Lead PI (US$750,000)
- FRST postdoctoral fellowship, Foundation of Research, Science and Technology of New Zealand, 2005 – 2008 - Sole PI
- University of Auckland Graduate Research Fund, University of Auckland, 2004
- IBRO Asia-Pacific Region Travel grant, International Brain Research Organization, 2004
- University of Auckland Doctoral Scholarship, University of Auckland, 2003-2004
- Bright Future Top Achiever Doctoral Scholarship, Foundation of Research, Science and Technology of New Zealand, 2000-2003

PATENTS/INVENTIONS

- Channelrhodopsin variants with improved channel kinetics and properties. Lin J.Y., Lin M.Z. & Tsien R.Y. (Provisional patent 62/425390).
- Engineered red-shifted channelrhodopsin variants. Lin J.Y. & Tsien R.Y. (US Patent No. 8759492).
- Allophycocyanin alpha-subunit evolved labeling proteins (smUFRPs). Rodriguez E.A., Lin J.Y., Ting R. & Tran G. (US Patent No. US10501502B2).

INVITED SEMINAR AND CONFERENCE PRESENTATIONS

- Australian-Korean Societies for Biochemistry and Molecular Biology Joint Symposium, Melbourne, Victoria, Australia (2024)
- Asia-Pacific Molecular Cellular Cognition Society meeting, Melbourne, Victoria, Australia (2022)
- Monash University Biomedicine Discovery Institute Seminar, Melbourne, Victoria, Australia (2019)
- Australasian Neuroscience Society Annual meeting symposium, Adelaide, South Australia, Australia (2019)
- Australia C. Elegans Symposium. Queensland Brain Institute, Brisbane, Queensland, Australia (2017)
- University of Melbourne Department of Physiology and Anatomy Seminar, Melbourne, Victoria, Australia (2017)
- Brain Research Center Seminar. National Tsing-hua University, Hsinchu, Taiwan (2017)
- Brain Networks: from molecules to diseases symposium. Lee Kong Chian School of Medicine. Singapore (2017)
- Flinders University Neuroscience Seminar. Adelaide, South Australia, Australia (2016)
- Queensland Brain Institute Neuroscience Seminar. Brisbane, Queensland, Australia (2016)

- Central cardiorespiratory control: Future directions annual meeting. Macquarie University, Sydney, New South Wales, Australia (2015)
- 25th Meeting of the International Society for Neurochemistry, Symposium 29 Optogenetics and Optopharmacology to illuminate the brain. Cairns, Queensland, Australia (2015)
- Photons and Neurons section of Photonics West conference, San Jose, California (2014)
- Genetic manipulation of neuronal activity III conference, HHMI-Janelia Farm Research Campus, Virginia (2014)
- Neuroscience symposium, Yokohama City University, Japan (2012)
- 14th International Congress of Histochemistry and Cytochemistry Chromophore assisted light inactivation workshop, Kyoto, Japan (2012)
- SfN meeting minisymposium 'Towards the Second Generation of Optogenetic Tools'. Society for Neuroscience 2010, San Diego (2010)
- Photons and Neurons section of Photonics West conference, San Jose, California (2009)
- Genetic manipulation of neuronal activity conference, HHMI-Janelia Farm Research Campus, Virginia (2008)

SERVICES

- Manuscript reviewer for Nature Methods, e-Life, Chemical Physical Letters, IETE Journal of Research, Nature Communication, Neuron, Molecular Biosystems, Scientific Reports, Nature Neuroscience, Nature, PLOS ONE, Biology Open, Experimental Physiology, Biochemistry, Biomedical Optics Express, Annals of the New York Academy of Sciences, Brain Stimulation and Communication Biology.
- Grant reviewers for National Science Foundation (USA), Israel Science Foundation, Human Frontier Science Program, National Health and Medical Research Council (Australia), Academic Sinica (Taiwan), Australia Research Council (Australia) and MS Research Australia.
- Serve on laboratory management committee. University of Tasmania 2023 – current.
- Serve on Optogenetics Australia Advisory board. 2019 – current.
- Serve on Australasian Course on Advanced Neuroscience organizing committee. 2017 – current.
- Served on College Inclusion, Diversity and Equity Committee. University of Tasmania, 2018 – 2020.

TEACHING ACCOMPLISHMENTS

- Unit coordinator and lecturer for third year Biomedicine unit CAM312 at University of Tasmania (2023-2024). Develop curriculum and responsible for unit organization and the development of new unit as unit coordinator.
- Unit coordinator (2020-2022) and lecturer (2015-2022) for third year Biochemistry unit CBA342 at University of Tasmania: Developed of new curriculum and the fluorescent protein laboratory module for CBA342. Responsible for unit organization as unit coordinator.
- Unit coordinator (2015-2017) and lecturer (2015-2022) for third year Biochemistry unit CBA341 at University of Tasmania: Development of new curriculum
- Lecturer for CHP312 Neuroscience B at University of Tasmania (2015-2019): Development of new curriculum
- Lecturer for the second-year units Biochemistry CBA260 and Biochemistry CBA221 at University of Tasmania (2015-2016).

SUPERVISION EXPERIENCE

Supervision of postdoctoral research projects:

- 5 postdoctoral fellows at University of Tasmania (2015-current)

Supervision of student research projects:

- 3 ongoing PhD students at University of Tasmania (2017-current)
- 5 PhD students at University of Tasmania (2014-2024)
- 5 Honours degree undergraduate students at University of Tasmania (2016-2023)
- 1 BSc undergraduate student, University of California, San Diego 2010-2011.

- 1 PhD rotation student (Biomedical Science program), University of California, San Diego 2006.
- 1 PhD rotation student (Neuroscience program), Sanford-Burnham Medical Research Institute 2004.
- 1 PhD student, Sanford-Burnham Medical Research Institute 2004.

PUBLICATIONS

PRIMARY RESEARCH PUBLICATIONS

1. Lockyer J., Reading A., Vicenzi S., Zbela A., Visnathan S., Delandre C., Newland J.W., McMullen J.P.D., Marshall O.J., Gasperini R., Foa L & **Lin J.Y.** (2024). Selective optogenetic inhibition of $G\alpha_q$ or $G\alpha_i$ signaling by minimal RGS domains disrupts circuit functionality and circuit formation. **Proceedings of the National Academy of Sciences of the United States of America** 121(36):e2411846121.
   https://www.pnas.org/doi/10.1073/pnas.2411846121?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub++0pubmed
2. Maiti A., Buffalo C.Z., Saurabh S., Montecinos-Franjola F., Hachey J.S., Conlon W.J., Tran G.N., Hasan B., Walters K.J., Drobizhev M., Moerner W.E., Ghosh P., Matsu H., Tsien R.Y., **Lin J.Y.** & Rodriguez E.A. (2023) Structural and photophysical characterization of the small ultra-red fluorescent protein. **Nature Communications** 14: 4155
   https://www.nature.com/articles/s41467-023-39776-9
3. Mermet-Joret N., Moreno A., Zbela A., Ellendersen B.E., Krauth N., von Philipsborn A., Piriz J, **Lin J.Y.** & Nabavi S. (2021). Dual-color optical activation and suppression of neurons with high temporal precision. * Co-last author , Preprint at **e-Life**
   https://elifesciences.org/reviewed-preprints/90327
4. Machado J-H., Ting R., **Lin J.Y.** and Rodriguez E.A. (2021). A self-labeling protein based on the small ultra-red fluorescent ptotein, smURFP. **RSC Chemical Biology** 2: 1221-1226.
   https://pubs.rsc.org/en/content/articlelanding/2021/cb/d1cb00127b#
5. Bonaventura J., Eldridge M., Hu F., Gomez J., Sanchez-Soto M., Abramyan A., Lam S., Boehm M., Ruiz C., Farrell M., Moreno A., Faress I.G., Andersen N., **Lin J.**, Moaddel R., Morris P., Shi L., Sibley D., Mahler S., Nabavi S., Pomper M., Bonci A., Horti A., Richmond B. & Michaelides M. (2019). High-potency ligands for DREADD imaging and activation in rodents and monkeys. **Nature Communications** 10: 4627.
   https://www.nature.com/articles/s41467-019-12236-z
6. Huang, T.N., Hsu T.T., Chuang H.C., Hu H.T., Sun C.P., Tao M.H., **Lin J.Y.** & Hsueh, Y.P.. (2019). Interhemispheric connectivity potentiates the basolaterial amygdalae and regulates social interaction and memory. **Cell Reports** 29: 34-48.
   https://www.cell.com/cell-reports/fulltext/S2211-1247(19)31137-4
7. Pavez M., Thompson A.C., Hayden A.J., Mitchell, C.B., D'Atri I., Don E.K., Chilton J.K., Scott E., Lin, J.Y., Young K.M, Gasperini R.J. and Foa L. (2019). STIM1 is required for remodeling of the endoplasmic reticulum and microtubule cytoskeleton in steering growth cones. **Journal of Neuroscience** 39 5095-5114.
   https://www.jneurosci.org/content/39/26/5095
8. Sengupta A., Chaffiol A., Macé E., Caplette R., Desrosiers M., Lampič M., Forster V., Marre O., **Lin J.Y.**, Sahel JA, Picaud S, Dalkara D, Duebel J. (2016). Red-shifted channelrhodopsin stimulation restores light responses in blind mice, macaque retina, and human retina. **EMBO Molecular Medicine** 8: 1248-1264.
   http://embomolmed.embopress.org/content/8/11/1248.long
9. Rodriguez E.A, Tran G.N., Gross L.A., Crisp J.C., Shu X., **Lin, J.Y.** and Tsien R.Y. (2016) A far-red fluorescent protein evolved from a cyanobacterial phycobiliprotein. **Nature Methods** 13: 763-769.
   https://www.nature.com/articles/nmeth.3935
10. Hooks B.M., **Lin J.Y.**, Guo C. and Svoboda K. (2015). Dual-channel circuit mapping reveals sensorimotor convergence in the primary motor cortex. **Journal of Neuroscience** 35: 4418-26.
    http://www.jneurosci.org/content/35/10/4418
11. Satpathy S., Batabyal S., Dhakal K.R., **Lin J.**, Kim Y. and Mohanty S.K. (2015) Broad spectral excitation of opsin for enhanced stimulation of cells. **Optics letters** 40: 2465-2468
    https://opg.optica.org/ol/abstract.cfm?uri=ol-40-11-2465
12. Nabavi S., Fox R., Proulx, C.D., **Lin J.Y.**, Tsien R.Y. and Malinow R. (2014). Engineering of a memory with LTD and LTP. **Nature** 511: 348-352.
    https://www.nature.com/articles/nature13294
13. Levin R.A., Felsen C.N., Yang J., **Lin J.Y.**, Whitney M., Nguyen Q.T. & Tsien R.Y**.** An optimized triple modality reporter for quantitative tumor imaging and therapy evaluation *in vivo*. (2014) **PLOS ONE**, 9: e97415.
    http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0097415

14. Inagaki H.K., Jung Y., Wong A.M., Hoopfer E.D., Mishra N., **Lin J.Y.**, Tsien R.Y., and Anderson D.J. (2014). Optogenetic control of *Drosophila* using a red-shifted channelrhodopsin reveals experience-dependent influences on courtship. **Nature Methods** 11: 325-332.
https://www.nature.com/articles/nmeth.2765
15. **Lin J.Y**., Knutsen P.M., Muller A., Kleinfeld D. and Tsien R.Y. (2013). ReaChR: A red-shifted variant of channelrhodopsin enables deep transcranial optogenetic excitation. **Nature Neuroscience** 16: 1499-1508.
https://www.nature.com/articles/nn.3502
16. **Lin J.Y.**, Sann S.B., Zhou K., Nabavi S., Proulx C., Malinow R., Jin Y. and Tsien R.Y. (2013). Optogenetic inhibition of synaptic release with chromophore-assisted light inactivation (CALI). **Neuron** 79: 241-253.
http://www.cell.com/neuron/fulltext/S0896-6273(13)00442-X
17. Miller E.W., **Lin J.Y.**, Frady E.P., Steinbach P., Kristan Jr W.B. and Tsien R.Y. (2012) Optically monitoring voltage in neurons by photoinduced electron transfer through molecular wires. **Proceedings of the National Academy of Sciences of the United States of America** 109: 2114-2119.
http://www.pnas.org/content/109/6/2114
18. **Lin J.Y.**, Lin M.Z. Steinbach P. and Tsien R.Y. (2009) Characterization of engineered channelrhodopsin variants with improved kinetics and other properties. **Biophysical Journal** 96: 1803-1814.
http://www.cell.com/biophysj/fulltext/S0006-3495(09)00016-2
19. Sheng G., Chang G.Q., **Lin J.Y.**, Yu Z.X., Fang Z.H., Rong J., Lipton S.A., Li S.H., Tong G., Leibowitz S.F., Li X.J. (2006) Hypothalamic huntingtin-associated protein 1 as a mediator of feeding behavior. **Nature Medicine** 12: 526-533.
https://www.nature.com/articles/nm1382
20. **Lin J.Y.**, Chung K.K.H., de Castro D., Funk G.D. & Lipski J. (2004) Effects of muscarinic acetylcholine receptor activation on membrane currents and intracellular messengers in medium spiny neurones of the rat striatum. **European Journal of Neuroscience** 20: 1219-1230.
https://www.ncbi.nlm.nih.gov/pubmed/15341594
21. Teo M.-Y., van Wyk M., **Lin J.**, and Lipski J. (2004) Differential effects of nicotine on the activity of Substantia Nigra and Ventral Tegmental Area dopaminergic neurons in vitro**. Acta Neurobiologica Experimentalis** 64: 119-130.
https://www.ncbi.nlm.nih.gov/pubmed/15366245
22. **Lin J.Y.**, van Wyk M., Bowala T.K., Teo M.Y. & Lipski J. (2003) Dendritic projections and dye-coupling in dopaminergic neurons of the substantia nigra examined in horizontal brain slices from young rats. **Journal of Neurophysiology** 90: 2531-2535.
http://www.physiology.org/doi/pdf/10.1152/jn.00020.2003
23. **Lin J.Y.**, Dubey R., Funk G.D. & Lipski J. (2003) Receptor subtype-specific modulation by dopamine of glutamatergic responses in striatal medium spiny neurons. **Brain Research** 959: 251-262.
https://www.sciencedirect.com/science/article/pii/S0006899302037575?via%3Dihub
24. **Lin J.Y.** & Lipski J. (2001) Dopaminergic substantia nigra neurons express functional NMDA receptors in postnatal rats. **Journal of Neurophysiology** 85: 1336-1339.
http://www.physiology.org/doi/pdf/10.1152/jn.2001.85.3.1336
25. During M.J., Symes C.W., Lawlor P.A., **Lin J.**, Dunning J., Fitzsimons H.L., Poulsen D., Leone P., Xu R., Dicker B.L., Lipski J. & Young D. (2000) An oral vaccine against NMDAR1 with efficacy and experimental stroke and epilepsy. **Science** 287: 1453-1460.
http://science.sciencemag.org/content/sci/287/5457/1453.full.pdf?ck=nck

INVITED REVIEWS AND BOOK CHAPTERS

26. Montecinos-Franjola F., **Lin J.Y.** & Rodriguez E.A. (2020) Fluorescent proteins for in vivo imaging, where is the biliverdin? **Biochemical Society Transactions**. BST20200444.
https://portlandpress.com/biochemsoctrans/article-abstract/doi/10.1042/BST20200444/226972/Fluorescent-proteins-for-in-vivo-imaging-where-s?redirectedFrom=fulltext
27. Simunovic S.P., Shen W., Lin J.Y., Protti D.A., Lisowski L. & Gillies M.C. (2018) Optogenetic approaches to vision restoration. **Experimental Eye Research.** 178: 15-26.
https://www.sciencedirect.com/science/article/pii/S0014483518304998

28. Rodriguez E.A., Campbell R.E., **Lin J.Y.**, Lin M.Z., Miyawaki A., Palmer A.E., Shu X., Zhang J. and Tsien R.Y. The growing and glowing toolbox of fluorescent and photoactive proteins. **Trends in Biochemical Sciences**. pii: S0968-0004(16): -3017630173. http://www.cell.com/trends/biochemical-sciences/fulltext/S0968-0004(16)30173-6
29. **Lin J.Y.**, Knutsen P.M. & Muller A. (2015) Discovery and development of spectrally-diverse channelrhodopsins for neurobiological applications. **New Techniques in Systems Neuroscience**. 129-146. https://link.springer.com/chapter/10.1007/978-3-319-12913-6_5
30. **Lin J.Y.** (2013) Production and validation of recombinant adeno-associated virus for channelrhodopsin expression in neurons. **Ion Channels: Methods in Molecular Biology** 998:401-15. https://link.springer.com/protocol/10.1007/978-1-62703-351-0_31
31. **Lin J.Y.** (2012) Optogenetic excitations of neurons with channelrhodopsins: light instrumentation, expression systems and channelrhodopsin variants. **Progress in Brain Research: Optogenetics: Tools for Controlling and Monitoring Neuronal Activity** 196, 29-48. https://www.sciencedirect.com/science/article/pii/B9780444594266000021
32. **Lin J.Y.** (2011) A user's guide to channelrhodopsin variants: features, limitations and future developments. **Experimental Physiology** 96.1, 19-25. http://onlinelibrary.wiley.com/doi/10.1113/expphysiol.2009.051961/abstract
33. Knopfel T., Lin M.Z., Levskaya A., Tian L., **Lin J.Y.** & Boyden E. (2010) Towards the second generation of optogenetic tools. **Journal of Neuroscience** 30(45), 14998-15004. http://www.jneurosci.org/content/30/45/14998/tab-article-info
34. Lipski J. **Lin J.Y.**, Teo M.Y. & van Wyk M. (2002) The network vs. pacemaker theory of the activity of RVL presympathetic neurons – a comparison with another putative pacemaker system. **Autonomic Neuroscience: Basic and Clinical** 98, 85-89. https://www.sciencedirect.com/science/article/pii/S1566070202000383

References:

1. Professor Roger Y. Tsien – Postdoctoral mentor

   Professor in Pharmacology, Chemistry and Biochemistry

   HHMI-UCSD

   9500 Gilman Drive, George Palade Lab 310,

   La Jolla, CA 92093-0647, USA

   Due to Professor Tsien's passing in 2016, his last letter of reference for my application of New York Stem Cell Foundation Innovator Awards for Early Career Investigators in Neuroscience is included in this CV. You can also contact Joan Kanter (jkanter0714@gmail.com), who was Professor Roger Tsien's last laboratory manager to verify the letter.

2. Professor Emeritus Janusz Lipski – PhD supervisor / mentor

   Professor in Neurophysiology

   Department of Physiology,

   Faculty of Medicine and Health Sciences,

   University of Auckland, Private bag 92019,

   Auckland, New Zealand.

   Email: j.lipski@auckland.ac.nz

3. Professor Lisa Foa – Previous line manager at UTAS School of Medicine and collaborator

   Head of School, School of Psychological Sciences

   University of Tasmania.

   Hobart, Tasmania, Australia

   Phone: +61 3 6226 2681

   Email: Lisa.Foa@utas.edu.au

4. Associate Professor Sadegh Nabavi – Current collaborator and Co-PI on several projects

   Research Group Leader / Danish Institute of Translational Neuroscience (DANDRITE) at Aarhus University

   Ole Worms Allé 8 Building 1182, 205

   8000 Aarhus C

   Denmark

   Phone: +4593508246

   Email: snabavi@dandrite.au.dk