Masakazu Iwai

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https://masakazuiwai.github.io

Professional Experience

2022 – Present	Biologist Research Scientist (Career) , Molecular Biophysics & Integrated Bioimaging Division, Lawrence Berkeley National Laboratory, Berkeley, USA
2021 – Present	Visiting Scientist , Department of Plant and Microbial Biology, University of California, Berkeley, USA
2018 – 2022	Biologist Research Scientist (Career-track) , Molecular Biophysics & Integrated Bioimaging Division, Lawrence Berkeley National Laboratory, Berkeley, USA
2015 – 2018	Biologist Postdoc Fellow , Physical Biosciences Division, Lawrence Berkeley National Laboratory, Berkeley, USA
2012 – 2015	Project Researcher , Precursory Research for Embryonic Science and Technology, Japan Science and Technology Agency, Japan
2012 – 2015	Visiting Researcher, Live Cell Super-Resolution Imaging Research Team, RIKEN Center for Advanced Photonics, Japan
2009 – 2012	Special Postdoctoral Researcher, Live Cell Molecular Imaging Research Team, RIKEN Advanced Science Institute, Japan

Education

Ph.D.	Life Science, 2009: Hokkaido University, Sapporo, Hokkaido, Japan
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M.S. Environmental Ecology, 2006: Hokkaido University, Sapporo, Hokkaido, Japan

B.S. Botany, 2003: Humboldt State University, Arcata, CA, USA

Publications

*Corresponding author(s)

- **31. Iwai M**†, Wakao S†, Niyogi KK (2023) Chapter 25 Photoprotection. In *The Chlamydomonas Sourcebook* (Third Edition) (eds. Grossman, A. R. & Wollman, F.-A.) 807–828 (Academic Press, 2023). ISBN: 978-0-12-821430-5. †Authors contributed equally.
- **30.** Yang S-J, Arsenault EA, Orcutt K, **Iwai M**, Yoneda Y, and Fleming GR* (2022) From antenna to reaction center: Pathways of ultrafast energy and charge transfer in photosystem II. *Proceedings of the National Academy of Sciences USA* **11**9: e2208033119. DOI: 10.1073/pnas.2208033119
- **29.** Yoneda Y, Arsenault EA, Orcutt K, **Iwai M**, Fleming GR* (2022) The initial charge separation step in oxygenic photosynthesis. *Nature Communications* 13: 2275. DOI: 10.1038/s41467-022-29983-1 (*arXiv* DOI: 10.48550/arXiv.2107.11112)
- **28.** Broderson M, Niyogi KK, **Iwai M*** (2021) Macroscale structural changes of thylakoid architecture during high light acclimation in *Chlamydomonas reinhardtii*. *bioRxiv* (preprint) DOI: 10.1101/2021.06.26.450046

- 27. Lu Y*, Gan Q, Iwai M, Alboresi A, Burlacot A, Dautermann O, Takahashi H, Crisanto T, Peltier G, Morosinotto T, Melis A, Niyogi KK* (2021) Role of an ancient light-harvesting protein of PSI in light absorption and photoprotection. *Nature Communications* 12: 679. DOI: 10.1038/s41467-021-20967-1
- **26. Iwai M***, Chen JJ, Park S, Yoneda Y, Schmid EM, Fletcher DA, Fleming GR, Niyogi KK (2020) Variable optical properties of light-harvesting complex II revisited. *bioRxiv* (preprint) DOI: 10.1101/2020.10.05.312405
- **25.** Arsenault EA, Yoneda Y, **Iwai M**, Niyogi KK, Fleming GR* (2020) The role of mixed vibronic Q_y-Q_x states in green light absorption of light-harvesting complex II. *Nature Communications* 11: 6011. DOI: 10.1038/s41467-020-19800-y (*Research Square* DOI: 10.21203/rs.3.rs-46465/v1)
- **24.** Onoa B*, Fukuda S, **Iwai M**, Bustamante C, Niyogi KK* (2020) Atomic force microscopy visualizes mobility of photosynthetic proteins in grana thylakoid membranes. *Biophysical Journal* 118: 1-11. DOI: 10.1016/j.bpj.2020.02.029 (*bioRxiv* DOI: 10.1101/426759)
- 23. Arsenault EA, Yoneda Y, Iwai M, Niyogi KK, Fleming GR* (2020) Vibronic mixing enables ultrafast energy flow in light-harvesting complex II. *Nature Communications* 11: 1460. DOI: 10.1038/s41467-020-14970-1
- 22. Perlaza K, Toutkoushian H, Boone M, Lam M, Iwai M, Jonikas MC, Walter P*, Ramundo S* (2019) The Mars1 kinase confers photoprotection through signaling in the chloroplast unfolded protein response. *eLife* 8: e49577. DOI: 10.7554/eLife.49577
- 21. Roth MS*, Westcott D, Iwai M, Niyogi KK* (2019) Hexokinase is necessary for glucose-mediated photosynthesis repression and lipid accumulation in a green alga. *Communications Biology* 2: 347-357. DOI: 10.1038/s42003-019-0577-1
- Yokono M*, Takabayashi A, Kishimoto J, Fujita T, Iwai M, Murakami A, Akimoto S, Tanaka A (2019) The PSI-PSII megacomplex in green plants. Plant & Cell Physiology 60: 1098-1108. DOI: 10.1093/pcp/pcz026
- **19.** Park S, Steen C, Lyska D, Fischer AL, Endelman B, **Iwai M**, Niyogi KK, Fleming GR* (2019) Chlorophyll-carotenoid excitation energy transfer and charge transfer in *Nannochloropsis* oceanica for the regulation of photosynthesis. *Proceedings of the National Academy of Sciences USA* 116: 3385-3390. DOI: 10.1073/pnas.1819011116
- 18. Roth MS*, Gallaher SD, Westcott DJ, Iwai M, Louie KB, Mueller M, Walter A, Foflonker F, Bowen BP, Ataii NN, Song J, Chen J-H, Blaby-Haas CE, Larabell C, Auer M, Northen TR, Merchant SS, Niyogi KK* (2019) Regulation of oxygenic photosynthesis during trophic transitions in the green alga *Chromochloris zofingiensis*. The Plant Cell 31: 579-601. DOI: 10.1105/tpc.18.00742
- **17. Iwai M†***, Grob P†, Iavarone AT, Nogales E, Niyogi KK* (2018) A unique supramolecular organization of photosystem I in the moss *Physcomitrella patens*. *Nature Plants* 4: 904-909. †Authors contributed equally. DOI: 10.1038/s41477-018-0271-1
- 16. Park S, Fischer AL, Steen C, Iwai M, Morris JM, Walla PJ, Niyogi KK, Fleming GR* (2018) Chlorophyll-carotenoid excitation energy transfer in high-light-acclimating thylakoid membranes investigated by snapshot transient absorption spectroscopy. *Journal of the American Chemical Society* 140, 11965-11973. DOI: 10.1021/jacs.8b04844
- **15. Iwai M***, Roth MS, Niyogi KK* (2018) Subdiffraction-resolution live-cell imaging for visualizing thylakoid dynamics. *The Plant Journal* 96, 233-243. DOI: 10.1111/tpj.14021.
- **14. Iwai M***, Yokono M (2017) Light-harvesting antenna complexes in the moss *Physcomitrella patens*: implications for the evolutionary transition from green algae to land plants. *Current Opinion in Plant Biology* 37, 94-101. DOI: 10.1016/j.pbi.2017.04.002
- **13.** Kromdijk J, Głowacka K, Leonelli L, Gabilly S, **Iwai M**, Niyogi KK*, Long SP* (2016) Improving photosynthesis and crop productivity by accelerating recovery from photoprotection. *Science* 354, 857-861. DOI: 10.1126/science.aai8878
- **12. Iwai M***, Yokono M, Kurokawa K, Ichihara A, Nakano A (2016) Live-cell visualization of excitation energy dynamics in chloroplast thylakoid structures. *Scientific Reports* 6, 29940.

- DOI: 10.1038/srep29940
- **11. Iwai M***, Yokono M, Nakano A (2015) Toward understanding the multiple spatiotemporal dynamics of chlorophyll fluorescence. *Plant Signaling & Behavior* 10:6, e1022014. DOI: 10.1080/15592324.2015.1022014
- **10. Iwai M***, Yokono M, Kono M, Noguchi K, Akimoto S, Nakano A (2015) Light-harvesting complex Lhcb9 confers a green alga-type photosystem I supercomplex to the moss *Physcomitrella patens*. *Nature Plants* 1, 34-40. DOI: 10.1038/nplants.2014.8
- **9. Iwai M***, Yokono M, Nakano A (2014) Visualizing structural dynamics of thylakoid membranes. *Scientific Reports* 4, 3768. DOI: 10.1038/srep03768
- **8. Iwai M***, Pack C-G, Takenaka Y, Sako Y, Nakano A (2013) Photosystem II antenna phosphorylation-dependent protein diffusion determined by fluorescence correlation spectroscopy. *Scientific Reports* 3, 2833. DOI: 10.1038/srep02833
- 7. Iwai M†, Takizawa K†, Tokutsu R, Okamuro A, Takahashi Y, Minagawa J* (2010) Isolation of the elusive supercomplex that drives cyclic electron flow in photosynthesis. *Nature* 464: 1210-1213. †Authors contributed equally. DOI: 10.1038/nature08885
- **6. Iwai M**, Yokono M, Inada N, Minagawa J* (2010) Live-cell imaging of photosystem II antenna dissociation during state transitions. *Proceedings of the National Academy of Sciences USA* 107: 2337-2342. DOI: 10.1073/pnas.0908808107
- **5.** Swingley WD, **Iwai M**, Chen Y, Ozawa S, Takizawa K, Takahashi Y, Minagawa, J* (2010) Characterization of photosystem I antenna proteins in the prasinophyte *Ostreococcus tauri*. *Biochimica et Biophysica Acta* 1797: 1458-1464. DOI: 10.1016/j.bbabio.2010.04.017
- **4.** Tokutsu R, **Iwai M**, Minagawa J* (2009) CP29, a monomeric light-harvesting complex II protein, is essential for state transitions in *Chlamydomonas reinhardtii*. *The Journal of Biological Chemistry* 284: 7777–7782. DOI: 10.1074/jbc.m809360200
- Iwai M, Takahashi Y, Minagawa J* (2008) Molecular remodeling of photosystem II during state transitions in *Chlamydomonas reinhardtii*. The Plant Cell 20: 2177-2189. DOI: 10.1105/tpc.108.059352
- 2. Iwai M, Kato N, Minagawa J* (2007) Distinct physiological responses to a high light and low CO₂ environment revealed by fluorescence quenching in phototrophically grown *Chlamydomonas reinhardtii. Photosynthesis Research* 94: 307-314. DOI: 10.1007/s11120-007-9220-y
- 1. Takahashi H†, **Iwai M†**, Takahashi Y, Minagawa J* (2006) Identification of the mobile light-harvesting complex II polypeptides for state transitions in *Chlamydomonas reinhardtii*. *Proceedings of the National Academy of Sciences USA* 103: 477-482. †Authors contributed equally. DOI: 10.1073/pnas.0509952103

Fellowships, Grants, and Awards

2021 – Present	U.S. Department of Energy, Field Work Proposal 449B: Regulation of
	Photosynthesis (Co-PI/Lead PI with Krishna K. Niyogi and Graham R. Fleming)
2021 – Present	U.S. Department of Energy, Field Work Proposal SDOEMF: Multidisciplinary
	Tools for Illuminating the Details of Photosynthetic Light Harvesting Systems
	(Co-PI with Matthew B. Francis, Naomi S. Ginsberg, Phillip L. Geissler, and
	Jeffrey B. Neaton)
2019	Talk Award - 28th Western Photosynthesis Conference 2019: The role of
	Lhcb9 in the unique photosystem I supercomplex formation in the moss
	Physcomitrella patens
2014 – 2015	Grant-in-Aid for Challenging Exploratory Research - Japan Society for the
	Promotion of Science: Development of proteoliposome reconstitution imaging
	of thylakoid membrane proteins
2012 – 2015	Precursory Research for Embryonic Science and Technology - Japan
	Science and Technology Agency: Study of plant photoadaptation
	mechanisms by using live cell imaging techniques
2011 – 2013	Grant-in-Aid for Young Scientists (A) - Japan Society for the Promotion of

	Science: Investigation of light energy redistribution mechanisms under stress
	environments in the moss Physcomitrella patens
2011	Individual Collaborative Research Projects - National Institute of Basic
	Biology: Spectroscopy analysis of photoacclimation mechanisms in
	Physcomitrella patens
2010	Grant-in-Aid for Young Scientists (B) - Japan Society for the Promotion of
	Science: Visualization of photosynthetic protein complex network during
	photoacclimation mechanisms (Withdrawn)
2010	Individual Collaborative Research Grant - Institute of Low Temperature
	Science, Hokkaido University: The study of photosynthetic activities of giant
	chloroplasts in <i>Physcomitrella patens</i>
2010	Collaboration Seed Fund - RIKEN: Nano-scale analysis of chloroplast
	thylakoid membranes using atomic force microscopy
2009 – 2010	Grant-in-Aid for Young Scientists (Start-up) - Japan Society for the
	Promotion of Science: Development of live-cell imaging for photosystem
	proteins by using the <i>Physcomitrella patens</i> giant chloroplasts
2009 – 2011	Grant for Special Postdoctoral Researchers - RIKEN: Visualization of
	thylakoid membrane dynamics during photoacclimation
2006 – 2009	Grant-in-Aid for JSPS Fellows (DC1) - Japan Society for the Promotion of
	Science: Investigation of photoacclimation mechanisms of light-harvesting
	complex proteins using the green alga Chlamydomonas reinhardtii
2005 – 2006	Nara Institute of Science and Technology "Plant Science Education
	Project" - The Ministry of Education, Culture, Sports, Science and
	Technology: Proteomics and visualization of photosynthetic proteins during
	state transitions
2004	Institute of Low Temperature Science, Hokkaido University: Director
	Leadership Fund (by Prof. Takeo Hondoh) - Travel award for The 13th
	International Conference on Photosynthesis, Montreal, Canada
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Professional Presentations

2023	LBNL Molecular Biophysics & Integrated Bioimaging Division Annual Meeting (Invited Talk)
2023	32nd Western Photosynthesis Conference (Invited Talk)
2023	Quantum Biology Gordon Research Conference (Invited Talk)
2022	31st Western Photosynthesis Conference (Online Poster)
2020	Department Seminar at Northern Illinois University (Invited online talk)
2020	Big Quantum in Proteins International Meeting (Invited online talk)
2020	Bioenergetics Seminar, Berkeley, CA, USA (Online talk)
2020	29th Western Photosynthesis Conference, Bodega Bay, CA, USA (Talk)
2019	28th Western Photosynthesis Conference, Friday Harbor, WA, USA (Talk & Poster)
2018	Molecular Biophysics & Integrated Bioimaging Division Annual Meeting, Berkeley, CA, USA (Invited Talk)
2016	Bioenergetics Seminar, Berkeley, CA, USA (Talk)
2016	The 13th Annual Advanced Imaging Methods Workshop, Berkeley, CA, USA (Poster)
2015	Plant & Microbial Biology Department Student & Postdoc Seminar, Berkeley, CA, USA
2013	(Talk)
2015	The 56th Annual Meeting of Japan Society of Plant Physiologists, Tokyo, Japan (Talk)
2015	The 17th Plant Organelle Workshop, Tokyo, Japan (Invited Talk)
2015	Precursory Research for Embryonic Science and Technology Project Research Seminar, Tokyo, Japan (Talk)
2015	RIKEN 4D Symposium, Saitama, Japan (Poster)
2014	Core Research for Evolutionary Science and Technology/Precursory Research for
	Embryonic Science and Technology Joint Project Meeting, Tokyo, Japan (Talk)
2014	RIKEN Symposium for Advanced Photonics, Saitama, Japan (Poster)
2014	The 40th Annual Meeting of the Japan Society for Laser Microscopy, Saitama, Japan (Talk)
2014	Precursory Research for Embryonic Science and Technology Project Meeting, Shizuoka,
	Japan (Talk)
2014	RIKEN Symposium for Advanced Photonics, Saitama, Japan (Poster)
2014	Japan Society for the Promotion of Science Project Seminar (Invited Talk)
2013	Core Research for Evolutionary Science and Technology/Precursory Research for

- Embryonic Science and Technology Joint Project Meeting, Tokyo, Japan (Talk)
- 2013 RIKEN Symposium for Advanced Photonics, Saitama, Japan (Poster)
- 2013 Precursory Research for Embryonic Science and Technology Project Meeting, Kyoto, Japan (Talk)
- 2013 The 4th Annual Symposium of The Japanese Society of Photosynthesis Research, Nagoya, Japan (Invited Talk)
- 2013 The 54th Annual Meeting of Japan Society of Plant Physiologists, Okayama, Japan (Talk)
- 2013 RIKEN Kibo Symposium, Saitama, Japan (Invited Talk)
- 2012 RIKEN Extreme Photonics Research Symposium, Saitama, Japan (Poster)
- 2012 Precursory Research for Embryonic Science and Technology Project Meeting, Tokyo, Japan (Talk)
- 2012 RIKEN Symposium, Saitama, Japan (Invited Talk)
- 2012 Okayama University International Symposium, Okayama, Japan (Poster)
- 2012 The 50th Annual Meeting of the Biophysical Society of Japan, Nagoya, Japan (Poster)
- 2012 Japanese-Finnish Photosynthesis Research Conference, Turku, Finland (Invited Talk)
- 2012 Core Research for Evolutionary Science and Technology/Precursory Research for Embryonic Science and Technology Joint Project Meeting, Hokkaido, Japan (Invited Talk)
- 2012 Precursory Research for Embryonic Science and Technology Project Meeting, Shizuoka, Japan (Talk)
- 2012 Photosynthesis Gordon Research Conference, Davidson, NC, USA (Poster)
- 2012 The 15th Annual Moss International Conference, The Bronx, NY, USA (Poster)
- 2012 The 53rd Annual Meeting of Japan Society of Plant Physiologists, Kyoto, Japan (Talk)
- 2012 Kyoto University Research Seminar, Kyoto, Japan (Invited Talk)
- 2012 Precursory Research for Embryonic Science and Technology Kick-Off Meeting, Kyoto, Japan (Talk)
- 2011 The 8th Chlamydomonas Workshop, Tokyo, Japan (Talk)
- 2011 The 24th Japanese Association of Plant Lipid Researchers Annual Symposium, Tokyo, Japan (Poster)
- 2011 RIKEN Extreme Photonics Research Seminar, Saitama, Japan (Poster)
- 2011 The 52rd Annual Meeting of Japan Society of Plant Physiologists, Sendai, Japan (Talk)
- 2011 Institute for Protein Research Seminar, Osaka, Japan (Poster)
- 2010 RIKEN Extreme Photonics Research Seminar, Saitama, Japan (Poster)
- 2010 Tokyo University Research Seminar, Tokyo, Japan (Invited Talk)
- 2010 The 51st Annual Meeting of Japan Society of Plant Physiologists, Kumamoto, Japan (Talk)
- 2010 RIKEN Advanced Science Institute-Yokohama Joint Research Forum, Yokohama, Japan (Poster)
- 2009 RIKEN Advanced Science Institute- BioResource Research Center Joint Research Forum, Saitama, Japan (Poster)
- 2009 RIKEN Extreme Photonics Research Seminar, Saitama, Japan (Poster)
- 2009 RIKEN Seminar, Saitama, Japan (Talk)
- 2009 Nara Institute of Science and Technology Symposium, Nara, Japan (Invited Talk)
- 2009 The 50th Annual Meeting of Japan Society of Plant Physiologists, Nagoya, Japan (Talk)
- 2008 Nara Institute of Science and Technology Symposium, Nara, Japan (Invited Talk)
- 2008 The 49th Annual Meeting of Japan Society of Plant Physiologists, Sapporo, Japan (Talk)
- 2007 The Hokkaido Branch meeting for Botanical Society of Japan, Sapporo, Japan (Invited Talk)
- 2007 Satellite Meeting of the 14th International Congress on Photosynthesis "State Transitions", London, UK (Invited Talk)
- 2007 The 14th International Congress on Photosynthesis, Glasgow, Scotland (Poster)
- 2007 Nara Institute of Science and Technology Workshop, Nara, Japan (Talk)
- 2006 Japanese-Finnish Seminar, Nara, Japan (Talk & Poster)
- 2006 The 47th Annual Meeting of Japan Society of Plant Physiologists, Tsukuba, Japan (Talk)
- 2006 Nara Institute of Science and Technology Workshop, Nara, Japan (Talk)
- 2005 The 5th Chlamydomonas Workshop, Tsukuba, Japan (Talk)
- 2005 The 46th Annual Meeting of Japan Society of Plant Physiologists, Niigata, Japan (Talk)
- 2004 The 13th International Congress on Photosynthesis Research, Montreal, Canada (Poster)

Peer Review Services

For Scientific Journals: Algal Research, Biochimica et Biophysica Acta, Biophysical Journal, Botany

Letters, Current Opinion in Plant Biology, Environmental and Experimental Botany, Food and Energy Security, The Journal of Physical Chemistry Letters, Journal of Visualized Experiments, Langmuir, Nature Plants, Photochemical & Photobiological Sciences, Planta, The Plant Cell, Plant, Cell & Environment, Plant & Cell Physiology, Plant Methods, Plant Physiology, Plant Production Science, Proceedings of the National Academy of Sciences USA, Scientific Reports

For Funding Agencies for Research: French National Research Agency (ANR); National Research, Development and Innovation Office, Hungary (NRDI); The Office of Basic Energy Sciences (BES), the U.S. Department of Energy (DOE), Office of Science

Outreach

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2023	STEM Career Pathways Interview at The Berkeley Lab Director's Apprenticeship
0000	Program (BLDAP), CA, USA
2023	Science & Career Talk for Hanazono High School Student visiting to UC Berkeley,
0000	CA, USA
2020	Online Science & Career Talk at The International Education Center at Diablo
0000	Valley College, CA, USA
2020	Online Science & Career Talk at NIC International College in Japan, Tokyo, Japan
2019 – 2021	Science Supervisor, Hanazono Junior/High School, Kyoto, Japan
2017	Career Talk at Diablo Valley College, Pleasant Hill, CA, USA
2016	Invited Lecture, Sonoma State University, CA, USA
2014	Science Seminar at Seishin High School and Junior High School, Ibaraki, Japan
2012	'Aesthetic' Panel Science Exhibition 2012, Tokyo, Japan
2011	A column in In-Cube (Leave a Nest), No. 14, June 2011
2011	A column in The Business & Technology Daily News (Feb. 1st, 2011)
2010 – 2014	Biannual Science Talk at NIC International College in Japan, Tokyo, Japan (every
	Fall and Spring semester during the 5-year period)
2010	Invited Science Presentation Contest in Science Agora 2010 at National Museum
	of Emerging Science and Innovation, Tokyo, Japan
2010	Editing Adviser, White Paper on Science and Technology for Children 2010, JST.
2010	A column in RIKEN News, Sept. 2010
2010	Science Talk at National Museum of Emerging Science and Innovation, Tokyo,
	Japan
2009	Science Presentation Contest in Science Agora 2009 at National Museum of
	Emerging Science and Innovation, Tokyo, Japan (The 1st place winner)

Mentorship & Lab Technical Training

Genevieve Han, Research Assistant, LBNL (September 2023 – Present) Nichole Zhang, Undergraduate Researcher, UC Berkeley (March 2023 – Present) Shaila Sendan, Undergraduate Researcher, UC Berkeley (January 2023 – Present) Keilan Hooper, Undergraduate Researcher, UC Berkeley (November 2022 – Present) Aviva Lucas, Lab Technician, UC Berkeley (October 2022 - June 2023) Sophia Velilla, Undergraduate Researcher, UC Berkeley (August 2022 – Present) Ashlev Chu, Undergraduate Researcher, UC Berkeley (June 2022 – August 2022) Raquel Ponce, Lab Technician, UC Berkeley (March 2022 - Present) Jonathan Liu, Undergraduate Researcher, UC Berkeley (February 2022 – May 2022) Shahar Schwartz, Undergraduate Researcher, UC Berkeley (January 2022 – May 2022) Megan Ogburn, Lab Technician, UC Berkeley (February 2021 – January 2022) Kylie Ren, Undergraduate Researcher, UC Berkeley (March 2020 - December 2021) Maddy Chapman, Undergraduate Researcher, UC Berkeley (January 2020 - May 2022) Victoria Kim, Undergraduate Researcher, UC Berkeley (November 2019 – May 2021) Valerie Lam, Undergraduate Researcher, Lab Technician, UC Berkeley (Oct. 2019 – December 2020) Christine Pagotan, Undergraduate Researcher, UC Berkeley (October 2019 – March, 2020) Veronica Wong, Undergraduate Researcher, UC Berkeley (May 2019 – May 2021) Kumiko Yanagihara, Undergraduate Researcher, UC Berkeley (August, 2018 – December 2019) Mimi Broderson, Lab Technician, UC Berkeley (September 2017 – April 2020) Arnold Chan, Undergraduate Researcher, UC Berkeley (February 2017 – August 2018) Hiroe Watanabe, Lab Technician, RIKEN (April 2012 – March 2015)

Kaoru Kotoshiba, Lab Technician, RIKEN (April 2012 - March 2015)