Curriculum Vitae

Keiichi Inoue, Ph. D.
November 25th, 2020

[Academic employment]

April, 2018-present	Associate Professor, The Institute for Solid State Physics, The University of Tokyo
April, 2016- March, 2018	Associate Professor, Nagoya Institute of Technology
December, 2015-March, 2019	PRESTO, JST researcher, Japan
October, 2012-November, 2015	PRESTO, JST researcher, Japan
November, 2009- March, 2016	Assistant Professor, Nagoya Institute of Technology
April, 2007- October, 2009	Project Assistant Professor, Chemical Resources Laboratory, Tokyo Institute of Technology
April, 2006-March, 2007	JSPS Fellow (DC2)

[Education]

March, 2007	Ph. D. (Science), Department of Chemistry, Kyoto University
March, 2004	M. S. Department of Chemistry, Kyoto University
March, 2002	B. S. Department of Chemistry, Kobe University

[Original papers (all peer reviewed)]

1. Expression Analysis of Microbial Rhodopsin-like Genes in *Guillardia theta*
   Masae Konno*, Yumeka Yamauchi, **Keiichi Inoue**, Hideki Kandori*. (2020) *PLOS ONE* in press
2. Active Learning for Level Set Estimation Under Input Uncertainty and Its Extensions
   Yu Inatsu, Masayuki Karasuyama, **Keiichi Inoue**, Ichiro Takeuchi*. (2020, October 20) *Neural Computation*, **32**, issue 12, published on the web
   doi: 10.1162/neco_a_01332
3. Active learning for level set estimation under input uncertainty and its extensions
   Yu Inatsu, Masayuki Karasuyama, **Keiichi Inoue**, Ichiro Takeuchi*. (2020) *Neural Computation*, in press
4. Excitonic Coupling Effect on the Circular Dichroism Spectrum of Sodium-Pumping Rhodopsin KR2
   Kazuhiro J. Fujimoto*, **Keiichi Inoue**. (2020) *The Journal of Chemical Physics*, **153**, Article number: 045101
5. Active Learning of Bayesian Linear Models with High-Dimensional Binary Features by

Parameter Confidence-Region Estimation
Yu Inatsu, Masayuki Karasuyama, **Keiichi Inoue**, Hideki Kandori, Ichiro Takeuchi*. (2020) *Neural Computation*, published on the web
doi: 10.1162/neco_a_01310

6. Gate-Keeper of Ion Transport – a Highly Conserved Helix-3 Tryptophan in a Channelrhodopsin Chimera, C1C2/ChRWR
Yujiro Nagasaka[†], Shoko Hososhima[†], Naoko Kubo, Takashi Nagata, Hideki Kandori, **Keiichi Inoue**, Hiromu Yawo*. (2020) *Biophysics and Physicobiology*, **17**, pp. 59-70
doi: 10.2142/biophysico.BSJ-2020007 ([†]: Equally contributed)
7. Schizorhodopsins: A Novel Family of Rhodopsins from Asgard archaea that Function as Light-Driven Inward H^+ Pumps
Keiichi Inoue*, Satoshi P. Tsunoda, Manish Singh, Sahoko Tomida, Shoko Hososhima, Masae Konno, Ryoko Nakamura, Hiroki Watanabe, Paul-Adrian Bulzu, Horia L. Banciu, Adrian-Ştefan Andrei, Takayuki Uchihashi, Rohit Ghai, Oded Béjà, Hideki Kandori*. (2020) *Science Advances*, **6**, No. 15, Article number: eaaz2441
doi: 10.1126/sciadv.aaz2441
8. Infrared spectroscopic analysis on structural changes around the protonated Schiff base upon retinal isomerization in light-driven sodium pump KR2
Sahoko Tomida, Shota Ito, Tomoya Mato, Yuji Furutani, **Keiichi Inoue**, Hideki Kandori*. (2020) *Biochimica et Biophysica Acta (BBA) - Bioenergetics*, published on the web
doi: 10.1016/j.bbabio.2020.148190
9. Allosteric Communication to the Retinal Chromophore upon Ion Binding in a Light-driven Sodium Ion Pumping Rhodopsin
Akihiro Otomo, Misao Mizuno, **Keiichi Inoue**, Hideki Kandori, Yasuhisa Mizutani*. (2019) *Biochemistry*, **59**, issue 4, pp 520-529
doi: 10.1021/acs.biochem.9b01062
10. Crystal Structure of Heliorhodopsin
Wataru Shihoya, **Keiichi Inoue**, Manish Singh, Masae Konno, Shoko Hososhima, Keitaro Yamashita, Kento Ikeda, Akimitsu Higuchi, Tamaki Izume, Sae Okazaki, Masanori Hashimoto, Ritsu Mizutori, Sahoko Tomida, Yumeka Yamauchi, Rei Abe-Yoshizumi, Kota Katayama, Satoshi P. Tsunoda, Mikihiro Shibata, Yuji Furutani, Alina Pushkarev, Oded Béjà, Takayuki Uchihashi, Hideki Kandori*, Osamu Nureki*. (2019) *Nature*, **574**, issue 7776, pp 132-136
doi: 10.1038/s41586-019-1604-6
11. Unique Photochemistry Observed in a New Microbial Rhodopsin
Chihiro Kataoka, **Keiichi Inoue**, Kota Katayama, Oded Béjà, Hideki Kandori*. (2019) *The*

Journal of Physical Chemistry Letters, **10**, issue 17, pp 5117-5121
doi: 10.1021/acs.jpclett.9b01957

12. X-ray Crystallographic Structure and Oligomerization of *Gloeobacter* Rhodopsin
Takefumi Morizumi[†], Wei-Lin Ou[†], Ned Van Eps, **Keiichi Inoue**, Hideki Kandori, Leonid S. Brown, Oliver P. Ernst*. (2019) *Scientific Reports*, **9**, 11283
doi: 10.1038/s41598-019-47445-5 ([†]: Equally contributed)
13. Engineered Functional Recovery of Microbial Rhodopsin without Retinal-Binding Lysine
Yumeka Yamauchi, Masae Konno, Daichi Yamada, Kei Yura, **Keiichi Inoue**, Oded Béjà, Hideki Kandori*. (2019) *Photochemistry and Photobiology*, **95**, pp 1116-1121
doi: 10.1111/php.13114
14. Red-shifting Mutation of Light-driven Sodium Pump Rhodopsin
Keiichi Inoue, María del Carmen Marín, Sahoko Tomida, Ryoko Nakamura, Yuta Nakajima, Massimo Olivucci, Hideki Kandori*. (2019) *Nature Communications*, **10**, Article number: 1993
doi: 10.1038/s41467-019-10000-x
15. Casting Light on Asgardarchaeota Metabolism in a Sunlit Microoxic Niche
Paul-Adrian Bulzu[†], Adrian-Ştefan Andrei[†], Michaela M. Salcher, Maliheh Mehrshad, **Keiichi Inoue**, Hideki Kandori, Oded Béjà, Rohit Ghai*, Horia L. Banciu. (2019) *Nature Microbiology*, **4**, issue 7, pp 1129-1137
doi: 10.1038/s41564-019-0404-y ([†]: Equally contributed)
16. Ultrafast Dynamics of Heliorhodopsins
Shinya Tahara, Manish Singh, Hikaru Kuramochi, Wataru Shihoya, **Keiichi Inoue**, Osamu Nureki, Oded Béjà, Yasuhisa Mizutani, Hideki Kandori, Tahei Tahara[*]. (2019) *The Journal of Physical Chemistry B*, **123**, issue 11, pp 2507-2512
doi: 10.1021/acs.jpcb.9b00887
17. Heliorhodopsins are Absent in Diderm (Gram-negative) Bacteria: Some Thoughts and Possible Implications for Activity
José Flores-Uribe[†], Gur Hevroni[†], Rohit Ghai, Alina Pushkarev, **Keiichi Inoue**, Hideki Kandori, Oded Béjà*. (2019) *Environmental Microbiology Reports*, **11**, issue 3, pp 419-424
doi: 10.1111/1758-2229.12730 ([†]: Equally contributed)
18. Resonance Raman Investigation of the Chromophore Structure of Heliorhodopsins
Akihiro Otomo, Misao Mizuno, Manish Singh, Wataru Shihoya, **Keiichi Inoue**, Osamu Nureki, Oded Béjà, Hideki Kandori, Yasuhisa Mizutani*. (2018) *The Journal of Physical Chemistry Letters*, **9**, issue 22, pp 6431-6436
doi: 10.1021/acs.jpclett.8b02741
19. Understanding Colour Tuning Rules and Predicting Absorption Wavelengths of Microbial

Rhodopsins by Data-Driven Machine-Learning Approach
Masayuki Karasuyama[†], **Keiichi Inoue**[†], Ryoko Nakamura, Hideki Kandori*, Ichiro Takeuchi*. (2018) *Scientific Reports*, **8**, Article number:15580
doi: 10.1038/s41598-018-33984-w ([†]: Equally contributed)

20. Crystal Structure of a Natural Anion-conducting Channelrhodopsin *Gt*ACR1
Yoon Seok Kim[†], Hideaki E. Kato[†,]*, Keitaro Yamashita, Shota Ito, **Keiichi Inoue**, Charu Ramakrishnan, Lief E. Fenno, Kathryn E. Evans, Joseph M. Paggi, Ron O. Dror, Hideki Kandori, Brian K. Kobilka, Karl Deisseroth*. (2018) *Nature*, **561**, issue 7723, pp 343-348
doi: 10.1038/s41586-018-0511-6 ([†]: Equally contributed)
21. Structural Mechanisms of Selectivity and Gating in Anion Channelrhodopsins
Hideaki E. Kato[†,]*, Yoon Seok Kim[†], Joseph M. Paggi, Kathryn E. Evans, William E. Allen, Claire Richardson, **Keiichi Inoue**, Shota Ito, Charu Ramakrishnan, Lief E. Fenno, Keitaro Yamashita, Daniel Hilger, Soo Yeun Lee, Andre Berndt, Kang Shen, Hideki Kandori, Ron O. Dror, Brian K. Kobilka, Karl Deisseroth* (2018) *Nature*, **561**, issue 7723, pp 349-354
doi: 10.1038/s41586-018-0504-5 ([†]: Equally contributed)
22. Mutation Study of Heliorhodopsin 48C12
Manish Singh, **Keiichi Inoue**, Alina Pushkarev, Oded Béjà, Hideki Kandori*. (2018) *Biochemistry*, **57**, issue 33, pp 5041-5049
doi: 10.1021/acs.biochem.8b00637
23. Time-Resolved FTIR Study of Light-Driven Sodium Pump Rhodopsins
Hui-Fen Chen, **Keiichi Inoue**, Hikaru Ono, Rei Abe-Yoshizumi, Akimori Wada, Hideki Kandori*. (2018) *Physical Chemistry Chemical Physics*, **20**, issue 26, pp 17694-17704
doi: 10.1039/C8CP02599A
24. A Distinct Abundant Group of Microbial Rhodopsins Discovered via Functional Metagenomics
Alina Pushkarev[†], **Keiichi Inoue**[†], Shirley Larom, José Flores-Uribe, Manish Singh, Masae Konno, Sahoko Tomida, Shota Ito, Ryoko Nakamura, Satoshi P. Tsunoda, Alon Philosof, Itai Sharon, Natalya Yutin, Eugene V. Koonin, Hideki Kandori*, Oded Béjà*. (2018) *Nature*, **558**, issue 7711, pp 595-599
doi: 10.1038/s41586-018-0225-9 ([†]: Equally contributed)
25. Spectroscopic Study of Proton Transfer Mechanism of Inward Proton Pump Rhodopsin, *Parvularcula oceani* Xenorhodopsin
Keiichi Inoue, Shinya Tahara, Yoshitaka Kato, Satoshi Takeuchi, Tahei Tahara*, Hideki Kandori*. (2018) *The Journal of Physical Chemistry B*, **122**, issue 25, pp 6453-6461
doi: 10.1021/acs.jpcb.8b01279
26. Hydrogen-bonding Network at the Cytoplasmic Region of A Light-driven Sodium Pump

Rhodopsin KR2

Sahoko Tomida, Shota Ito, **Keiichi Inoue**, Hideki Kandori*. (2018) *Biochimica et Biophysica Acta (BBA) - Bioenergetics*, **1859**, issue 9, pp 684-691

doi: 10.1016/j.bbabio.2018.05.017

27. Oligomeric States of Microbial Rhodopsins Determined by High-speed Atomic Force Microscopy and Circular Dichroic Spectroscopy

    Mikihiro Shibata†, **Keiichi Inoue**†, Kento Ikeda, Masae Konno, Manish Singh, Chihiro Kataoka, Rei Abe-Yoshizumi, Hideki Kandori*, Takayuki Uchihashi*. (2018) *Scientific Reports*, **8**, Article number:8262

    doi: 10.1038/s41598-018-26606-y (†: Equally contributed)

28. Origin of the Reactive and Non-Reactive Excited States in the Primary Reaction of Rhodopsins: pH Dependence of Femtosecond Absorption of Light-Driven Sodium Ion Pump Rhodopsin KR2

    Shinya Tahara, Satoshi Takeuchi, Rei Abe-Yoshizumi, **Keiichi Inoue**, Hiroyuki Ohtani, Hideki Kandori, Tahei Tahara*. (2018) *The Journal of Physical Chemistry B*, **122**, issue 18, pp 4784-4792

    doi: 10.1021/acs.jpcb.8b01934

29. Long-distance Perturbation on Schiff Base-counterion Interaction by His30 and The Extracellular Na^+-binding Site in *Krokinobacter* Rhodopsin 2

    Arisu Shigeta, Shota Ito, Rina Kaneko, Sahoko Tomida, **Keiichi Inoue**, Hideki Kandori*, Izuru Kawamura*. (2018) *Physical Chemistry Chemical Physics*, **20**, issue 13, pp 8450-8455

    doi: 10.1039/C8CP00626A

30. Effect of Temperature and Hydration Level on Purple Membrane Dynamics Studied Using Broadband Dielectric Spectroscopy from Sub-GHz to THz Regions

    Naoki Yamamoto, Shota Ito, Masahiro Nakanishi, Eri Chatani, **Keiichi Inoue**, Hideki Kandori, Keisuke Tominaga*. (2018) *The Journal of Physical Chemistry B*, **122**, issue 4, pp 1367-1377

    doi: 10.1021/acs.jpcb.7b10077

31. Chimeric Microbial Rhodopsins for Optical Activation of Gs-proteins

    Kazuho Yoshida, Takahiro Yamashita, Kengo Sasaki, **Keiichi Inoue**, Yoshinori Shichida, Hideki Kandori*. (2017) *Biophysics and Physicobiology*, **14**, pp 183-190

    doi: 10.2142/biophysico.14.0_183

32. Unique Hydrogen Bonds in Membrane Protein Monitored by Whole Mid-IR ATR Spectroscopy in Aqueous Solution

    Shota Ito, Masayo Iwaki, Shinya Sugita, Rei Abe-Yoshizumi, Tatsuya Iwata, **Keiichi Inoue**, Hideki Kandori*. (2017) *The Journal of Physical Chemistry B*, **122**, issue 1, pp 165-170

doi: 10.1021/acs.jpcb.7b11064

33. Low-temperature FTIR Spectroscopy Evidences Protein-bound Water Molecules in Eubacterial Light-driven Ion Pumps
    Yurika Nomura, Shota Ito, Miwako Teranishi, Hikaru Ono, **Keiichi Inoue**, Hideki Kandori*. (2017) *Physical Chemistry Chemical Physics*, **20**, issue 5, pp 3165-3171
    doi: 10.1039/c7cp05674e
34. Functional Characterization of Sodium-pumping Rhodopsins with Different Pumping Properties
    Satoshi P. Tsunoda, Matthias Prigge, Rei Abe-Yoshizumi, **Keiichi Inoue**, Yuko Kozaki, Toru Ishizuka, Hiromu Yawo, Ofer Yizhar, Hideki Kandori*. (2017) *PLOS ONE*, **12**, issue 7, e0179232
    doi: 10.1371/journal.pone.0179232
35. Molecular Properties of a DTD Channelrhodopsin from *Guillardia theta*
    Yumeka Yamauchi, Masae Konno, Shota Ito, Satoshi P. Tsunoda, **Keiichi Inoue**, Hideki Kandori*. (2017) *Biophysics and Physicobiology*, **14**, pp 57-66
    doi: 10.2142/biophysico.14.0_57
36. FTIR Analysis of a Light-driven Inward Proton Pumping Rhodopsin at 77 K
    Shota Ito, Shinya Sugita, **Keiichi Inoue**, Hideki Kandori*. (2017) *Photochemistry and Photobiology*, **93**, issue 6, pp 1381-1387
    doi: 10.1111/php.12771
37. Solid-state NMR Structural Study of the Retinal-binding Pocket in Sodium Ion Pump Rhodopsin
    Arisu Shigeta, Shota Ito, **Keiichi Inoue**, Takashi Okitsu, Akimori Wada, Hideki Kandori, Izuru Kawamura*. (2017) *Biochemistry*, **56**, issue 4, pp 543-550
    doi: 10.1021/acs.biochem.6b00999
38. A Chimera Na^+-pump Rhodopsin as an Effective Optogenetic Silencer
    Mohammad Razuanul Hoque, Toru Ishizuka, **Keiichi Inoue**, Rei Abe-Yoshizumi, Hiroyuki Igarashi, Takaaki Mishima, Hideki Kandori, Hiromu Yawo*. (2016) *PLOS ONE*, **11**, issue 11, e0166820
    doi: 10.1371/journal.pone.0166820
39. Natural Light-driven Inward Proton Pump
    Keiichi Inoue, Shota Ito, Yoshitaka Kato, Yurika Nomura, Mikihiro Shibata, Takayuki Uchihashi, Satoshi P. Tsunoda, Hideki Kandori*. (2016) *Nature Communications*, **7**, Article number:13415
    doi: 10.1038/ncomms13415
40. Role of Asn112 in a Light-driven Sodium Ion-pumping Rhodopsin

Rei Abe-Yoshizumi, **Keiichi Inoue**, Hideaki E. Kato, Osamu Nureki, Hideki Kandori*. (2016) *Biochemistry*, **55**, issue 41, pp 5790-5797
doi: 10.1021/acs.biochem.6b00741

41. Primary Photocycle of Na^+ Pump Rhodopsin Probed by Baseline-free Femto- to Submillisecond Stimulated Raman Spectroscopy
Yusaku Hontani†, **Keiichi Inoue**†, Miroslav Kloz, Yoshitaka Kato, Hideki Kandori, John T. M. Kennis*. (2016) *Physical Chemistry Chemical Physics*, **18**, issue 35, pp 24729-24736
doi: 10.1039/C6CP05240A (†: Equally contributed)
42. Asymmetric Functional Conversion of Eubacterial Light-driven Ion Pumps
Keiichi Inoue, Yurika Nomura, Hideki Kandori*. (2016) *The Journal of Biological Chemistry*, **291**, issue 19, pp 9883-9893 **(Selected for "Highlights of 2016" in the Journal)**
doi: 10.1074/jbc.M116.716498jbc.M116.716498.
43. Mutant of a Light-Driven Sodium Ion Pump Can Transport Cesium Ions
Masae Konno, Yoshitaka Kato, Hideaki E. Kato, **Keiichi Inoue**, Osamu Nureki, Hideki Kandori*. (2016) *The Journal of Physical Chemistry Letters*, **7**, issue 1, pp 51-55
doi: 10.1021/acs.jpclett.5b02385
44. Kinetic Analysis of H^+ - Na^+ Selectivity in a Light-Driven Na^+ Pumping Rhodopsin
Yoshitaka Kato, **Keiichi Inoue**, Hideki Kandori*. (2015) *The Journal of Physical Chemistry Letters*, **6**, issue 24, pp 5111-5115
doi: 10.1021/acs.jpclett.5b02371
45. Ultrafast Photoreaction Dynamics of a Light-driven Sodium-ion-pumping Retinal Protein from *Krokinobacter eikastus* Revealed by Femtosecond Time-resolved Absorption Spectroscopy
Shinya Tahara, Satoshi Takeuchi, Rei Abe-Yoshizumi, **Keiichi Inoue**, Hiroyuki Ohtani, Hideki Kandori*, Tahei Tahara*. (2015) *The Journal of Physical Chemistry Letters*, **6**, issue 22, pp 4481-4486
doi: 10.1021/acs.jpclett.5b01994
46. A New Group of Eubacterial Light-driven Retinal-binding Proton Pumps with an Unusual Cytoplasmic Proton Donor
Andrew Harris, Milena Ljumovic, Ana-Nicoleta Bondar, Yohei Shibata, Shota Ito, **Keiichi Inoue**, Hideki Kandori*, Leonid S. Brown*. (2015) *Biochimica et Biophysica Acta (BBA) - Bioenergetics*, **1847**, issue 12, pp 1518-1529
doi: 10.1016/j.bbabio.2015.08.003
47. The Role of the NDQ-motif in Sodium Pump Rhodopsin
Keiichi Inoue, Masae Konno, Rei Abe-Yoshizumi, Hideki Kandori*. (2015) *Angewandte Chemie International Edition*, **54**, issue 39, pp 11536-11539

doi: 10.1002/anie.201504549

48. Structural Basis for Na^+ Transport Mechanism by a Light-Driven Na^+ Pump
Hideaki E. Kato, **Keiichi Inoue**, Rei Abe-Yoshizumi, Yoshitaka Kato, Hikaru Ono, Masae Konno, Toru Ishizuka, Mohammad Razuanul Hoque, Shoko Hososhima, Hirohumi Kunitomo, Jumpei Ito, Susumu Yoshizawa, Keitaro Yamashita, Mizuki Takemoto, Tomohiro Nishizawa, Reiya Taniguchi, Kazuhiro Kogure, Andrés D. Maturana, Yuichi Iino, Hiromu Yawo, Ryuichiro Ishitani, Hideki Kandori*, Osamu Nureki*. (2015) *Nature*, **521**, Number 7550, 48–53
doi: 10.1038/nature14322

49. Converting a Light-driven Proton Pump into a Light-gated Proton Channel
Keiichi Inoue, Takashi Tsukamoto, Kazumi Shimono, Yuto Suzuki, Seiji Miyauchi, Shigehiko Hayashi, Hideki Kandori, Yuki Sudo*. (2015) *Journal of the American Chemical Society*, **137**, issue 9, pp 3291-3299
doi: 10.1021/ja511788f

50. Na^+ Transport by Sodium Ion Pump Rhodopsin is Resistant to Environmental Change - A Comparison of Photocycles of Na^+ and Li^+ Transport Processes
Keiichi Inoue, Hikaru Ono, Hideki Kandori*. (2014) *Chemistry Letters*, **44**, No. 3, 294-296
doi: 10.1246/cl.141023

51. Spectroscopic Study of a Light-Driven Chloride Ion Pump from Marine Bacteria
Keiichi Inoue, Faisal Hammad Mekky Koua, Yoshitaka Kato, Rei Abe-Yoshizumi, Hideki Kandori*. (2014) *The Journal of Physical Chemistry B*, **118**, issue 38, pp 11190-11199
doi: 10.1021/jp507219q

52. FTIR Spectroscopy of a Light-Driven Compatible Sodium Ion-Proton Pumping Rhodopsin at 77 K
Hikaru Ono, **Keiichi Inoue**, Rei Abe-Yoshizumi, Hideki Kandori*. (2014) *The Journal of Physical Chemistry B*, **118**, issue 18, pp 4784-4792
doi: 10.1021/jp500756f

53. Chimeric Proton-Pumping Rhodopsins Containing the Cytoplasmic Loop of Bovine Rhodopsin
Kengo Sasaki, Takahiro Yamashita, Kazuho Yoshida, **Keiichi Inoue**, Yoshinori Shichida, Hideki Kandori*. (2014) *PLoS ONE*, **9**, issue 3, e91323
doi: 10.1371/journal.pone.0091323

54. Role of Trimer-trimer Interaction of Bacteriorhodopsin Studied by Optical Spectroscopy and High-speed Atomic Force Microscopy
Hayato Yamashita[†], **Keiichi Inoue**[†], Mikihiro Shibata, Takayuki Uchihashi, Jun Sasaki, Hideki Kandori, Toshio Ando*. (2013) *Journal of Structural Biology*, **184**, 2-11 ([†]: Equally contributed)

doi: 10.1016/j.jsb.2013.02.011

55. Thermal and Spectroscopic Characterization of a Proton Pumping Rhodopsin from an Extreme Thermophile
Takashi Tsukamoto, **Keiichi Inoue**, Hideki Kandori, Yuki Sudo*. (2013) *The Journal of Biological Chemistry*, **288**, issue 30, pp 21581-21592
doi: 10.1074/jbc.M113.479394

56. A Blue-shifted Light-driven Proton Pump for Neural Silencing
Yuki Sudo*, Ayako Okazaki, Hikaru Ono, Jin Yagasaki, Seiya Sugo, Motoshi Kamiya, Louisa Reissig, **Keiichi Inoue**, Kunio Ihara, Hideki Kandori, Shin Takagi, Shigehiko Hayashi. (2013) *The Journal of Biological Chemistry*, **288**, issue 28, pp 20624-20632
doi: 10.1074/jbc.M113

57. A Light-driven Sodium Ion Pump in Marine Bacteria
Keiichi Inoue, Hikaru Ono, Rei Abe-Yoshizumi, Susumu Yoshizawa, Hiroyasu Ito, Kazuhiro Kogure, Hideki Kandori*. (2013) *Nature Communications*, **4**, Article number:1678
doi: 10.1038/ncomms2689

58. Absorption Spectra and Photochemical Reactions in a Unique Photoactive Protein, Middle Rhodopsin MR
Keiichi Inoue[†], Louisa Reissig[†], Makoto Sakai, Shiori Kobayashi, Michio Homma, Masaaki Fujii, Hideki Kandori, Yuki Sudo*. (2012) *Journal of Physical Chemistry B*, **116**, issue 20, pp 5888-5899 ([†]: Equally contributed)
doi: 10.1021/jp302357m

59. L105K Mutant of Proteorhodopsin
Tushar Kanti Maiti, Keisuke Yamada, **Keiichi Inoue**, Hideki Kandori*. (2012) *Biochemistry*, **51**, issue 15, pp 3198-3204
doi: 10.1021/bi201916a

60. Transient Dissociation of the Transducer Protein from *Anabaena* Sensory Rhodopsin Concomitant with Formation of the M State Produced upon Photoactivation
Masato Kondoh, **Keiichi Inoue**, Jun Sasaki, John L. Spudich, Masahide Terazima*. (2011) *Journal of American Chemical Society*, **133**, issue 34, pp 13406-13412
doi: 10.1021/ja202329u

61. Spectrally Silent Intermediates during the Photochemical Reactions of *Salinibacter* Sensory Rhodopsin I
Keiichi Inoue*, Yuki Sudo, Michio Homma, Hideki Kandori. (2011) *Journal of Physical Chemistry B*, **115**, issue 15, pp 4500-4508

62. Chimeric Microbial Rhodopsins Containing the Third Cytoplasmic Loop of Bovine Rhodopsin

Aya Nakatsuma, Takahiro Yamashita, Kengo Sasaki, Akira Kawanabe, **Keiichi Inoue**, Yuji Furutani, Yoshinori Shichida, Hideki Kandori*. (2011) *Biophysical Journal*, **100**, issue 8, pp1874-1882

63. Dual Emission Caused by Ring Inversion Isomerization of a 4-Methyl-2-pyridyl-pyrimidine Copper(I) Complex
    Michihiro Nishikawa, Kuniharu Nomoto, Shoko Kume*, **Keiichi Inoue**, Makoto Sakai, Masaaki Fujii, Hiroshi Nishihara*. (2010) *Journal of American Chemical Society*, **132**, issue 28, pp 9579-9581
64. Infrared Imaging of an A549 Cultured Cell by a Vibrational Sum-frequency Generation Detected Infrared Super-resolution Microscope
    Satoshi Kogure, **Keiichi Inoue**, Tsutomu Ohmori, Miya Ishihara, Makoto Kikuchi, Masaaki Fujii*, Makoto Sakai*. (2010) *Optics Express*, **18**, issue 13, pp 13402-13406
65. Development of a Non-scanning VSFG Detected IR Super-resolution Microscope and Its Application to Biological Cells
    Keiichi Inoue, Masaaki Fujii*, Makoto Sakai*. (2010) *Applied Spectroscopy*, **64**, Number 3, pp 275-281
66. Spectroscopic Studies of a Sensory Rhodopsin I Homologue from the Archaeon *Haloarcula vallismortis*
    Jin Yagasaki, Daisuke Suzuki, Kunio Ihara, **Keiichi Inoue**, Takashi Kikukawa, Makoto Sakai, Masaaki Fujii, Michio Homma, Hideki Kandori*, Yuki Sudo*. (2010) *Biochemistry*, **49**, issue 6, pp 1183-1190
67. Visible-super-resolution Infrared Microscopy Using Saturated Transient Fluorescence Detected Infrared Spectroscopy
    Nándor Bokor*, **Keiichi Inoue**, Satoshi Kogure, Masaaki Fujii, Makoto Sakai. (2010) *Optics Communications*, **283**, issue 3, pp 509-514
68. Characterization of a Signaling Complex Composed of Sensory Rhodopsin I and Its Cognate Transducer Protein from the Eubacterium *Salinibacter ruber*
    Yuki Sudo*, Akiko Okada, Daisuke Suzuki, **Keiichi Inoue**, Hiroki Irieda, Makoto Sakai, Masaaki Fujii, Yuji Furutani, Hideki Kandori, Michio Homma. (2009) *Biochemistry*, **48**, issue 42, pp 10136–10145
69. Two-point-separation in a Sub-micron Nonscanning IR Super-resolution Microscope Based on Transient Fluorescence Detected IR Spectroscopy
    Keiichi Inoue, Nándor Bokor, Satoshi Kogure, Masaaki Fujii*, Makoto Sakai*. (2009) *Virtual Journal for Biomedical Optics*, **4**, issue 9, pp 12013
70. Two-point-separation in a Sub-micron Nonscanning IR Super-resolution Microscope Based on Transient Fluorescence Detected IR Spectroscopy

Keiichi Inoue, Nándor Bokor, Satoshi Kogure, Masaaki Fujii*, Makoto Sakai*. (2009) *Optics Express*, **17**, issue 14, pp 12013-12018

71. Effects of Chloride Ion Binding on the Photochemical Properties of *Salinibacter* Sensory Rhodopsin I
    Daisuke Suzuki, Yuji Furutani, **Keiichi Inoue**, Takashi Kikukawa, Makoto Sakai, Masaaki Fujii, Hideki Kandori, Michio Homma, Yuki Sudo*. (2009) *Journal of Molecular Biology*, **392**, issue 1, pp 48-62
72. Reaction Dynamics of Halorhodopsin Studied by Time-Resolved Diffusion
    Keiichi Inoue, Megumi Kubo, Makoto Demura, Naoki Kamo, Masahide Terazima*. (2009) *Biophysical Journal*, **96**, issue 9, pp 3724-3734
73. Functional Imaging of a Single Cell: Far-field Infrared Super-resolution Microscopy Using Auto-fluorescence Detection
    Tsutomu Ohmori, **Keiichi Inoue**, Makoto Sakai, Masaaki Fujii, Miya Ishihara, Makoto Kikuchi. (2009) *Proceedings of SPIE*, **7182**, 71820G-1-6
74. Synthesis of Pd Complexes Directly Linked to the Light-Absorbing $[(bpy)_3Ru]^{2+}$ Unit and Their Photochemical Reactions toward Styrenes
    Akiko Inagaki*, Hiroki Nakagawa, Munetaka Akita*, **Keiichi Inoue**, Makoto Sakai, and Masaaki Fujii. (2008) *Dalton Transactions*, issue 47, pp 6709-6723
75. Signal Transmission through the HtrII Transducer Alters the Interaction of Two α-Helices in the HAMP Domain
    Keiichi Inoue, Jun Sasaki, John L. Spudich, Masahide Terazima* (2008) *Journal of Molecular Biology*, **376**, issue 4, pp 963-970
76. Energetics and Role of the Hydrophobic Interaction during Photoreaction of the BLUF Domain of AppA
    Partha Hazra, **Keiichi Inoue**, Wouter Laan, Klaas J. Hellingwerf and Masahide Terazima* (2008. Feb.) *Journal of Physical Chemistry B*, **112**, issue 5, pp 1494-1501
77. Photoreverse Reaction Dynamics of Octopus Rhodopsin
    Keiichi Inoue, Motoyuki Tsuda and Masahide Terazima* (2007) *Biophysical Journal*, **92**, issue 10, pp 3643-3651
78. Laser-Induced Transient Grating Analysis of Dynamics of Interaction between Sensory Rhodopsin II D75N and the HtrII Transducer
    Keiichi Inoue, Jun Sasaki, John L. Spudich, Masahide Terazima* (2007) *Biophysical Journal*, **92**, issue 6, pp 2028-2040
79. Tetramer Formation Kinetics in the Signaling State of AppA Monitored by Time-Resolved Diffusion
    Partha Hazra, **Keiichi Inoue**, Wouter Laan, Klaas J. Hellingwerf, Masahide Terazima* (2006)

Biophysical Journal, **91**, issue 2, pp 654-661

80. Diffusion Coefficient and the Secondary Structure of Poly-L-glutamic Acid in Aqueous Solution
    Keiichi Inoue, Naoki Baden, Masahide Terazima* (2005) *Journal of Physical Chemistry B*, **109**, issue 47, pp 22623-22628
81. Time-Resolved Enthalpy Changes of Sensory Rhodopsin II and the Transducer Complex during Photo-Reaction
    Keiichi Inoue, Jun Sasaki, Masayo Morisaki, Fumio Tokunaga, Masahide Terazima* (2005) *Journal de Physique IV France*, **125**, pp 769-772
82. Time-Resolved Detection of Sensory Rhodopsin II-Transducer Interaction
    Keiichi Inoue, Jun Sasaki, Masayo Morisaki, Fumio Tokunaga, Masahide Terazima* (2004) *Biophysical Journal*, **87**, issue 4, pp 2587-2597

[Review papers (all peer reviewed)]

1. Light-driven Sodium-pumping Rhodopsin: A New Concept of Active Transport
   Hideki Kandori*, **Keiichi Inoue**, Satoshi P. Tsunoda (2018) *Chemical Reviews*, **118**, issue 21, pp 10646-10658
   doi: 10.1021/acs.chemrev.7b00548
2. Conversion of Microbial Rhodopsins: Insights into Functionally Essential Elements and Rational Protein Engineering
   Akimasa Kaneko, **Keiichi Inoue**, Keiichi Kojima, Hideki Kandori, Yuki Sudo* (2017) *Biophysical Reviews*, **9**, issue 6, pp 861-876
   doi: 10.1007/s12551-017-0335-x
3. The Light-driven Sodium Ion Pump: A New Player in Rhodopsin Research
   Hideaki E. Kato*, **Keiichi Inoue**, Hideki Kandori, Osamu Nureki* (2016) *Bioessays*, **38**, issue 12, pp 1274-1282
   doi: 10.1016/j.tim.2014.10.009
4. The Study and Application of Photoreceptive Membrane Protein, Rhodopsin
   Keiichi Inoue (2016) *Bulletin of the Chemical Society of Japan*, **89**, No. 12, pp 1416-1424 **(Invited review)**
   doi: 10.1246/bcsj.20160235
5. The Study on a Novel Light-driven Sodium Pump and Creation of New Functional Molecules
   Keiichi Inoue (2016) *Molecular Science*, **10**, Number 1, A0086 **(Invited review)**
   doi: 10.3175/molsci.10.A0086
6. Light-driven Ion-translocating Rhodopsins in Marine Bacteria

Keiichi Inoue, Yoshitaka Kato, Hideki Kandori* (2015) *Trends in Microbiology*, **23**, issue 2, pp 91-98 (Recommended by "Faculty of 1000")
doi: 10.1016/j.tim.2014.10.009.

7. Molecular and Evolutionary Aspects of Microbial Sensory Rhodopsins
Keiichi Inoue, Takashi Tsukamoto, Yuki Sudo* (2014) *Biochimica et Biophysica Acta (BBA) - Bioenergetics*, **1837**, issue 5, pp 2587-2597
doi: 10.1016/j.bbabio.2013.05.005
8. IR Super-resolution Microspectroscopy and Its Application to Single Cells
Makoto Sakai*, **Keiichi Inoue**, Masaaki Fujii* (2013) *Current Pharmaceutical Biotechnology*, **14**, issue 2, pp 159-166

[Keynote lecture]

1. Microbial rhodopsins of marine bacteria: Nano-scale biological light-driven ion pumps
Keiichi Inoue
25th 2014 International Symposium on Micro-NanoMechatronics and Human Science, November 12, 2014, Nagoya, Japan

[Invited talks]

1. Sir Martin Wood Prize Lecture: The emerging world of microbial rhodopsins in photobiology
○**Keiichi Inoue**
MPI-FKF Seminar November 11, 2020 (講演：November 11, 2020), Online
2. Spectroscopic and structural studies on new types of rhodopsins: Heliorhodopsin and schizorhodopsin
Keiichi Inoue
Indo-Japan workshop Frontiers in Molecular Spectroscopy_From Fundamentals to Applications in Chemistry and Biology October 30- November 2, 2019, Kobe, Japan
3. Spectroscopic study on the functional mechanism of new microbial rhodopsin families
Keiichi Inoue
India-Japan Mini-workshop Frontiers in Molecular Spectroscopy: From Fundamentals to Applications in Chemistry and Biology October 30- November 2, 2018, Kobe, Japan
4. Biophysical study on heliorhodopsin
Keiichi Inoue
18th International Conference on Retinal Proteins September 24-29, 2018, Ontario, Canada
5. How the light-driven ion pump rhodopsins decide what ion species they transport?
Keiichi Inoue

The 79th Okazaki Conference: Synthetic, Biological, and Hybrid Molecular Engines August 31-September 2, 2018, Okazaki, Japan

6. The new era of marine bacterial photobiology- new types of microbial rhodopsin
   Keiichi Inoue
   3rd Global Congress & Expo on Materials Science & Engineering (GCEMSE-2018) June 14-16, 2018, Rome, Italy
7. Microbial rhodopsins: New types of machinery from marine bacteria
   Keiichi Inoue
   VI International Symposium Topical Problems of Biophotonics – 2017 July 28-August 3, 2017, St. Petersburg – Nizhny Novgorod, Russia
8. Microbial rhodopsins: New types of machinery from marine bacteria
   Keiichi Inoue
   IMS Asian International Symposium "Japan-China Joint Interdisciplinary Symposium on Coordination-based Hybrid Materials" June 23-25, 2017, Okazaki, Japan
9. Physicochemical study on the transport mechanism of novel types of microbial light-driven ion pump rhodopsins
   Keiichi Inoue
   International Symposium on Biophysics of Rhodopsins (Celebrating magnificent activities of Prof. Yoshinori Shichida), May 11, 2017, Kyoto, Japan
10. Physicochemical study on the ion-transport mechanism of light-driven ion pump rhodopsins
    Keiichi Inoue
    ITbM/IGER Chemistry Workshop 2016 ~student-centered symposium of forefront chemistry~, December 19, 2016, Nagoya, Japan
11. Exploration of new optogenetic tools: natural and artificial microbial rhodopsins
    Keiichi Inoue
    The 54th Annual Meeting of the Biophysical Society of Japan, November 26, 2016, Tsukuba, Japan
12. Spectroscopic study on the ion-transport mechanism of eubacterial light-driven ion pumps
    Keiichi Inoue
    Satellite Symposium of the Retinal Protein Conference 2016 on the Molecular Reaction Mechanism of Retinal Proteins, October 2, 2016, Potsdam, Germany
13. Light-driven sodium pump rhodopsins for optogenetics
    Keiichi Inoue
    Symposium "New probes and new light: evolution of optogenetics for neuroscientific revolution" The 39th Annual Meeting of the Japan Neuroscience Society, July 21, 2016, Yokohama, Japan

14. Light-driven sodium pump rhodopsin and its transport mechanism
    Keiichi Inoue
    OWLS (Optics Within Life Sciences) 2016, March 18, 2016, Munbai, India
15. Spectroscopic study on the photo-reaction dynamics of sodium pump rhodopsin
    Keiichi Inoue
    The seminar of the SFB 1078, Freie Universität Berlin, October 13, 2015, Berlin, Germany
16. Photochemistry of sodium pump rhodopsin
    Keiichi Inoue
    DFG-Rundgespräch Photoreceptors, October 12, 2015, Frauenchiemsee, Germany
17. Infrared spectroscopic study on the structure and dynamics of sodium pump rhodopsin
    Keiichi Inoue
    SCIX 2015, The Great Scientific Exchange Meeting, September 28, 2015, Providence, USA
18. The role of proton on the function of sodium pump rhodopsin
    Keiichi Inoue
    The 53rd Annual Meeting of the Biophysical Society of Japan, September 14, 2015, Kanazawa, Japan
19. Function and mechanism of sodium pump rhodopsin
    Keiichi Inoue 16th International Conference on Retinal Proteins, October, 7, 2014, Nagahama, Japan
20. Transient grating study of microbial rhodopsins and a new TG technique
    Keiichi Inoue, The 49th Annual Meeting of the Biophysical Society of Japan, September 17, 2011, Himeji, Japan
21. Dynamic conformational change of sensory rhodopsin II and transducer studied by transient grating method
    Keiichi Inoue, International Conference on Recent Frontiers in Applied Spectroscopy (ICORFAS-2010) September, 23, (2010) Tamil Nadu, India
22. Transient grating studies on photo-reaction dynamics of archeal rhodopsins
    Keiichi Inoue, Prof. Mathies Laboratory in University of California Berkeley August, 6, (2010) Berkeley, USA

[Brief publication statistics]

h-index: 28 (Google Scholar, November 25th, 2020).

[Awards]

1. 2019 Sir Martin Wood Prize (November 23, 2019)
2. 26th IUPAC International Symposium on Photochemistry, Awards for excellent

presentations: Young researcher oral presentation awards, Photochemical & Photobiological Sciences

3. Title: “Spectroscopic and Structural Studies on Light-driven Sodium Pump Rhodopsin” (April 8, 2016)
4. Research Funds to Promising Young Molecular Scientists by The Morino Foundation for Molecular Science (August 31, 2014)
5. “The Young Scientists’ Prize, The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology” (April 26, 2014)
6. Investigator's Award of Research Foundation” by Research Foundation for Opto-Science and Technology (February 13, 2014)

[Organizing committee member]

1. 19th International Conference on Retinal Proteins -ICRP2018- Local Executive Committee Member (2018-2020)
2. 16th International Conference on Retinal Proteins -ICRP2014- Local Executive Committee Member (2014)