GEN **ENOMOTO**

POST-DOC BIOLOGIST JSPS OVERSEAS-RESEARCH FELLOW
Albert-Ludwigs-Universität Freiburg, Schänzlestr. 1, 79104 Freiburg, Germany
gen.enomoto@biologie.uni-freiburg.de

EDUCATION/ TRAINING/ EMPLOYMENT

Post-doc JSPS Overseas Research Fellow *2020–*
Albert-Ludwigs-Universität Freiburg, Institut für Biologie III
Lab Head: Prof. Annegret Wilde

Post-doc EMBO Long-Term Fellow *2018–2020*
Albert-Ludwigs-Universität Freiburg, Institut für Biologie III
Lab Head: Prof. Annegret Wilde

Academic Fellow *2018–2019*
The University of Tokyo, Graduate School of Arts and Sciences
Host Researcher: Prof. Masahiko Ikeuchi

Assistant Professor *2016–2018*
The University of Tokyo, Graduate School of Arts and Sciences
Lab Head: Prof. Masahiko Ikeuchi

PhD *2013–2016*
The University of Tokyo, Graduate School of Arts and Sciences
Dissertation: "Molecular mechanisms of cyanobacteriochrome signaling via c-di-GMP"
Superviser: Prof. Masahiko Ikeuchi

MS *2011–2013*
The University of Tokyo, Graduate School of Arts and Sciences
Thesis: "Biochemical analysis of cyanobacteriochromes from a thermophilic cyanobacterium *Thermosynechococcus*"
Advisor: Prof. Masahiko Ikeuchi

BS *2007–2011*
The University of Tokyo, College of Arts and Sciences
Major: Biology

Honors, Awards and Grants

JSPS Overseas Research Fellowship *2020–2022*

EMBO Long-Term Fellowship *2018–2020*

grant-in-aid for Young Scientists (B) (Japan Society for the Promotion of Science (JSPS) KAKENHI grant No. 17K15244) *2017–2019*

The president of Japanese society of young photosynthesis researchers *2017*

Research Fellowships for Young Scientists by JSPS for Doctoral Course Students (DC1) *2013–2016*

Grants-in-Aid for JSPS Fellows, *2013–2016*

Conference Presentations (International)

Oral

○Gen Enomoto and Masahiko Ikeuchi
"**Cyanobacteriochrome-mediated blue/green light signaling is a population density-sensing system under photosynthesis-driving red light**"
10th European Workshop on the Molecular Biology of Cyanobacteria, (Cluj-Napoca, Romania), *August 2017*

○Gen Enomoto, Rei Narikawa, and Masahiko Ikeuchi
"Cyanobacteriochrome trio as color-sensitive light input module for c-di-GMP signaling"
9th European Workshop on the Molecular Biology of Cyanobacteria, ORAL3-6, (Texel, The Netherlands), *September 2014*

Poster

○Gen Enomoto, Annegret Wilde, and Masahiko Ikeuchi
"**Blue/green light responsive cyanobacteriochromes are cell shade sensors to adjust c-di-GMP levels according to cell depth in cyanobacterial community**"
Nucleotide Second Messenger Signaling in Bacteria SPP 1879 International Symposium, P13, (Berlin, Germany), *September 2018*

(and 8 other posters)

Teaching Experience

The University of Tokyo, Japan, *2016–2018*
Assistant Professor, Graduate School of Arts and Sciences,

- Taught *Experimental course of Basic biology,* an undergraduate course averaging 120 students per day in summer semester in cooperation with 7~8 assistant professors, covering the following topics: molecular biology, microbiology, plant biology, cell biology, etc.

LANGUAGES

Japanese: Native Language
English: (TOEFL result: 93, *2016*)
German:Elementary

PUBLICATIONS

Fushimi, K., Hasegawa, M., Ito, T., Rockwell, N. C., **Enomoto, G.**, Lagarias, J. C., Ikeuchi, M., and Narikawa, R.* (2020)
Evolution-inspired design of multicolored photoswitches from a single cyanobacteriochrome scaffold.
Proc. Natl. Acad. Sci. USA 117(27), 15573-155805

Enomoto, G., Kamiya, A., Okuda, Y., Narikawa, R., and Ikeuchi, M*. (2020)
Tlr0485 is a cAMP-activated c-di-GMP phosphodiesterase in a cyanobacterium *Thermosynechococcus*.
The Journal of General and Applied Microbiology 66(2), 147–152

Enomoto, G.* and Ikeuchi, M. (2020)
Blue/green light-responsive cyanobacteriochromes are cell shade sensors in red-light replete niches.
iScience 100936

Enomoto, G., Wilde, A., and Ikeuchi, M*. (2020)
Light-Regulated Nucleotide Second Messenger Signaling in Cyanobacteria.
Microbial Cyclic Di-Nucleotide Signaling (book chapter) 311-327

Enomoto, G.*, Okuda, Y., and Ikeuchi, M. (2018)
Tlr1612 is the major repressor of cell aggregation in the light-color-dependent c-di-GMP signaling network of *Thermosynechococcus vulcanus*.
Scientific reports 8, 5338

Hasegawa, M., Fushimi, K., Miyake, K., Nakajima, T., Oikawa, Y., **Enomoto, G.**, Sato, M., Ikeuchi, M., and Narikawa, R.* (2018)
Molecular characterization of DXCF cyanobacteriochromes from the cyanobacterium *Acaryochloris marina* identifies a blue-light power sensor.
J. Biol. Chem. 293, 1713-1727

Fushimi, K., **Enomoto, G.**, Ikeuchi, M., and Narikawa, R.* (2017)
Distinctive properties of dark reversion kinetics between two red/green-type cyanobacteriochromes and their application in the photoregulation of cAMP synthesis.
Photochem. Photobiol. 93, 681-691

Fushimi, K., Rockwell, N. C., **Enomoto, G.**, Ni Ni, W., Martin, S. S., Gan, F., Bryant, D. A., Ikeuchi, M., Lagarias, J. C., and Narikawa, R.* (2016)
Cyanobacteriochrome photoreceptors lacking the canonical Cys residue.
Biochemistry 55, 6981-6995

Fortunato, A. E., Jaubert, M., **Enomoto, G.**, Bouly, J. P., Raniello, R., Thaler, M., Malviya, S., Bernardes, J. S., Rappaport, F., Gentili, B., Huysman, M. J., Carbone, A., Bowler, C., d'Alcala, M. R.*, Ikeuchi, M., and Falciatore, A.* (2016)
Diatom phytochromes reveal the existence of far-red-light-based sensing in the ocean.
Plant Cell 28, 616-628

Enomoto, G., Ni Ni, W., Narikawa, R., and Ikeuchi, M.* (2015)
Three cyanobacteriochromes work together to form a light color-sensitive input system for c-di-GMP signaling of cell aggregation.
Proc. Natl. Acad. Sci. USA 112, 8082-8087

Narikawa, R.*, Nakajima, T., Aono, Y., Fushimi, K., **Enomoto, G.**, Ni Ni, W., Itoh, S., Sato, M., and Ikeuchi, M. (2015)
A biliverdin-binding cyanobacteriochrome from the chlorophyll *d*-bearing cyanobacterium *Acaryochloris marina*.
Scientific reports 5, 7950

Enomoto, G., Nomura, R., Shimada, T., Ni Ni, W., Narikawa, R., and Ikeuchi, M.* (2014)
Cyanobacteriochrome SesA is a diguanylate cyclase that induces cell aggregation in *Thermosynechococcus*.
J. Biol. Chem. 289, 24801-24809

Narikawa, R.*, **Enomoto, G.**, Ni Ni, W., Fushimi, K., and Ikeuchi, M. (2014)

A new type of dual-Cys cyanobacteriochrome GAF domain found in cyanobacterium *Acaryochloris marina*, which has an unusual red/blue reversible photoconversion cycle.
Biochemistry 53, 5051-5059

Enomoto, G., Hirose, Y., Narikawa, R., and Ikeuchi, M.* (2012)
Thiol-based photocycle of the blue and teal light-sensing cyanobacteriochrome Tlr1999.
Biochemistry 51, 3050-3058

*Corresponding Author