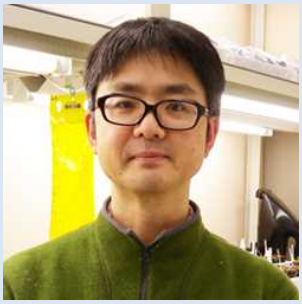

Tatsuya SAKAI, Ph.D. (Dr. Sci.)

Professor
Program: Life and Food Sciences
Area: Life Sciences
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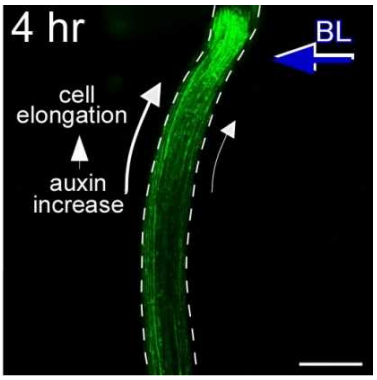
Professional Expertise

Tatsuya Sakai is a professor in Niigata University from 2014. Dr. Sakai received a Ph.D. degree in biological science from the university of Tokyo, Japan, in 1997. After completing his postdoctoral training in plant molecular genetics at Australian National University and Kyoto university, Dr. Sakai joined the Plant Science Center as Team Leader for Genetic Regulatory Systems Research Team, at RIKEN, from 2000 to 2010. He took up a new position as a tenure-track at Niigata University in 2010, and then landed a tenure professor position in 2014.

Dr. Sakai discovered the phot2 blue light photoreceptor. His research focuses mainly on the light signaling, especially phototropism. He has published over 31 peer-reviewed articles in the scientific journals including *Science*, *Plant Cell*, and *PNAS*, and an average citation (=citations/papers) of those articles is 63.

Research Fields of Interest



Plants regulate their growth patterns in response to various environmental stimuli, including light, gravity, water and so on. We are focusing on the light adaptation mechanisms, especially phototropism, in dicot plants. By the molecular genetic analysis using Arabidopsis mutants, we identified a signal transducer RPT2, a novel blue-light photoreceptor phot2, overlapping functions of phototropins, and of other photoreceptors, including phytochromes and cryptochromes. Recently, we found that the phototropic responses are induced by auxin tranporter family PIN and PIN-independent mechanisms. Now, we are studying about the phototropin signaling, which controls the differential growth through PIN-dependent and -independent pathways.

Education

1997: Ph.D. in Biology, Graduate School of Biological Science, University of Tokyo
1994: M.Sc. in Biology, Graduate School of Biological Science, University of Tokyo
1992: B.Sc. in Science, International Christian University

Professional Societies and Activities

1. Japan Society for Plant Physiology
2. American Society of Plant Biologists

Awards

1. JSPP Young Investigator Award 2009

Major Publications

Papers

[1] Takeshi Nishimura, Ken-ichiro Hayashi, Hiromi Suzuki, Atsuko Gyohda, Chihiro Takaoka, Yusuke Sakaguchi, Sachiko Matsumoto, Hiroyuki Kasahara, Tatsuya Sakai, Jun-ichi Kato, Yuji Kamiya and Tomokazu Koshiba (2014) YUCASIN is a potent inhibitor of YUCCA(s), a key enzyme in auxin biosynthesis. Plant J. 77, 352-366.

[2] Ken Haga and Tatsuya Sakai (2012) PIN auxin efflux carriers are necessary for pulse-induced but not continuous light-induced phototropism in Arabidopsis. Plant Physiol. 160, 763-776.

[3] Tatsuya Sakai*, Susumu Mochizuki*, Ken Haga, Yukiko Uehara, Akane Suzuki, Akiko Harada, Takuji Wada, Sumie Ishiguro and Kiyotaka Okada (2012) The WAVY GROWTH 3 E3 ligase family controls the gravitropic response in Arabidopsis roots. Plant J. 70, 303-314. (*equal contribution)

[4] Kiyoshi Mashiguchi, Keita Tanaka, Tatsuya Sakai, Satoko Sugawara, Hiroshi Kawaide, Masahiro Natsume, Atsushi Hanada, Takashi Yaeno, Ken Shirasu, Hong Yao, Paula McSteen, Yunde Zhao, Ken-ichiro Hayashi, Yuji Kamiya and Hiroyuki Kasahara (2011) The main auxin biosynthesis pathway in Arabidopsis. Proc. Natl. Acad. Sci. USA 108, 18512-18517.

[5] Akihiro Suzuki, Lalith Suriyagoda, Tamaki Shigeyama, Akiyoshi Tominaga, Masayo Sasaki, Yoshimi Hiratsuka, Aya Yoshinaga, Susumu Arima, Sakae Agarie, Tatsuya Sakai, Sayaka Inada, Yusuke Jikumaru, Yuji Kamiya, Toshiki Uchiumi, Mikiko Abe, Masatsugu Hashiguchi, Ryo Akashi, Shusei Sato, Takakazu Kaneko, Satoshi Tabata and Ann M. Hirsch (2011) *Lotus japonicus* nodulation is photomorphogenetically controlled by sensing the R/FR ratio through JA signaling. Proc. Natl. Acad. Sci. USA 108, 16837-16842.

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[9] Akitomo Nagashima, Genki Suzuki, Yukiko Uehara, Kensuke Saji, Toshiko Furukawa, Tomokazu Koshiba, Masayo Sekimoto, Shozo Fujioka, Takeshi Kuroha, Mikiko Kojima, Hitoshi Sakakibara, Noriko Fujisawa, Kiyotaka Okada, and Tatsuya Sakai. (2008) Phytochromes and cryptochromes regulate the differential growth of Arabidopsis hypocotyls in both a PGP19-dependent and -independent manner. Plant J. 53, 516-529.

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[17] Takatoshi Kagawa*, Tatsuya Sakai*, Noriyuki Suetsugu, Kazusato Oikawa, Sumie Ishiguro, Tomohiko Kato, Satoshi Tabata, Kiyotaka Okada, Masamitsu Wada (2001) Arabidopsis NPL1: A phototropin homologue controlling the chloroplast high-light avoidance response. Science 291, 2138-2141. (*equal contribution)

Book Chapters

[1] Tatsuya Sakai, Yukiko Uehara and Akitomo Nagashima (2014) Function of ABCBs in light signaling. in Plant ABC transporters, Ed. Markus Geislar, Springer. in press.

[2] Tatsuya Sakai (2005) NPH3 and RPT2: signal transducers in phototropin signaling pathways. In Light Sensing in Plants, ed. Wada M., Shimazaki, K., Iino, M. Springer-Verlag Tokyo.