

Keiji Nishida



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Education

- 1997-2001 Bachelor of Science, Plant Biology, University of Tokyo
2001-2003 Master of Science, Biological Science, University of Tokyo, Tsuneyoshi Kuroiwa lab
2003-2006 Ph.D., Biological Science, University of Tokyo, Toshiyuki Nagata lab.

Professional Experience

- 2006- 2008 Postdoctoral fellow, Rikkyo University, Tsuneyoshi Kuroiwa lab
2008- 2013 Postdoctoral fellow, Harvard Medical School, Pamela Silver lab
2013 to 2016 Research Associate Professor, Kobe University
2016 to present Professor, Kobe University

Awards and Fellowships

- 2003- 2005 Doctoral Course Students (DC1) Research Fellowship for Young Scientists, the Japan Society for the Promotion of Science (JSPS)
2005 Young Scientist award, The Japanese Society of Plant Morphology
2005- 2008 Postdoctoral fellow (PD) Research Fellowship for Young Scientists, JSPS
2007 BSJ Young Botanist Prize, The botanical Society of Japan
2008- 2010 Postdoctoral Fellowship for Research Abroad, JSPS
2017 NISTEP Award (National Institute of Science and Technology Policy)

Research interest

I have been interested in evolutionary design of life. My research career began with studying mitochondrial evolution and endosymbiosis with emphasis on the molecular mechanism of how mitochondrial division and segregation is conducted. In an attempt to integrate synthetic biology approach into evolutionary biology, I have demonstrated the emergence of new biological functionality by conferring bio-magnetism to yeast cells. These experiences lead me to realize the need for new technologies that accelerate designing of life system. My current research involves development of new genome editing tools that employs various DNA modification pathways to facilitate semi-rational and evolutionary design of life. The newly developed genome editing tool termed Target-AID enabled base-editing of DNA without cleavage and now is applicable to wide range of organisms.

Selected publications

Banno S, Nishida K*, Arazoe T, Mitsunobu H, Kondo A. Deaminase-mediated multiplex genome editing in *Escherichia coli*. *Nat Microbiol*. Feb 5. doi: 10.1038/s41564-017-0102-6. (2018)

Shimatani Z, Kashojiya S, Takayama M, Terada R, Arazoe T, Ishii H, Teramura H, Yamamoto T, Komatsu H, Miura K, Ezura H*, Nishida K*, Ariizumi T*, Kondo A. Targeted base editing in rice and tomato using a CRISPR-Cas9 cytidine deaminase fusion. *Nat Biotechnol*. Mar 27. doi: 10.1038/nbt.3833. (2017)

Nishida K, Arazoe T, Yachie N, Banno S, Kakimoto M, Tabata M, Mochizuki M, Miyabe A, Araki M, Hara KY, Shimatani Z, Kondo A. Targeted nucleotide editing using hybrid prokaryotic and vertebrate adaptive immune systems. *Science*, Aug 4. pii: aaf8729. (2016)

Nishida, K., Silver, P. A. Induction of Biogenic Magnetization and Redox Control by a Component of the Target of Rapamycin Complex 1 Signaling Pathway. *PLOS Biology*, 10(2), e1001269 (2012)

Nishida, K., Yagisawa, F., Kuroiwa, H., Yoshida, Y., Kuroiwa, T. WD40 protein Mda1 is purified with Dnm1 and forms a dividing ring for mitochondria before Dnm1 in *Cyanidioschyzon merolae*. *Proceeding of the National Academy of Science*, 104(11), 4736-41 (2007)

Nishida, K., Takahara, M., Miyagishima, S. Y., Kuroiwa, H., Matsuzaki, M., Kuroiwa, T. Dynamic recruitment of dynamin for final mitochondrial severance in a primitive red alga. *Proceeding of the National Academy of Science*, 100(4), 2146-51 (2003)