

Hiroshi Sasaki, Ph.D.

Contact Information	Wyss Institute for Biologically Inspired Engineering Harvard University Center for Life Sciences Boston, 530/2C, 3 Blackfan Circle, Boston, MA 02115, USA Email: Hiroshi.Sasaki@wyss.harvard.edu
Research Experience	<p>Postdoctoral Fellow – Yin Lab. July 2015 – Present Wyss Institute for Biologically Inspired Engineering, Harvard University Department of Systems Biology, Harvard Medical School</p> <p>Research Associate – Tomari Lab. April 2011 – June 2015 Institute of Molecular and Cellular Biosciences, The University of Tokyo</p> <p>Graduate Student – Yokoyama Lab. April 2005 – March 2011 Department of Biophysics and Biochemistry, Graduate School of Science, The University of Tokyo / RIKEN Yokohama Institute</p>
Education	<p>Ph.D. in Structural Biology March 2011 Department of Biophysics and Biochemistry, Graduate School of Science, The University of Tokyo Thesis: "Mechanisms for ensuring the fidelity of genetic code translation by class II aminoacyl-tRNA synthetases."</p> <p>M.S. in Biophysics and Biochemistry March 2007 Department of Biophysics and Biochemistry, Graduate School of Science, The University of Tokyo</p> <p>B.S. in Biophysics and Biochemistry March 2005 Minor: Bioinformatics and Systems Biology Department of Biophysics and Biochemistry, Graduate School of Science, The University of Tokyo</p>
Teaching Experience	<p>Practical Training of Biochemistry (Undergraduate Level) 2011 – 2015 Institution of Molecular and Cellular Biosciences, The University of Tokyo</p> <p>Teaching Assistant 2005 – 2006 Department of Biophysics and Biochemistry, Graduate School of Science, The University of Tokyo</p>
Grants	<ol style="list-style-type: none">Grant-in-Aid for Challenging Exploratory Research (No. 26650477) 2014 – 2016 The Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) Molecular dynamics of RNA silencing mechanism <i>in vivo</i>.Grant-in-Aid for Challenging Exploratory Research (No. 24657115) 2012 – 2014 The Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) <i>In vivo</i> single-molecule analysis of RNA silencing mechanism.Grant-in-Aid for JSPS Fellows (No. 07J02896) 2007 – 2010 The Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) Structural basis for quality control of microRNA by nuclear export factor exportin-5.

Honors and Awards	Postdoctoral Fellowship	2015 – 2017
	Uehara Memorial Foundation	
	Travel Grants for International Exchange	2010
	The University of Tokyo (Only one of seven recipients department-wide)	
	Research Fellowship for Young Scientists, DC1	2007 – 2010
Japan Society for the Promotion of Science		
Best Presentation Award	2007	
RNA Frontier Meeting		
Research Award for Young Scientists	2007	
The University of Tokyo (Only recipient department-wide)		

- Publications**
- Structure-based studies of tRNA recognition by *Thermus thermophilus* histidyl-tRNA synthetase.**
Sasaki H.M., Shibata R, Higashijima K, Nishimoto M, Bessho Y, Yokoyama S. *Submitted*.
 - Single-molecule analysis of target cleavage by *Drosophila* RNAi enzyme complex.**
Yao C., Sasaki H.M., Ueda T, Tomari Y, Tadakuma H. *Molecular Cell*. 2015. 59 (1):125–132.
 - Defining fundamental steps in the assembly of *Drosophila* RNAi enzyme complex.**
Iwasaki S.*, Sasaki H.M.*, Sakaguchi Y, Suzuki T, Tadakuma H, Tomari Y. *Nature*. 2015. 521(7553):533–6. *Co-first author.
 - The true core of RNA silencing revealed.**
Sasaki H.M., Tomari Y. *Nat. Struct. Mol. Biol.* 2012. 19(7): 657-60. News & Views.
 - Transplantation of a tyrosine editing domain into a tyrosyl-tRNA synthetase variant enhances its specificity for a tyrosine analog.**
Oki K, Sakamoto K, Kobayashi T, Sasaki H.M., Yokoyama S. *Proc. Natl. Acad. Sci. USA*. 2008. 105(36): 13298-303.
 - Structural and mutational studies of the amino acid-editing domain from archaeal/eukaryal phenylalanyl-tRNA synthetase.**
Sasaki H.M., Sekine S.I., Sengoku T., Fukunaga R., Hattori M, Utsunomiya Y, Kuroishi C, Kuramitsu S, Shirouzu M, Yokoyama Y. *Proc. Natl. Acad. Sci. USA*. 2006. 103(40): 14744-9.

- Oral Presentations**
- Defining fundamental steps in the assembly of *Drosophila* RNAi enzyme complex.**
Sasaki H.M. *Tokyo RNA Club*. Dec 2013. Tokyo, Japan. Invited
 - Structural basis for tRNA recognition by histidyl-tRNA synthetase.**
Sasaki H.M., Higashijima K, Shibata R, Nishimoto M, Bessho Y, Yokoyama S. *16th Annual Meeting of the RNA Society (RNA2011)*. June 2011. Kyoto, Japan.
 - Editing mechanism of archeal/eukaryal phenylalanyl-tRNA synthetase.**
Sasaki H.M., Sekine S, Yokoyama S. *RNA Frontier Meeting*. September 2007. Kobe, Japan.

- Expertise and Skills**
- Molecular Biology and Biochemistry**
- DNA works: PCR, cloning, sequencing, Southern blotting, and site-directed mutagenesis
 - Protein works: immunoprecipitation, SDS-PAGE, native PAGE, Western blotting, large-scale protein preparation, column chromatography using AKTA system, and *in vitro* translation
 - Cell culture: regular cell culture, DNA/RNA transfection, and lysate preparation

Expertise and Skills (cont)**RNA Biology**

- Standard RNA works: *in vitro* transcription, large-scale RNA preparation, RNA refolding, RI labeling of RNA, RNA biotinylation, phosphorimaging, scintillation counting, and urea PAGE
- Special techniques for studying aminoacyl-tRNA synthetases: tRNA aminoacylation assay, deacylation assay, and acidic PAGE
- Special techniques for studying RNA silencing: unwinding assay, target RNA cleavage assay, and native agarose gel electrophoresis
- *In vitro* reconstitution of RNA-induced silencing complexes (RISCs)

Structural Biology

- Protein/RNA crystallization
- Handling laboratory- or synchrotron-scale X-ray diffractometer
- Diffraction data acquisition and analysis, image processing, and initial phase determination
- Model building and refinement of protein/RNA/DNA structures

***In Vitro* Single-Molecule Imaging**

- Assembling a customized TIRF microscopy system from scratch
- Data acquisition and analysis of single-molecule imaging

Graphic Design

- Photoshop, Illustrator, Afterworks, InDesign, and Maya skills for academic illustration
- Four artworks appeared on the covers of *Molecular Cell*, and one on *Nature*
- Logo design (The RNA society of Japan, etc)

Outreach

- Writing popular science articles about biology and biotechnology (published on general magazines, e.g. WIRED)
- TEDxKids@Chiyoda 2013 speaker