

CURRICULUM VITAE

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Yuko Mimori-Kiyosue

清末 優子

Personal

Date of Birth: May 18, 1967
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Marital status: Married

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RIKEN, Center for Life Science Technologies (CLST)
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Education

1995 Ph.D., Osaka University School of Engineering Science
1992 M.D., Ochanomizu University Faculty of Science, Biology
1990 B.A., Ochanomizu University Faculty of Science, Biology

Research experience

- 2014- Unit Leader, Cellular Dynamics Analysis Unit, RIKEN Center for Life Science Technologies (CLST)
- Developmental cell biology of +TIPs using culture cell models and mouse models, currently especially focusing on molecular mechanisms for cancer initiation and development of treatment strategy.
 - Introduction of lattice light-sheet microscopy technology and development of data analysis strategy.
- 2009-14 Unit Leader, Optical Image Analysis Unit, RIKEN Center for Developmental Biology (CDB)
- Developmental cell biology of +TIPs using culture cell models and mouse models.
 - Development of high-speed high-resolution confocal microscope for intravital live imaging.
 - Establishment and operation of institute's common-use imaging facility. [cell biology, biochemistry, developmental biology, optics]
- 2000-09 Group Leader, Cytoskeleton & Cell Motility Research Group, KAN Research Institute, Inc.
- Cell biological analysis of +TIPs.
 - Analysis of action mechanism of low-molecular-weight compounds. [cell biology, microscopy, biochemistry, drug discovery research]
- 1997-00 Research Scientist, ERATO Tsukita Cell Axis Project (Prof. Shoichiro Tsukita)
- Discovery of "microtubule plus-end-tracking proteins (+TIPs)."

- Live imaging of microtubule dynamics in cells using GFP technology.
[cell biology, microscopy(GFP live imaging, confocal, EM)]
- 1992-97 Ph.D. student and Research Scientist, Osaka University School of Engineering Science (Prof. Toshio Yanagida), International Institute for Advanced Research, Matsushita Electric Industrial Co., Ltd. (Prof. Keiichi Namba, currently Osaka univ)
 - Structural analysis of bacterial flagellar filament using the world's coolest helium-cooled cryo-electron microscope developed by Prof. Yoshinori Fujiyoshi (currently Nagoya univ) and 3D image reconstruction method.
[structural biology, optics, computational image analysis]
- 1989-92 BA and MD student, Ochanomizu University Faculty of Science, Biology (Prof. Taiko Miki-Noumura)
 - *In vitro* analysis of microtubule sliding by dynein motor protein.
[biochemistry, biophysics, microscopy(dark field, EM)]

Scientific Societies

Membership:

American Society for Cell Biology, Japanese Society for Cell Biology (councilor),
The Molecular Biology Society of Japan

Grants

- 2015-18 Takeda Science Foundation
"Dissecting the actuating mechanism of the mitotic apparatus with lattice light-sheet microscopy" (representative)
- 2013-14 JSPS KAKENHI: Challenging Exploratory Research
"Exploration of novel mechanisms for intracellular trafficking by microtubule plus-end-tracking-proteins (+TIPs)" (representative)
- 2012 The Uehara Memorial Foundation
"Dissecting the functions of microtubule plus-end-tracking proteins" (representative)
- 2011 Naito Foundation Subsidy for Invitation of Overseas Scientists
"Invitation of Dr. Ernst H. K. Stelzer (EMBL, Germany) to the CDB-QBiC joint symposium" (representative)
- 2011-13 JSPS: Funding Program for Next Generation World-Leading Researchers (NEXT program)
"Analysis of microtubule function in morphogenesis" (representative)
- 2011-12 Kurata Memorial Hitachi Science and Technology Foundation
"Analysis of mechanisms for 3D organization of microtubule cytoskeleton" (representative)
- 2010-12 Takeda Science Foundation
"Analysis of microtubule network in polarized epithelial cells through microtubule plus-end-tracking-proteins (+TIPs)" (representative)

Publications

Original papers:

1. Yamashita N, Morita M, Legant WR, Chen BC, Betzig E, Yokota H, **Mimori-Kiyosue Y.**

- "Three-dimensional tracking of plus-tips by lattice light-sheet microscopy permits the quantification of microtubule growth trajectories within the mitotic apparatus" **J Biomedical Optics** (Special Section for honoring Prof. Osamu Shimomura), 20(10):101206, 2015.
2. Chen B, Legant WR, Wang K, Shao L, Milkie DE, Davidson MW, Janetopoulos C, Wu XS, Hammer III JA, Liu Z, English BP, **Mimori-Kiyosue Y**, Romero DP, Ritter A, Lippincott-Schwartz J, Fritz-Laylin L, Mullins RD, Mitchell D, Bembenek JM, Reymann AC, Böhme R, Grill SW, Wang J, Seydoux G, Tulu US, Kiehart DP, Betzig E. "Lattice Light Sheet Microscopy: Imaging Molecules, Cells, and Embryos at High Spatiotemporal Resolution" **Science**, 346(6208):1257998, 2014.
 3. van der Vaart B, van Riel WE, Doodhi H, Kevenaar JT, Katrukha EA, Gumy L, Bouchet BP, Grigoriev I, Spangler SA, Yu KL, Wulf PS, Wu J, Lansbergen G, van Battum EY, Pasterkamp RJ, **Mimori-Kiyosue Y**, Demmers J, Olieric N, Maly IV, Hoogenraad CC, Akhmanova A. "CFEOM1-associated kinesin KIF21A is a cortical microtubule growth inhibitor" **Dev Cell**. 27(2):145-60, 2013.
 > Selected by the Faculty of 1000 Prime.
 4. Shimozawa T, Yamagata K, Kondo T, Hayashi S, Shitamukai A, Konno D, Matsuzaki F, Takayama J, Onami S, Nakayama H, Kosugi Y, Watanabe TM, Fujita K, **Mimori-Kiyosue Y**. "Improving spinning disk confocal microscopy by preventing pinhole cross-talk for intravital imaging" **Proc Natl Acad Sci U S A**. 2013 110(9):3399-404, 2013.
 5. Nakamura S, Grigoriev I, Nogi T, Hamaji T, Cassimeris L, **Mimori-Kiyosue Y**. "Dissecting the nanoscale distributions and functions of microtubule-end-binding proteins EB1 and ch-TOG in interphase HeLa cells" **PLoS One**. 7(12):e51442, 2012.
 6. Tran LD, Hino H, Quach H, Lim S, Shindo A, **Mimori-Kiyosue Y**, Mione M, Ueno N, Winkler C, Hibi M, Sampath K. "Dynamic microtubules at the vegetal cortex predict the embryonic axis in zebrafish" **Development**. 139(19):3644-52, 2012.
 7. Kosodo Y, Suetsugu T, Suda M, **Mimori-Kiyosue Y**, Toida K, Baba SA, Kimura A, Matsuzaki F. "Regulation of interkinetic nuclear migration by cell cycle-coupled active and passive mechanisms in the developing brain" **EMBO J**. 30(9):1690-704, 2011.
 8. Hotta A, Kawakatsu T, Nakatani T, Sato T, Matsui C, Sukezane T, Akagi T, Hamaji T, Grigoriev I, Akhmanova A, Takai Y, **Mimori-Kiyosue Y**. "Laminin-based cell adhesion anchors microtubule plus ends to the epithelial cell basal cortex through LL5 α / β " **J Cell Biol**. 189(5):901-917, 2010.
 > Featured for the JCB "biosights video" (June 14, 2010) : "Laminin Adhesions Help Microtubules Reach Base"
 9. Kaieda S, Matsui C, **Mimori-Kiyosue Y**, Ikegami T. "Structural basis of the recognition of the SAMP motif of adenomatous polyposis coli by the Src-homology 3 domain" **Biochemistry**. 49(25):5143-5153, 2010.
 10. Nakamura T, Hayashi T, **Mimori-Kiyosue Y**, Sakaue F, Matsuura K, Iemura SI, Natsume T, Akiyama T. "The PX-RICS/14-3-3 ζ / θ complex couples N-cadherin/ β -catenin with dynein/dynactin to mediate its export from the endoplasmic reticulum" **J Biol Chem**. 285(21):16145-1654, 2010.
 11. Mori D, Yamada M, **Mimori-Kiyosue Y**, Shirai Y, Suzuki A, Ohno S, Saya H, Wynshaw-Boris A, Hirotsune S. "An essential role of the aPKC-Aurora A-NDEL1 pathway in neurite elongation by modulation of microtubule dynamics" **Nat Cell Biol**. 9:1057-1068, 2009.
 12. Matsui C, Kaieda S, Ikegami T, **Mimori-Kiyosue Y**. "Identification of a link between

- the SAMP repeats of adenomatous polyposis coli tumor suppressor and the Src homology 3 domain of DDEF" **J Biol Chem.** 283(47):33006-33020, 2008.
➤ *Selected by the Faculty of 1000 Biology.*
13. Yamada M, Toba S, Yoshida Y, Haratani K, Mori D, Yano Y, **Mimori-Kiyosue Y**, Nakamura T, Itoh K, Fushiki S, Setou M, Wynshaw-Boris A, Torisawa T, Toyoshima YY, Hirotsune S. "LIS1 and NDEL1 coordinate the plus-end-directed transport of cytoplasmic dynein" **EMBO J.** 27(19):2471-2483, 2008.
➤ *Selected by the Faculty of 1000 Biology.*
 14. Kotake Y, Sagane K, Owa T, **Mimori-Kiyosue Y**, Shimizu H, Uesugi M, Ishihama Y, Iwata M, Mizui Y. "Splicing factor SF3b as a target of the antitumor natural product pladienolide" **Nat Chem Biol.** 3(9):570-575, 2007.
➤ *Selected by the Faculty of 1000 Biology.*
 15. **Mimori-Kiyosue Y**, Matsui C, Sasaki H, Tsukita S. "Adenomatous polyposis coli (APC) protein regulates epithelial cell migration and morphogenesis via PDZ domain-based interactions with plasma membranes" **Genes Cells.** 12(2):219-233, 2007.
 16. **Mimori-Kiyosue Y**, Grigoriev I, Sasaki H, Matsui C, Akhmanova A, Tsukita S, Vorobjev I. "Mammalian CLASPs are required for mitotic spindle organization and kinetochore alignment" **Genes Cells.** 11(8):845-857, 2006.
 17. Lansbergen G, Grigoriev I, **Mimori-Kiyosue Y**, Ohtsuka T, Higa S, Kitajima I, Demmers J, Galjart N, Houtsmuller AB, Grosveld F, Akhmanova A. "CLASPs attach microtubule plus ends to the cell cortex through a complex with LL5beta" **Dev Cell.** 11(1):21-32, 2006.
➤ *Selected by the Faculty of 1000 Biology.*
 18. **Mimori-Kiyosue Y**, Grigoriev I, Lansbergen G, Sasaki H, Matsui C, Severin F, Galjart N, Grosveld F, Vorobjev I, Tsukita S, Akhmanova A. "CLASP1 and CLASP2 bind to EB1 and regulate microtubule plus-end dynamics at the cell cortex" **J Cell Biol.** 168(1):141-153, 2005.
➤ *Selected by the Faculty of 1000 Biology.*
 19. Sasaki H, Matsui C, Furuse K, **Mimori-Kiyosue Y**, Furuse M, Tsukita S. "Dynamic behavior of paired claudin strands within apposing plasma membranes" **Proc Natl Acad Sci USA.** 100(7):3971-3976, 2003.
➤ *Selected by the Faculty of 1000 Biology.*
 20. Yamaguchi J, Nemoto N, Sasaki T, Tokumasu A, **Mimori-Kiyosue Y**, Yagi T, Funatsu T. "Rapid functional analysis of protein-protein interactions by fluorescent C-terminal labeling and single-molecule imaging" **FEBS Lett.** 502(3):79-83, 2001.
➤ *Selected by the Faculty of 1000 Biology.*
 21. **Mimori-Kiyosue Y**, Shiina N, Tsukita S. "The dynamic behavior of the APC-binding protein EB1 on the distal ends of microtubules" **Curr Biol.** 10(14):865-868, 2000.
 22. **Mimori-Kiyosue Y**, Shiina N, Tsukita S. "Adenomatous polyposis coli (APC) protein moves along microtubules and concentrates at their growing ends in epithelial cells" **J Cell Biol.** 148(3):505-518, 2000.
 23. **Mimori-Kiyosue Y**, Yamashita I, Fujiyoshi Y, Yamaguchi S, Namba K. "Role of the outermost subdomain of Salmonella flagellin in the filament structure revealed by electron cryomicroscopy" **J Mol Biol.** 284(2):521-530, 1998.
 24. Yamashita I, Hasegawa K, Suzuki H, Vonderviszt F, **Mimori-Kiyosue Y**, Namba K. "Structure and switching of bacterial flagellar filaments studied by X-ray fiber diffraction" **Nat Struct Biol.** 5(2):125-132, 1998.

25. **Mimori-Kiyosue Y**, Vonderviszt F, Namba K. "Locations of terminal segments of flagellin in the filament structure and their roles in polymerization and polymorphism" *J Mol Biol.* 270(2):222-237, 1997.
26. **Mimori-Kiyosue Y**, Vonderviszt F, Yamashita I, Fujiyoshi Y, Namba K. "Direct interaction of flagellin termini essential for polymorphic ability of flagellar filament" *Proc Natl Acad Sci USA.* 93(26):15108-15113, 1996.
27. Yamashita I, Vonderviszt F, **Mimori Y**, Suzuki H, Oosawa K, Namba K. "Radial mass analysis of the flagellar filament of Salmonella: implications for the subunit folding" *J Mol Biol.* 253(4):547-558, 1995.
28. **Mimori Y**, Yamashita I, Murata K, Fujiyoshi Y, Yonekura K, Toyoshima C, Namba K. "The structure of the R-type straight flagellar filament of Salmonella at 9 Å resolution by electron cryomicroscopy" *J Mol Biol.* 249(1):69-87, 1995.
29. **Mimori Y**, Miki-Noumura T. "Extrusion of rotating microtubules on the dynein-track from a microtubule-dynein gamma-complex" *Cell Motil Cytoskeleton.* 30(1):17-25, 1995.
30. **Mimori Y**, Miki-Noumura T. "ATP-induced sliding of microtubules on tracks of 22S dynein molecules aligned with the same polarity" *Cell Motil Cytoskeleton.* 27(2):180-191, 1994.

Reviews:

31. **Mimori-Kiyosue Y**. 2011. "Shaping microtubules into diverse patterns: molecular connections for setting up both ends" *Cytoskeleton (Hoboken)*. 68(11):603-18, 2011.
32. **Mimori-Kiyosue Y**, Tsukita S. "'Search-and-capture' of microtubules through plus-end-binding proteins (+TIPs)" *J Biochem.* 134(3):321-326, 2003.
33. **Mimori-Kiyosue Y**, Tsukita S. "Where is APC going?" *J Cell Biol.* 154(6):1105-1109, 2001.

GFP movies:

34. JCB "biosights" video (June 14, 2010) : "Laminin Adhesions Help Microtubules Reach Base" (a video digest for Hotta A, et al., J Cell Biol. 2010, 189, 901-917), *The Journal of Cell Biology*
35. JCB online contents "Annotated Video Collection" (Relevant movies from Mimori-Kiyosue et al., J Cell Biol. 2000, 148, 505-518.), *The Journal of Cell Biology*
36. "APC and EB1 proteins are concentrated at microtubule plus ends through distinct mechanisms" **Mimori-Kiyosue Y**, Tsukita S. *Trend. Cell Biol.* 11, CD-ROM Supplement "GFP in Motion II", 2001.
37. **Mimori-Kiyosue Y**, Tsukita S. "16.5 Microtubule Dynamics in vivo" *The Molecular Biology of the Cell, 5th Edition*, CD-ROM Supplement, Garland Publishing Inc; 2008.
38. **Mimori-Kiyosue Y**, Tsukita S. "16.5 Microtubule Dynamics in vivo" *The Molecular Biology of the Cell, 4th Edition*, CD-ROM Supplement, Garland Publishing Inc; 2002.

日本語総説:

39. 下澤東吾, **清末優子**. 「カレントピックス」"3D 革命 — 生命活動の真の姿を照らし出す次世代蛍光顕微鏡技術" *実験医学*, 2014 *in press*.
40. 岡田康志, 藤田克昌, **清末優子**. 「News & Hot Paper Digest」"2014 年ノーベル化学賞: 超解像顕微鏡の開発"(ノーベル賞解説記事) *実験医学*, 2014 *in press*.

41. 下澤東吾, 清末優子. “生体試料深部の高速・高精細な蛍光イメージング装置の開発と応用” **BIOINDUSTRY** 7月号, 43-50, 2014.
42. 下澤東吾, 清末優子. “スピニングディスク型共焦点顕微鏡の改良と組織・個体内部観察への応用” **生体の科学**, 64, 564-570, 2013.
43. 清末優子. “ラミニン依存性細胞接着による、上皮細胞基底側表層への微小管プラス端捕捉” **細胞工学** 9月号 29(9):916-918, 2010.
44. 清末優子. 「News & Hot Paper Digest」“微小管プラス端集積因子(+TIPs)の伸長端認識メカニズム” **実験医学** 3月号26(4):532-533, 2008.
45. 清末優子. “微小管ダイナミクスと配向を制御する分子機構” **実験医学** 8月号増刊、24(13):43-51, 2006.
46. 清末優子. “微小管プラス端集積因子 (+TIPs)” **蛋白質核酸酵素増刊** 51(6):543-550, 2006.
47. 清末優子. 最新 蛍光イメージング活用術 第6回 “微小管ダイナミクスのイメージング” **バイオテクノロジージャーナル** 6(1):98-103, 2006.
48. 清末優子. イメージングで解き明かす生命機能 “微小管プラス端集積因子(+TIPs)” **実験医学** 22(15):2224-2225, 2004.
49. 清末優子, 月田承一郎. “生きた細胞における微小管プラス端集積因子のイメージング” **実験医学** 21(2):265-271, 2003.
50. 清末優子. 実験講座 “生細胞のイメージングータイムラプス画像処理とデコンボリューション演算ー” **生体の科学** 52(12):158-163, 2001.
51. 清末優子, 月田承一郎. “微小管伸長端局在タンパク質と細胞極性” **細胞工学** 19(12):1774-1780, 2000.

日本語書籍：

52. 清末優子, 米村重信. 「細胞・培地活用ハンドブック」 “4章, 形態変化、細胞運動、細胞極性 5章, 細胞骨格研究” pp40-59 (秋山徹, 河府和義編), 羊土社. 東京, 2008.
53. 清末優子, 大和隆志. 「阻害剤活用ハンドブック」 “細胞骨格・細胞分裂阻害剤” pp352-383 (秋山徹, 河府和義編), 羊土社, 東京. 2006.
54. 清末優子, 月田承一郎. わかる実験医学シリーズ 細胞骨格・運動がわかる その制御機構とシグナル伝達ネットワーク “微小管のダイナミクス制御 微小管プラス端集積因子(+TIPs)” pp63-72 (三木裕明編), 羊土社, 東京. 2004.

Patent

55. Title of invention: Pladienolide target molecule, compound capable of binding to the target molecule, and screening method for the compound
Inventors: Yoshihiko Kotake, Koji Sagane, Takashi Owa, Yoshiharu Mizui, Hajime Shimizu, Yuko Kiyosue
Application number: WO08/016187, Date of filing: Aug. 2, 2007
56. Title of invention: Cultured *Xenopus laevis* cell lines expressing mutant Adenomatous polyposis coli gene
Inventors: Yuko Kiyosue, Hiroyuki Sasaki, Tsukita; Shoichiro
Patent No.(JP): JP4333955B, Date of patent: Jul. 3, 2009
Patent No.(US): US7371843B2, Date of patent: May 13, 2008
Patent No.(EU): EP1544298B1, Date of patent: May 27, 2009

Scientific meetings

Invited talk:

Oct 2015 Optics & Photonics Japan 2015, Tokyo.

- Mar 2015 16. The 120th Annual Meeting of The Japanese Association of Anatomists / The 92nd Annual Meeting of The Physiological Society of Japan Joint Meeting, Kobe
- Jun 2014 The 66st Annual Meeting of the Japan Society for Cell Biology, Nara.
- May 2014 The 70th Annual Meeting of the Japanese Society of Microscopy, Chiba.
- May 2012 Joint Meeting of The 45th Annual Meeting of the Japanese Society of Developmental Biologists & The 64th Annual Meeting of the Japan Society for Cell Biology, Kobe.
- Jun 2009 The 61st Annual Meeting of the Japan Society for Cell Biology, Nagoya.
- Mar 2009 Wnt signaling symposium, Kyushu University.
- Oct 2007 The 66th Annual Meeting of the Japanese Cancer Association, Yokohama.
- Jun 2006 The 20th International Congress of Biochemistry and Molecular Biology (IUBMB), Kyoto.
- Dec 2004 The 42nd Annual Meeting of the Biophysical Society of Japan, Kyoto.
- May 2004 The 42nd Annual Meeting of The Molecular Biology Society of Japan, Osaka.
- Apr 2003 The 19th Annual Meeting of the Japanese Society of Electron Microscopy, The Jikei University School of Medicine.
- Jan 2003 Japan-Germany Cancer Research Workshop, Tokyo university.
- Oct 2002 The 61st Annual Meeting of the Japanese Cancer Association, Yokohama.
- May 2002 Joint Meeting of the Japanese Society of Developmental Biologists & the Japan Society for Cell Biology, Yokohama.

Oral communication:

- Oct 2005 The 78th Annual Meeting of the Japanese Biochemical Society, Kobe.

Organization:

- Nov 2014 Co-organizer of the workshop "Mechanisms of life woven from supramolecular networks" at the 37th Annual Meeting of the Molecular Biology Society of Japan, Yokohama, Japan.
- Jun 2011 Co-organizer of the symposium "Toward innovation in Developmental Cell Biology: The Impact of Emerging Technologies" at the Riken CDB.
- Jun 2011 Co-organizer/chair of the symposium "Cytoskeleton: Basics, Progress and Future" at the 63th annual meeting of the Japan Society of Cell Biology, Sapporo, Japan.

Chair:

- Jan 2007 7th Joint Conference of the American Association for Cancer Research and the Japanese Cancer Association "In the Forefront of Basic and Translational Cancer Research", Waikoloa, Hawaii.

Seminar/lecture:

- Feb 2011 Lecture, Institute of Molecular and Cellular Biosciences, Tokyo university.
- Dec 2010 Lecture, Tokyo university faculty of medicine.
- Aug 2007 Lecture, Kobe university graduate school of medicine.
- Sep 2005 Seminar, Department of System Information Sciences, Graduate School of Information Sciences, Tohoku University.
- Sep 2004 Seminar, Department of Molecular Biology, Yokohama City University Graduate School of Medical Science.
- Aug 2003 Seminar, Division of Molecular Neurobiology, National Institute for Basic Biology.
- Jan 2003 Seminar, RIKEN Center for Developmental Biology (CDB), Kobe.