

**Group Leader****Wellcome Trust Senior Research Fellow**

Department of Biochemistry, University of Oxford, UK

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Nationality: Japanese

Degrees: Ph.D. University of Washington 2010

B.S. University of Tokyo 2004

**Professional Positions**

- 2023– Group Leader, Wellcome Centre for Cell Biology, University of Edinburgh, UK  
2013–2023 Group Leader, Department of Biochemistry, University of Oxford, UK  
2010–2013 Postdoctoral Fellow, Sir William Dunn School of Pathology, University of Oxford, UK  
(Advisor: Professor Keith Gull, FRS)  
2005–2010 Graduate Research Assistant, Fred Hutchinson Cancer Research Center, Seattle, USA  
(Advisor: Dr. Sue Biggins)  
2004–2010 Molecular and Cellular Biology Graduate Student, University of Washington, Seattle, USA  
2003–2004 Research Assistant, Department of Biophysics and Biochemistry, University of Tokyo, Japan  
(Advisor: Professor Masayuki Yamamoto)

**Professional Experiences**

- 2018–2023 Royal Society Research Grant Board: Biological Sciences  
2017–2021 Biochemical Society Committee (Research Area IV: Cells)  
2021 Co-organizer, The Dynamic Cell IV (online), UK  
2019 Co-chair, ASCB Minisymposium, Washington DC, USA  
2019 Co-organizer, Dynamic Kinetochore Workshop, Paris, France  
2018, 2019 Co-organizer, Microtubule Meeting UK (4th and 5th), Edinburgh, UK  
2017 ASCB Ambassador

**Research Grants (as main applicant unless noted otherwise)**

- 2018–2023 Wellcome Trust Senior Research Fellowship (£1,910,507)  
2020–2025 Wellcome Trust Multi-User Equipment Grant (£475,478, co-applicant)  
2020 EMBO Young Investigator program small grant (€10,000)  
2018 John Fell Fund, Oxford University Press (£21,107)  
2018 EMBO Young Investigator program small grant (€10,000)  
2017–2021 EMBO Young Investigator program (€15,000)  
2017–2018 EPA Cephalosporin Fund (£20,907)  
2016–2018 Wellcome Trust Enhancement Grant (£178,556)  
2013–2018 Wellcome-Beit Prize Fellowship (£25,000)  
2013–2018 Wellcome Trust and Royal Society Sir Henry Dale Fellowship (£1,013,112)

**Honors and Awards**

- 2017 EMBO Young Investigator program  
2016 Biochemical Society's Early Career Research Award (Cells)  
2015 R.R. Bensley Award in Cell Biology (AAA Young Investigator Award)  
2013 Wellcome-Beit Prize  
2011 Human Frontier Science Program Long Term Fellowship  
2010 EMBO Long Term Fellowship  
2010 Harold M. Weintraub Graduate Student Award

**Institutional responsibilities**

- 2019–2023 Equality and Diversity Inclusion Team (formerly Athena Swan Equality & Diversity Self Assessment Team)

### Teaching Experience

2021 Senior demonstrator for gene expression practical to undergraduate students  
2014–2020 Tutorials to Wellcome Trust Chromosome and Developmental Biology DPhil program students  
2014 Lectures to third year undergraduate Biochemistry students, University of Oxford  
2005–2006 Science Education Partnership (SEP) Program, Fred Hutchinson Cancer Research Center  
2005 Teaching Assistant, Genetics 371, University of Washington

### Professional membership

2015–Present American Society for Cell Biology (ASCB)

### Preprints

Ishii M\*, Ludzia P\*, Marcianò G\*, Allen W, Nerusheva OO, **Akiyoshi B#** (2022)  
Divergent polo boxes in KKT2 and KKT3 initiate the kinetochore assembly cascade in *Trypanosoma brucei*  
*bioRxiv* 2022.06.02.494600; doi: <https://doi.org/10.1101/2022.06.02.494600>

### Publications (#corresponding author, \*equal contribution)

Ishii M and **Akiyoshi B#** (2022) Targeted protein degradation using deGradFP in *Trypanosoma brucei*. *Wellcome Open Research* 7:175

López-Escobar L, Hänisch B, Halliday C, Ishii M, **Akiyoshi B**, Dean S, Sunter JD, Wheeler RJ, Gull K (2022)  
Stage-specific transcription activator ESB1 regulates monoallelic antigen expression in *Trypanosoma brucei*.  
*Nature Microbiology* doi: 10.1038/s41564-022-01175-z

Ishii M and **Akiyoshi B#** (2022) Plasticity in centromere organization and kinetochore composition: lessons from diversity. *Current Opinion in Cell Biology* 74:47-54

Marcianò G\*, Ishii M\*, Nerusheva OO\*, and **Akiyoshi B#** (2021) Kinetoplastid kinetochore kinases KKT2 and KKT3 have unique centromere localization domains. *Journal of Cell Biology* 220(8): e202101022

Ludzia P# and **Akiyoshi B#** (2021) Illuminating the mechanism of monogenic antigen expression in trypanosomes. *Nature Reviews Microbiology*. doi: 10.1038/s41579-021-00641-5

Tromer EC#, Wemyss TA, Ludzia P, Waller RF, and **Akiyoshi B#** (2021) Repurposing of synaptonemal complex proteins for kinetochores in Kinetoplastida. *Open Biology* 11: 210049

Ludzia P, Lowe ED, Marcianò G, Mohammed S, Redfield C#, and **Akiyoshi B#** (2021) Structural characterization of KKT4, an unconventional microtubule-binding kinetochore protein. *Structure* 29(9):1014-1028.e8

**Akiyoshi B#** (2020, Preprint) Analysis of a Mad2 homolog in *Trypanosoma brucei* provides possible hints on the origin of the spindle checkpoint. *bioRxiv* doi.org/10.1101/2020.12.29.424754

Ludzia P, **Akiyoshi B#**, and Redfield C# (2020) <sup>1</sup>H, <sup>13</sup>C and <sup>15</sup>N resonance assignments for the microtubule-binding domain of the kinetoplastid kinetochore protein KKT4 from *Trypanosoma brucei*. *Biomolecular NMR Assignments* 14(2):309-3151

Ishii M and **Akiyoshi B#** (2020) Characterization of unconventional kinetochore kinases KKT10 and KKT19 in *Trypanosoma brucei*. *Journal of Cell Science* 133: jcs240978

Nerusheva OO, Ludzia P, and **Akiyoshi B#** (2019) Identification of four unconventional kinetoplastid kinetochore proteins KKT22–25 in *Trypanosoma brucei*. *Open Biology* 9: 190236

**Akiyoshi B#** (2019) Evolution: A Mosaic-Type Centromere in an Early-Diverging Fungus. *Current Biology* 29: R1184–R1186

Llauró A\*, Hayashi H\*, Bailey M\*, Wilson A, Ludzia P, Asbury CL#, and **Akiyoshi B#** (2018) The kinetoplastid kinetochore protein KKT4 is an unconventional microtubule tip-coupling protein. *Journal of Cell Biology* 217 (11) 3886–3900

Hayashi H and **Akiyoshi B#** (2018) Degradation of cyclin B is critical for nuclear division in *Trypanosoma brucei*. *Biology Open* 7: bio031609

Drinneberg IA# and **Akiyoshi B#** (2017) Evolutionary lessons from species with unique kinetochores. *Progress in Molecular and Subcellular Biology*, 56: 111–138

**Akiyoshi B#** (2016) The unconventional kinetoplastid kinetochores: from discovery toward functional understanding. *Biochemical Society Transactions* 44: 1201–1217

Nerusheva OO and **Akiyoshi B#** (2016) Divergent polo box domains underpin the unique kinetoplastid kinetochore. *Open Biology* 6: 150206

Kim J, Ishiguro K, Nambu A, **Akiyoshi B**, Yokobayashi S, Kagami A, Ishiguro T, Pendas AM, Takeda N, Sakakibara Y, Kitajima TS, Tanno Y, Sakuno T, and Watanabe Y. (2015) Meikin is a conserved regulator of meiosis I-specific kinetochore function. *Nature* 517: 466–471

**Akiyoshi B#** and Gull K. (2014) Discovery of unconventional kinetochores in kinetoplastids. *Cell* 156 (6): 1247–58

**Akiyoshi B#** and Gull K. (2013) Evolutionary cell biology of chromosome segregation: insights from trypanosomes. *Open Biology* 3: 130023

**Akiyoshi B**, Nelson CR, and Biggins S. (2013) The Aurora B kinase promotes inner and outer kinetochore interactions in budding yeast. *Genetics* 194: 785–9

Sarangapani KK, **Akiyoshi B**, Duggan NM, Biggins S and Asbury CL. (2013) Phosphoregulation promotes release of kinetochores from dynamic microtubules via multiple mechanisms. *PNAS* 110 (18): 7282–7

**Akiyoshi B**, Nelson CR, Duggan N, Ceto S, Ranish JA, and Biggins S. (2013) The Mub1/Ubr2 ubiquitin ligase complex regulates the conserved Dsn1 kinetochore protein. *PLoS Genetics* 9 (2): e1003216

Gonen S\*, **Akiyoshi B\***, Iadanza MG\*, Shi D, Duggan N, Biggins S and Gonen T. (2012) The structure of purified kinetochores reveals multiple microtubule attachment sites. *Nature Structural and Molecular Biology* 19: 925–929

**Akiyoshi B#** and Biggins S. (2012) Reconstituting the kinetochore-microtubule interface: what, why, and how. *Chromosoma* 121: 235–250

Unnikrishnan A, **Akiyoshi B**, Biggins S, and Tsukiyama T. (2012) An efficient purification system for native minichromosome from *Saccharomyces cerevisiae*. *Methods in Molecular Biology* 833: 115–23

**Akiyoshi B\***, Sarangapani KK\*, Powers AF\*, Nelson CR, Reichow SL, Arellano-Santoyo HS, Gonen T, Ranish JA, Asbury CL, and Biggins S. (2010) Tension directly stabilizes reconstituted kinetochore-microtubule attachments. *Nature* 468: 576–9 (\*equal contribution)

**Akiyoshi B** and Biggins S. (2010) Cdc14-dependent dephosphorylation of a kinetochore protein prior to anaphase in *Saccharomyces cerevisiae*. *Genetics* 186: 1487–91

**Akiyoshi B**, Nelson CR, Ranish JA, and Biggins S. (2009) Quantitative proteomic analysis of purified yeast

kinetochores identifies a PP1 regulatory subunit. *Genes and Development* 23: 2887–99

**Akiyoshi B**, Nelson CR, Ranish JA, and Biggins S. (2009) Analysis of Ipl1-mediated phosphorylation of the Ndc80 kinetochore protein in *Saccharomyces cerevisiae*. *Genetics* 183: 1591–5

### **Talks and Seminars**

Online seminar at the Igakuken, Japan (hosted by Yuichiro Miyaoka) 2022  
Online seminar at the University of Dundee, UK (hosted by David Horn) 2022  
Online seminar at the Ludwig Maximilian University of Munich, Germany (hosted by Nicolai Siegel's lab) 2022  
Seminar at the University of Edinburgh, Edinburgh, UK (hosted by Adele Marston and Owen Davies) 2021  
Talk at the 11<sup>th</sup> Salk Institute Cell Cycle meeting (online) 2021  
Online seminar at the University of Kumamoto, Kumamoto, Japan (hosted by Kei-ichiro Ishiguro) 2021  
Invited talk, The Socially Distant Centromere Conference (online) 2021  
Talk at the 38th Chromosome Workshop/19th Nuclear Dynamics, virtual meeting, Japan 2021  
Seminar at the University of Cambridge, Cambridge, UK (hosted by Eelco Tromer and Ross Waller) 2020  
Invited talk at the ASCB/EMBO meeting (Session Chair), Washington DC, USA 2019  
Invited talk at the London Parasitology Club, London, UK 2019  
Invited talk at the Cell Cycle meeting, Trieste, Italy 2019  
Seminar at the University of Edinburgh, Edinburgh, UK (hosted by Keith Matthews and Robin Allshire) 2019  
Seminar at the University of York, York, UK (hosted by Daniel Jeffares) 2019  
Invited talk at the Gordon Research Conference: Centromere Biology, Mount Snow, USA 2018  
Invited talk at the International Congress of Cell Biology, Hyderabad, India 2018  
Seminar at the Cancer Institute of JFCR, Tokyo, Japan (hosted by Norihisa Shindo) 2017  
Seminar at the Tohoku University, Sendai, Japan (hosted by Asako Sugimoto) 2017  
Seminar at the RIKEN, Wako, Japan (hosted by Tatsuya Hirano) 2017  
Invited talk at the Kinetoplastid Breeders' Club Meeting (KBC4), Lancaster, UK 2017  
Invited talk at the EMBO Dynamic kinetochore workshop, Edinburgh, UK 2017  
Short talk at the Kinetoplastid Molecular Cell Biology Meeting, Woods Hole, USA 2017  
Seminar at the University of Dundee, Dundee UK (hosted by Inke Näthke) 2017  
Seminar at the Institut Curie, Paris, France (hosted by Ines Drinnenberg) 2017  
Seminar at the University of Tokyo, Tokyo, Japan (hosted by Yoshinori Watanabe) 2016  
Invited talk at an ASCB meeting special interest subgroup, San Francisco, USA 2016  
Invited lecture at the Biozentrum, Basel, Switzerland (hosted by Erich Nigg) 2016  
Talk at the BSP Trypanosomiasis and Leishmaniasis Seminar, České Budějovice, Czech Republic 2016  
Invited talk at the EMBO Conference: Microtubules: Structure, Regulation and Functions, Heidelberg, Germany 2016  
Cells Early Career Research Award Medal Lecture at Cilia, Cytoskeleton and Cancer, Edinburgh 2016  
Seminar at the Hubrecht Institute, Utrecht, Netherlands (hosted by Geert Kops) 2016  
Seminar at the University of Glasgow, Glasgow (hosted by Jeremy Mottram) 2015  
Seminar at the MRC LMB, Cambridge (hosted by Andrew Carter) 2015  
Seminar at the Francis Crick Institute, Mill Hill (hosted by Eva Frickel) 2015  
Seminar at the Nagoya University, Nagoya, Japan (hosted by Tomomi Kiyomitsu) 2015  
Seminar at the Cancer Institute of JFCR, Tokyo, Japan (hosted by Toru Hirota) 2015  
Invited talk at the Gordon Research Conference: Motile & Contractile Systems, New London, US 2015  
R.R. Bensley Award Lecture at the Experimental Biology 2015, Boston, US 2015  
Invited talk at the Mazelet November meeting, Mazelet, France (hosted by Kim Nasmyth) 2014  
Seminar at the University of Tokyo, Tokyo, Japan (hosted by Yoshinori Watanabe) 2014  
Seminar at the National Institute of Genetics, Mishima, Japan (hosted by Tatsuo Fukagawa) 2014  
Invited talk at the 20th International Chromosome Conference (ICC), University of Kent, Canterbury, UK 2014  
Seminar at the University of Dundee, Dundee UK (hosted by Mike Ferguson) 2014  
Seminar at the London School of Hygiene & Tropical Medicine, London, UK (hosted by John Kelly) 2013  
Seminar at the RIKEN, Wako, Japan (hosted by Tatsuya Hirano) 2013  
Seminar at the RIKEN CDB, Kobe, Japan (hosted by Tomoya Kitajima) 2013  
Seminar at the Harvard Medical School, Boston, USA (hosted by Jonathan Higgins) 2013  
Talk at the Kinetoplastid Molecular Cell Biology Meeting, Woods Hole, USA 2013  
Seminar at the University of Tokyo, Tokyo, Japan (hosted by Yoshinori Watanabe) 2012  
Invited Talk at the 106th International Titisee Conference: Reconstituting Chromatin: From Self-Assembly to Self-Organization, Black Forest, Germany 2012  
Talk at the EMBO Workshop on: Structures, Function & Regulation of Centromeres and Kinetochores, Barcelona,

Spain 2012

Invited Talk at the UK-Japan Mechanochemical Cell Biology Symposium, Warwick, UK 2012

Seminar at the Max Planck Institute for Molecular Physiology, Dortmund, Germany (hosted by Andrea Musacchio) 2012

Seminar at the University of Edinburgh, UK (hosted by David Leach) 2012

Seminar at the University of Edinburgh, UK (hosted by Robin Allshire) 2012

Talk and poster presentation at the BSCB Meeting Spring Conference, Warwick, UK 2012

Seminar at the University of Oxford, UK (hosted by the Biochemistry Department) 2011

Seminar at the Cancer Research UK Clare Hall Laboratories, UK (hosted by John Diffley) 2011

Talk and poster presentation at the 6th UK-Japan Cell Cycle Workshop, Windermere, UK 2011

Seminar at the University of Oxford, UK (hosted by Kim Nasmyth) 2010

Seminar at the Cancer Institute of JFCR, Tokyo, Japan (hosted by Toru Hirota) 2010

Seminar at the University of Tokyo, Tokyo, Japan (hosted by Yoshinori Watanabe) 2010

Talk and poster presentation at the CSHL Cell Cycle meeting, Cold Spring Harbor, New York, USA 2010

Seminar at the University of Oxford, UK (hosted by Keith Gull) 2009

Seminar at the Cambridge University, UK (hosted by Mark Field) 2009

Seminar at the Kyoto University, Kyoto, Japan (hosted by Mitsuhiro Yanagida) 2009

Seminar at the University of Tokyo, Tokyo, Japan (hosted by Yoshinori Watanabe) 2009

Seminar at the University of California, San Diego, San Diego, USA (hosted by Arshad Desai) 2008

Seminar at the Institute for Systems Biology, Seattle, USA (hosted by Jeff Ranish) 2008

Seminar at the Rockefeller University, New York, USA (hosted by Tarun Kapoor) 2007

Seminar at the Friedrich Miescher Laboratory of the Max Planck Society, Tuebingen, Germany (hosted by Silke Hauf) 2007

**Poster presentations:**

Poster at the Evolution of Biomolecular networks: rules of the game, Leiden: Netherlands 2018

Poster presentation at the EMBO Conference Series: Microtubules: Structure, Regulation and Functions, Heidelberg, Germany 2012

Poster presentation at the FASEB meeting, Mitosis: Spindle Assembly and Function, Lucca, Italy 2009

Poster presentation at the ASCB meeting, Washington DC, USA 2007

Poster presentation at the FASEB meeting, Mitosis: Spindle Assembly and Function, Indian Wells, USA 2007