

EMBL Australia Group Leader
EMBL Australia node in Single Molecule Science
The University of New South Wales
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Nationality Swedish

EDUCATION

- 2007 - 2011 **Max Planck Institute of Molecular Cell Biology and Genetics**
PhD *summa cum laude* (Dr. rer. nat.)
Ewa Paluch Lab
- 2005 - 2006 **Imperial College of Science, Technology and Medicine**
Massachusetts Institute of Technology
MSc Bioinformatics & Diploma of the Imperial College
Paul Matsudaira lab
- 2002 - 2005 **Imperial College of Science, Technology and Medicine**
BSc (Hons) Physics & Associateship of the Royal College of Science

APPOINTMENTS

- 01/2016 – present **EMBL Australia**, Single Molecule Science node
The University of New South Wales
EMBL Australia Group Leader
- 04/2012 – 12/2015 **Centenary Institute of Cancer Medicine and Cell Biology**
Research Officer, Head of Cellular Mechanobiology - Immune Imaging Program
- 08/2012 – present **The University of Sydney**
Honorary Associate
- 04/2011 – 09/2011 **Max Planck Institute of Molecular Cell Biology and Genetics**
Postdoctoral Research Fellow - Ewa Paluch Lab
- 10/2007 – 04/2011 **Max Planck Institute of Molecular Cell Biology and Genetics**
International Max Planck Research School PhD Fellow - Ewa Paluch Lab
- 01/2007 – 09/2007 **Bioinformatics Institute, A*STAR, Singapore**
Research Associate - Imaging Informatics Group
- 06/2004 – 10/2004 **The Belle Collaboration**
KEK: High Energy Accelerator Research Organisation, Japan
Research Intern

RESEARCH INTERESTS

Cell biology, biophysics, cytoskeleton, immunology, bioimaging, image analysis, tissue engineering, modelling

FUNDING

GRANTS & FELLOWSHIPS

- ARC Discovery Project, Chief Investigator A, \$387,834 AUD, 2018-2020
- Cancer Council Tasmania, Chief Investigator B, \$20,990 AUD, 2017
- NHMRC Project Grant, Chief Investigator B, \$616,950 AUD, 2016-2018
- NHMRC Project Grant, Chief Investigator D, \$611,995 AUD, 2016-2018
- University of Sydney Cancer Research Fund SPARC, Chief Investigator B, \$135,717 AUD, 2015-2016
- Cancer Institute NSW Early Career Fellowship, sole CI, \$600,000 AUD, 2014-2016
- Cure Cancer Australia Foundation project grant, sole CI, \$99,037 AUD, 2014-2015
- University of Sydney Bridging Support Grant, sole CI, \$30,000, 2014 (declined in favour of above grant)
- Sydney Medical School Early Career Researcher Grant, sole CI, \$25,000 AUD, 2013 – 2014
- International Max Planck Research School PhD Fellowship, sole CI, 2007 - 2011

EQUIPMENT & INFRASTRUCTURE

- Cancer Institute NSW Research Equipment Grant, Chief Investigator D, \$600,000 AUD, 2017
- ARC Linkage Infrastructure, Equipment and Facilities, CI, \$550,000 AUD, 2017
- UNSW Research Infrastructure Scheme, Chief Investigator C, \$167,000 AUD, 2017
- Cancer Institute NSW Research Equipment Grant, Investigator, \$375,000 AUD, 2016
- Cancer Institute NSW Research Equipment Grant, Chief Investigator D, \$102,000 AUD, 2015
- NHMRC Equipment Grant, Chief Investigator, \$40,120 AUD, 2013

PUBLICATIONS

2018

- Zenker J., White M.D., Gasnier M., Alvarez Y.D., Lim H.Y.G., Bissiere S, Biro M.*, Plachta N* (2018), *Expanding Actin Rings Zipper the Mouse Embryo for Blastocyst Formation*, [Cell](#) (In press) (* senior and corresponding authors)

2017

- Chou J., Poole K., **Biro M.** (2017), *Your body's cells use and resist force, and they move. It's mechanobiology.* [The Conversation](#) October 20, 2017
- Sedzinski J., Hannezo E., Tu F, **Biro M.**, and Wallingford J. (2017), *RhoA regulates actin network dynamics during apical surface emergence in multiciliated epithelial cells*, [Journal of Cell Science](#) 130(2): 420-428
- Marshall A.D., Bailey C.G., Champ K., Vellozzi M., O'Young P., Metierre C., Feng Y., Thoeng A., Richards A.M., Schmitz U, **Biro M.**, Jayasinghe R., Ding L., Anderson L., Mardis E.R., Rasko J.E.J. (2017), *CTCF Genetic Alterations in Endometrial Carcinoma are Pro-tumorigenic*, [Oncogene](#) 36(29):4100-4110

2016

- Newman P., Galenano Niño J.L., Graney P., Razal J.M., Minett A.I., Ribas J., Ovalle-Robles R., **Biro M.***, Zreiqat H.* (2016), *Relationship between nanotopographical alignment and stem cell fate with live imaging and shape analysis*, [Scientific Reports](#) 6:37909 doi: 10.1038/srep37909 (* senior and corresponding authors)
- Tay S.S., Carol H., and **Biro M.** (2016), *TriKEs and BiKEs join CARs on the cancer immunotherapy highway*, [Human Vaccines & Immunotherapeutics](#) 12(11): 2790-2796
- Galeano Niño J.L., Kwan R.Y.Q., Weninger W., and **Biro M.** (2016), *Antigen-specific T cells fully conserve antitumour function following cryopreservation*, [Immunology and Cell Biology](#) 94(4): 411-418
- Sedzinski J., Hannezo E., Tu F, **Biro M.**, and Wallingford J. (2016), *Emergence of an Apical Epithelial Cell Surface In Vivo*, [Developmental Cell](#) 36(1): 24-35

2015

- Newman P., Lu Z., Roohani-Estefani S.I., Church T.L., **Biro M.**, Davies B., King A., Mackenzie K., Minett A.I. & Zreiqat H. (2015), *Porous and strong three-dimensional carbon nanotube coated ceramic scaffolds for tissue engineering*, [Journal of Materials Chemistry B](#) 3(42): 8337-8347

- Tong P.L., Roediger B., Kolesnikoff N., **Biro M.**, Tay S.S., Jain R., Shaw L.E., Grimbaldston M.A., Weninger W. (2015), *The skin immune atlas: three-dimensional analysis of cutaneous leukocyte subsets by in vivo microscopy*, [Journal of Investigative Dermatology](#) 135(1): 84-93

2014

- Munoz M.A.*, **Biro M.***, Weninger W. (2014), *T cell migration in intact lymph nodes in vivo*, [Current Opinion in Cell Biology](#) 30: 17-24 (* equal contribution)
- **Biro M.***, Munoz M.A., Weninger W. (2014), *Targeting Rho-GTPases in immune cell migration and inflammation*, [British Journal of Pharmacology](#) 171(24): 5491-5506 (* corresponding author)
- Weninger W., **Biro M.**, Jain R. (2014), *Leukocyte migration in the interstitial space of non-lymphoid organs*, [Nature Reviews Immunology](#) 14(4): 232-246
- Bovellan M., Romeo Y., **Biro M.**, Fritzsche M., Boden A., Moulding D., Thorogate R., Jégou A., Thrasher A.J., Romet-Lemonne G., Paluch E., Roux P.P., and Charras G. (2014), *Cellular control of cortical actin nucleation*, [Current Biology](#) 24(14): 1628-1635

2013

- **Biro M.**, Romeo Y., Kroschwald S., Bovellan M., Boden A., Tcherkezian J., Roux P.P., Charras G. & Paluch E. (2013), *Cell cortex composition and homeostasis resolved by integrating proteomics and quantitative imaging*, [Cytoskeleton](#) 70(11): 741-754

2011

- Sedzinski J.*, **Biro M.***, Oswald A., Tinevez J.-Y., Salbreux G. & Paluch E. (2011), *Polar actomyosin contractility destabilizes the position of the cytokinetic furrow*, [Nature](#) 476(7361): 462-6 (* equal contribution)
- Puah W.C., Cheok L.P., **Biro M.**, Ng W.T., Wasser M. (2011), *TLM-Converter: reorganization of long time-lapse microscopy datasets for downstream image analysis*, [BioTechniques](#) 51(1): 49-54

BOOK CHAPTER

2015

- **Biro M.*** and Maître J.L. (2015), *Dual Pipette Aspiration: A Unique Tool for Studying Intercellular Adhesion*, [Methods in Cell Biology](#) 125: 255-267, Biophysical Methods in Cell Biology, Vol. I, Elsevier Academic Press, Waltham, MA, USA (* volume cover)

AWARDS

- Sydney Medical School Early Career Overseas Travel Grant, November 2014
- Centenary Travel Award, June 2014
- 1st Prize presentation award, Cure Cancer Australia Researcher Symposium, Melanoma Institute Australia, March 2014
- 1st Prize presentation award, Cell Architecture in Development and Disease Symposium, Australian Society for Biochemistry and Molecular Biology, Lowy Cancer Centre, February 2013
- *Summa cum laude* (Highest distinction) for PhD, Max Planck Institute, Dresden, Germany, 2011
- International Max Planck Research School PhD Fellowship 2007 – 2011
- Dresden International Graduate School for Biomedicine and Bioengineering Conference Travel Award 2010

GRADUATE SUPERVISION

- Kroschwald S (**MSc**, 2009), *Dynamics and Regulation of Cortex Assembly* (Distinction)
- Boden A (**MSc**, 2011), *Nucleation of the Cellular Actin Cortex*
- Galeano Niño JL (**MPhil**, 2015), *Cytoskeletal Dynamics in Cytotoxic T Cell Migration*
- Newman P (**PhD**, 2017), *Stem cell adhesion on carbon nanotube coated biomaterials*
- Galeano Niño JL (**PhD**, ongoing), *The role of actin nucleators in T cell scanning*
- Govendir MA (**PhD**, ongoing), *Mechanobiology of T cell-target tumour cell interactions*
- Tearle LJ (**PhD**, ongoing), *Tumour cell escape and invasion*
- Mazalo J (**PhD**, ongoing), *T cell polarisation during migration*

PROFESSIONAL MEMBERSHIPS

- Associate Investigator, ARC Centre of Excellence in Advanced Molecular Imaging, Australia.
- Board Member of the Alliance for Design and Application in Tissue Engineering, Australia.
- Associate Faculty member of Faculty of 1000 (F1000) in Cell Adhesion and Migration.
- Member of the Biophysical Society, USA.
- Member of the Australian Society for Biophysics.
- Member of the Australasian Society for Immunology.
- Member of the Translational Cancer Research Network.
- Member of the Cancer Research Network of The University of Sydney.

SCIENTIFIC AND COMMUNITY ENGAGEMENT

FUNDING AGENCY REVIEW

- National Health and Medical Research Council (NHMRC), Australia - Panel member / Assessor
- Cancer Australia's Priority-driven Collaborative Cancer Research Scheme (PdCCRS) - Panel member
- Australian Research Council (ARC) - Assessor
- Translational Cancer Research Network - Assessor

EDITORIAL WORK

- Editorial Advisory Board, Cogent Biology, Taylor & Francis Publishing
- Editorial Board, Science Matters, UZH Publishing

JOURNAL PEER REVIEW

- Cell
- Journal of the Royal Society Interface
- Seminars in Immunology
- International Review of Cell and Molecular Biology
- Scientific Reports
- Journal of Immunology
- PLOS One

SELECTION PANELS

- EMBL Australia / CSIRO Group Leader recruitment 2016

LECTURES & COURSE ORGANISATION

- EMBL Australia PhD course 2017, Melbourne, Australia
- UNSW Cellular Mechanisms of Health and Disease (Lecturer 2017)
- University of Sydney Mechanobiology course (Lecturer 2017)

EXAMINATIONS

- PhD (Monash University, University of Sydney)
- Honours (UNSW)

COMMUNITY OUTREACH

- Charitable fundraising and representation benefitting Cure Cancer Australia Foundation and CanToo
- Collaboration with cancer Consumer Representative via Cancer Voices NSW (Ms. Doanh Tang)

SELECTED TALKS AND CONFERENCE PARTICIPATION

2017

- 76th Annual Meeting of the Japanese Cancer Association, Yokohama, Japan, September 2017 (Invited talk)
- University of Sydney, Faculty of Engineering, Introduction to Mechanobiology course, September 2017 (Invited lecture)
- University of Technology, Sydney, School of Life Sciences, August 2017 (Invited talk)
- Hunter Meeting 2017, Hunter valley, NSW, April 2017 (Session Chair)
- EMBL Australia PhD Course, Monash University, Melbourne, July 2017 (Organiser, session chair)

2016

- ComBio 2016, Brisbane Convention Centre, Brisbane, October 2016 (Invited talk)
- A sense of place: from cells to penguins, Woolcock Institute, Sydney, July 2016 (Invited talk)
- Macquarie University Photonics, Sydney, Australia, July 2016 (Invited talk)
- EMBL Australia showcase, John Curtin SMR, ANU, Canberra, Australia, July 2016 (Invited talk)
- Founder and organiser of the Sydney Cytoskeleton Consortium, inaugural meeting in Sydney, May 2016
- Olivia Newton-John Cancer Research Centre, Melbourne, Australia, May 2016 (Invited talk)

2015

- Forces in Biology, IMB, UQ, Brisbane, Australia, October 2015 (Invited talk)
- UNESCO International Year of Light, CUDOS ARC Centre of Excellence, July 2015 (Invited lecture)
- Garvan Institute of Medical Research, Sydney, June 2015 (Invited talk)
- Institute of Molecular and Cell Biology, A*STAR, Singapore, May 2015 (Invited talk)
- Institute for Neuroscience and Muscle Research, The Children's Hospital at Westmead, May 2015 (Invited)
- Cure Cancer Australia Researcher Symposium, March 2015 (Talk)
- Hunter Meeting 2015, March 2015 (Talk)
- Gordon Conference/Seminars on Directed Cell Migration, Galveston, TX, USA, Jan 2015 (Talk)
- University of Texas at Austin, Austin, TX, USA, Jan 2015 (Invited talk)

2014

- 5th Tissue Engineering Symposium, ADATE, Sydney, August 2014 (Organising Committee, Session Chair and Abstract/Presentation judge)
- 2014 International Biophysics Congress, IUPAB, Brisbane, Australia, August 2014 (Talk)
- Annual General Meeting of the Centenary Institute, Sydney, August 2014 (Invited talk)
- Fight on the Beaches charity fundraising event for Cure Cancer Australia, July 2014 (Invited talk)
- Children's Cancer Research Unit, Kids Research Institute, Westmead, July 2014 (Invited talk)
- Focus on Microscopy 2014, Sydney, Australia, April 2014 (Selected Talk)
- Cure Cancer Australia Researcher Symposium, Sydney, March 2014 (Talk)
- Sail for Cancer Research, CCAF, Empire Marina at Bobbin Head, Sydney, March 2014 (Invited talk)
- Institute of Molecular and Cell Biology, A*STAR, Singapore, February 2014 (Invited talk)

2013

- Focus on Metastasis, Cancer Research Network, Sydney, June 2013 (Invited talk)
- 3rd Sydney Imaging Group Symposium, Biomedical Imaging Facility, UNSW, March 2013 (Talk)
- 2nd Cell Architecture in Development and Disease Symposium, ASBMB, UNSW, Feb. 2013 (Talk)

2007-2012

- Evaluation of the Max Planck Research School MCBB 2007-2012, Dresden, July 2011 (Invited talk)
- Actin, the Cytoskeleton and the Nucleus, Biophysical Society, Singapore, Nov. 2010 (Poster)
- Mechanics of large molecular assemblies, IFISC, Mallorca, April 2010 (Talk)
- 54th Annual Meeting of the Biophysical Society, San Francisco, February 2010 (Poster)
- Cell Shape Changes, Institut Curie, Paris, France, October 2007 (Talk)

SELECTED COLLABORATIONS

- Nicolas Plachta, IMCB, Singapore: cytoskeletal dynamics in the early mouse embryo
- Mark Read, University of Sydney: computational modelling of biological processes
- Weimiao Yu, IMCB, Singapore: implementation of advanced 3D image analysis solutions
- Greg Rice, University of Waterloo, Canada: novel spatiotemporal statistics
- Jakub Sedzinski, University of Copenhagen, Denmark: cytoskeletal forces in epithelial sheets
- Hala Zreiqat, University of Sydney: tissue engineering and nanofabrication
- Fabio Luciani, UNSW: bioinformatics; single cell transcriptomics/epigenomics
- Jean-Léon Maître, Institut Curie, France: biophysical tools for force, tension and adhesion measurements

SKILLS

- Languages, fluent: Swedish, English, French, Italian and Hungarian; intermediate: German.
- I have extensive skills in programming, notably in Matlab, C++, Perl, R, LabVIEW, especially when applied to image processing, biophysical simulation or instrument control.
- Private Pilot Licence (JAR-FCL PPL-A), Rescue Diver (PADI), Emergency First Responder (First aid, CPR), General Boat Licence (NSW, Australia).

REFERENCES

Prof. Ewa Paluch, Group Leader, MRC LMCB, London

Prof. Guna Rajagopal, global VP & CIO, Janssen Pharmaceuticals (Johnson and Johnson)

Prof. Joe Howard, Emeritus Director, Max Planck Institute CBG / Professor, Yale University, USA