# Naoko Mizuno, Ph.D.

Curriculum Vitae

**PERSONAL INFORMATION**

Place of birth: Japan

Gender: Female

Current position: Investigator (PI)

 Laboratory of Structural Cell Biology

NHLBI, NIH

Work address: 9000 Rockville Pike, Bethesda, Maryland, 20892, USA

E-mail address: naoko.mizuno@nih.gov

Web site: <https://www.nhlbi.nih.gov/science/laboratory-structural-cell-biology/people/mizuno-naoko>

**EDUCATION**

2001-2005 Ph.D. program

 Department of Cell Biology

 University of Texas Southwestern Medical Center, USA

 Supervisor: Masahide Kikkawa and

 Department of Life Sciences,

Graduate School of Arts and Sciences, University of Tokyo

 Awarded Ph.D. degree for thesis entitled

 “Study on the Structural Aspect of the Dynein-Microtubules”

1999-2001 Master program,

 Department of Life Sciences,

 Graduate School of Arts and Sciences, University of Tokyo

 Awarded the degree of Master of Multi-Disciplinary Sciences for

thesis entitled “The Interaction between Dynein Stalk and Microtubules”

Supervisor: Yoko Toyoshima and Chikashi Toyoshima

1995-1999 Bachelor program,

Department of Pure and Applied Sciences,

College of Arts and Sciences, University of Tokyo

 Award the degree of Bachelor of Liberal Arts;

**RESEARCH**

**2020- Principal Investigator, NHLBI, NIH, USA**

**2012-2020 Independent Group Leader, Max Planck Institute of Biochemistry, Germany**

2007-2011 Research Fellow, NIAMS, NIH, US government

 Supervisor: Section Chief Dr. Alasdair Steven

2005-2007 Wrap-up postdoctoral Fellow, University of Texas Southwestern Medical Center, Supervisor: Prof. Masahide Kikkawa

2002-2005 Junior Fellow, University of Texas Southwestern Medical Center,

 Supervisor: Prof. Masahide Kikkawa

1999-2000 Visiting Scientist, Institute of Molecular and Cellular Bioscience, University of Tokyo

 Supervisor: Prof. Chikashi Toyoshima

1998-1999 Undergraduate Research Assistant, University of Tokyo

 Supervisor: Prof. Yoko Toyoshima

**AWARDS/FUNDING**

**2018-2021 DFG, SFB863 (400 000 Euro) (Terminated in 2020)**

**2017-2022 ERC consolidator grant (2 000 000 Euro) (terminated in 2020)**

**2017-2020 Boehringer Ingelheim Foundation, Perspective programme ‘PLUS 3’ recipient**

**(900 000 Euro)**

**2016-2019 EMBO Young Investigators award**

**2015-2018 DFG/ANR collaborative grant DECODIFT (300 000 Euro)**

**2014-2017 DFG project grant, 1745/2-1 (350 000 Euro)**

**2012-2017 DFG GRK1721 (225 000 Euro)**

2010 US Government, excellent employee selected

2009 Travel award selected at Gordon Research Conference

(declined due to US Government regulations)

2004–2006 Japanese Society for Promoting Science (JSPS) Research Fellowship

 ($88,000 funding for two years salary and $20,000 for the research)

**Oral Presentations**

1. 2022, Sep, Murnau conference on Structural Biology, Germany
2. 2021, Sep, Microtubules in Neurons, Island Frauenchiemsee, Germany
3. 2021, May, EMBO workshop – molecular neurobiology, Crete, Greece
4. 2021, May, Yale University, USA
5. 2021, May, University of Chicago, USA (web seminar)
6. 2020, Oct, Switzerland (postponed due to Covid-19 crisis)
7. 2020, Oct, MBI Conference, Singapore (converted to web conference Covid-19 crisis)
8. 2020, Oct, Microtubules in Neurons, Island Frauenchiemsee, Germany (postponed due to Covid-19 crisis)
9. 2020, Sep, Washington University (web seminar)
10. 2020, Sep, Murnau conference on Structural Biology, Germany (postponed due to Covid-19 crisis)
11. 2020, Jul, Protein Society meeting, Sapporo, Japan (postponed due to Covid-19 crisis)
12. 2020, May, University of Chicago, USA (postponed due to Covid-19 crisis)
13. 2020, May, EMBO workshop – molecular neurobiology, Crete, Greece (postponed due to Covid-19 crisis)
14. 2020, Apr, 'The cytoskeletal road to neuronal function', West Sussex, UK (postponed due to Covid-19 crisis)
15. 2020, Apr, Yale University, USA (postponed due to Covid-19 crisis)
16. 2020, Jan, NIDDK, NIH
17. 2019, Nov, University of Kaiserslautern, Germany
18. 2019, Oct, symposium “New trends in bioscience” Ceske Budejovice, Czech Republic
19. 2019, Oct, Max Planck Institute for molecular physiology
20. 2019, Jul, EBSA2019 (Biophysics congress), Madrid, Spain
21. 2019, May, ISBC2019 International School of biological crystallization, Granada, Spain
22. 2019, May, Gordon Research Conference on fibronectin, integrins and related molecules, Italy
23. 2019, Mar, National University, Taipei, Taiwan
24. 2019, Feb, Technical University, Munich
25. 2019, Feb, Technical University, Berlin
26. 2019, Feb, National Institutes of Health, USA
27. 2019, Feb, Wellcome Trust Center, Oxford, UK
28. 2019, Jan, Leeds University, UK
29. 2018, Nov, University of Bonn, Germany
30. 2018, Oct, LMB, University of Cambridge, UK
31. 2018, Oct, Paul Scherrer Institute (PSI), Switzerland
32. 2018, Sep, FEBS Cytoskeletal Forum, Prague, Czech Republic
33. 2018, Jun, Osaka University, Japan
34. 2018, Jun, SFB914, Ludwig Maximilian University of Munich, Germany
35. 2018, Jun, University of Geneva, Geneva, Switzerland
36. 2018, May, EMBO workshop – molecular neurobiology, Crete, Greece
37. 2018, Feb, US biophysical Society annual meeting, San Francisco, USA
38. 2018, Feb, Oxford University, UK
39. 2018, Jan, Technical University Munich, Germany
40. 2018, Jan, Ludwig Maximilian University of Munich, Germany
41. 2017, Nov, EMBO workshop Frontiers in Cytoskeleton, Pune, India
42. 2017, Oct, National Institutes of Health, USA
43. 2017, Jun, International School of Crystallography, Erice, Italy
44. 2017, Jun, ISBC2017 International School of biological crystallization, Granada, Spain
45. 2017, Apr, Technical University Munich, Germany
46. 2017, Jan, Florida State University, USA
47. 2016, Dec, National Institutes of Health, USA
48. 2016, Nov, Technical University Delft, the Netherlands
49. 2016, Feb, University of Mainz, Germany
50. 2016, Jan, Technical University Munich, Germany
51. 2015, Dec, DFG/GRK1721 winter school, Ringberg Castle, Germany
52. 2015, Jul, Yale University, USA
53. 2015, May, Institute Curie, France
54. 2015, May, OIST, Okinawa, Japan, Symposium "Current Developments in Three-Dimensional Biological EM",
55. 2015 April, Max-Planck-Institut für biophysikalische Chemie in Gottingen, Germany, Symposium “Recent Advances in Biological Electron Microscopy”
56. 2015, Feb, Goethe University University of Frankfurt Medical School, Seminar series, ‘seminar in biochemistry’
57. 2015, Feb, University of Heidelberg, ZMBH Colloquium series
58. 2014, Nov, Paul Scherrer Institute (PSI) , Switzerland
59. 2014, Mar, German Society for Cell Biology (DGZ), annual meeting
60. 2013, Dec, University of Tokyo, Japan
61. 2013, Feb, US Biophysical Society annual meeting, symposium – Frontier of cryo-EM
62. 2013, Feb, National Institutes of Health, US Government
63. 2012, Nov, GRK 1721 kick-off symposium, Gene Center, Munich
64. 2012, Sep, Max Planck Institute of molecular physiology
65. 2011, Sep, NICHD/NIH PPB seminar, Bethesda, MD
66. 2011, May, Osaka University, GCOE seminar
67. 2011, Apr, Max Planck Institute of biochemistry
68. 2011, Apr, Max Planck Institute for medical research in Heidelberg
69. 2011, Mar, Symposium on “Dynamic Cellular Organization: from EM to Ecology”

Max Planck Institute of molecular cell biology and genetics,

1. 2011, Jan, Stanford University school of medicine, special seminar, Palo alto, CA,
2. 2009, Dec, NIAMS/NIH IRP seminar
3. 2009, Jun, Gordon Research Conference – 3DEM, Boston, MA
4. 2009, May, NIAMS/NIH IPR RETREAT, North Bethesda conference center, MD
5. 2008, Dec, EMBL, Heidelberg, Germany, December
6. 2008, Jun, Gordon Research Conference – 3DEM, Il Ciocco, Italy
7. 2008, Apr, National Institute of Information and Communications Technology, Hyogo, Japan,
8. 2007, Feb, University of Pittsburg Structural Biology/ Molecular Biohyisics Seminar Series,
9. 2006, Dec, 16th International Toki Conference Advanced Imaging and Plasma Diagnostics, Gifu, Japan
10. 2006, Dec, National Institute for physiological Sciences, Aichi, Japan
11. 2006, Apr, OIST International Workshop on Single Molecule Analysis, Okinawa, Japan
12. 2005, Oct, International Workshop - DYNEIN 2005, Kobe, Japan
13. 2005, Jun, Gordon Research Conference – 3DEM, Boston, MA
14. 2005, Jan, Osaka University, Japan
15. 2004, Dec, The Biophysical Society of Japan, Kyoto, Japan
16. 2004, Jul, Photon factory seminar, High energy accelerator research organization, Japan
17. 2004, Jul, Spring8, Japan
18. 2002, Nov, The Biophysical Society of Japan, Nagoya, Japan

The structural study of dynein stalk head-microtubule complex

1. 2000, Sep, The Biophysical Society of Japan, Miyagi, Japan

**COMMISSION OF TRUST**

**ORGANISATION OF SCIENTIFIC MEETINGS**

2018 EMBO Symposia ‘microtubules’ session chair

2016 Gordon Research Conference (3DEM, Hong Kong), poster selection committee

2016 EMBO Symposia ‘microtubules’ session chair

2015-The annual group leader retreat of the greater Munich area (MPIs, LMU, TUM) Organizer

2010

Keystone symposia- Structural Biology

Conference assistant, Breckenridge, CO, USA

**COMMISSIONS OF TRUST**

2020 SBL Senior Investigator Search committee, NCI

2020 Reviewer, Study section NIH (Panel: National Cryo-ET Centers)

2019- Editor, Editorial board, FEBS letter

2018- Evaluator, European Union H2020

2015- Evaluator, CEITEC (Central European Institute of Technology), Czech Republic, open access Imaging facility

2013 Imaging Facility Commission Member, Max Planck Institute of Biochemistry

2012-2016 Commission Member, Research Training Group GRK1721/DFG

2011-present Reviewing activity

 Science/Cell cycle /Journal of Biological Chemistry/Journal of Cell Biology/EMBO J

 Journal of Structural Biology/Nature/Nature Communications/PLOS biology

 DFG grants/SNF grants (Switzerland)/MRC grants (UK)

**COLLABORATIONS**

Carsten Janke (Curie Institute, France)

Ralf Jungmann (Max Planck Institute of Biochemistry, Germany)

Zeynep Ökten (Technical University Munich)

Petra Schwille (Max Planck Institute of Biochemistry, Germany)

Rui Zhang (Washington University in St. Louis, USA)

Junichi Takagi (Osaka University, Japan)

Kevin O’Connell (NIDDK, NIH, USA)

**MENTORING and OUTREACH activities**

**TEACHING ACTIVITIES**

Although my current position at the Max Planck Society does not require formal teaching, I was interested in teaching and mentoring students. Teaching itself can be strenuous, however, it can also be quite fruitful, especially when I feel I learn something fresh and new from young students. Therefore, I volunteered to teach and examine within the Biochemistry Course 4 (BC4) at the Faculty of Chemistry and Pharmacology, Ludwig Maximilian University (LMU), Munich, which covers molecular signaling of cell polarization, migration and differentiation.

In addition, I teach within the graduate program of the International Max Planck Research School for Molecular Life Sciences (IMPRS-LS) and the research school of the GRK1721. I give lectures and supervise student network within the graduate school program. My teaching activities are part of the habilitation requirements at the biochemistry department at the LMU. Starting 2018, I am in the SFB network (Grant funding group funded by DFG) of ‘Forces in Biomolecular systems’ studying biophysical aspects of macromolecular complexes together with colleagues of Technical University Munich (Physics department).

2016-present

Ludwig Maximilian University (LMU), Munich

Biochemistry Course 4 (BC4), Faculty of Chemistry and Pharmacology,

2014 – present

Max Planck Institute of Biochemistry,

RIP (Research in Progress) Seminar series, Organizer

2012 – present

From Biology to Medicine, International Max Planck Research School for Molecular and Life Sciences (IMPRS-LS) Graduate School, Germany (lectures, recruitment committee)

2012 – 2016 GRK1721 (Graduate school program within the scheme of German Research Council (DFG), lecture, seminar)

**Within my laboratory:**

Postdoctoral Fellow

 Charlotte Kelley (2017-present)

 Nirakar Basnet (2014-present)

 Yurika Yamada (2020-present)

 Roberto Jareth Vazquez Nunez (2020-present)

 Kenichiro Taira (2020-present)

 Satish Bodakuntla (2020-present)

 YoungMin Soh (2021-present)

Ph.D. Student

 Christopher Kuhn (2018-present)

 Stephanie Schumacher (2015-present)

 Hana Nedozralova (2017-present)

 Lorenzo Agostini (2019-present)

Post Bachelor Fellow

 Hannah Margolis (2020-present)

Alumni

Postdoctoral Fellow

 Krzysztof Zak (2017-2018)

Ph.D. student

 Justine Witosch (2012-2015)

 Julia Adam (2012-2016)

 Qianmin Wang (2013-2017)

Dirk Deden (2013-2020)

Master student

Alexandra Naegoe (2017-present)

 Sudheer Kumar Peneti (2017-present)

Bachelor Student

 Matthias Beuerle (2014)

 Rebecca Moore (2017-2018)

Technical assistant

 Wolfgang Fink (2014-2016)

Sven Schkölziger (2017-2019)

Iosune Ibiricu (2018-2020)

**Outreach Activity**

Following are a part of outreach activities I have been involved with.

1. Introduction of science to young students

I have been hosting younger students who are interested in experiences in research labs. For this, I have hosted 2 local high-school students, master students from Australia, China, U.K. India, Japan and Poland for their internship activities through various exchange programs.

2. Organization of international student exchange.

I have been in close contact with educational programs in Japan. My lab is part of abroad hosting labs for Kyoto University Medical School so medical students from there can join to participate in our research. Moreover, I have been also involved in establishing exchange programs between Japan and Germany.

Additionally, because of my international exposure and experiences, I serve as an outside expert to the Japanese Government. For that, I have periodical meetings with the JST (Japan Science and Technology Agency, a governmental agency in Japan similar to NSF) and MEXT (Ministry of Education, Culture, Sports, Science and Technology) to discuss how to improve the educational system from a global point of view and what can be learnt from other countries.

3. Public Relationship

As part of community activities, my previous institute (Max Planck Institute of Biochemistry) has an annual public open day. I have been a co-organizer for the representation of our department and tours for visitors from the general public. I have also organized an annual retreat of research group leaders within the Munich area.

**PUBLICATIONS**

1. Schumacher S, Dedden D, Vazquez-Nunez R, Matoba K, Takagi J, Biertümpfel C, **Mizuno N.** (2021)

Structural insights into integrin α5β1 opening by fibronectin ligand.

***Science Adv.*** in press

1. Litschel T, Kelley CF, Holz D, Koudehi MA, Vogel SK, Burbaum L, **Mizuno N,** Vavylonis D, Schwille P(2021)

Reconstitution of contractile actomyosin rings in vesicles

***Nature Communications*** in press

1. Schumacher S, Vazquez-Nunez R, Biertümpfel C, **Mizuno N. (2021)**

Bottom-up reconstitution of Focal Adhesion complexes

***FEBS J.*** in press

1. Kelley CF, Litschel T, Schumacher S, Dedden D, Schwille P, **Mizuno N (2020)**

Phosphoinositides regulate force-independent interactions between talin, vinculin, and actin.

***Elife*** doi: 10.7554/eLife.56110.

1. Biel TG, Aryal B, Gerber MH, Trevino JG, **Mizuno N**, Rao VA **(2020)**

Mitochondrial dysfunction generates aggregates that resist lysosomal degradation in human breast cancer cells.

***Cell Death Dis.*** 11(6):460. doi: 10.1038/s41419-020-2658-y.

1. Dedden D, Schumacher S, Kelley CF, Zacharias M, Biertümpfel C, Fässler R, **Mizuno N (2019**) The architecture of talin1 reveals an autoinhibition mechanism.

***Cell*** 179(1):120-131.e13. doi: 10.1016/j.cell.2019.08.034.

1. Wang Q, Taschner M, Ganzinger K, Heymann M, Schwille P, Lorentzen E, **Mizuno N (2018)**

Membrane association and remodeling by intraflagellar transport protein IFT172

***Nature Communications*** 9:4684. doi: 10.1038/s41467-018-07037-9.

1. Basnet N, Crevenna AH, Taschner M, Bodakuntla S, Cardone G, Magiera MM, Biertümpfel C, Janke C, **Mizuno N** (**2018**)

Roles of microtubule nucleation factor SSNA1 in microtubule and axon branching.

***Nature Cell Biol.*** doi: 10.1038/s41556-018-0199-8

1. SunZ, TsengH, TanS, SengerF, KurzawaL, DeddenD, **MizunoN**, WasikA, TheryM, DunnA, FässlerR (**2016**)

Kank2 activates Talin and reduce force transduction across integrins

***Nature Cell Biol.*** 18:941-53

1. Adam J, Basnet N, **Mizuno N.** (**2015**)

Structural insights into the cooperative remodeling of membranes by amphiphysin/BIN1.

***Sci Rep***. Oct 21;5:15452.

1. Crevenna AH, Arciniega M, Dupont A, **Mizuno N**, Kowalska K, Lange OF, Wedlich-Söldner R, Lamb DC. (**2015**)

Side-binding proteins modulate actin filament dynamics.

***Elife*** Feb 23;4. doi: 10.7554/eLife.04599.

1. Witosch J, Wolf E, and **Mizuno N.** (**2014**)

Architecture and ssDNA interaction of the Timeless-Tipin-RPA Complexes.

***Nucleic Acids Research***42:12912-27

1. Kienzle C, Basnet N, Crevenna AH, Beck G, Habermann B, **Mizuno N**, von Blume J. (**2014**)

Cofilin recruits F-actin to SPCA1 and promotes Ca2+-mediated secretory cargo sorting.

***J Cell Biol***206:635-54.

1. Wang Q, Crevenna AH, Kunze I and **Mizuno N.** (**2014**)

Structural basis for the extended CAP-Gly domains of p150(glued) binding to microtubules and the implication for tubulin dynamics.

***Proc Natl Acad Sci***U S A. 111:11347-52.

1. Huang RK, Baxa U, Aldrian G, Ahmed AB, Wall JS, **Mizuno N**, Antzutkin O, Steven AC, Kajava AV. (**2014**)

Conformational switching in PolyGln amyloid fibrils resulting from a single amino acid insertion.

***Biophys J***.106:2134-42.

1. Bhogaraju S, Cajanek L, Fort C, Blisnick T, Weber K, Taschner M, **Mizuno N**, Lamla S, Bastin P, Nigg EA, Lorentzen E. (**2013**)

Molecular basis of tubulin transport within the cilium by IFT74 and IFT81.

***Science***. 341:1009-12.

1. **Mizuno N**, Dramićanin M, Mizuuchi M, Adam J, Wang Y, Han YW, Yang W, Steven AC, Mizuuchi K, Ramón-Maiques S. (**2013**)

MuB is an AAA+ ATPase that forms helical filaments to control target selection for DNA transposition.

***Proc Natl Acad Sci U S A.*** 110:E2441-50.

1. Varkey J\*, **Mizuno N**\*, Hegde BG, Cheng N, Steven AC, Langen R. (**2012**)

α-Synuclein oligomers with broken helical conformation form lipoprotein nanoparticles.

***J Biol Chem.***288:17620-30.**\*Equally contribution**

1. **Mizuno N**\*, Taschner M and Lorentzen E\* (**2012**)

Structural Studies of Ciliary Components.

***J Mol Biol.*** 422:163-80.

**\*Corresponding author**

1. **Mizuno N**\*, Varkey J, Kegulian NC, Hegde BG, Cheng N, Langen R\* and Steven AC\*. (**2012**) Remodeling of lipid vesicles into cylindrical micelles by α-synuclein in an extended α-helical conformation.

***J Biol Chem.***287:29301-11.

**\*Corresponding author**

1. Noinaj N, Easley NC, Oke M, **Mizuno N**, Gumbart J, Boura E, Steere AN, Zak O, Aisen P, Tajkhorshid EM, Evans RW, Gorringe AR, Mason AB, Steven AC and Buchanan SK. (**2012**)

Structural basis for iron piracy by pathogenic Neisseria

***Nature*** 483: 53-8.

1. **Mizuno N**, Baxa U and Steven AC. (**2011**)

Structural Dependence of HET-s Amyloid Fibril Infectivity Assessed by Cryo Electron Microscopy

***Proc Natl Acad Sci U S A****,*108:3252-7

1. V. Ashutosh Rao, Klein SR, Zielonka J, **Mizuno N**, Keller P, Joseph J, Kalyanaraman B, and Shacter E (**2010**)

Mechanism of breast cancer cytotoxicity by the triphenylphosphonium-conjugated redox agent mitoquinone: induction of autophagy and apoptosis

***J Biol Chem.*** 285:3 4447-59

1. Varkey J, Isas JM, **Mizuno N**, Jensen MB, Bhatia VK, Jao CC, Petrlova J, Voss J, Stamou D, Steven AC, Langen R. (**2010**)

Membrane curvature induction and tubulation is a common feature of synucleins and apolipoproteins.

***J Biol Chem.*** 285: 32486-93

1. **Mizuno N**, Jao C, Langen R and Steven AC. (**2010**)

Multiple modes of endophilin-mediated conversion of lipid vesicles into coated tubes: implications for synaptic endocytosis.

***J Biol Chem.*** 285: 23351-8

1. **Mizuno N**, Narita A, Kon T, Sutoh K, Kikkawa M. (**2007**)

Three-dimensional structure of cytoplasmic dynein bound to microtubules.

***Proc Natl Acad Sci U S A***.104: 20832-7.

1. Narita A, **Mizuno N**, Kikkawa M, Maéda Y. (**2007**)

Molecular determination by electron microscopy of the dynein-microtubule complex structure.

***J Mol Biol****.* 372: 1320-36.

1. Morfini, G., Pigino, G., **Mizuno, N**., Kikkawa, M., and Brady, S. (**2007**)

Tau binding to MTs does not directly affect microtubule-based vesicle motility.

***J. Neurosci. Res.*** 85: 2620-30.

1. Morii, H., Shimizu, T., **Mizuno, N**., Edamatsu, M., Ogawa, K., Shimizu, Y., and Toyoshima, Y. Y. (**2005**)

Removal of tightly bound ADP induces distinct structural changes of the two tryptophan-containing regions of the ncd motor domain.

***J. Biochem.*** 138: 95-104.

1. **Mizuno, N**., Toba, S., Edamatsu, M., Watai-Nishii, J., Hirokawa, N., Toyoshima, Y. Y. and Kikkawa M. (**2004**)

Dynein and kinesin share an overlapping microtubule-binding site.

***EMBO J.*** 23: 2459-2467.

**THIRD PARTY FUNDING**

**My laboratory runs with 100% third party funding including PI salary (W2-professor), 2 postdocs, 5 students and 2 technical assistants.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Project Title* | *Funding Source* | *Amount (Euro)* | *Period* |  |
| Integrated Analysis of Macromolecular Complexes and Hybrid Methods in Genome Biology (GRK1721) | German Research Foundation (DFG) | 225,000 | 2012-2016 | One student is paid by the program until April 2018. |
| Structural and Functional Characterization of the Regulation Network of Microtubule Plus-ends using Hybrid Methods | German Research Foundation (DFG) | 350,000 | 2014-2017 | 2 students are paid by the program until December, 2017 |
| DECODIFT | German Research Foundation (DFG / ANR) | 300,000 | 2015-2018 | One student is paid by the program until early 2018. |
| **Structural Studies on protein assemblies by cryo-EM** | **Boehringer Ingelheim Foundation** | **900,000** | **2017-2020** | **The main lab resource (PI salary, postdoc, students, technician, consumable). Transferable.**  |
| **EMBO Young Investigators Program** | **EMBO** | **25,000**  | **2016-2019** | **Networking costs as well as small equipment are covered** |
| **Structural Studies on Focal Adhesions (FocAd)** | **European Research Foundation, Consolidator program (ERC-CoG)** | **2,000,000** | **2017-2022** | **The main lab source** |
| **Functional relationship between the actin- and microtubule-based transport systems** | **German Research Foundation (DFG), SFB** | **400,000** | **2018-2021** | **One student is paid through this grant.** |