

## Elmar BEHRMANN, PhD

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### Current position

Max-Planck research group leader and Freigeist Fellow (VolkswagenFoundation), caesar, Bonn

### Research expertise

I am a specialist in the application of cryo-electron microscopy (cryo-EM) to visualize dynamic protein assemblies in native-like environments, and thus unveil the structural pathways at the heart of diverse biological processes. Key to this is the preparation of samples with minimal perturbation of the native state, allowing not only the determination of specific conformational states, but instead also the observation and analysis of the full distribution of functional states. Currently, my group is applying this approach to a diverse set of proteins, ranging from integral membrane proteins, to membrane-associated proteins, as well as on inflammasome-associated proteins.

### Academic qualifications

- 2008 - 2012 Doctorate: Dr. rer. nat., Technical University Dortmund and Max Planck Institute for Molecular Physiology in Dortmund, Germany
- 2003 - 2008 Diploma in Biochemistry, University Bielefeld, Germany, University of Notre Dame, USA and Max-Planck-Institute for Biophysical Chemistry, Germany

### Postgraduate professional career

- 2017 - pres. Independent Max-Planck group leader, caesar Bonn, Germany
- 2014 - pres. FreiGeist Group Leader; caesar Bonn, Germany
- 2012 - 2014 Postdoc, Institute for Medical Physics and Biophysics, Charité Berlin, Germany

### Honors and awards

- 2014 - 2019 Fellow of the Young "Zentrum für interdisziplinäre Forschung"
- 2014 - 2019 FreiGeist Fellow of the Volkswagen Foundation
- 2013 Otto-Hahn-Medal of the Max Planck Society
- 2010 Sponsorship to attend the 60th Lindau meeting of Nobel laureates, Fonds der Chemischen Industrie and Max Planck Society
- 2009 - 2012 Fellow of the "Fonds der Chemischen Industrie"
- 2006 DAAD Fellowship for integrated studies abroad
- 2003 - 2005 Fellow of the "Fonds der Chemischen Industrie"

### Memberships and professional functions

- 2014 - pres. Elected member of the 'Young ZiF – Center for Interdisciplinary Research'
- 2015 - pres. Elected member of the 'Bonner Forum Biomedicine'

### Most important funding since 2012

- 2017 - 2021 Free-Floating Max Planck Research Group "VoITEM"
- 2014 - 2019 FreiGeist Fellowship "Novel Nanotemplates for Combined Structural And Functional Analysis of Membrane Proteins", VolkswagenFoundation
- 2013 - 2014 NeuroCure Innovation Project, NeuroCure Cluster of Excellence

## Elmar BEHRMANN, PhD

### Publications

1. Hagelueken, G., Hoffmann, J., Schubert, E., Duthie, F.G., Florin, N., Konrad, L., Imhof, D., **Behrmann, E.**, Morgner, N., and Schiemann, O. (2016). Studies on the X-Ray and Solution Structure of FeoB from Escherichia coli BL21. *Biophys J* 110, 2642-2650.
2. **Behrmann, E.**, Loerke, J., Budkevich, T.V., Yamamoto, K., Schmidt, A., Penczek, P.A., Vos, M.R., Burger, J., Mielke, T., Scheerer, P., and Spahn, C.M. (2015). Structural snapshots of actively translating human ribosomes. *Cell* 161, 845-857. °equal contribution
3. Budkevich, T.V., Giesebrecht, J., **Behrmann, E.**, Loerke, J., Ramrath, D.J., Mielke, T., Ismer, J., Hildebrand, P.W., Tung, C.S., Nierhaus, K.H., Sanbonmatsu, K.Y., and Spahn, C.M. (2014). Regulation of the mammalian elongation cycle by subunit rolling: a eukaryotic-specific ribosome rearrangement. *Cell* 158, 121-131.
4. Shah, C., Hegde, B.G., Moren, B., **Behrmann, E.**, Mielke, T., Moenke, G., Spahn, C.M., Lundmark, R., Daumke, O., and Langen, R. (2014). Structural insights into membrane interaction and caveolar targeting of dynamin-like EHD2. *Structure* 22, 409-420.
5. Yamamoto, H., Unbehaun, A., Loerke, J., **Behrmann, E.**, Collier, M., Burger, J., Mielke, T., and Spahn, C.M. (2014). Structure of the mammalian 80S initiation complex with initiation factor 5B on HCV-IRES RNA. *Nat Struct Mol Biol* 21, 721-727. °equal contribution
6. Sot, B., **Behrmann, E.**, Raunser, S., and Wittinghofer, A. (2013). Ras GTPase activating (RasGAP) activity of the dual specificity GAP protein Rasal requires colocalization and C2 domain binding to lipid membranes. *Proc Natl Acad Sci U S A* 110, 111-116.
7. Taft, M.H., **Behrmann, E.**, Munske-Weidemann, L.C., Thiel, C., Raunser, S., and Manstein, D.J. (2013). Functional characterization of human myosin-18A and its interaction with F-actin and GOLPH3. *J Biol Chem* 288, 30029-30041.
8. **Behrmann, E.**, Muller, M., Penczek, P.A., Mannherz, H.G., Manstein, D.J., and Raunser, S. (2012). Structure of the rigor actin-tropomyosin-myosin complex. *Cell* 150, 327-338.
9. **Behrmann, E.**, Tao, G., Stokes, D.L., Egelman, E.H., Raunser, S., and Penczek, P.A. (2012). Real-space processing of helical filaments in SPARX. *J Struct Biol* 177, 302-313.
10. Hernandez, J.M., Stein, A., **Behrmann, E.**, Riedel, D., Cypionka, A., Farsi, Z., Walla, P.J., Raunser, S., and Jahn, R. (2012). Membrane fusion intermediates via directional and full assembly of the SNARE complex. *Science* 336, 1581-1584.