

## LOCATIONS

We are pleased to welcome you to the symposium at:  
**Max Planck Institute for the Science of Light**  
Leuchs-Russell Auditorium (A.1.500)  
Staudtstraße 2 | 91058 Erlangen | Germany



### How to find us:

<https://mpl.mpg.de/study-work-or-visit/how-to-find-us>



Join us for the Conference Dinner at:  
**Kulturforum Logenhaus**  
Universitätsstraße 25 | 91054 Erlangen | Germany

*A shuttle bus will take all participants directly to the conference dinner at the Kulturforum Logenhaus after the end of the scientific program.*

## INVITED SPEAKERS

**Philip V. Bayly** - St. Louis, US  
**Lynne E. Bilston** - Sydney, AU  
**Matteo Mario Bonsanto** - Luebeck, DE  
**Alain Goriely** - Oxford, GB  
**Magdalena Götz** - Munich, DE  
**Lucy V. Hiscox** - Cardiff, GB  
**Paul A. Janmey** - Philadelphia, US  
**Michael Krieg** - Barcelona, ES  
**Mehmet Kurt** - Washington, US  
**Katie R. Long** - London, GB  
**Medha M. Pathak** - Irvine, US  
**Manuel Salmeron-Sanchez** - Glasgow, GB  
**Daniel M. Suter** - West Lafayette, US  
**Roberto Toro** - Paris, FR

Scan for  
**Symposium Info**



Friedrich-Alexander-Universität  
Erlangen-Nürnberg

Collaborative Research Center CRC 1540

# EBM Symposium 2025

Exploring Brain Mechanics

International Symposium on  
Brain Mechanics

30.9.–1.10.2025

Max Planck Institute for the Science of Light  
Erlangen | Germany



## CONTACT

### Local Scientific Committee

**Prof. Dr.-Ing. Silvia Budday**  
Institute of Continuum Mechanics and Biomechanics  
Department of Mechanical Engineering  
Dr.-Mack-Straße 81 | 90762 Fürth | Germany  
✉ [silvia.budday@fau.de](mailto:silvia.budday@fau.de)

**Prof. Dr. Kristian Franze**  
Neuronal Mechanics Division  
Max-Planck-Zentrum für Physik und Medizin  
Kussmaulallee 2 | 91054 Erlangen | Germany  
✉ [kristian.franze@mpzpm.mpg.de](mailto:kristian.franze@mpzpm.mpg.de)

**Prof. Dr. rer. nat. Marisa Karow**  
Institut für Biochemie  
Professur für Biochemie und Molekulare  
Neurowissenschaften  
Fahrstraße 17 | 91054 Erlangen | Germany  
✉ [marisa.karow@fau.de](mailto:marisa.karow@fau.de)

**Prof. Dr.-Ing. Paul Steinmann**  
Institute of Applied Mechanics  
Department of Mechanical Engineering  
Egerlandstraße 5 | 91058 Erlangen | Germany  
✉ [paul.steinmann@fau.de](mailto:paul.steinmann@fau.de)

### Support and Coordination Team

**Doris Bittner**  
**Dr. rer. nat. Andrea Dakkouri-Baldauf**  
CRC1540 EBM Office  
Martensstraße 5a | 91058 Erlangen | Germany  
✉ [crc1540-ebm2025@fau.de](mailto:crc1540-ebm2025@fau.de)

Follow us on



## Tuesday, September 30, 2025

**08:30 – 09:20**  
**Registration & Welcome Coffee**

**09:20 – 09:30**  
**Welcome Address**

**Chairperson: Paul Steinmann**

**09:30 – 10:00**  
**Medha M. Pathak** (Irvine, US)  
*Forces at play: Deciphering the role of Piezo1 in neural development*

**10:00 – 10:15**  
**Sudipta Mukherjee** (Erlangen, DE)  
*Mechanical regulation of long-range chemical signaling in the developing *Xenopus laevis* brain*

**10:15 – 10:45**  
**Alain Goriely** (Oxford, GB)  
*The multiscale principles of neuronal path-finding*

**10:45 – 11:15**  
**Coffee Break**

**11:15 – 11:45**  
**Katie R. Long** (London, GB)  
*How the extracellular matrix shapes the developing human brain*

**11:45 – 12:00**  
**Jan Hinrichsen** (Erlangen, DE)  
*Towards an in silico model of brain malformations in FCD II epilepsies*

**12:00 – 12:30**  
**Roberto Toro** (Paris, FR)  
*Mechanical morphogenesis and the development and evolution of the brain*

**12:30 – 13:30**  
**Lunch Break & Meet the Mentor**

**Chairperson: Marisa Karow**

**13:30 – 14:00**  
**Magdalena Götz** (Munich, DE)  
*Novel mechanisms of neurogenesis and neural repair*

**14:00 – 14:15**  
**Theo Paillard** (Paris, FR)  
*GPR161 mechanosensitivity at the primary cilium drives neuronal saltatory migration*

**14:15 – 14:45**  
**Manuel Salmeron-Sanchez** (Glasgow, GB)  
*Mechanical signatures of glioma cells in response to matrix rigidity*

**14:45 – 16:15**  
**Poster Session + Coffee/Beer**

**16:15 – 16:45**  
**Daniel M. Suter** (West Lafayette, US)  
*Mechanosensing in neuronal growth and guidance*

**16:45 – 17:00**  
**Oliver De La Cruz** (Barcelona, ES)  
*Stiffness-regulated microtubule stability controls Tau phosphorylation and nuclear localization in neurons*

**17:00 – 17:30**  
**Michael Krieg** (Barcelona, ES)  
*Illuminating brain mechanics in an animal without a brain – lessons learned from *C. elegans**

**18:15 – 23:00**  
**Networking Reception & Conference Dinner**

## Wednesday, October 1, 2025

**09:00 – 09:30**  
**Registration & Welcome Coffee**

**Chairperson: Silvia Budday**

**09:30 – 10:00**  
**Lynne E. Bilston** (Sydney, AU)  
*In vivo brain mechanics measurements: Where are we now?*

**10:00 – 10:15**  
**Noah Jaitner** (Berlin, DE)  
*Combined MR elastography and 3D MRI deformation mapping towards in vivo assessment of solid stress in glioblastoma*

**10:15 – 10:45**  
**Philip V. Bayly** (St. Louis, US)  
*Using MRI to estimate mechanical properties, strain and stress in the brain*

**10:45 – 11:15**  
**Coffee Break**

**11:15 – 11:45**  
**Mehmet Kurt** (Washington, US)  
*Your brain in motion: How neuroimaging and computer vision transform our understanding of brain biomechanics*

**11:45 – 12:00**  
**Stefan Rampp** (Erlangen, DE)  
*(Towards) linking mechanical properties with neuronal function*

**12:00 – 12:30**  
**Matteo Mario Bonsanto** (Lübeck, DE)  
*Mechanical fingerprint: The challenging path to mechanical brain tumor diagnostics*

**12:30 – 13:30**  
**Lunch Break & Meet the Mentor**

**Chairperson: Kristian Franze**

**13:30 – 13:45**  
**Lucy V. Hiscox** (Cardiff, GB)  
*Brain tissue mechanics in dementia: Insights from magnetic resonance elastography*

**13:45 – 14:00**  
**Vickie Shim** (Auckland, NZ)  
*Brain dynamic changes after mTBI and repetitive head impacts in adolescent rugby players*

**14:00 – 14:15**  
**Riyi Shi** (West Lafayette, US)  
*Concussive injuries induce neuronal stress-dependent tau mislocalization to dendritic spines with acrolein and functional network alteration in TBI-on-a-chip*

**14:15 – 14:45**  
**Coffee Break**

**14:45 – 15:15**  
**Manuel P. Kainz** (Graz, AT)  
*Pores and prejudices: An experimental evaluation of Darcy's permeability in brain tissue with biomimetic hydrogels*

**15:15 – 15:30**  
**Daniel Garcia-Gonzalez** (Leganés, ES)  
*Mechanical and functional responses in astrocytes under alternating deformation modes*

**15:30 – 16:00**  
**Paul A. Janmey** (Philadelphia, US)  
*Mechanical properties of the brain and their effect on cell migration*

**16:00 – 16:30**  
**Conference Closing**