

Christian Spahn

Charité - Universitätsmedizin Berlin
Institute of Medical Physics and Biophysics
Ziegelstr. 5-9 | D-10117 Berlin
Phone: +49(0)30 450-524131
E-mail: christian.spahn@charite.de



Curriculum vitae

- since 2009 Director, Institute for Medical Physics and Biophysics, Charité
- since 2007 Professor (W3), Biophysics, Charité and member, Sciences Faculty I, Humboldt-Universität zu Berlin
- 2006 – 2007 Associate Professor (W2, tenured), Biophysics, Charité
- 2002 – 2008 Leader, junior research group, Volkswagen Stiftung
- 2002 – 2006 Assistant Professor, Charité
- 1998 – 2002 Research associate (Prof. Joachim Frank), Howard Hughes Medical Institute/ Wadsworth Center
- 1996 – 1998 Postdoctoral scientist with Prof. K.H. Nierhaus, Max Planck Institute for Molecular Genetics
- 1996 Degree: Dr. rer. nat., Freie Universität Berlin
- 1992 – 1996 Graduate student (Prof. Knud H. Nierhaus), Max Planck Institute for Molecular Genetics
- 1991 Diploma in Biochemistry, Freie Universität Berlin
- 1986 – 1991 Study of Biochemistry, Freie Universität Berlin

Research fields

- Our general interest is the structural biology of large macromolecular machines and assemblies:
- Cryo-electron microscopy (cryo-EM) in combination with digital image processing (single particle approach) to determine the structure of large macromolecular assemblies and machines
 - Cryo-electron microscopy of macromolecular machines; structure and function of ribosomes

Activities in the scientific community, honors, awards

- 2012 Chair, 3D EM Gordon Research Conference
- 2011 Vice Chair, 3D EM Gordon Research Conference
- since 2011 Spokesperson Collaborative Research Center (SFB) 740
- 2009 Organizer, International Symposium on “Membranes and Modules (together with V. Haucke)
- 2007 Professor (W3), Cluster of Excellence, „Cellular Networks“ at the Ruprecht Karls Universität Heidelberg (declined)
- 2007 Professor (W3), Cluster of Excellence „Macromolecular Complexes“ at the Johann Wolfgang Goethe Universität Frankfurt am Main (declined)
- 2007 – 2010 Deputy spokesperson, Collaborative Research Center (SFB) 740
- 2006 Chairman, CSHL Translational Control Meeting
- 2004 – 2007 Young Investigator, European Molecular Biology Organization (EMBO)

Selected publications

Ratje, AH, Loerke, J, Mikolajka, A, Brunner, M, Hildebrand, PW, Starosta, AL, Donhofer, A, Connell, SR, Fucini, P, Mielke, T, Whitford, PC, Onuchic, JN, Yu, Y, Sanbonmatsu, KY, Hartmann, RK, Penczek, PA, Wilson, DN and Spahn, CM. Head swivel on the ribosome facilitates translocation by means of intra-subunit tRNA hybrid sites. *Nature*. 2010; 468, 713-6.

Spahn, CM and Penczek, PA. Exploring conformational modes of macromolecular assemblies by multiparticle cryo-EM. *Curr Opin Struct Biol*. 2009; 19, 623-31.

Schuetz, JC, Murphy, FVt, Kelley, AC, Weir, JR, Giesebrecht, J, Connell, SR, Loerke, J, Mielke, T, Zhang, W, Penczek, PA, Ramakrishnan, V and Spahn, CM. GTPase activation of elongation factor EF-Tu by the ribosome during decoding. *EMBO J*. 2009; 28, 755-65.

Connell, SR, Topf, M, Qin, Y, Wilson, DN, Mielke, T, Fucini, P, Nierhaus, KH and Spahn, CM. A new tRNA intermediate revealed on the ribosome during EF4-mediated back-translocation. *Nat Struct Mol Biol*. 2008; 15, 910-5.

Connell, SR, Takemoto, C, Wilson, DN, Wang, H, Murayama, K, Terada, T, Shirouzu, M, Rost, M, Schuler, M, Giesebrecht, J, Dabrowski, M, Mielke, T, Fucini, P, Yokoyama, S and Spahn, CM. Structural basis for interaction of the ribosome with the switch regions of GTP-bound elongation factors. *Mol Cell*. 2007; 25, 751-64.

Schuler, M, Connell, SR, Lescoute, A, Giesebrecht, J, Dabrowski, M, Schroeder, B, Mielke, T, Penczek, PA, Westhof, E and Spahn, CM. Structure of the ribosome-bound cricket paralysis virus IRES RNA. *Nat Struct Mol Biol*. 2006; 13, 1092-6.

Penczek, PA, Frank, J and Spahn, CM. A method of focused classification, based on the bootstrap 3D variance analysis, and its application to EF-G-dependent translocation. *J Struct Biol*. 2006; 154, 184-94.

Spahn, CM, Jan, E, Mulder, A, Grassucci, RA, Sarnow, P and Frank, J. Cryo-EM visualization of a viral internal ribosome entry site bound to human ribosomes: the IRES functions as an RNA-based translation factor. *Cell*. 2004; 118, 465-75.

Spahn, CM, Gomez-Lorenzo, MG, Grassucci, RA, Jorgensen, R, Andersen, GR, Beckmann, R, Penczek, PA, Ballesta, JP and Frank, J. Domain movements of elongation factor eEF2 and the eukaryotic 80S ribosome facilitate tRNA translocation. *EMBO J*. 2004; 23, 1008-19.

Spahn, CM, Kieft, JS, Grassucci, RA, Penczek, PA, Zhou, K, Doudna, JA and Frank, J. Hepatitis C virus IRES RNA-induced changes in the conformation of the 40s ribosomal subunit. *Science*. 2001; 291, 1959-62.