

Curriculum Vitae

André Hoelz, Ph.D.

Professor of Chemistry

California Institute of Technology, Division of Chemistry and Chemical Engineering, Mail Code 147-75
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EDUCATION

- Ph.D.*
2004 **Structural Biology and Biochemistry**
The Rockefeller University, New York, NY, USA
- M.Sc. (Diplom)*
1997 **Chemistry and Biochemistry**
Albert-Ludwigs University, Freiburg im Breisgau, Germany
- B.Sc. (Vordiplom)*
1993 **Chemistry**
Albert-Ludwigs University, Freiburg im Breisgau, Germany

RESEARCH AND PROFESSIONAL EXPERIENCE

- November 2016*
– *present* **Faculty Scholar, Howard Hughes Medical Institute**
- April 2016*
– *present* **Professor of Chemistry**
California Institute of Technology
Division of Chemistry and Chemical Engineering, Pasadena, CA, USA
- August 2015*
– *present* **Investigator, Heritage Medical Research Institute**
- November 2010*
– *April 2016* **Assistant Professor of Chemistry**
California Institute of Technology
Division of Chemistry and Chemical Engineering, Pasadena, CA, USA
- September 2009*
– *November 2010* **Research Assistant Professor, Group Leader**
Laboratory of Cell Biology, The Rockefeller University, New York, NY, USA
- August 2007*
– *August 2009* **Research Associate, Group Leader**
Laboratory of Cell Biology, The Rockefeller University, New York, NY, USA
- August 2004*
– *July 2007* **Postdoctoral Fellow, Group Leader**
Sponsor: Günter Blobel, M.D., Ph.D.
Laboratory of Cell Biology, Howard Hughes Medical Institute
The Rockefeller University, New York, NY, USA
- August 2003*
– *July 2004* **Postdoctoral Fellow**
Sponsor: Thomas P. Sakmar, M.D.
Laboratory of Molecular Biology and Biochemistry, Howard Hughes Medical Institute
The Rockefeller University, New York, NY, USA
- August 1997*
– *July 2003* **Graduate Fellow**
Advisor: John Kuriyan, Ph.D.
Laboratories of Molecular Biophysics, Howard Hughes Medical Institute
The Rockefeller University, New York, NY, USA
- February 1997*
– *August 1997* **Research Associate**
Sponsor: Prof. Dr. Karl Decker
Institute of Molecular Biology and Biochemistry, Department of Medicine
Albert-Ludwigs University, Freiburg im Breisgau, Germany

AWARDS & HONORS

- 2016 **Faculty Scholar**
Howard Hughes Medical Institute
- 2016 **Science Highlight 2016**
Stanford Synchrotron Radiation Lightsource
- 2016 **Science Highlight 2016**
Advanced Photon Source, Argonne National Laboratory
- 2015 **Investigator**
Heritage Medical Research Institute
- 2015 **Camille Dreyfus Teacher-Scholar Award**
Camille & Henry Dreyfus Foundation
- 2015 **Science Highlight 2015**
Advanced Photon Source, Argonne National Laboratory
- 2012 **Kimmel Scholar Award**
Sidney Kimmel Foundation for Cancer Research
- 2011 **54th Mallinckrodt Scholar Award**
Edward Mallinckrodt, Jr. Foundation
- 2010 **Albert Wyrick V Scholar Award**
The V Foundation for Cancer Research
- 2009 **Science Highlight 2009**
Advanced Photon Source, Argonne National Laboratory
- 2008 **Science Highlight 2008**
Advanced Light Source, Lawrence Berkeley National Laboratory
- 2007 **Science Highlight 2007**
National Synchrotron Light Source, Brookhaven National Laboratory
- 2005 – 2010 **Leukemia & Lymphoma Society Specialized Center of Research Grant**
Specialized Center for the Study of Myeloid Malignancies (with Günter Blobel)
- 2003 – 2004 **Murray Foundation Postdoctoral Fellowship**
The Murray Foundation
- 1999 – 2003 **Burroughs Wellcome Fund Pre-Doctoral Fellowship**
Burroughs Wellcome Fund, Interfaces in Science Program
- 1997 – 2003 **David Rockefeller Graduate Program Fellowship**
- 1991 **Prize of the “Fonds der Chemischen Industrie”**
Academic proficiency; best chemistry student of the year

INVITED LECTURES

- July 2018 **Speaker, International Meeting of the German Society for Cell Biology (DGZ): "Life at the edge: the nuclear envelope in nucleocytoplasmic transport and genome organization", July 25-28, 2018, Potsdam, Germany**
- May 2018 **Speaker, Kuriyan Laboratory Symposium, University of California, Berkeley, Berkeley, CA**
- April 2018 **Speaker, Howard Hughes Medical Institute, Janelia Research Campus, Ashburn, VA**

November 2017 **Speaker, International Symposium on Atomic Force Microscopy at Solid-Liquid Interface, Kanazawa University, Kanazawa, Japan**

October 2017 **Seminar, Department of Physiology, DUKE-NUS Medical School, Singapore**

October 2017 **Seminar, Frontiers in Biology Seminar Series, Institute of Molecular Biology, Academia Sinica, Taipei, Taiwan**

October 2017 **Speaker, Dean's Lecture Series, Faculty of Medicine, University of Alberta, Edmonton, Canada**

September 2017 **Speaker, Nucleocytoplasmic Transport Meeting, Barcelona, Spain**

July 2017 **Speaker, 19th IUPAB congress and 11th EBSA congress, Edinburgh, UK**

June 2017 **Opening Keynote Speaker, Proteins Gordon Research Conference Holderness School, Holderness, NH, USA**

June 2017 **Seminar, European Molecular Biology Laboratory (EMBL), Heidelberg, Germany**

June 2017 **Speaker, Structural Biology Symposium "Integrative Structural Biology of Large Macromolecular Complexes", University of Göttingen, Göttingen, Germany**

March 2017 **Seminar, University of California, San Diego, San Diego, CA, USA**

February 2017 **Seminar, Molecular Biophysics Discussion Group (MBDG) University of Texas Southwestern Medical Center, Dallas, TX, USA**

February 2017 **Seminar, Institute of Medical Biology (IMB), A*STAR, Singapore**

November 2016 **Seminar, Howard Hughes Medical Institute, Chevy Chase, MD, USA**

December 2016 **Seminar, Molecular and Cellular Biology of Cancer (MCBC) Program City of Hope, Duarte, CA, USA**

November 2016 **Seminar, Howard Hughes Medical Institute, Chevy Chase, MD, USA**

October 2016 **Biochemistry Lecture Series, McGill University, Montreal, Quebec, Canada**

September 2016 **Seminar Series
Departments of Biochemistry & Molecular Biology and Cancer Biology
Thomas Jefferson University, Philadelphia, PA, USA**

September 2016 **Seminar Series, Department of Biochemistry
McGill University, Montreal, Quebec, Canada**

May 2016 **GM/CA CAT Review
Advanced Photon Source, Argonne National Laboratory, Lemont, IL, USA**

May 2016 **Life Sciences Institute Annual Symposium
University of Michigan, Ann Arbor, MI, USA**

May 2016 **Nuclear Organization & Function Meeting
Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, USA**

March 2016 **Seminar Series, Molecular Cellular Biology Department
University of California, Berkeley, CA, USA**

February 2016 **Biophysics Colloquium, Cornell University, Ithaca, NY**

September 2015 **Nucleocytoplasmic Transport Meeting, Sant Feliu de Guixols, Spain**

June 2015 **Seminar Series, Department of Structural Biology, Stanford University
Palo Alto, CA, USA**

March 2015 **Keystone Symposia, Hybrid Methods in Structural Biology
Tahoe City, CA, USA**

November 2014 **Seminar Series, Department of Biochemistry, University of Toronto
Toronto, Canada**

September 2014 **GM/CA CAT Review
Advanced Photon Source, Argonne National Laboratory, Lemont, IL, USA**

January 2014 **Institute Seminar Series
Biochemistry Center, University of Heidelberg, Heidelberg, Germany**

January 2014 **Seminar Series, MRC Laboratory of Molecular Biology, Cambridge, UK**

December 2013 **Seminar Series, Biochemistry and Molecular Biophysics Department
University of Chicago, Chicago, IL, USA**

November 2013 **Seminar Series, Department of Chemistry and Biochemistry
California State University, Los Angeles, Los Angeles, CA, USA**

October 2013 **Mechanisms of Nuclear Transport Meeting, Woods Hole, MA, USA**

October 2013 **Keynote Speaker, Annual Buffalo-Hamilton-Toronto (BHT) Symposium
Toronto, ON, Canada**

October 2013 **Plenary Seminar Series, Queen's University, Kingston, ON, Canada**

February 2013 **Seminar Series, Chemistry Department, University of California, Los Angeles
Los Angeles, CA, USA**

November 2012 **Seminar, Oncology Drug Discovery, Janssen
Pharmaceutical Companies of Johnson and Johnson, Antwerp, Belgium**

October 2012 **Seminar Series, Molecular Cellular Biology Department
University of California, Berkeley, CA, USA**

November 2010 **Institute Seminar Series, Biochemistry Center
University of Heidelberg, Heidelberg, Germany**

April 2010 **Special Seminar Series, Chromocell Corporation, North Brunswick, NJ, USA**

September 2009 **"*Lectio Magistralis*", EMBO Molecular Medicine Workshop
"Invasive Growth: a Genetic Program for Stems Cells and Cancer", Turin, Italy**

August 2009 **International Meeting on Nuclear Trafficking, Banff, AB, Canada**

May 2009 **Special Seminar Series, The Rockefeller University, New York, NY, USA**

February 2009 **Seminar Series, Biochemistry Department, Oxford University, Oxford, UK**

September 2008 **International Conference on Structural Genomics (ISGO 2008), Oxford, UK**

September 2008 **Instructor, Summer School "Chromatin & Transcription", Spetses, Greece**

April 2008 **ACS National Meeting & Exposition, "Lysine-specific demethylase 1 (LSD1) as a
target for antitumor therapy symposium", New Orleans, LA, USA**

March 2008 **Max Planck Institute of Biochemistry, Munich, Germany**

March 2008 **European Molecular Biology Laboratory (EMBL), Heidelberg, Germany**

March 2008 **Meeting "Conformational Transitions in Macromolecular Interactions",
Graduiertenkolleg, University of Halle, Germany**

PROFESSIONAL ORGANIZATIONS

- 2008 – present **The American Society for Cell Biology**
- 2008 – present **American Chemical Society**
- 2003 – present **New York Academy of Sciences**
- 1993 – present **German Chemical Society (Gesellschaft Deutscher Chemiker, GDCh)**

PUBLICATIONS (#co-first authors, *corresponding author)

45. Lin, D. H., **Hoelz, A.*** (2018). The structure of the nuclear pore complex (an update). **Annu. Rev. Biochem.**, *in press*.
44. Lin, D. H., Correia, A.C., Cai, S.W., Huber, F.M. Jette, C.A., **Hoelz, A.*** (2018). Structural and functional analysis of mRNA export regulation by the nuclear pore complex. **Nat. Commun.**, 2319.
43. Skubák, P., Araç, D., Bowler, M.W., Correia, A.R., **Hoelz, A.**, Larsen, S., Leonard, G.A., McCarthy, A.A., McSweeney, S., Mueller-Dieckmann, C., Otten, H., Salzman, G., Pannu, N.S.* (2018). A new MR-SAD algorithm for the automatic building of protein models from low-resolution X-ray data and a poor starting model. **IUCrJ** 5, 166-171.
42. **Hoelz, A.*** (2018), Günter Blobel (1936-2018). **Nat. Cell Biol.** 20, 364.
41. Huber, F.M.,# Greenblatt, S.M.,# Davenport, A.M.,# Martinez, C., Xu, Y., Vu, L.P., Nimer S.D.,* **Hoelz A.*** (2017). Histone-Binding of DPF2 Mediates Its Repressive Role in Myeloid Differentiation, **Proc. Natl. Acad. Sci. USA** 114, 6016-6021.
40. Huber, F., **Hoelz, A.*** (2017). Molecular basis for protection of ribosomal protein L4 from cellular degradation, **Nat. Commun.** 8, 14354.
39. Lin, D.H., **Hoelz, A.*** (2016). Nuclear Comings and Goings, **The Scientist** 12.2016, 24-29.
38. Sung, M.K., Porras-Yakushi, T.P., Reitsma, J.M., Huber, F.M., Sweredoski, M.J., Hoelz, A., Hess, S., Deshaies, R.* (2016). A conserved quality-control pathway that mediates degradation of unassembled ribosomal proteins, **eLife** 5, e19105.
37. **Hoelz, A.*** Glavy, J.,* Beck, M.* (2016). Towards the atomic structure of the Nuclear Pore Complex: When top down meets rock bottom up, **Nat. Struct. Mol. Biol.** 23, 624-630.
36. Lin, D.,# Stuwe, T.,# Schilbach, S., Rundlet, E.J., Perriches, T., Mobbs, G., Fan, Y., Thierbach, K., Huber, F.M., Collins, L.N., Davenport, A.M., Jeon, Y.E., **Hoelz, A.*** (2016). Architecture of the symmetric core of the nuclear pore, **Science** 352, aaf1015.
- ** featured on the **COVER** and highlighted in **CELL**
35. Stuwe, T.,# Bley, C.J.,# Thierbach, K.,# Petrovic, S.,# Schilbach, S., Mayo, D.J., Perriches, T., Rundlet, E.J., Jeon, Y.J., Collins, L.N., Huber, F.M., Lin, D.H., Paduch, M., Koide, A., Lu, V., Fischer, J., Hurt, E., Koide, S., Kossiakoff, A., **Hoelz, A.*** (2015). Architecture of the fungal nuclear pore inner ring complex, **Science** 350, 56-64.
- ** featured with a **PERSPECTIVE** by Katharine S. Ullman and Maureen A. Powers
34. Stelter, P.,# Huber, F.,# Kunze, R., Flemming, D., **Hoelz, A.*** Hurt, E.* (2015). Coordinated ribosomal protein assembly into the pre-ribosome is regulated by eukaryote-specific extension sequences. **Mol. Cell** 58, 854-862.
- ** featured on the **COVER**
33. Stuwe, T.,# Correia, A.,# Lin, D. H., Paduch, M., Lu, V. T., Kossiakoff, A. A., **Hoelz, A.*** (2015). Architecture of the nuclear pore complex coat. **Science** 347, 1148-1152.
32. Davenport, A.M., Collins, L., Chiu, H., Minor, P., Sternberg, P.,* **Hoelz, A.*** (2014). Structural and

functional analysis of the human tubulin acetyltransferase MEC-17. **J. Mol. Biol.** 426, 2605-2616.

31. Stuwe, T.,[#] Lin, D. H.,[#] Collins, L. N., Hurt, E., **Hoelz, A.*** (2014). Evidence for an evolutionary connection between the large adaptor nucleoporin Nup192 and karyopherins. **Proc. Natl. Acad. Sci. USA** 111, 2530-2535.
30. Davenport, A.M., Huber, F.M., **Hoelz, A.*** (2014). Structural and functional analysis of human SIRT1. **J. Mol. Biol.** 426, 526-541.
** featured on the **COVER** and with a **COMMENTARY** by Gino Cingolani
29. Lin, D.H., Zimmermann, S., Stuwe, T., Stuwe, E., **Hoelz, A.*** (2013). Crystal structure of the C-terminal domain of Nup358/RanBP2. **J. Mol. Biol.** 425, 1318-1329.
** featured on the **COVER**
28. Kassube, S.A., Stuwe, T.S., Lin, D.H., Antonuk, C.D., Napetschnig, J., Blobel, G.,* **Hoelz, A.*** (2012). Crystal structure of the N-terminal domain of Nup358/RanBP2. **J. Mol. Biol.** 423, 752-765.
27. Stuwe, T., Schada von Borzyskowski, L., Davenport, A.M., **Hoelz, A.*** (2012). Molecular Basis for the Anchoring of Proto-Oncoprotein Nup98 to the Cytoplasmic Face of the Nuclear Pore Complex. **J. Mol. Biol.** 419, 330-346.
** featured on the **COVER**
26. Yoshida, K., Seo, H.S., Debler, E.W., Blobel, G.,* **Hoelz, A.*** (2011). Structural and functional analysis of an essential nucleoporin heterotrimer on the cytoplasmic face of the nuclear pore complex. **Proc. Natl. Acad. Sci. USA** 108, 16571-16576.
25. King, H.A., **Hoelz, A.**, Crane, B.R.,* Young, M.W.* (2011). Structure of an enclosed dimer Formed by the drosophila period protein. **J. Mol. Biol.** 413, 561-572.
24. Stuwe, T., **Hoelz, A.*** (2011). Rae1: A new clue for nucleoporin leukemias, **Cell Cycle** 10, 2056.
23. **Hoelz, A.**,*** Debler, E.W., Blobel, G. (2011). Structure of the Nuclear Pore Complex, **Annu. Rev. Biochem.** 80, 613-643.
** invited author
22. Hsia, K.C., **Hoelz, A.*** (2010). Crystal structure of α -COP in complex with ε -COP provides insight into the architecture of the COPI vesicular coat. **Proc. Natl. Acad. Sci. USA** 107, 11271-11276.
21. Ren, Y., Seo, H.S., Blobel, G.,* **Hoelz, A.*** (2010). Structural and functional analysis of the interaction between the nucleoporin Nup98 and the mRNA export factor Rae1. **Proc. Natl. Acad. Sci. USA** 107, 10406-10411.
20. Debler, E.W., Hsia, K.C., Nagy, V., Seo, H.S., **Hoelz, A.*** (2010). Characterization of the membrane-coating Nup84 complex: Paradigm for the nuclear pore complex structure. **Nucleus** 1, 150-156.
19. Nagy, V., Hsia, K.C., Debler, E.W., Kampmann, M., Davenport, A.M., Blobel, G.,* **Hoelz, A.*** (2009). Structure of a trimeric nucleoporin complex reveals alternate oligomerization states. **Proc. Natl. Acad. Sci. USA** 106, 17693-17698.
18. Seo, H.S., Ma, Y., Debler, E.W., Wacker, D., Kutik, S., Blobel, G.,* **Hoelz, A.*** (2009). Structural and functional analysis of Nup120 suggests ring formation of the Nup84 complex. **Proc. Natl. Acad. Sci. USA** 106, 14281-14286.
17. Debler, E.W.*, Blobel, G.,* **Hoelz, A.*** (2009). Nuclear transport comes full circle. **Nat. Struct. Mol. Biol.** 16, 457-459.
16. Napetschnig, J., Kassube, S.A., Debler, E.W., Wong, R.W., Blobel, G.,* **Hoelz, A.*** (2009). Structural and functional analysis of the interaction between the nucleoporin Nup214 and the DEAD-box helicase Ddx19. **Proc. Natl. Acad. Sci. USA** 106, 3089-3094.

15. Debler, E.W.,[#] Ma, Y.,[#] Seo, H.S., Hsia, K.C., Noriega, T.R., Blobel, G.,* **Hoelz, A.*** (2008). A fence-like coat for the nuclear pore membrane. **Mol. Cell** 32, 815-826.
** featured on the **COVER**
14. Stavropoulos, P., Nagy, V., Blobel G.,* **Hoelz A.*** (2008). Molecular basis for the autoregulation of the protein acetyl transferase Rtt109. **Proc. Natl. Acad. Sci. USA** 105, 12236-12241.
13. Hsia, K.C., Stavropoulos, P., Blobel, G.,* **Hoelz, A.*** (2007) Architecture of a coat for the nuclear pore membrane. **Cell** 131, 1313-1326.
12. Stavropoulos, P. and **Hoelz, A.*** (2007) Lysine-specific demethylase 1 as a potential therapeutic target. **Expert Opin. Ther. Targets** 11, 809-920.
11. Melcak, I., **Hoelz, A.*** Blobel, G.* (2007). Structure of Nup58/45 suggests flexible nuclear pore diameter by intermolecular sliding. **Science** 315, 1729-1732.
** highlighted in **Cell** and the **Journal of Cell Biology**
10. Napetschnig, J., Blobel, G.,* **Hoelz, A.*** (2007). Crystal structure of the N-terminal domain of the human protooncogene Nup214/CAN. **Proc. Natl. Acad. Sci. USA** 104, 1783-1788.
9. Pirruccello, M., Sondermann, H., Pelton, J.G., Pellicena, P., **Hoelz, A.**, Chernoff, J., Wemmer, D.E., Kuriyan, J.* (2006). A dimeric kinase assembly underlying autophosphorylation in the p21 activated kinases. **J. Mol. Biol.** 361, 312-326.
8. Stavropoulos, P., Blobel, G., **Hoelz, A.*** (2006). Crystal structure and mechanism of human lysine-specific demethylase-1. **Nat. Struct. Mol. Biol.** 13, 626-632.
** **Faculty of 1000, must read** and highlighted in **Molecular Cell** by Andreas Ladurner
7. **Hoelz, A.*** Janz, J.M., Lawrie, S.D., Corwin, B., Lee, A., Sakmar, T.P.* (2006). Crystal structure of the SH3 domain of β PIX in complex with a high affinity peptide from PAK2. **J. Mol. Biol.** 358, 509-522.
6. Rosenberg, O.S., Deindl, S., Comolli, L.R., **Hoelz, A.**, Downing, K.H., Nairn, A.C., Kuriyan, J.* (2006). Oligomerization states of the association domain and the holoenzyme of Ca²⁺/CaM kinase II. **FEBS J.** 273, 682-694.
** featured on the **COVER**
5. **Hoelz, A.*** Blobel, G.* (2004). Cell biology: popping out of the nucleus. **Nature** 432, 815-816.
4. **Hoelz, A.**, Nairn, A. C., Kuriyan, J.* (2003). Crystal structure of a tetradecameric assembly of the association domain of Ca²⁺/calmodulin-dependent kinase II. **Mol. Cell** 11, 1241-1251.
** featured on the **COVER** and highlighted in **Nature Reviews Molecular Cell Biology**
3. Margarit, S. M., Sondermann, H., Hall, B. E., Nagar, B., **Hoelz, A.**, Pirruccello, M., Bar-Sagi, D., Kuriyan, J.* (2003). Structural evidence for feedback activation by Ras•GTP of the Ras-specific nucleotide exchange factor SOS. **Cell** 112, 685-695.
** **Faculty of 1000, must read**
2. Schenk, S., **Hoelz, A.**, Decker, K.* (1999) A novel heterotrimeric flavoprotein involved in bacterial nicotine degradation. In *Flavins and Flavoproteins*, Ghisla, S., Kroneck, P., Macheroux, P., Sund, H., eds., (Rudolf Weber, Berlin. Agency for Scientific Publications), pp. 427-430.
1. Schenk, S., **Hoelz, A.**, Krauß, B., Decker, K.* (1998). Gene structures and properties of enzymes of the plasmid-encoded nicotine catabolism of *Arthrobacter nicotinovorans*. **J. Mol. Biol.** 284, 1323-1339.