

Matthias P. Machner, Ph.D.

Contact Information

Cell Biology and Metabolism Program
Eunice Kennedy Shriver National Institute of
Child Health and Human Development
National Institutes of Health
18 Library Drive, Bldg. 18, Room 101
Bethesda, Maryland 20892
Tel: (301) 435-8417
Fax: (301) 402-0078
E-mail: machnerm@mail.nih.gov

Personal Information

Place of Birth: Osnabrück, Germany
Citizenship: Germany

Education

2002: Ph.D. *summa cum laude*, Carolo-Wilhelmina Technical University of Braunschweig, Germany
1998: M.Sc. (Diplom) Biology, University of Osnabrück, Germany

Research and Professional Experience

- 08.2008 – present: **Tenure-Track Investigator**
Head, Unit on Microbial Pathogenesis
Eunice Kennedy Shriver National Institute of
Child Health and Human Development
National Institutes of Health, Bethesda, MD, USA
- 11.2002 – 07.2008: **Postdoctoral HHMI Associate**
Tufts University School of Medicine, Boston, MA, USA
Laboratory of Prof. Ralph R. Isberg
- 10.1998 – 08.2002: **Graduate Student**
Helmholtz Center for Infection Research, Braunschweig, Germany
Laboratory of Prof. Dirk W. Heinz
Division of Structural Biology
Dissertation (Dr. rer. nat.)
- 10.1992 – 06.1998: **Undergraduate Student**
University of Osnabrück, Germany
Laboratory of Prof. Hildgund Schrempf
Research Group “Applied Genetics of Microorganisms”
Diplom, Biology

Invited Lectures

- 2012 Demystifying Medicine Lecture Series, NIH, Bethesda, MD
2011 Max Planck Institute for Terrestrial Microbiology, Marburg, Germany
2011 1st Alumni Symposium, Helmholtz Centre for Infection Research, Braunschweig, Germany
2011 NIH Research Festival, Posttranslational Modifications: From protein structure to systems biology. Bethesda, MD, USA
2011 UT Southwestern, Biochemistry Seminar Series, Dallas, TX, USA
2011 University of Maryland, Dept. of Mol. and Cellular Biology Seminar Series, College Park, MD
2011 Laboratory of Cell Biology Seminar, National Heart Lung and Blood Institute, Bethesda, MD, USA
2011 Gordon Research Conference on Microbial Adhesion and Signal Transduction, Newport, RI
2011 7th Annual NICHD Fellows Retreat, Warrenton, VA
2011 Microbiology and Genetics Club DNA Dinner, Iowa State University, Ames, IO (Talk)
2010 NICHD Scientific Retreat for Investigators, Bethesda, MD, USA
2009 NIH Research Festival, Recent Advances in Basic and Translational Research on Bacterial Pathogenesis, Bethesda, MD, USA
2007 Cold Spring Harbor Meeting on Microbial Pathogenesis & Host Response, Cold Spring Harbor, NY, USA
2006 Gordon Research Conference for Microbial Toxins and Pathogenesis, Andover, NH, USA
2000 The European Cytoskeleton Forum 15th Annual Meeting, Blankenberge, Belgium
1999 Heart of Europe Bio-Crystallography 2nd Annual Meeting, Lübben, Germany

Professional Activities

- Member, CBMP Faculty Search Committee
- Symposium Organizer and Chair; 112th General ASM Meeting, San Diego, CA, (June 2012)
- Ad hoc reviewer for *Cell*, *Nature*, *Science*, *Proceedings of the National Academy of Sciences* (PNAS), *Molecular Microbiology*, *PLoS Pathogens*, *Journal of Cell Science*, etc..
- Referee for grant proposals to the *Israel Science Foundation*
- Referee for grant proposals to the *US/China Collaborative Research Program*
- Member, American Society for Microbiology (since 2008)
- Member, graduate student mentoring committee

Awards

- 2012 NICHD Scientific Director Grant Competition Award
2010 NIH Graduate Partnership Program (GPP) Outstanding Mentor Award
2006 Collier Award, Gordon Research Conference for Microbial Toxins and Pathogenesis

Research Articles

Neunuebel MR, Mohammadi S, Jarnik M, **Machner MP**. Legionella pneumophila LidA Affects Nucleotide Binding and Activity of the Host GTPase Rab1. *J Bacteriol.* 2012 (In Press).

Neunuebel MR, Chen Y, Gaspar AH, Backlund, PS Jr., Yergey A, **Machner MP**. De-AMPylation of the small GTPase Rab1 by the pathogen *Legionella pneumophila*. *Science* (2011), 333:453-6.

Huang L, Boyd D, Amyot WM, Hempstead AD, Luo ZQ, O'Connor TJ, Chen C, **Machner MP**, Montminy T, Isberg RR. The E-Block motif is associated with *Legionella pneumophila* translocated substrates. *Cell Microbiol* (2010) 13:227-45.

Machner MP and Isberg RR. A Bifunctional Bacterial Protein Links GDI Displacement to Rab1 Activation. *Science* (2007) 318:974-977.

Machner MP and Isberg RR. Targeting of Host Rab GTPase function by the intravacuolar pathogen *Legionella pneumophila*. **Dev. Cell** (2006) 11(1):47-56.

Freiberg A, **Machner MP**, Pfeil W, Schubert WD, Heinz DW, and Seckler R. Folding and stability of the leucine-rich repeat domain of Internalin B from *Listeria monocytogenes*. **J. Mol. Biol.** (2004) 337(2):453-61.

Machner MP, Frese S, Niemann HH, Schubert WD, Orian-Rousseau V, Wehland J, and Heinz DW. Aromatic amino acids at the surface of InlB are essential for host cell invasion by *Listeria monocytogenes*. **Mol. Microbiol.** (2003) 48:1525-36.

Schubert WD, Urbanke C, Ziehm T, Beier V, **Machner MP**, Domann E, Wehland J, Chakraborty T, and Heinz DW. Structure of Internalin, a major invasion protein of *Listeria monocytogenes*, in complex with its human receptor E-cadherin. **Cell** (2002) 111:825-36.

Machner MP, Urbanke C, Barzik M, Otten S, Sechi AS, Wehland J, and Heinz DW. ActA from *Listeria monocytogenes* can interact with up to four Ena/VASP homology 1 domains simultaneously. **J. Biol. Chem.** (2001) 276:40096-103.

Walter S, Rohde M, **Machner MP**, and Schrempf H. Electron microscopy studies of cell-wall-anchored cellulose (Avicel)-binding protein (AbpS) from *Streptomyces reticuli*. **Appl. Environ. Microbiol.** (1999) 65:886-92.

Book chapters and Reviews

Machner MP and Chen Y. Catch and release: Rab1 exploitation by *Legionella pneumophila*. **Cellular Logistics** (2011), *In Press*.

Neunuebel MR, and **Machner MP.** The taming of a Rab GTPase by *Legionella pneumophila*. **Small GTPases** (2011), *In Press*.

Isberg RR, and **Machner MP** (2007). Identification of translocated substrates of the *Legionella pneumophila* Dot/Icm system without the use of eukaryotic host cells. In '*Legionella: State of the Art 30 Years after Its Recognition*'. p. 169-176. Ed. by Cianciotto NP et al, ASM Press Washington, D.C.