

# Dr. Gregor M. Blaha

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## CURRENT RESEARCH:

Study of the physiological response of eubacterial cells to environmental signals. In particular the regulation involving the eubacterial-specific secondary messenger (p)ppGpp. To this end biochemical and genetic approaches are combined with biophysical methods, including structure determination by X-ray crystallography.

## RESEARCH EXPERIENCE:

Assistant Professor, Department of Biochemistry, University of California, Riverside  
*Jan. 2012 – Present*

Yale University, Department of Molecular Biophysics & Biochemistry  
*Aug. 2008 – Dec. 2011*  
“Crystallographic studies of the prokaryotic protein translation machinery.” Mentor: Thomas A. Steitz

Yale University, Department of Molecular Biophysics & Biochemistry  
*Sept. 2001 – July 2008*  
“Crystallographic studies of the large ribosomal subunit of *H.marismortui*” Mentor: Thomas A. Steitz

## INDUSTRIAL COLLABORATIONS:

MiTeGen, LLC (Ithaca, NY) *2008 - 2011*  
Initiating the development of products and assisting in the development of product specifications

## EDUCATION:

Max Planck Institute for Molecular Genetics, Berlin, Germany *Feb. 2001 – Aug. 2001*

Vienna University of Technology, Vienna, Austria *July 1997 – Jan. 2001*

University of Vienna, Vienna Austria *Sept. 1990 – Jan. 1997*

## SELECTED PUBLICATIONS: (\* authors contributed equally)

- Blaha, G.M.\***, Polikanov, Y.S.\*, Steitz, T.A. (2012) Elements of ribosomal drug resistance and specificity. *Curr. Opin. Struct. Biol.*, 22, 750-758.
- Polikanov, Y.S.\*, **Blaha, G.M.\***, Steitz, T.A. (2012) How hibernation factors RMF, HPF, and YfiAc turn off protein synthesis. *Science*, 336, 915-918.
- Innis, C.A., **Blaha, G.**, Bulkley, D., and Steitz, T.A., ‘Structural studies of complexes of the 70S ribosome,’ (2011) in ‘Ribosomes, Structure, Function, and Dynamics’ edited by Rodnina, M.V, Wintermeyer, W., and Green, R., Springer, Wien New York, 2011.
- Bulkley, D., Innis, C.A., **Blaha, G.**, and Steitz, T.A. (2010). Revisiting the structures of several antibiotics bound to the bacterial ribosome. *Proc. Natl. Acad. Sci. USA*, 107, 17158-17163.
- Stanley, R.E.\*, **Blaha G.\***, Grodzicki, R.L., Strickler, M.D., and Steitz T.A. (2010). The structures of the anti-tuberculosis antibiotics viomycin and capreomycin bound to the 70S ribosome. *Nat. Struct. Mol. Biol.*, 17, 289-293.

- Gurel, G.\*, **Blaha, G.\***, Steitz, T.A., and Moore, P.B. (2009). The structures of Triacetyloleandomycin and Mycalamide A bound to the large ribosomal subunit of *Haloarcula marismortui*. *Antimicrob. Agents Chemother.*, *53*, 5010-5014.
- Blaha, G.\***, Stanley, R.E.\*, and Steitz, T.A. (2009). Formation of the first peptide bond: the structure of EF-P bound to the 70S ribosome. *Science*, *325*, 966-970.
- Gurel, G.\*, **Blaha, G.\***, Moore, P.B., and Steitz, T.A. (2008). U2504 Determines the Species Specificity of the A-Site Cleft Antibiotics: The Structures of Tiamulin, Homoharringtonine, and Bruceantin Bound to the Ribosome. *J. Mol. Biol.*, *389*, 145-156.
- Blaha, G.\***, Gurel, G., Schroeder, S.J.\*, Moore, P.B., and Steitz, T.A. (2008). Mutations Outside the Anisomycin-Binding Site Can Make Ribosomes Drug-Resistant. *J. Mol. Biol.*, *379*, 505-519.
- Evans, R.N., **Blaha, G.**, Bailey, S., and Steitz, T.A. (2008). The structure of LepA, the ribosomal back translocase. *Proc. Natl. Acad. Sci. USA*, *105*, 4673-4678.
- Schroeder, S.J.\*, **Blaha, G.\***, and Moore, P.B. (2007). Negamycin Binds to the Wall of the Nascent Chain Exit Tunnel of the 50S Ribosomal Subunit. *Antimicrob. Agents Chemother.*, *51*, 4462-4465.
- Schroeder, S.J.\*, **Blaha, G.\***, Tirado-Rives, J., Steitz, T.A., and Moore, P.B. (2007). The Structures of Antibiotics Bound to the E-site Region of the 50S Ribosomal Subunit of *Haloarcula marismortui*: 13-deoxytedanolide and Girodazol. *J. Mol. Biol.*, *367*, 1471-1479.
- Tu, D., **Blaha, G.**, Moore, P.B., and Steitz, T.A. (2005). Gene replacement in *Haloarcula marismortui*: construction of a strain with two of its three chromosomal rRNA operons deleted. *Extremophiles*, *9*, 427-435.
- Tu, D.\*, **Blaha, G.\***, Moore, P.B., and Steitz, T.A. (2005). Structures of MLSBK antibiotics bound to mutated large ribosomal subunits provide a structural explanation for resistance. *Cell*, *121*, 257-270.
- Blaha, G.**, Wilson, D.N., Stoller, G., Fischer, G., Willumeit, R., and Nierhaus, K.H. (2003). Localization of the trigger factor binding site on the ribosomal 50S subunit. *J. Mol. Biol.*, *326*, 887-897.
- Wendrich, T.M.\*, **Blaha, G.\***, Wilson, D.N.\*, Marahiel, M.A., and Nierhaus, K.H. (2002). Dissection of the mechanism for the stringent factor RelA. *Molecular Cell*, *10*, 779-88.
- Spahn, C.M.T., **Blaha, G.**, Agrawal, R.K., Penczek, P., Grassucci, R.A., Trieber, C.A., Connell, S.R., Taylor, D.E., Nierhaus, K.H., and Frank, J. (2001). Localization of the ribosomal protection protein Tet(O) on the ribosome and the mechanism of tetracycline resistance. *Molecular Cell*, *7*, 1037-1045.
- Blaha, G.**, Stelzl, U., Spahn, C.M.T., Agrawal, R.K., Frank, J., and Nierhaus, K.H. (2000). Preparation of functional ribosomal complexes and effect of buffer conditions on tRNA positions observed by cryoelectron microscopy. *Methods in Enzymology*, *317*, 292-309.