Gabriela Kovacikova

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Education

Slovak Technical University, Department of Chemistry and Chemical Engineering, Bratislava, Slovakia
1984-1987, MS

Relevant Professional Experience

Research Assistant, **Thayer School of Engineering, Dartmouth** Antibody Lab at Dartmouth College, Hanover, NH

February 2021 – Present

- Monitor equipment and instrument performance in compliance with dAbl standards; including EpMotion automated pipetting system, Luminex FlexMap, MSD and others
- Access monitoring the recording and reporting data results, review intermediate results and monitor standards and quality controls, proficiency testing, external proficiency standards control testing,
- Perform biochemical experiments and analyze data from studies focused on development of new drugs against HIV and other viral infections

Research Assistant, **Department of Microbiology and Immunology**, Geisel School of Medicine, Hanover, NH

January 1998 – February 2021

- Collaborate with Drs. Skorupski and Taylor to elucidate mechanism of virulence of gastrointestinal pathogen *Vibrio cholerae,* its pathogenesis and transcriptional regulation
- Development of new generation of drugs for treatment and/or prevention of disease based on protein targeted approaches
- Development and execution of new research protocols in lab, data analyses and reports
- Monitor equipment and instrument performance and instruct others in proper use of laboratory equipment, methods, procedures, and techniques
- Research the literature and consult with other investigators within and outside of the institution to identify and resolve complex issues and/or problems
- Mentor undergraduate students, summer program scholars and graduate students
- Laboratory management, biosafety, compliance with rules and regulations of institution

Course Manager, **Marine Biological Laboratory,** Woods Hole, MA

June 2017 - Present

- Manage all aspects of the Microbial Diversity Course summer intensive including curriculum development, laboratory set-up and learning as well as field trips

- Foster interdisciplinary collaboration within the Marine Biological Laboratory as well as other Woods Hole institutes (WHOI, NOAA)

- Mentor students in development of research protocols, result analyses and publication

Visiting Student, **University of Wurzburg,** Wurzburg, Germany

May 1996 - May 1997

- Working with member of the Department of Biochemistry to further research regarding suppressors of tRNA in *Arabidopsis* and *Nicotiana*

Trainings and Languages

Certifications: DOT training for shipment of biological and hazardous material, Radiation safety training, Biosafety level 2 training, Hazardous Waste management training, Laboratory Safety training, Institutional Animal Care training,
Languages: Fluent in Slovak, Czech and Russian.

Professional skills

DNA manipulations: DNA extraction, cloning, expression, primer design, EMSA, microarrays design and analysis, sequencing, mutagenesis, ELISA, RACE
RNA manipulations: RNA extractions, RT PCR, real time PCR
Biochemistry: purification of recombinant proteins, functional assays, Western blotting, spot blotting, protein gels and their analyses , footprinting
Microbiology techniques: bacterial cell culture proliferation, enrichments, purification, selection and various screens, microelectrodes system UNISENSE

Publications

Structural basis for virulence regulation in *Vibrio cholerae* by unsaturated fatty acid components of bile.
Cruite JT, Kovacikova G, Clark KA, Woodbrey AK, Skorupski K, Kull FJ.
Commun Biol. 2019 Nov 28;2:440. doi: 10.1038/s42003-019-0686-x. eCollection 2019.

A Modified ToxT Inhibitor Reduces *Vibrio cholerae* Virulence in Vivo.
Woodbrey AK, Onyango EO, Kovacikova G, Kull FJ, Gribble GW.
Biochemistry. 2018 Sep 25;57(38):5609-5615. doi: 10.1021/acs.biochem.8b00667. Epub 2018 Sep 12.

Identification of a Small Molecule Activator for AphB, a LysR-Type Virulence Transcriptional Regulator in *Vibrio cholerae.*
Privett BR, Pellegrini M, Kovacikova G, Taylor RK, Skorupski K, Mierke D, Kull FJ.
Biochemistry. 2017 Jul 25;56(29):3840-3849. doi: 10.1021/acs.biochem.7b00337. Epub 2017 Jul 11.

A new class of inhibitors of the AraC family virulence regulator *Vibrio cholerae* ToxT.
Woodbrey AK, Onyango EO, Pellegrini M, Kovacikova G, Taylor RK, Gribble GW, Kull FJ.
Sci Rep. 2017 Mar 23;7:45011. doi: 10.1038/srep45011.

Architecture of the *Vibrio cholerae* toxin-coregulated pilus machine revealed by electron cryotomography.
Chang YW, Kjær A, Ortega DR, Kovacikova G, Sutherland JA, Rettberg LA, Taylor RK, Jensen GJ.

Nat Microbiol. 2017 Feb 6;2:16269. doi: 10.1038/nmicrobiol.2016.269.

The Fatty Acid Regulator FadR Influences the Expression of the Virulence Cascade in the El Tor Biotype of *Vibrio cholerae* by Modulating the Levels of ToxT via Two Different Mechanisms.
Kovacikova G, Lin W, Taylor RK, Skorupski K.
J Bacteriol. 2017 Mar 14;199(7). pii: e00762-16. doi: 10.1128/JB.00762-16. Print 2017 Apr 1.

The *Vibrio cholerae* Minor Pilin TcpB Initiates Assembly and Retraction of the Toxin-Coregulated Pilus.
Ng D, Harn T, Altindal T, Kolappan S, Marles JM, Lala R, Spielman I, Gao Y, Hauke CA, Kovacikova G, Verjee Z, Taylor RK, Biais N, Craig L.
PLoS Pathog. 2016 Dec 19;12(12):e1006109. doi: 10.1371/journal.ppat.1006109. eCollection 2016 Dec.

Origins of pandemic *Vibrio cholerae* from environmental gene pools.
Shapiro BJ, Levade I, Kovacikova G, Taylor RK, Almagro-Moreno S.
Nat Microbiol. 2016 Dec 19;2:16240. doi: 10.1038/nmicrobiol.2016.240.

The 40-residue insertion in *Vibrio cholerae* FadR facilitates binding of an additional fatty acyl-CoA ligand.
Shi W, Kovacikova G, Lin W, Taylor RK, Skorupski K, Kull FJ.
Nat Commun. 2015 Jan 21;6:6032. doi: 10.1038/ncomms7032.

Characterization of BreR interaction with the bile response promoters breAB and breR in *Vibrio cholerae*.
Cerda-Maira FA, Kovacikova G, Jude BA, Skorupski K, Taylor RK.
J Bacteriol. 2013 Jan;195(2):307-17. doi: 10.1128/JB.02008-12. Epub 2012 Nov 9.

The crystal structure of AphB, a virulence gene activator from *Vibrio cholerae*, reveals residues that influence its response to oxygen and pH.
Taylor JL, De Silva RS, Kovacikova G, Lin W, Taylor RK, Skorupski K, Kull FJ.
Mol Microbiol. 2012 Feb;83(3):457-70. doi: 10.1111/j.1365-2958.2011.07919.x. Epub 2012 Jan 10.

Characterization of *Vibrio cholerae* O1 El Tor biotype variant clinical isolates from Bangladesh and Haiti, including a molecular genetic analysis of virulence genes.
Son MS, Megli CJ, Kovacikova G, Qadri F, Taylor RK.
J Clin Microbiol. 2011 Nov;49(11):3739-49. doi: 10.1128/JCM.01286-11. Epub 2011 Aug 31.

The LysR-type virulence activator AphB regulates the expression of genes in *Vibrio cholerae* in response to low pH and anaerobiosis.
Kovacikova G, Lin W, Skorupski K.
J Bacteriol. 2010 Aug;192(16):4181-91. doi: 10.1128/JB.00193-10. Epub 2010 Jun 18.

Integration host factor positively regulates virulence gene expression in *Vibrio cholerae*.
Stonehouse E, Kovacikova G, Taylor RK, Skorupski K.
J Bacteriol. 2008 Jul;190(13):4736-48. doi: 10.1128/JB.00089-08. Epub 2008 May 2.

Crystal structure of the *Vibrio cholerae* quorum-sensing regulatory protein HapR.
De Silva RS, Kovacikova G, Lin W, Taylor RK, Skorupski K, Kull FJ.
J Bacteriol. 2007 Aug;189(15):5683-91. Epub 2007 May 25.

The quorum sensing regulator HapR downregulates the expression of the virulence gene transcription factor AphA in *Vibrio cholerae* by antagonizing Lrp- and VpsR-mediated activation.
Lin W, Kovacikova G, Skorupski K.
Mol Microbiol. 2007 May;64(4):953-67.

Dual regulation of genes involved in acetoin biosynthesis and motility/biofilm formation by the virulence activator AphA and the acetate-responsive LysR-type regulator AlsR in *Vibrio cholerae*.
Kovacikova G, Lin W, Skorupski K.

Mol Microbiol. 2005 Jul;57(2):420-33.

Requirements for *Vibrio cholerae* HapR binding and transcriptional repression at the hapR promoter are distinct from those at the aphA promoter.
Lin W, Kovacikova G, Skorupski K.
J Bacteriol. 2005 May;187(9):3013-9.

Crystal structure of the virulence gene activator AphA from *Vibrio cholerae* reveals it is a novel member of the winged helix transcription factor superfamily.
De Silva RS, Kovacikova G, Lin W, Taylor RK, Skorupski K, Kull FJ.
J Biol Chem. 2005 Apr 8;280(14):13779-83. Epub 2005 Jan 12.

Vibrio cholerae AphA uses a novel mechanism for virulence gene activation that involves interaction with the LysR-type regulator AphB at the tcpPH promoter.
Kovacikova G, Lin W, Skorupski K.
Mol Microbiol. 2004 Jul;53(1):129-42.

The virulence activator AphA links quorum sensing to pathogenesis and physiology in *Vibrio cholerae* by repressing the expression of a penicillin amidase gene on the small chromosome.
Kovacikova G, Lin W, Skorupski K.
J Bacteriol. 2003 Aug;185(16):4825-36.

Regulation of virulence gene expression in *Vibrio cholera*e by quorum sensing: HapR functions at the aphA promoter.
Kovacikova G, Skorupski K.
Mol Microbiol. 2002 Nov;46(4):1135-47.

The alternative sigma factor sigma(E) plays an important role in intestinal survival and virulence in *Vibrio cholerae.*
Kovacikova G, Skorupski K.
Infect Immun. 2002 Oct;70(10):5355-62.

Binding site requirements of the virulence gene regulator AphB: differential affinities for the *Vibrio cholerae* classical and El Tor tcpPH promoters.
Kovacikova G, Skorupski K.
Mol Microbiol. 2002 Apr;44(2):533-47.