

October 2017

NAME: **Anne-Marie Krachler**

PRESENT TITLE: Associate Professor

WORK ADDRESS: Dep. of Microbiology and Molecular Genetics
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BIRTHDATE: 05/24/1983

CITIZENSHIP: Austria

UNDERGRADUATE EDUCATION: Vienna University of Technology 2001-2006
M.Eng. Chemical Engineering (distinction), 10/2006

GRADUATE EDUCATION: University of York 2006-2010
Ph.D. Biology, 07/2010

POSTGRADUATE TRAINING: Postdoctoral Fellow, Department of Molecular
Biology, UT Southwestern Medical Center, 2010-12

ACADEMIC & ADMINISTRATIVE APPOINTMENTS:
University of Birmingham, School of Biosciences:
Birmingham Fellow (Assistant Prof), 2012-2016

UTHealth Science Center Houston, MMG:
Visiting Associate Professor, 2016-present

PROFESSIONAL ORGANIZATIONS: ASM (American Society for Microbiology)

HONORS AND AWARDS:
Austrian Science Fund (FWF) Fellowship, 2005-06
Marie Curie Fellowship for Early Stage Researchers, 2006-09
Kathleen Mary Stott Prize (best graduate student talk), 2009
UT Southwestern Biochemistry Departmental Travel Award, 2011

AAAS Excellence in Science Program, 2012
EMBO Long-term Fellow, 2012-14
Winner of 'I'm a scientist get me out of here! Bugs, drugs and infection', 2013
University of Birmingham Founder's Award for Outstanding Early-Career Academic, 2015
Biochemical Society Early Career Research Award (Biological Systems), 2015
UT System Rising STAR award, 2016

EDITORIAL POSITIONS:

Review Editor, *Frontiers in Cellular and Infection Microbiology*, 2016-present

Regular manuscript reviewer for *BMC Microbiology*, *Current Opinion in Microbiology*, *FEBS Letters*, *Frontiers in Cellular and Infection Microbiology*, *Frontiers in Microbiology*, *J Bacteriol*, *J of Biomedical Materials Research: Part B – Applied Biomaterials*, *MBio*, *Microbiology*, *Mol Microbiol*, *Nature Cell Biology*, *PLoS One*, *PNAS*, *Science Advances*, *Scientific Reports*, *Virulence*

SERVICE ON NATIONAL GRANT REVIEW PANELS, STUDY SECTIONS, COMMITTEES:

External Reviewer, Medical Research Council (MRC) UK, 2013-16
External Reviewer, BBSRC, 2012-16
External Reviewer, Society of General Microbiology Studentship Grants, 2013-16
External Reviewer, Newton Fund, 2015
External Ph.D. Examiner, University of Aberdeen, 2015
Member of the Biotechnology and Biological Sciences Research Council (BBSRC) Pool of Experts, 2016
External Reviewer, FINOVI Foundation (France), 2016
External Reviewer, Israel Science Foundation, 2015, 2017
Panelist, Dunn Collaborative Research Awards, 2017
External Reviewer, Texas A&M CSTR Pilot Grant Program, 2017
External Reviewer, German Research Foundation (DFG), 2017
Ph.D. thesis mail reviewer, University of Melbourne, 2017

SERVICE ON THE UNIVERSITY OF TEXAS MEDICAL SCHOOL AT HOUSTON COMMITTEES:

Faculty Diversity Committee, 2017-present

SERVICE ON GRADUATE SCHOOL COMMITTEES:

Student Scholarship Committee, 2017-present

SERVICE TO THE COMMUNITY:

Serving Member of the Athena SWAN working group and Equality and Diversity Committee, University of Birmingham, School of Biosciences 2012-16
Organizer and Facilitator of the Annual Microbiology and Infection Summer School, 2014-15
STEMNET Ambassador, 2014-16
Scientific Advisor for the Sky1 television series 'Duck Quacks don't Echo', 2015
Co-Facilitator on Society of General Microbiology Small World Initiative for Undergraduate Students, University of Birmingham, 2015-16

Member of the Public Engagement Steering Group, Inst. of Microbiology and Infection, 2015-16
Poster judge for GSEC poster competition, 2016
GSBS applicant interviews, 2017

SPONSORSHIP OF CANDIDATES FOR POSTGRADUATE DEGREE:

Rosa Zavaleta-Romero, 2013 (M.Sc.)
Alexjahan Islam, 2013 (M.Sc.)
David Hardy, 2014 (M.Res.)
Victoria Attah, 2014 (M.Res.)
Maryan Cabdi, 2015 (M.Res.)
Robyn Orme, 2015 (M.Sc.)
Paul Bird, 2016 (M.Res.)
Fitua Al-Saedi, 2013-2017 (Ph.D.)
Eloise O'Donoghue, 2013-2017 (Ph.D.)
Nicolas Perez-Soto, 2014-present (Ph.D.)
Laurel Thompson, 2017-present (Ph.D.)

SPONSORSHIP OF POSTDOCTORAL FELLOWS:

Gregorious Papadakos (Visiting Postdoctoral Fellow, Univ. of Oxford), 2012
Jenson Lim, 2014 (now Assistant Prof at the Univ of Stirling)
Alexander Fehr, 2016 (now high school teacher in Switzerland)
Vipin Madhavan, 2016-2017 (now Research Associate at Indian Institute of Science)
Daniel Stones, 2014-present
Natalie Sirisaengtaksin, 2017-present

SPONSORSHIP OF UNDERGRADUATE STUDENTS:

(*) denotes students who have co-authored lab publications

*Catherine Hawley, Summer Student, 2012
*Charlotte Watson, Summer Student, 2012
Kim Kos, Final Year Project, 2014
Eilish Quinn, Final Year Project, 2014
Georgia Atkins, Final Year Project, 2014
Danielle Prowse, Final Year Project, 2014
*Lauren Moule, Summer and Final Year Project Student, 2014-15
Leah Elston-Thompson, Final Year Project, 2015
*Selina Patel, Final Year Project, 2015
Rebecca Douglas, Final Year Project, 2015
*Rachael Collins, Final Year Project, 2015
Pehrong Loh, Final Year Project, 2016
Kofoworaola Gaji, Final Year Project, 2016
*Sieta Majok, Final Year Project, 2016
*Jacqueline Rocha, MicroSURP Student, 2017

SPONSORSHIP OF GRADUATE STUDENT TUTORIALS:

Ileana Corsi Vasquez (Spring 2017)

Kristen Clemons (Spring 2017)
Laurel Thompson (Spring 2017)
Alec Santiago (Summer 2017)
Anh Kim Trinh Nguyen (Fall 2017)

CURRENT TEACHING RESPONSIBILITIES:

GS07 1092 Topics in Microbiology and Infectious Diseases (Fall 2017)

MENTORING ACTIVITIES:

• Service on Graduate Student Committees:

Robert Williams (2016-present)

Kalyn Weiss (2017-present)

Alexandra Berroyer (2017-present)

• Service on Ph.D. candidacy examination committees:

Unekwu Yakubu (2017)

• Mentoring of additional lab members:

Ghadah Alsharif (visiting graduate student), 2013-15

Diana Vaz (research assistant II) 2014-present

Emma Keen (research assistant I) 2015-present

Oliver Creese (jointly supervised graduate student), 2015-present

CURRENT GRANT SUPPORT:

Title: Molecular mechanisms modulating host epithelial integrity in response to bacterial adhesion (BB/M021513.1)

Principal Investigator: Anne-Marie Krachler

Funding Agency: Biotechnology and Biological Sciences Research Council (BBSRC) UK

Award Period: 08/2015-07/2018

Amount: \$800,653

Title: A mathematical and experimental approach for the rational assessment of bacterial adhesion inhibitor materials in vivo (BB/M021386/1)

Principal Investigator: Sara Jabbari and Anne-Marie Krachler

Funding Agency: Biotechnology and Biological Sciences Research Council (BBSRC) UK

Award Period: 09/2015-08/2018

Amount: \$789,830

Title: How is *V. cholerae* lifestyle switching controlled? (BB/N002792/1)

Principal Investigator: David Grainger

Funding Agency: Biotechnology and Biological Sciences Research Council (BBSRC) UK

Award Period: 01/2016-12/2019

Amount: \$659,390

PENDING GRANT SUPPORT:

Title: Mechanoregulation of EHEC virulence
Principal Investigator: Anne-Marie Krachler (PI)
Funding Agency: NIH R01 (NIAID/BACP)
Award Period: resubmitted 11/2017

Title: Role of translational errors in host-pathogen interactions
Principal Investigator: Ling (PI, 50%)/Krachler (Co-PI, 50%)
Funding Agency: NIH R21 (NIAID)
Award Period: submitted 10/2017

Title: Optimizing Wound Care in the Combat Casualty: Inhibitors of bacterial adhesion as new targets for the prevention and treatment of drug-resistant infections
Principal Investigator: Ryan Huebinger, UTSW (PI), Krachler (Sub-Contract lead)
Funding Agency: Department of Defense, BA170515
Award Period: submitted 07/2017, full proposal invited

PAST GRANT SUPPORT:

Title: Molecular and functional characterization of protein-lipid interactions at the bacterial-host interface (BB/L007916/1)
Principal Investigator: Anne-Marie Krachler
Funding Agency: Biotechnology and Biological Sciences Research Council (BBSRC) UK
Award Period: 02/2014-02/2017
Amount: \$733,619

Title: Real-time tracking of host GTPase activation during bacterial infections
Principal Investigator: Anne-Marie Krachler
Funding Agency: Wellcome Trust
Award Period: 02/2014-05/2014
Amount: \$23,698

Title: Determining the role of phospholipase B1 in pathogen escape from the phagosome
Principal Investigator: Anne-Marie Krachler
Funding Agency: European Molecular Biology Organization (EMBO)
Award Period: 03/2012-02/2014
Amount: \$106,109

Title: Developing tools for the analysis of membrane fusion events
Principal Investigator: Anne-Marie Krachler
Funding Agency: Wellcome Trust
Award Period: 04/2013-09/2013
Amount: \$23,648

Title: What drives host-pathogen membrane fusion: role of surface receptors in guiding outer membrane vesicles

Principal Investigator: Anne-Marie Krachler

Funding Agency: Royal Society

Award Period: 12/2012-11/2013

Amount: \$22,737

INVITED PRESENTATIONS (since 2012):

University of Oxford, Department of Biochemistry, 2012

University of Strathclyde, Institute of Pharmacy and Biomedical Sciences, 2013

Society of General Microbiology Annual Conference, Manchester, 2013

University of Warwick, Division of Microbiology, 2014

Research Center for Molecular Medicine of the Austrian Academy of Sciences, Vienna, 2014

Experimental Biology, San Diego, 2014

University of Stirling, Department of Biological and Environmental Sciences, 2015

University College London, Eastman Dental Institute, 2015

University of Tromsø, Norway, Department of Pharmacy, 2015

University of Dundee, Division of Microbiology and Biological Chemistry, 2016

Irish Society of Immunology Conference, Cork (cancelled), 2016

ASM Microbe, Boston, 2016

MD Anderson Cancer Center, Frog & Fish Club, 2016

ASM Texas Branch Fall Meeting, Dallas, 2016

UTHealth, MBID Retreat, 2017

UTHealth, MMG retreat, 2017

UT Rio Grande Valley, 2017

MD Anderson Cancer Center, Genetics Research Exchange Seminar Series, 2017

University of Maine, Dep of Molecular and Biomedical Sciences, 2017

Texas A&M, Center for Infections and Inflammatory Diseases Colloquium, 2017

International Conference on Model Hosts Greece, 2017

UT Austin, Department of Physics, 2017

PUBLICATIONS:

Refereed Original Articles in Journals

Vargha R., Endemann M., Kratochwill K., Riesenhuber A., Wick N., Krachler A.M., Malaga-Dieguez L., Aufricht C.: Ex vivo reversal of in vivo transdifferentiation in mesothelial cells grown from peritoneal dialysate effluents. *Nephrol Dial Transplant*. 21(10):2943-2947, 2006.

Bonsor D.A., Hecht O., Vankemmelbeke M., Sharma A., Krachler A.M., Housden N.G., Lilly K.J., James R., Morre G.R., Kleanthous C.: Allosteric beta-propeller signalling in TolB and its manipulation by translocating colicins. *EMBO J*. 28(18):2846-2857, 2009.

Krachler A.M., Sharma A., Kleanthous C.: Self-association of TPR domains: Lessons learned from a designed, consensus-based TPR oligomer. *Proteins*. 78(9): 2131-2143, 2010.

Krachler A.M., Sharma A., Cauldwell A., Papadakos G., Kleanthous C.: TolA modulates the oligomeric status of YbgF in the bacterial periplasm. *J Mol Biol.* 403(2): 270-285, 2010.

Krachler A.M., Ham H., Orth K.: Outer membrane adhesion factor multivalent adhesion molecule 7 initiates host cell binding by Gram-negative pathogens. *Proc Natl Acad Sci U S A.* 108(28):11614-11619, 2011. *Article was highlighted in *Nature* 2011, 475:9 and in *Nature Rev Microbiol* 2011, 9(9):627.

Krachler A.M., Orth K.: Functional characterization of the interaction between the bacterial adhesin Multivalent Adhesion Molecule (MAM) 7 and its host cell ligands. *J Biol Chem.* 286(45):38939-38947, 2011.

Krachler A.M., Woolery A.R., Orth K.: Manipulation of host kinase signalling pathways by bacterial pathogens. *J Cell Biol.* 195(7):1083-1092, 2011.

Krachler A.M. and Orth K.: Turnabout is fair play: use of the bacterial Multivalent Adhesion Molecule 7 as an antimicrobial agent. *Virulence.* 3(1):68-71, 2012. *Article featured on the cover.

Krachler A.M., Mende K., Murray C., Orth K.: In vitro characterization of Multivalent Adhesion Molecule 7-based inhibition of multi-drug resistant bacteria isolated from wounded military personnel. *Virulence.* 3(4):389-399, 2012.

Zhang L., Krachler A.M., Broberg C.A., Li Y., Mirzaei H., Gilpin C.J., Orth K.: Type III effector VopC mediates invasion for *Vibrio* species. *Cell Reports.* 1(5):453-460, 2012.

Altura M.A., Heath-Heckman E.A., Gillette A., Kremer N., Krachler A.M., Brennan C., Ruby E.G., Orth K., McFall-Ngai M.J.: The first engagement of partners in the *Euprymna scolopes-Vibrio fischeri* symbiosis is a two-step process initiated by a few environmental symbiont cells. *Environ Microbiol.* 15(11):2937-2950, 2013.

Hawley C.A., Watson C.A., Orth K., Krachler A.M.: A MAM7 peptide-based inhibitor of *Staphylococcus aureus* adhesion does not interfere with in vitro host cell function. *PLOS One.* 8(11):e81216, 2013.

Calder T., de Souza Santos M., Attah V., Klimko J., Fernandez J., Salomon D., Krachler A.M., Orth K.: Structural and regulatory mutations in *Vibrio parahaemolyticus* type III secretion systems display variable effects on virulence. *FEMS Microbiol Lett.* 361(2):107-114, 2014.

Lim J., Stones D.H., Hawley C.A., Watson C.A., Krachler A.M.: Multivalent Adhesion Molecule 7 clusters act as signaling platform for host cellular GTPase activation and facilitate epithelial barrier dysfunction. *PLoS Pathog.* 10(9):e1004421, 2014.

Collins R., Krachler A.M.: There's more to science than research. A team-based role game to develop school students' understanding of science careers in pharmaceutical quality control. *J Microbiol Biol Educ.* 16(2):263-265, 2015.

Stones D.H., Krachler A.M.: Dual function of a bacterial protein as an adhesion and extracellular effector of host GTPase signalling. *Small GTPases*. 6(3):153-156, 2015.

Ternent L., Dyson R.J., Krachler A.M., Jabbari S.: Bacterial fitness shapes the population dynamics of antibiotic-resistant and –susceptible bacteria in a model of combined antibiotic and anti-virulence treatment. *J Theor Biol*. 372:1-11, 2015.

Stones D.H., Al-Saedi F., Vaz D., Perez-Soto N., Krachler A.M.: Biomimetic materials to characterize bacteria-host interactions. *J Vis Exp*. (105):e53400, 2015.

Alsharif G., Ahmad S., Islam M.S., Shah R., Busby S.J., Krachler A.M.: Host attachment and fluid shear are integrated into a mechanical signal regulating virulence in *Escherichia coli* O157:H7. *Proc Natl Acad Sci U S A*. 112(17):5503-5508, 2015.

Mahmoud R.Y., Stones D.H., Li W., Emara M., Eldomany R.A., Wang D., Wang Y., Krachler A.M., Yu J.: The Multivalent Adhesion Molecule SSO1327 plays a key role in *Shigella sonnei* pathogenesis. *Mol Microbiol*. 99(4):658-673, 2016.

Al-Saedi F., Stones D., Vaz D.P., Krachler A.M.: Displacement of pathogens by an engineered bacterium is a multi-factorial process that depends on attachment competition and interspecific antagonism. *Infect Immun*. 84(6):1704-1711, 2016.

Patel S., Krachler A.M.: Sexual Health – Get Involved: A kinesthetic learning experience of statistics of STI transmission. *J Mol Biol Educ*. 17(2):302-304, 2016.

Insua I., Lamas E., Zhang Z., Peacock A.F.A., Krachler A.M., Fernandez-Trillo F.: Enzyme-responsive polyion complex (PIC) nanoparticles for the targeted delivery of antimicrobial polymers. *Polym Chem*. 7(15):2684-2690, 2016.

Huebinger R.M., Stones D.H., deSouza Santos M., Carlson D.L., Song J., Vaz D.P., Keen E., Wolf S.E., Orth K., Krachler A.M.: Targeting bacterial adherence inhibits multidrug-resistant *Pseudomonas aeruginosa* infection following burn injury. *Sci Rep*. (6):39341-39349, 2016.

Insua I., Majok S., Peacock A.F., Krachler A.M., Fernandez-Trillo F.: Preparation and antimicrobial evaluation of polyion complex (PIC) nanoparticles loaded with polymyxin B. *Eur Polym J*. 87:478-486, 2017.

Perez-Soto N., Moule L., Crisan D.N., Insua I., Taylor-Smith L.M., Voelz K., Fernandez-Trillo F., Krachler A.M.: Engineering microbial physiology with synthetic polymers: cationic polymers induce biofilm formation in *Vibrio cholerae* and downregulate the expression of virulence genes. *Chem Sci*. (8):5291-5298, 2017. *Article featured on cover.

Insua I., Peacock A., Krachler A.M., Fernandez-Trillo F.: Polymyxin B containing polyion complex (PIC) particles: Improving the antimicrobial activity by tailoring the degree of polymerisation of the inert component. *Sci Rep*. (7):9396-9406, 2017.

Stones D.H., Fehr A., Madhavan T.P., Voelz K., Krachler A.M.: High-resolution analysis of spatiotemporal virulence gene regulation during food-borne infection with *Escherichia coli* O157:H7 within a live host. *msphere*. 2(5):e00365, 2017. *Editor's pick

Alsaedi F.*, Vaz D.P.*, Stones D.H., Krachler A.M.: 3-sulfo-galactosyl dependent adhesion of *Escherichia coli* HS Multivalent Adhesion Molecule is attenuated by sulfatase activity. *J Biol Chem*. Accepted. *these two authors contributed equally.

Review Articles

Krachler AM and Orth K.: Targeting the bacteria-host interface: strategies in anti-adhesion therapy. *Virulence*. 4(4):284-94, 2013.

Stones DH, Krachler AM.: Fatal Attraction: How Bacterial Adhesins Affect Host Signaling and What We Can Learn from Them. *Int J Mol Sci*. 16(2):2626-40, 2015.

Stones DH, Krachler AM. Against the tide: The role of bacterial adhesion in host colonization. *Biochem Soc Trans*. 44(6):1571-80, 2016.

O'Donoghue EJ, Krachler AM.: Mechanisms of outer membrane vesicle entry into host cells. *Cell Microbiol*. 18(11):1508-17, 2016.

Commentaries

Krachler A.M. and Orth K.: Made to stick: Anti-adhesion therapy for bacterial infections as an alternative to conventional antimicrobials. In: *ASM Microbe*, 2013.

Islam M.S., Krachler A.M.: Mechanosensing regulates virulence in *Escherichia coli* O157:H7. *Gut Microbes*. 7(1):63-67, 2016.

Krachler A.M.: BamB and outer membrane biogenesis – The Achilles' heel for targeting *Klebsiella* infections? *Virulence*. 7(5):508-11, 2016.

Book Chapters

Krachler A.M., Orth K.: Black Spot, Black Death, Black Pearl: Tales of Bacterial Effectors. In 'Advances and new technologies in Toxinology' (SFET, ed.), ISSN 1760-6004, 2010.

De Souza Santos M., Salomon D., Li P., Krachler A.M., Orth K.: *Vibrio parahaemolyticus* Virulence Determinants. In 'The Comprehensive Sourcebook of Bacterial Protein Toxins, Fourth Edition'. (Acad Press, ed.) ISBN 9780128001882, 2015.

Published conference proceedings

Moreddu R., Boechler N., Krachler A.M., Mendes P.M.: A piezoelectric organic surface to control bacterial adhesion and growth. In: Eskola H, Väisänen O., Viik J., Hyttinen J. (eds) EMBEC & NBC 2017. EMBEC 2017, NBC 2017. IFMBE Proceedings, Vol 65. Springer, Singapore.

Patents

Orth K., Ham H., Krachler A.M.: Modulating bacterial MAM polypeptides in pathogenic disease. US 9,529,005 B2. Granted Dec 27, 2016.