

CURRICULUM VITAE

Robert A. Quinn

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CURRENT POSITION

Postdoctoral Scholar. San Diego State University. Specialization: Microbial Ecology of Cystic Fibrosis. Fellowship funding awarded by the Cystic Fibrosis Research Inc. May 2012-present.

RESEARCH INTERESTS

My research interests are the microbiology and microbial ecology of animal and human disease, and the physiology and dynamics of microbial communities.

EDUCATION

Ph. D. in Biology, University of Louisiana at Lafayette, Lafayette, Louisiana, 2008 – 2012.

Specialization: Microbiology of Aquatic Animal Disease.

Advisor: Dr. Andrei Y. Chistoserdov.

Dissertation: Shell Disease in the American Lobster (*Homarus americanus*): Microbiology and Microbial Ecology of a Complex Polymicrobial Disease

M. Sc. in Microbiology, University of Guelph, Guelph, Ontario, 2005-2007.

Specialization: Molecular and Microbiological Diagnostics of Finfish Disease.

Advisor: Dr. Roselynn M.W. Stevenson

Thesis: Non-lethal Detection of Bacterial Fish Pathogens with DGGE and the Molecular Epizootiology of *Aeromonas salmonicida*

B. Sc. Microbiology with Honors, University of Guelph, Guelph, Ontario, 2001 - 2005.

Department of Molecular and Cellular Biology. Specialization in Microbiology and Molecular Biology of Bacteria, Fungi and Viruses.

FUNDING AND ACADEMIC AWARDS

NIH Metabolomics Supplement 5R01GM095384-S1. I co-wrote a supplemental grant to Dr. Forest Rohwer's 'Ecology of Cystic Fibrosis' RO1, which was awarded to collaborate with Dr. Pieter Dorrestein at UCSD.

Elizabeth Nash Memorial Postdoctoral Fellowship. December, 2011.

Awarded a postdoctoral fellowship grant from the Cystic Fibrosis Research Inc. to work in Dr. Forest Rohwer's lab at San Diego State University based on my research proposal "Metagenomic signals characteristic of cystic fibrosis exacerbation onset".

Award Extended August 2014. Based on a proposal submitted to continue the research.

Best Ph.D. Presentation. Southeast/Texas Branch of the American Society of Microbiology Annual Meeting, November 8-11, 2008, University of Texas at Austin.

Best Student Presentation. Eastern Fish Health Workshop, April 28-May 1st, 2009. Lake Placid New York.

University of Guelph Travel Award. 2007.

PUBLICATIONS

Quinn, R.A., Whiteson, K., Lim, Y.W., Salamon, P., Bailey, B., Meinardi, S., Sanchez, S., Blake, D., Conrad, D., and F. Rohwer. 2014. A Winogradsky-based culture system reveals an association between microbial fermentation and cystic fibrosis exacerbation. *ISMEJ*. doi:10.1038/ismej.2014.234

Quinn, R.A. and T. Alexandrov. 2014. The community ecology of microbial molecules. *Journal of Chemical Ecology*. doi: 10.1007/s10886-014-0528-8

Quinn, R.A., Lim, Y.W., Maughan, H., Conrad, D., Rohwer, F and K. L. Whiteson. 2014. Biogeochemical forces shape the composition and physiology of polymicrobial communities in the cystic fibrosis lung. *mBio* 5(2):e00956-13. doi:10.1128/mBio.00956-13
Article Highlighted in: Molloy, S. 2014. A metabolic milieu. *Nat. Rev. Microbiol.* 12:315. doi:10.1038/nrmicro3268

Whiteson, K., Bailey, B., Bergkessel, M., Conrad, D., Delhaes, L., Felts, B., Harris, J.K., Hunter, R., Lim, Y.W., Maughan, H., **Quinn, R.A.,** Salamon, P., Sullivan, J., Wagner, B., and P.B. Rainey. 2014. The upper respiratory tract as a microbial source for pulmonary infections in cystic fibrosis patients: parallels from island biogeography. *Am. J. Resp. Clin. Care Med.* 189(11):1309-1315.

Whiteson, K., Meinardi, S., Lim, Y.W., Schmieder, R., Maughan, H., **Quinn, R.A.,** Black, D., Conrad, D., and F. Rohwer. 2014. Breath gas metabolites and bacterial metagenomes from cystic fibrosis airways indicated active pH neutral 2,3-butanedione fermentation. *ISME*. 8:1247-1258.

Smolowitz, R, **R. A. Quinn,** R.J. Cawthorn, R.L. Summerfield and A. Y. Chistoserdov. 2014. Pathology of two forms of shell disease in the American lobster *Homarus americanus* Milne Edwards in Atlantic Canada. *J. Fish Dis.* 37:577-581. Doi:10.1111/jfd.12136

Cheng-Chi Hsu, El Nagggar, M., Peng, Y., Fang, J., Sanchez, L.M., Mascuch, S., Møller, A., Alazzeah, E. K., Pikula, J., **Quinn, R.A.,** Zeng, Y., Wolfe, B.E., Dutton, R.J., Gerwick, L., Zhang, L., Liu, X., Månsson, M. and P. C. Dorrestein. 2013. Real-Time Metabolomics on Living Microorganisms Using Ambient Electrospray Ionization Flow-Probe. *Analytical Chemistry*. 85(15):7014-7018.

- Quinn, R.A.,** R.J. Cawthorn, R.L. Summerfield, R. Smolowitz and A.Y Chistoserdov. 2013. Bacterial communities associated with lesions of two forms of shell disease in the American lobster (*Homarus americanus*, Milne Edwards) from Atlantic Canada. *Canadian Journal of Microbiology*. 59(6):380-390.
- Quinn, R. A.,** R. M. Smolowitz, S. L. Gubbala and A. Y. Chistoserdov. 2013. Culture-independent analysis of bacterial communities in the hemolymph of American lobsters with epizootic shell disease using PCR-DGGE. *Diseases of Aquatic Organisms*. 103:141-148.
- Quinn, R. A,** A. Metzler, R. M. Smolowitz, M. Tlusty and A. Y. Chistoserdov. 2012. Exposures of *Homarus americanus* shell to three bacteria isolated from naturally occurring epizootic shell disease lesions. *Journal of Shellfish Research*. 31(2):485-493.
- Chistoserdov, A., **R. A. Quinn,** S.L. Gubbala and R. Smolowitz. 2012. Bacterial communities associated with lesions of shell disease in the American lobster (*Homarus americanus*, Milne-Edwards). *Journal of Shellfish Research*. 31(2):449-462.
- Quinn, R. A.,** A. Metzler, M. Tlusty, R. M. Smolowitz, P. Leberg and A. Y. Chistoserdov. 2012. Lesion bacterial communities of American lobsters with diet induced shell disease. *Diseases of Aquatic Organisms*. 98:221-233.
- Quinn, R.A.** and R. Stevenson. 2012. Denaturing gradient gel electrophoresis for nonlethal detection of *Aeromonas salmonicida* in salmonid mucus and its potential for other bacterial fish pathogens. *Canadian Journal of Microbiology*. 58(5):563-571.
- Quinn, R.A.,** R.M. Smolowitz and A.Y. Chistoserdov. 2009. Analysis of eukaryotic communities of American lobsters with epizootic shell disease using PCR-DGGE. *Journal of Shellfish Research*. 28:913-922.

PUBLICATIONS IN REVIEW/PREPARATION

- Quinn, R.A.,** Lim, Y.W., Whiteson, K., Conrad, D., Dorrestein, P. and F. Rohwer. Mass Spectrometry-based characterization of the cystic fibrosis sputum metabolome. *Am. J. Resp. Cell Mol. Biol.* In Prep.
- Quinn, R.A.,** Quistad, S., Haas, A., Vermeij, M., Dorrestein, P., and Rohwer. Metabolomics of coral reef benthic interactions reveals a bioactive lipid involved in coral defense. In prep.

INVITED TALKS

- Quinn, R.A.,** Dorrestein, P., and Rohwer, F. **Understanding Microbial Communities; Function, Structure, and Dynamics. Isaac Newton Institute for Mathematical Science. Cambridge University, Cambridge, UK. November 13, 2014.** Microbial and host physiology in the cystic fibrosis lung.
Video of presentation available at: <https://www.newton.ac.uk/seminar/20141113150016002>
- Quinn, R.A.,** Dorrestein, P., and Rohwer, F. **ISME 2014 August 24th-29th, 2014. Seoul, South Korea.** ‘Omics’ methods reveal how chemistry governs the biology of cystic fibrosis lung infections.

- Quinn, R.A. Cystic Fibrosis Research Inc. National CF Family Education Conference. San Francisco, CA, Aug 1st, 2014.** Omics analysis of cystic fibrosis pulmonary exacerbations.
- Quinn, R.A., Dorrestein, P., and Rohwer F. Canadian Institute for Advanced Research Meeting. June 25th-29th, 2014. Prague, Czech Republic.** Metabolomics approaches to reveal the chemical diversity of biological systems.
- Quinn, R.A., Dorrestein, P., and Rohwer, F. Southern Line Islands Cruise Meeting. May 29th-30th. Scripps Institute of Oceanography, La Jolla, CA.** Metabolomics of Coral Reef Benthic Interactions.
- Quinn, R.A. and Dorrestein, P. Bioinformatics Workshop. San Diego State University, Nov 18, 2013.** Bioinformatic challenges in metabolomics.
- Quinn, R.A., Phelan, V., Whiteson, K., Lim, Y.W., Conrad, D., Dorrestein, P., and Rohwer, F. Microbial Ecology of the Cystic Fibrosis Lung. August 2-4th, 2013. Telluride Sciences: Cystic Fibrosis Ecology and Eradication Conference. Telluride, CO.** Novel Culture Models, Metagenomics and Metabolomics of Cystic Fibrosis.
- Quinn, R.A. Cystic Fibrosis Research Inc. National CF Family Education Conference. San Francisco, CA, Aug 3rd, 2013.** Microbial Community Dynamics Through Cystic Fibrosis Pulmonary Exacerbations.
- Quinn, R.A. World Equine Airways Symposium. Calgary, Alberta, Canada. July 15, 2013.** Microbial Ecology of the Cystic Fibrosis Lung.
- Quinn, R.A. Cystic Fibrosis Research Inc. National CF Family Education Conference. San Francisco, CA, July 28, 2012.** The Microbial Ecology of Cystic Fibrosis: Novel Approaches to a Complex Microbial Infection.
- Quinn, R.A. Invited Talk for the laboratory of Dr. Forest Rohwer. San Diego State University, April 12, 2011.** The makings of an Ugly Lobster: Epizootic Shell Disease in the American lobster.
- Quinn, R. A., D. Felder, A. Chistoserdov, A. Metzler, M. Tlusty and R. Smolowitz. Rhode Island Sea Grant, Lobster Initiative Meeting. August 3-5, 2009.** Microbes and Shell Disease.
- Quinn, R.A. and A. Y. Chistoserdov. New England Aquarium Research Seminar, July 8, 2009.** Microbiology of Epizootic Shell Disease. Presented to scientists at the New England Aquarium
- Quinn, R.A. March, 2007. Graduate Student Seminar Series, University of Guelph. Guelph, Ontario.** Molecular epizootiology and evolution of Viral Haemorrhagic Septicaemia virus.

CONFERENCE PRESENTATIONS AND POSTERS

- Quinn, R.A., Phelan, V., Whiteson, K., Lim, Y.W., Conrad, D., Dorrestein, P., and Rohwer, F. October, 28th-30th. NIH Common Fund Metabolomics meeting. Research Triangle Park,**

NC. Metabolomics reveals how host and microbial specialized metabolites contribute to cystic fibrosis disease. **Poster.**

Quinn, R.A., Phelan, V., Whiteson, K., Meehan, M., Conrad, D., Rohwer, F, and Dorrestein, P. **March 1st-4th, 2014. Mass Spectrometry Applications to the Clinical Lab.** Target and untargeted metabolomics of cystic fibrosis sputum guided by molecular networking. **Poster.**

Quinn, R.A., Phelan, V., Whiteson, K., Lim, Y.W., Conrad, D., Dorrestein, P., and Rohwer, F. Microbial Ecology of the Cystic Fibrosis Lung. **August 2-4th, 2013. Cystic Fibrosis Research Inc. National CF Family Education Conference. San Francisco, CA.** Microbial Ecology of the Cystic Fibrosis Lung. **Presentation.**

Rath, C., Phelan, V., Yurong, G., Watrous, J., Wang, M., **Quinn, R.A.,** Lim, Y.W., Dorrestein, K., Bandeira, N., Alexandrov, T., and Pieter C. Dorrestein. **June 8-9, 2013. American Society of Mass Spectrometry Annual Meeting, Minneapolis, MN.** Understanding the biology of higher organisms through GoogleMAPS-type visualization of specialized metabolites found to be associated with microbial communities. **Presentation.**

Quinn, R.A., Lim, YW, Whiteson, K., and F. Rohwer. **July 28, 2012. Cystic Fibrosis Research Inc. National CF Family Education Conference. San Francisco, CA.** The Microbial Ecology of Cystic Fibrosis: Novel Approaches to A Complex Microbial Infection. **Presentation.**

Quinn, R. A., A. Metzler, M. Tlusty, R. Smolowitz and A. Chistoserdov. **Sept 25st-30th, 2011. Joint Genome Institute Microbial Metagenomics Workshop. Walnut Creek, CA.** Microbial communities of epizootic shell disease lesions of the American lobster (*Homarus americanus*). **Poster.**

Quinn, R. A., A. Metzler, M. Tlusty, R. Smolowitz and A. Chistoserdov. **May 21st-24th, 2011. 111th Annual General Meeting of the American Society of Microbiology, New Orleans, Louisiana.** Characterization of the microbial community of epizootic shell disease lesions of the American lobster (*Homarus americanus*). **Poster.**

Quinn, R. A., A. Metzler, M. Tlusty, R. Smolowitz and A. Chistoserdov. **May 21st-24th, 2011. 111th Annual General Meeting of the American Society of Microbiology, New Orleans, Louisiana.** A role for an *Aquimarina* sp. in shell disease of the American lobster (*Homarus americanus*). **Poster.**

Quinn. R. A., A. Chistoserdov, A. Meltzer, M. Tlusty and R. Smolowitz. **May 23-28th, 2010. 35th Annual Eastern Fish Health Workshop, Shephardstown, West Virginia.** Localization of the Shell Disease Pathogen in the Environment: A Quantitative Approach. **Presentation.**

Quinn, R.A., A. Metzler, M. Tlusty, R.M. Smolowitz and A. Chistoserdov. **November 6-9, 2009. Southcentral Branch of the American Society of Microbiology Annual Meeting.** Lobster Shell Disease: Interactions at the Host, Pathogen and Environmental Interface. **Presentation.**

Quinn R. A., A. Chistoserdov, A. Meltzer, M. Tlusty and R. Smolowitz. **April 28th-May1st, 2009. 34th Eastern Fish Health Workshop, Lake Placid, New York.**

Bacteroidetes and Epizootic Shell Disease: Microbial Community Analysis Can Reveal Potential Etiological Agents. **Presentation.**

Quinn, R. A., A. Y. Chistoserdov*, A.Y., S. L. Gubbala, and R. M. Smolowitz. **March 22-26, 2009. The 101th Annual Meeting of National Shellfisheries Association.** Various forms and stages of shell disease in the American lobster share a common bacterial pathogen in their lesions. **Presentation.** Abstract published in: J. Shellfish Res. 28:689.

Quinn, R. A., A. Y. Chistoserdov*, A.Y., S. L. Gubbala, and R. M. Smolowitz. **March 22-26, 2009. The 101th Annual Meeting of National Shellfisheries Association.** Protozoan and metazoan communities associated with shell lesions and healthy shell surfaces of the American lobster (*Homarus americanus*) afflicted by epizootic shell disease. **Presentation.** Abstract published in: J. Shellfish Res. 28: 722-722.

Smolowitz, R.M.*, J. DeFaveri, **R. A. Quinn** and A. Y. Chistoserdov. **101st annual meeting of the national shellfisheries association, March 22nd-26th, 2009, Savannah Georgia.** Comparative Histopathology of Shell Disease in American Lobsters (*Homarus americanus*) and Four Species of Crab from Coastal Waters of the Northeastern U.S. **Presentation.** Abstract published in: J. Shellfish Res. 28:730-730.

Quinn, R.A. and A. Chistoserdov. **November 8-11, 2008. Southcentral/Texas Branch of the American Society of Microbiology Annual Meeting. University of Texas at Austin, Austin, Texas.** Molecular analysis of microbial communities of American lobsters with epizootic shell disease and implications for disease etiology. **Presentation.**

Quinn, R.A. and A. Chistoserdov. **October 24, 2008. University of Louisiana at Lafayette, Graduate Student Symposium. Lafayette, Louisiana.** Denaturing gradient gel electrophoresis analysis of the prokaryotic and eukaryotic communities of lobster shell disease lesions. **Presentation.**

Quinn, R.A., A.Y. Chistoserdov* and R. Smolowitz. **March 20-22, 2008. Annual meeting of the National Shellfisheries Association. Providence, Rhode Island.** Denaturing gradient gel electrophoresis analysis of the prokaryotic and eukaryotic communities of American lobsters with epizootic shell disease. **Presentation.**

Quinn, R.A. and R. Stevenson. **June 18-21, 2007. 32nd Eastern Fish Health Workshop.** Gettysburg, PA. Comparison of lethal and non-lethal sampling techniques for the detection of *Aeromonas salmonicida* and other fish pathogens in populations of Ontario salmonids. **Presentation.**

Quinn, R.A. and R. Stevenson*. **February 23, 2006. Great Lakes Fish Health Committee Continuing Education Workshop,** 2006, Madison, Wisconsin. Non-lethal sampling approaches for detecting pathogens in fish health monitoring. **Poster.**

Stevenson, R*, **R.A. Quinn,** Indervesh, V. Harper and S. Lord. **Sept 3-6, 2006. 5th International Symposium on Aquatic Animal Health.** San Francisco, CA. Non-lethal approaches to pathogen detection in salmonid fish: A review and applications for Ontario freshwater fish. **Poster.**

***Denotes presenting author if not R. A. Quinn.**

PROFESSIONAL AND TEACHING EXPERIENCE

Guest Instructor, Louisiana State University at Eunice.

2011. Microbiology Laboratory. Acted as an interim instructor for the microbiology laboratory at LSUE, when the current instructor left the position.

Teaching Assistant, University of Louisiana at Lafayette, Lafayette, Louisiana,

2010. Instructor. Taught lecture and lab for a sophomore microbiology laboratory worth 3 credit hours.

2008, 2009 and 2011. Microbial physiology and genetics class T.A. and interim instructor.

Teaching Assistant, University of Guelph, Guelph, Ontario.

2005. Introductory Microbiology Laboratory T.A. and Coordinator.

2006. Systematic Bacteriology Laboratory T.A. and Coordinator.

2007. Introductory Biology Laboratory and Grading T.A.

Research Assistant, AquaHealth Vaccine Laboratory, Victoria, Prince Edward Island, 2005.

Assisted in the development of recombinant viral and bacterial vaccines for the salmonid aquaculture industry. Trained in protein expression, purification and analysis, salmonid challenge experiments, RT-PCR, and other molecular techniques.

CERTIFICATIONS AND SPECIAL TRAINING

Modeling Microbial Communities. Attended a workshop and think-tank on how to model the dynamics of microbial communities at the Isaac Newton Institute for Mathematics at Cambridge University. November 2014.

Advanced Mass Spectrometry. Trained on Bruker LC-MS/MS and MALDI-TOF mass spectrometry instruments, by members of Dr. Pieter Dorrestein's lab. January 2013.

Registered and Certified Integrated Microbial Genomes User (IMG). September, 2011. Completed course on advanced assembly and analysis of microbial genomes and metagenomes using the Joint Genome Institute IMG system.

REFERENCES

Dr. Forest Rohwer

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Dr. Andrei Chistoserdov (Ph.D. Dissertation Advisor)

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