

KRYSTAL L. RYPIEN
CURRICULUM VITAE

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EDUCATION

2008 Ph.D. Cornell University, Ecology & Evolutionary Biology
2000 B.Sc. University of Alberta, Environmental Biology (with Honors)

PROFESSIONAL EXPERIENCE

2008 – present Postdoctoral Researcher, Scripps Institution of Oceanography, University of California San Diego
2007 – present Adjunct Faculty, San Diego State University

RESEARCH EXPERIENCE

01/2008 – present: Scripps Institution of Oceanography, Marine Biology Research Division
Postdoctoral Research with Dr. Farooq Azam

- The role of bacteria in coral health and disease. Focus on the role of microbial interactions, ecological processes, and environmental stressors in maintaining community homeostasis.

2001 – 2008: Cornell University, Ecology and Evolutionary Biology

Doctoral Research with Dr. C. Drew Harvell

- The origins, phylogeography, and pathogenicity of *Aspergillus sydowii*, a fungal pathogen of Caribbean gorgonian corals. Also examined the community-level impacts of disease on *Cyphoma gibbosum*, a snail predator of gorgonian corals.

2001: University of Alberta, Microfungus Collection and Herbarium

Research Assistant with Dr. L. Sigler

- Comparative study of fungal biota from the skin of captive reptiles to locate the *Chrysosporium* anamorph of *Nannizziopsis vriesii*, a pathogen implicated in several outbreaks of reptile disease.

2000: Friday Harbor Marine Laboratory

Undergraduate Research Apprentice with Dr. J. Ruesink

- The effect of full and partial *Fucus gardneri* canopy removal on herbivorous snails (*Littorina* spp.) and limpets.

1996 – 2000: University of Alberta, Biological Sciences***Undergraduate Honor's Thesis Research with Dr. A.R. Palmer***

- Intraspecific aggression and the formation of puncture wounds in *Petrolisthes cinctipes*, the flat-topped porcelain crab.

1999: University of Alberta / Bamfield Marine Sciences Center***National Science & Engineering Research Council Undergraduate Research with Dr. A.R. Palmer***

- Morphological analysis of the claws of crabs in Barkley Sound, Canada, to assess the evolutionary patterns of symmetry breaking.

TEACHING EXPERIENCE

2009: Organismal and Evolutionary Biology (BILD 3), University of California San Diego
Curriculum Revision & Instruction

- Revising and teaching 1/3 of majors introductory biology course (ecology section) using a learner-centered approach.

2009 – 2010: Faculty Institutes for Reforming Science Teaching (FIRST) IV***Postdoctoral Fellow***

- NSF-funded postdoctoral training program focusing on improving student learning in science courses. Designing introductory course (Cell Biology) for a learner-centered classroom.

2006 – 2007: Writing the Ocean Waves (BIOEE 165), Cornell University***Curriculum Development & Instruction***

- Designed and taught a writing-intensive marine science course for the John S. Knight Institute for Writing in the Disciplines. Students were part of a NSF-funded Campus to the Coast program, which promotes underrepresented minorities in marine sciences.

2005 – 2006: State of the Planet (BIONB 321), Cornell University***Curriculum Development***

- Developed an interdisciplinary course with a group of graduate students focusing on the crises facing our global population.

2005: Biology of the Marine Invertebrates (BIOEE 373), Shoals Marine Laboratory / Cornell University***Co-Instructor and Graduate Teaching Assistant***

- Organized and taught daily laboratory sections, developed and gave several lectures, led field trips, mentored students in independent research projects.

2002: Ecology, Evolution & Disease Seminar (BIOEE 760), Cornell University***Course Coordinator***

- Designed and organized weekly graduate-level seminar.

2001 – 2006: Cornell University***Graduate Teaching Assistant***

- Developed and led weekly discussion sections or laboratories for a diversity of courses (Introductory Biology, Graduate Field Course in Hawaii, Ecology & the Environment, The Naturalist's Way, Marine Ecology).
- Participated in developing, administering, and grading exams.

PUBLICATIONS

PEER-REVIEWED PUBLICATIONS (* Undergraduate student co-author)

- Rypien, K. L.**, Ward, J. W., and Azam, F. In press. Antagonistic interactions among coral-associated bacteria. *Environmental Microbiology*. doi:10.1111/j.1462-2920.2009.02027.x
- Rivest, E. A.*, Baker, D. M., **Rypien, K. L.**, and Harvell, C. D. In press. Nitrogen source preference of *Aspergillus sydowii*, an infective agent associated with aspergillosis of sea fan corals. *Limnology & Oceanography*.
- Kirkwood, M., Todd, J. D., **Rypien, K. L.**, and Johnston, A. W. B. In press. The coral pathogen *Aspergillus sydowii* contains *dddP* and makes dimethyl sulphide from dimethylsulphoniopropionate. *The ISME Journal*. doi:10.1038/ismej.2009.102
- Page, C. A., Baker, D. M., Harvell, C. D., Golbuu, Y., Raymundo, L., Neale, S. J., Rosell, K. B., **Rypien, K. L.**, Andras, J. P., and Willis, B. L. In press. Influence of marine reserves on coral disease prevalence. *Diseases of Aquatic Organisms*. doi 10.3354/dao02112
- Rypien, K. L.**, and Baker, D.M. 2009. Isotopic labeling and antifungal resistance as tracers of gut passage of the sea fan pathogen, *Aspergillus sydowii*. *Diseases of Aquatic Organisms*. 86: 1-7.
- Andras, J.P. and **Rypien, K.L.** 2009. Isolation and characterization of microsatellite loci in the Caribbean sea fan coral, *Gorgonia ventalina*. *Molecular Ecology Resources* 9: 1036-1038.
- Rypien, K. L.** 2008. African dust as an unlikely source of *Aspergillus sydowii*, the causative agent of sea fan disease. *Marine Ecology Progress Series* 367: 125-131.
- Rypien, K. L.**, Andras, J. P., and C. D. Harvell. 2008. Globally panmictic population structure in the opportunistic fungal pathogen *Aspergillus sydowii*. *Molecular Ecology* 17: 4068-4078.
- Rypien, K. L.** and J. P. Andras. 2008. Isolation and characterization of microsatellite loci in *Aspergillus sydowii*, a pathogen of Caribbean sea fan corals. *Molecular Ecology Resources* 8: 230-232.
- Rypien, K. L.** and A. R. Palmer. 2007. The effect of sex, size and habitat on the incidence of puncture wounds in the claws of the porcelain crab *Petrolisthes cinctipes* (Anomura: Porcellanidae). *Journal of Crustacean Biology* 27: 59-64.
- Ward, J. R., **Rypien, K. L.**, Bruno, J. F., Harvell, C. D., Jordán-Dahlgren, E., Mullen, K. M.,

Rodríguez-Martínez, R. E., Sánchez, J., and Smith, G. 2006. Coral diversity and disease in Mexico. *Diseases of Aquatic Organisms* 69: 23-31.

Paré, J. A., Sigler, L., **Rypien, K. L.**, and Gibas, C. F. 2003. Cutaneous mycobiota of captive squamate reptiles with notes on the scarcity of *Chrysosporium* anamorph of *Nannizziopsis vriesii*. *Journal of Herpetological Medicine and Surgery* 13: 10-15.

NON-REFEREED PUBLICATIONS

Rypien, K. L., Anderson, J., Andras, J., Clark, R. W., Gerrish, G. A., Mandel, J. T., Nydam, M. L., and Riskin, D. K. 2007. Students unite to create State of the Planet course. *Nature* 447: 775. (Correspondence to Nature)

FUNDING

pending	National Science Foundation, “Microbial interactions underlying coral disease resistance” (Co-author and senior personnel with F. Azam [PI])
2004 – 2006	The Teresa Heinz Scholars For Environmental Research, \$10,000
2004, 2005	Cornell University Graduate Student Conference Grant, \$850
2004	Sigma Xi Grant, Cornell University Chapter, \$600
2004	Mario Einaudi Center for International Studies Travel Grant, \$800
2003, 2004	Andrew W. Mellon Student Research Award, \$1,800
2003 – 2006	National Science Foundation, “Origins and spread of the <i>Aspergillus</i> – gorgonian coral epizootic: Role of climate and environmental facilitators” (Co-author and collaborator with C.D. Harvell [PI]); 09/03 – 08/06, \$792,696
2003 – 2005	NOAA / National Undersea Research Center, “Origins and impacts of the sea fan aspergillosis epizootic explored with molecular and field techniques” (Co-author and collaborator with C.D. Harvell [co-PI], K. Kim [co-PI]); 09/03 – 09/05
2002	Sir James Lougheed Award of Distinction, \$15,000 CDN
2002, 2005	American Museum of Natural History Lerner-Gray Fund for Marine Research, \$3,500
2002	Edna Bailey Sussman Environmental Internship, \$945
2001 – 2005	National Science & Engineering Research Council Postgraduate Fellowship, \$72,800 CDN

INVITED PRESENTATIONS AND SYMPOSIA

2009	Scripps Institution of Oceanography, La Jolla, CA.
2009	International Biogeography Society Meeting, Mérida, Mexico. [invited]
2008	International Coral Reef Symposium, Fort Lauderdale, FL.
2005	Marine Benthic Ecology Meeting, Williamsburg, VA.
2004	NSF/NIH Ecology of Infectious Disease Meeting, Washington, DC.
2004	International Coral Reef Symposium, Okinawa, Japan.

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- 2004 Society for Integrative and Comparative Biology Meeting, New Orleans, LA.
 2003 Marine Benthic Ecology Meeting, Groton, CT.
 2000 Friday Harbor Laboratory Research Apprentice Symposium, Friday Harbor, WA.
 2000 University of Alberta Biological Sciences Honors Thesis Symposium, Edmonton, Canada.

AWARDS, HONORS AND FELLOWSHIPS

- 2007 Excellence in Teaching Award, Cornell University, Ecology and Evolutionary Biology
 1999 William Rowan Memorial Prize, University of Alberta
 1998, 1999 Louise McKinney Post-Secondary Scholarship, University of Alberta
 1997 University of Alberta Undergraduate Scholarship, University of Alberta
 1996 – 1999 Faculty of Science Undergraduate Scholarship, University of Alberta

ACADEMIC AND COMMUNITY SERVICE

COMMUNITY SERVICE

- 2008 – present *American University Center for Social Media and Center for Environmental Filmmaking and Filmmakers for Conservation*, Science Review Board
 2007 – present *National Ocean Sciences Bowl* (National academic competition for high school students), Mentor
 2002, 2008, 2009 *Expanding Your Horizons* (Motivating young women in science and mathematics), Workshop Organizer

INVITED PARTICIPANT

- 2009 – 2010 *FIRST IV Professional Development Workshop*, Invited Participant
 2009 *Pan-Pacific Coral Health and Disease Workshop*, Invited Participant
 2006 *External Review Preparation Committee*, Graduate student representative, Cornell University Ecology & Evolutionary Biology
 2005 – 2007 *Dive Control Board*, Nominated Member, Cornell University
 2005 *Women in Science at Cornell*, Panelist
 2004 *Scientists of the Future: Recruiting the Next Generation of Public Service Scientists*, Panelist
 2002 – present *Coral Reef Targeted Research and Capacity Building for Management Program (Global Environment Facility)*, *Coral Disease Working Group*, Invited Participant

COMMITTEES

- 2006 – 2007 *Web Page Design & Maintenance*, Cornell University Ecology and Evolutionary Biology Graduate Student Association

2006	<i>Graduate Student Grant & Fellowship Database Compilation</i> , Cornell University Ecology and Evolutionary Biology Graduate Student Association
2005 – 2006	<i>Prospective Graduate Student Recruitment Weekend Committee Member</i> , Cornell University Ecology and Evolutionary Biology
2004 – 2005	<i>Lunch Bunch Seminar Series Coordinator</i> , Cornell University, Ecology & Evolutionary Biology
2002 – 2003	<i>Co-President</i> , Cornell University Ecology and Evolutionary Biology Graduate Student Association

GUEST LECTURES

2006	Marine Ecology, Cornell University
2006	Invertebrate Pathology, Cornell University
2005	The Naturalist's Way, Cornell University

REVIEWER

Funding: Andrew W. Mellon Student Research Grants, Cornell University Center for the Environment Research Grants, Teresa Heinz Scholars for Environmental Research Fellowships

Journals: Aquatic Biology, Diseases of Aquatic Organisms, Heredity, Molecular Ecology Resources, Proceedings of the 11th International Coral Reef Symposium

SELECTED PRESS COVERAGE

2008	<i>ClimateShifts.org</i> : "Origins of sea fan aspergillosis" 29 October 2008.
2008	<i>USGS</i> : "The good, the bad, and the smelly: USGS at the 2008 Coral Reef Symposium" 7 July 2008.
2006	<i>The Cornell Daily Sun</i> : "Cornell to offer class on revitalizing Earth" 25 October 2006.