

Postdoctoral Fellowship:

Microbiome Influences on Coral Resilience to Climate Change

University of Victoria, Canada

The Baum Lab at the University of Victoria (British Columbia, Canada) seeks to recruit an outstanding, highly quantitative postdoctoral fellow (PDF) to lead research investigating how the relationships between corals and their microbial partners (bacteria, *Symbiodinium*) vary with local and global stressors, and the extent to which the microbiome influences coral resilience to thermal stress.

Research Context and Specific Focus: Climate change poses an imminent threat to the world's coral reefs. The 2015-2017 mega El Niño unleashed globally unprecedented heat stress on Kiritimati (Christmas) Island, a large coral atoll in the central equatorial Pacific Ocean. With its strong spatial gradient of local human disturbance, Kiritimati offers an excellent platform for studying how local and global stressors interact. We tagged, sampled and tracked >1,000 individual coral colonies from multiple species over space (across Kiritimati's local disturbance gradient) and time (before, during and after the El Niño event) to characterize coral-associated microbial communities. The post-doctoral fellow will conduct bioinformatics and statistical analyses to synthesize our longitudinal next-generation sequencing (16S and ITS2) data set from these coral samples to investigate: 1) how coral-associated microbial communities vary with local disturbance and with multiple stressors (local disturbance and heat stress), and the influence of microbial communities on resilience to thermal stress; 2) covariance between coral-associated microbial and symbiont communities under single and multiple stressors. The fellow would also have the opportunity to conduct fieldwork on Kiritimati in the summers of 2019 and/or 2020. Together, these activities provide the opportunity to address questions of fundamental importance to coral reef resilience under climate change.

Required Qualifications:

- § A PhD in ecology, oceanography, mathematical biology, statistics, or computer science;
- § Excellent publication record (Minimum of 8 peer-reviewed publications);
- § Considerable experience processing, manipulating, and modelling large next-generation sequencing data set. Demonstrated proficiency with Unix, R and/or Python, and with software tools for bioinformatics pipelines and microbiome analyses;
- § Excellent technical, analytical, computer, organizational, and problem-solving skills. Strong attention to detail, and meticulous work style, as evidenced by previous research;
- § Experience working with microbial or *Symbiodinium* data sets and an in-depth understanding of the related literature;
- § Excellent time management skills, including the ability to meet project goals in a timely manner, and follow through on projects to completion;
- § Strong interpersonal and communication skills, the ability to work both independently and collaboratively, and to communicate research findings at professional meetings and in high quality peer-reviewed journals.

Research Environment: The postdoc will be based in Prof. Julia Baum's lab (<https://baumlab.weebly.com>; @BaumLab) in UVIC's (<https://www.uvic.ca/>) Department of Biology. The Baum lab is a supportive and stimulating research environment, with a group of scientists who are committed to scientific outreach and policy, to open science, and to enhancing diversity in STEM. UVic is one of Canada's top comprehensive universities (<https://www.macleans.ca/schools/university-of-victoria/>), has a vibrant ecology community (<https://uviccecolgy.weebly.com/>) and is located in beautiful Victoria, on Vancouver Island, British Columbia. The PDF will also work collaboratively with Prof. Rebecca Vega-Thurber (<http://vegathurberlab.oregonstate.edu>), Dr. Ross Cunning (<http://www.rosscunning.com/>) and Prof. Andrew Baker (<http://yyy.rsmas.miami.edu/groups/reef-futures/people.html>).

Funding: Funding is available for a one-year initial period to cover the postdoctoral fellows' salary (\$55,000 per annum including medical and dental benefits), a new laptop computer and attendance at a major conference. Funding for a second and third year is contingent on the postdoctoral candidate applying, and being successful in the competition for either:

- 1) an NSERC Postdoctoral Fellowship (http://www.nserc-crsng.gc.ca/Students-Etudiants/PD-NP/PDF-BP_eng.asp); Notes: Candidates for this fellowship must be Canadian citizens or permanent residents of Canada; Fellowship is \$45,000 per annum with an October 15, 2018 deadline, and would be topped up to \$55,000, assuming satisfactory progress in year one; or
- 2) a Banting Postdoctoral Fellowship (<http://banting.fellowships-bourses.gc.ca/en/home-accueil.html>); Notes: This fellowship is open to candidates of all nationalities; Fellowship is \$70,000 per annum with an August 18, 2018 internal UVic deadline.

Both of these fellowships are highly competitive and require academic excellence and an outstanding publication record (e.g. ~8-12 peer-reviewed publications in quality journals). Alternatively, the post-doc could be funded for two years directly through a MITACS Elevate Fellowship (internal deadline) <https://www.mitacs.ca/en/programs/elevate>; Notes: This fellowship is open to candidates of all nationalities; Fellowship is \$55,000 per annum. Dr. Baum will work with the successful applicant this summer/fall to craft the appropriate postdoctoral fellowship application. International applicants are also strongly encouraged to determine if PDF funding opportunities are available from their home country that would enable them to hold the fellowship internationally, in the Baum Lab.

To apply: Candidates should submit the following materials via email to Dr. Baum (baum 'at' uvic.ca) in a single PDF document, with your last name in the file name and the subject heading "Coral Microbiome PDF":

- § a cover letter explaining your motivation for applying for this position, how your prior research experience qualifies you for the position, and your career goals;
- § a CV (including publication list and clear specification of relevant quantitative skills; publication list may include publications in advanced stages of preparation that will be in the review process by the above postdoctoral fellowship deadline dates);
- § names and contact details for three references.

All qualified persons are encouraged to apply. In accordance with Canadian immigration requirements, Canadian citizens and permanent residents of Canada will be given priority. The Baum Lab and UVIC are committed to employment equity and we encourage applications from women, visible minorities, aboriginal people, and persons with disabilities.

Start date: September 2018 – February 2019 (flexible); Applicant **must** be highly

competitive for, and available to write PDF applications in time for this year's deadlines. If starting in the lab this fall, applicant should also be available to attend the Baum Lab's lab retreat Labour Day weekend in Banff National Park.

Deadline to Apply: Extended to July 31st, 2018.