University of California, Berkeley | College of Natural Resources
A Newsletter for Faculty, Students, Staff and Friends of the Department

PLANT & MICROBIAL BIOLO

Issue No. 43 **March 10, 2016**

Research. Academics. Discoveries.

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New PMB Faculty -- Benjamin Blackman

Benjamin Blackman

Benjamin Blackman joined the faculty of the Department of Plant and Microbial Biology as assistant professor in January, 2016.

Blackman received his Bachelor of Science in Biological Sciences at Stanford, and he worked there for two more years as a technician investigating the genetics of skeletal evolution in threespine stickleback.

He then completed his doctorate in evolutionary biology and ecology at Indiana University, Bloomington. His PhD studies examined the evolution of developmental timing during sunflower domestication and adaptation.

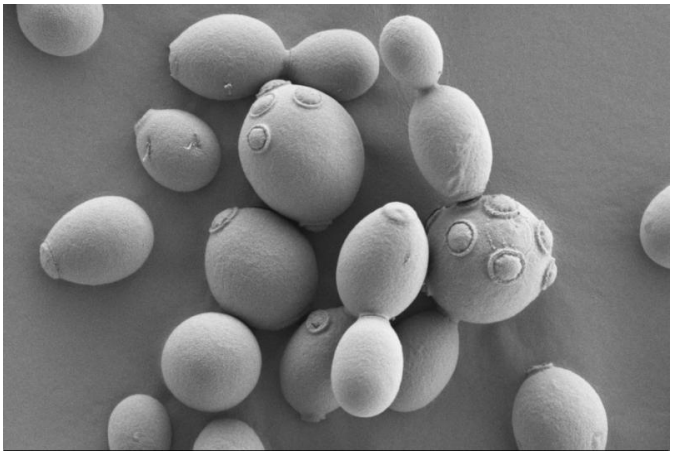
Blackman studies Evolutionary Process and works predominately in two systems: sunflowers and monkeyflowers (above)

Full article: pmb.berkeley.edu/news/new-pmb-faculty-member-benjamin-blackman

Blackman web page on pmb.berkeley.edu: pmb.berkeley.edu/profile/bblackman

Understanding Evolutionary Genetics

Think about the living things you see on a walk through the forest, the zoo, or even a research laboratory. Since Darwin, evolutionary biologists have been fascinated by how different organisms are from one another.



Yeast. (Photo by Kathryn Cross)

The ultimate goal is to understand how mutations in the DNA, deep inside cells, shape the behavior of the animals, plants, and microbes around us. Standard research tools in the field are now available to study the genetics of closely related individuals, like the variation in lactose intolerance among humans. But understanding differences between long-separated species has remained a challenge.

Full article: pmb.berkeley.edu/news/rachel-brem-understanding-evolutionary-genetics

Bacterial Organelle Discovery

Arash Komeili. The Komeili Lab uses bacterial magnetosomes as a model system to study the molecular mechanisms governing the biogenesis and maintenance of bacterial organelles.

PMB Associate Professor Arash Komeili and grad student Elias Cornejo recently published a research paper to mBio, an open access journal published by The American Society for Microbiology.

Their discovery that the size of a bacterial organelle impacts its biochemical function is a fundamental advance that impacts and informs future attempts at creating magnetic particles.

The research paper is titled: "Dynamic Remodeling of the Magnetosome Membrane is Triggered by Initiation of Biomineralization." To see the full paper, please visit mbio.asm.org/content/7/1/e01898-15.long

For more information about the Komeili Lab please visit Komeili Lab

Climate Change Is Leaving Native Plants Behind

Willis Linn Jepson encountered a squat shrub while he was collecting botanical specimens on California's Mount Tamalpais in the fall of 1936. He trimmed off a few branches and jotted down the location along the ridge trail where the manzanita grew, 2,255 feet above sea level.

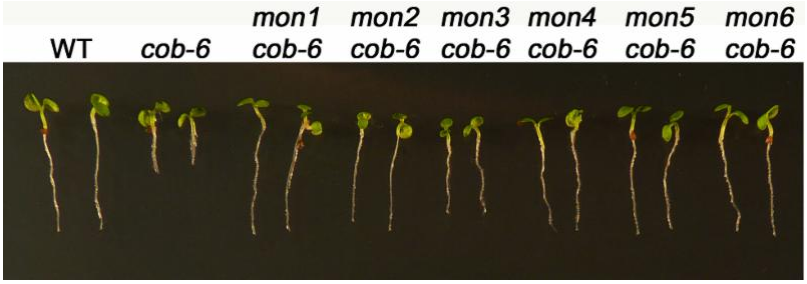
A manzanita specimen from 1936 housed at the University and Jepson Herbaria at the University of California, Berkeley.
(Photo by John Upton/Climate Central)

The desiccated specimen is now part of an herbarium here that's named for the famed botanist. It was among hundreds of thousands of specimens of thousands of different species that were used recently to track the movement of plant species up the state's many hills.

Full article: climatecentral.org/news/climate-change-is-leaving-native-plants-behind-19992

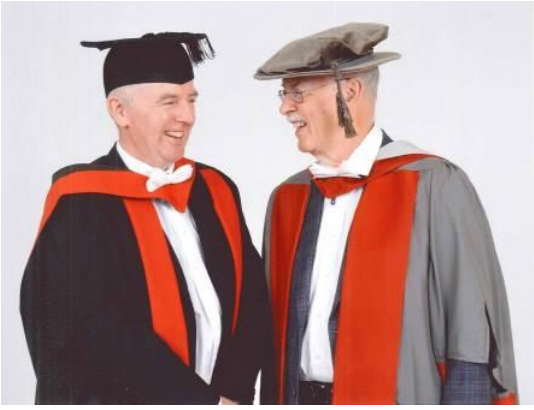
Somerville, Sorek Publication

PMB Professor Chris Somerville and Postdoc Nadav Sorek recently published a paper "Identification of MEDIATOR16 as the Arabidopsis COBRA suppressor MONGOOSE1."



The MONGOOS mutants suppress COBRA phenotype.

A genetic screen was preformed to identify novel genes that are involved in cell wall biosynthesis. The basis of the screen was aimed to look for COBRA suppressor, and therefore the novel mutants were named MONGOOSE. One of the MONGOOSE mutants was mapped to MEDIATOR16 gene. Through gene expression analysis, two genes that control the esterification of the cell wall pectins were identified to be regulated by MEDIATOR16, and over-expression of these genes separately did suppress COBRA phenotype. This suggests that cellulose biosynthesis can be affected by the esterification levels of pectin, possibly through modifying cell wall integrity or the interaction of pectin and cellulose.
Link: www.pnas.org/content/112/52/16048.shor


Professor Ian Graham, left, presents Somerville with honorary degree.

Somerville also recently received an honorary degree from York University.

Upcoming Symposia, Events and Dates to Remember

Plant Breeding Symposium at UC Davis

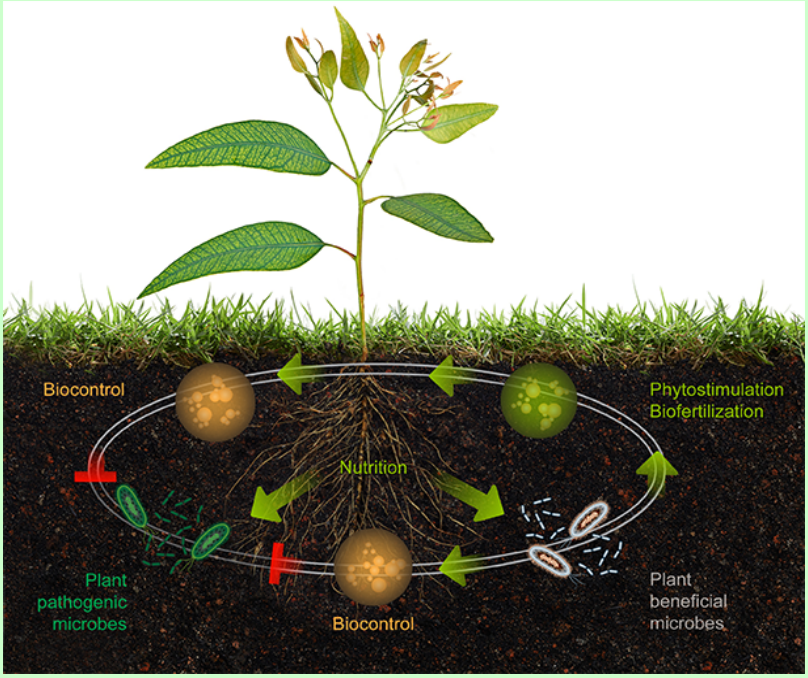
The Plant Breeding Symposium provides graduate students and postdocs in plant science related fields an opportunity to to showcase their work in form of posters. Additionally, two graduate students will be competitively chosen to present their work in the form of 20-minute oral presentations; post-docs are ineligible for oral presentations.

This year's theme is "Breeding for Stress Resilience" and we have invited speakers from around the world to present on this highly relevant and important topic. This event is free and open to the public. For registration and more information, visit:

http://plantbreeding2016.ucdavis.edu/

Microbial and Plant Systems Meeting

The Department of Energy Joint Genome Institute (DOE JGI) has recently developed an integrated pipeline where biosynthetic pathways present in these genomes are computationally mined, refactored and synthesized de novo to facilitate expression in heterologous hosts. The aim of this meeting is to bring together a diverse group of investigators interested in the role of secondary metabolites in plant-microbe and microbe-microbe interactions.



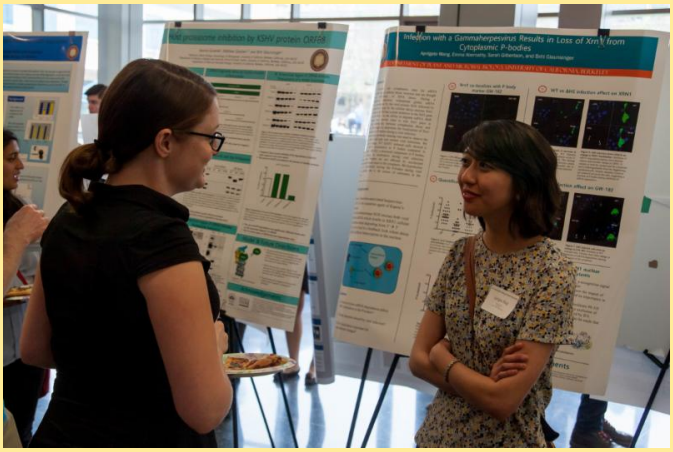
Microbial and Plant Systems Modulated by Secondary Metabolites

The meeting's central goals include mediating an exchange of ideas and approaches for studying and manipulating the impact of secondary metabolites on environmental

systems and to serve as an opportunity for the meeting participants to learn about JGI capabilities (large-scale DNA sequencing, data mining and synthesis capabilities) available to them.

The meeting will take place May 2-4, 2016 at Walnut Creek, CA. For registration and more information, visit: jgi.doe.gov/events/microbial-plant-systems-modulated-secondary-metabolites-meeting/

Annual Microbiology Student Symposium



Poster session at previous Microbiology Student Symposium

How do microscopic life forms affect our bodies, our economies, our planet and our understanding of biological processes?

The annual Microbiology Student Symposium, organized by the Microbial Biology Graduate Student Group at UC Berkeley, has touched on all of these issues in past years. This year, in addition to addressing deeply stimulating intellectual issues, we're also asking how microbiological techniques and realizations have influenced creative pursuits like art, design and architecture.

The symposium will take place on Friday, May 6th, 2016 at the David Brower Center.

For more information, visit: microstudentgroup.weebly.com/symposium.html

May 27th 2016 BayViro Symposium

The 6th Annual Bay Area Symposium on Viruses is set for Friday, May 27th 2016 at

the Li Ka Shing Center. Please save the date now; speaker line-up and registration information coming soon.

Updates available at bayviro.org

Spring 2016 Seminars

Seminars below are at noon, Wednesdays, 101 Barker Hall.

3/14	Andrea Porras-Alfaro, Mycology, Microbial Molecular Ecology Western Illinois University	*"Revealing the Hidden World of Fungal Symbionts in Extreme Environments"*
3/16	Claudia Köhler, Molecular Genetics Swedish University of Agricultural Sciences	*"Epigenetic Mechanisms Driving Plant Speciation"*
3/30	David Hibbett, Biology Clark University	**Taylor White Lecture:** *"Getting to the Roots of Rot: Fungal Phylogenomics and the 'End of the Carboniferous Period"*

In addition to the above, Brian Staskawicz will be hosting a Special Seminar Tuesday, March 29, 2016 at noon in Koshland 338 featuring Morten Petersen, Professor of Biology, University of Copenhagen. Seminar Title: *"PTI Components and Autoimmunity".*

For a full listing of all seminars, including the Plant Gene Expression Center and Student / Postdoc Seminars please visit: pmb.berkeley.edu/seminars

Save the Date

Spring 2016

3/21 to 3/25 - Spring Break

4/15 - Chelsea Specht talk at Berkeley Art Museum

4/16 - Cal Day

5/6 - Last day of instruction

5/12 - PMB Social, Genetics & Plant Biology Lawn

5/15 - College of Natural Resources Commencement

5/24 - Instruction Begins

5/30 - Memorial Day

8/26 - 8/28 - PMB Retreat, Marconi Conference Center

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