

MICROBIAL OCEANOGRAPHY

ECODIM VI 2010

ECOLOGY & DIVERSITY OF MARINE MICROORGANISMS

January 4 – 23, 2010, at the Marine Biological Station Dichato of the University of Concepción, Chile

- **Housing** is available for all course students from Sunday, January 3 to Saturday, January 23 (or 24) in the Guest House at the Estación de Biología Marina at Dichato (phone ++ 56 41 2683033). Instructor's quarters are at the Cabañas El Mirador, Daniel Vera 1440 (phone and fax: ++56 41 2683036). Breakfast and dinner will be served for all at the Dichato Station Guest House, lunch at a nearby restaurant.
- **Pick-up:** International participants (students and instructors), and Chilean participants from other regions, will be met at the airport or bus station in accordance to the arrival information that was provided to Monica Sorondo (in case of delays or emergencies please contact her via the cell phone number that you received by separate mail).
- **First Get-together:** Sunday, January 3 at 19.30 at the guesthouse. Pizza and drinks will be available.
- **Course program:** See outline of daily work. The course starts Monday morning, January 4 at 08.30 in the Ignacio Molina Lecture room.
- **Lectures (L)** and Evening **Sessions** will take place in the Ignacio Molina Lecture room, **Microscopy**, **Computer Exercises** and **Laboratory work** in specially equipped labs at the Estación de Biología Marina, unless stated otherwise in the program.
- **Language:** The entire course will be taught in **English**. Students will have to make their presentations in English and write the contents of the poster in English.
- The course **Symposium** on "Aquatic microbial food-web: From community structure to ecosystem functioning" (special program) will take place on Friday, January 15, at the Auditorium Claudio Gay, Faculty of Natural and Oceanographic Sciences, at the main campus of the University in Concepción. A bus transport to Concepción and back will be organized by the course. The symposium will be open to non-course participants as well.

- **Lectures** last 40 – 50 minutes and are followed by extended discussion periods on the topics covered. The lecturers are
Week 1: Osvaldo Ulloa, Kurt Hanselmann, Daniel Vaultot, Rodrigo De la Iglesia, Veronica Molina,
Week 2: Eric Allen, Mónica Vásquez, Jonathan Cole, Cristian Vargas, Daniel Vaultot, Kurt Hanselmann
Week 3: Veronica Molina, Rodrigo De la Iglesia, Victor Gallardo, Kurt Hanselmann, Eric Allen
- If the lecturers agree we will make their **lecture slides** available on the Internet course folder.
- The **TAs** for the entire course are: Nicole Trefault (Pontifical Universidad Católica de Chile) and Juan Ugalde (University of California, San Diego, USA). Both are former course students.
- **Course topics:**
Week 1: Concepts of microbial oceanography, sampling cruise, diversity of marine microorganisms, introduction to lab work, defining interests and project work, student presentations.
Week 2: Metagenomics, phylogeny, biothermodynamics, picoplankton, community analysis. Case studies illustrating ongoing research in microbial oceanography and ecology of microorganisms, computer exercises, time for paper preparation.
Week 3: Population genomics, ecosystem evolution, N-cycling, alternative molecular techniques for community analysis; paper presentations, results of laboratory work, designing poster, exam.
- The **sampling cruise** is scheduled to take place twice on Wednesday, January, 6 in 2 groups: for groups A & C in the morning, groups B & D in the afternoon
- **Laboratory work** will be carried out in groups in the Dichato Oceanography Laboratories under the supervision of Nicole Trefault, Juan Ugalde, Veronica Molina, Rodrigo De la Iglesia, Daniel Vaultot, Osvaldo Ulloa, Eric Allen and Kurt Hanselmann. We intend to cover the following techniques:
 1. Sampling for planktonic and sedimentary community analyses and enrichments of microorganisms
 2. Physical and chemical characterization of the water column (some data are available from time series measurements and from ARGO floats in the Eastern South Pacific OMZ <http://www.omz.udec.cl/?op=argos>)
 3. Characterization of suspended particles (cytofluorometry, phase contrast and fluorescence microscopy)
 4. Culturing of eukaryotic and prokaryotic microorganisms. Defining and designing media for growth
 5. Molecular phylogenetics (DNA extraction, PCR, cloning, plasmid extraction, sequencing, if possible)
 6. BLAST, phylogenetic tree building, environmental libraries and sequencing, community modeling
 7. Analyzing metagenomic sequence data

- The **microscopes** are installed in the main building of the Estación de Biología Marina.
- **Computer exercises** on metagenomics, phylogenetics and bio-thermodynamics will be offered in groups in the computer lab.
- Each student will participate in a group **research** project, which will contribute towards the course's **poster presentations**.
- Students are asked to present their regular project work, which they carry out "at home" in a **short presentation** that is followed by a discussion (15 minutes each). Monday, Tuesday, Thursday and Friday evenings of week 1 are reserved for the student presentations.
- **Evaluation:** The course directors are asked by UdeC to evaluate student performance and give credit for fulfilling the course goals. Full credit requires:
 - a) Giving a 15-minute presentation on the work, you are presently involved in at your home institution (during week 1 of the course) (15%).
 - b) Presenting the essence of a published scientific paper, selected by the student, in 25 minutes (incl. discussion) in English and being able to respond to questions related to it. The paper should be relevant to the course topics (microbiology, ecology, diversity, genomics) and your particular scientific interests (counts as individual exam at the end of the course) (30%).
 - c) The presentation of the course research results (counts as an individual and group effort) (30%).
 - d) The contribution to the poster (group effort) (30%).
- **Internet site:** Newest versions of the course information are available at the address http://www.microeco.uzh.ch/chile/chile_10/chile_2010.html
- **ECODIM is also on FACEBOOK:** <http://www.facebook.com/group.php?gid=20128635388>