

**INSTRUCTORS**

[Alvaro Migotto](#)  
CEBIMAR - USP

[André Morandini](#)  
ZOO - IB - USP

[Augusto Flores](#)  
CEBIMAR - USP

[Billie Swalla](#)  
Friday Harbor Labs  
University of Washington

[Federico Brown](#)  
ZOO - IB - USP

[Gisele Kawauchi](#)  
CEBIMAR - USP

[Marcio Custodio](#)  
FISIO - IB - USP

[Maria Byrne](#)  
University of Sydney

[Renato Ventura](#)  
UFRJ



**APPLICATION INFO:**

**Total # of students:** 12

**Language:** Official language is English, with occasional Portuguese

**Registration Costs:**  
R\$0 for USP students (alunos regulares)  
R\$50 for all other students (alunos especiais), but only after they have been accepted.

**Application deadline:**  
July 31st

[more info...](#)

**CEBIMAR INFO:**

The Center for Marine Biology (CEBIMar) is a specialized institute of the University of São Paulo (USP) devoted to research teaching and outreach in this field.

With ocean-front facilities, CEBIMar offers adequate infrastructure to meet such a demand. Among other facilities, our staff and visitors have access to laboratories with running sea water, tank rooms where living organisms can be maintained and manipulated, classrooms of different size, including a large auditorium, and a specialized library. There is also housing and a restaurant which can be used by visitors.

The Center was incorporated to the University of São Paulo (USP) in 1962, and, although managed by its own advisory board, is mostly maintained by the central university administration. This support ultimately assists research projects, outreach initiatives and a variety of courses, not only those under responsibility of USP academics but also attending the demand of other higher education institutions.

**Course description:**

Taking advantage of the great marine diversity found in São Sebastião, SP, Brazil; this annual course aims to attract graduate students and researchers interested in the study of embryos and larvae of distinct animal phyla. The participants will be immersed at CEBIMAR for two weeks exploring local diversity, and learning about tools or methods to carry experimental research with the available marine embryos and larvae. All observations and findings will be discussed in the context of life history theory, and up-to-date phylogenetical hypotheses. Participants will induce animals to spawn, fertilize their gametes, culture their embryos and larvae, and will document stages of development in detail. In addition, plankton will be surveyed regularly to observe larval forms and further stages of development in other animals. This year, the CEMI course is organized in parallel and as a satellite event to the 2015 LASDB Meetings in Santos (<http://lasdb2015.com>).

**LINKS**

[2015 LASDB MEETINGS \(SANTOS\)](#)

[CEBIMAR](#)

[INSTITUTO DE BIOCIENCIAS - USP](#)

[CIFONAUTA](#)

[PLANKTON CHRONICLES](#)



## CEMI Program 2015

Course activity:	L: Lecture		For instructors, schedule your activities and fix colors (either green or yellow):	Movable/exchangeable activities (in green) are activities that you would like to do but do not necessarily have a fixed schedule. These can be accommodated after all other activities are fixed.
	<b>LA:</b> Lab Activity			Fixed activities (in yellow) are activities that need to be done at the specified time.
	<b>C:</b> Collecting trip			
	<b>P:</b> Personal time for students to work on their species drawings/presentations/report			
<b>WEEK 1:</b>				
	<b>Fri (ALL INSTRUCTORS)</b>	<b>23/10/2015</b>	<b>Sat (ALL INSTRUCTORS - MORNING, M. BYRNE &amp; R. VENTURA)</b>	<b>Thurs (B. SWALLA &amp; F. BROWN)</b>
7:00	Breakfast (Ian & Laura)	24/10/2015	Breakfast (Vivian & Montserrat)	27/10/2015
8:00			LA: Sea urchin fertilization (M. BYRNE, R. VENTURA)	28/10/2015
9:00	L: Briefing and general information to the course, etc.; safety, location of all materials and reagents, general course organization, etc. (A. MIGOTTO, F. BROWN)		LA: Sea urchin fertilization (M. BYRNE, R. VENTURA)	Breakfast (Felipe & Rafael)
10:00	L: Instructor presentations (5 minute short informal presentations to research areas of ALL INSTRUCTORS)		LA: Echinoderm practical session (M. BYRNE, R. VENTURA)	LA: Asexual development in cnidarians (A. MORANDINI)
11:00	L: Overview Metazoan Diversity and Phylogenetic Relationships (B. SWALLA)		LA: Echinoderm practical session (M. BYRNE, R. VENTURA)	LA: Asexual development in cnidarians (A. MORANDINI)
12:00	Lunch CARMELA		Lunch CARMELA	Lunch CEBIMar
13:00	Bus leaves USP (São Paulo) at 13h sharp!!!!		Lunch CARMELA	
14:00	L: Echinoderm development (M. BYRNE, R. VENTURA)		L: Echinoderm development (M. BYRNE, R. VENTURA)	LA: Ascidian fertilization demo (B. SWALLA) (Suggestions ascidian metamorphic competence or in situ hybridization)
15:00	Santos PICK-UP - Bus leaves from Meeting venue (Parque Balneario Hotel)!		L: Research Talk: One on the Hox, Nodal-BMP - Research Lecture (M. BYRNE)	LA: Scyphozoa (and/or other cnidarians) gametes and fertilization (A. MORANDINI)
16:00	L: Echinoderm development (M. BYRNE, R. VENTURA)		LA: Echinoderm practical session (M. BYRNE, R. VENTURA)	LA: Scyphozoa (and/or other cnidarians) gametes and fertilization (A. MORANDINI)
17:00	LA: Sea urchin fertilization (M. BYRNE, R. VENTURA)		LA: Sea urchin fertilization (M. BYRNE, R. VENTURA)	LA: Scyphozoa (and/or other cnidarians) gametes and fertilization (A. MORANDINI)
18:00	Arrival at CEBIMAR		Pizza Social CARMELA!!	Pizza Social CARMELA

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19:00	DINNER CARMELA											
20:00	Chill out for students! (Organizational time for ALL instructors)	P: Personal time for students to work on their species drawings/presentations/report	Pizza Social CARMELA!	P: Student conversation with instructors (Animals of choice should be defined TONIGHT!!!)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report
21:00	Chill out for students! (Organizational time for ALL instructors)	P: Personal time for students to work on their species drawings/presentations/report	Pizza Social CARMELA!	P: Student conversation with instructors (Animals of choice should be defined TONIGHT!!!)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report						
<b>WEEK 2:</b>												
	Sat (A. MORANDINI & A. MIGOTTO)(André leaves in the evening)	Sun (Marcio arrives to São Sebastião) (Billie leaves at 22h00 from GRU)	Mon (A. MIGOTTO & GISELLE) (FERIADO PARA FUNCIONARIOS CEBIMAR)	Tue (M. REIS)	Wed (A. FLORES)	Thurs (A. FLORES) (Marcio leaves in the afternoon)	Fri					
7:00	Breakfast (Montserrate & Vinicius)	DAY OFF!	Breakfast (Ana & Andressa)	Breakfast (Licia & Felipe)	Breakfast (Rafael & Carlos)	Breakfast (Ian & Laura)	Breakfast (Vivian & Montserrate)					
8:00		DAY OFF!										
9:00	DAY OFF!	L: Sipuncula development (G. KAWAUCHI)	L: Porifera, development, life cycles, and diversity (M. REIS)	L: Diversity, life cycles, and development of marine crustaceans & Larval rhythms and dispersal potential (A. FLORES)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report					
10:00	DAY OFF!	LA: Techniques to study Mollusca development (G. KAWAUCHI); intro to practical session	LA: Porifera Practical session (M. REIS); suggestion sponge reaggregation? cell culture?	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report					
11:00	DAY OFF!	LA: Techniques to study Mollusca development (G. KAWAUCHI); intro to practical session	LA: Porifera Practical session (M. REIS)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report					
12:00	Lunch CARMELA	DAY OFF!	Lunch CARMELA	Lunch CEBIMAR	Lunch CEBIMAR	Lunch CEBIMAR	Lunch CEBIMAR					
13:00		DAY OFF!										
14:00	DAY OFF!	LA: Spiralian development (Suggestions: Polychaete fertilization; observation of limpet, gastropod, polychaete or sipunculan embryo or larvae (G. KAWAUCHI))	LA: Porifera Practical session (M. REIS)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report					
15:00	DAY OFF!	LA: Spiralian development (Suggestions: Polychaete fertilization; observation of limpet, gastropod, polychaete or sipunculan embryo or larvae (G. KAWAUCHI))	LA: Porifera Practical session (M. REIS)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report					
16:00	DAY OFF!	LA: Spiralian development (Suggestions: Polychaete fertilization; observation of limpet, gastropod, polychaete or sipunculan embryo or larvae (G. KAWAUCHI))	LA: Porifera Practical session (M. REIS)	LA: Diel vertical migration in the São Sebastião Channel (A. FLORES)	LA: Immunocytochemistry: Photo session (M. REIS & F. BROWN)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report					

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17:00	DAY OFF!	LA: Spiralian development (Suggestions: Polychaete fertilization; observation of limpet, gastropod, polychaete or sipunculan embryo or larvae (G. KAWAUCHI))	LA: Immunocytochemistry: 1ary AB (M. REIS & F. BROWN)	LA: Immunocytochemistry: 2ary AB (M. REIS & F. BROWN)	LA: Immunocytochemistry: Photo session (M. REIS & F. BROWN)	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report
18:00	MAMUTES DINNER PIZZA ESF!	DAY OFF!	Dinner CARMELA	Dinner CARMELA	Dinner CARMELA	Dinner CARMELA	Dinner CARMELA
19:00		DAY OFF!					
20:00	P: Personal time for students to work on their species drawings/presentations/report	DAY OFF!	Pizza Social CARMELA!!	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report
21:00	P: Personal time for students to work on their species drawings/presentations/report	DAY OFF!	Pizza Social CARMELA!!	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report	P: Personal time for students to work on their species drawings/presentations/report