

Evolution of Development of Plants: *An introduction to comparative developmental biology*

Date & time: *Monday, October 15 – Friday, October 26, 2018, 13:00-18:30*

Location: *Programa de Pós-Graduação em Sistemática e Evolução, Universidade Federal do Rio Grande do Norte, Natal, Brazil*

Teacher: *Joseph Williams, Department of Ecology and Evolutionary Biology, University of Tennessee, USA*

<http://eeb.bio.utk.edu/people/joseph-williams-jr/> <http://williamslab.utk.edu/>

Background

For over a century, Evolutionary biology and Developmental biology grew as largely separate fields. Since the late 1970's the two fields have become increasingly united as biologists interested in phenotypic evolution began to include development in their studies. Today "Evo-Devo" is a broad and thriving field with diverse topics and approaches. Although many think of Evo-Devo as being currently dominated by research done at the molecular level, the roots of Evo-Devo lie in comparative developmental biology and life history theory. Because Evo-devo analyses connects these fields, they have become useful not only to those interested in character evolution and the process of adaptation, but also to ecologists, systematists and even conservation biologists.

This will be a practical course in how to apply the study of development to your own biological system. Emphasis will be on comparative study of developing phenotypes (morphologies), not on genes, gene expression or genomics.

Objectives

1. Historical and seminal ideas of Evolution of Development - from an organismal point of view
2. Basic methods for studying comparative development
3. In class discussion of seminal papers and methods for developing and answering an evo-devo question
4. Discuss your area of research and organisms individually with the instructor
5. Prepare a short talk (5 minutes) applying evo-devo thinking to your own work or to a taxonomic group of your choosing

Target group and admission

Students and researchers in the areas of ecology, systematics and evolutionary biology. Workers in other disciplines are also welcome. Maximum number of participants: 20. If the number of applicants exceeds this limit, applicants will be chosen based on expected need and fit into her/his research, with additional consideration to achieve a balance in home university, gender, career level, and taxon studied. The course will be taught in English but questions are welcome in Portuguese. Applications: send your CV and a cover letter explaining your interest in the course and your current research theme to ppgse.ufrn@gmail.com, please use the subject line *Evolution of Development*. **Deadline: 21 September**

Literature

Two weeks before the start, participants will be provided with about 10 articles as pdfs, to be read prior to and during the mini-course. Background literature will also be provided.

Examination

Grades are pass/fail. Successful participants should participate in all course days and present a short powerpoint talk on the last day. A certification will be issued for all participants.

Schedule (minor changes may occur)

Each class will be three hours long. The instructor will lecture for more or less half of each class and then we will discuss the assigned papers.

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| Day 1 | Introduction to “Evo-Devo” and discussion of Homology |
| Day 2 | Heterochrony, heterotopy and modularity Meetings with individual students |
| Day 3 | Constraint versus selection, adaptation Meetings with individual students |
| Day 4 | Parallelism versus convergence – repeated evolution Meetings with individual students |
| Day 5 | Novelty Meetings with individual students |
| Day 6 | Presentation of student talks |

Evolution of Plant Reproduction:

Current topics

Date & time: Monday, October 29 – Friday, November 2, 2018. Segunda a sexta-feira (08:00-18:30). Haverá horários reservados para orientação de alunos que já tenham dados coletados, leituras e redação de relatórios de atividades práticas e preparação de seminários..

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Background

Plant reproduction in highly diverse and creative ways. The study of plant reproduction occurs at many levels, from agricultural and horticultural benefits to ecological patterns of pollination and pollinators to evolutionary processes that shape plant diversity itself. Many of the big questions in understanding plant biodiversity revolve around how and why reproductive systems evolve.

Objectives

In this seminar we will read current papers from a variety of groups working from the microevolutionary to macroevolutionary levels. The instructor will lecture on basic plant reproductive biology to provide background. Then papers will be discussed. Opportunities for developing your own projects involving plant reproduction are welcomed.

Target group and admission

Students and researchers with interests in the reproductive biology of plants and their interactions. Maximum number of participants: 20. If the number of applicants exceeds this limit, applicants will be chosen based on expected need and fit into her/his research, with additional consideration to achieve a balance in home university, gender, career level, and taxon studied. The course will be taught in English but questions are welcome in Portuguese. Applications: send your CV and a cover letter explaining your interest in the course and your current research theme to ppgse.ufrn@gmail.com, please use the subject line *Evolution of Plant Reproduction. Deadline: 21 September*

Literature

Two weeks before the start, participants will be provided with about 5 articles as pdfs, to be read prior to and during the mini-course. Background literature will also be provided.

Examination

Grades are pass/fail. Successful participants should participate in all course days. A certification will be issued for all participants.

Schedule (minor changes may occur)

1. Inbreeding and outbreeding; Mating systems versus breeding systems;
2. co-evolution of flower and pollinator form;
3. pollen limitation; pollen competition; sexual selection; gametophytes, double fertilization and the evolution of endosperm;
4. seed ecology and sporophyte evolution.

Both courses are in English and will be offered as graduate courses.

Please divulge to potential candidates.



6th International Conference on
Comparative Biology
of Monocotyledons



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