

Term Information

Effective Term Summer 2013

General Information

Course Bulletin Listing/Subject Area Molecular Genetics
Fiscal Unit/Academic Org Molecular Genetics - D0340
College/Academic Group Arts and Sciences
Level/Career Graduate, Undergraduate
Course Number/Catalog 5800
Course Title Organelle Biology
Transcript Abbreviation Organelle Bio
Course Description Structure and function of plastids and mitochondria, apicoplasts and hydrogenosomes
Semester Credit Hours/Units Fixed: 2

Offering Information

Length Of Course 14 Week, 7 Week, 4 Week (May Session)
Flexibly Scheduled Course Never
Does any section of this course have a distance education component? No
Grading Basis Letter Grade
Repeatable No
Course Components Lecture, Seminar
Grade Roster Component Lecture
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites MolGen 4500 (500) or MolGen 4500E or MolGen 4606 (606) or permission of instructor
Exclusions Not open to students with credit for MicroBio 5800

Cross-Listings

Cross-Listings Cross-listed in MicroBio

Subject/CIP Code

Subject/CIP Code 26.0307
Subsidy Level Doctoral Course
Intended Rank Junior, Senior, Masters, Doctoral

Quarters to Semesters

Quarters to Semesters	New course
Give a rationale statement explaining the purpose of the new course	Previously taught as 21383-1, Plant Bio 694
Sought concurrence from the following Fiscal Units or College	

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- 1) Analyze and discuss published findings on organelle biogenesis
- 2) Develop verbal, presentation, and critical analysis skills through the careful review of research papers published in the field of organelle biology

Content Topic List

- Targeting and importing pathways in organelles
- Organelle dysfunction: Mitochondria and human disease
- Organelle dysfunction: Mitochondria and cytoplasmic male sterility in plants
- Chloroplast molecular engineering: the implication for crop science

Attachments

- MG 5800 Course description.PDF: MG5800 course description
(Other Supporting Documentation. Owner: Shannon, Laurel Jean)
- Organelle Syllabus_Semester.docx: Semester format syllabus
(Syllabus. Owner: Shannon, Laurel Jean)

Comments

- Semester-format syllabus attached. Other documents not required have been deleted. *(by Shannon, Laurel Jean on 10/29/2012 07:46 AM)*
- Letters of support for teaching effectiveness and SEI information for a specific instructor are not needed for curriculum approval.

However, a draft version of the new 5800 course syllabus is critical. Please resubmit with an actual draft version of the new semester course, rather than the old PB 694 version. *(by Hadad, Christopher Martin on 10/19/2012 06:06 PM)*

- The attached syllabus is the old 694 course, not for MG5800. Please list as a sample syllabus and upload it as a MG694 syllabus in file name. *(by Vaessin, Harald Emil Friedrich on 10/17/2012 04:42 PM)*

COURSE REQUEST
5800 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette
Chantal
10/31/2012

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Shannon, Laurel Jean	10/17/2012 02:46 PM	Submitted for Approval
Revision Requested	Vaessin, Harald Emil Friedrich	10/17/2012 04:42 PM	Unit Approval
Submitted	Shannon, Laurel Jean	10/19/2012 09:24 AM	Submitted for Approval
Approved	Vaessin, Harald Emil Friedrich	10/19/2012 04:36 PM	Unit Approval
Revision Requested	Hadad, Christopher Martin	10/19/2012 06:06 PM	College Approval
Submitted	Shannon, Laurel Jean	10/29/2012 07:47 AM	Submitted for Approval
Approved	Vaessin, Harald Emil Friedrich	10/30/2012 10:22 AM	Unit Approval
Approved	Hadad, Christopher Martin	10/30/2012 11:05 AM	College Approval
Pending Approval	Nolen, Dawn Jenkins, Mary Ellen Bigler Vankeerbergen, Bernadette Chantal Hogle, Danielle Nicole Hanlin, Deborah Kay	10/30/2012 11:05 AM	ASCCAO Approval

ORGANELLE BIOGENESIS SYLLABUS (SEMESTER FORMAT)

INSTRUCTOR:

Dr. Patrice Hamel
Department of Molecular Genetics
Department of Molecular and Cellular Biochemistry
Aronoff Laboratory room #582, 318 West 12th avenue
Phone: 292-3817 email: hamel.16@osu.edu
Available by appointment

COURSE DESCRIPTION AND OBJECTIVES:

This course aims to offer a comparative overview of mitochondria and plastids two related organelles devoted to the conversion of energy with very distinct biologies. Beside the textbook function of ATP production, the course will also explore other aspects of mitochondria and chloroplast biologies such as organelle division and inheritance and inter and intra-organellar communication. A substantial part of the course will also be devoted to the dysfunction of organelles and their repercussions in human health and plant biology. Recently discovered mitochondria- and plastid-derived organelle such as the hydrogenosome and apicoplast will also be the topic of this course. The lecture will be based on novel development in the field of organelle biogenesis and will make extensive use of recent publications. The goals of the course will be for the students to 1) analyze and discuss published findings on the biogenesis of mitochondria and plastids (similarities and differences between the two organelles) and 2) develop verbal, presentation and critical analysis skills through the careful review of research papers published in the field of organelle biogenesis.

CREDIT: 2 hours

COURSE MEETINGS: Once a week (2h)

FORMAT: Each session will start with an introduction/overview from the instructor (or a guest speaker). Student presentations, moderated by the instructor will follow, and a discussion on a particular topic of organelle biogenesis is expected to take place in the context of these presentations.

COURSE MATERIAL: The instructor will provide background reading in the form of comprehensive reviews and book chapters and will give short presentations. Student-run presentations will make use of current research papers selected by the instructor for their relevance to a particular topic addressed in one of the sessions (see course topic).

EVALUATION: A minimum of one research paper presentation will be given by student and each presentation will comprise 50% of the final grade. The presentation will be evaluated based on the following criteria: 1) organization/comprehension of the of the research paper presentation, 2) critical evaluation of the scientific content/merit of the selected paper and 3) student's ability to answer questions and lead the discussion. Participation in instructor or student led discussion during the session will be worth 50% of the final grade (letter grade A to E). The final grade will be computed according to the following percentage of total points:

93– 100% = A
90– 92% = A-
87– 89% = B+
83– 86% = B

80– 82% = B-
77– 79% = C+
73– 76% = C
70– 72% = C-
67– 70% = D+
60– 66% = D

Less than 60% = E

ACADEMIC MISCONDUCT STATEMENT:

“It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/info_for_students/csc.asp).”

“Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.”

SCHEDULE SEMESTER FORMAT

Week 1 Presentation of the course and “Overview of mitochondria and chloroplasts”

Week 2 “Apicoplast and hydrogenosomes”

Week 3 Import pathways in plastid: The specificity of the TOC translocons (Inoue et al., 2009)

Week 4 Import pathways in mitochondria: Disulfide bond formation in the intermembrane space (Bien et al., 2010)

Week 5 Proteolysis in plastids: The role of Clp in plant development (Kim et al., 2009)

Week 6 Proteolysis in mitochondria: Insights into the AAA protease family (Augustin et al., 2009)

Week 7 Plastid division: the role of fatty acid synthesis in the division of the organelle (Wu and Xu, 2010)

Week 8 Mitochondrial division: The implication of dynamin-related protein in the fusion of the outer membrane (Hoppins et al., 2011)

Week 9 Assembly of photosynthetic complexes: A novel assembly factor for Photosystem I (Albus et al., 2010)

Week 10 Assembly of mitochondrial complexes: An acyl-CoA dehydrogenase-like protein controls the assembly of Complex I (Nouws et al., 2010)

Week 11 Mitochondrial lipid metabolism: Discovery of a novel phosphatase involved in cardiolipin synthesis (Osman et al., 2010)

Week 12 Organelle ultrastructure: the role of photosystem II phosphorylation in thylakoid membrane organization (Fristedt et al., 2009)

Week 13 Organelle genome expression: Editing in the plastid (Hammani et al., 2009)

Week 14 Redox chemistry and organelle genome expression: The role of thioredoxin in regulating plastid transcription (Arsova et al., 2011)

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