

# DRB601 "Fertilization and Early Development" - Fall 2022

Course Director: Yusuke Marikawa, PhD (marikawa@hawaii.edu) Tel: 692-1411

Instructors: Dr. Vernadeth B. Alarcon, Dr. Benjamin Fogelgren,  
Dr. Yusuke Marikawa, Dr. Monika Ward,  
Dr. Steve Ward, Dr. Yukiko Yamazaki, Dr. Masato Yoshizawa

Schedule: August 22 ~ December 12, every Monday (see Table below)  
3:30pm ~ 5:30pm

Location: (K) Kakako JABSOM Biosciences Building (BSB), 222N  
(M) Manoa IBR Conference Room, E125

| Date         | Topic                                | Lecturer               | Location |
|--------------|--------------------------------------|------------------------|----------|
| August 22    | Introduction and Overview            | Dr. Yusuke Marikawa    | K        |
| August 29    | Gametes and Fertilization            | Dr. Monika Ward        | M        |
| September 5  | <i>No class (Labor Day Holiday)</i>  |                        |          |
| September 12 | Preimplantation Development          | Dr. Vernadeth Alarcon  | K        |
| September 19 | Embryonic Body Patterning            | Dr. Yusuke Marikawa    | K        |
| September 26 | Stem Cells in Development            | Dr. Yusuke Marikawa    | K        |
| October 3    | Chromatin Structure and Development  | Dr. Steve Ward         | M        |
| October 10   | MIDTERM EXAM                         |                        | K        |
| October 17   | Development of Renal System          | Dr. Benjamin Fogelgren | K        |
| October 24   | Development of Cardiovascular System | Dr. Yusuke Marikawa    | K        |
| October 31   | Development of Reproductive System   | Dr. Yusuke Marikawa    | K        |
| November 7   | Evolutionary Developmental Biology   | Dr. Masato Yoshizawa   | M        |
| November 14  | Germ Cell Development                | Dr. Yukiko Yamazaki    | K        |
| November 21  | Assisted Reproductive Technologies   | Dr. Monika Ward        | M        |
| November 28  | Cloning and Nuclear Reprogramming    | Dr. Yukiko Yamazaki    | K        |
| December 5   | Developmental Biology and Bioethics  | Dr. Yusuke Marikawa    | K        |
| December 12  | FINAL EXAM                           |                        | K        |

(August 5, 2022)

Course Objectives: The overall objective of this course is to understand the molecular and anatomical fundamentals of early developmental biology. This course will have an underlying evolutionary biology approach with the goal of having a deeper understanding of developmental biology, which has significant impact on reproductive and regenerative medicine. The specific goals are:

1. to learn a series of critical events that take place during fertilization and embryo development
2. to understand the genetic, molecular and cellular basis of the mechanisms that regulate those critical events
3. learn how such important knowledge is obtained from studies using non-human model organisms
4. to learn how the recent advancement in genomic and reproductive technology has yielded new diagnostic methods, surgical procedures, and embryo manipulation tools

Grading criteria: Your grade will be determined based on the following three criteria:

1. Attendance - Basically, you need to attend every single lecture from the start (3:30pm) to the end.
2. Participation - This includes “actively asking questions to lecturers” and also “responding to lecturers”.
3. Written exams - There are two exams (midterm and final). Both are equally important. The format of exams may vary depending on lecturers (multiple choice or essay). They will be based on lecture materials.

Suggested Text: Developmental Biology, by Scott F. Gilbert (Sinauer Associates)

This is just a suggestion (not requirement), but it's a good suggestion. You can learn a lot of interesting and cool stuff from this book, which may not be covered by the lectures.