311424

Cytogenetics 244

School of Biomedical Sciences
Faculty of Health Sciences

UNIT OUTLINE

Study Period 2 2012
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INTRODUCTION

Welcome to Cytogenetics 244

Cytogenetics 244 is one of the core units in the second year of Bachelor of Science (Molecular Biotechnology). This unit will teach you about the physical properties of chromosomes as well as about the DNA sequences of chromosomes via introductory Bioinformatics and the use of databases.

ESSENTIAL ADMINISTRATIVE INFORMATION

<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Cytogenetics 244</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Study Package Number</td>
<td>311424</td>
</tr>
<tr>
<td>Unit Coordinator</td>
<td>Dr Ross Graham</td>
</tr>
<tr>
<td>Teaching Area</td>
<td>School of Biomedical Sciences</td>
</tr>
<tr>
<td>Credit Value</td>
<td>25</td>
</tr>
<tr>
<td>Mode(s) of study</td>
<td>Internal</td>
</tr>
<tr>
<td>Co-, Pre- and Anti-requisites</td>
<td>Check Handbook</td>
</tr>
<tr>
<td>Additional requirements</td>
<td>Nil</td>
</tr>
<tr>
<td>Core Unit status</td>
<td>If you are taking this unit as a required (core) unit in your course of study, you may be terminated from your course of study if you fail this unit twice.</td>
</tr>
<tr>
<td>Result Type</td>
<td>Grade and Mark</td>
</tr>
<tr>
<td>Ancillary Fees and Charges</td>
<td>All fee information can be obtained through the Fees Centre. Visit <a href="http://www.fees.curtin.edu.au/index.cfm">http://www.fees.curtin.edu.au/index.cfm</a> for details.</td>
</tr>
<tr>
<td>Tuition Pattern</td>
<td>5 hours per week allocated as follows:</td>
</tr>
<tr>
<td></td>
<td>- Lectures  Monday 1-3pm</td>
</tr>
<tr>
<td></td>
<td>- Practical  Monday 3-6pm</td>
</tr>
<tr>
<td>Study Load</td>
<td>You will need to spend about <strong>10 hours a week</strong> outside of scheduled classes studying in this unit to be successful. You may need more time if you have not studied in the field of biomedical sciences before. Those of you who are not fast readers may also need to spend more time on the unit. Keeping up with the work is the key to being successful in this unit.</td>
</tr>
</tbody>
</table>
TEACHING STAFF

The lecturer or tutor for this unit and their contact details are below:

Your lecturers: Ross Graham & Mahony Fenn (plus various Guest Lecturers)

Email: ross.graham@curtin.edu.au

Phone: 9266 7521

On-Campus Hours: Normal Working Hours

The teaching staff will assist you with your learning and any problems or difficulties you may be experiencing while undertaking this unit. They will also mark your assignments and provide feedback in relation to your progress in this unit.

If you leave a message for the lecturer or tutor on email or telephone, allow for a response time of five working days.

UNIT COORDINATOR

Every unit also has a person who is responsible for the overall administration of that unit. This person is the Unit Coordinator. If you cannot contact the person who is teaching you (see the Unit Study Calendar, p 9) or if you have further queries about this unit, you may wish to contact the Unit Coordinator for this unit, whose contact details are below:

Unit Coordinator: Dr Ross Graham

Email: ross.graham@curtin.edu.au

Phone: 08 9266 7521

Fax: 08 9266 2342

Building: 305

Room: 137

Contact Hours: Mon- Fri, normal working hours
UNIT SYLLABUS

During your study in this unit you will learn basic identification of all chromosomes in the human genome, laboratory techniques for culture and preparation of human tissues for cytogenetic studies, and methods used to identify and analyse individual cytogenetic alterations. In addition, you will learn about cytogenetic identification and mechanisms of disease expression, cytogenetic alterations and relationships to specific clinical expression and cytogenetic alterations related to development of leukaemia. The genome as a whole will be examined by investigating the use of molecular cytogenetics techniques and the use of databases to understand whole genome sequences.

LEARNING OUTCOMES

On successful completion of this unit you will be able to:

1. provide an understanding of the laboratory methods used to identify and analyse individual cytogenetic alterations
2. provide an insight into some (cyto)genetic mechanisms of disease expression
3. understand cytogenetic alterations and relationships to specific clinical expression
4. become familiar with some of the molecular cytogenetic tools now available as additional aids in diagnosis
5. be competent in the use of databases for the study of whole genome sequences.

LEARNING ACTIVITIES

1. Demonstrate knowledge of basic cytogenetic laboratory techniques necessary to prepare tissue samples for cytogenetic diagnosis.
2. Appreciate and understand the implications of cytogenetic result that differ from the norm.
3. Recognise the clinical implications of the most common cytogenetic abnormalities encountered in the population.
4. Be able to identify the abnormality in a karyotype.
5. Understand the principles of the cell cycle and how it relates to tissue culture.
6. Develop an understanding of the mechanisms which contribute to cytogenetic alterations.

STUDENT FEEDBACK

For Semester 1 and Semester 2 eVALUate is open for student feedback in weeks 12-17.

For other study periods see http://evaluate.curtin.edu.au/info/dates.cfm

We welcome your feedback as one way to keep improving this unit. Later this semester, you will be encouraged to give unit feedback through eVALUate, Curtin’s online student feedback system (see http://evaluate.curtin.edu.au).
LEARNING RESOURCES

Lecture materials will be available on FLECS-Blackboard. You will be given study materials as the unit progresses through the semester. Instruction notes for the Practicals will be available on blackboard at least the week before each class.

TEXT BOOK

You do not have to purchase any of the following textbooks but you may like to refer to them.


Journals and Journal articles

1. American Journal of Human Genetics
2. Clinical Genetics
3. Human Genetics
4. Prenatal Diagnosis

Citations for articles and useful references will be given to you throughout the semester.

ASSESSMENT DETAILS

Assessment Summary

The assessment for this unit consists of the following items. Please note that a mark of 50% or greater for EACH component is required to pass this unit.

<table>
<thead>
<tr>
<th>Assessment Tasks</th>
<th>Worth</th>
<th>Due</th>
<th>Unit Learning Outcome Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1 Weeks 1-4</td>
<td>20%</td>
<td>13th August</td>
<td>1, 2, 3</td>
</tr>
<tr>
<td>Test 2 Weeks 5 to 9</td>
<td>20%</td>
<td>17th September</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Practical Assessment</td>
<td>20%</td>
<td>Ongoing</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Final Exam</td>
<td>40%</td>
<td>Exam Week TBA</td>
<td>1, 2, 3, 4, 5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
<td></td>
<td></td>
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</table>
Test 1 (20%)

*Date / Time: 2pm Monday 13th August*
Assessment on all material covered in lectures and practicals Weeks 1 - 4. Details of Exam format will be outlined during the lectures.

Test 2 (20%)

*Date / Time: 2pm Monday 17th September*
Assessment on all material covered in lectures and practicals Weeks 5 - 8. Details of Exam format will be outlined during the lectures.

Practical (20%)

*Date / Time: Ongoing (continuous assessment, see Practical Manual for details)*
The Practical component will be assessed during the practicals. You will be expected to complete the practical tasks and have them assessed each week. Professional and safe behaviour in practical sessions will also be assessed. *Attendance at practical sessions is mandatory.*

Final Exam (40%)

*Date / Time: Exam Weeks (to be advised)*
The final exam will assess your attainment of the learning outcomes on all material covered in lectures and practicals. This will be a closed book exam. Further details regarding the final examinations will be provided later in the semester.

**STUDENTS’ RIGHTS AND RESPONSIBILITIES**

It is the responsibility of every student to be aware of all relevant legislation, policies and procedures relating to their rights and responsibilities as a student. These include:

- the Student Charter,
- the University’s Guiding Ethical Principles,
- the University’s policy and statements on plagiarism and academic integrity,
- copyright principles and responsibilities,
- the University’s policies on appropriate use of software and computer facilities,
- students’ responsibility to check enrolment,
- deadlines, appeals and grievance resolution,
- student feedback,
- other policies and procedures,
- electronic communication with students

See [www.students.curtin.edu.au/administration/responsibilities.cfm](http://www.students.curtin.edu.au/administration/responsibilities.cfm) for comprehensive information on all of the above.
ADDITIONAL INFORMATION

Telephone Contacts:
If you have a query relating to administrative matters such as:-

- requests for deferment of study
- difficulties with accessing online study materials
- obtaining assessment results

Then please contact the Faculty Student Services Office (FSSO) on
Telephone: +61 8 9266 3685
Fax: +61 8 9266 4593
Hours: 8.30am-5.00pm
Level 2 Building 400 Kent Street Bentley WA 6102

Deferrals
Deferral of an examination cannot be granted by a Unit Coordinator, although that person’s signature is required as part of the application process. Students may be permitted by the relevant Board of Examiners to defer an examination or other assessment where circumstances outside their control have arisen. However, a student's overall performance may be taken into account in granting permission to defer an examination.

Applications for deferment on health grounds or as a result of extenuating circumstances must be submitted not later than seven (7) days after the end of the relevant examination period or assessment date during the semester. Detailed medical certificates should be attached to the application where appropriate.

The prescribed application form may be obtained either from the FSSO, the Curtin Website or the Reception Desk Building 308. Completed forms must be submitted to the Course Administrator. This includes applications for deferred assessment for units in your course of study conducted by other Schools.
# UNIT STUDY CALENDAR 2012

**Lectures:** Monday 1-3pm, room 404.204  
**Practicals:** Monday 3-6pm, room 308.250 or 308 Computer Lab

<table>
<thead>
<tr>
<th>Teaching Week</th>
<th>Lecture Topic</th>
<th>Lecturer</th>
<th>Laboratory Topic</th>
</tr>
</thead>
</table>
| 1 16th Jul    | History of Cytogenetics  
Mitosis & Meiosis  
Chromosome Structure 1 | RMG | Mitosis & meiosis  
Basic karyotyping |
| 2 23th Jul    | Chromosome Structure 2 | MF | Karyotyping 1- Normal |
| 3 30th Jul    | Numerical Abnormalities | MF | Karyotyping 2 - Abnormal |
| 4 6th Aug     | Tissue Culture Techniques  
Cytogenetics Methods | MF | Lab Display  
Virtual Cytogenetics Laboratory |
| 5 13th Aug    | Structural Abnormalities | MF | **Test 1** (on weeks 1 to 4) |
| 6 20th Aug    | Sex chromosome abnormalities  
Uniparental disomy | MF | Blood Harvest |
| 7 27th Aug    | Non-Teaching week | | |
| 8 3rd Sept    | Malignancies | JO’R | Banding of chromosomes |
| 9 10th Sept   | History of Genomics  
The Human Genome | DMG/ RMG | Tutorial 1: Case Study |
| 10 17th Sept  | The Bacterial Genome  
The Archaeal Genome | DT/ MC | **Test 2** (on weeks 5 to 9) |
| 11 24th Sept  | Genome Databases | EM | Using Genome Databases 1 |
| 12 1st Oct    | Epigenetics  
Linkage Analysis | DMG | Using Genome Databases 2 |
| 13 8th Oct    | Review | RMG | Tutorial 2: Case Study cont. |
| 15th Oct    | **Study Week** | | |
| 22nd Oct – 2nd Nov | **Exams** | | |

**Key to Lecturers**

RMG: Ross Graham  
MF: Mahony Fenn  
JO’R: John O’Reilly  
DMG: David Groth  
DT: David Townsend  
EM: Eleanor Morgan  
MC: Melissa Corbett