MBMG615 Research Rotations in Molecular Biology Handbook 2019/2020

- General course guideline
- Course syllabus
- RR forms

Date revised: 21 November 2019

Poochit Nonejuie

MBMG615 Research Rotations in Molecular Biology

Academic year 2019 (semester 2/2019)

General guideline

The goals of the laboratory rotations are to introduce students to various ongoing research topics in the MGGE program and provide students opportunities to explore, by themselves, a variety of research laboratory environments under supervision of faculty members. Students are required to perform 3 lab rotations with the faculty of the MGGE program. This course format encourages students to explore research varieties in the program and assists them to decide which research area and laboratory environment in molecular biology they want to pursue.

Lab rotations serve several functions.

- Students will have chances to discover various laboratories in detail which will help them decide where they will do thesis work according to research topics of interest, laboratory environments, and advisors
- Students will be exposed to different sub-disciplines and techniques in molecular biology and related fields that match their interest
- Students will have opportunities to perform meaningful experiments, improve laboratory skills, and learn how research is accomplished and also how laboratory operates.
- Students will obtain hands-on experience in real research laboratories giving them an opportunity to create substantial contact with faculty mentors and lab members.

Before each rotation

Before starting each rotation, students should discuss their plans with the rotation mentor. This will help students find appropriate research experience during rotation that fits their main interests and supports their future goal. Importantly, students are strongly encouraged to make rotation arrangements in advance as space is not always available in all labs since rotation mentors can accept no more than 2 students per rotation period. Once the decision has been made, students must submit the complete and signed "MENTOR AGREEMENT FORM (RR01)" to the course-coordinator according to the timeline indicated in this guide book to officially secure the rotation spot. All rotation forms (RR forms) can be found at the back of this guide book.

During each rotation

Since each rotation is only 4 weeks in length, it is mainly emphasized on gaining research experience. It is neither required nor expected that the rotation project will result in a substantial body of work. However, students are expected to devote a substantial amount of time in the lab during the rotation period to ensure maximum benefit of students.

After each rotation

At the end of each lab rotation, students must submit the "ROTATION EVALUATION form (RR02)" to the mentor for evaluation. Note that mentors are encouraged to discuss the evaluation result with students. The rotation mentor will discuss both positive and negative aspects of the rotation with the student. The completed and signed RR02 form will be submitted to the course-coordinator and become a part of the student's performance. It is recommended that students obtain copies of all lab rotation evaluations for their records.

At the end

After completion of the course (all 3 rotations), students are required to choose only one topic from the rotation that most interests them for presentation. Students will present a research finding of the chosen topic to the public that includes a description of the research question, experiments attempted, interpretations, etc. The evaluation will be heavily weighed on efficient presentation and communication skills as well as scientific content by all attending lecturers using the "PRESENTATION SCORE SHEET (RR03").

Course Syllabus

MBMG 615 Research Rotations in Molecular Biology

Academic year 2019

Course ID and Name: MBMG 615 Research Rotations in Molecular Biology

Course coordinator: Poochit Nonejuie
Institute of Molecular Biosciences, Mahidol University
Tel: 0-2441-9003 Ext 1339
Email: Poochit.non@mahidol.edu

Instructors:

Prof. Chanan Angsuthanasombat, Ph.D.
Prof. Duncan R. Smith, Ph.D.
Assoc. Prof. Albert J. Ketterman, Ph.D.
Assoc. Prof. Apinunt Udomkit, Ph.D.
Assoc. Prof. Chalermporn Ongvarrasopone, Ph.D.
Assoc. Prof. Chartchai Krittanai, Ph.D.
Assoc. Prof. Kanokporn Triwitayakorn , Ph.D.
Assoc. Prof. Panadda Boonserm, Ph.D.
Assoc. Prof. Saovaros Svasti, Ph.D.
Assoc. Prof. Surapon Piboonpocanun, Ph.D.
Assoc. Prof. Wipa Chungjatupornchai , Ph.D.
Asst. Prof. Duangrudee Tanramluk, Ph.D.
Asst. Prof. Kusol Pootanakit, Ph.D.
Asst. Prof. Sarin Chimnaronk, Ph.D.
Chalongrat Noree, Ph.D.
Poochit Nonejuie, Ph.D.

Credits: 3 (0-9-3)

Curriculum: Master of Science Program in Molecular Genetics and Genetic Engineering (required course)

Semester offering: Second semester

Pre-requisites: None

Expected learning outcomes:

1.1 Students will acquire experience and skills in conducting various research in the areas of molecular biology and related disciplines with responsibility and integrity

1.2 Students will acquire professional and interpersonal skills through working in various laboratory environments and by personal time-management

1.3 Students will acquire scientific communication skill via presenting of research findings to the public

Alignment of teaching and assessment methods to course learning outcome:

Course learning outcome	Teaching method	Assessment methods
1. Students will acquire experience and skills in conducting various research in the areas of molecular biology and related disciplines with responsibility and integrity	- Hands-on laboratory experience - Mentoring by PI of each rotation	- **ROTATION EVALUATION FORM (RR02)**
2. Students will acquire professional and interpersonal skills through working in various laboratory environments and by personal time-management	- Hands-on laboratory experience - Mentoring by PI of each rotation	- **ROTATION EVALUATION FORM (RR02)**
3. Students will acquire scientific communication skill via presenting of research findings to the public	- Mentoring by PI of each rotation - Research presentation and discussions	- Research presentation to the public (**PRESENTATION SCORE SHEET (RR03))**

Course description:

Research principles in Molecular Medical and Agricultural Biosciences; searching databases or literature related to the project during each rotation; performing experiments in Molecular Biology with research ethics awareness; responsibility to the work assigned; communicating and working with others effectively; planning to achieve goals efficiently; analysis and interpretation of the experimental data; presentation of the results via a short seminar

Course schedule:

Date: Weekdays

Time: Arranged by the mentor of each rotation

Place: Arranged by the mentor of each rotation

Date	Topic/Details	Number of Hours	Class Activity/Teaching Media	Lecturer
3 Feb – 28 Feb, 2020	Laboratory Rotation 1	52	Hands-on laboratory experience / Feedback from faculty mentor	Laboratory rotation mentor
2 Mar – 27 Mar, 2020	Laboratory Rotation 2	52		
30 Mar – 24 Apr, 2020	Laboratory Rotation 3	52		
7 May 2020	**Rotation presentation**	14	Presentation	All lecturers

Assessment Criteria:

Student performance evaluation	60 % (20% from each rotation)
Research presentation to public	35 %
Form submission by deadlines	5 %

Student's achievement will be graded using symbols: A, B+, B, C+, C based on the distribution of students' scores from the whole course.

Important dates :

Date	For student	For faculty
Nov 2019	Rotation Orientation & **MENTOR AGREEMENT FORM (RR01)** distribution	
Jan 29, 2020	**Complete MENTOR AGREEMENT FORM (RR01)** submission to course-co (rotation 1)	
Feb 3 - 28, 2020	**Rotation 1**	
Feb 26, 2020	**Complete MENTOR AGREEMENT FORM (RR01)** submission to course-co (rotation 2)	
Mar 4, 2020	**Complete ROTATION EVALUATION form (RR02)** submission to course-co (rotation 1)	
Mar 2 - 27, 2020	**Rotation 2**	
Mar 25, 2020	**Complete MENTOR AGREEMENT FORM (RR01)** submission to course-co (rotation 3)	
Apr 1, 2020	**Complete ROTATION EVALUATION form (RR02)** submission to course-co (rotation 2)	
Mar 30 – Apr 24, 2020	**Rotation 3**	
Apr 29, 2020	**Complete ROTATION EVALUATION form (RR02)** submission to course-co (rotation 3)	
May 7, 2020	**Research presentation**	
May 7, 2020		**PRESENTATION SCORE SHEET (RR03)** submission to course-co

Date revised :24 October 2019

RR forms

RR01: MENTOR AGREEMENT FORM

RR02: ROTATION EVALUATION FORM

RR03: PRESENTATION SCORE SHEET

MBMG615 Research Rotations in Molecular Biology

MENTOR AGREEMENT FORM (RR01)

Student Name: _____ Student ID: _____

Faculty mentor: _____

FACULTY MENTOR AGREEMENT

Faculty – Please read and complete the following statement. Then, sign your signature on the appropriate line.

I, _____ representing the Molecular genetics and genetic engineering (MGGE)

M.Sc. Program will act as the faculty mentor of_____ during "MBMG615 Research

Rotations in Molecular Biology" lab rotation (choose only 1 option)

☐ 1 (from Feb 4, 2010 to Feb 28, 2020)

☐ 2 (from Mar 2, 2020 to Mar 27, 2020)

☐ 3 (from Mar 30, 2019 to Apr 24, 2020)

and I **am** on the list of lecturers that are eligible for the MBMG615 course academic year 2018 indicated on the MBMG615

TQF3 document (please see detail on the second page).

SIGNATURES

_____ _____

Student Name Date

_____ _____

Faculty Mentor Date

_____ _____

Poochit Nonejuie Date

(MBMG615 Course coordinator)

This form is to be completed by the faculty mentor once an agreement has been made between the student and mentor prior to the beginning of the lab rotation. Students are responsible to return the form singed by student and faculty mentor to the MBMG615 course coordinator prior to the indicated deadlines (see course syllabus).

Lecturers that are eligible for the MBMG615 academic year 2019

Prof. Chanan Angsuthanasombat, Ph.D.

Prof. Duncan R. Smith, Ph.D.

Assoc. Prof. Albert J. Ketterman, Ph.D.

Assoc. Prof. Apinunt Udomkit, Ph.D.

Assoc. Prof. Chalermporn Ongvarrasopone, Ph.D.

Assoc. Prof. Chartchai Krittanai, Ph.D.

Assoc. Prof. Kanokporn Triwitayakorn, Ph.D.

Assoc. Prof. Panadda Boonserm, Ph.D.

Assoc. Prof. Saovaros Svasti, Ph.D.

Assoc. Prof. Surapon Piboonpocanun, Ph.D.

Assoc. Prof. Wipa Chungjatupornchai, Ph.D.

Asst. Prof. Duangrudee Tanramluk, Ph.D.

Asst. Prof. Kusol Pootanakit, Ph.D.

Asst. Prof. Sarin Chimnaronk, Ph.D.

Chalongrat Noree, Ph.D.

Poochit Nonejuie, Ph.D.

MBMG615 Research Rotations in Molecular Biology

ROTATION EVALUATION form (RR02)

Student: This form is to be completed by the student prior to the indicated deadlines (see course syllabus) and returned to the faculty mentor for evaluation

Faculty mentor: Please fill out the evaluation part for the named student. Please note:

- Faculty mentors are encouraged to discuss evaluation result with students.
- The complete and signed form should be delivered to the course coordinator by the student.

Student Name: _____ Student ID: _____

Faculty mentor: _____

Period:

☐ 1 (from Feb 4, 2010 to Feb 28, 2020)

☐ 2 (from Mar 2, 2020 to Mar 27, 2020)

☐ 3 (from Mar 30, 2019 to Apr 24, 2020)

STUDENT PERFORMANCE EVALUATION (to be completed by faculty mentor)

Please see the evaluation rubric at the back of this form.

Research and Professional skills (60%)											
Criteria	Excellent		Good		Satisfactory			Need improvement			
	10	9	8	7	6	5	4	3	2	1	0
Laboratory performance											
Time-management skill											
Safety practices											
Lab notebook											
Interpersonal skills (40%)											
Criteria	Excellent		Good		Satisfactory			Need improvement			
	10	9	8	7	6	5	4	3	2	1	0
Communication skills											
Relationship with others											
Conflict Management and Responsibility											

Additional comments :

SIGNATURES

_____	_____
Student Name	Date
_____	_____
Faculty Mentor	Date

Rotation evaluation rubric

	Criteria	Excellent (10-9)	Good (8-7)	Satisfactory (6-4)	Need improvement (3-0)
Research and Professional skills (60%)	Laboratory performance	Actively followed the instructions in the procedure with little or no assistance. If the procedure was not provided, the student was able to determine an appropriate experiment to satisfy the lab objectives independently.	Followed the instructions in the procedure with some assistance. If the procedure was not provided, the student needed a little guidance about experiments to perform to satisfy the lab objectives.	Had difficulty with some of the instructions in the procedure and needed clarification from the instructor or lab partner. If the procedure was not provided, student needed some guidance about experiments to perform to satisfy the lab objectives.	Had difficulty understanding the procedure and following the directions. Several mistakes were made during the experiment. If the procedure was not provided, student was incapable of designing a set of experiments to satisfy the given lab objectives.
	Time-management skill	Students is an efficient time mananger, applies best effort to all projects and seeks out further challenges to improve skills.	Student manages rotation time well and demonstrates good effort on all projects.	Student does not manage rotation time effiently and therefore does not make adequate progress on projects.	Student wastes rotation time and make no progress on projects.
	Safety practices	Lab was carried out with full attention to relevant safety procedures & directions. No incident occurred. Outstanding job cleaning up working area, tools and equipment. Lab tools were organized and stored with care	Lab was generally carried out with attention to relevant safety procedures & directions. No incident occurred. Good job on cleaning up working area, tools and equipment. Lab tools were properly stored.	Lab was carried out with some attention to relevant safety procedures & directions. A few incidents occurred. Had to be reminded to clean up area and equipment. Sometimes showed disorganized storage of lab tools.	Safety procedures were ignored. Did not follow directions. Several incidents occurred. Did not clean up area and equipment after working. Showed disorganized storage of lab tools.
	Lab notebook	Lab notebook was complete including procedure for each experiment, calculation, results and conclusion. Easy to follow.	Lab notebook was sufficiently complete with only minor omissions.	Lab notebook had partial information with major omissions.	Lab notebook was incomplete and difficult to understand.
Interpersonal skills (40%)	Communication skills	Engages in conversation in ways that facilitate others contributions by constructively building upon or synthesizing the contributions of others. Always listens attentively and respectively to instructions.	Engages in conversation in ways that facilitate others contributions by restating the views of others and/or asking questions for clarification. Listens respectfully and quietly to instruction.	Engages in conversation by taking turns and listening to others without interrupting. Often needs reminders to listen quietly and attentively to instruction.	Does not engage in conversation nor listening to others. Student shows a lack of repect for self and others and/ or disrespect for teacher during instruction
	Relationship with others	Student is always helpful and polite to others in the group. Shows genuine respect for individual differences and demonstrates good teamwork. Always uses appropriate and inoffensive language and begins topic related conversations.	Student is helpful and polite to members of their group. Demonstartes respect for individual difference and is cooperative. Student uses appropriate and unoffensive language in conversations.	Student is sometimes impolite to members of their group. Student uses language that disrepects or offends others in the room at times. Does not always work cooperatively with teacher and others.	Student is often rude when interacting with members of their group. Student consistantly needs to be reminded to use appropriate and less offensive language.
	Conflict Management and Responsibility	Student shows strengths in conflict resolution, accepts, gives, and uses constructive feedback well. Accepts total responsibility for personal behavior and acts in an ethical manner.	Student resolves conflicts appropriately, gives, accepts, and uses constructive feedback. Accepts responsibility for personal behavior.	Student has trouble resolving conflict or accepting, giving constructive feedback. Student often does not accept responsibility for own behavior and blames others.	Student does not respond appropriately to conflict and has trouble handling emotions. Student often blames others and doesn't reflect on own behaviors.

MBMG615 Research Rotations in Molecular Biology

PRESENTATION SCORE SHEET (RR03)

Presenter name_____

Evaluator name_____ Date/Time_____

PRESENTATION SCORE (to be completed by faculty, please give score by making a circle "O" on the number listed in the table below)

Criteria		Excellent (10-9)		Good (8-7)		Satisfactory (6-4)			Need improvement (3-0)			
Main content	**Background and Research Question:** Did the presenter provide an understanding of background and clearly present the research question? **(15%)**	10	9	8	7	6	5	4	3	2	1	0
	Experiment(s) performed to answer research question: Did the presenter clearly describe experiment performed? **(15%)**	10	9	8	7	6	5	4	3	2	1	0
	Research finding discussions: Did the presenter provide a clear discussion? **(10%)**	10	9	8	7	6	5	4	3	2	1	0
Slide quality	**Quality of the Slide:** Was the slide well-organized, insightful, and attractive? **(10%)**	10	9	8	7	6	5	4	3	2	1	0
	Reference/citations: Did the presenter appropriately cite references? **(5%)**	10	9	8	7	6	5	4	3	2	1	0
	Spelling & Grammar: Correct spelling and grammar? **(5%)**	10	9	8	7	6	5	4	3	2	1	0
Presentation performance	**Quality of the presenter:** Enthusiastic, good stage presence, and confident? Is narration engaging? **(20%)**	10	9	8	7	6	5	4	3	2	1	0
	Response to questions: Did the presenter demonstrate knowledge of the material and can explain and elaborate on questions **(20%)**	10	9	8	7	6	5	4	3	2	1	0

Additional comments (Weaknesses?/How to improve?) :