

## **Bench-to-bedside Project: Basic Science and Drug Discovery**

### **Learning Outcomes:**

*At the completion of this project the student will be able to:*

1. Demonstrate the ability to work collaboratively and effectively as part of a team in the small group setting to discuss contemporary topics in drug discovery and development
2. Demonstrate an understanding of the basic and translational science approaches used to investigate pathophysiological mechanisms and discover, develop and evaluate new drugs
3. Demonstrate an ability to identify, appraise and interpret the primary biomedical literature relevant to pre-clinical drug discovery and clinical drug development
4. Demonstrate an ability to identify any knowledge deficiencies that exist with regards to basic and clinical research and use the primary biomedical literature and other resources in order to adequately address those deficiencies
5. Demonstrate an ability to evaluate the credibility of online resources of scientific content
6. Demonstrate an ability to read a pharmacologically-relevant primary biomedical research paper and then discuss the rationale, design, conduct, results and significance of the published research with peers
7. Demonstrate the ability to synthesize complex basic science and clinical concepts and effectively explain them to individuals of diverse educational backgrounds
8. Create effective oral and written presentations capable of communicating the rationale, study design, major findings and significance of a scientific study

### **Assignment 1: Basic Science and Drug Discovery**

**Goal:** *To gain an understanding of the manner in which basic scientific research approaches are used to investigate new pathophysiological mechanisms and discover new drugs*

**Overview:** You and your group will discuss a recent basic science research paper addressing a significant problem of pharmacological or pathophysiological interest and prepare a group presentation on the topic to be presented to the other three small groups present in your assigned SDL. In addition, you will be required to write a brief report (no more than 400 words) describing the principal findings and clinical significance of the study that could be used to describe the study to a typical patient.

**Dates:**

September 7th 10:30am-12:30pm – Discussion of assigned paper in small groups

September 11th 1:00-3:00pm – Group oral presentations

1. Students will find their small group assignments posted on the UME calendar. Based upon their group number they will be responsible for downloading the relevant discussion paper from the Pharmacology and Therapeutics web site. (i.e. If you are in small group 1 in your SDL you should download Discussion Paper 1 from the bottom left hand corner of the Pharm web page).

2. You should attempt to read and comprehend the assigned paper in preparation for the group discussion. It is acknowledged that you will not necessarily fully understand all of the experimental techniques and approaches used in the studies. However, part of the exercise is for you as a group to identify any critical deficiencies in your understanding and address them by using available online resources and publication databases.

3. On **September 5th 10:30am-12:30pm** you will meet as part of the first small group session and will discuss the paper amongst yourselves, first addressing any topics or content that members of the group do not fully understand, then identifying:

- a) the underlying background and rationale behind the study
- b) the experimental approaches and strategies utilized in the study
- c) the principal results and major findings of the study
- d) the major conclusions of the study and their clinical significance.

Note: These small group discussions will be moderated by a faculty facilitator who will help guide the discussion and provide feedback, but should not be expected to serve as a content expert.

4. On **September 10th 1:00-3:00pm** you will meet as part of the second small group session to present your findings in the form of an informal presentation to the other three small groups present in the SDL. These presentations should be in the form of a powerpoint presentation and should take no longer than 15-20 mins with five additional minutes allotted for questions. Presentations should involve each member of the group.

Each group should also be prepared to answer questions from both the faculty and other students.

*Presentations should not aim to describe every last detail of the study (there likely will not be sufficient time and that is not the point of the exercise). Instead you will be expected to identify and effectively summarize the most important elements of the paper (i.e. background, rationale, results, discussion and clinical significance) that are essential for communicating the “essence” and significance of the study. It is far more important that the presentation is logical and understandable, rather than full of highly technical jargon and data that “goes over the heads” of the audience.*

5. At the completion of the assignment, each student should write a brief report (no more than 400 words) describing the principal findings and clinical significance of the study that could be used to describe the study to a typical patient. These reports should be completed on the Project report form available for download from the Pharm page web site and should be labeled with your name, room number and peer group number. Reports should represent your own original work and should not be copied from either other students or lifted from the assigned paper. Any evidence of plagiarism will result in the award of no points and a concern noted in your professionalism competency. Completed reports should be handed into the Pharmacology and Therapeutics Medical Education Coordinator, Kelly Larkin (Rm 320) no later than **Monday September 24<sup>th</sup>**.

*Note: The goal of this exercise is not simply to recite the abstract (points will be deducted if that is the case). Rather, the purpose of the exercise is for you to provide an explanation that would be suitable to explain the major findings and clinical significance of the study to a typical patient. The premise is that a patient has perhaps seen a report of the study in a newspaper or on television and is now asking you (his/her doctor i.e. you) to explain it to them in terms they can understand. The goal is for you to demonstrate your ability to communicate complex biological concepts in language that is suitable for a typical patient to understand. Points will be deducted if the explanation is too technical or is too reliant on technical jargon.*

6. In addition to the written assignment you should also submit a Peer Group evaluation form (these will be provided to you during the session). Simply sign your signature against your name and then distribute 100 points amongst the members of your group to reflect the quality of their participation in the group activity. Points can be distributed in any manner you wish, except that students are not able to award points to themselves- attempts to do so will nullify all points awarded to the student by other members of the group.