Category （科目区分）	Cluster of Biofunctional Systems		
Course Title （授業科目名）	Pharmacology & Practice		
Instructors （担当者名）	Kota Saito	Academic Year （配当年次）	1, 2
Required Course / Elective Course （必修/選択）	Elective Course	Credits （単位数）	1
Class Format （授業形態）	Experimental Practice		
Schedule （開講期間）	Students will be notified by email after completing the course registration.		
Class Date/Period （開講曜日・時間）	Students will be notified by email after completing the course registration.		

Course Outline/ Course Objectives（授業の概要・到達目標）

Objectives: To understand the relationship between ligands and receptors, dose-response curves, etc., and to quantify the concentration-dependent response of ligands using cultured cells. Outline of the class
1. Students will learn about the relationship between agonists, antagonists and receptors.
2. Learn the significance and importance of exploratory research as a basis for drug discovery.
3. To understand how to write dose-response curves and what information can be read from the curves.
4. To understand how the dose-response curve is displaced when an antagonist is added.
5. To explain the practical training using cultured cells.
6. Stimulate cultured cells with hormones at various concentrations, and prepare cell extracts.
7. Analyse cell extracts by SDS-PAGE electrophoresis and blot them.
8.Detect the cellular response to hormone stimulation by Western blotting.
9. Quantitatively evaluate the results obtained by Western blotting.
10.Summarize this practical on dose-response relationship.

Course Planning（授業計画）

	Course Outline/ Course Objectives（授業の概要及び到達目標） （Contents of Class　　（（授業内容）））	Instructor （担当教員名）	Department （講座名） Class Room 〔実施場所〕
1	The relationship between agonists, antagonists and receptors.	Kota Saito	"Department of Biological Informatics and Experimental Therapeutics, 〔 laboratory 〕
2	The significance and importance of exploratory research as a basis for drug discovery.	Miharu Maeda	
3	To understand how to write dose-response curves and what information can be read from the curves.	Kota Saito	
4	To understand how the dose-response curve is displaced when an antagonist is added.	Kota Saito	
5	To explain the practical training using cultured cells.	Kota Saito	
6	Stimulate cultured cells with hormones at various concentrations, and prepare cell extracts.	Miharu Maeda	
7	Analyse cell extracts by SDS-PAGE electrophoresis and blot them.	Miharu Maeda	
8	Detect the cellular response to hormone stimulation by Western blotting.	Miharu Maeda	
9	Quantitatively evaluate the results obtained by Western blotting.	Miharu Maeda	
10	Summarize this practical on dose-response relationship.	Kota Saito	

Grading Criteria　（成績評価の基準と方法）

The evaluation will be based on the attendance and the submitted reports.

Contact Information（問い合わせ先(氏名，メールアドレス等)）

Name：　Kota Saito　　/ E-mail：　ksaito@med.akita-u.ac.jp

Comment　（その他特記事項）

Information about the course: If you are a working graduate student and cannot attend the practical training due to work, we will adjust the schedule.
Textbooks and reference materials: Materials will be distributed as necessary.
Content of study during self-study time: It is desirable to conduct preparatory study according to the objectives and class content.