UNIVERSIDAD DE CHILE
FACULTAD DE MEDICINA
ESCUELA DE POSTGRADO

CURSO DE POSTGRADO

Basic and Novel Concepts in Cell Signaling

Nombre Curso

SEMESTRE *1º* **AÑO** *2024*

PROF. ENCARGADO	*Andrew Quest*	*14.672.243-1*
	Nombre Completo	Cédula Identidad

Center for studies on Exercise, Metabolism and Cancer (CEMC), Instituto de Ciencias Biomédicas, Facultad de Medicina, Universidad de Chile & Advanced Center for Chronic Diseases (ACCDiS)

UNIDAD ACADÉMICA

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TIPO DE CURSO *Basico*

(Básico, Avanzado, Complementario, Seminarios Bibliográficos, Formación General)

CLASES	**36 H**
SEMINARIOS	**30 H**
PRUEBAS	**6 H**
TRABAJOS	**20 H**
Nº HORAS PRESENCIALES	**72 H**
Nº HORAS NO PRESENCIALES	**144 H**
Nº HORAS TOTALES	**218 H**

CRÉDITOS *7*

(1 Crédito Equivale a 30 Horas Semestrales)

CUPO ALUMNOS	*3*	*20*
	(N° mínimo)	(N° máximo)

PRE-REQUISITOS A reasonable understanding of cell and molecular biology. Ability to read and understand papers in English.

INICIO *02 April* **TERMINO** *25 June*

DIA/HORARIO POR SESION *Tuesday 14:00-17:30 h* **DIA / HORARIO POR SESION** *Wednesday 09:00-12:30 h*

LUGAR ***AUDITORIO CEMC,*** *1er piso, Block B, Programa de Fisiopatología. Facultad Medicina, Universidad de Chile*

Escuela De Postgrado (Sala a determinar) u otro lugar

METODOLOGÍA

The course will last 12 weeks and consist of 1-2 lectures one day (Wednesday) followed by a discussion of 2 papers dealing with the respective topics the following week (Tuesday)

EVALUACIÓN (INDICAR % DE CADA EVALUACION)

Students will be evaluated in 2 separate blocks:
First block (8 weeks)

- Oral participation in discussion of papers every week (30%)
- Answer in writing to short questions every week (20%)
- Oral exam including formulation/discussion of mini project (50%)

Second block (4 weeks)

- Oral participation in discussion of papers every week (30%)
- Answer in writing to short questions every week (20%)
- Final written exam (50%)

Grades from these activities will be averaged taking into account the percentiles indicated to generate the final grade for each block. The average grades from the first and second blocks will be equivalent to 65% and 35%, respectively, of the final grade of the course.

Attendance Requirements
Clases: greater than 80%
Seminars: 100%

PROFESORES PARTICIPANTES (INDICAR UNIDADES ACADEMICAS)

- Molecular & Cell Biology Program, ICBM: Lisette Leyton Ph.D (Professor), Andrew Quest Ph.D. (Professor), Sergio Lavandero Ph.D (Professor)
- Department of Biochemistry & Molecular Biology, Faculty of Chemical and Pharmaceutical Sciences: Mario Chiong Ph.D (Associate Professor) and Sergio Lavandero Ph.D (Professor)
- INTA: Mariana Cifuentes, PhD (Professor)
- Faculty of Odontology: Vicente Torres (Associate Professor)
- Universidad Andres Bello (UNAB): Martin Montecino (Professor)

DESCRIPCIÓN

In this course basic to advanced knowledge in a number of signaling pathways relevant to the development of human diseases will be discussed. The importance of protein targeting, supramolecular complex formation and compartmentalization of signaling molecules will be emphasized.

OBJETIVOS

Main objective: Understand the mechanisms of signal transduction and how malfunction of such processes leads to disease.

CONTENIDOS/TEMAS

Specífic aims: During the first 6 weeks, lectures will focus on building an understanding of individual signaling pathways involving receptors (Tyrosine kinases, G-protein-coupled, cytokine, nuclear) the universal second messengers (Calcium, cyclic AMP and cyclic GMP, lipid second messengers, etc), protein kinases (src, raf-MAPK, PKC, etc.), phosphatases, proteases, downstream effector molecules, including how these events can lead to changes in gene transcription. The seminars will provide a forum for the discussion of the relevant literature. In the subsequent 6 weeks, some examples of more complex signaling "organelles" and their relevance to biomedical processes will be discussed.

BIBLIOGRAFIA BASICA

Participants should have some basic knowledge of cell and molecular biology, as well as signalling pathways at a level taught in undergraduate courses

BIBLIOGRAFIA RECOMENDADA

Recommended reading will be provided prior to the respective lectures.

Calendario de actividades
BASIC AND NOVEL CONCEPTS CELL SIGNALING 2024

		FECHA	HORAS PRESENCIALES	HORAS PRESENCIALES	DESCRIPCION ACTIVIDAD	PROFESOR
1	Tuesday	02 April	14.00 - 14.45 15.00 – 17.30	3	General introduction GPCRs & 2nd messengers	A.Quest S. Lavandero
	Wednesday	03 April	09.00 - 12.30	3	Receptor and non-receptor tyrosine kinases	L.Leyton A.Quest
2	Tuesday	09 April	14.00 - 17.30	3	Journal Club-1	S. Lavandero L.Leyton
	Wednesday	10 April	09.00 - 12.30	3	Lipid second messengers	A. Quest
3	Tuesday	16 April	14.00 - 17.30	3	Journal Club-2	A. Quest
	Wednesday	17 April	9:00 – 12:30	3	Kinases: MAPKs, PKC, PI3K	A. Quest
4	Tuesday	23 April	14.00 – 17:30	3	Journal Club-3	A. Quest
	Wednesday	24 April	09.00 - 12.30	3	Phosphatases and Proteases	A.Quest
5	Tuesday	30 April	14.00 – 17:30	3	Journal Club-4	A.Quest
	Wednesday	01 May	09.00 – 12.30	3	holiday	
6	Tuesday	07 May	14.00 – 17.30	3	Wnt/bcatenin signaling Journal Club-5	V.Torres
	Wednesday	08 May	09.00 – 10.30 11.00-12.30	3	Transcription factors Epigenetic regulation	M. Chiong M.Montecinos
7	Tuesday	14 May	14.00 – 17.30	3	Journal Club 6	M. Chiong M.Montecinos
	Wednesday	15 May	09.00 – 12.30	3	Intermediate oral exam: Presentation of project proposal	All
8	Tuesday	21 May	14:00 – 17:30	3	holiday	
	Wednesday	22 May	09:00-12:30	3	Discussion intermediate exam Compartmentalization part I	A.Quest
9	Tuesday	28 May	14.00 – 17.30	3	Journal Club 7	A. Quest
	Wednesday	29 May	09:00 – 12.30	3	Adhesion complexes	V. Torres
10	Tuesday	04 June	14.00 – 17.30	3	Journal Club-8	V. Torres
	Wednesday	05 June	09.00-12.30	3	Inflammasome	M.Cifuentes

		FECHA	HORAS PRESENCIALES	HORAS PRESENCIALES	DESCRIPCION ACTIVIDAD	PROFESOR
11	Tuesday	11June	14.00 - 17.30	3	Journal Club-9	M. Cifuentes
	Wednesday	12 June	09.00 - 12.30	3	Exosomes	A. Quest
12	Tuesday	18 June	14.00 - 17.30	3	Journal Club-10/ Summary discussion Preparation final exam	A. Quest
	Wednesday	19 June			??	
13	Tuesday	25 June	09.00 – 12.30	3	Final exam: written test	All