



## CURSO DE POSTGRADO

### **Basic and Novel Concepts in Cell Signaling**

Nombre Curso

SEMESTRE

1º

AÑO

2023

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

(Nº mínimo)

20

(Nº máximo)

PRE-REQUISITOS

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

INICIO

04 April

TERMINO

27 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.

## **PROFESORES PARTICIPANTES (INDICAR UNIDADES ACADÉMICAS)**

- 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

**Specific 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 2019**

		FECHA	HORAS PRESENCIALES	HORAS PRESENCIALES	DESCRIPCION ACTIVIDAD	PROFESOR
1	Tuesday	04 April	14.00 - 14.45 15.00 - 17.30	3	General introduction GPCRs & 2nd messengers	A.Quest S. Lavandero
	Wednesday	05 April	09.00 - 12.30	3	Receptor and non-receptor tyrosine kinases	L.Leyton A.Quest
2	Tuesday	11 April	14.00 - 17.30	3	Journal Club-1	S. Lavandero L.Leyton
	Wednesday	12 April	09.00 - 12.30	3	Lipid second messengers	A. Quest
3	Tuesday	18 April	14.00 - 17.30	3	Journal Club-2	A. Quest
	Wednesday	19 April	9:00 - 12:30	3	Kinases: MAPKs, PKC, PI3K	A. Quest
4	Tuesday	25 April	14.00 - 17:30	3	Journal Club-3	A. Quest
	Wednesday	26 April	09.00 - 12.30	3	Phosphatases and Proteases	A.Quest
5	Tuesday	02 May	14.00 - 17:30	3	Journal Club-4	A.Quest
	Wednesday	03 May	09.00 - 12.30	3	Wnt/bcatenin signaling	V.Torres
6	Tuesday	09 May	14.00 - 17.30	3	Journal Club-5	V.Torres
	Wednesday	10 May	09.00 - 10.30 11.00-12.30	3	Transcription factors Epigenetic regulation	M. Chiong M.Montecinos
7	Tuesday	16 May	14.00 - 17.30	3	Journal Club 6	M.Montecinos
	Wednesday	17 May	09.00 - 12.30	3	Intermediate oral exam: Presentation of project proposal	All
8	Tuesday	23 May	14:00 - 17:30		Discussion intermediate exam Compartmentalization part I	A.Quest
	Wednesday	24 May	09:00-12:30	3	Compartmentalization part II	A.Quest
9	Tuesday	30 May	14.00 - 17.30	3	Journal Club 7	A. Quest
	Wednesday	31 May	09:00 - 12.30	3	Adhesion complexes	V. Torres
10	Tuesday	06 June	14.00 - 17.30	3	Journal Club-8	V. Torres
	Wednesday	07 June	09.00-12.30	3	Inflammasome	M.Cifuentes

		FECHA	HORAS PRESENCIALES	HORAS PRESENCIALES	DESCRIPCION ACTIVIDAD	PROFESOR
11	Tuesday	13 June	14.00 - 17.30	3	Journal Club-9	M. Cifuentes
	Wednesday	14 June	09.00 - 12.30	3	Exosomes	A. Quest
12	Tuesday	20 June	14.00 - 17.30	3	Journal Club-10/ Summary discussion Preparation final exam	A. Quest
	Wednesday	21 June	09.00 - 12.30	3	holiday	
13	Tuesday	27 June	09.00 - 12.30	3	Final exam: written test	All