



## CURSO DE POSTGRADO

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

Nombre Curso

SEMESTRE

1º

AÑO

2019

PROF. ENCARGADO

Andrew Quest  
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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)***

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TIPO DE CURSO

Avanzado

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

CLASES	33 H
SEMINARIOS	30 H
PRUEBAS	9 H
TRABAJOS	20 H
Nº HORAS PRESENCIALES	72 H
Nº HORAS NO PRESENCIALES	138 H
Nº HORAS TOTALES	210 H

CRÉDITOS

7

(1 Crédito Equivale a 30 Horas Semestrales)

CUPO ALUMNOS

5

(Nº mínimo)

25

(Nº máximo)

PRE-REQUISITOS

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

INICIO

02 April 2019

TERMINO

25 June 2019

DIA/HORARIO  
POR SESION

Tuesday 14:00 17:30 h

DIA / HORARIO  
POR SESION

Wednesday 09:00 a 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 3 ways:

- Oral participation in discussion of papers every week (30%)
- Answer in writing to questions during the semester (20%)
- Intermediate oral exam (10%)
- Final oral exam (40%). Project proposal (10%), Conceptual understanding (30%)

Grades from these activities will be averaged taking into account the percentiles indicated to generate the final grade for the course

## PROFESORES PARTICIPANTES (INDICAR UNIDADES ACADEMICAS)

- Molecular & Cell Biology Program, ICBM: Lisette Leyton Ph.D (Professor), Andrew Quest Ph.D. (Professor) and 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).
- Immunology Program, ICBM: Marcela Hermoso (Professor)
- Faculty of Odontology: Vicente Torres (Associate 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 compartmentalisation 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 8 weeks, lectures will focus on building and 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. The seminars will provide a forum for the discussion of the relevant literature. In the subsequent 4 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	2 April	14.00 - 15.30 16.00 - 17.30	3	GPCRs & 2nd messengers RTK and nRTK signaling	S. Lavandero L. Leyton
	Wednesday	3 April	09.00 - 12.30	3	Lipid second messengers	A. Quest
2	Tuesday	09 April	14.00 - 17.30	3	Journal Club-1	L. Leyton A. Quest
	Wednesday	10 April	09.00 - 10.30	3	Kinases I: MAPKs, PKC, PI3K	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 II: AMPK -mTOR	M. Chiong
4	Tuesday	23 April	14.00 - 17:30	3	Journal Club-3	M. Chiong
	Wednesday	24 April	09.00 - 12.30	3	Transcription factors	M. Chiong
5	Tuesday	30 April	14.00 - 17:30	3	Journal Club-4	M. Chiong
	Wednesday	01 May	09.00 - 12.30		holiday	
6	Tuesday	07 May	14.00 - 17.30	3	Proteases and Phosphatases	A. Quest
	Wednesday	08 May	09.00 - 12.30	3	How to write a research proposal Signaling organization and Compartmentalization part I	A. Quest
7	Tuesday	14 May	14.00 - 17.30	3	Journal Club 6	A. Quest
	Wednesday	15 May	09.00 - 12.30	3	Journal Club 7	A. Quest
8	Tuesday	21 May	14:00 - 17:30		holiday	
	Wednesday	22 May	09:00-12:30	3	Intermediate oral exam: Presentation of project proposal	All
9	Tuesday	28 May	14.00 - 17.30	3	Discussion intermediate exam Compartmentalization part II	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-9	V. Torres
	Wednesday	05 June	09.00-12.30	3	Inflammasome/Apoptosome	M. Hermoso

		FECHA	HORAS PRESENCIALES	HORAS PRESENCIALES	DESCRIPCION ACTIVIDAD	PROFESOR
11	Tuesday	11 June	14.00 - 15.30	3	Journal Club-10	M. Hermoso
	Wednesday	12 June	09.00 - 12.30	3	Exosomes	A. Quest
12	Tuesday	18 June	14.00 - 17.30	3	Journal Club-11	A. Quest
	Wednesday	19 June	09.00 - 10.30	3	Summary discussion Preparation final exam	A. Quest
13	Tuesday	25 June	09.00 - 12.30	3	Final oral exam: Presentation of project proposal and theoretical exam	All