

ANNO ACCADEMICO 2017/2018

PROGRAMMA

CORSO DI STUDIO (LM) IN SCIENZE E TECNOLOGIE GENETICHE
INSEGNAMENTO DI BIOLOGIA ED ENDOCRINOLOGIA CELLULARE

DOCENTI:

NATALICCHIO ANNALISA (MED/13)

AMBROSINO CONCETTA (BIO/13)

PROGRAMMA

Introduction to Endocrinology.

The main endocrine axes

Thyroid

Pathophysiology, therapy and applications in basic research

Pituitary

Pathophysiology, therapy and applications in basic research

Pancreas

Pathophysiology, therapy and applications in basic research

Diabetic disease and its complications

Obesity

Pathophysiology, therapy and applications in basic research

Cellular and molecular therapy of endocrine/metabolic diseases

Biological aspects of endocrinology.

How cells produce, release and respond to hormones.

The secretory pathways: biological and molecular aspects

The different pathways of signal transduction

Receptors for steroid hormones, RTK, 7TM receptors, enzyme-associated receptors, Notch and Delta pathway in developmental biology.

The cytoskeleton

Structure and modifications induced by cellular signaling.

Cell division

Mechanisms and molecular aspects of symmetrical and asymmetric mitosis

Endocrine disorders and new therapies.

Introduction to cell cultures

Tools and techniques of cell cultures. Definition and characterization of primary and immortalized cell cultures. Molecular characteristics of the immortalization.

Immortalized and cancerous cell lines

Cellular models and gene transfer in endocrine diseases

• **Gene transfer techniques**

Retrovirus and Lentivirus,

Adenovirus

Adeno-associated Viruses

• **Stem cells in cellular therapy**

Definition of the characteristics of embryonic and adult stem cells and their use in cell therapy.

Differentiation of pancreatic endocrine cells and their use in diabetic disease

Textbooks

- S. Melmed, K.S. Polonsky, P.R. Larsen, H. M. Kronenberg (curatori) "Williams Textbook of Endocrinology" 2012 Saunders Elsevier (ISBN 9781437703245) Pietro Scotto (curatore)
- "Fisiologia" 2006 Poletto Editore. Milano (NUOVA EDIZIONE) V. Taglietti, C. Casella "Principi di Fisiologia e Biofisica della Cellula Vol. III La comunicazione tra le cellule" 2006 La Goliardica Pavese Editore. Pavia
- Giacca- Terapia genica Springer
- Alberts – Biologia Molecolare della Cellula VI edizione – Zanichelli
- Benjamin Lewin, Jocelyn E. Krebs, Elliott S. Goldstein, Stephen T. Kilpatrick-II gene X, Zanichelli