



Dipartimento di Scienze e Tecnologie

ANNO ACCADEMICO 2017/2018

PROGRAMMA

CORSO DI STUDIO IN BIOLOGIA (LM)

INSEGNAMENTO IN: TERAPIA GENICA E CELLULE STAMINALI (MODULO BIO/13)

DOCENTE: PROF.SSA_AMBROSINO CONCETTA

Introduction to cell cultures: tools and methods of cell cultures.

Definition and characterization of primary and cell line cultures: molecular characteristics of the cell, immortalization process.

Immortalized cell lines or derived from cancerous diseases

Development of cell lines and the role of recombinant DNA technology.

- Tissue cell origin
- Expression vectors in mammalian cells
- The different methods of transfection
- Selection of stable clones and development of cell lines

Stem cells in gene therapy

Definition of the characteristics of embryonic and adult stem cells and their use in cell therapy. Stem cell division and niche cellular hub. Mesenchymal stem cell and hematopoietic cell stem. Tissue regeneration and engineering

Gene Transfer systems:

- Naked plasmids applications
- Adenoviral Vectors
- AAV Vectors
- Lentiviral and retroviral vectors

Cellular models, stem cells and gene transfer in:

- Gene therapy of metabolic diseases
- Congenital immunodeficiency gene therapy
- Gene therapy of retinal pathologies
- Gene and cellular therapy of Neuromuscular diseases: Duchenne Muscular dystrophy
- Gene therapy of respiratory disorders: cystic fibrosis
- Gene therapy of solid tumours

Textbooks

Giacca- Gene Therapy- Springer Verlag (2010)

Alberts - Biologia Molecolare della Cellula VI edizione - Zanichelli