BIOTECNOLOGIE MEDICHE E NANOBIOGEOLOGIE (LM49)
(Lecce - Università degli Studi)

Insegnamento MICROBIAL BIOTECHNOLOGIES

GenCod A004553

Insegnamento MICROBIAL BIOTECHNOLOGIES
Insegnamento in inglese MICROBIAL BIOTECHNOLOGIES
Settore disciplinare BIO/19
Corso di studi di riferimento BIOTECNOLOGIE MEDICHE E
Tipo corso di studi Laurea Magistrale

Anno di corso 1
Lingua INGLESE
Percorso PERCORSO GENERICO/COMUNE
Docente Pietro ALIFANO
Sede Lecce

Crediti 6.0

Periodo Primo Semestre
Tipo esame Orale
Valutazione Voto Finale

Ripartizione oraria Ore Attività frontale: 50.0
Per immatricolati nel 2019/2020
Erogato nel 2019/2020

BREVE DESCRIZIONE DEL CORSO

Lectures
Part 1. Microbial virulence and vaccines
Microbial and viral pathogenesis.
Vaccines.
Part 2. Drugs from microorganisms
Bioactive compounds from microorganisms.
Actinomycetes producing bioactive compounds.

Labs

PREREQUISITI

No formal prerequisite is required with respect to other courses.
However basic knowledge of general microbiology, basic immunology and microbial genetics is strongly recommended. This knowledge is normally acquired in the bachelor’s degrees that give access to the master’s degree in Medical Biotechnology and Nanobiotechnology.

OBIETTIVI FORMATIVI

Course outline and aims
The course aims to provide knowledge and skills to work professionally with roles of responsibility in the areas of medical biotechnology and nanobiotechnology which make use of micro-organisms or viruses (natural or genetically modified, whole or parts thereof) or which develop diagnostic devices and therapeutic to combat infectious and non-infectious diseases.

Learning outcomes
Knowledge to be attained:
- molecular and cellular mechanisms underlying microbial and viral pathogenicity
- methodological foundations for design and development of vaccines
- methodological foundations for discovery and production of bioactive compounds from microorganisms

Abilities to be attained:
- New drug discovery from microorganisms by bioassays and genome mining
- Mutate-and-screen methods for microbial strain improvement

METODI DIDATTICI

Learning methods consist of formal Lectures and Labs making use of slides and hypertext links to specific Web sites. Outside these activities, the students are expected to read assigned papers from the scientific literature.
Oral examination. It is aimed at ascertaining, in proportion:
- The level of theoretical knowledge through the presentation of the program topics (50%)
- The level of practical abilities through description of methods and methodologies (25%)
- The ability to apply theoretical knowledge and practical skills to solve simple problems (25%)

Due to COVID-19 emergency, exams will be held temporarily by telematic devices, using the TEAMS platform according to the instructions on the University website.

MODALITÀ D’ESAME

PROGRAMMA ESTESO

Programs of Lectures and Labs

Lectures

Part 1. Microbial virulence and vaccines


Part 2. Drugs from microorganisms

Bioactive compounds from microorganisms. Chemical diversity and structural classes. Biological activity (antibiotic, antifungal, antiprotozoal, immunosuppressive, anticancer, etc.). Biosynthetic pathways: synthesis of precursor substrates, polyketides and polyketide synthase (PKS), oligopeptides and NRPS, PKS_NRPS hybrid systems, oligopeptides of ribosomal origin, oligosaccharides and terpenes, the main decoration reactions; manipulation of biosynthetic pathways.


Labs

Large-scale microbial cultivation for industrial purposes. The growth curve. Discontinuous or

TESTI DI RIFERIMENTO