

COURSE INTRODUCTION.

Dear Students,

it is my pleasure to welcome you to the module of «Application in Medicine ». We are doing a big effort to overcome this challenge and I hope that these lessons and activities will offer you an opportunity to develop a critical thinking skills.

This part of the course has ambitious to open the way toward the study of tools in molecular biology field able to solve disease problems. The molecular mechanisms underpinning several diseases are unknown yet, however this is the first step to find a cure.

The course is structured in two main parts. On one end, video lessons will be used to explain the main concepts and tests to stimulate the comprehension and analysis of experiments and methods important to demonstrate the role of genes. Genome wide data represent a resource in which we can find a lot of information. Thanks to integration data, the identification of the potential targets follows to validation of them and develop the drugs to restore health. The construction of these competencies is necessary to translate the knowledge obtaining in the basic research in the discovery of new drug.

On the other hand, hands- on activities in bioinformatics want to develop two important skills : the exploration of genome browsers and the connection of the data present in the databases to design some experiments. We have given a few guide for moving in the genome browsers because this is very dynamic field and we want to create the ability to find information, not to follow a simple instruction. When you want to design an experiment, you can find some information, for exemple, to construct a vector with DNA elements important in your research.

Diapo 4 : Hands-on activities in bioinformatics are divided in several tasks in which there are several questions and you can find answer by exploring different databases. Giulio Ferrero have give an important support to prepare these activities.

Together with Giulio, we changed the object of bioinformatics part these year to give you the opportunity to know Sar-Cov2 under the expect of the genome sequence and the features of proteins that help virus entry into the cells.

Diapo 6 :

This bioinformatics part is mandatory and it will be evaluated by

2 POINTS: all activities. Each activity must obtain at least 6 score.

1 POINTS: if some activities is lost or activity score is under 6.

The deadline is May 3rd at midnight

We are starting with the lesson on 4 May at 9 am. In this first lesson, we will discuss about bioinformatics task and we will divided in two group to allow the questions from you.

Diapo 8 : In order to improve this skills, we will analyze the papers taking into account the methods, experiment steps and what is the meaning of the results. Another important point is which experiments should be used to demonstrate research questions and how we can do it, which methods is better.

During the exam the student will demonstrate to know basic and specific concepts, methods and to solve biological problems.

1. Knowledge of **basic** concepts
2. Understanding of **specific** concepts
3. Comprehension of experimental **methodology**
4. **Solving problem** that we have discuss during lesson

EXAMS is based on lessons and is composed to multiple choice questions and two open questions.