



BIOL2286 Genomics

[45h+30h exercises] 7.5 credits

This course is taught in the 2nd semester

Teacher(s): François Chaumont, Françoise Foury, Pascal Hols, Bernard Knoops, René Rezsohazy
Language: French
Level: Second cycle

Aims

Introducing to genomics. This neologism refers to the overall knowledge related the systematic sequencing of genomes. Descriptive genomics concerns the sequence data as such (full or partial) that are annotated (translated in terms of genes and loci). Starting from descriptive genomics, functional genomics unravels the overall set of transcribed RNAs ("transcriptome") or expressed proteins ("proteome") by cells, tissues, organs or organisms under specific conditions (stress, differentiation, #.). Finally comparative genomics approaches the similarities or differences appearing when distinct genomes, transcriptomes or proteomes are compared to each other. The course will present the experimental methods, resulting knowledge and biotechnological or biomedical applications emanating from this new field of molecular genetics. NB: the course may be followed partim (common module 1 obligatory, modules 2 to 6 optional)

Main themes

Considering the fast evolution and progress in genomics, the content of the course will be permanently updated and adapted. Genomics concerns distinct areas of biology, each corresponding to a distinct module of the course.

- 1/introduction to genomics: common concepts, sequencing and annotation strategies, methods for transcriptome and proteome analysis
- 2/bacterial genomics
- 3/fungal genomics
- 4/plant genomics
- 5/animal genomics
- 6/human genomics

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites: basics in molecular genetics (ex. BIOL 2137) and thorough knowledge in microbiology, animal and plant biology.

Assisted work: students choose a subject in accordance with the teachers. They are asked to go thoroughly into it by searching and analysing recent scientific articles. Students present their own work in the form of a ten pages essay that they will expose and defend in front of the other students. The teachers will evaluate the written work, oral presentation and defense. The grade obtained is the exam quotation.

Written support: scientific articles, outlines and course notes; bibliographic data bank available on-line, notably on a local site developed with the FDP.

Other credits in programs

BIOL22/A	Deuxième licence en sciences biologiques (Biologie moléculaire, cellulaire et humaine)	(3 credits)	Mandatory
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