UCLouvain

lbrai2101

2018

Population and quantitative genetics

3 credits	30.0 h + 7.5 h	Q1

Teacher(s)	Baret Philippe coordinator ;Draye Xavier ;Draye Xavier (compensates Baret Philippe) ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	Quantitative and population genetics (LBRAI 2101) Section A: Population Genetics (2 ECTS) Genetic structure of a single population (Mendelian population, genotypic and gene frequencies). Genotypic and gene frequencies in populations in equilibrium (Hardy-Weinberg Law). Systematic factors (mutation, selection, migration) and dispersive factors (fixation or loss of alleles, inbreeding) determining the population variation. Characterization of genetic polymorphism and measurement of diversity within and between populations. Part B: Quantitative Genetics (1 ECTS) Extending Mendelian genetics genetic to quantitative traits. Study of phenotypic variance with statistical determination of the share due to environmental and phenotypic differences in genotype. Heritability of quantitative traits and breeding strategies for transfer and accumulation of alleles. Identifying QTLs (quantitative traits loci) Part C: Structure of genomes and comparative genomics (1 ECTS) Presentation / reminders on genetic information structure (repeated sequences, gene families, genome structure). Genetic mapping extended to over three genes and introduction to physical mapping. Genomics and Evolution: structural genomics and comparative genomics.
Aims	a. Contribution from operations AA repository program M1.1., M2.1., M3.5 b. Specific formulation for this activity AA program At the end of this activity, the student is able to: 1 - Understand how are structured populations and how they evolve from a genetic point of view. - Understand the concepts of genetic diversity, selection and inbreeding. - Anticipate the evolution of natural populations and populations managed by man. - Understand the conceptual bases of animal and plant breeding: breeding value, heritability, genotype-environment interaction, heterosis. - Integrate developments in molecular biology in the study of populations and quantitative traits (including QTL). - Perceive the dynamics and organization of genetic information in the genome. - - - - *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods	The assessment is made on the basis of a written examination with a question defended orally.
Teaching methods	The course takes the form of lectures alternating theory and practical examples
Inline resources	Moodle
Other infos	This course can be given in English.
Faculty or entity in charge	AGRO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Agricultural Bioengineering	BIRA2M	3		
Master [120] in Chemistry and Bioindustries	BIRC2M	3		
Master [120] in Statistic: Biostatistics	BSTA2M	3		
Master [120] in Environmental Bioengineering	BIRE2M	3		
Master [120] in Forests and Natural Areas Engineering	BIRF2M	3		