


This learning unit is not open to incoming exchange students!

Language :	French
Place of the course	Charleroi
Prerequisites	<p>The prerequisites are:</p> <ul style="list-style-type: none"> • In genetics (genetics and biotechnology): classical genetics, notion of genetic linkage, chromosomal theory, mitosis and meiosis, gene expression (transcription and translation with their molecular mechanism), DNA repair (everything except repair of double-strand breaks) • In biostat (proba and stat): concept of relative frequency, mean and standard deviation, probabilities and independent events, confidence interval at the mean • In biochemistry (chemistry of life): structure of proteins, effects of solvents, enzymatic catalysis • In (general and) organic chemistry: acids and bases, nucleophilic/electrophilic attacks and stereochemistry • In general biology: general structure of cells (prokaryotes and eukaryotes, evolution, molecular evolution, trophic, symbiotic and parasitic interactions) <p><i>The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.</i></p>
Main themes	<ul style="list-style-type: none"> • The plasticity of genetic information • Genetic engineering: molecular biology, transgenesis and genome sequencing • Genetic logic and genetic interactions • Study of polymorphism for the discovery of associations between genotype and phenotype
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <ol style="list-style-type: none"> 1) Mastering molecular processes that stimulate genomic plasticity at the generational scale on the one hand and evolutionary on the other hand 2) Understand the tools of molecular biology and their limits 3) Understand the generation of large DNA sequences and their constraints 4) Integrate genetic logic and concepts of genetic interactions 5) Understand the logic of genetic association from genomic data
Evaluation methods	<p>The assessment will be in the form of an oral exam, as long as the number of students is compatible with this type of assessment. The exam begins with a period of 45 to 60 minutes during which the student</p>

- 1.3.1. Mechanism of serine recombinases
- 1.3.2. Mechanism of tyrosine recombinases
- 1.3.3. Recombinase-dependent phase variation
- 1.3.4. Resolution of chromosome dimers by site-specific recombination
- 1.4. transposition
 - 1.4.1. DNA transposons
 - 1.4.1.1. Insertion sequences and evolutionary origin of transposons
 - 1.4.1.2. Conservative transposition
 - 1.4.1.3. Replicative transposition
 - 1.4.2. The retrotransposons

Faculty or entity in charge	SINC
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Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Computer Science	SINC1BA	5	LSINC1231 AND LSINC1211	