



UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

MOLECULAR METHODOLOGIES FOR BIODIVERSITY CONSERVATION

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	EXPERIMENTAL AND APPLIED BIOLOGY
Curriculum	Biologia ambientale e biodiversità
Year of study	1°
Period	1st semester (01/10/2021 - 14/01/2022)
ECTS	9
Language	Italian

The activity is split

500766 - MOLECULAR METHODOLOGIES FOR BIODIVERSITY CONSERVATION

500767 - MOLECULAR METHODOLOGIES FOR BIODIVERSITY CONSERVATION - MODULE 2



MOLECULAR METHODOLOGIES FOR BIODIVERSITY CONSERVATION

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Academic discipline	BIO/04 (PLANT PHYSIOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	EXPERIMENTAL AND APPLIED BIOLOGY
Curriculum	Biologia ambientale e biodiversità
Year of study	1°
Period	(01/10/2021 - 14/01/2022)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	BALESTRAZZI ALMA (titolare) - 6 ECTS
Prerequisites	Basic knowledge in cellular and molecular biology is required.
Learning outcomes	This part of the course aims at highlighting some methodological aspects of molecular biology applied to plant biodiversity issues, particularly as concerns GMOs traceability.
Course contents	GMOs (genetically modified organisms): definition, history. New-generation GMOs. GMOs and nutrition (in agreement with the 2030 Agenda for Sustainable Development, Goal 2, Zero Hunger) Environmental impact of transgenic plants. Transgene dispersal in soil and gene flow. Techniques for extraction and purification of total DNA from soil, detection of recombinant DNA sequences by standard PCR (Polymerase Chain Reaction). Use of QRT-PCR (Quantitative RealTime-Polymerase Chain Reaction) for the detection and quantification of recombinant DNA in food and environment (GMOs

	traceability).
Teaching methods	Lectures. Laboratory activities.
Reccomended or required readings	no text books are suggested but all the material will be provided by the teacher
Assessment methods	written exam
Further information	
Sustainable development goals - Agenda 2030	\$lbl legenda sviluppo sostenibile



MOLECULAR METHODOLOGIES FOR BIODIVERSITY CONSERVATION - MODULE 2

Enrollment year	2021/2022
Academic year	2021/2022
Regulations	DM270
Academic discipline	BIO/05 (ZOOLOGY)
Department	DEPARTMENT OF BIOLOGY AND BIOTECHNOLOGY "LAZZARO SPALLANZANI"
Course	EXPERIMENTAL AND APPLIED BIOLOGY
Curriculum	Biologia ambientale e biodiversità
Year of study	1°
Period	(01/10/2021 - 14/01/2022)
ECTS	3
Lesson hours	24 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	GOMULSKI LUDVIK MARCUS - 3 ECTS
Prerequisites	Students on this course are required to possess or acquire adequate initial preparation on the following knowledge: General Zoology, Biology.
Learning outcomes	At the end of the course the student is expected to be able to understand and be able to explain and apply the various concepts taught during the course
Course contents	Module 2. The course will describe, by means of theoretical lessons and practical laboratory sessions, the application of biochemical (MLEE) and molecular (RFLP, AFLP, rDNA, RAPD, scnDNA, SSR, mtDNA and SNPs) techniques to reveal genetic variability in animal populations. This genetic variability, deduced from DNA and protein polymorphisms, is the basis for different methodologies for the study of taxa at the systematic, population genetics and phylogenetic levels. The combination of different methods to detect variation and the use of

	appropriate statistical analyses provides an overview of the potentiality of such approaches in different fields of evolutionary and conservation biology.
Teaching methods	Lessons and Laboratory practicals
Reccomended or required readings	Material and articles provided during the course
Assessment methods	Written exam
Further information	Written exam
Sustainable development goals - Agenda 2030	\$Ibl legenda sviluppo sostenibile