## AMMINISTRAZIONE CENTRALE AREA RELAZIONI INTERNAZIONALI PROJECTS & MOBILITY OFFICE



Università degli Studi di Padova

Organising institution	Università degli Studi di Padova Dipartimento di Medicina Molecolare -DMM Prof.ssa Sara Richter
Visiting Professor	Nicole Maria Smith The University of Western Australia, Australia
Course Title	Emerging trends in Biotechnology
and Description	The purpose of this project is to equip students with fundamental knowledge in biotechnology breakthroughs including 3D bioprinting, iPSCs to model disease, targeted therapies, genome engineering including CRISPR/Epigenetic modifiers, high-resolution sequencing including single-cell sequencing/multiplexing and personalised medicine.
	<ul> <li>8 x 45 minutes lectures will be provided.</li> <li>Lecture 1–3 Targeted therapies What they are? eg Small molecules, antibodies, nanoparticles, CRISPR-based modifiers, dendrimers, ultrasound. Processes involved in design and testing. How experiments are planned and executed, what information they reveal and impact on biology and personalised medicine.</li> <li>Pros/cons and current bottlenecks.</li> <li>Lectures 4-6: Cutting-edge omics approaches Genomics, epigenomics, transcriptomics, single- cell sequencing and multiplexing for high- throughput cost-effective analyses. How experiments are planned and executed, what information they reveal and impact on biology and personalised medicine. Pros/Cons and current bottlenecks.</li> <li>Lectures 7-8: Cellular models of Disease – IPSCs pros and cons to model disease, 2D vs 3D cell models, organoids compared to whole organisms, High-throughput 3D-bioprinting. How these experiments are planned and executed, what information they reveal and impact on biology and personalised medicine. Pros/Cons and current bottlenecks.</li> </ul>
Period	04/10/2021 – 29/10/2021
Course Level	Master's degree in Pharmaceutical biotechnologies, Master's degree in Medical biotechnologies, Dottorato in Medicina molecolare