Master's Degree in Biology – Stem Cell Science

1 Year Online, 9 courses, 36 Credits, Standard for U.S. Masters Degree

The Master's Degree in Biology – Stem Cell Science offers a focused curriculum centered on adult, fetal, and birth tissue-derived stem cells. This 9-course program emphasizes clinically relevant and research-based applications of regenerative medicine, including platelet-rich plasma (PRP) therapy, umbilical cord blood (UCB) products, and emerging therapeutics. The program avoids embryonic stem cells and bone marrow sourcing, instead concentrating on advanced techniques in cell preparation, therapeutic delivery, quality control, and clinical translation. Graduates will be equipped to work in biologics processing, clinical research, therapeutic development, and regulatory oversight within the growing field of regenerative medicine. **Courses may be substituted or changed at any time, as curriculums undergo continued revision and updating**.

1 Year Master of Science (M.S.) Biology-Stem Cell Science 36 Credits
Foundations of Stem Cell Biology Introduction to adult, fetal, and birth tissue-derived stem cells, including mesenchymal stem cells (MSCs), amniotic cells, and UCB-derived cells. 4 Credits.
Platelet-Rich Plasma (PRP) Science and Protocols Biology of PRP, centrifugation techniques, growth factors, preparation protocols, and clinical applications in regenerative medicine. 4 Credits
Stem Cell Isolation and Characterization Hands-on protocols for isolating and analyzing viable cells from birth tissues using flow cytometry, markers, and culture methods. Harvesting, cryopreservation, and clinical use of UCB cells and Wharton's jelly-derived mesenchymal stem cells. SVF. 4 Credits
Fetal Tissue-Derived Stem Cell Applications Overview of fetal-derived MSCs and extracellular vesicles for orthopedic, neurological, and inflammatory conditions. 4 Credits
Clinical Applications of Regenerative Biologics Real-world use of stem cell-derived therapeutics, including protocols for joint, nerve, skin, and systemic conditions. 4 Credits
Laboratory Techniques in Cell Processing and Storage Sterile technique, cell viability, cryopreservation, cell banking, and transport logistics for regenerative products. 4 Credits
Exosome and Extracellular Vesicle Science Biogenesis, isolation, and therapeutic relevance of exosomes and secretomes in regenerative therapies. 4 Credits
Ethics, Law, and Regulation in Stem Cell Science Covers FDA regulations, IND applications, IRB oversight, and legal frameworks for ethically compliant regenerative practices. 4 Credits
Regenerative Medicine Product Development Brings together scientific and commercial perspectives in designing, testing, and scaling regenerative therapies. 4 Credits
Total 36 Credits, Standard USA Master's Degree