

WFIRM's New Masters of Science in Translational Biotechnology

Anthony Atala, MD, Professor and Director of WFIRM

Tracy Criswell, PhD, Associate Professor, Program Director

Joan Schanck, MPA, Administrative Co-Director



About Us:

- World-renowned tissue engineering and regenerative medicine research
- In house expertise in biomanufacturing, regulatory affairs, and clinical translation
- Two pathways – Research and Business
- 2 years of study (40 Credit Hours)
- Asynchronous course design for distance learning (Business Pathway)
- Content experts as faculty from key industry and research fields
- Tailored for traditional and non-traditional learners

“Our program features a combination of traditional STEM training combined with instruction in the business skills and expertise in regulatory affairs required to move a novel therapeutic from the laboratory to the clinic.

Students will leave the program with the competencies required for a broad range of STEM careers relevant to current and changing times.”



Meet Professor and Director of WFIRM, Anthony Atala, MD

Dr. Atala's research is known world-wide for many ground-breaking advances in RM. Many firsts have resulted from his research. Sixteen applications of technologies developed in his lab have been used clinically. He is PI for several grants, including NIH and DoD research (AFIRM, XCEL, MTEC) which span creating a “body-on-a-chip” platform and RM strategies for wounded soldiers. Other projects include rapid prototyping 3D organ printing technology exploring novel biomaterial/cell combinations. Dr. Atala and his team use a multidisciplinary approach to achieve the goal of engineering complex functional tissues. Trainees benefit from extensive interaction with Dr. Atala and his team with diverse scientific backgrounds at all levels, from undergraduate to MDs, PhDs, and MD/PhDs. Dr. Atala has mentored over 190 postdoctoral fellows, 64 graduate students and 42 undergraduates, and is a strong role model/mentor for PhD students interested in clinical translation of basic research.



Meet The Translational Biotechnology Masters Degree Program Director, Tracy Criswell, PhD, Associate Professor, WFIRM

Dr. Criswell received her PhD in cellular biology from Case Western Reserve University followed by a postdoctoral fellowship in cancer biology at Vanderbilt University. Her expertise in cell biology and cell signaling is broadly applicable to the field of regenerative medicine. Dr. Criswell's research interests involve examining the effect of sex and age on regenerative medicine and tissue engineering therapies. More specifically, her research has focused on identifying novel therapies to aid skeletal muscle regeneration after acute and chronic injuries. She developed a novel rodent model of compartment syndrome that has led to several discoveries related to the pathogenesis of skeletal muscle injury and the consequent regenerative processes. Her current research areas of focus include: 1) the development of biological and pharmacological therapies for the treatment of acute skeletal muscle injury; 2) the identification of age and sex-specific changes in skeletal muscle regeneration after injury, across the lifespan; 3) engineering ovarian tissue for the regulation of hormones in women during the menopausal transition; and 4) the development of micro-physiological systems that mimic the hormonal changes that occur in women as they age (adolescence – puberty – child-bearing – peri-menopause – post-menopause).



Meet The Translational Biotechnology Masters Degree Administrative Co-Program Director, Joan Schanck, MPA, Chief Education Program Officer, WFIRM

Joan's work is focused on providing high quality educational programming within the field of tissue engineering and regenerative medicine. In her role, she also works to increase awareness of the Institute's leadership role within the field of biomedicine. Joan's professional background includes more than 20 years of specialized experience in administration, education, research, fund raising, collaborative team building, program development and direct care/services delivery within the university, community and non-profit, public health, and education setting. Throughout her career, she has recognized the importance of education and the need to develop collaborative, multidisciplinary education and research training programs across formal and informal educational environments.

Introducing our WFIRM Program Faculty



Anthony Atala, MD
G. Link Professor
Director of WFIRM
MMTS 721:
Regenerative Medicine
Immersion Course



Graca Almeida-Porada,
MD, PhD
Professor
TBIO 732: Biotechnology
Seminar



Gary Green, EdD
Assistant Professor,
Chief Workforce
Development Officer
TBIO 794: Externship



Steve Bauer, PhD,
Chief Regulatory
Science Affairs
Program Officer
TBIO 731: FDA Case
Studies



Tracy Criswell, PhD
Associate Professor
TBIO 701: Regenerative
Medicine for Non-
Scientists
TBIO 740:
Biotechnology and
Ethics



Amol M. Joshi, PhD
Bern Beatty Fellow and
Associate Professor of
Strategic Management
for Wake Forest
University School of
Business/Associate
Professor of Innovation
and Commercialization
WFIRM
TBIO 711: Business
Fundamentals
TBIO 795/796: Capstone



Frank Marini, PhD
Professor
RegeneratOR Test Bed

Introducing our WFIRM Program Faculty



Josh Maxwell, PhD
Assistant Professor
*TBIO 702: Intro to
Translational
Regenerative Medicine*



Christopher Porada, PhD
Professor
*TBIO 732: Biotechnology
Seminar*



Michael C. Seeds, PhD
Assistant Professor
TBIO 795/796: Capstone



**Bitia Nickkholgh, MD,
PhD, Process
Development Scientist**
*TBIO 702: Intro to
Translational
Regenerative Medicine*
*TBIO 704: Intro to
cGMP Regulations*



Joan Schanck, MPA
**Chief Educational
Program Officer**
TBIO 794 Externship
*MMTS 721:
Regenerative Medicine
Immersion Course*



**Lisa Winkler, BS,
ASQ-CQA Certified
Quality Auditor and
ASQ-CMQOE
Certified Manager of
Quality /
Operational
Excellence**
*TBIO 702: Intro to
cGMP Regulations*

Program Content

Research Pathway

- Business Fundamentals
- Regenerative Medicine Journal Club
- Introduction to Regenerative Medicine
- Introduction to Translational Medicine
- Advanced Topics in Regenerative Medicine
- Regenerative Medicine Immersion: Fundamental Principles and Clinical Applications
- FDA Case Studies
- Biotechnology Seminar
- Foundations of Scientific Integrity and Professionalism
- Thesis research at WFIRM or Capstone Project
- Externship

Business Pathway

- Regenerative Medicine for Non-Scientists
- FDA Case Studies
- Research Design and Methods in Clinical Research
- Introduction to Translational Medicine
- Biotechnology Seminar
- Introduction to cGMP Regulations
- Medicines, Development, Regulation, Industry
- Biotechnology and Ethics
- Regenerative Medicine Immersion: Fundamental Principles and Clinical Applications
- Capstone Project
- Externship



Program Learning Goals

At the end of this program learners will be able to:

- Understand relevant scientific knowledge related to Regenerative Medicine.
- Outline the process of product development from preclinical testing to use in the clinic.
- Apply relevant ethical, regulatory, healthcare industry, and organizational considerations to biomanufacturing.
- Lead individuals and teams using relevant management and leadership skills and knowledge.

The RegenMed Hub

Populated by



WFIRM

**Wake Forest Institute for
Regenerative Medicine**

Applications Open Now Through July 1, 2023!!

Apply at <https://school.wakehealth.edu/education-and-training/graduate-programs/how-to-apply>

Application Information

- Available Admission Term: Fall 2023
- Required Pre-Requisites:
 - 4-Year Baccalaureate Degree from an Accredited College or University or Advanced Degree with GPA Equal to Or Greater Than 3.0 on a 4.0 Scale
 - Science Undergraduate Coursework in Biology, Chemistry, Organic Chemistry, Biochemistry, or Similar (Research Pathway)
 - TOEFL Examination for International Students
 - 2 Letters of Recommendation
 - Official Transcripts
 - Written Personal Statement
 - CV or Resume
 - \$100 Application Fee
 - Research and/or Laboratory Experience (Optional)
 - Graduate Record Examination (GRE) General Examination (Optional)