A New NIH-funded postdoctoral training program starting July 2012

Why Regenerative Medicine?

Regenerative medicine is commonly defined as creating living, functional tissues to repair or replace body parts whose function has been compromised by age, disease, trauma, or congenital defects. Advances in this field over the past decade have been linked to the increased interdisciplinary communication among materials scientists, cell biologists and clinicians. New tissue scaffolds increasingly include sophisticated biochemical cues. Many stem cell-based therapies require biomaterials-based scaffolds for optimal cell delivery. The merging of disciplines necessary for this type of research is the core of regenerative medicine, an approach that will have a revolutionary impact on our health care system.

Training Without Borders

To deliver unique research experiences built around special combinations of expertise, this program draws its faculty from six institutions. Each faculty member is a leading researcher in his or her own field. Many of them are currently collaborating, and all are eager to co-mentor new trainees in individualized research projects at the frontiers of regenerative medicine.

www.njbiomaterials.org/postdoc/
**Mentoring Constellations**

Each trainee will have at least two mentors from among the training faculty. Each candidate should identify his or her preferred mentor(s) and contact them to discuss their laboratories’ research programs.

Each trainee will be resident in the principal mentor’s laboratory/institution, and will have at least one additional mentor. This faculty member may be located at another of the participating institutions, and the program will facilitate the trainee’s interactions through organizing videoconferencing and face-to-face meetings. Each trainee will also have contact with one or more of the clinical faculty, as appropriate to the trainee’s research.

The several mentors will all contribute to the mentoring plan set out at the start of each two-year residency in the program. The trainee will gain the great benefit of active co-mentoring, which will contribute to his or her readiness for working in the cross-disciplinary areas of regenerative medicine.

**The Training Community**

A full agenda of both face-to-face and online interactions will link the trainees and mentors, and provide trainees with diverse research experiences. These include:

- Monthly program-wide video conferences/webinars, augmented by an annual program-wide, weeklong retreat at Rutgers.
- The new online course on stem cells, RENEW, developed at Case Western Reserve will be a requirement for all trainees.
- An online course on degradable polymers in medicine.
- A laboratory course on induced pluripotent, and reprogrammed stem cells.
- Also, a variety of professional development workshops and courses, including an online biodesign course.
Mentoring Faculty

The 15 mentors for this new program are based at Rutgers University, University of Pennsylvania, Princeton University, Massachusetts General Hospital/Harvard Medical School, Case Western Reserve University and Mayo College of Medicine.

First row (L to R):
- Martin Grumet, PhD
- Joachim Kohn, PhD
- Bozena Michniak, PhD
- Prabhas Moghe, PhD
- Robert Prud'homme, PhD

Second row (L to R):
- Jeffrey Schwartz, PhD
- Jean Schwarzbauer, PhD
- Christopher Chen, MD, PhD
- Anthony Windebank, MD
- Michael Yaszemski, MD, PhD

Third row (L to R):
- Cathryn Sundback, PhD
- Joseph Vacanti, MD
- Arnold Caplan, PhD
- Stanton Gerson, MD
- Gary Wnek, PhD

FACULTY

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RESEARCH

- Stem cell and molecular mechanisms in spinal cord injury
- Biomaterials synthesis, drug delivery, medical devices
- Pharmaceutical science, drug delivery systems, skin models
- Stem cell bioengineering, imaging, and cell-material interactions
- Biopolymer self-assembly, drug delivery; nanomedicine
- Interface organic and inorganic chemistry and biomaterials
- Molecular/cell biology, extracellular matrix proteins and structure
- Mechanotransduction, angiogenesis; cancer; stem cell biology
- Neurobiology, repair and regeneration after neural injury
- Orthopedic surgery, musculoskeletal tissue engineering
- Biomaterials for tissue engineering of nerve, muscle and bone
- Cell-seeded scaffolds and growth factors; Tissue Engineering
- Molecular and cellular biology of regeneration and aging
- Stem cells and DNA repair, Therapy for hematologic malignancy
- Polymer-based microfluidic platforms and fabrication.
Eligibility and Selection Criteria

This two-year training program is open to M.D., Ph.D., DV.M., D.D.S., and D.M.D. graduates who are US citizens or permanent residents.

Trainees from science backgrounds will be selected on the basis of excellence in previous training and proven research capabilities, as evidenced through both publications and presentations. Faculty will also look for evidence of interest in collaborative, multi-disciplinary research; commitment to a rigorous training program; and high levels of communication and organizational skills.

Clinical trainees will be selected using well-established procedures for resident selection and many of the above criteria for scientific trainees, recognizing that clinical trainees typically have limited opportunities to carry out major research projects.

Application Process

STEP 1. Contact the program administrator
STEP 2. Explore potential mentors’ research and formulate a provisional research topic
STEP 3. Complete and submit application on-line.

The following must be included in ALL application packages.
• A completed application form (see website)
• A current CV
• At least three letters of recommendation from advisors with whom you have worked
• A written response to the following questions:

1) Explain your reasons for wanting to enter the field of Regenerative Medicine.
2) What are the qualities and experience that you bring to this multi-disciplinary work?
3) What skills and abilities do you hope to gain from this training program?
4) What specific research would you like to carry out and what resources will you need?

Applicants must be US citizens or permanent residents.

Joachim Kohn, PhD, Director
Prabhas Moghe, PhD, Co-Director
Anthony Windebank, MD, Co-Director

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