

## **Medical Student Scholars Program (MSSP) Anesthesiology Track**

### **Synopsis/Background:**

Many medical schools across the country have developed longitudinal curricular tracks for first through fourth year students who have an established interest in a particular medical specialty. At the University of Cincinnati College of Medicine, several Medical Student Scholars Programs (MSSPs) have been developed in fields such as OB/GYN, Pediatrics and Emergency Medicine, and others. Recently, the number of students applying to residencies in Anesthesia from the College of Medicine has increased. We now have an opportunity to meet this increased demand for early exposure by creating a longitudinal track in anesthesia.

The Department of Anesthesia was established in 1970 and currently has over 70 clinical faculty at UCMC (4 United States Air Force faculty as well). The clinical faculty provide anesthesia care at the only level one trauma center in the Cincinnati area. As the only regional level one trauma center, we provide care that ranges from simple outpatient medical procedures to the most complex multi-disciplinary medical problems seen anywhere in the world. Our department includes multiple faculty members with subspecialty training in all the top anesthesia subspecialty categories including critical care medicine, acute and chronic pain management, obstetric anesthesia, cardiac anesthesia, and point of care ultrasound. The UC Health system includes three main facilities; The University of Cincinnati Medical Center, Holmes Hospital, and West Chester Medical Center. Our faculty practice in multiple areas of the UC Health system including the main operating rooms, intensive care units, interventional radiology, endoscopy suite, Barrett Cancer Center, Center for Perioperative Care, cardiac catheterization labs, cardiac echocardiography labs, cardiac electrophysiology labs, and psychiatric electroconvulsive therapy labs.

The Research Division of the Anesthesia Department is a nationally recognized program and one of the highest NIH funded anesthesia departments in the entire country. The research department is a collaborative effort to fight pain by investigating the underlying neurological mechanisms at cellular and molecular levels. Over the past several years, the department has consciously sought to develop this research focus as a strategic decision to build an intellectually strong and coherent department. The Anesthesiology Department maintains strong interdepartmental and inter-institutional collaborations. The program includes seven full-time research faculty focusing their efforts on cutting-edge translational research, including the main areas of:

- Targeting sensory ganglia and glial signaling for the treatment of acute and chronic pain;

- Purification and characterization of mature murine and human satellite glial cells;
- Synaptic function within mature central pain networks after neonatal injury;
- Developmental regulation of intrinsic excitability in spinal pain networks;
- Thalamo-limbic Circuits in Pain;
- Discovery and validation of a new long noncoding RNA as a novel target for neuropathic pain;
- Sympathetic-mediated sensory neuron cluster firing as a novel therapeutic target for neuropathic pain;
- Steroids and steroid receptors in low back pain;
- Study of activity dependent sympathetic sprouting;
- Pilot study: steroids and steroid receptor blockers for back pain in humans
- Inflammation biomarkers and treatment outcome in CRPS
- Efficacy of methylprednisolone (Depo-Medrol) vs. triamcinolone (Kenalog) used in lumbar epidural steroid injections for the treatment of chronic lower back pain

Total active award received from NIH by the UC Anesthesia Research Division (4 Labs) in the last 5 years (excluding expired R21 and Foundation award): \$13,780,848. The total fund received from NIH is over 2 million dollars annually. Number of active NIH grants: 8 R01s; 2 R21; several collaborative grants as Co-I.

Accepted medical scholars are required to complete IACUC and CITI training prior to the beginning of the summer research.

The Department of Anesthesiology is pleased to offer two students per year an opportunity to gain additional classroom, clinical and research exposure within the field (and may offer exposure to obstetric care, critical care, acute pain, regional anesthesia, chronic pain, and cardiothoracic anesthesia). The details of the four-year experience are outlined below. Prior research is highly preferred.

### **Goals/Objectives:**

1. Explore the field of anesthesia as a possible career path and gain exposure to some of the various divisions and subspecialties within anesthesia through shadowing.
2. Gain research experience while working in one of our labs and also complete a scholarly activity on the research project (presentation, abstract, etc.).
3. Exposure to anesthesia work room supplies, setup, and carts.
4. Exposure to didactics on various anesthesia topics.

### **Program Personnel:**

Thomas James, MD – Director  
 Meredith Shepherd, MD – Assistant Director, Clinical  
 Ming Zang, MD, MSc. – Assistant Director, Research  
 Julie Karpe – Program Manager

### **Financial Support:**

Department of Anesthesiology - \$3,500 for 8 weeks of summer research work between M1 and M2 year. An additional \$500 may be given as a travel stipend for any research project presented at a local or regional anesthesia conference.

### **Enrollment number:**

2 M1 students each year and prior research is highly preferred.

**\*\*\*Given that only 2 students are chosen from a long list of applicants, we want to emphasize that any student who applies to the MSSP program but is not chosen will still get priority for POSSIBLE (not a guarantee) summer research projects (if still interested).**

### **General Description & Curricular Overview:**

#### ***Year 1 (starts January):***

1. Attendance at Grand Rounds (Wednesday mornings from 7 – 8 am excluding the first Wednesday of each month), resident lectures (Tuesday's from 4 – 6 pm), or resident journal club.\*\*
2. Participation in shadowing.\*\*
3. Meet 1-2 times with the Program Director, Dr. Thomas James
4. Meet with research staff to decide which lab to work with for the Summer Research project.
5. Full-time Scholarly Research project (40 hours a week for 8 weeks the summer between M1 and M2 year).
6. Encouraged to enter into the M2 Fall Research Symposium.
7. Complete required Research Training courses prior to the start of the Summer Research.

\*\*Must participate in any two of these per month averaged over six months.

#### ***Year 2***

1. Train for Medical Student Anesthesia Extern program\*\*
2. Must complete 10 – 15 Anesthesia Extern Shifts throughout M2 – M4 year (shifts are 4 – 8 pm)\*\*
3. Attendance at Grand Rounds (Wednesday mornings from 7 – 8 am excluding the first Wednesday of each month), resident lectures (Tuesday's from 4 – 6 pm), or resident journal club.\*\*
4. Participation in shadowing.\*\*

\*\*Must participate in any two of these per month averaged over six months

### ***Year 3***

1. Must complete 10 – 15 Anesthesia Extern Shifts throughout M2 – M4 year (shifts are 4 – 8 pm)\*\*
2. Students will be prioritized for the specialty two week elective during M3 if desired.
3. Meet with Dr. Thomas James for focused fourth year course planning and/or research mentor as needed.

### ***Year 4***

1. Must complete 10 – 15 Anesthesia Extern Shifts throughout M2 – M4 year (shifts are 4 – 8 pm)\*\*
2. Students should complete a minimum of two week elective in anesthesia and will be given priority if desired.
3. Meet with Dr. Thomas James focused on residency application advice and planning.