The Bonica Scholars Research Program

Developing Anesthesiology Leaders in Research and Innovation

Department of Anesthesiology and Pain Medicine
University of Washington

Dr. Michael Crowder, Department Chair
Dr. Mark Opp, Vice Chair for Basic Research
Dr. Karen Domino, Vice Chair for Clinical Research
Dr. Tonya Palermo, NIH T32 Fellowship Co-director
Dr. Margaret Sedensky, NIH T32 Fellowship Co-director
Dr. Philip Morgan, Director for Research at SCH
Dr. Karen Souter, Vice Chair for Education and Residency Program Director

Document and Materials Designed by Dr. C. William Carspecken, Current Bonica Scholar
Overview and Introduction
The University of Washington (UW) Department of Anesthesiology and Pain Medicine is committed to training the future leaders in anesthesiology and perioperative medicine. As one of the top grant funded anesthesiology departments in the United States, our diverse research faculty are internationally renowned for their scholarship in numerous disciplines. These areas cover neuroscience, pharmacology, pain physiology, global perioperative health, health care economics, bioengineering, outcomes research, quality improvement, bioethics and many other inter-disciplinary areas of innovation.

The Bonica Scholars Research Program is a selective research residency track that fosters scientific discovery in anesthesiology and perioperative medicine. Our program is designed to provide world-class clinical and research training for exceptional individuals who desire a career in academic anesthesiology. We select up to two individuals a year through the residency match process.

The Bonica Scholars Research Program derives its name from Dr. John Bonica, a pioneer in pain medicine and the first chair of the anesthesiology department at UW. Widely considered the founding father of pain management, Dr. Bonica established one of the first multi-disciplinary pain centers and authored over 240 articles and the quintessential pain medicine textbook *The Management of Pain*. Continuing his research legacy, the Bonica Scholar Research Program is a five-year training opportunity for anesthesiology residents committed to a career in academic research. Our goal is to provide high quality clinical training, rigorous research instruction and comprehensive mentoring to support successful academic careers.

Timeline and Scholarship
The American Board of Anesthesiology (ABA) allows for a maximum of 11 months of research time during the four required post-graduate years of anesthesiology residency training. Our flexible program allocates this time starting with the first clinical base intern year and subsequent three years of clinical anesthesia (CA) training (see Table). We also provide up to $20,000 in research funding that can be used during the five-year program as well as a taxable $10,000 stipend during the CA3 year.

<table>
<thead>
<tr>
<th></th>
<th>PGY1</th>
<th>PGY2</th>
<th>PGY3</th>
<th>PGY4</th>
<th>PGY5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>CBY</td>
<td>CA1</td>
<td>CA2</td>
<td>CA3</td>
<td>Clinical</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Instructor</td>
</tr>
<tr>
<td>Research Time</td>
<td>2 Months</td>
<td>None</td>
<td>3 Months</td>
<td>6 Months</td>
<td>80% Research Time</td>
</tr>
</tbody>
</table>

*The above table shows the general allocation of research time over the post-graduate years (PGY) which include a clinical base year (CBY), three clinical anesthesia (CA) years and a fifth year of research time in the department depending on the scholar’s interests. Fellowship training is optional after completion of the five year program.*
Clinical and Research Training Facilities

Our department provides clinical residency training at our four main academic hospitals: University of Washington Medical Center (UWMC), Harborview Medical Center (HMC), Seattle Children's Hospital (SCH) and the VA Puget Sound (VAPUG).

We have additional research facilities and faculty working at the University of Washington School of Medicine South Lake Union, the University of Washington Main Campus adjacent to the UWMC, the Seattle Children's Research Institute (SCRI) in downtown Seattle and the Fred Hutchinson Cancer Research Institute.
Core Research Areas

The UW Department of Anesthesiology and Pain Medicine has four core focus areas of research across our hospitals and research institutions: pain medicine and neuroscience, mitochondrial biology and genomics, clinical outcomes and epidemiology and medical training and patient education.

Pain Medicine and Neurosciences
- Pediatric Pain and Sleep Innovations Lab (Dr. Tonya Palermo, SCRI)
- Sleep Immunology Laboratory (Dr. Mark Opp, HMC)
- Neuropathology (Dr. Charles Chavkin, Dr. Gregory Terman, Pharmacology)
- Virtual Reality Analgesia Group (Dr. Sam Sharar, HMC)

Mitochondrial Biology and Genomics
- Mitochondrial Disease (Dr. Philip Morgan and Dr. Margaret Sedensky, SCH/SCRI)
- Genetic Regulation of Hypoxic Injury (Dr. Michael Crowder, Chair, Marc Van Gilst, UW SLU)
- Cardiovascular and Pulmonary Biology (Dr. Rong Tian, UW SLU)
- Metabolomics Research Core (Dr. Daniel Raftery, UW SLU)
- Oxidative Biomarkers in Cardiac Dysfunction (Dr. Wang Wang, UW SLU)

Clinical Outcomes and Epidemiology
- Harborview Injury Prevention and Research Center (HIPRC) (Dr. Monica Vavilala, HMC)
- ASA Closed Claims Project (Dr. Karen Domino, UWMC)
- Perioperative and Pain Quality, Safety and Outcomes (PPQSO) Group (Dr. Bala Nair, Dr. Karen Posner, all sites)
- Sudden Infant Death Syndrome (SIDS) Group (Dr. Daniel Rubens, SCH)

Medical Training and Patient Education
- Pain Outcomes (PainTracker) and TeleCoaching (Dr. Tauben, Dr. Curatolo, UWMC)
- WWAMI Institute for Simulation in Healthcare (WISH) (Dr. Brian Ross, UWMC)

Many of our faculty collaborate with academic departments across UW, which received over $325 million in NIH funding in FY2014 and ranks among the best medical schools in the nation in both primary care and research. The UW Department of Anesthesiology and Pain Medicine also ranks among the top five NIH-funded anesthesiology departments in the US and has been awarded a prestigious T32 NIH grant to support the development of clinician researchers.

Bonica Scholars can perform research in any of the centers listed above or in any other department within UW or its affiliates with approval by the Bonica Scholars Committee. Our goal is to expose scholars to research experiences that will facilitate identification of a research focus and begin the path towards research independence. In addition to research time, we provide grant writing seminars, journal clubs, work-in-progress seminars and a writer’s workshop for manuscripts in progress. Awarded a Clinical and Translational Science Award by the NIH, the UW has an Institute for Translational Health Sciences (ITHS) which hosts career development seminars and offers educational programs with possibility of formal degree award (MPH, MS, MSE, MSHS or PhD). This is open to Bonica Scholars during their five years of training.
Selection Process

The Bonica Scholar residents are selected through the National Residency Match Process (NRMP) in March of each year. Residents are required to apply to the core residency program using the Electronic Resident Application Service (ERAS). Applicants are also required to complete a short additional application by completing a short questionnaire about their research interests and career goals.

Bonica Scholar candidates will be selected for interview based on their accomplishments including: performance in medical school and undergraduate studies, USMLE (or equivalent) scores, prior research experience and success, leadership, volunteer and professional activities. Candidates will be invited to a questions and answers reception with members of the Bonica Scholar Oversight committee, which is held 2-3 times during the interview season on Sunday afternoons before the general resident interviews. In addition, candidates will be encouraged to meet and discuss their career goals and research interests with UW faculty members. Candidates will be evaluated based on their academic merit, previous experience and their performance during the interviews.

A rank order of candidates will be submitted to the NRMP (program number 1918040C2). Candidates for the Bonica Scholar Program are not excluded from applying for the general 4-year residency program or 5-year combined ICU program. We encourage interested candidates to rank the UW Anesthesiology residency program in addition to ranking the Bonica Scholars Research Program. Applications for the Bonica Scholars Research Program are accepted only through the NRMP system. Successful candidates will join the anesthesiology CBY in June after the match.

Program Oversight and Expectations

The Chair of the Department of Anesthesiology and Pain Medicine, the Bonica Scholars Oversight Committee, and the residency training program director oversee the Bonica Scholars Program and the individual Bonica Scholars.

Oversight Committee Members
Dr. Michael Crowder, Department Chair
Dr. Mark Opp, Vice Chair for Basic Research
Dr. Karen Domino, Vice Chair for Clinical Research
Dr. Tonya Palermo, NIH T32 Fellowship Co-Director
Dr. Margaret Sedensky, NIH T32 Fellowship Co-Director
Dr. Philip Morgan, Director for Research at SCH
Dr. Karen Souter, Vice Chair for Education and Residency Program Director

In addition to the Bonica Scholar Oversight Committee, each Bonica Scholar has a clinical and a research mentoring team. Each scholar undergoes a formal annual review to assess academic progress. The Residency Program Director will have overall responsibility for scheduling the Bonica Scholars’ research time in a way that both meets the Bonica Scholar’s academic needs and clinical training requirements.

In order to remain in good standing in the residency program, all residents (including the Bonica Scholar residents) must satisfy the essential requirements mandated by the ACGME, the ABA and the UW Anesthesiology residency program (described in detail in the UW Anesthesiology Resident Manual). Residents who enter the Bonica Scholars Program are required to maintain a high standard of clinical, professional and academic achievement. Specifically, Bonica Scholar residents must be at or above the ACGME and ABA milestone levels for their training year.
Current Bonica Scholars

Dr. C. William Carspecken, MD, MSc, MBA, CA3
Will grew up in Colorado and came to the University of Washington in 2013 after graduating from Harvard Medical School. He did a research fellowship and master's degree in biomedical engineering at Oxford University, developing a novel low-cost spirometer for use in chronic lung disease. He published work as a researcher in clinical informatics at Stanford University and on cellular mechanisms of hematologic stem cell differentiation at the Harvard Stem Cell Institute. He also worked in translational immunology at Baylor College of Medicine and the National Jewish Research Center in Denver.

At the University of Washington as a Bonica Scholar, Will is the lead author on a funded prospective clinical trial (NCT02752724) exploring the neurobiology of ketamine for depression with Dr. Irene Rozet at the VA Puget Sound in conjunction with Dr. Daniel Raftery at the Northwest Metabolomics Center. He is correlating this clinical work with a mouse model of ketamine resistance at the Seattle Children's Research Institute in the lab of Dr. Phil Morgan and Dr. Margaret Sedensky. He received both VA and departmental grants for this work and plans to focus on the pharmacology and neurobiology of depression and cognition.

Dr. Elisabeth B. Powelson, MD, MPH, CA2
Lis grew up in Berkeley, California. She came to the University of Washington in 2014 after graduating from the University of California Berkeley-University of California San Francisco Joint Medical Program. She did her master's work at Berkeley in healthcare utilization by women who use methamphetamine. Before going to medical school she worked for UCSF at San Francisco General Hospital in the methadone clinic providing case management services as well as working on a study to provide directly administered antiretroviral therapy to patients who had HIV. As an undergraduate Lis put in some beach time at University of California Santa Barbara.

At University of Washington as a Bonica scholar, Lis has been working with Dr. Michele Curatolo and Dr. Monica Vavilala on a prospective longitudinal study to investigate the development of chronic pain in patients who are admitted to Harborview Medical Center. She also tries to find time to enjoy the beautiful outdoors that the Pacific Northwest has to offer. She enjoys skiing, camping, backpacking and hiking.
Dr. Flora Li, MD, CA1
Flora grew up in the Los Angeles area and came to the University of Washington after graduating from medical school at the University of California, San Diego. While in undergrad at Caltech, she worked on the C. elegans response to environmental pheromones and on a translational research project seeking to develop an immunotherapy for neuroblastoma at Stanford. In medical school, she became interested in ultrasound and echocardiography and worked on a project using TTE to assess effects of epidurals and spinals on diastolic function laboring women. At UW, she is currently working with Dr. Burkhard Mackensen using 3-D TEE to improve measurement of the left atrial appendage and sizing of left atrial appendage closure devices. She is also exploring using preoperative gastric ultrasound to reduce risk of aspiration events.

Dr. Jordan Starr, MD, CA1
Jordan is a Washington native who went to undergrad at the University of Washington and medical school at the University of Michigan. While in medical school, he developed an interest in applying data science and machine learning techniques to clinical research questions. His current projects involve working collaboratively with the anesthesia and neurology departments on large databases for neuro-anesthesia related questions regarding pain, stroke outcomes, and neuro-inflammation. In addition to clinical research, he is also involved in medical device, website, and mobile app development.

Dr. Kelly Michaelsen, MD, PhD, CBY
Kelly grew up in Buffalo NY and completed her undergraduate, MD and PhD at Dartmouth College. Her PhD is in biomedical engineering, developing a breast imaging system combining x-ray tomosynthesis with near infrared light for improving noninvasive breast cancer detection. She has previously been funded through the NIH F30 and the Radiological Society of North America. In anesthesia, she has studied the effects of opioid administration after tonsillectomy in children. Areas of interest include device development, bioinformatics, imaging and biomedical optics.
Bonica Scholar Alumni

Class of 2016

Dr. Elizabeth Hansen, MD, PhD
Pediatrics Fellow, Seattle Children’s Hospital
Dr. Hansen was academic chief resident 2015-2016 and completed a translational clinical research project on pharmacotherapy of post-operative nausea and vomiting prevention.

Dr. Michael Patz, MD
Cardiothoracic Anesthesiology Fellow, University of Colorado
Dr. Patz completed projects on hypoxic pulmonary vasoconstriction and pulmonary physiology at high altitude during his research time at UW.

Resident Researcher 2016

Dr. Jacob Sunshine, MD, MS
Faculty Member, UW Dept. of Anesthesiology
Dr. Sunshine graduated from the residency program in 2016 and was awarded a prestigious Foundation for Anesthesia Education Research (FAER) early investigator mentored award for $175,000 over two years. His research at the University of Washington focuses on public health and the epidemiology of traumatic injuries. His FAER award is entitled, “Trauma anesthesia care: An analysis of motor vehicle crash management, risk factors and costs” and is mentored by Dr. Ali Mokdad, PhD and Dr. Sam Sharar, MD.

Class of 2015

Dr. Chinwe Nwaneshiudu, MD, PhD
Pain Medicine Fellow, Stanford University
Dr. Nwaneshiudu worked with Dr. Greg Terman on tolerance to opioid-induced respiratory depression after fentanyl and morphine administration focusing on signal transduction in mice.

Dr. Lance Relland, MD, PhD
Pediatric Fellow, Nationwide Children's Hospital, Columbus, OH
Dr. Relland worked on pediatric anesthesiology clinical research while a resident at UW.
Thank you for your interest in the
Bonica Scholars Research Program.

Questions?

Please call, email or write if you need additional information or assistance. Contact Ms. Louena Goodwin at 206-543-2773, fax 206-543-2958 or email lfg@uw.edu.

Department of Anesthesiology & Pain Medicine
University of Washington, Box 356540
1959 NE Pacific Street, BB-1469
Seattle, WA 98195-6540
phone: 206-543-2673
fax: 206-543-2958