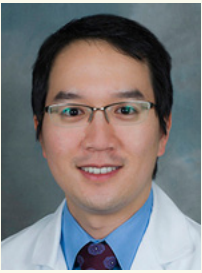


Researcher Profile: Jason Ko, MD



Jason Ko, MD

Approximately 1,800 US military personnel have suffered traumatic major limb amputations in Iraq and Afghanistan, and as many as 41,000 people in the US have sustained upper extremity loss. As the incidence of extremity amputations in our wounded warriors has increased, the [US Department of Defense's \(DoD\) Defense Advanced Research Projects Agency \(DARPA\)](#) has spent \$144 million on prosthetics research and development since 2006.

In 2009 the DoD announced the [Peer Reviewed Orthopaedic Research Program \(PRORP\)](#) Clinical Trial Award, which is intended to support the rapid implementation of clinical trials with the potential to have a significant impact on military combat-relevant orthopedic injuries. [Jason Ko, MD](#), Assistant Professor of Surgery in the Division of Plastic Surgery and Adjunct Faculty of the Department of Orthopaedics and Sports Medicine, is the Co-Principal Investigator of the 2012 PRORP Clinical Trial Award entitled, "Targeted Reinnervation as a Means to Treat Neuromas Associated with Major Limb Amputation." This \$2.5 million award provides support to a 4-year multicenter, prospective clinical trial that will evaluate the effects of "targeted muscle reinnervation" (TMR) on neuroma formation in upper and lower extremity amputees. The project is led by PI [Gregory Dumanian, MD](#) at Northwestern University, and also includes Walter Reed National Military Medical Center in Bethesda, MD, and San Antonio Military Medical Center in San Antonio, TX. In addition to serving as Co-PI for the entire project, Dr. Ko is the PI for the UW portion of the trial and is supported by his Co-Investigators [Douglas Smith, MD](#), Professor of Orthopaedics and Sports Medicine, and [Janna Friedly, MD](#), Assistant Professor of Rehabilitation Medicine, at Harborview Medical Center.

TMR is a revolutionary surgical technique performed in upper and lower extremity amputees whereby amputated nerves are transferred to intact target muscles to create new motor signals that allow the amputee to intuitively control a bionic limb. Developed by Drs. Gregory Dumanian (PI of the grant) and [Todd Kuiken](#) at Northwestern University, TMR has received previous funding support from the [National Institutes of Health \(NIH\)](#), DoD, and other sources. TMR has been featured in respected scientific journals such as *Lancet*, the *Journal of the American Medical Association (JAMA)*, the *Journal of Bone and Joint Surgery*, *Plastic and Reconstructive Surgery*, and, most recently, the *New England Journal of Medicine*. In addition, TMR has gained nationwide attention as an innovative strategy to help amputees and has been highlighted in the *New York Times*, *TIME Magazine*, *Newsweek*, the *Economist*, *National Geographic*, *New Yorker Magazine*, the *Oprah Winfrey Show*, *Good Morning America*, *CNN*, and other major media outlets.

Painful neuromas are a significant problem after amputation, and although TMR was initially intended for the motor control of bionic limbs in amputees, Drs. Dumanian and Kuiken noticed early on that amputees with pre-existing neuroma pain had less pain after the TMR surgery. It was hypothesized that TMR surgery provided an avenue for amputated nerves to grow into target muscles, rather than form disorganized, painful neuromas. Supported by a grant he received from the Plastic Surgery Foundation (PSF), Dr. Ko spent 18 months in the laboratory testing this hypothesis during his residency at Northwestern University. His demonstration that TMR prevents neuroma formation in various animal models helped to formulate the concepts behind the current DoD grant.

Dr. Ko's initial interest in research began when he was a medical student at Duke University in Durham, NC, where he spent a year in the Frank Hawkins Kenan Plastic Surgery Laboratory, and his interest in research continued throughout his residency in plastic and reconstructive surgery at Northwestern and a fellowship in hand and microvascular surgery at UW.

Shortly after joining as faculty in the Department of Surgery, he received the aforementioned DoD grant as well as a grant from the [Musculoskeletal Transplant Foundation \(MTF\)](#) for work in the field of vascularized composite allotransplantation (VCA). Dr. Ko attributes much of his early research success to the support he has received from [Nicholas Vedder, MD](#), Professor of Surgery and Chief of Plastic Surgery, and [Carlos Pellegrini, MD](#), Henry N. Harkins Professor and Chair of Surgery, who not only supported, but embraced, Dr. Ko's desire to seek additional training in brachial plexus, peripheral nerve, and microvascular surgery in Taiwan and Japan immediately after joining the Department of Surgery.

During these two months in Asia, Dr. Ko learned innovative surgical techniques that he uses in his clinical practice today, while also making time to apply for three research grants during this span. Dr. Ko states that his time in Asia was extremely educational for a number of reasons, and it only served to strengthen his interest in making research a core component of his academic career.

Currently, Dr. Ko is the newest member of the Department of Surgery Research Leadership Committee and is involved with a number of research projects, including a multicenter effort focusing on hand and upper extremity surgery funded by the Plastic Surgery Foundation (PSF), in addition to other multicenter clinical trials. Since joining the faculty at UW, Dr. Ko has established multidisciplinary collaborations with faculty within Electrical Engineering, Neurological Surgery, Rehabilitation Medicine, and Bioengineering, and together they are in the process of seeking extramural funding from the DoD, DARPA, and the NIH for research related to amputee care, revolutionizing prosthetics, and TMR.

(continued on page 9)

Researcher Profile: Jason Ko, MD

Continued from page 8

Orthopedic-related injuries and major limb amputations make up a large portion of the devastating casualties resulting from conflicts overseas, and many of our wounded US Warfighters will suffer from chronic pain due to symptomatic neuromas that do not respond to currently accepted treatment modalities. Harborview Medical Center is a unique civilian medical center that treats a high volume of extremity amputees, and Dr. Ko hopes that UW's involvement with this DoD clinical trial will help define TMR as the new standard of care for the treatment of neuromas in amputees.

2014 New Faculty



Muhammad Nuri, MD

[Dr. Muhammad Nuri](#), Assistant Professor joins the Department of Surgery in the Division of Cardiothoracic Surgery. He is a member of the section of pediatric cardiothoracic surgery and will serve as the site director of the regional pediatric cardiothoracic surgery program at Mary Bridge Children's Hospital & Health Center. His clinical interests focus on neonatal, pediatric cardiac surgery and international outreach.

A native of Pakistan, he received his undergraduate and medical school training in Pakistan. He proceeded to the United States to complete his general surgery and thoracic surgery residency training at West Virginia University and Penn State University respectively. He was then sponsored by the Royal College of Surgeons of England to complete a fellowship in congenital cardiac surgery at Great Ormond Street Hospital for Children. He returned to Pakistan for four years to participate in a voluntary medical mission. The mission focused on establishing adult and pediatric cardiac surgical services in the rural setting for the first time in Pakistan.

To focus on neonatal surgery, he returned to the United States to complete a post doctoral fellowship in congenital cardiac surgery at Columbia University and an ACGME accredited fellowship at Emory University. His research interests include health services research and healthcare resource utilization, with a specific focus on the delivery of cardiac services in the pediatric population.

"The University of Washington and Seattle Children's Hospital afforded the privilege to work with an extremely talented core of individuals. The ability to impact life and productivity of an individual from an extremely early age is fulfilling and rewarding. My goal is to establish a trusting relationship with our patients and deliver safe and effective care."

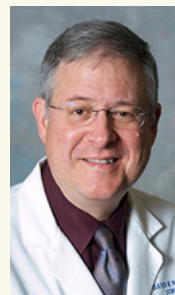
Honors and Awards

Faculty



Bulger

[Eileen Bulger, MD](#), Professor, Trauma & Burn Division, is Co-Principal Investigator with [Dr. Catherine Hough, MD](#), Associate Professor in the Department of Medicine, Division of Pulmonary and Critical Care, on a 7-year grant from the [National Institutes of Health \(NIH\)](#) for the establishment of the Pacific Northwest Clinical Center. This Center will serve as one of 12 Clinical Centers in the new [National Heart, Lung, and Blood Institute \(NHLBI\)](#) Clinical Trials Network for the [Prevention and Early Treatment of Acute Lung Injury \(PETAL Network\)](#). Coordinated by Massachusetts General Hospital, the PETAL Network will develop and conduct high-quality randomized, controlled clinical trials using a multidisciplinary and collaborative approach in order to prevent, treat and improve outcomes of patients with, or at risk for, acute respiratory distress syndrome (ARDS). The Center will also collect biologic samples and clinical data necessary to determine the molecular phenotype of disease pathogenesis, response to therapy, and recovery. Drs. Bulger and Hough are joined on this project by [Erik Van Eaton, MD](#), Assistant Professor, Trauma & Burn Division, who will serve as Co-Investigator, and [Ronald Maier, MD](#), Professor and Jane and Donald D. Trunkey Chair in Trauma Surgery, who will serve as Contributor.



Byrd

[David Byrd, MD](#), Professor, General Surgery Division, has been selected as one of the healthcare provider recipients for the Spring 2014 [UW Medicine Cares Award](#) at the UW Medical Center.

UW Medicine established the UW Medicine Cares Award in 2013, a program to formally recognize and celebrate the accomplishments and excellence of those in the UW Medicine community who consistently exemplify the UW Medicine Service Culture Guidelines. The guidelines are professional standards that ensure that anyone who encounters UW Medicine receives the same great care and service throughout the system.

Each UW Medicine entity – Harborview Medical Center, Northwest Medical Center,

(continued on page 10)