

WYLIE SCHOLAR PROGRAM **REPORT**

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Wylie Scholar Program Award

INVESTING IN LEADERS FOR A LIFETIME OF IMPACT

The most enduring contribution to medical innovation is the development of promising young surgeon-scientists who bring the real-world problems of patients to their research. Yet sharp declines in research funding and the economics of today's healthcare are making it increasingly difficult to pursue this career path. Vascular Cures' Wylie Scholar award provides support to pursue innovative patient-centered research projects to successfully compete for subsequent grant funding and achieve leadership roles. This enables a lifetime of impact to improve the lives of patients.

Each year Vascular Cures awards a \$150,000 three-year grant to an outstanding early career surgeon-scientist with a demonstrated aptitude in vascular research, leadership and promise in vascular surgery. Vascular Cures has supported 25 surgeon-scientists at 15 of the most highly regarded medical institutions in the United States and Canada. They have had exceptional achievements and many are chiefs or past chiefs of their divisions at world-class institutions. In addition, seven grantees are "second generation", a tribute to the mentorship of earlier awardees. A number are on Vascular Cures key advisory boards.

This report provides highlights their work and the additional funding obtained by those who have completed their three-year grant. For each \$150,000 granted, those who have completed their three-year term generated on average \$6.1 million* in subsequent national research funding – a return on investment of 41 to 1*. Wylie Scholars have collectively generated a total of \$133 million dollars in research funding over the life of the program. At least 50% of Wylie Scholars have received K08 or other early career awards as a result of the support provided by the Wylie funds. This means more discoveries and innovations in patient care – transforming the lives of patients.

The award is named in honor of Edwin J. Wylie, MD, a renowned pioneer in vascular surgery. This would not have been possible without the dedication of Dr. Wylie and other leaders in vascular surgery and donors who are committed to the support of early career scientists and understand that such support stimulates new discovery and advancements. Many thanks to the Society for Vascular Surgery for its support of the Wylie Scholarship from 2014-2019, and to the many philanthropists who contributed to this program.

*Actual results are higher than shown, as complete data on new funding was not received by time of publication.



2022 Wylie Scholar

Tammy T. Nguyen, MD, PhD

Assistant Professor of Surgery
Medical Director of Lower Extremity Wound Clinic
Division of Vascular and Endovascular Surgery
University of Massachusetts

"My research helps in the development of better treatment options for the 10 million Americans with diabetic foot ulcers who are at risk for a major lower extremity amputation."

Dr. Tammy Nguyen received the 2022 Wylie Scholar Award for her project "Exploring How the Diabetic Immune System Contributes to Non-Healing Ulcers".

Type 2 diabetic (T2D) patients have a thirty-fold increased lifetime risk of developing a foot ulcer, of which 50% will lead to a lower extremity amputation and subsequently a 40% increased mortality risk. Diabetic foot ulcers are associated with impaired bone marrow-derived immune function. To study the effect of T2D on the development of the human immune system and design targeted therapies to combat poor wound healing in T2D, Dr. Nguyen has developed a novel method to collect and expand human stem cells directly from the bone marrow of T2D and non-T2D donors that underwent lower extremity amputation for non-healing wounds.

Dr. Nguyen received her PhD in Biochemistry at the University of Utah. She attended medical school at the University of Utah and completed an Integrated Vascular Surgery Residency at the University of Massachusetts. Throughout her career, she has received training support from the Howard Hughes Medical Institute, American Heart Association, National Institutes of Health, and most recently the Vascular and Endovascular Surgery Society Early Career Award. Her clinical practice as the Medical Director of the Lower Extremity Wound Clinic uniquely positions her to be at the forefront of patient-oriented wound care. Her surgical and bench lab skills have allowed her to develop clinically relevant translational research models that will facilitate testing for new therapeutics to better care for the 10 million Americans with diabetic foot ulcers who are at risk for a major lower extremity amputation.

"The Wylie Scholar Award has provided me with a unique opportunity to connect with other vascular surgeon-scientists who share my goal of combating vascular disease through translational science. I am honored to part of an environment that nurtures scientific creativity, promotes patient-oriented research and has an impact on disease outcome and quality of life. I look forward to continuing my scientific growth and contributing to the Wylie Scholar community."

2021 WYLIE SCHOLAR



Kevin W. Southerland, MD

Assistant Professor of Surgery
Division of Vascular & Endovascular Surgery
Duke University

"My work lays the foundation for the development of new therapies that can save the limbs of patients with chronic limb-threatening ischemia."

Dr. Kevin Southerland received the 2021 Wylie Scholar Award for his project, "Transcriptional Dynamics and Heterogeneity of Macrophages in Chronic Limb Threatening Ischemia".

Chronic limb-threatening ischemia (CLTI) is the most severe manifestation of peripheral arterial disease. Patients with CLTI are at high risk for limb loss and death. A significant number of CLTI patients suffer limb loss despite successful restoration of arterial flow. Novel approaches to treat CLTI remain an unmet clinical need. The goal of Dr. Southerland's lab is to understand the communication signals between the various cell types in the ischemic limb. He is particularly interested in how macrophages (a type of immune cell) interact with muscle stem cells. He believes that understanding these mechanisms will be the groundwork for the development of new therapies for CLTI patients.

"The Wylie Scholar Award is a tremendous honor. I am humbled to be part of such an amazing community of surgeon-scientists. My primary clinical and investigative interest is Chronic Limb Threatening Ischemia (CLTI). The goal of my lab is to understand the cellular mechanisms responsible for CLTI and to develop molecular therapeutics to improve limb salvage. The Wylie Scholar program is providing me with the resources to pursue this research program. I am truly grateful for this opportunity."

2020 WYLIE SCHOLAR



Kathryn Howe, MD, PhD

Surgeon-Scientist at UHN, Div. of Vascular Surgery & Toronto General Hospital Research Institute; Assistant Professor, Dept. of Surgery, University of Toronto

"My research is focused on the treatment and prevention of strokes. The work I do in the lab is building the foundation for brand new therapies."

Dr. Kathryn Howe received the 2020 Wylie Scholar Award for her project "Role of endothelial extracellular vesicle microRNA release and paracrine cellular communication in vulnerable carotid atherosclerotic plaques: a new paradigm for stroke."

Many people have atherosclerotic plaques in the carotid arteries but only some cause strokes – the problem is scientists don't know which ones. Dr. Howe's laboratory is trying to understand how cells within blood vessels communicate with one another in diseases such as atherosclerosis using secreted vesicles containing genetic code. The main goal of this research is to better understand these cellular communication signals in order to identify and treat plaques that are going to cause a problem so that we can prevent a stroke.

Dr. Howe received her PhD in Molecular Immunology, Virology, and Inflammation at McMaster University. She attended medical school at the University of Toronto. Throughout her research career, she has been awarded competitive fellowships from the Canadian Institutes of Health Research & national scholarships. During her Vascular Surgery residency at McMaster, Dr. Howe was a fellow at Stanford University and established her own bench research program investigating the role of endothelial microRNA in vascular disease. Her clinical interests include carotid revascularization & stroke prevention, aneurysm repair, and peripheral vascular disease.

"The Wylie Scholar Award is allowing me to pursue an ambitious research program to find new targets to prevent stroke. Stroke has affected my family & many of my patients. This mission is personal – on behalf of all our loved ones. We've already had some early transformative discoveries that set the foundation for new therapies unlike any that currently exist. With the Wylie Scholar Award support, my ideas have been validated by eminent Vascular Surgeon-Scientists and funds provided to continue working towards major breakthroughs in stroke prevention. As an early career Vascular Surgeon-Scientist, I am incredibly honored to be part of this distinguished group & the lineage the Wylie Scholar Award represents."

2019 WYLIE SCHOLAR

Andrea Obi, MD

Assistant Professor of Vascular Surgery
University of Michigan



"My lab helps identify new ways to prevent and treat blood clotting conditions without the use of blood thinners."

Dr. Andrea Obi received the 2019 Wylie Scholar Award for her work on "Impact of bone marrow progenitor cells epigenetic memory on venous thrombus formation and resolution". Her lab seeks to better understand how blood clots in our veins form, the root cause of life-threatening conditions known as Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE).

Acute infection is incredibly common and increases the risk of DVT and death from PE. These conditions affect 1 in 1000 adults and lead to approximately 200,000-300,000 death per year. Blood-thinners, the only available options for treatment and prevention, come with serious risks and cannot be used by everyone. Dr. Obi's lab has established a link between infection, thrombosis and changes in the bone marrow programming of immune cells. She and her team are working on understanding the interplay between the immune system and thrombosis to help identify new non-blood thinning techniques of preventing and treating DVT in the future.

Dr. Obi's clinical interests include vascular surgery, aneurysmal and occlusive diseases of the arterial system and the surgical management of superficial venous disease.

"The Wylie Award has been a tremendous ignitor in expanding on our laboratory's exploration of a major unexplained problem in modern healthcare: the link between deep vein thrombosis and infection. Very few other researchers are trying to solve this problem and the Wylie award provides the necessary resources, a shared vision, and recognition of the challenges faced by our patients which can best be solved by taking the clinical problem back to the benchtop. It is an honor to join the legacy of the surgeon-scientists who have won the Wylie award in the past and we will do our best to leverage it to the same degree of success in obtaining external funding and advancing the knowledge of thrombosis biology."

The 2019 Wylie Scholar Award was supported by the
Society for Vascular Surgery

2018 WYLIE SCHOLAR

John Byrne, MB BCh, MD

Vascular Surgeon
Vascular & Interventional Radiology
Division
William Osler Health System
Toronto, Canada



Dr. John Byrne received the 2018 Wylie Scholar Award for his work on "Characterization of Macrophage Biology in the Pathogenesis of Abdominal Aortic Aneurysms." His research studied the inflammatory process of abdominal aortic aneurysm (AAA) development, which could improve the prediction and treatment of aortic aneurysms at high risk of a fatal rupture.

AAA is a swelling in the largest artery of the body, the aorta, most commonly occurring in the abdomen. As the aneurysm swells, there is a risk of rupture that can lead to rapid and fatal internal bleeding. There are currently no medications to prevent or slow down the growth of an aneurysm. Studies show that a type of white blood cell called a macrophage is present in excess in aneurysms. It is thought that macrophages contribute to the enlargement of AAA by weakening the walls of the aorta. Since receiving this award, Dr. Byrne demonstrated that two newly discovered populations of aortic macrophages differentially contribute to AAA, one population contributes to worsening of disease, whilst the other contributes to the maintenance of aortic integrity. His work was accepted for oral presentation at the American Heart Association Scientific Sessions conference in November 2019 and Dr. Byrne was invited to contribute to an Early Career Research event during the conference.

"Future progress in the medical treatment of small aortic aneurysms will not take place until we, as physicians and scientists, improve our understanding of aortic biology. I am honored as a Wylie Scholar to be able to contribute to this lofty but realistic goal, which will improve the outlook for patients with this disease. Looking back at the giants of vascular surgery that make up the previous winners of this award, I am humbled and excited to be funded by Vascular Cures."

The 2018 Wylie Scholar Award was supported by the
Society for Vascular Surgery

2017 WYLIE SCHOLAR

Sean English, MD

Former Assistant Professor of Surgery
Vascular Surgery Section
Washington University in St. Louis



Dr. Sean English became the 20th Wylie Scholar for his research project to neutralize the body's signaling mechanisms that cause abdominal aortic aneurysms (AAA) to grow.

Abdominal aortic aneurysm (AAA) is a dangerous condition and AAA rupture often results in death. Without an accepted medical therapy, treatment requires surgery and long-term follow-up imaging. Yet diagnostic and surveillance methods used for the assessment of AAAs are limited.

The inflammation associated with AAA development is multifaceted; however, Dr. English identified a particular signaling molecule that plays an integral role in both AAA development and rupture. His intent was to assess the ability of a positron emission tomography (PET) radiotracer to neutralize this signaling molecule, in an effort to limit AAA development and decrease associated rupture. He hoped to demonstrate inflammation predictive of growth/rupture in an animal model that he developed. Dr. English's research evaluated the ability of this radiotracer to noninvasively characterize human AAA associated inflammation.

"I am honored to be acknowledged in this manner as a surgeon-scientist, and I am incredibly humbled to be in the company of the prior recipients. We share the same passion and vision to evolve the way we diagnose, survey, and treat vascular disease in a more patient-specific fashion."

The 2017 Wylie Scholar Award was supported by the
Society for Vascular Surgery

2016 WYLIE SCHOLAR

Ryan McEnaney, MD

Assistant Professor of Surgery
University of Pittsburgh School of Medicine
VA Pittsburgh Healthcare System



"My lab focuses on how arteries build collateral or "backup" blood vessels that take over when an artery is blocked. The goal is to help develop alternatives to surgery for patients with blood flow blockages."

Dr. Ryan McEnaney received the 2016 Wylie Scholar Award for his research that aims to improve collateral artery development, known as arteriogenesis. His lab has demonstrated that growing better collateral circulation is possible. The physical forces of flowing blood acting on the vessel wall are important determinants of the size and capacity that collateral vessels will achieve. Dr. McEnaney seeks to understand the molecular signals in the vessel wall that communicate change in flowing blood. Identifying the secondary molecular messages could lead to pharmaceutical therapies to improve collateral circulation for patients unable to undergo surgery.

Additionally, for pre-existing arteries to grow into collaterals, the matrix structure must be reorganized and sometimes rebuilt. Unfortunately, some of the critical components of an artery's structure are limited – created in early life but seemingly irreplaceable if destroyed. Key to arterial remodeling is the careful reorganization and redistribution of certain structural components so that the vessel may enlarge, but not deteriorate. Dr. McEnaney's lab has been using advanced imaging modalities to investigate the extracellular matrix reorganization of enlarging collateral vessels. Understanding these processes have implications for not just arteriogenesis and collateral development, but also arterial aneurysmal disease. With the work accomplished through the Wylie Award's support, Dr. McEnaney has been awarded federal funding via VA CDA mechanism.

"The Wylie Scholar Award has been a major milestone in my career and truly instrumental in advancing my research. The Award has led to my successful application for funding through the VA. I look forward to continuing the mission of Vascular Cures by my research to advance care of vascular disease."

The 2016 Wylie Scholar Award was supported by the
Society for Vascular Surgery

2015 WYLIE SCHOLAR



Mohamed Zayed, MD, PhD

Associate Professor of Surgery, Radiology, Molecular Cell Biology, & Biomedical Engineering, Washington University in St. Louis; Staff Physician, Dept. of Surgery, St. Louis VA Health Care System

"I investigate why individuals with diabetes develop peripheral artery disease (PAD), one of the most common and costly types of vascular disease. My goal is to develop more effective ways to treat this challenging problem."

Mohamed Zayed, MD, PhD, is Director of Vascular Surgery Research at Washington University School of Medicine in St. Louis. He leads a multi-pronged research program investigating mechanisms of arterial disease progression. His multidisciplinary background in pharmacology, molecular biology, genetics, and lipid research allows his team to focus on creative approaches to explore the underlying causes of peripheral arterial atheroprosession, aortic aneurysms, and the impact of metabolic disorders such as diabetes on arterial disease.

Since receiving the Wylie Scholar Award, Dr. Zayed was awarded a 5-year K08 career development award, an American Surgical Association research fellowship award, and a Society for Vascular Surgery investigator award. As his translational research program matured, this gave opportunity for additional major NIH funding (7 R01 grants and multiple foundation grants).

Dr. Zayed is also the Director of the CardioVascular Research Innovation in Surgery & Engineering (CVISE) center, which aims to synergize and foster collaboration between surgical and engineering disciplines. This multidisciplinary center has led to many biomedical innovations, multiple filed/issued U.S. patents, and several startup ventures to commercialize new biomedical diagnostics/treatments. The innovation team is in part funded by an NIH R41/R42 grant. Dr. Zayed was recently awarded the Academy of Science of St. Louis Innovator Award – which is awarded to an investigator who has exceptional potential for future accomplishments in science, engineering, and technology.

"The Wylie Fellowship was a catalyst to my research program at a critical early phase of my career as a surgeon-scientist. The fellowship immediately connected me with a network of accomplished prior fellows and scientists. This award allowed me to build the foundation for many critical activities that followed."

The 2015 Wylie Scholar Award was supported by the Society for Vascular Surgery

2014 WYLIE SCHOLAR



Matthew A. Corriere, MD, MS

Frankel Professor of Cardiovascular Surgery
Associate Professor, Vascular Surgery
University of Michigan

"My research focuses on finding ways for doctors to understand patient goals and improve shared decision-making in vascular treatment. The goal is to increase patients' engagement in their own care."

Matthew A. Corriere MD, MS is the Frankel Professor of Cardiovascular Surgery, Associate Professor in the Section of Vascular Surgery within the Department of Surgery at the University of Michigan. Dr. Corriere's leadership roles at the Michigan Medicine Frankel Cardiovascular Center include Medical Director of the Operating Room and co-lead for the Multidisciplinary Peripheral Artery Disease Clinic. His affiliations at the University of Michigan include the Institute for Health Policy and Innovation, the Center for Health Outcomes and Policy, the Center for Bioethics and Social Sciences in Medicine, and the Biosocial Methods Collaborative.

Dr. Corriere's clinical practice includes treatment of aortic, carotid, mesenteric, renal, and peripheral artery disease. His current research focuses on patient preference elicitation, patient-doctor communication, risk stratification, and clinical outcomes related to peripheral artery disease. Dr. Corriere has received research support from the United States Food and Drug Administration, the American Heart Association, the Vascular Cures Foundation, the Society for Vascular Surgery Foundation, the Vascular and Endovascular Surgery Society, the Frankel Cardiovascular Center Innovation Challenge, the Frankel Cardiovascular Center Inaugural Grant, and the University of Michigan MCubed program. Dr. Corriere is past president of the Vascular & Endovascular Surgery Society and has previously chaired of the Society for Vascular Surgery Clinical Research Committee.

"The Wylie Scholar Award has allowed me to move forward with work that I believe is truly innovative and has potential to redefine interactions between patients and providers. As a vascular surgeon treating patients with PAD, I am excited about the potential for this research to positively impact care through development of more patient-centered approaches."

The 2014 Wylie Scholar Award was supported by the Society for Vascular Surgery

2013 WYLIE SCHOLAR



Thomas Monahan, MD

1975-2019

Former Assistant Professor of Surgery University of Maryland

The Wylie grant was awarded to support the late Dr. Monahan's research identifying the mechanisms responsible for vein graft, angioplasty and stent failure. Dr. Monahan studied the body's abnormal healing reaction to surgery, known as intimal hyperplasia or restenosis.

As a vascular surgeon, Dr. Monahan performed both bypass surgery and angioplasty (inflation of a balloon within a diseased segment of artery) to relieve arterial blockages. Over seven million cardiovascular bypass operations and angioplasty procedures are performed in the US each year. Bypass grafting, endarterectomy, and angioplasty remain plagued by restenosis, or recurrent narrowing of the affected vessel, which affects up to 30 - 40% of procedures within 6 months. Restenosis represents a large clinical problem.

Dr. Monahan's work focused on methods of specifically inhibiting vascular smooth muscle cell migration and proliferation. Present treatments for the prevention of intimal hyperplasia are limited because they inhibit both smooth muscle and endothelial cell migration and proliferation. Dr. Monahan had identified a protein, MARCKS, that when knocked down, inhibits smooth muscle cell migration and proliferation with no effect on endothelial cells. This protein is potentially a powerful target for the prevention of intimal hyperplasia.

"Dr. Monahan had a personal commitment to providing much needed surgical care for the most vulnerable in our society: the poor, uninsured, veterans and persons with no advocates...His patients and colleagues remember him as a tireless advocate for the chronically ill and disadvantaged, as well as a dedicated teacher and scientist."

Raj Sarkar, 2005 Wylie Scholar and mentor to Dr. Monahan

2012 WYLIE SCHOLAR



Katherine Gallagher, MD

John R. Pfeifer Collegiate Professor of Vascular Surgery
Professor of Microbiology & Immunology
University of Michigan

"I study how to improve inflammation in cardiovascular disease, a severe problem that frequently leads to many pathologies, with the goal of developing new treatments."

The goal of Dr. Gallagher's research is to improve immune cell function in cardiovascular disease and tissue repair in other disease states such as diabetes. Although the concept that chronic inflammation is associated with cardiovascular disease processes has been well-accepted, no approach to date has been clinically effective in restoring normal immune cell function that leads to this pathology. Her lab studies the epigenetic alterations in immune cells that alter the cell functions and lead to pathology.

In 2022, Dr. Gallagher was elected to the National Academy of Medicine for her innovative research on epigenetic regulation of immune cells. She is a fellow in the American Surgical Association and Vice Chair of Basic and Translational Science at the University of Michigan. In addition, she is a mentor to the 2019 Wylie Scholar Andrea Obi MD, the 2021 Wylie Scholar, Kevin Southerland MD and the 2022 Wylie Scholar, Tammy Nguyen MD PhD. Dr. Gallagher is the PI on several grants from the NIH (multiple RO1s, U01), American Diabetes Association, and Doris Duke Charitable Foundation. She is a member of the ASCI and most recently won the American Heart Association ATVB Werner Risau Investigator Award in Vascular Biology. She has been awarded over \$29 million in funding since becoming a Wylie Scholar.

"Due to the critical start-up funding from the Wylie Scholarship Program, we have identified that epigenetic changes in the bone marrow predispose peripheral macrophages towards an inflammatory phenotype. Funding from the Wylie Scholarship Program has been instrumental in allowing me to gather preliminary data to secure much-needed funding from the National Institutes of Health and others."

2011 WYLIE SCHOLAR



Gale Tang, MD

Associate Professor, Div. of Vascular Surgery
VA Puget Sound Health Care System
University of Washington

“I am studying arteriogenesis to better develop therapies to enhance collateral artery development in patients with chronic limb threatening ischemia. I am also studying the process of vascular reaction to injury by looking at how vein grafts remodel by putting human veins into rats and developing an in vitro perfused vein graft model.”

The Wylie grant was awarded to support Dr. Tang's research in understanding the mechanisms that promote blood vessel growth, and to develop new non-surgical therapies for people suffering from an advanced form of peripheral artery disease (PAD).

Dr. Tang's original research focused on creating new vessels to carry the blood that blocked arteries can no longer transport, evaluating the syndecan-1 protein encoded by the SDC1 gene. Dr. Tang subsequently shifted her research to focus on the role of p27Kip1 in collateral artery development. This built on work performed by the late Dr. Alec Clowes (UW) and Dr. Michael Conte (UCSF) on the role of p27 in healing following leg bypass surgeries. Her current work continues Dr. Alec Clowes' studies on vein graft healing.

Dr. Tang is an excellent example of the synergy of Vascular Cures' programs made possible by generous donors. Prior to receiving the 2011 Wylie Scholar award, Dr. Tang studied mechanisms of blood vessel growth at the Laboratory for Accelerated Vascular Research (LAVR) from 2001-2003. LAVR was established at UCSF with grants from Vascular Cures and the Wayne and Gladys Valley Foundation. She also worked under the mentorship of the late Alec Clowes, MD, a leader of the Vascular Cures Research Network. Dr. Tang was just awarded a VA Merit grant to study the effect of adventitial cells on vein graft neointimal hyperplasia.

“Since being awarded the Wylie Scholar award and directly related to the work I have been able to achieve using the award funds, I have received \$991,219 of competitive internal and external funding since the award tenure.”

2010 WYLIE SCHOLAR



Bryan Tillman, MD, PhD, FACS

Associate Professor of Surgery
Director of Vascular Research
The Ohio State University Wexner Medical Center

“I develop minimally invasive vascular devices in my laboratory. The Rescue Stent is a device to stop bleeding after trauma of the torso and a dual chambered stent is being explored to improve outcomes after major aortic surgery and for targeted delivery of therapeutic drugs”

Dr. Tillman's laboratory is currently involved in the development of novel endovascular devices. To address lethal vascular injuries on the battlefield and after civilian trauma, Dr. Tillman developed a novel magnetic sensor positioned, retrievable stent device (Rescue Stent) to allow virtually any emergency physician to rapidly stop bleeding until patients can reach proper vascular expertise and imaging. He currently directs a Department of Defense funded research study and recently demonstrated that the Rescue stent offers superior survival to current approaches in a model of lethal hemorrhage.

In addition, motivated by the critical shortage of available organs for transplant, he has also designed and developed a novel dual chambered stent to increase the number and quality of donor organs for transplant by improving organ perfusion during recovery, a project funded by the National Institutes of Health. Most recently his laboratory has been developing a large animal models of aortic aneurysms, examined the Rescue Stent to make elective open aortic surgery safer and developed a new platform to facilitate drug delivery to the spinal cord.

“The Wylie Scholar award allowed me to develop my research interests at a critical time of my research career. As a result of this funding, I was able to explore several novel high-risk projects which now have each blossomed into federally funded studies. Our progress to improve the care of patients has generated interest both at the national and international levels.”

2008 WYLIE SCHOLAR



Ulka Sachdev, MD

Associate Professor of Surgery,
University of Pittsburgh
Chief of Vascular Services.
Magee Womens Hospital of UPMC

Dr. Sachdev's research involves understanding the mechanisms that promote blood vessel growth and developing new therapies for people suffering from peripheral arterial disease and critical limb ischemia. Often these patients are unable to undergo treatments to open blocked vessels and face amputation as a result. Her more recent research program focuses not only on new blood vessel growth but also on mechanisms by which the muscle tissue itself responds to the ischemic injury and promotes repair. Specifically, she is understanding how an inflammatory molecule called caspaet-1 initiates release of HMGB1, a nuclear protein that helps promote new blood vessel growth. Caspase-1 is present in the muscle cells and is protective in animal models of limb ischemia. Interestingly, similar protective effects of caspase-1 are also noted in liver tissue, and she is collaborating with other members of the department of surgery whose research focuses on liver disease.

Dr. Sachdev was able to successfully convert her K08 mentored clinical science award from the NHLBI to independent R01 funding in 2018, worth close to \$2 million. She has also been able to initiate a very exciting research project evaluating inflammation in varicose vein disease. In particular, she and her collaborators who have expertise in computational modeling have shown a unique pattern of inflammatory mediator expression in varicose veins. She was awarded an SVS Foundation award for this work and is pursuing research funding from the NIH to advance the work. Her total funding since the Wylie award was granted is over \$3 million.

"Since receiving the Wylie award, I have been able to obtain a Mentored Clinical Scientist Award through the NHLBI, which was matched by the SVS foundation and American college of surgeons. I was then able to transition to independent R01 funding from NHLBI to study mechanisms of HMGB1 release from ischemic muscle cells. I have also had the opportunity to expand my research focus to venous disease and received funding from SVS foundation to complete a pilot project on inflammation in varicose veins. The funding I received from the Wylie award was absolutely instrumental in propelling my research programs forward. In addition to research and clinical work, I continue to mentor medical students both locally and nationally through the SVS mentoring program and I always emphasize that my research success really started with funding through the Wylie program."

2007 WYLIE SCHOLAR



Matthew Eagleton, MD

Chief, Division of Vascular and
Endovascular Surgery and
Co-Director, Fireman Vascular Center,
Massachusetts General Hospital
Professor, Harvard Medical School

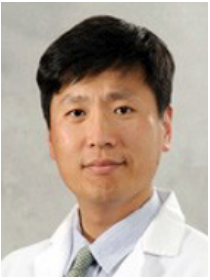
Dr. Eagleton's initial interests when receiving his award was to investigate the processes leading to the development of an aortic aneurysm, a potentially fatal bulge or ballooning of the main artery leading from the heart to lower portions of the body. Currently, the only available treatment for aortic aneurysm disease is surgical repair. Dr. Eagleton's goal is to develop a drug therapy that will limit the growth of an aneurysm or prevent it from forming.

Since that time, Dr. Eagleton's interest has altered with much of his focus on the development of technology and the application of this technology towards the treatment of aortic and vascular disease. Dr. Eagleton is the sponsor and principal investigator on several Investigation Device Exemption studies evaluating the use of branched and fenestrated aortic endografts to treat complex aortic pathology. In addition to the above research, Dr. Eagleton is involved in the development and commercialization of an imaging and navigation system to allow the performance of endovascular procedures without the use of ionizing radiation. Dr. Eagleton serves as the Director of the Scientific Advisory Board for Centerline Biomedical, who recently received 510K approval from the FDA for this technology.

Dr. Eagleton's Wylie award led to the opportunity for several leadership positions including becoming Chief of the Division of Vascular and Endovascular Surgery and the Co-Director of the Fireman Vascular Center at the Massachusetts General Hospital. In addition, he currently serves as the Vice-President of the Society for Vascular Surgery.

"One of the greatest assets of this award is the opportunity to meet and share ideas with several of my peers with whom I might not have done so previously. These interactions have helped fuel ideas that contributed to hypothesis development and establishment of clinical and translational research programs. I have received about \$6.8 million in research funding since the Wylie award."

2006 WYLIE SCHOLAR



Eric Choi, MD, FACS

Vice Chairman, Department of Surgery
St. Joseph's Health, Paterson NJ

Dr. Choi is investigating ways to grow new blood vessels as a therapy for treating critical limb ischemia (CLI), in which legs and feet do not receive blood because of severe blockage in the arteries and amputation can result.

Dr. Choi's research involves vein and artery complications in patients undergoing dialysis due to kidney failure. Dialysis requires a surgically-created artery-to-vein direct connection in the patient's arm or leg. This artificial circuit often fails due to abnormal scarring and thickening of the lining of the vein that receives the blood from the artery, and must be surgically repaired. Dr. Choi is researching the cellular and molecular mechanism that causes this abnormality, a significant step in developing new treatments to prevent this vascular problem.

Experts are becoming increasingly concerned about the growing number of people in their 20s and 30s coping with Type 2 diabetes. The longer people live with diabetes, the more likely they are to develop complications such as high blood pressure, high cholesterol, kidney failure, blindness and lack of blood flow to the legs that can lead to amputation.

"It's alarming how many young adults are on the verge of amputation," stated Dr. Choi. "About 20% of the amputations that we did last year were in patients 45 or under." Dr. Choi does everything in his power to save a limb.

2005 WYLIE SCHOLAR



Rajabrata Sarkar, MD, PhD

Division Head, Vascular Surgery
Barbara Baur Dunlap Professor of Surgery
& Physiology
University of Maryland

Dr. Sarkar is an expert in treating blood vessel disorders and a nationally known researcher in blood vessel growth and development. He is investigating the genetic mechanisms regulating the growth of new arteries and ways to prevent damage from blood clots in the veins. He is also studying how certain risk factors, including smoking, diabetes, high cholesterol, high blood pressure—all prevalent among Americans today—prohibit that growth of new vessels.

Another focus of his research is how and why blood clots in veins fail to resolve in many people, leading to poor circulation. "We have identified key genes and proteins that help the body resolve clots, and we are targeting drug therapy to these genes with the goal of finding new treatments for the millions of people with deep vein thrombosis," says Dr. Sarkar.

Dr. Sarkar has also studied members of the armed forces with vascular problems and tissue damage due to blast injuries, and is investigating the use of gene therapy to stimulate the growth of arteries and capillaries damaged by traumatic injuries. Such research would not only benefit patients with traumatic injuries, but also help people with poor blood flow due to hardening of the arteries.

Dr. Sarkar was mentor to the recipient of the 2013 Wylie Scholar award, the late Dr. Thomas Monahan.

"The Wylie Scholar award allowed my laboratory to flourish and receive significant extramural funding from the NIH totaling \$1.8 million."

2004 WYLIE SCHOLAR



Michael Watkins, MD

Former Associate Professor of Surgery
Harvard University
Former Associate Director
Massachusetts General Hospital

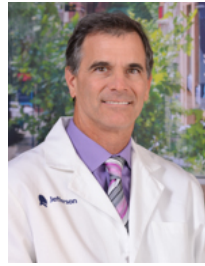
Dr. Watkins developed new ways to repair thoracic aortic aneurysms and addressed complications that occur after restoring blood flow in patients with critical limb ischemia. Surgery is the primary treatment for these but can cause spinal cord injury. Dr. Watkins' experimental treatments showed promise in understanding and potentially preventing the paralysis that may occur after surgery to repair aortic aneurysms.

Dr. Watkins also researched why tissues become damaged after blood flow is restored in patients with peripheral artery disease, which can cause chronic inflammation and even strokes. Dr. Watkins hoped to develop new treatments that will save patients' limbs without complications.

Since receiving the Wylie Scholar award, Dr. Watkins served as Director of the Vascular Research Laboratory at Massachusetts General Hospital, which received grants from the NIH and American Diabetes Association. Dr. Watkins was awarded the Joint Services Commendation from the Department of Defense, the Care and Compassion Award from the VA Boston Healthcare System, and teaching awards from the University of Rochester and Boston University. He was member of the Research Council of the Society of Vascular Surgery.

"My greatest success has been developing an exciting translational non-invasive tool with collaborators at the Massachusetts General Hospital to detect spinal cord injury prior to the onset of neurologic symptoms. This has significant clinical potential as a tool to help patients undergo vascular surgery procedures on the thoracoabdominal aorta safely. Since receiving the award I have obtained \$300,000 from the American Diabetes Association and \$2.4 million from the NIH."

2003 WYLIE SCHOLAR



Paul DiMuzio, MD, MBA, FACS

Professor of Surgery
Director, Division of Vascular and
Endovascular Surgery
Co-Director, Jefferson Vascular Center
Thomas Jefferson University

Dr. DiMuzio's research focus involved using adult stem cells and advanced tissue-engineering technology to create new blood vessels for bypass grafts. Although veins are usually used for bypass grafts, not all patients have enough of their own tissue to use in this way. Dr. DiMuzio has successfully created grafts in larger animals and is working to make this innovative treatment option available to people.

This treatment offers hope for patients with limited options, including those with coronary artery disease, peripheral artery disease and kidney disease that requires hemodialysis access. Dr. DiMuzio is currently working with industry partners to bring this work to clinical usage.

Since receiving the Wylie Scholar award, Dr. DiMuzio has received funding from the NIH, American Heart Association, American Vascular Association and industry. With multiple teaching and research awards, Dr. DiMuzio was listed in "Top Doctors" in Philadelphia Magazine in 2008, 2011, 2012 and 2013.

Dr. DiMuzio says persistence is a key attribute for anyone but particularly for vascular surgeons who often address situations that require them to work through complex problems faced by their patients.

"If I'm presented with a problem, I keep working at it until it's solved. Funding from the Wylie award legitimized the work I have performed using adult stem cells to create an artificial blood vessel ... this important springboard allowed me to obtain over \$1.3 million in funding from national organizations such as the NIH and the American Diabetes Association."

2002 WYLIE SCHOLAR



Alan Dardik, MD, PhD, FACS, DFSVS, FAHA

Professor of Surgery and of Cellular and Molecular Physiology; Vice Chair for Faculty Affairs, Yale University
Editor-in-Chief, JVS-Vascular Science

Dr. Alan Dardik is a surgeon-scientist who harnesses the power of molecular biology to achieve a modern understanding of vascular disease, and then use the basic science laboratory to ultimately benefit patients with vascular diseases.

Dr. Dardik trained at Yale, the University of Pennsylvania, and the Johns Hopkins Hospital before his appointment to the Yale faculty in 2001. He focuses his clinical practice on teaching at the VA Connecticut, where he was formerly the Chief of Vascular Surgery. He has won the C. Elton Cahow Award for Outstanding Faculty Teaching from Yale's Department of Surgery and the Faculty Teaching Award from St. Mary's Hospital. Dr. Dardik is also a Vice Chair of Yale's Department of Surgery where he is charged with Faculty Affairs, and he has served as Yale's Interim Division Chief of Vascular and Endovascular Surgery.

The Dardik lab studies the healing and function of blood vessels, fistulae and vessel patches that are used in patients having vascular surgery. The lab is trying to understand the fundamental molecular mechanisms by which vein graft adaptation and arteriovenous fistula maturation result in positive remodeling and successful adaptation to the arterial environment, yet often proceed, in the long-term, to neointimal hyperplasia and failure. The lab also studies novel methods to deliver stem cells to diabetic wounds. The laboratory is funded from the NIH as well as Yale's Department of Surgery.

Dr. Dardik currently serves as the Editor for the newly launched journal JVS-Vascular Science; he has served as the President of the New England Society for Vascular Surgery, the Association of VA Surgeons, as well as the International Society for Vascular Surgery. Dr. Dardik has run several national and international meetings, including the Society for Vascular Surgery Vascular Research Initiatives Conference, and has served on numerous peer review committees including review for the NIH, the VA, the American Heart Association, and Vascular Cures. Dr. Dardik has edited several textbooks including "Vascular Surgery: A Global Perspective" and "Stem cell therapy for vascular diseases."

"My two greatest successes were leveraging the Wylie Scholar award into over \$2 million dollars of NIH research funding, and using the stature of the award to gain a voice at the table when vascular research priorities are being determined at a national level by the SVS and the National Heart, Lung, and Blood Institute."

2001 WYLIE SCHOLAR



Edith Tzeng, MD, FACS

Chief of Vascular Surgery, VAPHCS
UPMC Chair and Professor of Surgery
Program Director, Vascular Surgery T32
Training Program, Division of Vascular
Surgery, University of Pittsburgh
UPMC Heart and Vascular Institute

Dr. Tzeng is focused on translational studies of vascular healing and wound healing, and is developing treatments to treat abnormal cell growth following angioplasty. Her research involves studying the effect of carbon monoxide and nitric oxide in preventing inflammation and injury after angioplasty procedures. Dr. Tzeng is studying ways to reduce inflammation, and has shown significant positive outcomes in the healing process in animals. The ultimate goal of her research is to bring these agents to clinical application.

Since receiving the Wylie Scholar award, Dr. Tzeng has established a vascular laboratory that has mentored dozens of researchers including 2008 Wylie Scholar Ulka Sachdev MD, 2010 Wylie Scholar Bryan Tillman MD and 2016 Scholar Ryan McEnaney MD. Dr. Tzeng, Dr. Sachdev and their team at the University of Pittsburgh discovered a novel method of how nuclear proteins may grow new blood vessels to restore blood flow.

Dr. Tzeng has been the Program Director of the VascTrain NIH T32 program at the University of Pittsburgh since 2010. Dr. Tzeng is on the Advisory Board of Vascular Cures. In 2018 she was named Chair of the American College of Surgeons Scientific Forum Committee and Chair of the Research Council for the Society for Vascular Surgery. She is also Treasurer for the Association for VA Surgeons. She has been a standing member of the NHLBI National Institute of Training Mechanisms study section since 2018 and a member of the AHA Strategically Focused Research Network Oversight Advisory Committee.

"My greatest achievement since being awarded the Wylie Scholarship is maintaining national funding in these very difficult times. In the 20 years since the award, I have had a total of \$17 million of funding between the American Heart Association, VA Merit Award, and the National Institutes of Health. My other achievement that I am very proud of is my mentorship role for three of my junior partners who have also been Wylie Scholars, helping them achieve the next level in their research careers."

1999 WYLIE SCHOLAR



Richard Powell, MD

Section Chief, Vascular Surgery Dartmouth-Hitchcock Medical Center
Professor of Surgery & Professor of Radiology
Geisel School of Medicine, Dartmouth

Dr. Powell is currently the principal investigator for multiple national stem cell therapy and plasmid gene therapy trials for the treatment of critical limb ischemia. He is also principal investigator for a study to evaluate adding a drug to standard of care treatment to reduce the incidence of clots and complications of the heart, brain or legs due to procedure(s) to improve the blood flow of legs.

Dr. Powell's research for the Wylie Scholar award laid the foundation for further studies in atherosclerosis, growing new blood vessels (angiogenesis), and re-narrowing of a blood vessel after angioplasty and stenting. His work involved investigating blood vessel dysfunction and growth to treat ischemic heart disease and critical limb ischemia.

Dr. Powell's Wylie Scholar award led to obtaining multiple NIH grants, building a vascular research laboratory at Dartmouth-Hitchcock Medical Center, and becoming Section Chief of Vascular Surgery.

"My greatest accomplishment was becoming section chief of vascular surgery at Dartmouth and facilitating the research careers of the faculty in our section. I have secured approximately \$8 million in additional funding since receiving the Wylie award."



1998 WYLIE SCHOLAR

Barry Rubin, MD, PhD, FACS, FRCSCMD

Professor of Surgery, University of Toronto
Chair & Program Medical Director, Peter Munk Cardiac Center
University Health Network

Dr. Rubin's academic research focuses on the way the heart responds to injury and the regulation of the immune response to infection. His research has been widely published in high impact journals. Dr. Rubin and his lab continue to investigate the role of prostaglandins in left ventricular remodeling after myocardial infarction, and the role of phospholipase A2 enzymes in the innate immune response to bacterial infection.

Since receiving the Wylie Scholar award, Dr. Rubin has received 19 years of continuous funding from the Canadian Institutes of Health Research and is the Senior Scientist at the Toronto General Research Institute. He is Chair and Program Medical Director of the Peter Munk Cardiac Centre.

Dr. Rubin was Head of Vascular Surgery at Toronto General Hospital from 2001 - 2010, and has been the Medical Director of the Peter Munk Cardiac Program at Toronto General Hospital since 2011. He is the Lead of the Provincial Alternate Funding Plan, which allocates \$270 million to 17 Academic Health Science Centres to support clinical service, teaching, research and innovation carried out by 8,000 academic physicians in Ontario. He is Chair of the Ontario New Technologies Planning Committee, which advises the Government of Ontario in regard to funding for new devices used in the management of patients with Vascular or Cardiac diseases, or Stroke.

Aligned with his evolving interest on the impact of clinician burnout, Dr. Rubin is co-Chair of the US National Academy of Medicine Clinician Wellbeing Implementation Working Group, is a member of the steering committee that is collaborating with the US Surgeon General to develop a national plan for health workforce wellbeing in the U.S, and is a Wellness Advisor to the Royal College of Physicians and Surgeons of Canada.

"There is no question that my greatest success is the 19 years of national level peer-reviewed funding for basic research that I have been able to attract. The seed money for this research was from the Wylie Scholar award. My total peer-reviewed research funding to date is approximately \$4.2 million."

1997 WYLIE SCHOLAR



Larry W. Kraiss, MD

Professor of Surgery
Vice-Chair for Discovery & Innovation
Medical Director, Non-invasive Vascular
Laboratory
University of Utah Medical Center

Dr. Larry Kraiss is a senior academic surgeon at the University of Utah. During his career, he performed basic science and clinical research in various vascular conditions. His Wylie Scholarship was focused on basic endothelial cell biology – work supported by his Wylie award was instrumental in achieving funding from the NIH to study translational control mechanisms in endothelial cells subjected to stress. His more recent research interests focus on hemodialysis access and frailty along with shared decision-making in vascular surgery. He is the Principal Investigator for the multicenter Frailty4Sight study funded by Vascular Cures. This study recently completed enrollment and is being analyzed.

Dr Kraiss served as Chief of Vascular Surgery at the University of Utah from 2003-2015 and Director of the Vascular Surgery Fellowship from 2003-2012. He is currently the Medical Director of Non-Invasive Vascular Laboratory for the University of Utah Hospitals & Clinics. He maintains a broad-based vascular surgery practice in Salt Lake City treating patients from throughout the Intermountain West.

“My two greatest successes were leveraging the Wylie Scholar award into over \$2 million dollars of NIH research funding, and using the stature of the award to gain a voice at the table when vascular research priorities are being determined at a national level by the Society for Vascular Surgery and the National Heart, Lung, and Blood Institute.”

1996 WYLIE SCHOLAR



Robert W. Thompson, MD

Professor of Surgery (Vascular Surgery),
Radiology, and Cell Biology and Physiology
Director of the Center for Thoracic
Outlet Syndrome
Washington University in St. Louis

Dr. Robert Thompson’s research was focused on the cellular and molecular mechanisms responsible for the growth of abdominal aortic aneurysms. Through the support of the Wylie Scholar award, he identified a group of enzymes that break down the connective tissue in the wall of the blood vessel. These findings advanced research to develop new treatments to suppress aneurysm growth, including the basis for a recently completed multicenter clinical trial.

In addition to his research, Dr. Thompson is an expert on thoracic outlet syndrome (TOS), a group of conditions caused by compression of nerves and blood vessels that can cause pain or weakness in the arm, numbness in the hands and fingers, and sudden swelling and discoloration of the arm. TOS is most common in active, otherwise healthy individuals and can be a cause of substantial disability.

Dr. Thompson directs the multidisciplinary Center for Thoracic Outlet Syndrome at Washington University in St. Louis, one of the only such centers in the country, and is a consulting vascular surgeon for many collegiate and professional sports teams.

His departmental leadership enabled mentorship of Dr. Mohamed Zayed, winner of the 2015 Wylie Scholar award and Dr. Sean English, winner of the 2017 award.

“The Wylie award was the most pivotal award I received early in my academic surgery career. It provided recognition of the research program I had proposed and gave me confidence that I was on the right track in gaining interest from funding sources. It supported the first steps of a laboratory research project that soon grew into a major NIH grant. That project spurred 15 years of continuous NIH funding with over \$5 million of grant support, and has allowed development toward a drug treatment for abdominal aortic aneurysms. It’s hard to be sure that any of that would have occurred if not for that crucial first funding stimulus and the recognition that was provided by the Wylie award, for which I will always be grateful.”