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 22 surgeon-scientists at 14 of the most highly regarded medical institutions in the United States and Canada. They have had exceptional achievements and many are presently 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 $3.5 million* in subsequent national research funding – a return on investment of 28 to 1*. This means more discoveries and innovations in patient care – transforming the lives of patients.

This would not have been possible without the Wylie Award and the important donors to Vascular Cures. The award is named in honor of Edwin J. Wylie, MD, a renowned pioneer in vascular surgery.

Since 2014, the Wylie Scholar award has been co-sponsored by the Society of Vascular Surgery (SVS). SVS seeks to advance excellence and innovation in vascular health through education, advocacy, research and public awareness.

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

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

1997 WYLIE SCHOLAR

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

Dr. Kraiss’ research involves gene expression by endothelial cells (EC) to understand how stress alters their function to allow development of vascular diseases such as atherosclerosis. Clinically, he is particularly interested in outcomes research in patients with vascular disease as well as use of non-invasive imaging by the vascular laboratory to assess the status of arteries and veins.

As a Wylie Scholar, Dr. Kraiss studied how endothelial cells that line the blood vessels respond to changes in their environment including blood clots, inflammation, and changes in blood flow. He identified the triggers of abnormal cell growth due to vascular disease and laid the groundwork for new drug treatments and innovative therapies.

Dr. Kraiss served as Chief of the Division of Vascular Surgery at the University of Utah for fifteen years and continues to maintain a broad-based vascular surgery practice. He was director of the vascular surgery fellowship program from 2003–2012 and twice received teaching awards from the University of Utah general surgery residents (2000 and 2006).

Dr. Kraiss was named the first Chair of the newly organized Society for Vascular Surgery (SVS) Quality Council and also serves a regular reviewer for research proposals submitted to the NIH, NASA, and the SVS. In addition, he is a recipient of the 2016 Vascular Cures Collaborative Patient-Centered Research grant award.

“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.”

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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 laboratory 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 has been the elected 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 7,000 academic physicians in Ontario. He is Chair of the Ontario New Technologies Planning Committee, which will advise the Government of Ontario in regard to funding for new devices used in the management of patients with Vascular or Cardiac diseases, or Stroke. He continues as a member of the Health Canada scientific advisory committee on medical devices used in the cardiovascular system, and is co-leading implementation of a new Health Information System at University Health Network.

"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."

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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. Dr. Powell is a participant in the Vascular Cures Research Network.

“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.”

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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 is on the Advisory Board of Vascular Cures. As of 2016 she has also been named Vice Chair of the American College of Surgeons Scientific Forum Committee, Chair of the Research and Education Committee for the Society for Vascular Surgery, and Chair of the Program Committee, Association for VA Surgeons.

“My greatest achievement since being awarded the Wylie Scholarship is maintaining national funding in these very difficult times. In the 16 years since the award, I have had a total of $15.9 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.”

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

Dr. Dardik focuses his clinical practice on teaching at the VA Connecticut, where he was formerly the Chief of the Vascular Surgery. Dr. Dardik 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 laboratory studies the healing and function of blood vessels, fistulae and vessel patches that are used in patients having vascular surgery. The laboratory 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 laboratory 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.

“My greatest success since receiving the Wylie Scholar award has been the recognition of my scientific ability by both the vascular surgery as well as the vascular biology communities. The vascular surgery world is small, so this was not very surprising. But recognition from the larger vascular biology community, with 2 NIH grants, was a mark of having made it to the big leagues. I have received about $9.8 million in grant money since the Wylie award.”

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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.”

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Dr. Watkins is working on developing new ways to repair thoracic aortic aneurysms, as well as addressing 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 show promise in understanding and potentially preventing the paralysis that may occur after surgery to repair aortic aneurysms.

Dr. Watkins is also researching 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 hopes to develop new treatments that will save patients’ limbs without complications.

Since receiving the Wylie Scholar award, Dr. Watkins has become Director of the Vascular Research Laboratory at Massachusetts General Hospital, which has received grants from the NIH and American Diabetes Association. Dr. Watkins has been 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. Recently, he was elected to 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.”

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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."

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.

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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 Investigational 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. He currently serves as the Program Committee Chair for the Society for Vascular Surgery’s Vascular Annual Meeting.

“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 had 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.”

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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 caspase-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. She 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.”

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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 radiofrequency 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 model of aortic aneurysms which will be important for surgical education and device testing.

“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.”

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**2010 WYLIE SCHOLAR**

Bryan Tillman, MD, PhD

Associate Professor

University of Pittsburgh

**2011 WYLIE SCHOLAR**

Gale Tang, MD

Assistant Professor

University of Washington

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.”

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2012 WYLIE SCHOLAR

Katherine Gallagher, MD
Associate Professor of Surgery, Vascular Division
Associate Professor of Microbiology and Immunology
University of Michigan

The goal of Dr. Gallagher’s research is to improve wound healing in patients with Type 2 diabetes, a severe problem that frequently leads to amputation. Although the concept that chronic inflammation is associated with impaired diabetic wound healing has been well-accepted, no approach to date has been clinically effective in restoring the normal wound healing cascade in Type 2 diabetic wounds. These findings will improve our understanding of the chronic inflammation associated with diabetic wounds and enable development of new therapeutics.

Since becoming a Wylie Scholar, Dr. Gallagher has received major funding from the NIH (R01, U01), American Diabetes Association, and Doris Duke Charitable Foundation. She most recently won the American Heart Association ATVB Werner Risau Early Career Investigator Award in Vascular Biology.

Dr. Gallagher is mentor to the 2019 Wylie Scholar Andrea Obi, MD.

“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.”

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2013 WYLIE SCHOLAR

Thomas Monahan, MD
1975-2019
Former Assistant Professor of Surgery University of Maryland

Vascular Cures mourns the loss of Dr. Monahan, a great contributor to vascular surgery through both his academic research and clinical practice.

The Wylie grant was awarded to support 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 was focusing 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.

“He 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

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Dr. Corriere’s research goal is to increase shared decision-making by improving participation of patients with peripheral arterial disease (PAD) in their own care. His particular focus is claudication, a type of PAD characterized by leg pain and impaired walking, which presents some of the most complicated decision-making challenges for patients and providers. Dr. Corriere has recognized that multiple barriers exist for providers working to make individualized treatment decisions.

Dr. Corriere seeks to identify factors that are important to patients for making treatment choices, and to develop tools to help providers understand a patient’s personal goals and values. This information can then be used to create an individualized plan consistent with what the patient wants to achieve. By improving communication between patients and providers, he hopes to achieve broader adoption of individualized approaches to PAD treatment resulting in better outcomes and improved patient satisfaction.

Dr. Corriere is the Principal Investigator of Vascular Cures’ Project Voice, an integrated technology platform designed to conduct patient-reported outcomes research and improve management of PAD for patients and clinicians. He serves on the Advisory Board for Vascular Cures, is Chair of the Clinical Research Committee for SVS and a member of the SVS Research Council.

"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."

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Dr. Zayed’s research is focused on the role of phospholipids in the progression of peripheral arterial disease in diabetics. Individuals with chronic diabetes – approximately 20 million Americans – develop a unique pattern of lower leg peripheral arterial disease, which dramatically increases their risk for poor healing and higher rates of amputations. It is presumed that accelerated arterial plaque development and impaired arterial collateral formation contribute to this, but the molecular processes causing it are not yet understood.

It is estimated that 60% of the more than 130,000 non-traumatic lower extremity amputations performed annually in the US are in diabetic patients. The impact of these amputations is extraordinary with substantial patient morbidity and mortality, disability, and high socio-economic costs estimated at $3.1 billion Medicare dollars annually. The Society for Vascular Surgery (SVS) Research Council has recommended intensive scientific investigation of potential adjunct therapies that may optimize lower extremity re-vascularization strategies in these vulnerable patient populations. Dr. Zayed’s research is in line with these goals and will provide the impetus for future translational studies to improve peripheral arterial patency and limb preservation in diabetic patients.

“The Wylie Fellowship was a huge 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. The Wylie funding allowed me to develop my research in diabetic peripheral arterial disease. As a result, we have been able to pursue additional grant support and novel NIH-funded clinical trials.”

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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.”

2017 WYLIE SCHOLAR

Sean English, MD
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 has identified a particular signaling molecule that plays an integral role in both AAA development and rupture. He intends 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 also hopes to demonstrate inflammation predictive of growth/rupture in an animal model that he developed. For the first time in patients, Dr. English’s research will also evaluate 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.”

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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 will study 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 has 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. This exciting work has been accepted for oral presentation at the American Heart Association Scientific Sessions conference in November 2019 and Dr. Byrne has been invited to contribute an Early Career Research event during this 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.”

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.”