

WYLIE SCHOLAR PROGRAM REPORT

July 2017

20 Years of Leadership



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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 20 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 \$3.3 million* in subsequent national research funding – a return on investment of **22 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

1996
WYLIE SCHOLAR



Robert Thompson, MD
*Vice-Chairman of Research,
 Department of Surgery
 Director of Vascular Surgery Research
 Laboratories
 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, and resulted in a patent for Dr. Thompson.

In addition to his research, Dr. Thompson is an expert on thoracic outlet syndrome (TOS), a group of conditions caused by compression of the 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 the consulting vascular surgeon for most major league baseball 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, 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 recognition that was provided by the Wylie award, for which I will always be grateful.”

RETURN ON INVESTMENT
33:1

1997
WYLIE SCHOLAR



Larry Kraiss, MD
*Professor of Surgery
 Vice-Chair for Discovery & Innovation
 Chief, Division of Vascular Surgery
 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 is Chief of the Division of Vascular Surgery at the University of Utah. He was director of the vascular surgery fellowship program at the University of Utah from 2003–2012. He maintains a broad-based vascular surgery practice at the University of Utah. Dr. Kraiss has twice received teaching awards from the University of Utah general surgery residents (2000 and 2006). He is a regular reviewer for research proposals submitted to the NIH, NASA, and the Society for Vascular Surgery.

Dr. Kraiss is on the Scientific Advisory Board of Vascular Cures and 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.”

RETURN ON INVESTMENT
13:1

1998
WYLIE SCHOLAR



Barry Rubin, MD, PhD

*Professor of Surgery
University of Toronto
Chair & Program Medical Director
Peter Munk Cardiac Center
Chair, Mt. Sinai Hospital 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 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 15 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 from 2001 – 2010 and has been the Chair and CEO of the UHN Academic Medical Organization since 2003, which manages the allocation of teaching, research, and innovation funds from the Ministry of Health to 750 physicians and represents 4,000 academic physicians on the Ontario Academic Medicine Steering Committee. He is also a member of the Health Canada scientific advisory committee on medical devices used in the cardiovascular system. Dr. Rubin is a member of the Scientific Advisory Board of Vascular Cures.

“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.”

**RETURN ON INVESTMENT
28:1**

1999
WYLIE SCHOLAR



Richard Powell, MD

*Section Chief, Vascular Surgery
Dartmouth-Hitchcock Medical Center*

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 was a participant in the Vascular Cures Research Network and is on the Scientific Advisory Board of Vascular Cures.

“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.”

**RETURN ON INVESTMENT
53:1**

2001
WYLIE SCHOLAR



Edith Tzeng, MD
*Professor of Surgery
 University of Pittsburgh
 Chief of Vascular Surgery
 VA Medical Center, Pittsburgh*

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 Scientific 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 \$12.8 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.”

RETURN ON INVESTMENT
85:1

2002
WYLIE SCHOLAR



Alan Dardik, MD, PhD
*Professor of Surgery, Vice Chair for
 Faculty Affairs
 Yale University
 Chief of Vascular Surgery
 VA Connecticut Healthcare Systems*

Dr. Dardik concentrates his clinical practice in vascular surgery at the VA Connecticut where he is the Chief of the Vascular Surgery section, focusing his practice on teaching of medical students, residents, and fellows.

Since receiving the Wylie Scholar award, Dr. Dardik has built an NIH-funded vascular laboratory at Yale University which includes surgery residents from multiple institutions and postdoctoral fellows from Japan, China and India. A world-renowned vascular surgeon-scientist, Dr. Dardik’s laboratory studies the molecular changes that occur when a vein graft fails, and how patches heal after angioplasty or venoplasty. He has been able to significantly increase the success rate of vein grafts in animals and is working to translate this into treatments for patients.

His recent accomplishments include being elected Fellow of the American Surgical Association (2015), Vice-President, Association of VA Surgeons (2017) and serving as President of the International Society for Vascular Surgery (2014-16). He is currently serving as Chair of the American College of Surgeons Advisory Council for Vascular Surgery, Chairman of the Society for Vascular Surgery Research Council, and on the Board of Directors, Society for Vascular Surgery. He co-authored a book on global practices in vascular 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 \$5.2 million in grant money since the Wylie award.”

RETURN ON INVESTMENT
35:1

2003
WYLIE SCHOLAR



Paul DiMuzio, MD

*Director, Division of Vascular and Endovascular Surgery
Director, Vascular Tissue Engineering & Stem Cell Research Laboratory
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.”

**RETURN ON INVESTMENT
9 : 1**

2004
WYLIE SCHOLAR



Michael Watkins, MD

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

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.”

**RETURN ON INVESTMENT
18 : 1**

2005
WYLIE SCHOLAR



Rajabrata Sarkar, MD, PhD

*Professor of Surgery
Chief of Vascular Surgery
University of Maryland Medical
Center*

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.

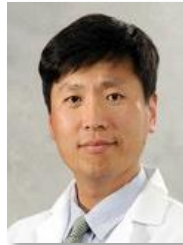
Dr. Sarkar has also studied members of the armed forces with vascular problems and tissue damage due to blast injuries, and is investigating the use of gene therapy to stimulate the growth of arteries and capillaries damaged by traumatic injuries. Such research would not only benefit patients with traumatic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

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

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

RETURN ON INVESTMENT
12:1

2006
WYLIE SCHOLAR



Eric Choi, MD

*Professor
Surgery Chief, Vascular and
Endovascular Surgery
Temple University
Co-Surgical Director, Temple Heart &
Vascular Institute*

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.

RETURN ON INVESTMENT
8:1

2007
WYLIE SCHOLAR



Matthew Eagleton, MD
Associate Professor, Vascular Surgery
and Biomedical Engineering
Director, Vascular Surgery Training
Programs
Cleveland Clinic

Dr. Eagleton is investigating the processes leading to the development of an abdominal 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.

Dr. Eagleton's specialty interests include endovascular and open surgery for complex aortic disease, aneurysm pathogenesis, pediatric and congenital vascular disease and vessel wall matrix remodeling.

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 research related to engineering stent graft design and investigating alternate methods of intraoperative imaging. Dr. Eagleton's research funding sources include industry partners and private donors.

"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."

RETURN ON INVESTMENT
45:1

2008
WYLIE SCHOLAR



Ulka Sachdev, MD
Associate Professor of Surgery
University of Pittsburgh

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.

Dr. Sachdev, 2001 Wylie Scholar Edith Tzeng, MD, and their team at the University of Pittsburgh discovered that the nuclear protein HMGB1 is released when the blood supply is limited or obstructed, and may help initiate new blood vessel growth. By understanding how to grow new blood vessels to restore blood flow, they plan to develop new treatments that reduce the incidence of gangrene, amputations and death in patients who cannot get a bypass or stent.

Dr. Sachdev is in the fifth year of her K08 award from the NIH with a matching grant from the SVS. Her recent R01 submission to the NIH/NHLBI (2017) has received a score within the funding range.

"Since receiving the Wylie award, I have been able to obtain a Mentored Clinical Scientist Award through the NHLBI, which has been matched by the SVS/ACS. Certainly, I would not have qualified for this funding without the preliminary data that was supported by my Wylie award. 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. The amount of research funding I have received is about \$1.1 million."

RETURN ON INVESTMENT
7:1

2010
WYLIE SCHOLAR



Bryan Tillman, MD, PhD

Assistant Professor
University of Pittsburgh

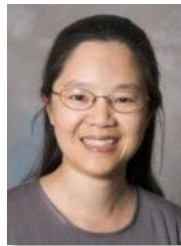
Dr. Tillman’s early research investigated how a particular type of stem cell in the blood leads to recurrent blockage after a stent or bypass graft. These blockages result in the failure of over half of all vascular interventions in less than five years and are a major cause of additional procedures, limb loss and mortality among cardiac, vascular and dialysis patients.

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 to allow virtually any emergency physician to rapidly stop bleeding until patients can reach proper vascular expertise and imaging. He currently directs a \$1.8 million Department of Defense funded research study of this RESCUE stent. 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.

“The Wylie Scholar award allowed me to explore a new hypothesis about how certain cells in the blood contribute to vascular graft and stent failure. As a result of this award, we have a better understanding of how this disease occurs and have developed several strategies to prevent this life and limb threatening problem. Thanks to the Wylie award, I have had the opportunity to collect essential preliminary data to support our applications for federal funding and support this important study.”

RETURN ON INVESTMENT
13:1

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.

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.

“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 \$252,000 of competitive internal and external funding since the award tenure.”

RETURN ON INVESTMENT
1.7:1

2012
WYLIE SCHOLAR



Katherine Gallagher, MD

Associate Professor of Surgery
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. She hopes to identify the molecular mechanisms including the role of stem cells that delay wound healing, in order to improve healing rates that have remained relatively unchanged for over 30 years. Her work will investigate the link between functional modifications of bone marrow cells and disordered immune cell (macrophage) function in wounds. These findings will improve our understanding of the chronic inflammation associated with diabetic wounds, and enable development of new therapeutics.

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.

Since becoming a Wylie Scholar Dr. Gallagher has received many awards, including the Women’s Leadership Committee award of the Society for Vascular Surgery (2012), the American College of Surgeons & Society for Vascular Surgery Foundation’s Mentored Clinical Scientist Research Career Development Award (2014), and the Doris Duke Charitable Foundation Clinical Scientist Development Award (2017).

“Due to the critical start-up funding from the Wylie Scholarship Program, we have data already supporting my hypothesis that epigenetic changes in the bone marrow predispose peripheral macrophages towards a M1 phenotype. Funding from the Wylie Scholarship Program has been instrumental in allowing me to gather preliminary data from mouse models and to use this data to secure \$2.1 million of much-needed funding from the National Institutes of Health, Society of Vascular Surgery and others.”

**RETURN ON INVESTMENT
14:1**

2013
WYLIE SCHOLAR



Thomas Monahan, MD

Assistant Professor of Surgery
University of Maryland

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

As a vascular surgeon, Dr. Monahan performs 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 is currently 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 has 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.

“Support from the Wylie Scholarship has allowed me the freedom to pursue MARCKS as a potential target for therapy to prevent intimal hyperplasia. This support is especially valuable in the very competitive present funding environment. This funding will allow me to generate data and transition to an independently funded surgeon-scientist.”

**RETURN ON INVESTMENT
14:1**

2014
WYLIE SCHOLAR



Matthew A. Corriere, MD, MS

Associate Professor of Surgery
University of Michigan

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 currently 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 is also Chair of the Project Voice advisory board.

"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."

RETURN ON INVESTMENT
2.5:1

2015
WYLIE SCHOLAR



Mohamed Zayed, MD, PhD

Assistant Professor of Surgery
Washington University in St. Louis
Staff Physician, Department of Surgery
St. Louis Veterans Affairs Health Care System

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."

RETURN ON INVESTMENT
3:1

2016
WYLIE SCHOLAR



Ryan McEnaney, MD

*Assistant Professor of Surgery
University of Pittsburgh School of
Medicine*

Dr. Ryan McEnaney received the 2016 Wylie Scholar Award for his research that may lead to pharmaceutical therapies to unblock arteries for patients unable to undergo surgery.

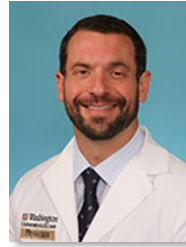
Diseases involving arterial blockages are the leading causes of death and disability in North America and Europe. Current therapy requires invasive methods of stenting or bypassing the blockages.

Dr. McEnaney's research seeks to understand the biochemical signaling mechanisms that allow collateral arteries to perceive these forces. Once these mechanisms are understood, it may be possible to develop medical therapies that encourage collateral arteries to grow much larger than they would have otherwise. This would enable better blood flow around the blocked large artery. This research may someday result in a non-surgical treatment to restore blood flow in patients with blocked arteries.

Dr. McEnaney's interests include peripheral vascular disease, aortic aneurysms, venous diseases, and vascular access. His scientific research focuses on the molecular biology and biochemistry of vascular adaptation to occlusive disease.

"I am honored to receive this award – a major milestone in my career as a surgeon and scientist. I am also humbled to now be listed among the distinguished group of prior recipients. It's a tremendous accomplishment to receive the award, as well as a great responsibility to carry on its tradition of excellence. I thank the review committee for granting me this opportunity."

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."