Time matters when it comes to vascular disease. Traditional medical research takes too long, costs too much and patients cannot wait. The Vascular Cures Research Network (VCRN) is a collaboration of world-class surgeons and scientists from 10 medical centers whose research is driven by the urgent and unmet needs of their patients. By bringing together thousands of patients, major discoveries will be made in a few years instead of decades. These leaders will:

• Jointly design and conduct research to unite the best ideas
• Create the world’s first biobank of DNA and vascular tissue
• Build a powerful database of patient outcomes to connect the research results
• Share resources and data with researchers around the world.

Studies will be done to identify biomarkers that indicate which patients will have the best results from bypass surgery, angioplasty and stenting for peripheral artery disease. This will lead to the development of new tests, drugs and devices that are targeted to an individual's biology and will increase the odds of successful vascular healing after such procedures.

Vascular Cures' Scientific Advisory Board (SAB) members are leading the VCRN initiatives and several are renowned in the field of inflammation and biomarkers. Dr. Paul M. Ridker, the Eugene Braunwald Professor of Medicine at Harvard Medical School and Director of the Center for Cardiovascular Disease Prevention, is the co-inventor of the high sensitivity C-reactive protein test (hsCRP), now widely used to gauge inflammation in the blood vessels that may be an indicator of a greater risk of heart attack.

Dr. Charles Serhan, the Simon Gelman Professor of Anesthesia, Perioperative and Pain Medicine at Harvard Medical School and Brigham and Women’s Hospital, has recently discovered certain molecules called resolvins in the human body that are involved in controlling inflammation. This may ultimately lead to new treatments for diseases where chronic inflammation is thought to play a critical role, including cardiovascular disease, arthritis and even Alzheimer’s disease.

Through the Research Network, Vascular Cures is tapping the power of teamwork, relentlessly seeking to improve patient lives.
New Study Links Depression with Increased Risk of Peripheral Artery Disease

Depression can have a negative impact on our overall health and has now been linked with Peripheral Artery Disease, according to a study just published in the Journal of the American Heart Association. Peripheral Artery Disease (PAD) is a circulatory problem in which blood flow to the limbs is reduced due to narrowed arteries. It can result in extreme pain in the legs and feet and can even lead to amputation.

The study led by Marlene Grenon, MD, CM, a vascular surgeon at San Francisco VA Medical Center and assistant professor of surgery at UCSF and Beth Cohen, MD, MAS, assistant professor of medicine at UCSF analyzed data from 1,024 participants in the Heart and Soul Study, a study comprised of men and women with coronary artery disease who were followed for an average of approximately seven years. Drs. Grenon and Cohen discovered that there was an association between depression and PAD at baseline, and also that patients who were depressed at the beginning of the study were more likely to develop PAD by the end of the seven year period.

Further research is needed to determine if modifiable factors such as smoking and lack of exercise are associated with depression thus increasing the risk of PAD, or if people with PAD are more likely to be depressed due to pain and lack of mobility.

There is a growing body of research showing the importance of depression in both the development and progression of PAD and these findings reiterate the need for the medical community to be attentive to the mental health of their patients with, or at risk, for PAD. The study authors suggest that whatever the initial cause, lifestyle modifications such as being more physically active, eating better, quitting smoking and managing stress more effectively might potentially address symptoms of both PAD and depression.

Investing in Leaders for a Lifetime of Impact

Medical innovation is driven by talented people with a shared passion to change the world, and a sustained track record of accomplishment. For this reason, we invest in the development of promising young surgeon-scientists who combine their clinical practices with translational research—insuring that the real-world problems of patients are always the priority.

By doing so, they accelerate the development of new ways to revolutionize the diagnosis and treatment of vascular disease. But these early stage surgeons face a problem—they need to generate innovative research to attract research funding from the NIH. Vascular Cures provides the crucial funding needed to jumpstart their careers, enabling them to complete a critical research project that will be the key to follow-on funding and a lifetime of impact.

Our Wylie Scholar career development grants of $150,000 have supported 15 surgeon-scientists at 13 leading medical institutions in the United States and Canada. Their accomplishments are significant, their work is well-established, their results are invaluable and they have become world class leaders. For each $150,000 award, they generated an average of $2.8 million in subsequent national research funding—a return on investment of nearly 19 to 1!

This award was named in honor of Edwin J. Wylie, MD, pioneer in vascular surgery and Professor of Surgery at UCSF. Their work includes:

- Research to heal or grow new blood vessels
- Prevention of spinal cord injury following repair of aortic aneurysms
- Treatments to prevent damage from blood clots
- Drug therapies that slow or prevent the growth of aneurysms and eliminate the need for surgical repair
Faz K. Bashi, MD, is the CEO of Carrot Clinical, Inc., focusing on novel technology to improve patient care through intelligent information brokering that enables true clinical collaboration. He is a founding member and on the Board of Directors of HealthTech Capital, coordinator of the Angel Capital Association’s Life Sciences sector, and an active member of the Life Science Angels Committees for Medical Devices and for Biotechnology & Pharmaceuticals. Dr. Bashi also works as a consultant to Coleman Associates as a Deep Dive expert, coaching on workflow process improvement within the healthcare system.

Linda S. Cooperman, PhD brings genetics, clinical trial and medical device experience to Vascular Cures. She began her career as a clinical geneticist for Kaiser Permanente where she was instrumental in establishing one of the country’s first amniocentesis centers. Over the course of 27 years, Dr. Cooperman held a variety of senior management positions with a wide array of companies in the medical device industry, where she was responsible for pre-clinical testing, regulatory strategy, clinical trials, FDA product approvals, and quality control systems. Her track record includes devices with a broad range of clinical application including treatment of cardiac arrhythmias, blocked carotid arteries, venous insufficiency, coronary artery disease, and abdominal aortic aneurysm (AAA).

Allan W. May is Chairman of the Board of the Kauffman Foundation’s Angel Resource Institute, a nonprofit devoted to the promotion and study of angel investing. He is a founder of Life Science Angels, the largest angel organization in the U.S. focused solely on early stage medical device and life science start-ups, and comprised solely of high net worth individuals from the medical device or biotech fields. In 2011, Allan launched the Life Science Angel Network, a consortium of angel groups throughout the United States, which will focus on increasing the syndication and capitalization of highly vetted healthcare startups.

DIABETES AND VASCULAR DISEASE

Diabetes is skyrocketing in the US, due to obesity and the aging population. 25 million people are diabetic, and in 2010 almost 2 million new cases of diabetes were diagnosed in people 20 years or older. What’s worse, nearly 215,000 people younger than 20 years were diagnosed with diabetes that same year.

Cardiovascular disease is the leading cause of death for those who are diabetic, with complications including increased risk of heart disease, stroke, high blood pressure, kidney failure and amputation. Sores in the feet or legs that won’t heal are common, and may cause so much damage to tissue and bone that amputation becomes the only option. Every 20 seconds, someone in the world undergoes an amputation as a consequence of diabetes with a subsequent 5 year survival rate similar to advanced cancer.

The costs associated with diabetes are enormous, totaling $174 billion in 2007 alone. The need for durable solutions to diabetes related health problems is urgent.

“Those who are diabetic have a significant risk for vascular disease,” says Karen Talmadge, 2012 Chair-Elect, National Board, American Diabetes Association. “It is crucial to develop new treatments to improve vascular health, including growing new blood vessels for those whose circulation is compromised.”

Vascular Cures’ 2012 Wylie Scholar, Dr. Katherine Gallagher, Assistant Professor of Surgery at the University of Michigan, is investigating the role of stem cells and inflammation in diabetic wounds in order to design novel therapeutic agents. Stem cells from the bone marrow play a key role in healing. Dr. Gallagher is studying how diabetes can disorder these cells, impairing their function. Identifying these alterations will allow for the development of immune therapies targeting specific proteins involved in this process.

Since diabetes and vascular disease are so closely linked, Dr. Gallagher’s research has the potential to impact millions of patients and significantly improve their quality of life.
Young Afghani and Iraq war veterans are probably not expecting long-term threats to their vascular system. However, a growing number of soldiers have injuries in their legs or arms that present unique challenges for the surgeon. Interrupted blood supply can damage tissue beyond the area of injury itself and result in loss of function or even amputation.

A number of the Wylie Scholars have focused their research efforts on how to restore blood flow to tissue. This involves both the growth of new blood vessels and the enlargement of pre-existing blood vessels around the area of blockage or disruption. Identifying the factors that stimulate growth or enlargement of new blood vessels can lead to new therapies to restore normal function. This will not only help war veterans or others with traumatic injuries, but will help those with poor blood flow due to atherosclerosis or hardening of the arteries.

2005 Wylie Scholar Rajabrata Sarkar, MD, PhD and Chief of Vascular Surgery at the University of Maryland has investigated the use of gene therapy to stimulate the growth of arteries and capillaries of soldiers damaged by traumatic injuries. His recent efforts have centered on the development of innovative devices that can be inserted on the battlefield or in combat hospitals before a soldier arrives at a hospital or operating room and allow later operations to have a better chance of survival.

2011 Wylie Scholar Gale Tang, MD at the University of Washington is conducting research focused on creating new blood vessels to carry the blood that blocked arteries can no longer transport. By understanding the mechanisms that promote blood vessel growth, Tang hopes to develop new, non-surgical therapies, improving outcomes for hundreds of thousands of patients each year.

I was 21 years old and attending Syracuse University, when suddenly I couldn’t walk, my face blew up like a balloon and I had dangerously high blood pressure and a terrible headache. Doctors discovered that I had massive scar tissue built up in my arteries. After months of being in and out of the hospital and on medication that caused me to lose my hair and experience a seizure, I underwent 7 hours of aortic bypass surgery. I’m doing well now, but unfortunately live with the threat of it happening again.