

THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER

# Vascular Surgery Fellowship Program



## Delivering the highest-quality care

#### **About the Division**

The Division of Vascular Diseases and Surgery is one of nine specialty divisions within the Department of Surgery at The Ohio State University Wexner Medical Center.

Our division provides state-of-the-art vascular care to the citizenry of Ohio and surrounding states at the Richard M. Ross Heart Hospital and the affiliated healthcare facilities of the Ohio State Wexner Medical Center. We remain deeply engaged in the education and training of medical students, surgery residents and fellows while continuing our involvement in clinical outcomes and quality initiatives research and, more recently, expanding our faculty's efforts in vascular biology.

Ohio State Wexner Medical Center's heart and vascular experts offer the best care in central Ohio. No other hospitals or heart centers in central Ohio are ranked among the nation's best by *U.S. News & World Report* – only Ohio State.

Opened in 2004 and expanded in 2007, Ohio State's Richard M. Ross Heart Hospital is a 150-bed facility that combines the latest technology with patient-focused care to create the best possible healing environment. Each floor is dedicated to a specific service, such as cardiac surgery or vascular medicine. From diagnostic studies and routine care to implantation of lifesaving heart pumps, robot-assisted surgical procedures and heart transplants, the Ross Heart Hospital offers the full spectrum of heart and vascular care, including medications; vascular, valve and bypass surgery; pacemaker implants; coronary and vascular angioplasty and stents; arrhythmia surgery and ablation.

#### Mission

The mission of the Division of Vascular Diseases and Surgery is to deliver the highest quality of care to vascular patients throughout Ohio and the surrounding regions, to innovate in medicine through translational research and clinical outcomes studies, and to educate medical students, postgraduate trainees and vascular care providers.



#### **Patient Care**

We specialize in complete care for any vascular condition, from a patient's initial visit to diagnostic testing, endovascular treatments, open surgical procedures and most importantly, ongoing lifelong posttreatment care as needed. Ohio State's Comprehensive Wound Center at University Hospital East offers the latest treatment and technology for limb-threatening conditions. Faculty in our division see more than 7,800 outpatient visits and perform more than 1,500 major endovascular cases and open vascular procedures yearly. For ease of patient access, outpatients are seen in Columbus and also in outreach clinics throughout central Ohio. We are proud of our personalized approach to each and every person we care for and perennially have one of the highest patient satisfaction ratings in the medical center. Ultrasound testing is intimately involved in the diagnosis and treatment of most vascular problems. We have an Intersocietal Accreditation Commission-accredited vascular ultrasound lab that services the Ross Heart Hospital, University Hospital East and our Outpatient Care Upper Arlington clinic. Our vascular sonographers are experienced and perform tests of the highest quality, ensuring accurate and rapid diagnosis of conditions, with results immediately available to the physicians. Outpatient treatment of varicose veins and spider veins is done at our Total Vein Care office in Upper Arlington. We offer foam sclerotherapy, perforator ablation, phlebectomy, endovenous laser therapy, radiofrequency ablation, and other endovenous interventions in a comfortable, relaxing outpatient office environment. These procedures can be done for cosmetic improvement or to treat symptoms such as swelling, pain, heaviness or ulcers related to venous disease.





#### **Education**

The crown jewel of the division is our accredited Vascular Surgery fellowship, which has been in existence for 41 years, since 1978. This is a two-year fellowship, and qualified applicants have completed the requirements for certification in general surgery by the American Board of Surgery.

The division is responsible for the vascular education of Ohio State's medical students and surgical residents and is home to one of the oldest vascular surgery fellowships in the country. Graduates of our fellowship finish equipped to practice the full spectrum of vascular and endovascular surgery in a community or an academic setting. Eight faculty staff the vascular surgery clinical teaching service. As our fellowship evolves to follow the changing paradigms in vascular education, we have maintained a high-guality depth and breadth of experience for our general surgery residents, and the vascular surgery rotation remains a favorite among the residents. The service consists of a second-year fellow, a first-year fellow, a fourth-year senior general surgery resident, a junior resident, and one to three interns, as well as medical students and physician extenders. Most clinical activity occurs in the Ross Heart Hospital, University Hospital and The James Cancer Hospital, but service is also provided at University Hospital East and Nationwide Children's Hospital. With seven surgeons operating at the main campus and University Hospital East, there is ample operative experience for both of the fellows and all of the residents. There are three operating rooms dedicated to the vascular surgery service in the Ross Heart Hospital, with two newly constructed, state-of-the-art hybrid suites. Two other peripheral vascular GE Innova<sup>™</sup> suites can be used in the cath lab.

To prepare physicians to function as well-qualified, independent specialists in vascular surgery, the faculty is committed to the education of vascular surgery residents in basic science and vascular surgery as it relates to the specialty. We hope to instill in our trainees the essential elements of success for a career in vascular surgery, including honesty and integrity, objectivity, self-motivation, curiosity, timeliness, a sense of responsibility and a commitment to excellence established by the Accreditation Council for Graduate Medical Education (ACGME). Implicit in the educational goals of our program is the successful acquisition of the six general competencies adopted by the ACGME.

#### **Clinical Experience**

The strength of our fellowship is the tremendous depth and breadth of clinical material. We offer a comprehensive educational program in routine and complex vascular reconstructions using both open. endovascular, and hybrid techniques. We are a major referral site for complex vascular care throughout Ohio and surrounding states. The endovascular and open surgery experience is combined seamlessly throughout the fellowship experience, as in real-world practice. The experience covers the full range of vascular surgery including:

- Aortoiliac, femoropopliteal and tibial occlusive disease
- Cerebrovascular disease
- Thoracic, thoracoabdominal and abdominal aortic aneurysms and dissections
- Peripheral and visceral aneurysms
- Open mesenteric and renal revascularization
- Open venous reconstructions
- Management of outpatient venous diseases
- Endovascular aneurysm repair, including thoracic and fenestrated
- Tibial, mesenteric, renal and carotid interventions
- Percutaneous atherectomy, thrombectomy and pharmacomechanical and standard thrombolysis
- Percutaneous venous interventions including deep vein thrombosis (DVT) thrombolysis
- Thoracic outlet disease
- Spine exposure
- Dialysis access
- Pediatric vascular surgery
- Portal hypertension

While we are fully engaged in all progressive developments in endovascular surgery, the open surgical experience remains robust at Ohio State. Recent graduates have finished with 500-700 vascular operations and endovascular procedures in the defined categories. Fellows benefit from a faculty with a healthy age and experience range and diverse training backgrounds, ensuring exposure to multiple solutions to vascular problems.

Fellows also participate in the outpatient clinic one half day (minimum) per week to ensure continuity of care and familiarity with outpatient diseases, post-operative management, and preoperative risk stratification.

#### The Noninvasive Vascular Laboratory

The fellowship offers extensive experience in the noninvasive lab and requires active weekly participation not only in interpretation of studies but also in performance of sonography. An established vascular lab curriculum is followed. Registered Physician in Vascular Interpretation (RPVI) certification is obtained during the fellowship.





#### **Educational Conferences**

Every Monday from 7 to 9 a.m., clinical activity is suspended and our educational conferences take place. All faculty, fellows and on-service residents and students participate. Faculty and fellows rotate presenting topics following the Association of Program Directors in Vascular Surgery (APDVS) basic science and clinical curricula; the entire curriculum is covered over a two-year period. The morbidity and mortality (M&M) conference, interesting cases and preoperative case conference occur monthly. Quarterly, a vascular lab topics presentation and Vascular Quality Initiative (VQI) meeting are held. In addition, every Wednesday morning from 7 to 8 a.m., faculty-led teaching rounds are held, and once a month, the fellows spend an hour with a single faculty member devoted to discussion of advanced vascular topics. We have a monthly Aortic Center of Excellence meeting, where physicians in the Heart and Vascular Center meet and discuss care for patients with diseases of the aorta. Journal Club is held bimonthly at a faculty member's home on a rotating basis. Our division organizes and hosts the annual "Vascular Non-Invasive Testing Symposium" and "Controversies in Vascular Diseases" every fall, now in its 11th year. Fellows are given the opportunity to present at this regional conference. We also participate in General Surgery grand rounds and M&M conferences, and guarterly we host a visiting professor in vascular disease at our Mid-Ohio Endovascular Club. Visiting vascular specialists are also arranged to present at Heart and Vascular Center Grand Rounds twice annually and for the Luther Keith Visiting Professorship annually.

#### **Research Opportunities**

Each fellow is expected to submit an abstract for presentation at a regional or national meeting annually, followed by manuscript submission if appropriate. Ample opportunities are available in outcomes research, retrospective chart reviews and prospective trials run by our faculty. For those with a sincere interest, vascular biology research opportunities are available in the lab of Lian-Wang Guo, MS, PhD, and Bowen Wang, PhD, and dedicated time for basic research may be arranged on an individual basis.

#### Current prospective research trials include:

A 3:1 Randomized Trial Comparing the Boston Scientific RANGER<sup>™</sup> Paclitaxel Coated Balloon vs. Standard Balloon Angioplasty for the Treatment of Superficial Femoral Arteries (SFA) and Proximal Popliteal Arteries (PPA), to evaluate the safety and effectiveness of the Ranger Paclitaxel Coated Balloon for treating lesions located in the superficial femoral and proximal popliteal arteries (SFA/PPA) PI: Jean Starr, MD Sponsor: Boston Scientific ClinicalTrials.gov Identifier: NCT03064126

Barostim Therapy for Heart Failure (BeAT-HF), a trial to develop valid scientific evidence for safety and effectiveness of Baroreflex Activation Therapy with the Barostim Neo in subjects with heart failure PI: Jean Starr, MD Sponsor: CVRx, Inc ClinicalTrials.gov Identifier: NCT02627196

Best Endovascular vs. Best Surgical Therapy in Patients with Critical Limb Ischemia (BEST-CLI), a study to compare the effectiveness of best available surgical treatment with best available endovascular treatment in adults with critical limb ischemia PI: Jean Starr, MD Sponsor: National Institutes of Health (NIH), National Heart, Lung, & Blood Institute (NHLBI), Division of Cardiovascular Diseases ClinicalTrials.gov Identifier: NCT02060630

Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis (CREST-2), two independent multicenter, randomized, controlled trials of carotid endarterectomy and intensive medical management versus medical management alone and carotid artery stenting and intensive medical management versus medical management alone in patients with asymptomatic high-grade carotid stenosis PI: Jean Starr. MD

Sponsor: The National Institute of Neurological Disorders and Stroke (NINDS) ClinicalTrials.gov Identifier: NCT02089217

Carotid Revascularization and Medical Management for Asymptomatic Carotid Stenosis Trial -Hemodynamics (CREST-H), a trial aimed to determine whether cognitive impairment attributable to cerebral hemodynamic impairment in patients with high-grade asymptomatic carotid artery stenosis is reversible with restoration of flow PI: Jean Starr, MD Sponsor: The National Institute of Neurological Disorders and Stroke (NINDS) ClinicalTrials.gov Identifier: NCT03121209

CREST-2 Registry (C2R), a safety and quality registry of patients undergoing carotid artery stenting for symptomatic or asymptomatic carotid artery disease PI: Jean Starr, MD Sponsor: The University of Maryland ClinicalTrials.gov Identifier: NCT02240862

Patients Undergoing Vascular Surgery, a prospective, randomized, single arm trial evaluating the effectiveness of Prevena therapy on decreasing groin surgical site infections in obese patients who are undergoing vascular surgery PI: Jean Starr. MD Sponsor: The Ohio State University Division of Vascular Diseases and Surgery ClinicalTrials.gov Identifier: NCT01983215

improving outcomes in critical limb ischemia PI: Jean Starr, MD Sponsor: Vanderbilt University Medical Center ClinicalTrials.gov Identifier: NCT03085524

progression PI: Michael Go, MD

MicroRNA and Inflammatory Cytokines in Blood and CSF in TEVAR, a trial designed to discover novel drug targets that can be used for development of new pharmacological therapies to advance patient safety and eliminate paralysis after thoracic endovascular aneurysm repair PI: Hosam El Saved, MD

Effects of Prevena Therapy on Reduction of Groin Surgical Site Infection in Obese and/or Diabetic

The Impact of Diabetes on Revascularization (TIDE), a trial to investigate the mechanisms by which diabetes affects surgical and endovascular revascularization procedures with the long-term goal of

A Mathematical Model of Abdominal Aortic Aneurysm Progression, a trial to identify candidate biomarkers for abdominal aortic aneurysm growth and propose a mathematical model for aneurysm A Phase II Clinical Study of the Safety and Performance of the Treovance Stent-Graft with Navitel Delivery System for Patients with Infrarenal Abdominal Aortic Aneurysms, a trial to assess and evaluate the safety and efficacy of the Treovance Stent-Graft with Navitel Delivery System in patients with abdominal aortic aneurysms PI: Mounir Haurani, MD Sponsor: Bolton Medical, Inc. ClinicalTrials.gov Identifier: NCT02009644 Plasma and Platelet miRNA Signaling after Peripheral Vascular Interventions and Their Relationship to Intimal Hyperplasia and Arterial Re-Stenosis PI: Mounir Haurani, MD NIH Center for Accelerated Innovations-Cleveland Clinic (NCAI-CC), Pericelle: a nanoparticle based perivascular drug delivery system to prevent stenosis and failure in vascular reconstruction surgeries

Valiant Evo US Clinical Trial: a prospective, multicenter, pre-market, nonrandomized, single-arm trial utilizing Valiant Evo Thoracic Stent Graft System for patients with descending thoracic aortic aneurysms PI: Jean Starr, MD Sponsor: Medtronic Vascular ClinicalTrials.gov Identifier: NCT02652949

PI: K. Craig Kent, MD Sponsor: Cleveland Clinic

Zenith® TX2® Low Profile Thoracic Aortic Aneurysm Endovascular Graft Clinical Study, an extended study to collect confirmatory safety and effectiveness data on patients treated with the Zenith TX2 Low Profile Endovascular graft for descending thoracic aortic aneurysms or penetrating ulcers Pl: Jean Starr, MD Sponsor: Cook Incorporated ClinicalTrials.gov Identifier: NCT02471781



#### **Additional Information**

Scholarship has always been a point of emphasis in our division. In particular, Bhagwan Satiani, MD, MBA, (left) has written and presented extensively in the areas of the business of medicine, workforce issues, healthcare policy and administration and has become an acknowledged regional and national expert.

Clinically, we consistently enroll high numbers of patients in multicenter clinical trials and registries and have recently renewed our focus on outcomes research, especially utilizing the Vascular Quality Initiative database. Fellows are expected to participate in a hospital quality project each year during their training, and there are many ways to get involved.

Researcher Lian-Wang Guo, MS, PhD, (top right) is investigating the disease mechanisms dictated by epigenetic regulators in the vascular cells and lesions via ChIPseq/RNAseq and transgenic animal models. Dr. Guo has recently identified a molecular switch that, when pharmacologically turned off, halts the disease-prone cellular transition. This bromodomain and extra-terminal (BET) family of epigenetic "readers" couple with transcription factors to co-activate the expression of a select set of genes that in concert drive cell state transition. Dr. Guo is also exploiting the neuroprotective potential of the sigma-1 receptor chaperone in retinal neurodegeneration. With ongoing translational efforts, Dr. Guo hopes their research will ultimately lead to effective treatments for large populations who would otherwise develop flowobstructing vascular diseases or blindness.

Researcher Bowen Wang, PhD (bottom right), is investigating the lack of non-invasive therapeutic strategies to effectively prevent and reverse the development of vascular lesions such as restenosis and aneurysm. Dr. Wang is dedicated to utilizing an interdisciplinary approach to not only understand their etiologies, but also develop prototypes of effective therapeutics that can lead to future application in vascular patients.

### Faculty



### Timur Sarac, MD

Professor of Clinical Surgery Director, Division of Vascular Diseases and Surgery Director, Aortic Center Bachelor of Arts: Canisius College MD: SUNY at Buffalo Specialty Training: General surgery residency, University of Rochester; research fellowship, University of Rochester; fellowship in vascular surgery at University of Florida, endovascular fellowship at Texas Tech University Appointment: 2018 Specialty Interests: Complex aortic disease, thoracic and thoracoabdominal aortic aneurysm aneurysms Research Interests: Minimally invasive stents for thoracic and abdominal aortic aneurysms



### Hosam El Sayed, MBBCh, PhD

Associate Professor of Clinical Surgery Associate Program Director, Vascular Surgery Fellowship Program BS: University of Cairo, School of Medicine MD: University of Cairo, School of Medicine PhD: General surgery, University of Cairo, School of Medicine Specialty Training: General surgery residency, University of Cairo and The Ohio State University, Columbus, Ohio; vascular surgery fellow, Eastern Virginia Medical School Appointment: 2015

Specialty Interests: Complex aortic disease, limb salvage, complex endovascular interventions, complex vascular access procedures, minimally invasive venous interventions and noninvasive vascular lab diagnosis

Research Interests: Outcome clinical research, complex aortic endograft therapy for thoracic and abdominal aortic disease, endovascular lower extremity revascularization, evaluation and adoption of new technologies and therapies in vascular surgery



### Michael Go, MD

Associate Professor of Surgery

Medical Director, Vascular Diseases and Surgery at Ohio State University Hospital East Director, Critical Limb Ischemia

BS: Duke University, Durham, North Carolina, 1996

MD: University of Cincinnati, Cincinnati, Ohio, 2000

MS: The Ohio State University, Columbus, Ohio, 2005

Specialty Training: Residency in general surgery, The Ohio State University, Columbus, Ohio; fellowship in vascular surgery, University of Pittsburgh, Pittsburgh, Pennsylvania Appointment: 2008

Specialty Interests: General vascular surgery, endovascular surgery, limb salvage preservation

Research Interests: Endovascular surgery, stem cell research



### Lian-Wang Guo, MS, PhD

Associate Professor of Surgery BS: Xinjiang University, P.R. China MS: Shanghai Institute of Plant Physiology, Chinese Academy of Sciences PhD: Shanghai Institute of Plant Physiology, Chinese Academy of Sciences Appointment: 2017 Research Interests: Epigenetic mechanisms in vascular disease, neurodegeneration in the retina, translational drug delivery into the vasculature and eye

### Mounir Haurani, MD

Associate Professor of Clinical Surgery Director, Outpatient Vascular Lab Services School, Boston, Massachusetts Appointment: 2011

retrieval and placement and neointimal hyperplasia

### Kristine Orion, MD

Associate Professor of Clinical Surgery Director, Quality and Patient Safety BS: University of Hawaii at Manoa, Honolulu, Hawaii MD: University of Miami, Miami, Florida Specialty Training: Residency in general surgery, University of Iowa; vascular surgery fellowship at The Johns Hopkins Hospital, Baltimore, Maryland Appointment: 2019 Research Interests: Open thoracoabdominal aneurysm repair, thoracic outlet syndrome, patient quality and safety

### Bhagwan Satiani, MD, MBA

Professor of Clinical Surgery Undergraduate Degree: Shah Abdul Latif College, Mirpurkhas, Pakistan, 1964 MD: Dow Medical College, University of Karachi, Karachi, Pakistan, 1971 MBA: Franklin University, Columbus, Ohio, 2002 Specialty Training: General surgery residency and trauma fellowship, Emory University, Atlanta, Georgia; vascular surgery fellowship, The Ohio State University, Columbus. Ohio Appointment: 2004 Specialty Interests: Noninvasive vascular studies and diagnoses, healthcare economics, business aspects of medicine Research Interests: Medical economics









- BS: University of Michigan, Ann Arbor, Michigan, 1998
- MD: Wayne State University School of Medicine, Detroit, Michigan, 2002
- Specialty Training: Residency in general surgery, Henry Ford Hospital, Detroit, Michigan; research fellowship, Henry Ford Hospital, Detroit, Michigan; clinical and research fellowship in surgery, Massachusetts General Hospital and Harvard Medical

Specialty Interests: Aneurysms, carotid disease, venous obstructive disease, peripheral vascular disease, complex endovascular revascularization, IVC filter

Research Interests: Surgical education, clinical outcomes reactive oxygen species



### Jean Starr, MD

Professor of Clinical Surgery Program Director, Vascular Surgery Fellowship Program Medical Director, Endovascular Services BS: The Ohio State University, Columbus, Ohio, 1985 MD: The Ohio State University, Columbus, Ohio, 1989 Specialty Training: General surgery residency and vascular surgery fellowship, Cleveland Clinic, Cleveland, Ohio Appointment: 2004 Specialty Interests: Vascular and endovascular surgery, intervention procedures, thoracic and abdominal aneurysms Research Interests: Endovascular trials



### Patrick Vaccaro, MD, MBA

Professor of Clinical Surgery Luther M. Keith Professor of Surgery Medical Director of Perioperative Services, Ohio State Ross Heart Hospital BS: Yale University, New Haven, Connecticut, 1971 MD: University of Cincinnati, Cincinnati, Ohio, 1975 MBA: The Ohio State University Fisher College of Business, Columbus, Ohio, 2013 Specialty Training: General surgery residency, The Ohio State University, Columbus, Ohio; clinical fellowship in cardiothoracic surgery, Baylor College of Medicine, Houston, Texas Appointment: 2004 Specialty Interests: Vascular surgery, endovascular surgery, thoracic and abdominal aneurysms Research Interests: Clinical trials

### K. Craig Kent, MD



Dean, The Ohio State University College of Medicine Leslie H. and Abigail S. Wexner Dean's Chair in Medicine MD: University of California, San Francisco Specialty Training: General surgery residency, University of California, San Francisco; fellowship in vascular surgery, Brigham and Young Women's Hospital; endovascular fellowship, The Cleveland Clinic Research Interests: Stem cell drug delivery, tissue engineering and outcomes research



### Bowen Wang, PhD

#### Assistant Professor of Research

Bachelor of Medicine in Basic Medicine, Peking University, Health Science Center, Beijing, China

PhD: University of Wisconsin-Madison, PhD in Cellular and Molecular Pathology Research Interests: Restenosis, vascular injury, phenotypic switching, aneurysm, biomimetic medicine, nanomedicine

For an application or more information on the vascular training program, contact the address below. This division also participates in the ERAS registration program. Selected applicants will be invited for a personal interview.

### Dawn Sagle



**Residency Coordinator** Division Administrator 701 Prior Hall, 376 W. 10th Ave. Columbus, OH 43210 Phone: 614-293-8536; Fax: 614-293-8902 Dawn.Sagle@osumc.edu wexnermedical.osu.edu/departments/surgery/vascular

THE OHIO STATE UNIVERSITY WEXNER MEDICAL CENTER AND COLLEGE OF MEDICINE DIVISION OF VASCULAR DISEASES AND SURGERY

### Alumni List of Vascular Fellows

1984-1985 Benson Harvey, MD	2004
1987-1988 Alan Annenberg, MD	2005
1988-1989 William Finklemeier, MD	2006
1989-1990 Edward Rigdon, MD	2006
1989-1990 Douglas Massop, MD	2007
1990-1992 Matthew Lukens, MD	2008
1991-1993 John Horowitz, MD	2009
1992-1994 J. Chadwick Tober, MD	2010-
1993-1995 Deepak Gupta, MD	2011-2
1995-1996 George Geroulakos, MD	2012-
1996-1997 David Landau, MD	2013-
1997-1998 Stavros Kalliafas, MD	2014-
1998-1999 Norman Kumins, MD	2015-
1999-2000 Randy Irwin, MD	2016-
2000-2001 Dawn Salvatore, MD	2017-
2001-2002 Bart Chess, MD	2018-
2002-2003 Deepak Guttikonda, MD	2019-
2003-2004 David Finley, MD	

I-2005 John Foor, MD 5-2006 Kenneth Wright, MD 6-2007 Nnamdi Azie. MD 6-2007 Gregory Walker, MD 2009 Richard Fries, MD 8-2010 Siddharth Bhende, MD -2011 Maria Litzendorf, MD -2012 Joseph Habib, MD 2013 Alex Thors, MD -2014 Nicolas Mouawad. MD -2015 Loren Masterson, MD -2016 Babatunde Oriowo. MD -2017 Suzanne Siefert-Kool, MD -2018 Ghaleb Darwazeh, MD -2019 Daisy Chou, MD -2020 Jennifer Baker, MD -2021 Kara Hessel, MD

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