

## Tarsadia Foundation funding supports research using 3-D printing to model aneurysms and explore rupture risks



**Gary R. Duckwiler, MD**  
 Professor of Radiology  
 Chief of Interventional Neuroradiology  
 Director of Interventional Neuroradiology Fellowship Program  
 Co-Director of UCLA HHT Center of Excellence  
 Department of Radiological Sciences  
 David Geffen School of Medicine at UCLA

Unruptured intracranial aneurysms are frequently detected as incidental findings in patients undergoing computed tomography (CT) or magnetic resonance imaging (MRI) for other reasons. While physicians know that only a minority of these will rupture if left untreated, the often catastrophic consequences of hemorrhagic stroke from a ruptured intracranial aneurysm — including death and devastating disability — make knowledge of which aneurysms are likely to burst of great clinical importance.

“Many of these smaller, unruptured aneurysms that are detected incidentally may never cause a problem,” states Gary Duckwiler, MD, Professor and Chief of the Division of Interventional Neuroradiology (DINR) at Ronald Reagan UCLA Medical Center. “Treating all unruptured aneurysms would expose many patients to unnecessary risks.”

### **New research examines flow dynamics and biological factors**

Dr. Duckwiler is leading a team of researchers investigating how biological activity and flow dynamics at the aneurysm site can help determine the likelihood of a future rupture. A significant donation recently made by the Tarsadia Foundation to UCLA’s DINR Research Fund will help fund these investigations.

Using real patient data, Dr. Duckwiler’s group is creating models using 3-D printing of actual aneurysms and lining them with human endothelial cells to test what changes take place when they are subjected to simulated blood flow. Observing the changes, and knowing the clinical facts of these cases — which aneurysms remained stable over time, which ones enlarged, which unexpectedly ruptured — will help the researchers better understand factors affecting the course of an aneurysm.

Decisions on when to treat incidentally detected unruptured aneurysms are currently made based on known associations between aneurysm rupture and the size and growth of the aneurysm over time. The location and shape of aneurysms are also known to play a role. But even when accounting for these factors, and considering such general health and lifestyle factors as family history, blood pressure, smoking and alcohol use, the risk can be difficult to assess. “Sometimes very small aneurysms can rupture when risk factors would indicate that they would have a low probability of rupture,” states Dr. Duckwiler.

### **Donor supported research at UCLA Radiology**

Private donations like the Tarsadia Foundation gift help fill a need that is often not met by government grants, which are often available only to pursue avenues of inquiry that have already demonstrated a high degree of promise. “An area of study in its infancy — like our work on aneurysm flow dynamics — is extremely difficult to fund with government grants,” explains Dr. Duckwiler. “Without funding like that of the Tarsadia Foundation, such high-risk, high-reward research is often not possible.”



### **Tushar Patel’s Tarsadia Foundation Gift Helps Fund Aneurysm Research**

Tushar Patel is the founder and chairman of Tarsadia Investments, a privately held capital investment firm that manages approximately \$2 billion. Tarsadia invests in health care, financial service, life sciences, real estate and technology.

Born in India, Mr. Patel immigrated with his family, first to Zambia and then to the United States. He started working for his father at a very young age in the hospitality industry and immersed himself in all aspects of the business. He studied business at California State University, Fullerton and helped expand his family business in hospitality and real estate, and grow into an investment company with multiple areas of focus.

Through the Tarsadia Foundation, Mr. Patel supports the health and well-being of the community as well as education and economic empowerment for the underserved. Mr. Patel became interested in Dr. Duckwiler’s research in aneurysms because of his own health experiences. Mr. Patel hopes that the Tarsadia Foundation’s involvement can raise awareness of aneurysms and their potentially devastating consequences, help those suffering from aneurysms, provide education to patients and family members, and help Dr. Duckwiler and others improve aneurysm care and prevention.

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