Office of Technology Management
Stent that Prevents Endoleaks for Fusiform Aneurysms

**Background:**
Popliteal artery aneurysms are the most prevalent type of peripheral aneurysms. Diagnosis of popliteal aneurysms are critical because of the risks for thrombotic complications to the limb. Thus, the main goal of treatment is to prevent rupture. Currently, surgical options include an open surgery or the less invasive endovascular aneurysm repair (EVAR). Stent grafts placed through EVAR result in shorter hospital stays (1 versus 5 days) with similar success rates as open surgery and lower mortality rates.

Despite the clear benefits of EVAR, the main limitation are endoleaks where there is persistent blood flow to the aneurysm sac, external to the stent. Management of endoleaks is costly due to reinterventions through EVAR and open surgery if endoleaks continue. Considering that 10-30% of popliteal aneurysms treated with stents develop endoleaks, there is a strong need for a treatment for aneurysms that prevent endoleaks.

**Technology Description:**
A stent for popliteal fusiform aneurysms that prevents endoleaks has been developed. SPARTA is able to functionalize existing stents and initiates blood clotting within the aneurysm sac, creating a solid biological barrier that blocks all types of endoleaks. Fibrosis over the blood clot is also induced which results in a reduction in the size of the aneurysm. SPARTA consists of a nitinol frame (gold in figure below) supporting a lattice of silk sutures (blue). The silk sutures contain thrombogenic material that triggers the blood coagulation cascade. The nitinol frame is compressed into the sheath for deployment and once inside, expands to provide equal distribution of silk suture within the aneurysm sac. SPARTA has been designed for popliteal aneurysms but could be applied to other (non-brain) aneurysms as well.

![SPARTA Stent Diagram](image.png)

**Stage of Development:**
A prototype for popliteal fusiform aneurysms has been developed and we are seeking a partner to begin testing.

**Patents:**
PCT Application Pending

**Inventors:**
Dr. Eric Leuthardt et al., WU Department of Neurosurgery

**WU Reference Number:**
015969