



# Alabama Research Experiences for Undergraduates (ALREU)

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**Project Title:**

LTP Engineered Scaffolds for Vascular Tissue Regeneration

**Project Reference Code:**

ASU-Vig

**Hosting Institution:**

Alabama State University

**Hosting Institution Location:**

Montgomery, AL

**Project Description:**

Cardiovascular disease (CVD) is the no. 1 killer in the world, and is responsible for > 17.3 million deaths every year. Bypass surgery has been one of the most effective treatments for CVD, and helped patients live longer. Traditionally bypass surgery used the autologous vein, however, more recently artificial blood vessels have shown great potential in bypass surgery. Artificial blood vessel currently employs a number of scaffold materials and treatments that mimic the native blood vessel wall and help stimulate neovascularization and angiogenesis. Though various vascular grafts such as expanded polytetrafluoroethylene (ePTFE), poly(ethylene terephthalate) (Dacron) and polyurethane (PU), have been used in vascular surgery their application is limited in smaller diameter grafts (< 6 mm) due to thrombosis. There is a need to find an appropriate biodegradable material for fabrication of smaller diameter grafts.

In recent years, the application of Non-Thermal Plasma or Low Temperature Plasma (LTP) in biomedical research such as wound healing, angiogenesis, cancer treatment and as an antimicrobial is gaining usage. In the current project, small-diameter Vascular graft (4 mm) will be designed using different scaffold material and treated with LTP to enhance cell attachment leading to vascular regeneration and angiogenesis.

**Disciplines:**

Biology, Physics, Material engineering, Chemistry, Biomedical engineering

**Name of Mentor and contact information:**

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**Internship Coordinator/ HR manager:**

Ms. Lashaundria Lucas

The name and contact information of personnel at the hosting is provided for further assistance with questions regarding the hosting institution or the project.

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