Researchers at the University of South Florida have invented a patient specific implant for detecting tissue rejection. There are approximately 30,000 organ transplants conducted each year in the US alone, with over 670,000 completed since 1988. Survival rates after 1, 3, and 5 years are 96%, 85%, and 80% respectively across all solid organs. Rejection is a leading cause of graft failure among organ recipients. Today, the standard of care for detecting rejection relies upon surgical biopsy.

There are numerous disadvantages to relying on biopsy for organ rejection. The average biopsy costs between $3,000 and $10,000 each, with many required per patient. Tissue biopsies are often unreliable in early rejection and are usually only done if symptoms are present. Additionally, the results rely on the physician acquiring a random biopsy sample from the area where rejection is presumed to be taking place; which lends itself to inaccuracies. Furthermore, complications such as infections or bleeding are serious consequences.

Our scientists have created a minimally invasive implantable device for detecting rejection. This device allows for easier, more frequent testing; with the ability to detect rejection before symptoms occur. Furthermore, bleeding and infection will be virtually eliminated. The novelty of this test is that it is donor specific and is compatible with any donor organ or tissue. With the potential to diagnose rejection far earlier than biopsies, this makes the implant an effective monitoring system for rejection. In addition to organ transplantation, this device could be applied to many clinical scenarios where immunogenicity is of utmost concern.

**ADVANTAGES:**
- Patient specific
- Works with any tissue type
- Implantable and minimally invasive
- Early detection of rejection
- Detects cellular and humoral immune response

**Patient Specific Implant for Detecting Tissue Rejection and Immune Response**

*Depicts Antigen Specificity Demonstrated on Silicone Apparatus, According to an Embodiment of the Current Invention*