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A Multi-functional Nanostructured Bioactive Stent Prototype to Induce Closure of Cerebral Aneurysms and Pseudo-Aneurysms

A novel bioactive stent minimizes blood clot risk and promotes tissue growth for rapid, non-surgical treatment of cerebral aneurysms.

According to the National Institute of Neurological Disorders and Stroke, brain aneurysms can occur to anyone at any age. Aneurysms occur when a weak section of a blood vessel balloons out and fills with blood. These can burst and cause severe internal bleeding, nerve damage, or stroke. There are currently two methods of treating an aneurysm that has burst: clipping and coiling. Clipping, like the name suggests, requires a dangerous surgery to open the brain and expose the aneurysm which is then clipped shut with a small metal clip. Coiling involves threading a catheter through an artery to the site of the aneurysm, and once there, tiny platinum coils are released to block the leak and cause the blood to clot. The danger with coiling is the chance of forming unwanted blood clots in the cerebral artery.

Researchers at Purdue University have developed a bioactive stent that allows surgeons to quickly stop the bleeding without brain surgery or risk of unwanted clots. The stent is designed to attract biological cells to its surface where a special coating promotes tissue growth and healing. The stent is inserted at the aneurysm similarly to the coiling method where it attaches to the aneurysms neck and begins the healing process. By securely attaching to the artery, the risk of blood clots is minimized. This method allows surgeons to quickly treat and heal cerebral aneurysms, thereby saving thousands of lives each year.

Advantages:

-Attracts cells to quickly close aneurysm

Potential Applications:

-Medical/Healthcare

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Category
Materials Science & Nanotechnology/Biomedical & Bioinspired Materials

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-Medical devices

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Intellectual Property:

Provisional-Patent, 2011-10-06, United States | PCT-Patent, 2012-10-06, WO | NATL-Patent, 2012-10-06, Australia | NATL-Patent, 2012-10-06, European Patent | NATL-Patent, 2012-10-06, Canada | NATL-Patent, 2012-10-06, Japan | NATL-Patent, 2014-04-04, United States | CON-Patent, 2017-03-20, United States

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