

NJIT receives patent for new shunt to aid brain-injured patients

3 January 2012

NJIT Professor Gordon Thomas and NJIT Research Professor Reginald Farrow, both in the department of physics, and NJIT alumnus Sheng Liu, formerly a doctoral student of both researchers and now an engineer at a biotech company, were awarded a patent today for the NJIT SmartShunt, a unique device to help patients with brain injuries.

The patent, entitled "No Clog Shunt Using a Compact Fluid Drag Path" (US Patent Number 8,088,091), discloses a device that enables the non-invasive wireless monitoring of both the extremely slow flow of cerebrospinal fluid as well as tiny changes in pressure in a shunt that drains fluid out of the brain. Ordinary shunts are commonly used by patients suffering from severe excess pressure in the brain due to [hydrocephalus](#) or [brain injury](#).

"A serious problem with shunts is that they may malfunction or become obstructed. The symptoms include a severe headache, but can be confusing, particularly when patients are small children," said Thomas. Such uncertainty can lead to the performance of unnecessary and unpleasant surgical procedures or, alternatively, to the postponement of what could be life-saving medical interventions.

"The technology will enable patients and physicians to determine whether cerebrospinal [fluid flow](#) is in fact, impaired," added Farrow. The device will also allow those involved to determine better what medical procedures should be performed

The NJIT SmartShunt[®] includes a set of components that are geared toward reducing the potential for [shunt](#) obstruction. It is designed to have a lifetime of more than a decade because it needs no internal power. "The SmartShunt[®] will also be a valuable new tool for research into what extent diet, motion and medication of patients can improve the pressure and flow of the fluid in

the brain," Thomas added.

The NJIT team has been working on this device since September 2004 with grants from New Jersey Commission on Science and Technology and most recently from the National Institutes of Health.

Provided by New Jersey Institute of Technology

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