

## *Department of Neurological Surgery*

# **ROSA Robot Comes to Columbia Neurosurgery Department**

By Department Author, May 13, 2015



Have a look in one of our ORs while a neurosurgeon is operating, and you just might catch a glimpse of Rosa.

Rosa isn't a neurosurgeon, though. [ROSA](#) is a Robotized Surgical Assistant—the most advanced of its kind.

The ROSA robot now at [Columbia University Medical Center/New York Presbyterian Hospital](#) is one of only eleven in the United States. ROSA robots are also in use at hospitals in Canada, Europe, Asia, and the Middle East.

ROSA has two main parts, a computer “brain” and a robotic “arm.”

ROSA's computer system allows neurosurgeons like [Dr. Neil Feldstein](#), [Dr. Guy McKhann](#) and [Dr. Sameer Sheth](#) to make 3-D maps of a patient's brain. They can look at the 3-D images from any angle, and at any depth. It's kind of like having an incredibly precise, detailed GPS map. They use this image to mark the exact areas they need to reach. Then—just as importantly—they use the image to plan the best routes to the destinations.

After the planning stage is finished, it's time for surgery. ROSA's arm is designed to perform surgery with very small instruments—instruments as thin as a needle. With its range of motion and ability to assume different positions, the arm is made especially to mimic a human arm.

These features are especially helpful in a variety of surgeries, including [epilepsy](#) surgery. To precisely detect where seizures arise in a patient's brain, the neurosurgeon needs to place a series of very fine electrodes deep within the brain. The angle of approach is different for each electrode.

ROSA's computer “brain” and robotic “arm,” working together under the neurosurgeon's control, make this surgery much faster. That's something that patients really appreciate.

As [Dr. Feldstein](#) explains,

The Rosa robot is an extraordinary surgical tool that facilitates many complex neurological surgical procedures. It is especially useful in epilepsy surgeries. With the robot, we can greatly improve the speed and accuracy of the procedures. This will directly translate to shorter and less invasive procedures for our patients and thus hasten their care and recovery. The robot does not replace the surgeon, nor does it function independently of the surgeon. Its function is to aid the surgeon in performing intricate procedures in a safe and efficient fashion.

“The improved accuracy and shorter surgical times will be a tremendous improvement for patient safety and comfort,” agrees [Dr. Sheth](#).

ROSA is also useful in other operations at [CUMC/NYPH](#). The robot is especially useful in assisting with biopsies, [brain tumor surgeries](#), and [pediatric neurosurgery](#).

“As the first center in New York to implement this technology,” comments [Dr. McKhann](#), “we remain deeply committed to providing the latest cutting edge care for our patients, to maximize their outcomes and improve patient safety.”

We look forward to learning about all the doctors and patients at [CUMC/NYPH](#) who will benefit from ROSA. Welcome, ROSA!

Learn more about [Dr. Neil Feldstein](#) on his bio page [here](#).

Learn more about [Dr. Guy McKhann](#) on his bio page [here](#).

Learn more about [Dr. Sameer Sheth](#) on his bio page [here](#).

Image credit: © [Tatiana Shepeleva] / [Dollar Photo Club](#) (not an actual image of ROSA robot)

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