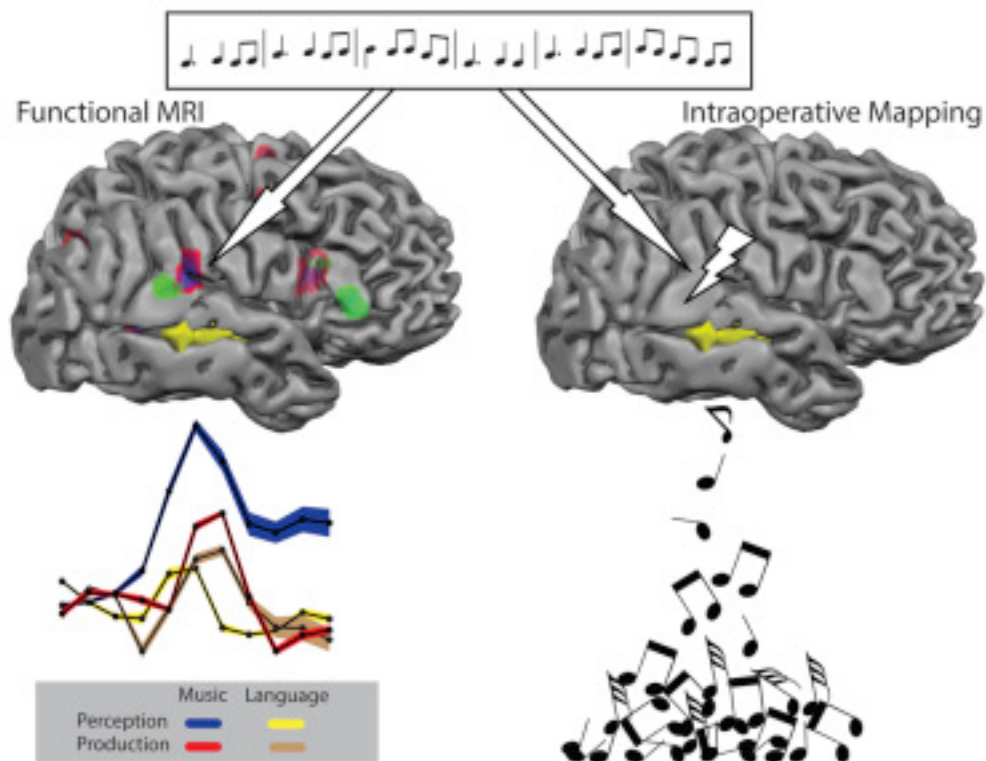


Man Plays Musical Instrument During a Surgery

Asking a patient to hum piano **melodies** and play an instrument while undergoing brain surgery may sound like a strange request from a doctor. However, that is **precisely** what a team of brain specialists, led by University of Rochester Medical Center's Web Pilcher, requested Dan Fabbio to do as they were removing his **tumor**.



Fabbio's

brain map (Image Credit: U of Rochester)

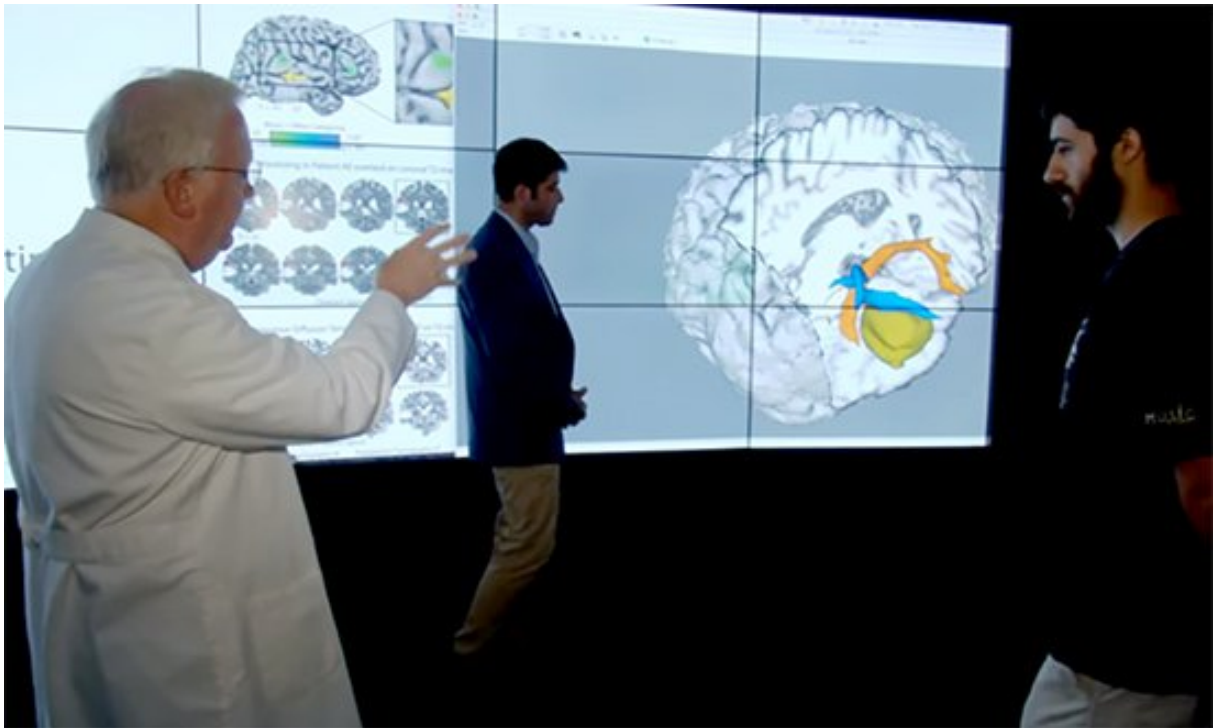
The chain of events that led to this **unprecedented** medical feat began in 2015, when the then 25-year-old professional musician was **diagnosed** with a low-grade brain tumor. Though the swelling was **benign**, it was located in the part of the brain known to be active when people listen to and make music. "Removing a tumor from the brain can have significant **consequences** depending upon its location," Pilcher says. "Both the tumor itself and the operation to remove it can damage tissue and **disrupt** communication between different parts of the brain."

Fabbio, therefore, feared the surgery would cause him to lose his musical ability, which was not just his means of **livelihood** but also his passion. To prevent that from happening, Pilcher and his **colleague** Brad Mahon, a **cognitive** neuroscientist,

spent six months mapping the functional and structural organization of the musician's brain.

They **devised** numerous tests, including asking Fabbio to listen to piano melodies and hum back the tunes during **MRI** scans. This enabled the physicians to **pinpoint** the region that is **crucial** for music and language processing and create a three-dimensional map of Fabbio's brain.

Though that was a great starting point, it was not a **foolproof** way to prevent Pilcher and his medical team from **inadvertently** impacting the area responsible for the young man's musical talent. The only way to do that was to keep the patient awake and ask him to hum piano melodies during the surgery so that the surgeons could identify the areas to avoid. To ensure Fabbio was accurately repeating the tunes being played to him, they asked Elizabeth Marvin, a professor of music theory at Rochester University's Eastman School of Music, to score each cognitive test in real-time.



Pilcher shows Fabbio his brain map (Photo Credit: everbetter.rochester.edu)

While the surgery went without **incident**, the real test came when Fabbio was asked play a song on his **saxophone**. The tune had been **modified** to ensure that it would not require too much **exertion** and cause harm to the stitches in the brain. "He played it **flawlessly**, and when he finished, the entire operating room **erupted** in applause," says Marvin. "It made you want to cry."

The researchers, who outlined the procedure in detail in the September 11, 2017 issue of *Current Biology*, say that a year after the **groundbreaking** surgery, Fabbio's musical abilities are as good as they were before the tumor formed. The young musician can once again hear melodies in everything — even his electric toothbrush!