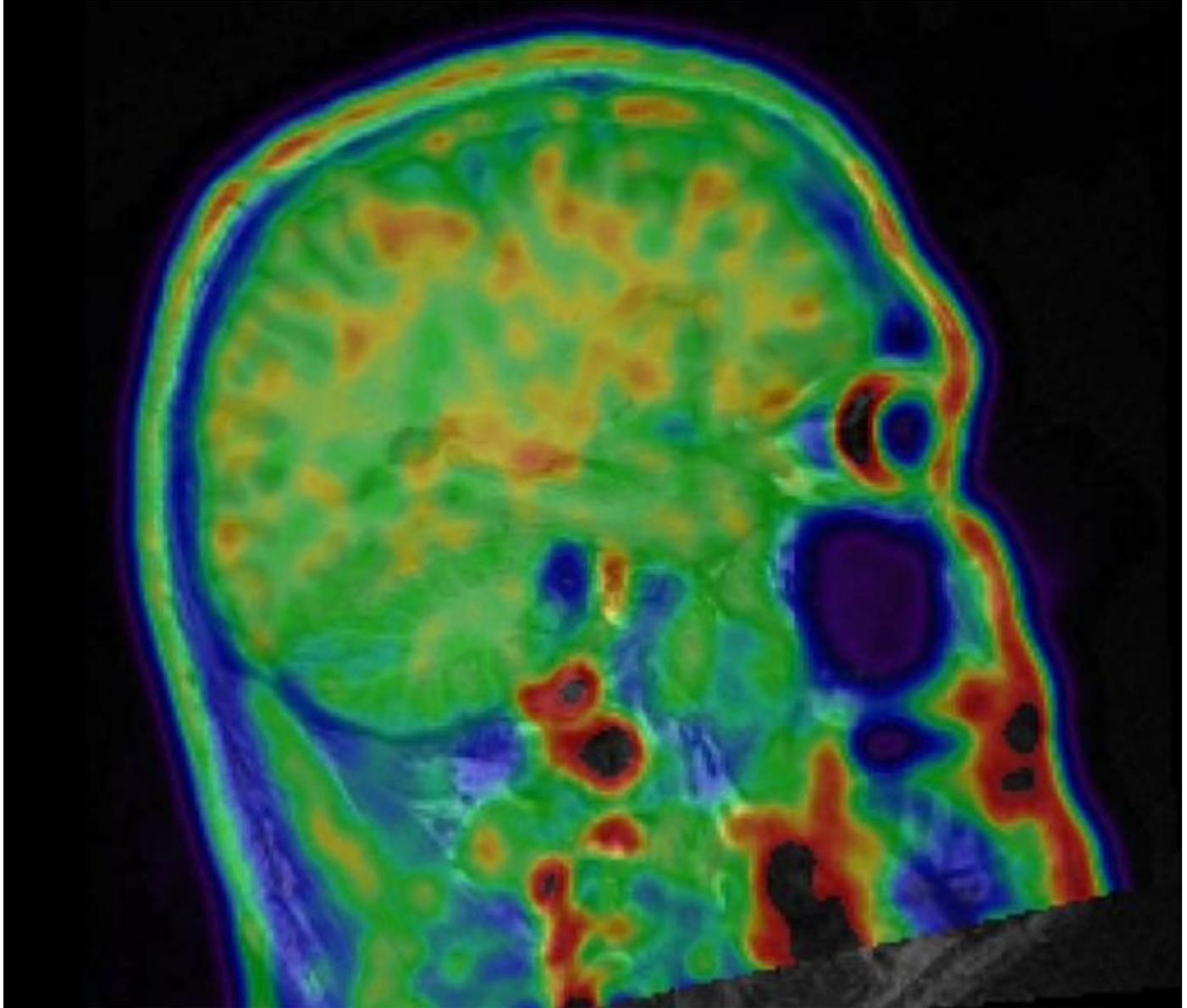


New brain scan a leap forward for CTE research



A brain scan image captured recently by researchers at Mount Sinai shows evidence of brain disease in a living former NFL football player. The subject of the image is 39 years old and is showing psychiatric symptoms consistent with CTE, the devastating illness afflicting an unknown number of former players.

BY NATHANIEL VINTON

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<http://www.nydailynews.com/sports/i-team/new-brain-scan-leap-cte-research-article-1.2636640>

ARLINGTON, Va. — The image is a splotchy rainbow of a PET-scan, showing abnormalities in the brain of a former NFL football player.

The unnamed player suffered head trauma in his career, and it shows. The scan was captured recently by New York City researchers who are racing to develop methods for detecting brain disease in living athletes and soldiers — a disease that currently can only be diagnosed through autopsy.

The brain scan, made possible with a new generation of radioactive pharmaceuticals, brings researchers a step closer to understanding chronic traumatic encephalopathy, or CTE, the devastating illness that afflicted Mike Webster, Junior Seau, and unknown numbers of athletes.

There's a lot we don't know about this anonymous football player. We don't know how many years he played in the NFL or what position he played or if he was a starter or a bench player, played offense or defense. But here's what we do know. He's 39 years of age and he sustained numerous concussions while playing football, and that the signs of brain trauma are fast emerging.

[NFL players experience low blood flow to brain: study](#)

“This particular subject had this really dramatic image,” says Samuel Gandy of Mount Sinai's Icahn School of Medicine in New York City, who presented the image Wednesday at the 6th Annual Traumatic Brain Injury Conference in Arlington, Va.

“He functions, runs a business, but his symptoms are primarily psychiatric,” Gandy told the Daily News after his presentation. “He's irritable and has trouble controlling rage.”

Gandy, who performed the research with his colleague Dara Dickstein, is one of a small number of scientists using cutting-edge ligands — substances that bind to receptors and become visible through brain imaging — to examine the brains of living at-risk athletes, including NFL and NHL players.

Gandy, who cautions that the results are preliminary, is currently recruiting pro hockey players from Canada to New York for his latest research. The findings of such studies could shape the payouts from the NFL's billion-dollar concussion settlement, which is currently a [subject of federal court appeals](#).

[Researchers looking at marijuana cousin to help NFL players](#)



Junior Seau's CTE was found after suicide, but researchers hope they'll soon be able to diagnose disease in living.

(OTTO GREULE JR/GETTY IMAGES)

The research relies on a new ligand called T807, which is not yet FDA-approved and has only been used in human research since 2014. Gandy and Dickstein published the photo and outlined their findings in a commentary in the latest issue of the journal *Current Research in Concussion*.

“It’s huge,” says Robert Stern of Boston University, the preeminent researcher in the hunt to diagnose CTE in living people. “We want to be able to detect it really early, so we can intervene, slow it down or stop it in its tracks.”

Stern, who is also using T807 in research funded by grants from the Department of Defense and National Institutes of Health, says the end goal is to detect CTE early in an athlete’s life and modify the disease progression before there’s too much brain damage.

“Because once there’s brain damage from the disease, you can’t get that tissue back,” he says.

[Lions LB DeAndre Levy: 'It's scary to think I may have CTE'](#)

Next month Stern and his colleagues will commence a \$16-million, 7-year study of CTE that will involve 50 investigators from 17 institutions. The study, which will examine 120 former NFL players and 60 former college football players, is the largest ever to seek methods of diagnosing CTE during life.

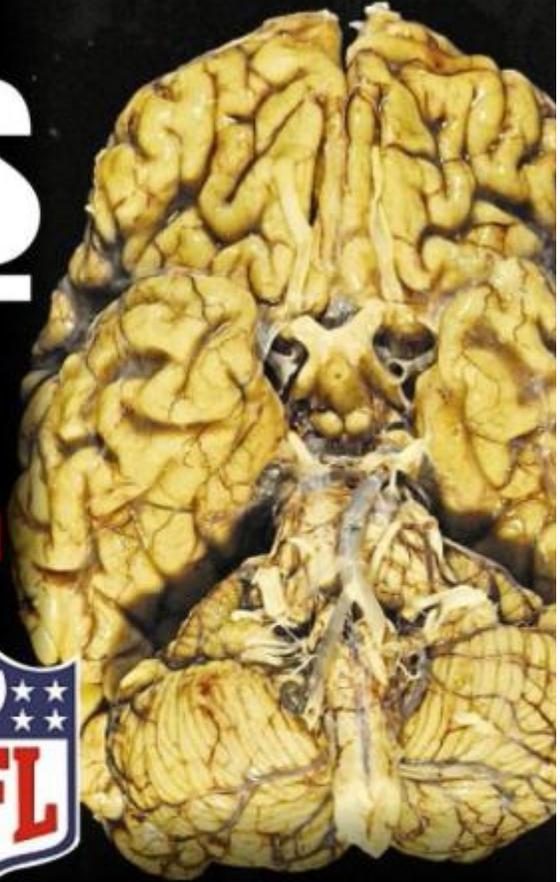
Developed by Siemens, T807 was acquired by Avid Pharmaceuticals, which provided it freely to Gandy and Dickstein, who have prepared a complete case report on the player whose brain is depicted in their striking brain scan, which was taken on Oct. 15, 2015. The scientists are withholding his identity while their report is under peer review.

In the image, the red-yellow splotches signal the presence of abnormal tau, the protein whose buildup leads to CTE. Stern and others have captured patchier images, but the Mount Sinai brain scan “outlined the celci very nicely,” says Gandy, describing a region of the brain where researchers have found abnormal tau deposits in deceased players with CTE.

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Front page of the New York Daily News for January 30, 2016.

(NEW YORK DAILY NEWS)

“It was different from anything I’ve ever seen with this ligand from our group or anyone else,” says Gandy. “It looked like it could be nothing else.”

Such research could ultimately have a profound impact on the way contact sports are played and run.

The NFL’s notorious efforts to stifle scientific discovery about football-related head trauma supposedly gave way to a new era in 2012, when the league pledged an [“unrestricted” \\$30 million gift](#) for brain research through the National Institute of Neurological Disorders and Stroke, a part of the NIH.

But late last year the league balked in funding the Stern-led study, which had been approved by an advisory council of top experts. This came after Stern filed an affidavit in the federal suit describing the disease, pointing out that many of the 76 deceased NFL players with CTE would not have qualified for awards under the terms of the settlement.

[Cowboys owner Jerry Jones: No link between CTE and NFL](#)

Despite the [NFL’s veto of Stern’s research](#), the NIH went forward and funded Stern’s project on its own, using \$16 million that the organization might have applied to something else before the NFL hesitated. On Wednesday, Stern declined to comment on the funding controversy, which drew a congressional investigation.

“What we learn from CTE will benefit our knowledge of Alzheimer’s disease and other neurodegenerative diseases,” says Stern.

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