

Scientist of the Week: Frederick Lepore

Lily Barback, Associate Editor



Every Thursday, Laboratory Equipment features a Scientist of the Week, chosen from the science industry's latest headlines. This week's scientist is Frederick Lepore from the [Robert Wood Johnson Medical School](#) [1]. He and a team studied [newly discovered photographs taken in 1955 of Einstein's brain and compared it to 85 typical brains, highlighting the unique features behind Einstein's genius](#) [2].

Q: What made you interested in studying images of Einstein's brain?

A: I live 3 blocks from the house in Princeton, NJ where Einstein resided until his death in 1955. In 1999 Sandra Witelson published an article about the exceptional brain of Einstein and I became interested in why we are so fascinated by Einstein's genius. While writing "Dissecting Genius ..." for the Dana Foundation in 2000, I had the opportunity to interview the pathologist, Thomas Harvey, who performed Einstein's autopsy and took photograph the specimen jars holding 180 or so tissue blocks of Einstein's brain. Since that time I have been trying to locate and study the photographs, tissue blocks, and microscope slides produced by Harvey in 1955.

Q: What are the future implications of your research and findings?

A: For now the major implication is whether the surface neuroanatomy of Einstein's brain provides any insight into his epochal genius. In our paper in Brain, we provide evidence of Einstein's extraordinary neuroanatomy. Neuroscience conventionally looks at "simple" nervous systems such as Aplysia with roughly 20,000 neurons. We

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departed from the “tried and true” (and successful) reductionist approach by going to the other end of the phylogenetic chain and studying the brain of one of the smartest humans who ever lived. Given our preliminary findings with Einstein’s brain, it is well worth pursuing further scientific examination of the brains of gifted individuals.

Q: What was the most surprising thing you found in your research?

A: Although Einstein’s brain was of average weight (1230 grams) for a 76 year old male, his prefrontal, somatosensory, primary motor, parietal, temporal and occipital cortices were clearly abnormal as compared to 85 normal human brains.

Q: What is the take home message of your research and results?

A: The brain of this pre-eminent genius was very different. Although the accuracy of this observation is irrefutable, we face an insurmountable “explanatory gap” if we attempt to use our neuroanatomical findings to account for the mind that envisioned the curvature of the universe, the absolute speed limit of light and $E=MC^2$.

Q: What new technologies did you use in your lab during your research?

A: The newest technology we used was digital photography with enlargement of digitized images.

Q: What is next for you and your research?

A: The next logical step would be to look at the connectome or white matter connections/pathways of Einstein’s brain. This would entail histologic examination of the 560+ microscope slides that the Harvey family donated to the National Museum of Health and Medicine. Another potential avenue of research would be a comparison of Einstein’s brain with the brains of other geniuses.

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<http://www.laboratoryequipment.com/news/2012/12/scientist-week-frederick-lepore>

Links:

[1] <http://rwjms.umdnj.edu/>

[2] <http://www.laboratoryequipment.com/news/2012/11/pics-einsteins-brain-yield-clues-his-genius>