LAMBDA NEUROSCIENCE FOUNDATION

ADVANCING BRAIN RESEARCH & STEM ENGAGMENT

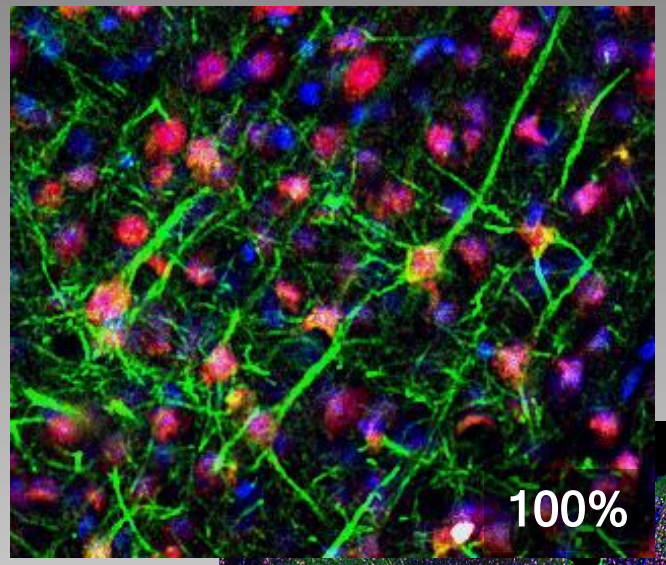
OUR CHAIRTABLE PURPOSE

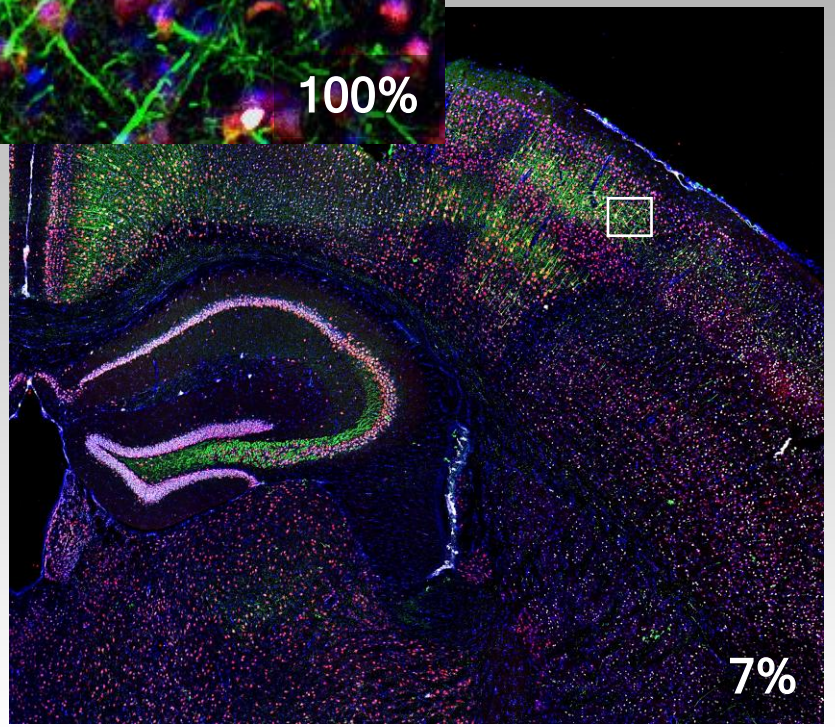
- Lambda Neuroscience Foundation (LNF) is a nonprofit that helps biomedical researchers expedite new neuroscience discoveries by supplying superior histology (microscopic tissue analysis) outsource service for free.

- Brain diseases like Autism, Altheimer's, stroke, and even brain cancer are studied by using mouse models. Researchers submit intact brains from these mice to LNF and they are processed to produce highly detailed digital images at sub-cellular resolution.

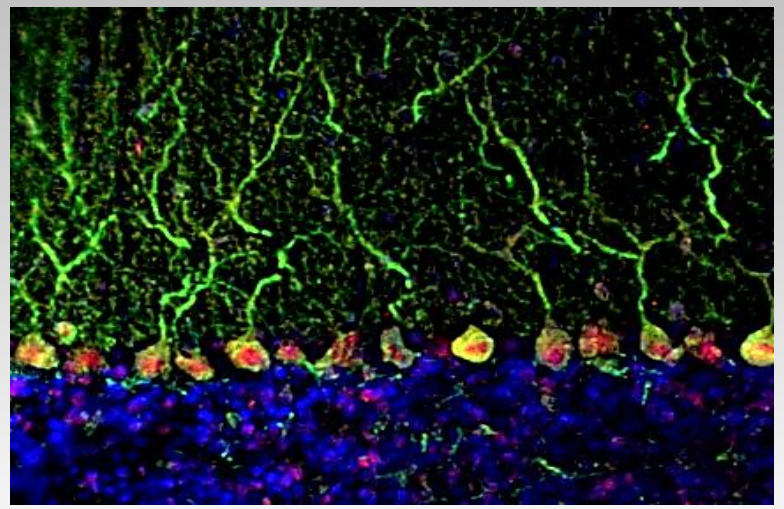
- This advanced microscopic analysis exceeds standard lab workflows and allows for novel insights into neurological disease progression, and new possible drug therapies, as researchers can visualize the disease in greater detail throughout the entire brain.

- The sole obligation of the researcher in exchange for free service is that all digital images produced by LNF must be added to our online, open-access database.



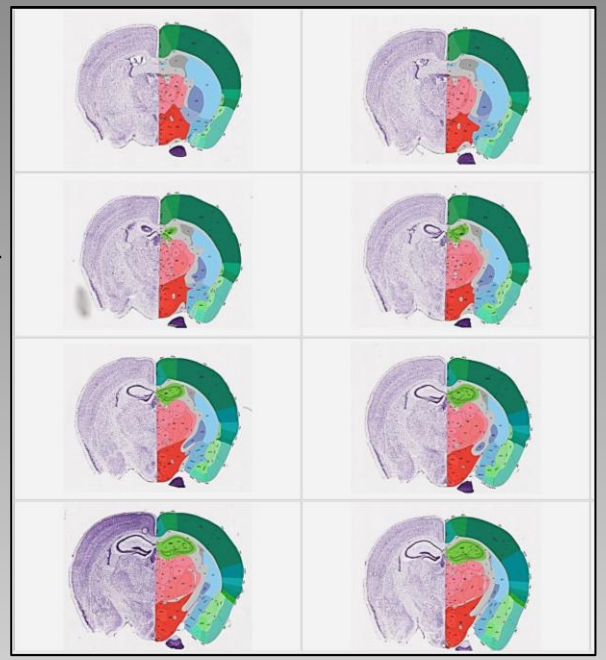


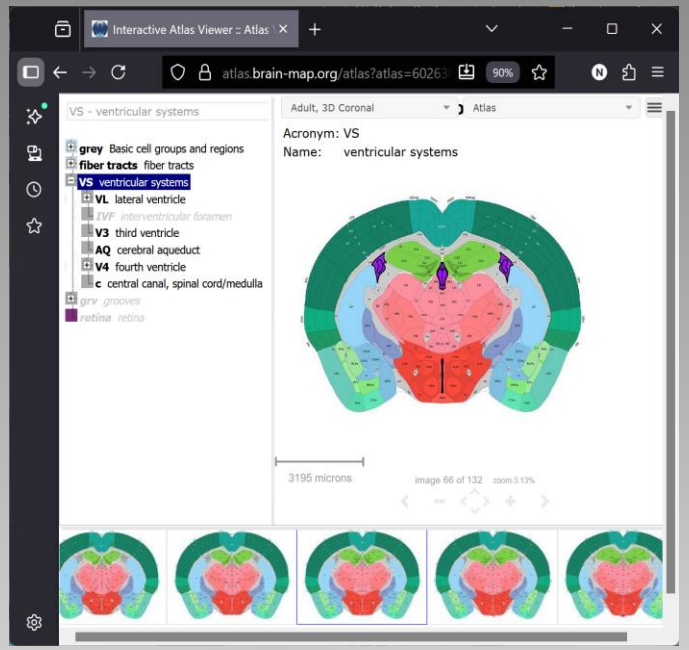
OUR COMMUNITY IMPACT



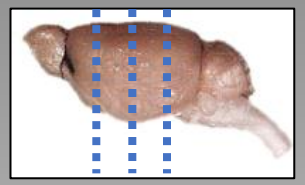
- In addition to advance neuroscience discoveries, an equally important goal of LNF is to advance public STEM education in an effort to demystify therapeutic discovery and inspire the next generation of scientists.
- LNF produces video “lab diaries” that document and narrate projects we are currently working on, as well as other virtual content describing the science basics of brain diseases and the theory behind our process microscopic analysis.
- We provide guided lab tours for middle schoolers, and hands-on lab experiences for high school students interested in a future career in biomedical sciences.
- LNF is unique because donor money funds real biomedical research, which in turn allows us to conduct our community outreach programs. Donors can easily access actual research images and other public content to directly see the work they helped pay for.

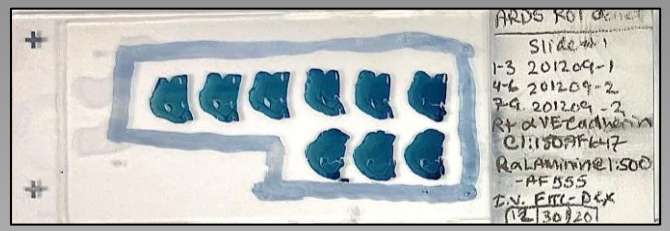
WHAT WE DO AT LAMBDA



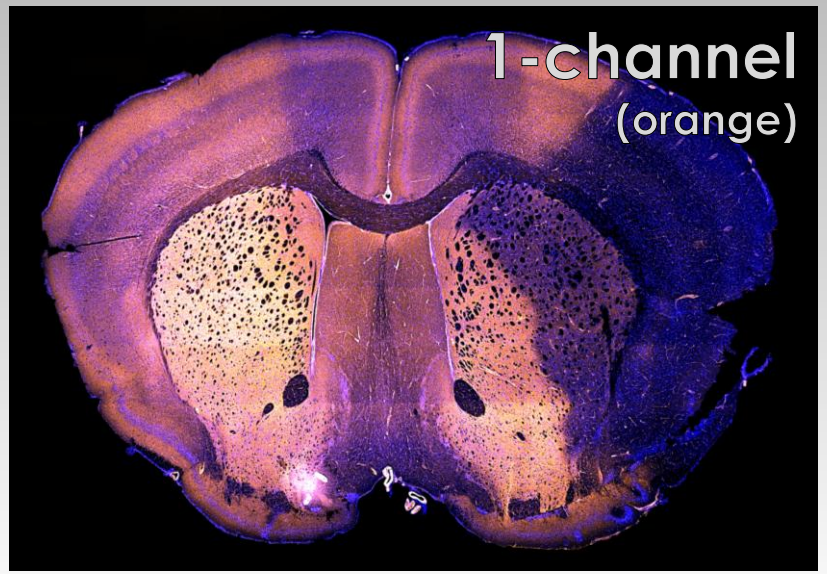


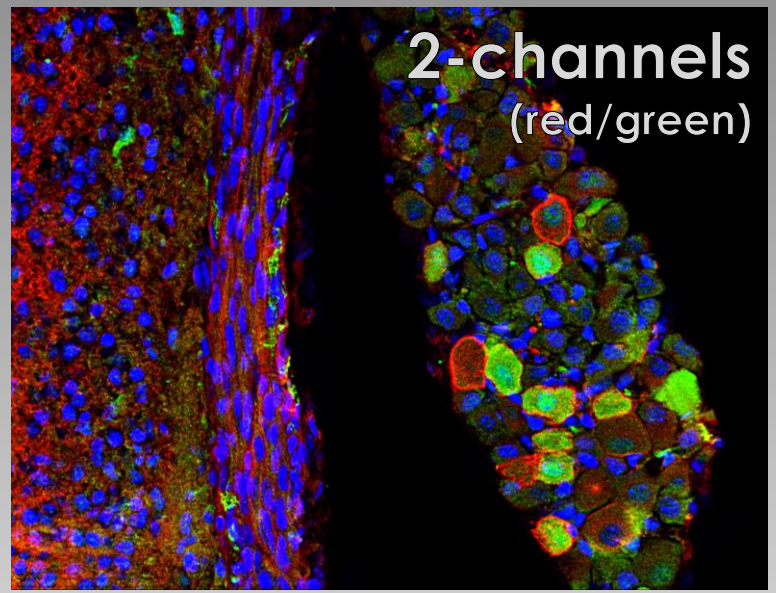
STANDARD LABORATORY WORKFLOW





- Brains are thinly sliced and attached to slides
- Brain sections are stained and imaged
- Analyze only a specific brain region (5% total)



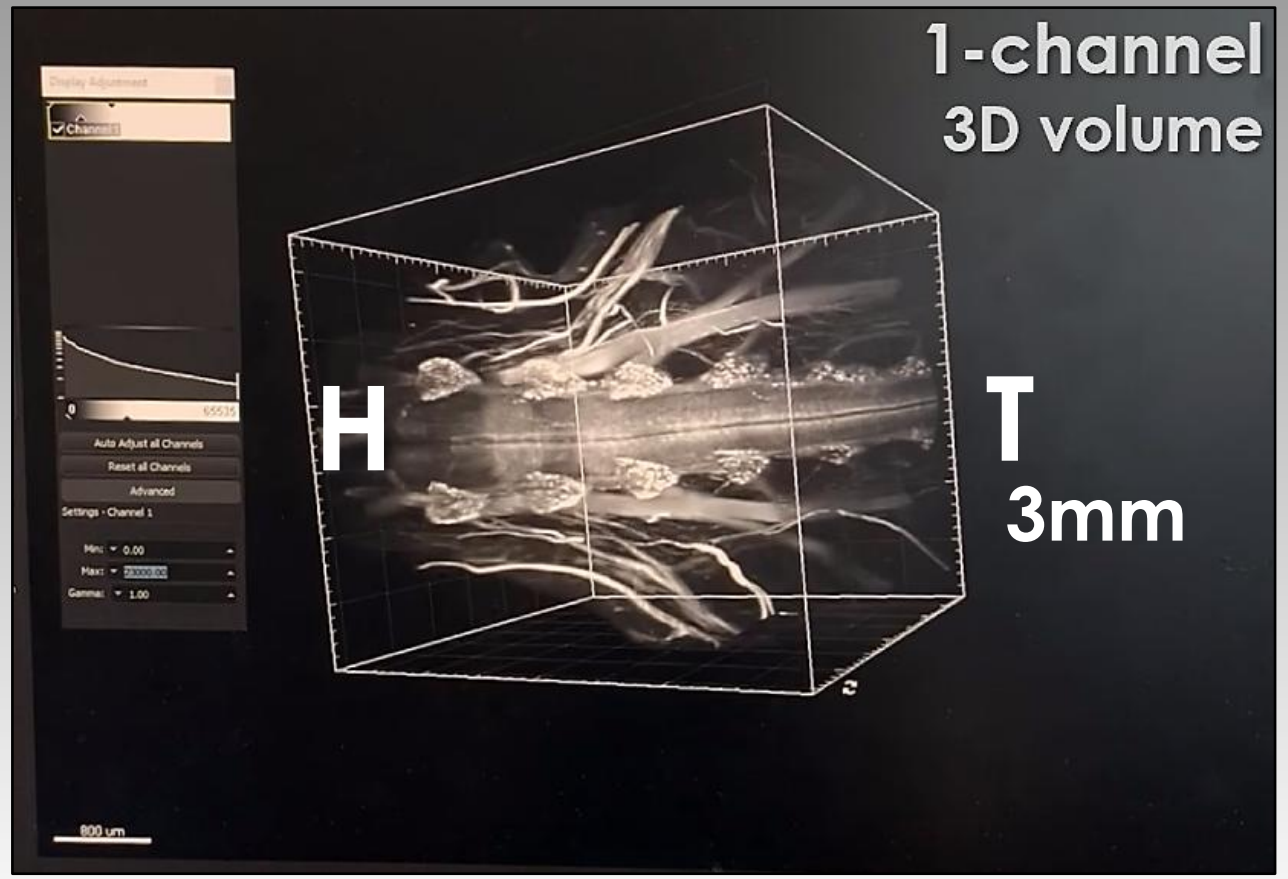


- Antibodies are used to label specific cellular structures with specific colors

- Typically only two channels used, therefore it's possible to distinguish only four cellular populations:
  R^-/G^-, R^+/G^-, R^-/G^+, R^+/G^+

WHY SCIENTISTS WILL WORK WITH US

Our comprehensive & detailed method of visualization



We offer…

6-channels
across
the entire brain

64 populations
in 12mm

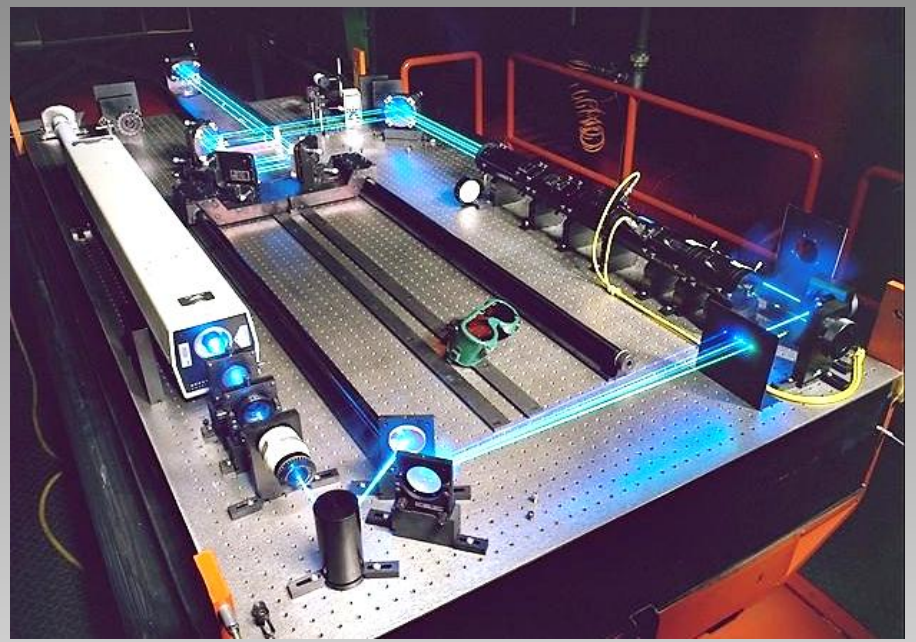
LAMBDA'S FOUNDER

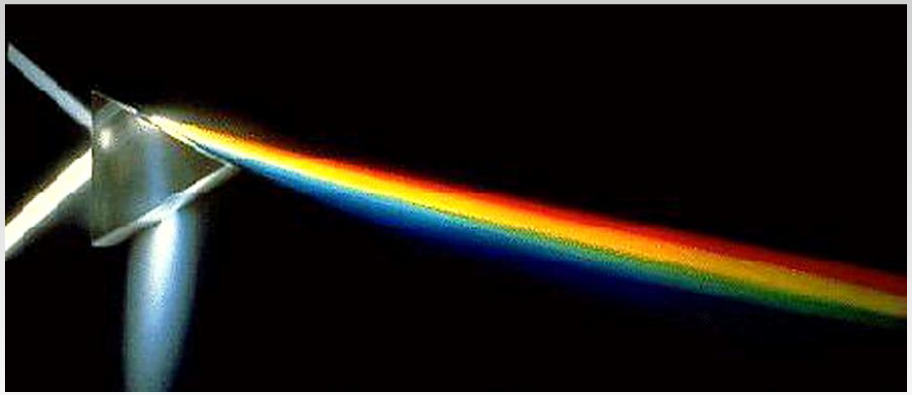
- **I hold a PhD in Biomedical Sciences with a focus in Neurobiology, supported by multiple peer-reviewed primary neuroscience publications and presentations at national and international scientific conferences.**
- **I most recently served as laboratory manager of a translational neuroscience research lab in the Neurology Department at Cedars-Sinai Medical Center.**
- **I established the laboratory from the ground up while simultaneously conducting my own research and managing compliance, operations, and project support for four additional researchers through project completion.**
- **I bring over 20 years of hands-on experience in histological staining, advanced molecular imaging, 2D and 3D digital tissue analysis, and end-to-end biomedical research workflows.**

Nicklaus A. Sparrow, PhD

- **Ph.D., Biomedical Sciences**, 2011-2017, University of Central Florida
- **B.S., Molecular Biology & Microbiology and B.S., Biotechnology, Honors** 2005-2010 University of Central Florida

LAMBDA'S NAME, LOGO, BRAND





- The lowercase Greek letter lambda (λ) is used in physics equations as the variable to indicate wavelength of light. Using discreet wavelengths of light is fundamentally at the core of LNF's process of visualizing brain tissue microscopically.
- The capital Greek letter lambda (Λ) was chosen for LNF's logo because it resembles a prism like those used in optical workbenches. The prism motif is reinforced by the spectrum of light shining through the letter.
- Additionally, capital lambda is visually like two pillars/columns holding each other up. This is metaphorically like the two pillars of LNF's: help neuroscientists and inspire local LA students.
- Lambda is also associated with light and the rainbow, and the rainbow has long been a symbol of diversity. Inclusivity is of top priority to LNF both in house and when conducting our community outreach.

OUR GROWTH VISION

Phase 1

- Establish laboratory space with core instrumentation, including a vibratome and an epifluorescence microscope.
- Develop standardized experimental protocols, LNF website, and produce public-facing lab content.
- Conduct foundational collaborative work with neuroscience investigators at Cedars-Sinai Medical Center.

Phase 2

- Deliver free, high-throughput histology services to ~350 academic and industry neuroscience projects across greater Los Angeles.
- Provide tours for younger students, and hands-on experiences for LA high school students (AP Biology).
- Secure Year-2 funding through targeted outreach to major donors and public fundraising campaigns.

Phase 3

- Expand regionally in Year 1, then scale nationally in Year 2 through infrastructure growth and staff expansion.
- Secure long-term funding via large scale donations, NIH R21 grants, and NIH Blueprint CRO designation.
- Partner with/acquire sponsorship by LAUSD to integrate STEM programs and student research engagement.

Year 1

Year 2 & beyond

WHAT WE NEED TO GET STARTED

Leica Biosystems VT1200 S Vibratome

~35k

Leica Biosystems Aperio VERSA Microscope

~70k

Category	Amount	Notes
Founder annual salary & benefits	$50,000	Full-time leadership and continuity of operations
Vibratome	$35,000	Cornerstone instrument for reproducible brain sectioning (Leica VT1200S)
Epifluorescence microscope	$70,000	Core imaging system with multichannel fluorescence (Leica Aperio VERSA)
Lab rental, utilities, and compliance	$50,000	Small private suite with visitor access; waste disposal; permits (overhead)
Laboratory Materials & IT	$30,000	Bench equipment, consumables, reagents, antibodies, and digital infrastructure
Education/outreach content	$5,000	Online lab diaries, videos, and classroom materials
Strategic reserve	$10,000	Buffer for unexpected costs and rapid growth (contingency & scaling)
TOTAL:	**$250,000**	**Year-1 request**