

F.M. KIRBY FOUNDATION SOLICITATION EVALUATION FORM

DATE: November 23, 2022

REQUEST DATE: October 31, 2022

Last grant acknowledgment: Yes

Program Area: Health

APPLICANT:

The Rockefeller University
1230 York Avenue, Box 164
New York, NY 10065-6399

CONTACT: Ms. Maren E. Imhoff, Senior Vice President for Development

PHONE: 212-327-8682

PAYEE OTHER THAN ADDRESSEE:

AMOUNT REQUESTED: \$150,000 **NATURE OF REQUEST:** Toward the purchase of a multimode microplate reader and a dedicated plate stacker

GRANT HISTORY

SUPPORT: 1994 - 2021 **# OF GRANTS:** 21 **TOTAL DOLLARS:** \$11,319,000

LAST GRANT DATE: 12/20/2021

LAST GRANT AMOUNT: \$125,000

FYE DATE: 6/30/2022

AFS DATE: 11/2/2022

2016	Toward the purchase of a supercomputer for the proposed research computing facility	\$125,000	4/4/2016
2017	Toward the purchase of a VisiTech (VT) i-SIM (instant structured illumination microscope)	\$125,000	4/28/2017
2018	Toward the purchase of an ultrafast laser scanning resonant confocal microscope	\$125,000	4/23/2018
2020	Toward the purchase of a scanning electron microscope	\$125,000	4/29/2020
2021	Toward construction of a next-generation light-sheet microscope	\$125,000	12/20/2021

DLK COMMENTS: Last year's grant award went towards the construction of an advanced light sheet microscope, which addressed the shortfalls of many other imaging systems. Known as a swept confocally aligned planar excitation (SCAPE) microscope, SCAPE uses a single objective lens to project the light sheet and collect light from the specimen, which simplifies sample positioning and alignment. SCAPE also uses a mirror to sweep the light plane through the specimen, eliminating the need to move the sample or the lens. Two members of the Hudspeth laboratory have built the microscope in the group's maker space in the Rockefeller Research building. The microscope is being used to record neuronal activity in the zebrafish brain as the animal responds to stimulation. The fish's sensory organs situated along the sides of its body detect motion in the water and the microscope rapidly captures optical "slices" of the fish's brain (100 frames per second). The scientists can see the pattern of neurons activating as the fish uses the information it receives to decide on how it responds. The goal of the experiments is to decode the processing algorithm that determines the decision. Images of the scans and the SCAPE microscope are shown below. Phase Two of the project has been to introduce another SCAPE for shared use on campus. This required the hiring of a qualified optical engineer to lead the project. A prolonged

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search resulted in the appointment of Dr. Behzad Khajavi in September 2022. He has a Ph.D. in physics and has held postdoctoral positions at the University of Houston and most recently Harvard Medical School/Massachusetts General Hospital. Dr. Khajavi and Dr. Alison North have visited other laboratories to see several microscopes in operation, inspect instruments and seek additional advice as they implement SCAPE microscopy for shared use within the Bio-Imaging Resource Center. This expanded use will require renovations in the Bronk lab building where the instrument will be located. The University's Precision Instrument Technologies (PIT) Resource Center will be used to fabricate some parts for the SCAPE. The PIT launched a decade ago with support from the F. M. Kirby Foundation (\$175K).

This year's request is for support in funding the purchase of a multimode microplate reader and dedicated plate stacker, with an estimated cost of \$175K. These two pieces of equipment will reside in the Fisher Drug Discovery Resource Center where a significant number of the University's 70 laboratories perform high-throughput molecular screening. The multimode microplate reader can perform rapid tests on hundreds of samples simultaneously. Microplates contain grids of 96 or 384 wells. Readouts can be obtained for each well. Automated liquid handling systems load the samples and compounds into the microplates. Then the microplate reader conducts assays that generate large volumes of data for analysis. The microplate stacker provides automated, hands-free transfer of microplates to and from the reader. The Center curates and annotates a library containing 420K diverse, drug-like molecules that can be screened for biological activity. The library includes prescription drugs from around the world; investigational drugs that have been tested in clinical trials; and pre-clinical compounds that have appeared in peer-reviewed, published research or patents. The Drug Discovery Resource Center has recently been used by 11 of the 23 Rockefeller University laboratories conducting neuroscience research, including the lab headed by Dr. James A. Hudspeth, the University's F. M. Kirby Professor. Dr. Hudspeth's team has used the high-throughput screening to understand signaling pathways (specifically the Hippo pathway) and the capacity to induce regeneration in organs such as the retina, heart, and the sensory receptors of the inner ear.

On a final note, the **F. M. Kirby Fund for Regenerative Neuroscience** (established in 2007 with a \$1.5 million grant) had a market value of \$2,185,424 as of June 30, 2022. The **F. M. Kirby Postdoctoral Fellowship** (established in 1999 with a \$1.0 million grant) had a market value of \$2,154,312 as of June 30, 2022.

I recommend the budgeted grant of \$115K, which would cover 66% of the cost for the two new pieces of equipment. Financial analysis attached.

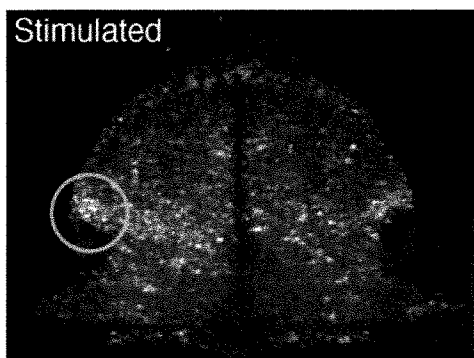
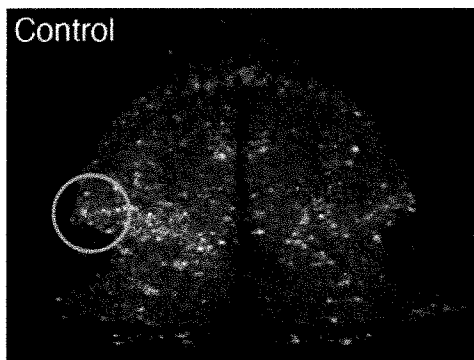
JJK COMMENTS: There is a common thread running through a history of recent FMKF grants to Rockefeller University: supporting the early adoption of groundbreaking research instruments for the benefit not only of F. M. Kirby Professor James Hudspeth and his lab but for many of the labs that exist within Rockefeller. This graduate research university does not have departments; rather, the labs operate independently, popping up when a new investigator discovers new research possibilities and closing down when a line of inquiry has reached its conclusion or has evolved into something else. This structure allows for more collaboration and sharing of ideas, and thus, broader use of the equipment FMKF funds. The force-multiplier effect here is that, by entrusting the needs to Hudspeth and his lab, FMKF indirectly helps advance research across several fields. This was illustrated in the aforementioned SCAPE device, which will soon be available for wide usage.

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This thread continues with the requested grant for a multimode microplate reader and a dedicated plate stacker. While not necessarily an entirely novel technology, the multimode reader is a workhorse of the laboratory, and the request makes clear that several researchers will look to it to run assays. Beyond Hudspeth himself, the proposal notes how two Rockefeller faculty members will use the reader and plate stacker to run assays on the biomechanics behind Alzheimer's-related neurodegeneration. Considering the Foundation's interest in Alzheimer's research, this is a particularly good example of the force-multiplier effect with regard to our funding at Rockefeller.

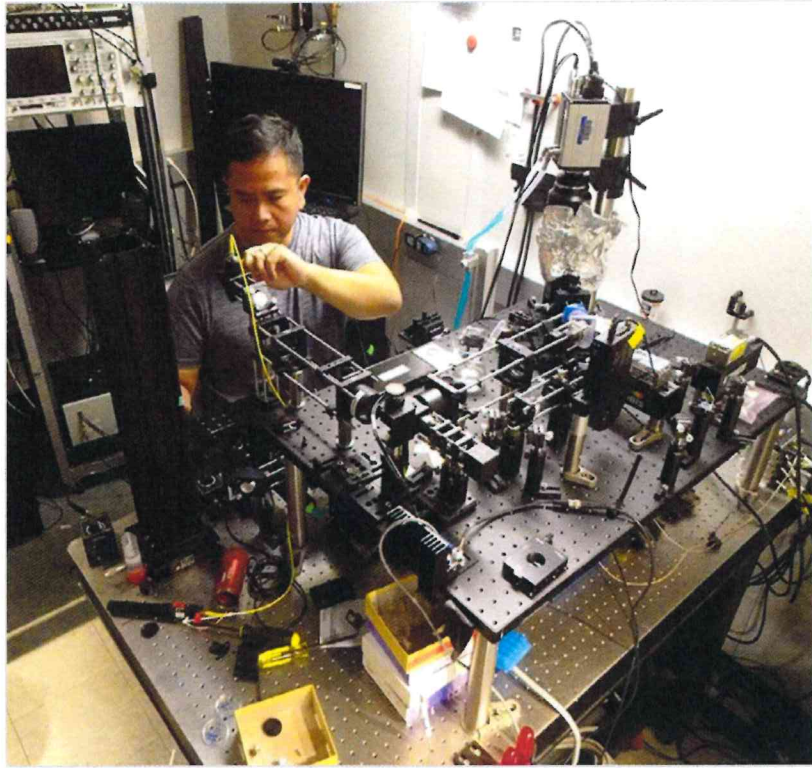
I will note for the Board that Maren Imhoff, the Senior Vice President for Development, shared with the team here an incredible story of how FMKF early funding helped build research capacity within the university. As DLK notes, a decade ago, we helped develop the Precision Instrumentation Technologies Shared Resource Center, or "PIT", for short. The PIT allowed RU to fabricate precision equipment for research, meeting the needs of scientists as they popped up. With seed funding from the Kirby Foundation, the PIT eventually grew from a one-room facility to become the university's "imagination factory," now staffed by four engineers or machinists. Today, 55% of RU laboratories rely on tools and technologies available in PIT, another example of the shared resources philosophy of RU.

I remain impressed by the stewardship exhibited by Hudspeth and the team at Rockefeller. One senses that Dr. Hudspeth's asks for equipment are always strategic and likely to impact other labs as well. I also recommend \$115K, as designated below.



Two frames from a SCAPE recording, made in the Hudspeth laboratory, of the brain of a zebrafish with active neurons seen as tiny white spots. In the lower frame, the circled area shows a cluster of about a dozen neurons that brighten significantly when the fish's lateral line is stimulated.

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Brian Fabella works on the SCAPE microscope constructed in the Hudspeth lab.

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FM KIRBY FOUNDATION Financial Statement Analysis			
Grantee Name:	The Rockefeller University	Date:	11/22/2022
Prepared By:	DLK		
Grant Request Amt.	\$ 150,000	Type of Financial Report Submitted	Audit
Recommended Amt.	\$ 115,000	Period Covered in Financial Report	FYE 6/30/22
Board Approved Amt.			
Audit Firm	KPMG	Date of Report Issuance	11/2/2022
Opinion	Present fairly		
Basis of Acctg.	GAAP		
Current Ratio (Liquidity Ratio/Working Capital Ratio)	5.15	Amount of Unrestricted Net Assets (Operating Reserve)	\$ 228,539,810 (down \$111M from FY21)

Note: A current ratio measures an organization's ability to pay short-term and long-term obligations. The higher the ratio, the more capable the organization is of paying its obligations. A ratio under 1 indicates that the organization's liabilities are greater than its assets.

Allocation of Functional Expenses	6/30/2022	%	Must Read Financial Statement Notes
A. Program Service Expenses	\$ 350,731,000	88%	Ideally program expenses should be at least 70% of total budget.
B. Management and General	\$ 46,926,629	10%	
C. Fundraising	\$ 9,083,000	2%	
D. Total Expenses	\$ 406,740,629	100%	

** Functional expenses broken down in Note 11 of Audit

Comments/ Notes:

FY23 Budget: The FY23 budget is essentially forecasting to break even. Revenues are budgeted to grow by \$16.8M (4.2%), primarily from increased endowment income (\$8.8M) and auxiliary services reincome (\$6.7M). Total expenditures are budgeted to increase by \$17.0M (4.3%). Research expenditures are budgeted to grow by \$4.1M (1.7%), while support expenses are growing by \$5.4M (6.9%). Auxiliary enterprises (housing, food svc, RU Press) are growing by \$5.7M (23.6%). The multimode microplate reader and dedicated plate stacker the University is looking to purchase will cost approximately \$175K. The budgeted FMKF grant of \$115K would cover 66% of the cost.

FY22 Audit: The University had an operating deficit of \$130.2M for FY22 versus an operating surplus of \$717.1M for FY21. Total net assets declined by \$283.0M due to litigation payments of \$176.4M for legal settlements, expenses and payments related to childhood abuse claims/inappropriate conduct by a former physician. Future costs and expenses relating to the matter could not be reasonably estimated at the time of the audit. The University expects that a number of the claims will be covered by insurance. The primary drivers of the operating deficit was the depreciation of the fair value of investments (down \$854.9M/ 110%). Expenses were fairly flat, up \$3.8M (0.9%). The University had investments of \$2.8B as of June 30, 2022, of which \$2.6B were endowment-related. The audit notes that \$2.4B of the \$2.8B are limited partnerships. With a spend rate of 5.5%, the endowment appropriation was \$83.7M. The University has three revolving credit agreements totaling \$350.0M with \$61.0M outstanding as of June 30, 2022. The fees associated with those lines of credit were \$258K. Approximately 51% (\$107M) of the University's gross contributions receivables as of June 30, 2021 were due from three donors. There were no red flags as a result of my review.

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DISPOSITION:

- Declination
- Hold for review on/about:
- Approval for: **\$115,000**
- Hold for Board Review
- Insert Information: **Toward the purchase of a multimode microplate reader and a dedicated plate stacker**
- Other:

Initials: jjr Date: 11/28/22

Check #: _____ Date: _____