F. M. KIRBY FOUNDATION SOLICITATION EVALUATION FORM

DATE: November 19, 2023 **REQUEST DATE:** October 31, 2023
Program Area: Health

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

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

AMOUNT REQUESTED: $150,000 **NATURE OF REQUEST:** Purchase of new lattice light sheet microscope

GRANT HISTORY

SUPPORT: 1994-2022

 # OF APPROVED GRANTS: 22 **TOTAL DOLLARS:** $11,434,000

LAST GRANT DATE: 12/12/2022 **LAST GRANT AMOUNT:** $115,000

FYE DATE: 06/30 **AFS DATE:** 11/08/2023

Year Approved	Approved Amount	Approval Date	Grant Purpose
2022	$115,000	12/12/2022	Toward the purchase of a multimode microplate reader and a dedicated plate stacker
2021	$125,000	12/20/2021	Toward construction of a next-generation light-sheet microscope
2020	$125,000	04/29/2020	Toward the purchase of a scanning electron microscope
2018	$125,000	04/23/2018	Toward the purchase of an ultrafast laser scanning resonant confocal microscope
2017	$125,000	04/28/2017	Toward the purchase of a VisiTech (VT) i-SIM (instant structured illumination microscope)

HELEN BENSON COMMENTS: See financial analysis.

EMILY PRINCE COMMENTS: The Rockefeller University (Rockefeller) is the oldest biomedical research instute in the United States, and is focused primarily on the biological and medical sciences. Founded in 1901 by John D. Rockefeller as The Rockefeller Institute, in 1955 the organization expanded its mission to include education and admitted its first class of graduate

students. Since its first Convocation ceremony in 1959, when five doctorates were conferred, Rockefeller has granted more than 1K Ph.D. degrees to students who have gone on to influential positions in academia, industry, and other fields. Rockefeller researchers and trainees have also been recipients of some of the world's most prestigious bioscience prizes, including 26 Nobel Prizes, 4 MacArthur Fellowships, and 20 National Medals of Science **(JJK: WOW.)** . In FY23, Rockefeller seeks a $150K grant toward the purchase of components for a new lattice light sheet microscope (LLSM) which it intends to construct on campus in its Bio-Imaging Resource Center and maintain for shared use by university laboratories.

Light sheet fluorescence microscopy is a technique that allows the user to rapidly and gently image cross-sections of live cells and tissues by shining thin planes of light through the sample, producing high resolution images via reconstruction in three dimensions. LLSM minimizes damage to samples from light exposure and oxidative stress, which allows for imaging over longer periods of time. While commercial LLSM systems are available, the Rockefeller team led by F. M. Kirby Professor James Hudspeth believes that building a microscope based on open-source design specifications will offer the necessary flexibility and power that the Rockefeller labs deserve – commercial systems are highly specialized, and thus render them inappropriate for all but a specific set of applications or samples. Moreover, the commercialization of new, improved instruments can take years from the time of development to release, which can be catastrophic for research that relies on rapid access to the latest technological innovations. To avoid the need to purchase multiple limited and expensive commercial systems, this new system will be built with components fabricated in the Precision Instrument Technologies (PIT) Resource Center, which was launched a decade ago with support from FMKF. The instrument design requires the use of these custom-built parts in combination with mostly manufactured components, such as lenses and lasers. Although the expense of building the instrument will be considerably lower than the cost of buying one, the purchased components represent a significant investment, estimated at $195K. A grant from FMKF would help to fund these purchases.

At first sight, the current proposal might seem like a duplicate of the proposal funded by FMKF in FY21, but the FY21 project title is somewhat misleading. The FY21 proposal requested partial funding for a SCAPE (Swept Confocally Aligned Planar Excitation) microscope, which can image very small live organisms even as they are moving around. The Hudspeth lab has used SCAPE to observe larval zebrafish, their favorite model organism for studying the development and dynamics of the sensory receptors known as hair cells. The SCAPE that FMKF helped Rockefeller to build is now operational in the Bio Imaging Resource Center at Rockefeller. This FY23 proposal requests funding for hi-tech components needed to build a LLSM which uses different optics to obtain images at subcellular resolution. For example, one of the labs mentioned in the proposal will use this system to understand how structures within the cell reform after cell division. So, while both are light sheet systems constructed in-house, they have distinct features and are used for different purposes.

Also of note in this request are updates on the FY22 grant, the F. M. Kirby Fellowship, and the F. M. Kirby endowed funds. In FY22, FMKF approved a grant toward the purchase of a multimode microplate reader and microplate stacker for the Fisher Drug Discovery Resource Center. These components enable studies in which hundreds of thousands of small molecules are screened for biological activity against experimental samples, including live cells. Rockefeller purchased the

items and installed them within the same month. The Senior Director of the Center has described them as essential instruments, as replacement parts were no longer available for the old instruments, and service contracts could no longer be written, impeding the progress of research. The new setup is much improved and capable of measuring the activity of 80K compounds per day. Some examples of work involving the instruments include mapping genes associated with short term memory processing and development of new antiviral drugs. Dr. Francesca Gianoli, who replaced Yuval Edri as the F. M. Kirby Fellow on January 1, 2023, was appointed to an additional one-year postdoctoral fellowship beginning July 1. Dr. Gianoli has a background in bioengineering and physics and has expertise in the neuroscience of the inner ear. The F. M. Kirby Fund for Regenerative Neuroscience was established in 2007 with a grant of $1.5M and has grown to a current market value of $2.06M. The F. M. Kirby Postdoctoral Fellowship was established in 1999 with a $1M grant and has grown to a current market value of $2.03M.

Rockefeller is the ultimate example of how FMKF's rich history of funding spanning 22 grants, totaling $11.434M has helped to energize high-risk, high-reward investigations through the development of technology as well as support of innovative programs in sensory neuroscience and beyond. I recommend $120K as budgeted, towards the purchase of components for a lattice light sheet microscope.

JUSTIN J. KICZEK COMMENTS: When GEB and I visited Rockefeller University in 2021, we had the fortune of witnessing the power of a light sheet microscope (presumably a less powerful one than the microscope PIT is trying to build now). We observed:

> We later got to see the light sheet ultramicroscope, subject of a 2014 grant, and a miraculous instrument. The light sheet microscope's best use is for 3D renderings of complete objects. Using nano-sheets of light that project through a translucent object, the microscope develops a computer image that has 360 degree manipulability. Tissue is made translucent (I don't recall what kind of chemical compounds can do this) so that a brain or embryo almost looks like a very small jellyfish. Then, through fluorescent microscopy, researchers can render in different colors what they wish to observe (in this case, neural wiring).

So, with even a less powerful microscope, we were still able to see incredible interior 3D renderings – now this year's proposal makes clear that this light sheet microscope will do something similar, but for an object as small as a cell.

RU continues to be a strong investment for the foundation, given the quality of their researchers, the multiple disciplines able to use the microscope, and the atypical, non-departmental structure of the University, which fosters communication between scientists. I was deeply impressed with Alison North, PhD, director of the Bio-Imaging Resource Center, so I am happy to hear she is involved in this project. I highly recommend ECP visit Rockefeller in 2024, as it will be three years since our last visit, but it will also help put into perspective the power of these machines FMKF has helped to fund.

I recommend $120K.

APPLICANT: The Rockefeller University

FM KIRBY FOUNDATION				
Financial Statement Analysis				
Grantee Name:	Rockefeller University		**Date:**	11/17/2023
Prepared By:	HVB			
Grant Request Amt.	$150,000			
Budgeted Amt.	$120,000		**Report Submitted**	Audit
			Period Covered	June 30, 2023 and 2022
Audit Firm	KPMG			
Opinion	Unqualified		**Date of Report**	11/8/2023
Basis of Acctg.	GAAP			
Current Ratio (Liquidity Ratio/Working Capital Ratio)	6.77		**Amount of Unrestricted Net Assets (Operating Reserve)**	**$169,292,642.00**
				Decrease of $59M from 2022

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	6/30/2023	**%**	
A. Program Service Expenses	$ 372,494,000	85%	Ideally program expenses should be
B. Management and General	$ 55,630,391	13%	at least 70% of total budget
C. Fundraising	$ 10,182,000	2%	
D. Total Expenses	$ 438,306,391	100%	
	** Functional expenses broken down in Note 11 of Audit		

Comments/ Notes:

FY24 BUDGET: The Proposed Budget for FY2024 is forecasting the University to breakeven in 2024 with Revenues of $437.4M and Expenditures of $437.3M.

Revenue is anticipated to grow $14M primarily attributed to the following: Endowment Income +$20M(+16%), Other Sources +$3.3M(+60%) and Auxiliary Income +$2.2M (+6%) *offset by* decreases in Government Grants and Contracts -$7.3M(-7%) and Private Grants & Contracts -$4.1M(-3%).

Expenses are forecasted to increase $14M(+3%). Support Function expenses are forecasted to increase by $2.9M(+3%), Auxiliary Enterprises (housing, RU Press, food service) are expected to increase $2M(+7%)and Debt Service expenses are forecasted to increase $8.8M(22%).

FY23 AUDIT: **Total Net Assets** declined $145M in 2023. The University had a net operating deficit of $90M versus a net operating deficit of $130M in 2022.

Revenue increased by $72M(+26%) primarily related to : Investment Income +$81M(+103%), Private Grants +$29M,(+21%) Government Grants +$7M (+7%) *offset by* Net Appreciation of derivative instruments -$41M(-60%), Royalty and Other -$6.3M(-24%)

Operating Expenses increased by $32M(+8%) primarily related to Research +$17M(+6%) and Institutional Support +$9.8M.(+18%)

Other Changes contributing to the decline in Net Assets totaled ($55M) due to Litigation payments of $70M and Post Retirement Related changes of ($15M). The Litigation expense is for settlements, legal fees and other expenses through November 3, 2023 and related to claims of inapproriate conduct/child abuse by a former physician at the University. 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 Univeristy has investments totaling $2.5B in 2023 of which $2.4B are endowment related. It also has Lines of Credit totaling $275M available, which have not have been drawn down on as of June 30, 2023. The fees associated with the lines of credit were $420k for 2023.

There were no red flags in my review.

APPLICANT: The Rockefeller University

DISPOSITION:

( ) Declination

( ) Hold for review on/about:

(X) Approval for: **$120,000**

(X) Hold for Board Review

( ) Payee Other Than Addressee:

(X) Insert Information: **Support for the purchase of new lattice light sheet microscope**

( ) Other:

Initials: JJK Date: 11/29/2023

Check #_____ Date:_____