

**F. M. KIRBY FOUNDATION SOLICITATION EVALUATION FORM**

**DATE:** March 27, 2024  
**Program Area:** Health  
**Grant Type:** Board Grant

**REQUEST DATE:** February 28, 2024

**APPLICANT:**  
Children's Hospital Corporation  
300 Longwood Avenue  
Boston, MA 02115

**CONTACT:** Mr. Kevin Churchwell, President and Chief Executive Officer

**AMOUNT REQUESTED:** \$220,000  
**BUDGETED AMOUNT:** \$200,000

**NATURE OF REQUEST:** Support of the Innovation and Education Fund and Support of the Undergraduate Research Internship Program

**GRANT HISTORY**

**SUPPORT:** 1997-2023

**# OF APPROVED GRANTS:** 17

**TOTAL DOLLARS:** \$13,050,000

**LAST GRANT DATE:** 05/01/2023

**LAST GRANT AMOUNT:** \$200,000

**FYE DATE:** 09/30

**AFS DATE:** 12/22/2023

<b>Year Approved</b>	<b>Approved Amount</b>	<b>Approval Date</b>	<b>Grant Purpose</b>
2023	\$200,000	05/01/2023	Toward the F.M. Kirby Neurobiology Center, specifically the Innovation and Education Fund-\$180,000; toward Equity, Diversity and Inclusion Internship Initiative-\$20,000
2022	\$200,000	05/02/2022	Toward the F.M. Kirby Neurobiology Center, specifically the Innovation and Education Fund-\$150,000; toward Equity, Diversity and Inclusion Internship Initiative-\$50,000
2021	\$200,000	05/03/2021	Toward the F.M. Kirby Neurobiology Center, specifically the Innovation and Education Fund-\$150,000; toward Equity, Diversity and Inclusion Internship Initiative-\$50,000
2020	\$175,000	04/29/2020	Toward the F.M. Kirby Neurobiology Center, specifically the Innovation and Education Fund
2019	\$175,000	04/15/2019	Toward the F.M. Kirby Neurobiology Center, specifically the Innovation and Education Fund

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**LAST SITE VISIT DATE:** November 2022

**ENDORSEE:** N/A

**FINANCIAL ANALYSIS COMMENTS:** The FY24 expense budget for Boston Children's Hospital (BCH) projects a 4% increase over the prior year actuals. The FY24 revenue budget projects a \$70.1M surplus, and a 12% increase over the prior year actuals. This is an improvement over FY23, which ended with a \$127.2M deficit. Approximately 50% of income is attributable to patient service revenue, which is budgeted to grow by \$251.5M (13.6%). The FY24 expense budget for the F. M. Kirby Neurobiology Center projects a 6% increase over the prior year actuals, with increases to faculty salaries, facilities, and educational activities. The FY23 audit, which covers BCH and its subsidiaries, shows unrestricted net assets totaling \$6.8B, and a cash position of \$286.3M. Investments are valued at \$6.1B, with \$2.3B limited by Board designation. Total endowment value is \$1.7B, a significant decrease from FY22, when the value was \$2.2B. However, total assets have increased by 4.6% from FY22. Financial assets available for general expenditures within 12 months are \$5B. Total long-term debt was \$1.5B as of September 30, 2023, and BCH was in compliance with all applicable debt covenants. In June 2022, BCH entered into a \$200M revolving line of credit agreement for a three-year term. There were no amounts outstanding as of September 30, 2023. FMKF last approved a grant to BCH in FY23. The amount accounted for 1.1% of BCH's unrestricted philanthropy revenue.

**ORGANIZATION DESCRIPTION:** Boston Children's Hospital (BCH) is dedicated to improving and advancing the health and well-being of children around the world through its work in clinical care, biomedical research, medical education, and community engagement. With more than 40 clinical departments and 258 specialized clinical programs, they provide a complete range of health care services for children of all ages. BCH is nationally ranked and home to the largest hospital-based pediatric research program in the world. BCH's research facility consists of more than 1M square feet of laboratory space, including the F. M. Kirby Neurobiology Center, the largest hospital-based basic neuroscience research program. In 2023, the BCH community celebrated the election of four faculty to the National Academy of Medicine, including Kirby Center member Mustafa Sahin, MD, PhD. He was recognized for expertise in the neurobiology of autism and pioneering translational studies for neurogenetic disorders. Kevin B. Churchwell serves as the hospital's current CEO.

**EMILY PRINCE COMMENTS:** BCH's F. M. Kirby Neurobiology Center's primary goal is to advance the most novel and impactful research on how the nervous system develops, functions, and changes in disease settings. They aim to understand neural mechanisms and reveal the nature of the disturbances that occur in neurological and psychiatric diseases, and from this combined approach, explore new therapeutic opportunities. In FY24, BCH is seeking a grant of \$220K in support of two Kirby Center initiatives, the Innovation and Education Fund and the Undergraduate Research Internship Program.

In 2023, Center faculty drove numerous high impact discoveries, advancing our understanding of how the nervous system develops and functions to develop novel treatment strategies – this included the issuance of 4 new patents, with 11 patent applications filed since November 2022.

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Benefitting from their setting within BCH, the Center fosters a stimulating academic work environment where innovation and collaboration flourish. That spirit of collaboration was in full view this year at the Center's first in-person scientific retreat since 2019. For the first time ever, trainees, including postdoctoral fellows and graduate students, came together with faculty to present their work on topics ranging from studying sensory development in a dish, to mechanisms of the female fertility window, to therapeutic advances for neurodegenerative diseases. The Center's collaborative ethos was also evident this past year: Center researchers combined their expertise to screen for new targets for anti-seizure medications, used advanced techniques to understand the circadian rhythms of protein production in cells, and tackled a diverse slate of other complex neurological problems, such as modeling disease using human stem cells. In all, Center faculty published 153 peer-reviewed papers, of which 27 appeared in high impact journals such as Cell, Nature, and Science, and secured \$36.6M in competitive grants.

The Center's Innovation and Education Fund supports pioneering projects that are too early for federal funding and have the potential to: provide completely novel insights into the functioning or malfunctioning of the nervous system, develop exciting and transformative new technologies, and introduce new approaches to diagnosing and treating neural diseases. Innovation grants have been a major driver of the Center's success, demonstrated by their ability to secure major competitive grants to support established projects with high quality preliminary data and the frequent citations of their publications. In addition, they have a strong track record of developing new intellectual property based on this research, which has led to multiple licensing agreements and new startups. While FMKF may view these types of grants as "high risk/high reward" in terms of our health docket strategy, the Center would argue that they are actually low risk given the expertise and experience of their faculty, including those responsible for reviewing and selecting the most promising applications. Over the past eight years, FMKF has granted \$1,355,000 towards the Fund. Thanks to our FY23 grant, the Center was able to fund three projects: 1) **Understanding, preventing, and reverting age-induced female infertility** Michael Crickmore, PhD, which seeks to extend the window in which women can conceive and bear children, and could lay the groundwork for a new era of reproductive freedom; 2) **Discovery of Circadian Heterogeneity in Translational Machinery** Jonathan Lipton, MD, PhD and Judith Steen, PhD, which could provide an extremely useful avenue to better understand and potentially treat diseases like Alzheimer's whose hallmarks are a disrupted circadian rhythm; and, 3) **A reverse genetic screen for novel anti-seizure targets using MIC-Drop in zebrafish larvae** Annapurna Poduri, MD, MPH with Chris McGraw, MD, PhD, which is seeking to identify a range of potential targets for novel, more effective anti-seizure medicines.

The Center's Undergraduate Research Internship Program provides 8 college students from underrepresented communities with the opportunity to receive mentorship and work in world-class research laboratories. The program builds on the Center's commitment to creating a more inclusive environment that fuels creativity and encourages more students from diverse backgrounds to pursue careers in science and medicine. The program is a partnership between the Center and Bunker Hill Community College, and student interns receive a stipend and college credit. The internship has three main components: a research project which is presented in a poster session at the conclusion of the semester; a week long orientation boot camp; and customized, periodic workshops that foster the intern's scientific and professional development. The internship program builds on two core beliefs. The first belief is that diverse perspectives fuel creativity and that underrepresented

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individuals - when given the opportunity - show extraordinary drive and novel ways of thinking about research. The second belief is that exposing these individuals to research will help in the crucial task of increasing confidence in science and medicine and broaden the pool of participants. Each intern joins a Center lab or Core facility pursuing work aligned with their interests, and each student interacts with both the Principal Investigator (PI) and a lab member designated as a day-to-day mentor. The interns develop and pursue discrete research projects, with PIs and mentors providing guidance on project design, execution, interpretation, and communication. At the end of the summer, they present their research at a poster session attended by the Center community. From its outset in 2021, the program has been both highly competitive (with as many as 35 applicants per cohort) and very successful. Interns have made substantial research contributions, and nearly half have accepted long-term positions in their host labs. Many interns have also moved on to four-year colleges to complete their bachelor's degrees (Bunker Hill, offers a two-year program).

In addition to their efforts to target communities underrepresented in the sciences, BCH is prioritizing making the Kirby Center a more welcoming environment for researchers of all abilities and backgrounds. In October, they hosted a workshop on best practices to welcome and support neurodiverse colleagues. Over 250 attendees (in-person and on Zoom) learned important terms, nuances, approaches, and techniques to make BCH a more neuro-inclusive workplace – I wonder if they have connected with Autism Speaks, as neurodiverse inclusivity is a major focus of their research and workplace. In the coming year, they will continue to cultivate a healthy, inclusive scientific community and pursue novel and challenging research projects, pushing the boundaries of neurobiology to do their best for the people at the heart of their research: patients and their families.

As we only have \$200K budgeted, I asked Lisa Kaufman, Assistant Vice President, Foundation Relations & Strategic Partnerships if the Center had a preference as to how I allocated the funds in my Board recommendation. They asked for the same designation as FY23: \$180K for the Innovation and Education Fund and \$20K for the Internship Program. Typically, \$180K can fund three projects. The total cost of the summer 2024 Internship Program, including salaries, program activities, supplies, and administrative expenses is expected to be \$124,968, which will be covered through other sources. I am in support of their request as outlined.

**RECOMMENDATION:** In FY24, I recommend a grant of \$200K in support of the Innovation and Education Fund and the Undergraduate Research Internship Program. The payment should be allocated as follows:

\$180K - Innovation and Education Fund

\$20K - Undergraduate Research Internship Program

**JUSTIN J. KICZEK COMMENTS:** I remain as impressed as ever in this center. Under the leadership of Dr. Clifford Woolf, the Kirby Neurobiology Center upholds a standard of excellence that is fueled by values of open inquiry and collaboration and a steady faith in basic research as the building blocks for future cures and therapies. The projects described above by ECP represent well the variety of research that Kirby Center faculty can pursue, as well as the degree to which the Neurobiology Center's research crosses over into other FMKF areas of interest. Dr. Woolf *could*

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just rest on these laurels, knowing that some of the world's best scientists (like Beth Stevens and Mustafa Sahin) will be attracted to this institution.

But over the last few years, the Kirby Center leadership has gone above and beyond to not only attract talent from underrepresented communities but to make them feel welcome there. I have said this before but will say it again: I so appreciate that, while this Center could have just said they were seeking diverse internship candidates and then pluck them from nearby MIT, Tufts, Harvard, and Northeastern, Woolf and his team chose to partner with Bunker Hill Community College, perhaps recognizing that an internship with the Kirby Center would represent a transformative experience for the students there – many of them immigrants.

Moreover, activities like the neuro-diverse conference (fitting for a Center focused on neurobiology) further demonstrate their belief that diversity, inclusivity, meritocracy, and excellence can coexist when done thoughtfully.

**RECOMMENDATION:** I am very pleased to recommend a grant of \$200,000 in support of the Innovation and Education Fund and the Undergraduate Research Internship Program. The payment should be allocated as follows:

\$180,000 - Innovation and Education Fund

\$20,000 - Undergraduate Research Internship Program

