Program Approval

I. General Information

A. Institution University of Kansas Medical Center

B. Program Identification

Degree Level:	Doctoral Program
Program Title:	Clinical and Translational Science
Degree to be Offered:	PhD in Clinical and Translational Science
Responsible Department or Unit:	School of Medicine, Department of Biostatistics & Data Science
CIP Code:	51.1402
Modality:	Face-to-Face, Online, Hybrid
Proposed Implementation Date:	Fall 2024

Total Number of Semester Credit Hours for the Degree: 61

II. Clinical Sites: Does this program require the use of Clinical Sites? No

III. Justification

The University of Kansas Medical Center (KUMC) is committed to improving lives and communities in Kansas and beyond through innovation in education, research, and health care. To fulfill this mission, KUMC is proposing to establish a PhD program in Clinical and Translational Science (CTS). CTS is an emerging field of research that focuses on translating scientific discoveries into new treatments and cures for disease. The proposed PhD program will prepare graduates to lead and conduct research that improves the overall quality of healthcare and the health of patients. A successful PhD program in CTS at KUMC will attract top predoctoral students interested in the clinical and translational aspects of diseases such as Alzheimer's and related dementias, brain aging, polycystic kidney disease, and cancer, and serve as a source of postdoctoral fellows to lead future clinical and translational research at KUMC. Research shows that investments in educational channels to train clinician scientists have a high rate of positive return in the form of increased research funding and institutional reputation (1,2), thus a successful PhD program in CTS positions KUMC to become a first-tier medical school based on Blue Ridge Institute rankings (brimr.org) and to recruit and train the next generation of biomedical and clinician-scientists to serve the education, research, and health care needs of Kansans.

KUMC is one of the leading medical schools in the U.S. and is home to several National Institutes of Health (NIH)-funded research programs, including the National Cancer Institute-designated Comprehensive Cancer Center (KUCC), Frontiers Clinical and Translational Science Institute, KU Alzheimer's Disease Research Center, KU Polycystic Kidney Disease Research and Translation Core Center, Kansas-Institutional Development Award (IDeA) Networks of Biomedical Research Excellence (INBRE), and Kansas Institute for Precision Medicine Centers of Biomedical Research Excellence (COBRE). KUMC has a strong research infrastructure, including state-of-the-art research facilities and a large pool of highly skilled researchers, providing students with the mentoring and resources they need to conduct cutting-edge clinical and translational research. The institutional environment is also highly collaborative, giving students the opportunity to work with researchers from a variety of disciplines and develop the skills they need to conduct interdisciplinary research or 'team science.' Furthermore, KUMC has a diverse patient population, preparing students for careers in CTS which require an understanding of the needs of patients from all backgrounds. KUMC also has strong student support services, including the ASCEND program funded by the Office of Academic and Student Affairs. This program provides students with the opportunities and resources to develop successful careers and transferrable skills.

KUMC currently offers a 33-credit hour Master of Science in Clinical Research, a 1- to 2-year program that

includes didactic coursework in biostatistics, clinical research, and epidemiology, and a culminating master's thesis. The proposed PhD in CTS is a 61-credit hour program with curriculum derived from competencies established by the Clinical and Translational Science Award Enhancing Clinical Research Professionals' Training and Qualifications Consortium (3). The curriculum focuses on biostatistics and analytics, clinical and translational research methods, leadership, and team science. In addition to the increased coursework, the proposed PhD degree includes preliminary, qualifying, and comprehensive exams and a dissertation. The PhD degree provides students with an in-depth understanding of clinical research and translational science, along with practical and experiential research training focusing on scientific rigor and reproducibility. There is substantial curriculum overlap of the MS in Clinical Research with the proposed PhD. All 33 credit hours required for the MS could be pulled from the curriculum of the PhD program, making the MS in Clinical Research a potentially efficient pathway program for the PhD in CTS.

KUMC is one of 67 medical research institutions that have active NIH National Center for Advancing Translational Sciences (NCATS) Clinical and Translational Science Awards (CTSA). These institutions work together to speed the translation of research discovery into improved patient care. Each CTSA institution has a linked KL2 program (early-stage investigators) and an optional TL1 (pre- and post-doctoral trainees) program. Through these programs, institutions provide training and educational opportunities in clinical and translational research, including graduate degrees. Given the heterogeneous training components implemented by individual institutions, the types of degrees offered vary greatly. According to NCATS (nih.ncats.gov), as of 2022, 93% of CTSA institutions offer a relevant master's degree (MS or MPH) and 64% offer a PhD. As in the proposed PhD program, most institutions have a major training/education focus on team science (80%), career development (58%), and cross-/inter-/multi-disciplinary training (46%). However, few provide competency-based training (30%), experiential learning (24%), entrepreneurship (20%), rigor and reproducibility (14%), community engagement (14%), or a competencies-based curriculum (6%), all of which exist in the proposed PhD program curriculum and are explicit strengths of the KUMC CTSA, Frontiers.

IV. Program Demand: Select one or both of the following to address student demand:

A. Survey of Student Interest

Number of surveys administered:	_Unknown_
Number of completed surveys returned:	138
Percentage of students interested in program:	__61.4%_

We distributed an electronic RedCAP survey through various channels, including the KUMC Office of Graduate Medical Education, Postdoctoral Affairs and Graduate Studies, the University of Kansas Cancer Center, and Frontiers. We also shared the survey with several select regional academic institutions.

Out of the 137 respondents who completed the survey, 70 (50.7%) indicated that clinical and translational research was a career goal. To explore their degree aspirations further, we presented a series of questions to those who answered positively. The results showed that 29 (21.2%) were undergraduate students, two (1.5%) were medical students, 50 (36.5%) were graduate students, 30 (21.9%) were medical residents, nine (6.6%) were medical doctors, 16 (11.7%) were post-doctoral fellows, three (2.2%) were staff, and five (3.6%) were faculty.

Of those who expressed interest in clinical and translational research, 43 (61.4%) replied "Yes" to our question about whether they would be interested in pursuing a PhD in Clinical and Translational Science if the University of Kansas School of Medicine offered a program that could be completed within 3 to 4 years.

B. Market Analysis

The landscape of biomedical research and education is changing rapidly, with an increasing emphasis on interdisciplinary collaboration to improve clinical care and population health outcomes. To achieve these goals,

basic, clinical, and population sciences must be closely aligned and integrated. Basic science research needs to be made more immediately applicable to clinical problems, while health challenges observed in populations must be rapidly integrated into rigorous basic and clinical science investigation. In response to these changes, the PhD program in clinical and translational science has been developed both in North America and worldwide.

The demand for medical scientists is projected to grow significantly in the next decade, with an estimated 17 percent growth from 2021 to 2031, which is much faster than the average for all occupations (4). On average, about 10,000 openings for medical scientists are projected each year. These openings will be driven by the greater demand for healthcare services as the population ages and the rates of chronic diseases continue to increase. Medical scientists will be needed to research and treat diseases such as Alzheimer's and cancer, and to address issues related to treatment, such as antibiotic resistance. Moreover, as the world becomes more interconnected and the population travels globally, medical scientists will continue to be needed for medical research to help prevent and mitigate the spread of diseases.

V. Projected Enrollment for the Initial Three Years of the Program

Year	Total Headcount Per Year		Total Sem Credit Hrs Per Year	
	Full- Time	Part- Time	Full- Time	Part- Time
Implementation	1		20	
Year 2	2		40	
Year 3	3		60	

The program anticipates matriculating one full-time student per year for the first three years, growing to cohorts of 3 – 5 per year over time. Assuming these students are on a three-year timeline to defense, each student would take approximately 20 credit hours in each of their three years.

VI. Employment

The largest employers of clinical and translational researchers are research and development in the physical, engineering, and life sciences (36%), universities and professional schools (23%), and hospitals (17%) (3). Program graduates will be highly recruited by academia and industry. As most of our anticipated matriculated students will be from clinical biomedical sciences (e.g., medicine, nursing, physical therapy, and psychology), we anticipate that most of our graduates will obtain positions in hospital/university-based academic centers with solid track records for clinical and translational science. Many will have combined clinical and research appointments; however, some will likely solely perform research. We also anticipate that with the skills and knowledge obtained from our educational program, the biomedical industry may recruit a proportion of students to perform in-house clinical and translational science. Successful completion of this program will provide a highly competitive advantage to all graduates seeking careers in clinical and translational biomedical research.

VII. Admission and Curriculum

A. Admission Criteria

All applicants must meet the following criteria:

- Bachelor's degree from a regionally accredited institution (or international equivalent) with cGPA ≥3.0/4.0
- One of: MD, DDS, DO, PharmD, PhD, DNP, or other professional degree *OR* enrolled in clinical professional doctoral degree program
- Demonstrated high level of interest/potential for innovative clinical and translational research
- Calculus I

- Course-by-course and degree equivalency performed by WES (or equivalent), if applicable
- TOEFL/IELTS or ECFMG certificate for applicants with an MD, if applicable
- Personal statement describing research interests and how the program aligns with goals
- CV/Resume
- Contact information for at least two references
- A background check, as required

Applicants who are employed by KUMC must also provide:
- Contact information of division chief/chair
- Confirmed protected time

Applicants seeking an accelerated time to degree (less than 4 years) must also provide:
- Contact information for research mentor
- Confirmed protected time
- Demonstrated research experience (beyond labs associated with lecture courses)

B. Curriculum

The curriculum of the PhD Program in Clinical and Translational Science is built upon four pillars: clinical and translational research methods, statistics and analytics, professional skills, and mentored experiential research. The program is designed to allow students to engage simultaneously in didactic coursework and practical research experiences. The proposed PhD program will prepare graduates to *lead* and *conduct* clinical and translational research.

Credit requirements. The PhD Program in Clinical and Translational Science is an approximately 61-credit hour program designed for full-time study. Coursework is divided into required and elective courses in the student's area to allow maximum flexibility. Students will begin participating in mentored research and developing their research projects from their first semester.

Mentoring. All students will participate in a Mentoring Workshop at the start of their program. The workshop aims to ensure a clear understanding of mentoring's purpose, define student expectations, establish consistent mentoring practices, formalize team mentoring and non-negotiable aspects of the mentoring agreement, and provide professional skills training such as negotiation and active listening. Students will meet with mentors to develop an Individual Development Plan (IDP). IDPs will consider students' interests, strengths, and the necessary skills and qualifications for their chosen career. IDPs will serve as a shared reference for students, mentors, exam committees, and program leadership.

Research Training. Students are expected to actively pursue training in critically reading research literature within their field of interest. They can achieve this by participating in a monthly journal club organized by their home department or a department related to their research area. Additionally, students are encouraged to enroll in PRVM 869: Systematic Reviews. Students are expected to deliver at least one public research presentation annually, preferably at a national conference. To support their professional growth, students are encouraged to attend KUMC ASCEND (Achieving Successful Careers, Exploring New Directions) Program seminars and workshops sponsored by the Office of Graduate Studies and Postdoctoral Affairs. The KUMC ASCEND Program offers career development opportunities, transferable skill training, and career exploration. Students are also encouraged to attend the KUMC Research Institute Research and Discovery Grand Rounds, which are co-sponsored by Frontiers. These activities will be integrated into the students' IDPs.

Mentored Research. Students will begin participating in mentored research and developing their research projects beginning in Year 1. The goal of having students engage in mentored research early in the program is to ensure that they actively participate in planning data collection, gathering data, and analyzing results while

completing the didactic training that complements these activities. Students must also enroll in six credit hours of BIOS 899: Clinical/Translational Mentored Research.

Research Skills and Responsible Scholarship Requirement. Students are required to complete and maintain training in Human Subjects Protections, Good Clinical Practice, and Responsible Conduct of Research through Institutional Training. Students must also enroll in the one-credit course PRVM 853: Responsible Conduct of Research. At the time of graduation, students must be current on all training and have completed PRVM 853 to be eligible to graduate.

Required Clinical and Translational Research Methods Courses. These required courses (10 credits) emphasize research methods, grant writing, and scientific communication, equipping students with essential skills to write grant proposals, conduct high quality research, and effectively communicate their findings through presentations and manuscripts. In PRVM 872: Grant Writing, students learn how to build an NIH-style grant application around a research question, identify human subject protection concerns, and prepare an Institutional Review Board protocol. The outcome is a finalized grant application adhering to the PHS-398 format, in preparation for the *Comprehensive Exam*.

PRVM 853: Responsible Conduct of Research (1 CH)
BIOS 811: Scientific Rigor and Reproducibility (3 CH)
BIOS 810: Clinical Trials (3 CH)
PRVM 872: Grant Writing (3 CH)

Required Analytics Methods Courses. These required courses (9 credits) provide students with training in methodology, biostatistics, and measurement. These prepare students to critically analyze academic and research literature, understand most statistical and measurement approaches used, perform and interpret common statistical analyses using their own or existing data, and effectively collaborate with biostatisticians in planning and executing statistical analyses for their projects.

BIOS 714: Fundamentals of Biostatistics 1 (3 CH)
BIOS 717: Fundamentals of Biostatistics 2 (3 CH)
BIOS 715: Introduction to Data Management using RedCap and SAS (3 CH)

Required Professional Skills Courses. This required course (3 credits) provide students with practical knowledge crucial for developing professional skills and advancing their careers.

NRSG 880/HP&M 840: Organizational Foundations for Leading Change (3 CH)

Required Clinical Trials/Translational Research Mentored Research Course. The required clinical trials/translational mentored research course (6 credits) gives students course credit for an early mentored research experience. Students will become part of a research team and learn how studies or trials are designed, implemented, managed, analyzed, and results disseminated. This course provides students with practical experience critical for developing clinical and translational research skills to inform and advance their research projects.

BIOS 899: Clinical/Translational Mentored Research (6 CH)

Required Advanced Elective Coursework. Students must take at least 15 advanced elective credits, including at least six credits of advanced analytics and six credits of advanced CT research methods. The PhD advisor and Program Director must approve advanced electives before enrollment.

Dissertation Proposal Credits. In preparation for the dissertation proposal defense ('Comprehensive Oral Examination for PhD'), students may take BIOS 998: Doctoral Research. Enrollment in this course will provide credit for mentored guidance through preparing and submitting the written dissertation proposal and preparation for the oral proposal defense.

Dissertation Credits. Students must take at least 18 credits of BIOS 998: Doctoral Research and BIOS 999: Doctoral Dissertation, with at least nine credits from BIOS 999: Doctoral Dissertation, to be eligible for graduation. Only students who have passed the dissertation proposal defense ('Comprehensive Oral Examination for PhD') and submitted a dissertation proposal report are eligible to enroll in BIOS 999: Doctoral Dissertation.

Milestones. Each trainee is expected to meet specific curriculum and program expectations and milestones. The expectations and milestones are:

Preliminary Examination. By the end of Year 1, the trainee will be expected to have a research plan, including specific aims for research, and undergo a Preliminary Examination. This preliminary evaluation of student progress is conducted by the Program Director(s) and the student's mentor to ensure that he/she is meeting program milestones. The evaluation will involve a review of the student's academic and research progress and result in development of an action plan for any areas of concern.

Comprehensive Examination. By the end of Year 2, students are expected to accomplish several milestones in their program. These include establishing an Advisory Committee, undergoing a comprehensive examination, and submitting a Comprehensive Examination report. The purpose of the comprehensive exam is to assess the student's knowledge and readiness to embark on their dissertation project. The written portion of the comprehensive exam follows the format of an NIH R01-style proposal and should include an abstract, specific aims, draft research strategy covering significance, innovation, and approach, and reference materials. The oral portion of the comprehensive exam will be conducted like an NIH study section review. The written portion of the exam and the evaluation report, prepared by the Advisory Committee using NIH peer review guidelines, must be submitted to the Program Directors. Successful completion of the Comprehensive Examination is a program requirement and precedes the defense of the dissertation proposal.

Dissertation Proposal Defense. By the end of Year 3, students are expected to achieve important milestones in their doctoral program. This includes preparing and submitting a dissertation proposal, completing a dissertation proposal defense ('Comprehensive Oral Examination for PhD') and submitting a dissertation proposal report. Using the preliminary evaluation from the Comprehensive Examination and considering any progress made since, the student must create a written proposal and deliver an oral defense to their doctoral advisory committee during a formal dissertation proposal defense. The written proposal follows the format of an NIH R01-style proposal, encompassing an abstract, specific aims, research strategy covering significance, innovation, and approach, protection of human subjects, and reference materials. During the meeting, the student presents their final research plan and progress to the Advisory Committee. The committee members offer guidance to further refine the conceptualization and methodology of the plan. Unanimous approval of the dissertation topic and research plan by the advisory committee is necessary. If the proposed research involves human subjects, it must receive approval from the University Institutional Review Board (IRB) before being conducted.

Dissertation Defense. The student will be expected to complete the dissertation project, which includes writing and revising the dissertation, applying for graduation, and completing the dissertation defense ('Final Oral Examination for PhD'). The dissertation may take one of two formats. The first format includes three first-authored manuscripts that are at least submission ready for publication in peer-reviewed journals. The three manuscripts must be thematically related to one another and to the dissertation proposal approved by the student's Dissertation Committee. The manuscripts must be

accompanied by an introductory chapter that discusses the context in which the research was performed and a concluding chapter that discusses the implications of the research findings and provides a description of plans for future research. The second option is to submit a more traditional dissertation that includes, at a minimum, chapters describing the background, methods, analyses/results, and conclusions of the dissertation project. The dissertation defense is an oral presentation and examination of the student's research. In the defense, the student should provide an overview of the aims, literature, significance, methods, analysis, results, and implications.

C. Typical Program Plan

Year 1: Fall **SCH = Semester Credit Hours**

Course #	Course Name	SCH
BIOS 714	Fundamentals of Biostatistics I	3
PRVM 872	Grant Writing	3

Year 1: Spring

Course #	Course Name	SCH
BIOS 810	Clinical Trials	3
BIOS 717	Fundamentals of Biostatistics II	3
PRVM 853	Responsible Conduct of Research	1

Year 1: Summer

Course #	Course Name	SCH
BIOS 811	Scientific Rigor and Reproducibility	3
	Elective(s)	1 – 3

Year 2: Fall

Course #	Course Name	SCH
BIOS 715	Introduction to Data Management using RedCap and SAS	3
HP&M 840	Organizational Foundations for Leading Change	3
	Elective(s)	1 – 3

Year 2: Spring

Course #	Course Name	SCH
BIOS 899	Clinical and Translational Mentored Research	3 – 6
	Elective(s)	3 – 6

Year 2: Summer

Course #	Course Name	SCH
BIOS 998	Doctoral Research	3 – 6
	Elective(s)	1 – 3

Year 3: Fall

Course #	Course Name	SCH
BIOS 999	Doctoral Dissertation	6 – 9
	Elective(s)	1 – 3

Year 3: Spring

Course #	Course Name	SCH

BIOS 999	Doctoral Dissertation	6 – 9
	Elective(s)	1 – 3

Total Number of Semester Credit Hours …… 61

D. Program Review, Assessment, and Accreditation

The program will be reviewed in accordance with Kansas Board of Regents, KUMC Graduate Studies, and Higher Learning Commission policies. The Program Directors and Curriculum Committee will be responsible for annual curriculum review, program assessment, and the creation and execution of plans to address necessary improvements. Student- and peer-reviews of classes will be part of the annual review. Students and mentors will be interviewed by the Program Directors bi-annually to track progress, satisfaction, and identify any unmet needs. A database will be created to track student demographics and outcome metrics, including course grades, the completion of IDP milestones, engagement with non-didactic program components, mentor/committee assessments of progress, publications, presentations, awards, accomplishments, time-to-milestone completion (exams, graduation), annual retention rates, milestone passing rates (exams, graduation), employment, and research-related career outcomes. All information will be summarized and reviewed by the Program Directors, the Department Chair, and the Department of Biostatistics & Data Science External Advisory Board. External accreditation will be conducted by the Higher Learning Commission as part of the institutional accreditation.

VIII. Core Faculty

Note: * Next to Faculty Name Denotes Director of the Program, if applicable
FTE: 1.0 FTE = Full-Time Equivalency Devoted to Program

Due to the inherent interdisciplinary nature of the proposed PhD program, it was developed under the 'hub-and-spoke' model of program administration. The KUMC Department of Biostatistics & Data Science serves as the centralized administrative hub, providing a cost-effective, consistent, and efficient mechanism for ensuring student success. Mentors and committees will most certainly cross disciplines and departments (spokes). This model of administrative support and oversight is cost-effective, efficient, and ensures consistency across all students in the program. Further, the Department of Biostatistics & Data Science currently serves in this capacity for clinical and translational research at KUMC, housing six NIH-funded cores that support the KU Cancer Center, Frontiers, the Kansas-INBRE, the Kansas Institute for Precision Management, and the KU Alzheimer's Disease Research Center. The Department also supports clinical and translational research that falls outside these centers, and frequently pools resources (including software, personnel, and administration) across all centers and projects. The core faculty listed are all associated with one or more of the major clinical and translational research and educational programs at KUMC.

Faculty Name	Rank	Highest Degree	Tenure Track Y/N	Academic Area of Specialization	FTE to Proposed Program
Jo Wick	Professor	PhD	Y	KU Cancer Center, Biostatistics, Clinical Research, Education	0.3
Andrea Chadwick	Associate Professor	MD, MS	N	Clinical Research, Medicine	0.3
Lynn Chollet-Hinton	Assistant Professor	PhD, MSPH	Y	MS in Clinical Research, KU Cancer Center OPTIK, Epidemiology	0.05

Simon Lee	Professor	PhD, MPH	Y	MS in Clinical Research, Implementation Science	0.05
Ed Ellerbeck	Professor	MD, MPH	Y	Frontiers, KU Cancer Center, Epidemiology, Clinical and Translational Research, Medicine	0.05
Doug Wright	Professor	PhD	Y	Kansas-INBRE, Translational Research	0.05
Jeffrey Thompson	Associate Professor	PhD	Y	Kansas Institute for Precision Medicine, KU Cancer Center C3OD, Research Informatics, Precision Medicine, Translational Research	0.05
Jonathan Mahnken	Professor	PhD	Y	Frontiers, KU Alzheimer's Disease Research Center, Biostatistics, Clinical Research	0.05
Devin Koestler	Professor	PhD	Y	Kansas Institute for Precision Medicine, Kansas INBRE, KU Cancer Center, Molecular Epidemiology	0.05
Jianghua He	Professor	PhD	Y	Frontiers, Biostatistics, Translational Research	0.05

Number of graduate assistants assigned to this program **1**

IX. Expenditure and Funding Sources

A. EXPENDITURES	First FY	Second FY	Third FY
Personnel – Reassigned or Existing Positions			
Faculty (0.6 FTE at AAMC Multiplier $125,544)	75,326	77,586	79,913
Administrators *(other than instruction time)* (0.4 FTE at AAMC Multiplier $125,544)	50,218	51,724	53,276
Graduate Assistants			
Support Staff for Administration (0.5 FTE at median range for Academic Program Specialist $67,000)	33,500	34,505	35,540
Fringe Benefits (assuming 32%)	50,894	52,420	53,993
Other Personnel Costs	0	0	0
Total Existing Personnel Costs – Reassigned or Existing	209,938	216,235	222,722
Personnel – New Positions			
Faculty	0	0	0

Administrators *(other than instruction time)*	0	0	0
Graduate Assistants	37,400	38,522	39,678
Support Staff for Administration (0.5 FTE at median range for Academic Program Specialist $67,000)	33,500	34,505	35,540
Fringe Benefits (assuming 32%)	22,688	23,368	24,069
Other Personnel Costs			
Total Existing Personnel Costs – New Positions	93,588	96,395	99,287
Start-up Costs - One-Time Expenses			
Library/learning resources	0	0	0
Equipment/Technology	0	0	0
Physical Facilities: Construction or Renovation	0	0	0
Other	0	0	0
Total Start-up Costs	0	0	0
Operating Costs – Recurring Expenses			
Supplies/Expenses	0	0	0
Library/learning resources	0	0	0
Equipment/Technology	0	0	0
Travel	10,000	10,000	10,000
Other	0	0	0
Total Operating Costs	10,000	10,000	10,000
GRAND TOTAL COSTS	313,526	322,630	332,009

B. FUNDING SOURCES *(projected as appropriate)*	Current	First FY (New)	Second FY (New)	Third FY (New)
Tuition / State Funds ($534.84 per CH)		10,697	21,394	32,091
Student Fees ($421.77 per student per F/Sp)		843	1,687	2,531
Other Sources				
GRAND TOTAL FUNDING		11,540	23,081	34,622
C. Projected Surplus/Deficit (+/-) (Grand Total Funding *minus* Grand Total Costs)		(301,986)	(299,549)	(297,387)

X. Expenditures and Funding Sources Explanations

A. Expenditures
Personnel – Reassigned or Existing Positions

Drs. Wick and Chadwick will co-direct the program. All associated personnel are currently in existing positions at the institution paid and effort will be reallocated to support this program. Faculty mentoring and advising effort not explicitly listed in this proposal will be paid through dollars allocated to their home department by the School of Medicine funding model. Salary increases assume 3% annual cost of living increase.

Personnel – New Positions

1 FTE Academic Program Specialist (median salary $67,000) will be necessary to support this program, with 0.5 existing FTE paid by the Department of Biostatistics & Data Science reallocated to this program. Funding for 1 PhD GRA (0.5 FTE) is included. However, the program directors will apply for other funding sources [e.g., training programs (existing and new)] and will encourage eligible students to apply for fellowships.

Start-up Costs – One-Time Expenses

None.

Operating Costs – Recurring Expenses

Presentations at scientific conferences is expected, so funds are allocated to provide travel support.

B. Revenue: Funding Sources

Calculations assume an 80/20 resident/non-resident mix, yielding $534.84 tuition revenue per credit hour (resident KUMC graduate rate is $421.15 per credit hour, non-resident is $989.60 per credit hour). For the sake of simplicity, we assume all students are on campus for the calculation of fees. On campus students are assessed $421.77 in campus fees in spring and fall semesters. In Year 1, total tuition revenue from 1 full-time student will be $534.84×20 credit hours = $10,697. Campus fees for 1 student will be $421.77×1 student×2 terms = $843.54. Therefore, the total revenue including tuition and fees will be $10,697 + $843.54 = $11,540. In Year 2, this amount increases by 2-fold to $23,081, reflecting the addition of 1 full-time enrolled student. In Year 3, 1 additional student is added for a total of 3 full-time enrolled students, so the amount increases 3-fold to $34,621.

Program directors will apply for new sources of funding [e.g., training programs (existing and new)] and will encourage eligible students to apply for fellowships.

C. Projected Surplus/Deficit

Given the planned limit on program size at start-up, the program is expected to run at a deficit until the program size reaches 8 full-time students (across all 4 – 5 years of the program). This can be reasonably achieved by year 7 if the program matriculates 2-3 new students each year beginning in year 4. However, program directors will actively apply for new sources of funding [e.g., training programs (existing and new)] and will encourage eligible students to apply for fellowships with the goal of achieving a self-sustaining funding model.

XI. References

1. Roberts SF, Fischhoff MA, Sakowski SA, Feldman EL. Perspective: Transforming science into medicine: how clinician-scientists can build bridges across research's "valley of death". Acad Med. 2012 Mar;87(3):266-70. doi:

10.1097/ACM.0b013e3182446fa3. PMID: 22373616.

2. Switzer GE, Robinson GFWB, Rubio DM, Fowler NR, Kapoor WN. Doctoral programs to train future leaders in clinical and translational science. Acad Med. 2013 Sep;88(9). doi: 0.1097/ACM.0b013e31829e7bce. PMID: 23899901.

3. Calvin-Naylor NA, Jones CT, Wartak MM, et al. Education and training of clinical and translational study investigators and research coordinators: a competency-based approach. J Clin Transl Sci. 2017 Feb;1(1):16-25. Doi: 10.1017/cts.2016.2. PMID: 28480054

4. Bureau of Labor Statistics (2022). https://www.bls.gov