Master of Medical Education Program

A Proposal to the Graduate Council of the University of California, Riverside Academic Senate
# Executive Summary

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Executive Summary

This is a proposal for a new Master of Medical Education (M.M.Ed.) degree program to start in Fall 2023. This program aims to train the next generation of academic medical leaders. The program will build upon existing strengths of UCR in teaching, research, and service in the core principles of academic medicine. Our overarching goal is to create a program that will serve the academic medical needs of Inland Southern California.

The University of California, Riverside (UCR) recently identified increasing graduate enrollment as a campus priority. Establishment of a M.M.Ed. ol program at UCR will contribute to the goal, articulated in UCR’s Strategic Plan, of doubling student enrollment in master’s programs. The proposed M.M.Ed. program will build on and complement:

- Existing School of Medicine (SOM) and campus educational and research programs, which will help fulfill its mission of training the next generation of health professionals
- Campus-wide faculty expertise in academic medicine
- Recent campus-wide expansions in and focus on improving student education and engagement in research, training, and service in the health of communities and populations.
- Recent campus-wide expansions in research, training, and service in the health of communities and populations. These include resources provided by the Office of Faculty Development, access to research funding and expanding collaborative research and innovation with other UCR academic units, community-based organizations and other higher education and research-focused institutions to improve upon healthcare delivery.

Our proposed 40-unit M.M.Ed. program can be completed in two years. The program will recruit and train graduates of UCR and other programs from Inland Southern California and beyond who want to enhance their careers in academic medicine. Students will be provided rigorous instruction in core academic disciplines of: (1) theories of teaching and learning, (2) teaching practice and leadership, (3) assessment and evaluation, (4) diversity, equity, and inclusion, and (5) research and scholarship. Coursework will be made up of core courses, elective courses, and a capstone project.

We aim to enroll the first M.M.Ed. class in Fall 2023. The program will be marketed to UCR graduates as well as graduates from institutions from throughout Southern California and beyond, including individuals with medical, health professional (e.g., PharmD, MSN, DDS), and other degrees (MPP, EdD, MSW, JD, PhD) who seek training in academic medicine. We project that 20 students will matriculate in the first year of the program. Subsequently, we estimate enrollment increasing 10% each year, reaching 30 students admitted per year by the fifth year of the program.

In summary, the proposed M.M.Ed. program will address the increasing local and national demand for academic medical professionals; build on existing strengths of UCR faculty in research and teaching; and provide students with exemplary education to prepare them for successful and impactful careers in healthcare and academic leadership.
Section 1. Introduction

The UCR School of Medicine is proposing a new Master of Medical Education (M.M.Ed.) degree to meet the needs of the changing environment within academic medicine, increase the number of trained healthcare leaders in academic medicine, and generate a source of revenue for the School of Medicine. This program is unique among University of California graduate programs. The vision of this program is to prepare a workforce of academic leaders with a deep understanding of teaching and learning within academic medicine.

1.1 Program Aims and Objectives

The main objective of the proposed program is to produce medical education professionals with a thorough understanding of teaching and learning in a medical, biomedical, or health professions field. Students who enroll in the UCR M.M.Ed. program will engage in transformational learning that connects their professional experiences with dynamic coursework and practical teaching experiences to develop a more in-depth understanding of their teaching and their role within academic medicine. At the conclusion of this program, learners will be proficient in the following key program level learning outcomes. Graduating students will:

1. Support student-centered medical educational practices that are sensitive to the diverse backgrounds of their learners
2. Design and implement innovative and effective curricula and educational opportunities for learners
3. Develop teaching skills in a range of classroom-based, online, and clinical teaching environments to create a positive learning environment
4. Design and implement instruments to assess and promote student learning and progress towards educational goals
5. Evaluate, synthesize, and apply educational research in academic medicine settings to design and implement evidence-based programs and methods
6. Assess the effectiveness of teaching and educational programs using formative, summative, and programmatic evaluation methods
7. Identify current issues and resources in medical education to monitor developments in the field.

This graduate degree program is being designed to accommodate the schedules and learning needs of working professionals through a hybrid, online/on-campus program design. This curricular format will allow students from any location to have access to the high-quality educational opportunities for which UCR is known. In addition to reaching larger numbers of qualified students, the program’s flexible design will meet many of the needs of a diverse workforce. Furthermore, the hybrid model for advanced study can be accomplished while students live and work in their own community.

The target audience for the UCR M.M.Ed. program is professionals working in the healthcare field who are interested in expanding their knowledge of medical education. Since some coursework will be conducted on the campus of UCR, it is anticipated that the largest portion of students will live in the Southern California region; however, there may be a small percentage who travel from out-of-state. International students are not anticipated.
The course selection, program design, and model of delivery ensure academic integrity while promoting access to a novel and innovative program. The new program will complete the work of the Office of Faculty Development’s Professional Certificate in Medical Education Certificate program. The Professional Certificate in Medical Education can be used as a pipeline program for the Master’s in Medical Education. Using this model, students will be able to complete the M.M.Ed. program in 6 quarters (two-years) and will conform to the Graduate Council Regulations and Rules which require a minimum of 36 academic units.

1.2 Historical Development of the Field and Department Strengths

A Master’s degree in medical education is fairly new. In 2005, only six institutions in the United States were offering them, and only two of those were in California. By 2012, 24 degrees were being offered by institutions including prestigious medical programs like Oxford, Harvard, and John Hopkins. Today, there are a range of programs including those offered completely online.

The available programs have significant differences. Some have an emphasis on leadership, others focus on research, and a few programs focus on teaching and learning in academic medicine. Some programs are partnerships with other entities such as the UCSF program which offers a Master of Arts in Education from UC Berkeley.

The UCR SOM created a Professional Certificate in Medical Education and offered it in partnership with UCR University Extension and Professional Studies. The certificate program is a fully online 12-unit program that includes courses in teaching and learning theory, curriculum design, instructional strategies, and assessment. Students must also complete a teaching practicum related to their professional work to earn the certificate.

In addition, the Senior Associate Dean of Medical Education holds an advanced degree in education, and the Director of the Office of Faculty Development holds an EdD in Education. The remaining faculty have significant expertise in academic medicine.

1.3 Relation of Proposed Program to Existing Program’s on Campus

The UCR strategic plan states that we will expand our research enterprise and establish UCR as a global leader in providing a high quality, collaborative, rigorous, and inclusive learning environments. The proposed degree, with its focus on high quality, inclusive teaching directly addresses these campus priorities.

The strategic plan further states as a specific goal to “accelerate the expansion of master’s degree programs.” Further the strategic plan identifies self-supporting graduate professional degree programs as a method for growing and diversifying revenue streams. The proposed professional graduate degree directly fits within the strategic goals of the campus.

As the UCR SOM does not offer undergraduate degrees, there is no anticipated impact on existing programs. Further, as the degree is focused on working professionals, the target audience is faculty and not students. We anticipate no negative effects on any existing programs within the SOM.

1.3.1 Relation to Campus Priorities

As mentioned above, increasing the number of graduate students in professional degree programs is a very high priority for the UCR campus, as the campus has one of the lowest ratios of graduate/professional students
to undergraduates in the UC system. As per the penultimate draft (dated February 2021) of UCR’s Strategic Plan, UCR plans to double the proportion of Master’s enrollments, which would raise the total graduate enrollment to 18% (Strategic Plan, 2021). The implementation of this program will help UCR progress towards this goal. In addition, the proposed M.M.Ed. Program aligns with several institutional goals and objectives identified in the UCR 2020 Strategic Plan penultimate draft:

I. **Distinctive, Transformative Research and Scholarship**

While not its primary objective, we believe that the development of a graduate program in medical education will help establish a community of scholars and academic medical professionals. This would include promoting the mission of the Office of Faculty Development and School of Medicine by creating a diverse workforce of physicians/health professional rooted in a culture of excellence in teaching, advances in inclusion, equality, and equity, fosters collaboration, and supports faculty in their efforts to explore innovative, evidence-informed teaching methods that generate student success.

II. **A Rigorous, Engaging, and Empowering Learning Environment**

The Strategic Plan calls for expansion of engagement and collaboration throughout the university as a means of achieving this goal. The proposed M.M.Ed. program, which will draw on expertise from multiple departments, can serve as a critical mechanism for expanding engagement across campus. In addition, the proposed M.M.Ed. program will increase the capacity and diversity of learning by educating matriculating students on the need for professional development, developing innovative approaches to address and overcome barriers in student education, and creating a learning environment where faculty, staff, and students are partners in the creation and dissemination of knowledge.

III. **A Welcoming, Inclusive, and Collaborative Community**

The Strategic Plan speaks of “[building] a welcoming, inclusive, respectful and fair campus that eliminates structures that contribute to inequities.” The proposed M.M.Ed. program will build upon this goal of campus via several mechanisms. The first is to build upon campus’ capacity to meet diverse needs. A foundational component of the M.M.Ed. program is to educate and ultimately graduate academic medical professionals in competencies centered around diversity, equity, and inclusion. Furthermore, the proposed program will expand campus’ ability to increase engagement and collaboration throughout the university. M.M.Ed. graduates will be equipped with the ability to immediately contribute to this campus goal as leaders within academic medicine by using medical education competencies that will result in the ability for graduates to use learned skills and knowledge to apply and create networks and opportunities to ultimately influence their peers and students to reflect the society they serve and teach.

IV. **Advancing the Public Good**
Widening education pipelines is an identified goal of the campus as a way of becoming an example for colleges and universities to promote public good. Although not directly, the proposed M.M.Ed. program will be able to enhance this goal by training individuals matriculating in the program to be able to make an impact in this space as they move forward in their careers in academic medicine. This would also contribute to the advancement of preparing leaders that will be able to provide leadership on pressing societal issues, specifically within medicine and public health, and help UCR become an engine for equitable economic development, engagement, and translation of knowledge into widespread practice in Inland Southern California and beyond.

1.4 Program Differentiation

We propose a program that will be the only one of its kind in the UC system. The proposed program will also be markedly distinct from existing programs in Southern California (Loma Linda University and University of Southern California; see section 1.5 for details on these programs) as the flexible design will better meet the needs of working professionals than any other available program in the region.

The UCR M.M.Ed. program is part of a growing national trend in developing a graduate level program focusing on medical education. Currently, there are only 34 such M.M.Ed. programs in the nation, and many of them require full-time on campus commitment. Respected institutions such as Harvard and Stanford are now offering similar programs.

The M.M.Ed. program differs from existing offerings in the area of curriculum, program structure, and cost. The proposed program focuses the core curriculum on teaching and learning; in contrast, other programs address the scholarship of teaching and learning as only one small aspect of the overall degree. The proposed program’s core curriculum focuses entirely on aspects of teaching and learning, with additional electives in areas such as leadership, finance, and accreditation. In addition, the UCR M.M.Ed. program offers the flexibility necessary for physicians and other busy healthcare professionals. Of the 9 required courses, four are offered as fully online courses and one is a self-study course. The remaining courses are offered in a hybrid model allowing much of the coursework to be completed online. Lastly, the proposed program will be substantially more cost-efficient than other programs available in the region and will provide numerous options for reduced tuition (See section 6.1).

1.5 Relationship of Proposed Program with Other Notable Programs

There are no other UC campuses that offer a M.M.Ed. Program, which bodes well for the proposed M.M.Ed. program. In fact, there are only 34 such programs throughout the country with the closest such programs being at Loma Linda University and the University of Southern California, at substantially higher prices than the M.M.Ed. program being proposed at UCR.

1.5.1 Loma Linda University

Loma Linda University offers a 48-unit, two-year master’s program that is designed for health professionals who want to enhance the effectiveness and efficiency of student learning in the classroom and in practice. The
48-units are made up of 18-units of core courses, 6-units from Domain I: Teaching, Learning, Assessment, and Evaluation, 6-units from Domain II: Leadership, and the remaining 18-units can be made up of elective units.

1.5.2 University of Southern California

The University of Southern California offer a 33-unit, two-year master’s program that aims to cultivate leaders who will develop and advance programs in health professions education that will enable graduates to guide future generations of health professionals toward better meeting the health needs of a global society and promoting the wellbeing of future providers. The program is composed of 26-units of core courses, with another 7-units of elective courses.

1.6 Development Timeline of Master’s in Medical Education Program

As shown in Figure 1 (below), we have engaged in the process of planning and developing this proposal which started in Spring 2021, continuing to the present. This proposal will be submitted to UCR’s Graduate Council in September, 2021. We envision receiving feedback, making necessary modifications, and receiving final Graduate Council approval between September and November, 2021. Campus approval will be requested immediately following Graduate Council approval; we project that approval will be forthcoming between November 2021 and January 2022. The proposal will then be advanced for UC approval; we project that this will take place between March and September, 2022. Assuming the proposal is approved during the 2021-2022 Academic Year, the program will begin recruiting students in Fall 2022, with the first class, targeted at 15 students, enrolling in Fall 2023. Thereafter, the new cohort size will increase by 10% year-over-year.
1.7 Contributions to Diversity

The proposed M.M.Ed. program will contribute to diversity in at least three ways. First, the faculty and staff supporting the program will reflect racial, ethnic, and socioeconomic diversity. While academic medicine is more diverse than many other academic fields, there is still a long way to go to achieve equity. For example, 2018 data on faculty of member institutions of the Association of American Medical Colleges indicate that the largest proportions of faculty were White (63.9%) and Asian (19.2%). Only 3.6% of full-time faculty in 2018 were Black, and 5.5% were Hispanic, Latino, or of Spanish Origin. Moreover, females were the minority among all racial/ethnic faculty groups except Black faculty, of whom 57.7% were female (AAMC, 2019). As we recruit faculty and staff to the program, we will aggressively implement best practices in recruitment and hiring, supported by the affirmative action goals of the School of Medicine and UCR at large making a concerted effort to improve on diversity and equity to reflect our student body and ultimately the individuals we serve in an increasingly diverse healthcare setting.

A second contribution to diversity will involve recruitment of a highly diverse student body, reflecting the diversity of the population of Inland Southern California. UCR, including the School of Medicine, has been extremely successful in recruiting and retaining a highly diverse student body. For example, U.S. News & World Report rated the School of Medicine 6th in the country with respect to recruitment and retention of a diverse student body. We will use best practices in recruitment and retention, including the development of “pipeline” programs at UCR, implementation of a holistic admissions strategy, and intensive advising and student support practices. The School of Medicine’s Student Affairs office has agreed to support the new program in these efforts.

Finally, the curriculum of the proposed M.M.Ed. program will contribute to student understanding of diversity, equity, and inclusion and their relevance in academic medicine. This will be achieved by requiring students take a course in Diversity, Equity and Inclusion in Academic Medicine—see Table 1, as well as integrating considerations of diversity, equity, and inclusion across the curriculum.

1.8 Administering Department

The M.M.Ed. program falls under the governance of the UCR Graduate Division and will be administered by the Office of Faculty Development within the larger Department of Undergraduate Medical Education within the UCR School of Medicine.

1.9 Evaluation Plan for Program

Graduate programs at UCR are formally evaluated in their third year (initially, after launch of the program) and then every seven years thereafter. This includes both an external review by a panel of nationally recognized scholars and an internal review by a subcommittee of the UCR Graduate Council.

The M.M.Ed. program will conduct both formative and summative evaluation activities. Formative evaluation will assess institutional/program development with the purpose of improving implementation and/or procedures. Summative evaluation will assess the overall impact of the program. Taken together, both
methods provide considerable insight concerning overall program performance against set objectives. Specific methods used to systematically gather data can be employed in both categories of evaluation and will include annual surveys of students, alumni, faculty, and employers, as well as syllabi audits and institutional reports (e.g., GPA, graduation rates, attrition rates). Data collection will involve the efforts of many program constituents, including current students, alumni, program faculty and staff, community partners, institutional officers, and employers. The evaluation processes used by the M.M.Ed. program will enable faculty, staff, students, and community partners to enhance program operations and student learning.

Section 2. Application Requirements/Program Description

2.1 Preparation for Admission

The program will initially target UCR School of Medicine faculty, students/residents, fellows, physicians, and advanced medical practitioners. After the initial launch of the program, we will expand to include local, state, and national applicants from institutions beyond UCR. Students must have adequate preparation in the field of academic medicine, and show potential to undertake advanced study, research, and practical training as evidenced by past academic performance, along with, past and current experience in academic medicine.

In addition to applying via the UCR application portal, applicants must also provide the following:

1. Three (3) letters of recommendation, including at least two (2) from faculty who are in applicant’s major area and can assess the applicant’s academic ability and potential to succeed in our program.
2. Official transcripts from all institutions
3. Resume/CV
4. Statement of Purpose
5. Successful completion of a terminal degree (PharmD, MD, PhD, NP, PA, RN, DO, etc.)
6. Those who do not have an advanced degree, a minimum of five (5) years of experience in health professions education and a bachelor’s degree or its equivalent from an accredited institution is required.

Applications will be reviewed by a M.M.Ed. Admissions Committee comprised of faculty across various departments. The Admissions Committee will make recommendations based on the applicant’s statement of purpose; academic achievement; academic interest; academic, work, and life experience.

2.2 Foreign Language

There will not be a language requirement for students applying for the M.M.Ed. Program.

2.3 UCR M.M.Ed. Program Description

The UCR M.M.Ed. program will conform to the Graduate Council Regulations and Rules which require 36 academic units. The units will be earned through required core courses and elective courses as well as a
capstone project. The target date for admission of the first cohort is Fall 2023 with a goal of a cohort of 15 students.

All students will receive formal education in the fundamental principles of teaching in an academic, medical setting rooted in understanding and implementing the theory and practice of curriculum design, effective teaching, assessment, and other aspects of academic medicine.

Coursework, educational activities, and professional experiences will be presented in three major formats: 1) synchronous online sessions; 2) asynchronous online courses; and 3) in-person classes consisting of lectures, small group discussions and active learning. Completion of the program will also include a mentored practicum.

Online courses provide maximum flexibility while on-campus classes provide opportunities to: 1) integrate learning outcomes from the online coursework; 2) collaborate with the cohort; 3) engage with UCR faculty and guest speakers; and 4) participate in essential learning activities. Practicums provide an opportunity to apply theory in real-world medical education environments. Collectively, online, on-campus, and practicum coursework prepare graduates with core competencies and a nuanced understanding of teaching, learning, and leadership within academic medicine.

2.3.1 Degree Type

All qualified students will obtain the Master’s degree in Medical Education (M.M.Ed.)

2.3.2 Curriculum Tracks(s)

The UCR M.M.Ed. Program will be a two-year/6-quarter, full-time program, with the option to continue beyond the two-years if needed. As mentioned above the program will require students to complete 36-units composed of core (including a capstone project) and elective courses.

2.3.3 Unit Requirements

All candidates for the degree are required to complete all the general requirements specified below. The core curriculum will consist of 36 graduate-units. Students will also complete two courses (4-units) of elective courses. The course breakdown to fulfill these requirements is presented in Table 1 below:

Table 1. M.M.Ed. Course Breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMED 2xx: Seminar in Medical Education OR Teaching Excellence Academy</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Designing Medical Education</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: The Scholarship of Teaching and Learning</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Instructional Strategies and Assessment</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Course Title</td>
<td>Units</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Conducting Research in Academic Medicine</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Diversity, Equity, and Inclusion in Academic Medicine</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Program Evaluation in Medical Education</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Medical Education Law</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>MDED 297: Directed Study in Medical Education</td>
<td>4.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Core Courses Unit Total</th>
<th>36.0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elective Courses</strong></td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: History of Academic Medicine</td>
<td>4.0</td>
</tr>
<tr>
<td>MDED 2xx: Innovations in Medical Education</td>
<td>4.0</td>
</tr>
<tr>
<td>MDED 2xx: Accreditation in Medical Education</td>
<td>4.0</td>
</tr>
<tr>
<td>MDED 2xx: Finance in Academic Medicine</td>
<td>4.0</td>
</tr>
<tr>
<td>MDED 2xx: Leadership in Medical Education</td>
<td>4.0</td>
</tr>
<tr>
<td>MDED 290: Independent Study (Self-study. Course of study proposed by the learner. Must be approved by advisor)</td>
<td>4.0</td>
</tr>
</tbody>
</table>

| Unit Grand Total                                                 | 4.0   |

2.3.4 M.M.Ed. Core Knowledge

The areas of knowledge basic to academic medicine include the following:
- Theories of Teaching and Learning
- Teaching Practice and Leadership
- Assessment and Evaluation
- Diversity, Equity, and inclusion
- Research and Scholarship

All graduate professional medical education degree students must complete sufficient coursework to attain mastery in the core areas of academic medicine identified above.

2.3.5 Required and Recommended Courses

A description of the required and recommended courses is listed under Section 5 of this proposal.

2.3.6 Licensing or Certification

There will be no specialized licensing or certification required for the M.M.Ed. degree.

2.4 Field Examinations

There will be no field examinations required for the M.M.Ed. degree.

2.5 Qualifying Examinations
There will be no qualifying examinations required for the M.M.Ed. degree.

2.6 Capstone Requirements

Successful completion of the M.M.Ed. degree will require a capstone experience. The M.M.Ed. program will adopt an academically rigorous approach for the capstone, and include two options that students can pursue as part of the capstone experience. Both a capstone-project and thesis option are described in sections 2.6.1 and 2.6.2. We anticipate that many research-oriented M.M.Ed. students will select the thesis option. Each option will require a formal presentation and written report.

2.6.1 Capstone Project Option

The capstone will be designed to review, integrate, and apply concepts and methods presented in the M.M.Ed. curriculum, and enhance the student’s preparation for post-graduation success in academic medical education. The breadth of capstone options will be similar to that offered at other M.M.Ed. programs. Students will need to complete an individual written report approved by their faculty academic advisor and the graduate committee as part of the capstone, along with a formal presentation. A capstone agreement form will be completed and signed prior to the start of the project. All capstone reports will be reviewed by two or more independent faculty reviewers. A faculty capstone coordinator will be designated and will review and approve all capstone projects. The capstone project may focus on, but is not limited to, addressing and presenting a substantial issue related to their professional area of interest, as well as designing and implementing a scholarly approach towards its resolution. A thesis option is also available for students requiring a directed research study. In all cases the capstone project must be a product demonstrating mastery and synthesis of medical education principles consistent with the M.M.Ed. degree.

2.6.2 Thesis Option

The thesis option requires that at least 24 units be in graduate (200) level courses taken at a University of California campus. Of these, only 12 may be in graduate research for the thesis and, in most cases, none may be in courses numbered 291 (exam preparation). Students are guided by a committee of three faculty who must be approved by the Graduate Dean. In addition to requiring an acceptable thesis, the department may require any examination that it feels necessary to confirm that the student has an appropriate knowledge of the discipline. Once completed the thesis must adhere to University standards and be filed in the Graduate Division electronically.

We anticipate that many research-oriented M.M.Ed. students will select the thesis option. The scope of the thesis will be decided by mutual agreement among the student, thesis advisor, and thesis committee members, and a thesis agreement form will be completed and signed. Students and their advisors will be responsible for identification of appropriate thesis topics. Each student will be required to prepare a thesis proposal that will be reviewed and approved by the entire thesis committee before embarking on the thesis project.
The M.M.Ed. thesis’ provides an opportunity for students to demonstrate their understanding of academic medicine principles and methodology applied to a specific topic. The student may define a research or medical education problem and, using existing data or field experiences, carry out the necessary data synthesis and/or analysis to answer or illuminate the problem. The student may also define a research problem and design and carry out the research necessary to answer or illuminate the problem posed. The thesis may also be based upon an in-depth analysis of existing literature leading to the development of a research proposal. The proposal should include objectives, rationale, well-defined methods, and a discussion of proposed analyses; moreover, the proposal should represent a feasible project, particularly with respect to human subjects review. The thesis must meet University standards and can be structured to facilitate preparation of one or more manuscripts for submission to the peer-reviewed literature, although acceptance of publication is not a requirement. Students will also be encouraged, but not required, to defend their thesis in public academic settings. The thesis report should follow the usual research paper format.

2.7 Special Requirements Over-and-Above Minimum Requirements

There are no special requirements for the M.M.Ed. degree program.

2.8 Sample Program

A sample program outline can be found in Appendix D.

2.9 Normative Time from Matriculation to Degree Conformation

The normative time to complete the M.M.Ed. degree will be six quarters (approximately 24 months), with the option to continue beyond the two-years if needed. Resident physicians, medical and pharmacy students, and other individuals possessing an advance degree in a health-related field, e.g. PhD, PharmD, MSN, with appropriate background coursework and/or professional experience in medical education may be able to complete the M.M.Ed. program in less time based on their prior or existing academic program and experience.

2.10 Professional Fees

Students in this program will pay a professional fee of $2,500 per quarter for a total annual amount of $7,500 for three quarters in addition to other fees. The choice of assessing a Professional Degree Supplemental Tuition (PDST) fee aligns with other graduate professional degree programs throughout the University of California (UC) system with over 90% of students enrolled in graduate programs paying PDST. The amount of PDST was set based on comparing the proposed M.M.Ed. program with similar programs across the UC system.

Below is a table comparing PDST fees at several UC locations:
Given these comparisons and the scope of the program of ultimately becoming a regional program to educate and train academic medical professionals, an annual PDST of $7,500 or $2,500 quarterly is proposed for both in-state and out-of-state students.

The revenue provided by the PDST will be used to maintain program quality and expand access to resources for students and faculty within the program. A majority of PDST revenue will be used towards faculty, instructional resources, and student resources that are necessary to train future generations of highly skilled professionals. PDST revenue will also be used for financial aid that will allow the program to provide targeted grant and scholarship assistance to allow the program to be more accessible and affordable for students.

Below is the annual cost breakdown for matriculating students:

### UCR M.M.Ed Program Annual Costs (Students)

#### In-State Students

<table>
<thead>
<tr>
<th>Monetary Category</th>
<th>Fall Quarter</th>
<th>Winter Quarter</th>
<th>Spring Quarter</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
<td>$3,814.00</td>
<td>$3,814.00</td>
<td>$3,814.00</td>
<td>$11,442.00</td>
</tr>
<tr>
<td>Professional Degree Supplemental Tuition (Professional Fees)</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
<td>$2,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>Student Services Fee</td>
<td>$376.00</td>
<td>$376.00</td>
<td>$376.00</td>
<td>$1,128.00</td>
</tr>
<tr>
<td>Campus-based Fees</td>
<td>$348.16</td>
<td>$348.16</td>
<td>$348.16</td>
<td>$1,044.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$7,038.18</td>
<td>$7,038.16</td>
<td>$7,038.16</td>
<td>$21,114.50</td>
</tr>
<tr>
<td>GSHIP</td>
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<td>$1,324.27</td>
<td>$1,324.27</td>
<td>$3,972.82</td>
</tr>
<tr>
<td>*Tuition, Student Services, &amp; Campus-Based Fees</td>
<td></td>
<td></td>
<td></td>
<td>$13,614.50</td>
</tr>
<tr>
<td><strong>Total with GSHIP</strong></td>
<td>$8,362.45</td>
<td>$8,362.45</td>
<td>$8,362.45</td>
<td>$25,087.32</td>
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#### Out-of-State Students

<table>
<thead>
<tr>
<th>Monetary Category</th>
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<th>Winter Quarter</th>
<th>Spring Quarter</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
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<td>$3,834.00</td>
<td>$3,834.00</td>
<td>$11,502.00</td>
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<tr>
<td>Professional Degree Supplemental Tuition</td>
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<td>$2,500.00</td>
<td>$2,500.00</td>
<td>$7,500.00</td>
</tr>
<tr>
<td>Student Services Fee</td>
<td>$376.00</td>
<td>$376.00</td>
<td>$376.00</td>
<td>$1,128.00</td>
</tr>
<tr>
<td>Campus-based Fees</td>
<td>$348.16</td>
<td>$348.16</td>
<td>$348.16</td>
<td>$1,044.50</td>
</tr>
<tr>
<td>Nonresident Supplemental Tuition</td>
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<td>$5,034.00</td>
<td>$5,034.00</td>
<td>$15,102.00</td>
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<tr>
<td><strong>Total</strong></td>
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<td>$12,092.16</td>
<td>$12,092.16</td>
<td>$36,276.50</td>
</tr>
<tr>
<td>GSHIP</td>
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<td>$1,280.56</td>
<td>$1,280.56</td>
<td>$3,841.68</td>
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<td></td>
<td></td>
<td>$28,776.50</td>
</tr>
<tr>
<td><strong>Total with GSHIP</strong></td>
<td>$13,372.74</td>
<td>$13,372.74</td>
<td>$13,372.74</td>
<td>$40,118.18</td>
</tr>
</tbody>
</table>

### Section 3. Projected Need

#### 3.1 Student Demand - Growing Educational Need

Graduate programs in medical education are viewed by many as a key strategy to contribute to a health professional’s conversion from competent clinician to transformational academic leader. Prospective
physicians must acquire a large body of knowledge and incorporate it into a working framework of clinical reasoning that in turn informs effective medical practice. Most physicians get next to no training in theory or on the ground methods of education. To be great teachers, potential instructors need explicit training in multiple areas: learning theory, pedagogy, curriculum design, assessment methods, accreditation, and much more (Sethi et al., 2018). The skills, techniques, and mindsets that medical instructors must possess in order to cultivate the transformation of students into physicians do not arise automatically. Training in these areas also significantly impacts the practices, behaviors, and job prospects of graduates (Sethi et al., 2015). Finally, simply participating in such programs dramatically affects the career intentions of participants, allowing them to better imagine and navigate the development of a career in medical education (Chen et al., 2017).

In practical terms, the focused, trained medical educator workforce has become increasingly important due to institutional and regulatory dynamics. The first being that many clinicians are making education the primary focus of their careers, and institutions are creating career tracks focused on medical education in response. Another important transition has occurred within accreditation bodies. Accrediting bodies have increased their requirement criteria that educational leaders have the expertise and documented education to excel in their roles (Artino et al., 2018). In addition, the need to maintain an educational environment conducive to educating the students and residents in required competencies has significantly increased, emphasizing the value of employing faculty educators and leaders who possess advanced training in academic medicine to maintain and improve their programs. In every aspect of medical education, it is more and more critical to have personnel in place that understand how to review curriculum, grow and develop educational expertise among faculty, and create an evaluation system that meets the criteria that accrediting bodies set out for medical education programs (Artino et al., 2018).

Moreover, in the United States there is a striking variation in ratios of medical education degree programs to medical schools, which indicates an increased need for medical education degree programs, especially considering the increase in educational research and development in medical schools. A recent market research study published by Transparency Market Research has projected that from 2020 to 2030 the medical education market is to expand at a Compounded Annual Growth Rate (CAGR) of more than 5%, which is largely due to a rise in the number of medical schools, an increase in students seeking medical education, and an increase in the globalization of medical education contributed by migrating medical student population (Medical Market, 2021). Thus, the above-mentioned reasons shed light on the growing need and demand for well-trained teacher-clinicians that understand and have mastered the core teaching competencies taught in our proposed M.M.Ed. program and other similar programs. A UCR-based M.M.Ed. program would be of profound importance to the medical education community in Southern California.

3.2 Opportunities for Placement of Graduates

There is wide opportunity for utilization of the skills and knowledge learned in the program throughout Southern California, the state at large, nationally, and internationally. Increasingly, unique skill sets are required for medical education professionals to be successful in academics. From clinical faculty who need training in education, to educators being introduced to the specific field of medical education, these skills are in high demand. According to the AAMC, the U.S. faces in physician shortage. In 2006, the AAMC called on medical schools to increase physician capacity to meet this shortage. Since then, the number of first-year students enrolled in medical schools has increased and 30 new medical schools have opened. Despite these
efforts, it is projected that a shortage of up to 139,000 physicians will be present by 2033. In 2020, the number of students applying to medical schools for the 2021 academic year was up by approximately 18% from the same time the previous year, with enrollment increasing by 1.7% over the same period (AAMC, 2020). This increase in physician demand, indirectly puts pressure on medical schools to have sufficient, qualified faculty FTE levels to support this anticipated increase in medical students. Thus, graduates of this program will be competitive candidates for a variety of leadership roles within medical education programs. Of note, there are 11 medical schools in Southern California, and 16 in California. More and more defined training is preferred or required for most of the positions in leadership, with one of the more common reasons for enrolling in a program like this being to educate existing medical professionals in the art and science of medical education.

3.3 Importance to the Discipline and Community

The UCR SOM MEd program will be of high importance to the medical education community of the region. With 16 medical schools and only two formal programs in the discipline, it is already an underserved educational need. Moreover, the other two programs in southern California are structured as intense, in-person programs with very high tuition. We intend to provide a program delivered with a hybrid model, allowing attendance by working professionals, which would be unique to our program. Combined with a more reasonable tuition structure, and we believe our program will be of very high import and value to the medical education discipline and community.

3.4 Relationship of Program to Research/Professional Interests of Faculty

UCR SOM has a deep and varied medical education faculty. From basic science faculty, to full-time academic faculty, to community faculty, they all have a deep investment in the education of our students. Our core medical education faculty have a number of leaders who have completed formal training in Medical Education or Higher Education, including Rosemary Tyrrell (Ed.D.), Elizabeth Morrison-Banks (M.S.Ed.), and Brigham Willis (M.Ed.). Many others have completed certificate programs or other training in educational and teaching methodologies. The program will have ample faculty willing and able to teach, as well as many faculty members who will possibly enroll to further their own educational goals. In relation to the overall educational program at UCR SOM, it is perfectly aligned. Our goal is to become one of the premier medical educational institutions in the nation, and improving our faculty’s skills and training in this area is one step toward that goal.

Section 4. Faculty

Participating faculty will include a program director and an interdisciplinary group of faculty to create the curriculum, teach, and advise students in the M.M.Ed. program. The program director (.5 FTE), assisted by a program coordinator (1.0 FTE), will oversee administrative and day-to-day operational tasks of the program.

Core faculty will be comprised of interested faculty from across campus concentrated in faculty from UCR SOM Department of Undergraduate Medical Education. In addition to teaching in the M.M.Ed. program, faculty will also serve as faculty advisors to assigned M.M.Ed. students. All students will be advised by an assigned faculty
advisor, who will meet with the student to assess initial skills and learning needs, review program requirements, serve as a mentor for students, and provide feedback on academic progress.

A list of potential faculty members is provided in Table 2, below.

Table 2. MPH Program Faculty List:

<table>
<thead>
<tr>
<th>Faculty</th>
<th>Qualification/Area of Expertise</th>
<th>Potential Courses to Teach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosemary Tyrrell Ed.D.</td>
<td>Director of Faculty Development</td>
<td>Seminar in Medical Education/TEA &amp; The Scholarship of Teaching and Learning</td>
</tr>
<tr>
<td>Brigham Willis M.D., ME.d.</td>
<td>Senior Associate Dean, Medical Education; Professor of Pediatrics</td>
<td>Leadership in Academic Medicine Medical Education Law</td>
</tr>
<tr>
<td>Byron Ford Ph.D.</td>
<td>Associate Dean, Pre-Clerkship Medical Education</td>
<td>Conducting Research in Academic Medicine</td>
</tr>
<tr>
<td>Pablo Joo M.D.</td>
<td>Associate Dean for Clinical Medical Education</td>
<td>Designing Medical Education</td>
</tr>
<tr>
<td>John Nevin, M.D.</td>
<td>Assistant Clinical Professor, Health Sciences</td>
<td></td>
</tr>
<tr>
<td>Kendrick Davis Ph.D.</td>
<td>Associate Dean of Assessment and Evaluation</td>
<td>Program Evaluation in Medical Evaluation</td>
</tr>
<tr>
<td>Elizabeth Morrison-Banks M.D., M.S.Ed.</td>
<td>Associate Dean, Medical Education Quality and Integration Associate Dean for Medical Education Quality Integration</td>
<td>Accreditation in Medical Education</td>
</tr>
<tr>
<td>Adwoa Osei, M.D.</td>
<td>Assistant Clinical Professor, Health Sciences</td>
<td>Innovations in Medical Education</td>
</tr>
<tr>
<td>Takesha Cooper, M.D., M.S.</td>
<td>Associate Clinical Professor, Health Sciences</td>
<td>Diversity, Equity, and Inclusion</td>
</tr>
<tr>
<td>Khanh-Van Le-Bucklin M.D., M.Ed.</td>
<td>Vice Dean, Medical Education UCI School of Medicine</td>
<td></td>
</tr>
</tbody>
</table>

Faculty with expertise and interest in academic medicine are distributed across campus. We anticipate recruiting several additional individuals with relevant expertise to be members of the program faculty prior to the start of the program.

Section 5. Courses

5.1 Courses and Course Descriptions

The M.M.Ed. Program will consist of required core courses for all students, including a required capstone course, and two elective courses totaling 36 units. Below is a description of each course:

Table 3. MPH Program Course Descriptions:
<table>
<thead>
<tr>
<th>Courses</th>
<th>Description</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Seminar in Medical Education OR Teaching Excellence Academy (4-Units)</td>
<td>Overview of teaching in academic medicine. Discussion of curriculum, learning theory, instructional strategies, and inclusive teaching methods. Exploration of feedback, assessment, mentoring, and leadership</td>
<td>Hybrid</td>
</tr>
<tr>
<td>MDED 2xx: Designing Medical Education (4-Units)</td>
<td>Development of medical curriculum and instructional planning skills in relation to academic content, curriculum frameworks, performance levels of students and instructional materials. Discussion of pedagogical skills that maximize learning, create well-managed classrooms and online environments, and foster students' physical, cognitive, emotional and social development.</td>
<td>Fully Online</td>
</tr>
<tr>
<td>MDED 2xx: The Scholarship of Teaching and Learning Theory (4-Units)</td>
<td>Study of the scholarship of teaching and learning. Exploration of a range of theories related to medical education and in a social context. Theories reviewed include adult learning, constructivism, mindset, and Pedagogy of the Oppressed. Strategies for using learning theory to improve learning outcomes are presented.</td>
<td>Fully Online</td>
</tr>
<tr>
<td>MDED 2xx: Instructional Strategies and Assessment (4-Units)</td>
<td>Identification of best practices in instructional pedagogy and adult learning. Exploration of the shift between traditional, teacher-centered learning focused on the delivery of content, and active, student-centered learning where the emphasis shifts to the collaborative, integrated learning process facilitated by the teacher. Focuses on recommended principles, concepts and theories used in practice that create effective learning environments. Active learning flipped classroom approaches, hybrid learning, feedback methods, and other instructional strategies are examined. Teaching strategies, reflective practices, and self-assessment are explored. A variety of practical classroom, simulation, and clinical teaching strategies emphasizing the use of technology are discussed.</td>
<td>Hybrid</td>
</tr>
<tr>
<td>MDED 2xx: Conducting Research in Academic Medicine (4-Units)</td>
<td>Overview of the different parts of the research process, such as developing a research question, conducting a literature search, and designing a research study. Discussion of data collection methods, qualitative and quantitative data analysis, and writing research results for publication. Ethics of research will be examined. Focus will be placed on approaches used in the social sciences.</td>
<td>Fully Online</td>
</tr>
<tr>
<td>MDED 2xx: Diversity, Equity, and Inclusion in Academic Medicine (4-Units)</td>
<td>Examine the perceptual and psychological processes that impact the way educators interact with learners who are demographically dissimilar to them. Academic climate as it relates to diversity, equity and inclusion are presented. Exploration of unconscious bias, complexity of diversity, and intersectionality. Discussion of inclusive communication, teaching across cultures, inclusive teaching practices, and understanding intercultural differences.</td>
<td>Hybrid</td>
</tr>
<tr>
<td>MDED 2xx: Program Evaluation in Medical Education (4-Units)</td>
<td>Examine and apply program evaluation models relevant for health education with emphasis on process and impact analysis. Discover the parameters, needs, components, and outcomes of program design with a goal of improving student learning. Design options for measuring program effectiveness. Threats and externa validity are discussed. The Kirkpatrick model of training evaluation, the CIPP decision-oriented model, and the SEP protocol are reviewed.</td>
<td>Fully Online</td>
</tr>
<tr>
<td>MDED 2xx: Medical Education Law (4-Units)</td>
<td>Examine theories, history and application of education law as it relates to medical education. Identify liability concerns of health care educators and health care providers. Examine informed consent, student privacy, negligence, and academic freedom. Discussion of complex litigation scenarios. Examine legal responsibilities, constraints, and opportunities of medical education administrators.</td>
<td>Hybrid</td>
</tr>
<tr>
<td>MDED 2xx: Directed Study in Medical Education (4-Units)</td>
<td>A concentrated study of a specific topic related to medical education. Examine an approved area of study resulting in a capstone project or thesis for the completion of the Master’s degree. Application of theories and concepts studied throughout the program through analysis, synthesis, and evaluation.</td>
<td>Self-Study</td>
</tr>
<tr>
<td><strong>Elective Courses (Total of 4 Credit Units Required)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MDED 2xx: Historical and Contemporary Issues of Healthcare &amp; Academic Medicine (4-Units)</td>
<td>This course explores contemporary healthcare issues that affect patients. The healthcare issues are examined within historic, economic, and philosophical contexts and students will analyze those that affect individual’s healthcare needs.</td>
<td>Fully Online</td>
</tr>
<tr>
<td>MDED 2xx: Innovations in Medical Education (4-Units)</td>
<td>Introduction to design and scholarly review of innovations in health professions education; needs assessment, problem selection, use of research methods to study, and innovation</td>
<td>Hybrid</td>
</tr>
</tbody>
</table>
5.1.1 Core Competencies of Theories of Teaching and Learning

Theories of teaching and learning is concerned with how students receive, process, and retain knowledge during learning. Cognitive, emotional, and environmental influences, as well as prior experience, all play a part in how students perceive and understand learning situations and how knowledge and skills are retained. Upon graduation, a student with an M.M.Ed. degree should be able to:

- Identify and apply theoretical constructs and approaches to inform their analysis and action towards common medical problems.
- Understand the background of medical education so as to provide a context for current educational issues and problems.

5.1.2 Core Competencies of Teaching Practice and Leadership

Teaching practice refers to the way in which faculty understand and implement instruction and reflects the beliefs and ethics about the teaching and learning process. As a M.M.Ed. program it is also important to note that these future faculty will also use their leadership skills acquired in the program to make changes in the areas identified below. Upon graduation, a student with an M.M.Ed. degree should be able to:

- Use thoughtful and reasoned analysis to select among educational methods and technologies
- Analyze educational needs and develop appropriate curriculum to address them
- Support the development of an educational community within a given institutional environment
- Apply personal leadership skills to a changing educational environment
- Select and apply relevant theories of leadership
- Analyze organizational structures to diagnose problems and to affect change

5.1.3 Core Competencies of Assessment and Evaluation

Assessment is classroom research to provide useful feedback for the improvement of teaching and learning. Evaluation uses methods and measures to judge student learning and understanding of the material for purposes of grading and reporting. Upon graduation, a student with an M.M.Ed. degree should be able to:

- Apply principles of assessment to the individual learner
- Conduct effective program evaluation

5.1.4 Core Competencies of Diversity, Equity, and Inclusion
Teaching to engage diversity, to include all learners, and to seek equity is essential for preparing civically engaged adults and for creating a campus and society that recognizes the contributions of all people. Teaching for diversity refers to acknowledging a range of differences in the classroom. Teaching for inclusion signifies embracing difference. Teaching for equity allows the differences to transform the way we think, teach, learn, and act such that all experiences and ways of being are handled with fairness and justice. Upon graduation, a student with an M.M.Ed. degree should be able to:

- Demonstrate openness to new perspectives and diverse opinions and individuals
- Evaluate diverse perspectives, and navigate the ambiguity and complexity that comes with multiple perspectives
- Assess one’s own personal perspective when appropriate using a process that requires courage and humility
- Develop communication skills that enable effective communication to a diverse student body and include effective listening skills
- Demonstrate professionalism by working inclusively and co-creating an environment where each perspective is considered for the cooperative purpose of making progress toward common goals

5.1.5 Core Competencies of Research and Scholarship

Research and scholarship refers to the systematic inquiry into student learning which advances the practice of teaching in higher education. This builds upon many past traditions in higher education such as program assessment, action research, reflective practice improvement, and faculty development. Upon graduation, a student with an M.M.Ed. degree should be able to:

- Demonstrate applicable research methods to a specific research question
- Develop educational scholarship in the form of a thesis or capstone research project

Section 6. Resource Requirements

Program revenue collected via tuition and PDST are projected to fully support the program expenses by year three where it will reach a steady state. The budget accounts for 20 incoming students with an increase in cohort size of 10% year-over-year. The budget also takes into account the costs of the Program Director, Program Coordinator, Administrative Specialist, faculty stipends (to incentivize faculty from outside the program to teach in the program), financial aid, and all other operational costs. The proposed program also has a commitment for using FTE faculty within the UCR School of Medicine Department of Undergraduate Medical Education (UME) as core program faculty. The program has the ability to adjust revenue (student numbers) and costs to refine the budget model as needed. The use of the course buy-out model for some of the course load is one lever to manage costs.

6.1 FTE Faculty

Participating faculty will include a program director and an interdisciplinary group of faculty to create the curriculum, teach, and advise students in the M.M.Ed. program. The program director (.5 FTE), assisted by a program coordinator (1.0 FTE), will oversee administrative and day-to-day operational tasks of the program.
The program will target a commitment of 6.0 FTE from the SOM Department of Undergraduate Medical Education for dedicated teaching appointments within the M.M.Ed. program. Core faculty will be comprised of interested faculty from across campus concentrated in faculty from UCR SOM Department of Undergraduate Medical Education. In addition to teaching in the M.M.Ed. program, faculty will also serve as faculty advisors to assigned M.M.Ed. students. All students will be advised by an assigned faculty advisor, who will meet with the student to assess initial skills and learning needs, review program requirements, serve as a mentor for students, and provide feedback on academic progress. Remaining courses will be taught on a part-time basis and via a course buy-out basis with faculty from other UCR departments as well as those wanting to affiliate with such a novel program from other UC’s/institutions such as Khanh-Van Le-Bucklin, Vice Dean of Medical Education at the UCI School of Medicine who has expressed interest in teaching in the M.M.Ed. program.

6.2 Operating Costs

The program will require administrative support and student services support. Students in the M.M.Ed. Program will need to be recruited and given support during their time in the program. The Program Director will provide support in the first year. Over time, the Program Director will mainly provide oversight, with the Program Coordinator taking on full-time day-to-day duties of the program.

An operating budget for the first five years is shown below:

<table>
<thead>
<tr>
<th>Monetary Category</th>
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<th>2024-25</th>
<th>2025-26</th>
<th>2026-27</th>
<th>2027-28</th>
<th>2028-29</th>
<th>Average</th>
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<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
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<tr>
<td>Program Coordinator</td>
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<td>$65,563.62</td>
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<td>Administrative Specialist</td>
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<td>Fringe Benefits</td>
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<tr>
<td>Faculty Stipend</td>
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<td>$10,000.00</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Course Buy-Out for Teaching Courses</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
</tr>
<tr>
<td>Student Recruitment Costs</td>
<td>$10,000.00</td>
<td>$5,000.00</td>
<td>$4,500.00</td>
<td>$4,050.00</td>
<td>$3,645.00</td>
<td>$3,280.50</td>
<td>$5,079.25</td>
</tr>
<tr>
<td>Supplies &amp; Equipment</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>Total Operating Cost</td>
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<td>$253,317.45</td>
<td>$257,101.98</td>
<td>$261,065.04</td>
<td>$265,205.49</td>
<td>$269,522.80</td>
<td>$260,286.58</td>
</tr>
<tr>
<td>Total Adjusted Operating Cost</td>
<td>$255,506.72</td>
<td>$253,317.45</td>
<td>$263,529.53</td>
<td>$267,951.66</td>
<td>$271,835.63</td>
<td>$276,260.87</td>
<td>$264,673.64</td>
</tr>
</tbody>
</table>

Notes:
1. Teaching will be done by core faculty in the program, including faculty from the Department of Undergraduate Medical Education. Funds are included for teaching stipends and course buy-outs, as needed. As additional faculty are recruited in the program the need for course buy-outs and stipends will diminish.
2. Student Recruitment Cost and Faculty Equipment also factored to diminish as the program grows and is established.
3. Fringe Benefits are based on UCR established benefit guidelines for staff members qualified for full benefits at 45.3%.
   https://accounting.ucr.edu/payroll-coordination/benefits-and-assessments
4. Course Buy-Outs:
   a. Internal buyout (from other campus departments or units): $8,500 per course
   b. External buyout (from extramural funding): 10% of 9-month salary and benefits for one course and 25% of 9-month salary and benefits for two courses
   c. Units reserve the right to approve buyout requests at lower rates; if a course or buyout is granted at a negotiated rate, it must be used in the unit in which it was granted.
5. A 3% salary increase is built in for staff positions
6. Total Adjusted Operating Costs represent the amount after UC Assessment Fees of 2.5% have been calculated, which kick-in starting in year 3 of the program.
6.2.1 Library Acquisitions

No major library acquisitions will be needed for the M.M.Ed. Program. Most journals (printed and electronic) and books in the area of Medical Education are available in the UCR and UC library system.

6.2.2 Space and Other Capital Facilities:

The program will require the following space to begin operation:

- Administrative office space, with furniture, computers, etc.
- Office for the program director
- Office space for student services assistant
- Group workspace for student projects

Department space and existing campus instructional space will be utilized. While the addition of this program to current Medical Education instructional space will require a little more planning than the current load, capacity is available. General campus space will also be considered if reasonable. No new space / capital facilities development projects are needed. Classrooms will be scheduled through the Registrar’s office in general campus classroom space, including the new School of Medicine Education Building. As enrollment and faculty FTEs are hired, additional office space will be needed. The costs above will be funded in part from income from professional fees.

6.2.3 Overall M.M.Ed. Program Cost-Structure

<table>
<thead>
<tr>
<th>Monetary Category</th>
<th>2023-24</th>
<th>2024-25</th>
<th>2025-26</th>
<th>2026-27</th>
<th>2027-28</th>
<th>2028-29</th>
<th>Average</th>
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<tr>
<td>Revenue</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>In-State Student Tuition</td>
<td>$204,217.50</td>
<td>$248,856.75</td>
<td>$570,808.33</td>
<td>$627,889.17</td>
<td>$470,406.14</td>
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<tr>
<td>Less Campus Distribution (75% Rev.)</td>
<td>$51,054.38</td>
<td>$107,214.19</td>
<td>$254,935.61</td>
<td>$129,792.17</td>
<td>$142,702.08</td>
<td>$156,972.29</td>
<td>$117,601.29</td>
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<tr>
<td>Out-of-State Student Tuition*</td>
<td>$28,776.50</td>
<td>$57,553.00</td>
<td>$63,086.30</td>
<td>$69,639.13</td>
<td>$76,603.04</td>
<td>$84,263.35</td>
<td>$63,357.22</td>
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<tr>
<td>Less Campus Distribution (100% Rev.)</td>
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<tr>
<td>Professional Fees (POST)</td>
<td>$120,000.00</td>
<td>$251,250.00</td>
<td>$304,012.50</td>
<td>$334,413.75</td>
<td>$367,855.13</td>
<td>$275,651.06</td>
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<td>Less 1/3 POST used for Student Aid</td>
<td>$80,000.00</td>
<td>$167,500.00</td>
<td>$184,250.00</td>
<td>$202,675.00</td>
<td>$222,942.50</td>
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<td>Adjusted POST Retention</td>
<td>$40,000.00</td>
<td>$83,750.00</td>
<td>$101,357.50</td>
<td>$111,471.25</td>
<td>$122,618.38</td>
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<td>Total Revenue</td>
<td>$131,054.38</td>
<td>$274,714.19</td>
<td>$302,185.61</td>
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<td>$365,644.58</td>
<td>$402,209.04</td>
<td>$301,368.66</td>
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<th>Operating Cost</th>
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<td>Program Director</td>
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<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
<td>$25,000.00</td>
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<td>Program Coordinator</td>
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<td>$63,654.00</td>
<td>$65,563.62</td>
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<td>Administrative Specialist</td>
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<td>$39,728.28</td>
<td>$40,920.12</td>
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<td>Fringe Benefits**</td>
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<td>$43,569.74</td>
<td>$44,876.84</td>
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<td>Faculty Stipend</td>
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<tr>
<td>Course Buy-Out for Teaching Courses ***</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
<td>$25,500.00</td>
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<tr>
<td>Student Recruitment Costs</td>
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<td>$10,000.00</td>
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<tr>
<td>Supplies &amp; Equipment</td>
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<td>$20,000.00</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
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<td>Miscellaneous</td>
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<td>$25,000.00</td>
<td>$25,000.00</td>
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<tr>
<td>Total Operating Cost</td>
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<td>$253,317.45</td>
<td>$257,101.98</td>
<td>$261,065.04</td>
<td>$265,205.49</td>
<td>$269,522.80</td>
<td>$260,286.58</td>
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<tr>
<td>Total Adjusted Operating Cost</td>
<td>$255,506.72</td>
<td>$253,317.45</td>
<td>$257,101.98</td>
<td>$261,065.04</td>
<td>$265,205.49</td>
<td>$269,522.80</td>
<td>$260,286.58</td>
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<tr>
<td>Total Operating Income</td>
<td>($124,452.35)</td>
<td>$21,396.73</td>
<td>$38,656.08</td>
<td>$64,812.50</td>
<td>$93,808.96</td>
<td>$125,948.17</td>
<td>$36,695.02</td>
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Note:
1. This projections doesn’t have GHSIP calculated in student tuition & has a starting cohort in 2023 of 15 students.
   a. Starting in 2024-2025 cohort size takes into account two simultaneous cohorts with a 10% increase in entering cohorts moving forward.
2. Currently, graduate programs affiliated with SOM retain 25% of In-State Student Tuition generated.
3. Program would not retain Out-of-State Student Tuition revenue.
4. Retain all professional fees
   a. 1/3 of retained professional fees have to be reinvested in students

As the overall M.M.Ed. budget depicts above, the program will be in a deficit in its first year, with steady state achieved in year three of the program. Deborah Deas, the Dean for the UCR SOM has expressed her commitment to the creation of the program and will allocate needed resources in the early years of the program, until the program is self-supporting and no longer needs assistance to function.

6.3 Future Program Development

As the proposed M.M.Ed. program becomes further established, we intend to develop formalized tracks of specialization in core medical education disciplines and eventually develop a School of Medical Education. As mentioned above, additional FTE faculty will be recruited to teach within the program. These additional FTEs will be made available for recruitment subject to revenue projections.

Section 7. Graduate Student Support

Students enrolled in the M.M.Ed. program will pay a professional fee of $2,500.00 per quarter in addition to quarterly resident or non-resident graduate fees and tuition. Projected costs are $21,174.50 for in-state and $33,420.50 for out-of-state students without GSHIP. If students require UC mandated insurance those projected costs will go up to $25,016.18 and $37,262.18, respectively. In addition, as per UC policy, one-third of the fees will be put towards financial aid, with the remaining professional fees returned to the program. Therefore, the importance of structuring the portion of the professional fee monies to be used for student support in the most impactful way will be a top priority of the program.

7.1 Financial Aid & Student-Aid Packages

The primary goal is to ensure that financial issues do not prevent qualified, motivated students from matriculating into, and graduating from, the M.M.Ed. Program. The School of Medicine financial aid department will provide prospective students and enrolled students with information and resources to facilitate access to their educational needs. The M.M.Ed. Program will award aid to students based on the program’s mission as well as student financial need, ensuring federal, state, and university compliance. These awards will include a combination of need-based and merit-based grants, student-aid packages, and scholarships. The M.M.Ed. Program will also encourage students to compete for campus, state, federal, and foundation awards and fellowships.

7.2 Additional Financial Aid Programs

Additional resources can be found at the UCR graduate program funding site at the link provided below:

https://graduate.ucr.edu/funding#fellowships
7.3 Program Evaluation, Assessment, & Feedback

The results of the evaluative measures discussed in Section 1.9 will be regularly used to enhance the quality of the program. The evaluation procedures will include: 1) student evaluation and feedback; 2) authorization of curriculum or policy changes by the appropriate School of Medicine committees; 3) implementation of continuous quality improvement by the Medical Education Quality and Integration office; and 4) annual review by the Senior Associate Dean of Undergraduate Medical Education and the Vice Chancellor for Health Sciences and Dean of the School of Medicine.

Course evaluations will be compiled and reviewed by the M.M.Ed. program director. These evaluations can impact subsequent teaching assignments, sequencing of course offerings, or specific teaching strategies. In the event of lower than average scores, M.M.Ed. teaching faculty will be counseled and opportunities provided for professional development with respect to teaching philosophy and skills. Course content or evaluative criteria may also be revised in the light of student comments. Student surveys, particularly exit and alumni surveys, will provide important information concerning student satisfaction with program curriculum, attainment of competencies, and overall program operations. These data will be used by the M.M.Ed. program director and appropriate program committees to identify new content areas and methods to improve student services. In addition, shortly prior to graduation from the program, each student’s advisor will conduct an exit interview to gather information on student perspectives of, and experience in, the program. These data will be compiled and reviewed collectively by program faculty to inform quality improvement efforts, including needed revisions of the curriculum. We will also develop and implement a system for tracking alumni to assess job placement, career satisfaction, and post-employment perspectives on strengths and weaknesses of the M.M.Ed. program.

Section 8. Program Governance

We propose a M.M.Ed. program drawing faculty from throughout campus, including adjunct faculty. The program will be sponsored by the UCR School of Medicine, with administrative support provided by the Office of Faculty Development. Bylaws and operating procedures will be developed by the faculty affiliated with the program, convened by the Program Director. The participating faculty will meet annually to review and make decisions on any changes in curriculum structure, student mentorship, collaborations with faculty across schools, and relationships with local, state, and government agencies.

Section 9. Changes in Senate Regulations

No changes in Senate Regulations are required for the M.M.Ed. Program.
References


Appendix A: Faculty Short Vitae/Bio-Sketch

Brigham Willis, M.D., Senior Associate Dean Medical Education.................................................................25
Byron Ford, Ph.D, Associate Dean Pre-Clerkship Medical Education..........................................................28
Pablo Joo, M.D., Associate Dean for Clinical Education..................................................................................34
Rosemary Tyrrell, Ed.D, Director of the Office of Faculty Development.........................................................39
BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. DO NOT EXCEED Two PAGES. Counted in the page limit.

NAME
Brigham C. Willis

POSITION TITLE:
Senior Associate Dean of Medical Education / Co-investigator

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

<table>
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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
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<td>University of California, Los Angeles,</td>
<td>B.S.</td>
<td>03/94</td>
<td>Molecular Biology</td>
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<td>CA</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>University of California, San Francisco,</td>
<td>M.D.</td>
<td>06/98</td>
<td>Medicine</td>
</tr>
<tr>
<td>San Francisco, CA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children’s Hospital Oakland, Oakland, CA</td>
<td>06/01</td>
<td></td>
<td>Pediatrics</td>
</tr>
<tr>
<td>Children’s Hospital Los Angeles, Los</td>
<td>06/04</td>
<td></td>
<td>Pediatric Critical Care</td>
</tr>
<tr>
<td>Angeles, CA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arizona State University, Tempe, AZ</td>
<td>M.Ed.</td>
<td>11/15</td>
<td>Higher Education</td>
</tr>
<tr>
<td>AAMC, Washington DC</td>
<td></td>
<td>1/18</td>
<td>GME Leadership</td>
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</tbody>
</table>

A. Personal Statement

My career as a critical care physician has taught me volumes about burnout and its morbidities. I have lost colleagues to suicide, and seen countless others leave the profession. There is an epidemic of burnout among physicians, and I see it as my duty to help intervene to change things for the next generation of physicians. My role as leader of the educational efforts for undergraduate medical education puts me in the wonderful and unique position of now being able to meld my desire for change and the ability to enact early interventions to effect that change. Implementing a curriculum focused on forward-looking strategies for wellness and burnout in medical trainees would hold the highest position in my professional focus. I have developed high-level expertise over the years in curricular design, pedagogy, curricular evaluation, student assessment, and evaluation of programmatic outcomes, and would be so excited to apply my skills to this project.

B. Positions and Honors:

2004-2007  Assistant Professor of Pediatrics
University of Texas Southwestern, Dallas, TX

2005-2007  Associate Program Director, Pediatric Critical Care Medicine Fellowship
University of Texas Southwestern Medical Center

2008-2020  Associate Professor, Department of Child Health
Educator Scholar Track
University of Arizona COM – Phoenix

2008-2020  Associate Clinical Professor of Pediatrics
Creighton University

2011-2014  Director of Electives
University of Arizona, Phoenix COM
2013-2015 Medical Student Professional and Career Development Advisor
University of Arizona COM - Phoenix
2015-2016 Director, Critical Care Selective
University of Arizona COM - Phoenix
2014-2016 Associate Program Director, Scholarly Activity
Pediatric Critical Care Medicine Fellowship
2016-2020 Chief Medical Education Officer and Designated Institutional Official
Phoenix Children’s Hospital
2018 Program Director
Cardiovascular Intensive Care Fellowship
Phoenix Children’s Hospital
2019-2020 Academic Chairman of Pediatrics
Creighton University School of Medicine, Phoenix
2020- Senior Associate Dean of Medical Education
Professor of Pediatrics
University of California, Riverside School of Medicine

C. Peer-reviewed Publications or manuscripts in press (in chronological order)


2021 Panchanathan SS, Bhavaraju VL, Willis BC, Garcia-Filion P. The Use of Electronic Health Record Data to Support Competence Based Graduate Medical Education. Manuscript in submission.


D. Research Support
7/1/2019-6/30/2020
Continuous Infusion versus Intermittent Ketorolac for Postoperative Pain Control in Pediatric Cardiac Surgery Patients
Phoenix Children’s Hospital Heart Center Pilot Grant Fund
Role: Co-Investigator
7/1/2017-12/31/2018
Tissue Engineering of Bioinspired, Personalized Neonatal Cardiac Patches to Improve Outcomes in Pediatric Patients with Congenital Heart Disease
Phoenix Children’s Hospital Leadership Fund
Role: Co-PI
NAME: Ford, Byron

eRA COMMONS USER NAME (credential, e.g., agency login): BDFORD

POSITION TITLE: Associate Dean, Medical Education

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

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<th>FIELD OF STUDY</th>
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<td>Grambling State University</td>
<td>BS</td>
<td>12/1989</td>
<td>Biology</td>
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<tr>
<td>Meharry Medical College</td>
<td>PHD</td>
<td>05/1996</td>
<td>Neurobiology</td>
</tr>
<tr>
<td>Harvard Medical School</td>
<td>Postdoctoral Fellow</td>
<td>07/1998</td>
<td>Neurobiology</td>
</tr>
<tr>
<td>National Institutes of Health</td>
<td>Postdoctoral Fellow</td>
<td>12/2000</td>
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A. Personal Statement

I am currently Associate Dean of Medical Education and Professor in the Division of Biomedical Sciences at the UCR SOM. My laboratory has studied mechanisms of neuroprotection and inflammatory mediators in ischemic stroke for over 17 years. Specifically, we have published extensively on the neuroprotective of neuregulin-1 (NRG-1) in acute brain injury models, including rodent and non-human primate middle cerebral artery (MCA) occlusion cerebral ischemia models. We have shown that NRG-1 is neuroprotective and anti-inflammatory following stroke with an extended post-injury therapeutic window. NRG-1 is currently in a phase III human clinical trial for heart failure and showed significant efficacy for improving cardiac function in a phase II patient study. Our work has yielded numerous peer-reviewed publications, nine full U.S. patents and 4 additional patent applications for the use of neuregulins in CNS and inflammatory disorders. I previously served as a member of the NINDS Advisory Council at NIH (2012-2016).

I previously served as Director of the Graduate Program in Biomedical Sciences at UCR and I am a member of 3 different graduate programs: Biomedical Sciences; Neuroscience; and Bioengineering. I have been involved with professional undergraduate, graduate, and postdoctoral student training for over twenty-five years, beginning as a postdoctoral fellow at Harvard Medical School, Senior Staff Scientist at NIH, and as faculty member. I have extensive experience in science education/academic advising and have been involved in the direct training of 10 postdoctoral fellows, 23 graduate/medical students and over 100 undergraduate students. Since joining UCR in October 2015, I have attracted seven graduate students and thirteen undergraduate students to my laboratory. Prior to joining UCR, I was Professor and Vice Chairman in the Department of Neurobiology at the Morehouse School of Medicine (MSM). At MSM, I served as Director of the Neuroscience Institute Summer Research Program for 15 years. I was also PI of the NSF-funded Promoting Our Worth as Researchers and Entrepreneurs in Innovative Technologies (POWER-IT) Program, which was a collaborative effort between MSM and three area high schools to introduce a hands-on neuroscience curriculum and hire teachers to enrich the scientific experience for a diverse population of students.
interested in science. In 2017, I received a 5-year grant from the NIGMS Bridges to the Baccalaureate (B2B) Program. I recently received a University of California-Historically Black Colleges and Universities (UC-HBCU) Initiative grant that was funded in 2020 by the UC Office of the President. The goal of the program is to improve diversity and strengthen UC graduate programs by investing in relationships between UC faculty and HBCUs. The three-year grant is a partnership with Morehouse College, Spelman College, the Morehouse School of Medicine, and Fort Valley State University in Georgia.

B. Positions and Honors

Positions and Employment

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<td>1996-1998</td>
<td>Postdoctoral Fellow</td>
<td>Department of Neurobiology, Harvard Medical School, Boston, Massachusetts (with Dr. Gerald D. Fischbach)</td>
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<tr>
<td>1998-2000</td>
<td>Senior Staff Fellow</td>
<td>National Institutes of Health (with Dr. Gerald D. Fischbach)</td>
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<tr>
<td>2001-2005</td>
<td>Assistant Professor</td>
<td>Department of Neurobiology, Morehouse School of Medicine, Atlanta, GA</td>
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<tr>
<td>2005-2009</td>
<td>Associate Professor</td>
<td>Department of Neurobiology, Morehouse School of Medicine</td>
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<tr>
<td>2007-2012</td>
<td>Adjunct Professor</td>
<td>Unit of Comparative Medicine, University of Puerto Rico, Medical Sciences Campus</td>
</tr>
<tr>
<td>2009-2015</td>
<td>Professor</td>
<td>Department of Neurobiology, Morehouse School of Medicine</td>
</tr>
<tr>
<td>2013-2015</td>
<td>Chief Executive Officer</td>
<td>Chief Scientific Officer, Brain-Gen Biotech, Atlanta, GA (<a href="http://www.brain-gen.com">www.brain-gen.com</a>), Atlanta, GA</td>
</tr>
<tr>
<td>2013-2015</td>
<td>Vice Chair</td>
<td>Department of Neurobiology, Morehouse School of Medicine</td>
</tr>
<tr>
<td>2014-2015</td>
<td>Acting Chair</td>
<td>Department of Neurobiology, Morehouse School of Medicine</td>
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<tr>
<td>2015-2017</td>
<td>Professor (Tenured)</td>
<td>Division of Biomedical Sciences, University of California-Riverside School of Medicine</td>
</tr>
<tr>
<td>2017-2018</td>
<td>Professor (Cooperating Faculty)</td>
<td>Department of Bioengineering, University of California-Riverside</td>
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<tr>
<td>2018-2020</td>
<td>Director</td>
<td>Graduate Program in Biomedical Sciences, University of California-Riverside</td>
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<tr>
<td>2020-</td>
<td>Associate Dean</td>
<td>Medical Education, University of California, Riverside, School of Medicine</td>
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Other Experience and Professional Memberships

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<td>2005-2006</td>
<td>Ad hoc Reviewer</td>
<td>Brain Disorders and Clinical Neuroscience Study Section (BDCN), NIH</td>
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<tr>
<td>2005-2007</td>
<td>Member</td>
<td>Neurodegeneration and Biology of Glia Study Section (NDBG), NIH</td>
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<tr>
<td>2007-2010</td>
<td>Member</td>
<td>Society for Neuroscience Membership and Chapters Committee</td>
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<tr>
<td>2007-2010</td>
<td>Member</td>
<td>Cellular and Molecular Biology of Glia Study Section (CMBG), NIH</td>
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<tr>
<td>2008-2008</td>
<td>Member</td>
<td>Stroke Treatment Academic Industry Roundtable (STAIR)</td>
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<tr>
<td>2010-2013</td>
<td>Member</td>
<td>Board of Trustees, Faculty Trustee, Morehouse School of Medicine</td>
</tr>
<tr>
<td>2012-2016</td>
<td>Member</td>
<td>NINDS Advisory (NANDS) Council</td>
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<tr>
<td>2016-2016</td>
<td>Reviewer</td>
<td>International Stroke Conference Abstract Review, American Heart Association</td>
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<tr>
<td>2016-2016</td>
<td>Reviewer</td>
<td>EPSCoR-Experimental Program to Stimulate Competitive Research, NSF</td>
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<td>2017-2018</td>
<td>Ad hoc Reviewer</td>
<td>T32 Review Meeting ZNS1 SRB-M(03)</td>
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<td>2018-2018</td>
<td>Ad hoc Reviewer</td>
<td>NIH/NINDS: DSPAN F99 Study Section, NIH</td>
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<tr>
<td>2018-2019</td>
<td>Member</td>
<td>NIH/NIGMS BUILD Review, NIH</td>
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<td>2019-2019</td>
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<td>NST-1 Study Section, NIH</td>
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<td>2019-2019</td>
<td>Ad hoc Reviewer</td>
<td>ZNS1 SRB D3 NINDS SPAN Study Section, NIH</td>
</tr>
</tbody>
</table>

Honors

- 2003: Keynote Speaker, Mapp Symposium, Morehouse College
- 2004: Keynote Speaker, Faculty Appreciation Symposium, Grambling State University
- 2004: NAEHS Council Meeting, Invited Speaker, NIEHS, Bethesda, MD, NIH
C. Contribution to Science

1. Stroke is a leading cause of death in the United States and the major cause of long-term disability. Neuregulins are a family of structurally related proteins with diverse nervous system functions that have shown promise in treating stroke. Recent work from our laboratory demonstrated a single, intravascular administration of neuregulin-1 (NRG-1) reduced ischemia-induced neuronal death in rat and mouse focal stroke models by ~90% with a therapeutic window of >12 hours. Currently, we are examining the evolution of neuronal injury in an NHP stroke model and evaluating the efficacy of NRG-1 for acute neuroprotection and post-stroke neuronal repair. NRG-1 is currently in phase III human clinical trials for heart failure after showing significant efficacy for improving cardiac function in phase II patient studies in China (Chinese Clinical Trial: ChiCTR-TRC-00000414) and Australia (Australian New Zealand Clinical Trials Registry: ACTRN1260700330448). Three additional clinical trials to determine the ability of NRG-1 to improve cardiac function after heart failure have been initiated in the U.S. (ClinicalTrials.gov identifiers NCT01258387; NCT01541202; NCT01251406). These findings could support the development of clinical studies using NRG-1 alone or in conjunction with other therapies, such as thrombolytic compounds, for the treatment of patients with acute stroke. I am the primary investigator for these studies.


2. Nerve agents are rapidly acting and toxic chemicals that have been used by terrorists in military combat and against civilian populations. Recently, a United Nations report confirmed that Syria used sarin gas in an attack against a civilian population. The attack killed 1,400 people, including more than 400 children in the suburbs of Damascus. I have a Department of Defense (DoD) collaborative project with the US Army Medical Research Institute for Chemical Defense (MRICD) to examine the effectiveness of NRG-1 against weaponized nerve agents such as sarin. I am the primary investigator for these studies.


3. Cerebral Malaria (CM) is a diffuse encephalopathy caused by Plasmodium falciparum infection. Despite availability of anti-malarial drugs, CM-associated mortality remains high (~30%) and a subset of survivors develop neurological and cognitive disabilities. While anti-malarials are effective at clearing Plasmodium parasites, they do little to protect against CM pathophysiology and parasite-induced brain inflammation that leads to seizures, coma and long-term neurological sequelae in CM patients. NRG-1 therapy significantly improved survival against experimental CM by 73% despite persistent parasite burden within NRG-1-treated mice. Additionally, NRG-1 therapy reduced systemic and brain pro-inflammatory factors, enhanced anti-inflammatory factors, and decreased leukocyte accumulation in brain microvessels. This study demonstrates that NRG-1 attenuates ECM-associated brain inflammation and injuries and may represent a novel supportive therapy for the management of CM. I am the co-primary investigator for these studies.


4. Imaging techniques, including CT and MRI, are useful in detecting the occurrence, type and severity of strokes. However, these technologies are expensive and require considerable amounts of time to develop a complete and correct diagnosis. This is particularly true in rural areas and cities with large, underserved populations. Therefore it is crucial to develop rapid, accessible,
affordable and easy to use diagnostic tools to identify and treat stroke symptoms. The use of blood biomarkers for stroke has been long considered an excellent method to determine the occurrence, timing, subtype and severity of stroke. Using high-throughput genomics and proteomics, we identified candidate blood biomarkers in a non-human primate stroke model and in human patients that could potentially be used clinically to diagnose the onset, progression and severity of stroke. These blood biomarkers can also be used to determine the efficacy of existing and novel treatment strategies for stroke. I serve as the primary investigator for these studies.


5. Traumatic brain injury (TBI) occurs when a sudden blow to the head results in brain damage. Currently, there are no treatments available to reverse brain injury caused by TBI. Therefore, the need to develop novel strategies for treating TBI in military and civilian populations is crucial. Based on our stroke studies, we examine whether NRG-1 and KPT-350 will have a potent neuroprotective effect in TBI resulting from its ability to prevent multiple mechanisms associated with delayed neuronal death.


Complete List of Published Work in My Bibliography:

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support
Riverside Bridges to the Baccalaureate Program (B2B)
The goal of the Riverside B2B program is to create a research education program to facilitate transfer of students into Biomedical and Behavioral science majors, with the ultimate goal of increasing participation of underrepresented minority groups in research-oriented careers in these areas.
Role: PI

“The efficacy of a novel osmotic transport device (OTD) in facilitating recovery of neuronal tissue after ischemic stroke”. This grant will examine whether the OTD with and without neuregulin-1 (NRG-1) delivery can prevent neuronal damage and neuroinflammation following stroke.
Role: PI

Drug Development and Capacity Building: A UCR/COH-CCC Partnership
Role: Co-Investigator

“Agents of Change for a Healthier Tomorrow: Transformational Integration of Quality Improvement with Primary Care Education”
Role: CPI
A. Personal Statement

I am an experienced educator in primary care and preventive medicine, having co-directed a residency program in Family Medicine and having been appointed as a director of medical student education at two U.S. medical schools. I am currently the Associate Dean for Clinical Medical Education at the University of California, Riverside School of Medicine. I previously published a study, which successfully enhanced the preventive medicine education of students via a web-based portal. I also published the results of a needs assessment on medical students' perceptions regarding the concept of the Patient-centered Medical Home. I have developed team-based learning and flipped classroom methodologies to teach preventive medicine, quality improvement principles, and patient-centeredness to medical students. The U.S. health care system is rapidly transforming and is shifting the emphasis from individual patient care encounters to enhanced health care outcomes of entire populations. I have been able, with members of working groups, to debut new curriculum which covers domains in population health: public health; community, occupational, and environmental health; health disparities and social determinants of health; medical economics, quality improvement in health care; patient safety in medicine, practice management, the health care system; law and medicine; and inter-professional team care at Einstein. In cooperation with Warren Alpert Medical School of Brown University, we developed instructional and assessment methodologies focused on medical student competencies in practicing value-added care (e.g., evidence-based, enhanced safety, patient-centered, and cost-effective). I am continue to teach family medicine and medical economics to medical students at UCR SOM.

B. Positions and Honors

Positions and Employment:
1994 – 1997 Intern and Resident, Residency Program in Family and Social Medicine, Montefiore Medical Center, Bronx, NY.

1996 – 1997 Chief Resident, Residency Program in Family and Social Medicine, Montefiore Medical Center, Bronx, NY.
1997 – 2008 Assistant Clinical Professor of Family Medicine, Center for Family and Community Medicine, Columbia University College of Physicians and Surgeons, New York, NY.

2003 – 2005 Associate Residency Director, Center for Family and Community Medicine, Columbia University Medical Center / New York Presbyterian, New York, NY.

2005 – 2008 Director of Predoctoral Education / Co-director of Primary Care Clerkship, Center for Family and Community Medicine, Columbia University Medical Center, New York, NY.

2008 – 2014 Assistant Professor of Family and Social Medicine, Department of Family and Social Medicine, Albert Einstein College of Medicine, Bronx, NY.

2008 – 2012 Director of Medical Student Education / Clerkship Director of Family and Social Medicine, Department of Family and Social Medicine, Albert Einstein College of Medicine, Bronx, NY.

2012 – 2017 Assistant Dean for Medical Education, Albert Einstein College of Medicine, Bronx, NY.

2017 – 2021 Associate Dean for Medical Education, Albert Einstein College of Medicine, Bronx, NY.

2014 – 2021 Associate Professor of Family and Social Medicine, Department of Family and Social Medicine, Albert Einstein College of Medicine, Bronx, NY.

2021 – pres. Associate Dean for Clinical Medical Education, University of California at Riverside, Riverside, CA.

2021 – pres. Full Professor, Department of Family Medicine, University of California at Riverside, Riverside, CA.

**Other Experience and Professional Memberships**

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<td>2007 - present</td>
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<td>2007 - present</td>
<td>Association of American Medical Colleges, Group on Educational Affairs</td>
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<tr>
<td>2009 - present</td>
<td>Team-based Learning Collaborative</td>
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<tr>
<td>2010 – 2012</td>
<td>Co-chair, Group on Hispanic/Latino Faculty, Society of Teacher of Family Medicine</td>
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<tr>
<td>2021 – present</td>
<td>California State Academy of Family Physicians</td>
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**Honors**

1997 Daniel C. Leicht Award for Social Medicine, Residency Program in Social Medicine, Montefiore Medical Center, Bronx, NY.

1997 Resident Teacher of the Year Award, Society of Teachers of Family Medicine, Residency Program in Social Medicine, Montefiore Medical Center, Bronx, NY.
2003  Director’s Recognition Award, Center for Family Medicine, Columbia University/ New York Presbyterian Hospital, New York, NY.

2004  Nomination – Family Physician Educator of the Year Award, New York State Academy of Family Physicians, Albany, NY.

2004  Family Medicine Teacher of the Year Award, Center for Family Medicine, Columbia University Medical Center, New York, NY.

2006  Columbia Student Medical Outreach (CoSMO) Volunteer Faculty of the Year Award, Columbia University College of Physicians and Surgeons, New York, NY.

2007  Nomination – American Academy of Family Medicine Exemplary Teacher of the Year Award

2007  Harvard Macy Scholar, Program for Educators in the Health Professions, Harvard Macy Institute, Boston, MA.

2007  Nomination – Association of American Medical Colleges Humanism in Medicine Award, Columbia University College of Physicians and Surgeons, New York, NY.

2008  Appointed - Glenda Garvey Teaching Academy - Fellow, Columbia University College of Physicians and Surgeons, New York, NY.

2010  Bronx-Westchester Academy of Family Physicians Teaching Excellence Award, Bronx, NY.

2014  Team-based Learning Trainer – Consultant Certification, Team-based Learning Consortium, Fort Worth, Texas

2014  Appointed - Leo M. Davidoff Teaching Society

2015  Appointed - Alpha Omega Alpha Honor Society

C. Select Peer Reviewed Publications of Original Work


**D. Research Support**

*Completed Research Support*

**Title:** Palliative Care Medical School Education Grant  
**Pi:** P Joo  
**Dates:** 12/2008 – 12/2010  
**Goal:** Created a longitudinal palliative care curriculum across the Family Medicine and Pediatrics Clerkships and select fourth year electives.  
**Agency:** Robert Wood Johnson

**Title:** Daniel Noyes Brown Primary Care Scholars Program  
**Pi:** P Joo  
**Dates:** 1/2006 – 12/2008  
**Goal:** Coordinated and created a 4 year curriculum for medical students interested in primary care careers.  
**Agency:** Daniel Noyes Brown Endowment

**Title:** Primary Care Clerkship Web Based Education Project
PI: P Joo
Dates: 7/2005 – 12/2008  Primary Care Education Fund $48,000 per year
Effort: 20%
Goal: Developed a web-based primary care curriculum for a primary care clerkship with clinical sites across the United States
Agency: Columbia University College of Physicians and Surgeons, Primary Care Education Fun
BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED TWO PAGES.**

**NAME:** Rosemary Tyrrell, Ed.D.

**POSITION TITLE:** Director of the Office of Faculty Development

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

<table>
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<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
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<td>Youngstown State University, Youngstown, OH</td>
<td>B.A.</td>
<td>08/1980</td>
<td>Psychology</td>
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<tr>
<td>University of Kansas, Lawrence, KS</td>
<td>M.A.</td>
<td>10/1983</td>
<td>Theatre</td>
</tr>
<tr>
<td>University of California, Los Angeles, CA</td>
<td>Ed.D.</td>
<td>09/2015</td>
<td>Educational Leadership</td>
</tr>
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</table>

**A. Personal Statement**

My over 20 years experience in the field of faculty professional development makes me uniquely qualified for my role in the project. I have expertise in teaching, learning, curriculum design, instructional design, and assessment. My background encompasses teaching in both face-to-face and online environments.

During my tenure at University of California Riverside School of Medicine, I have created a large body of programs and developed curriculum for a teaching excellence academy, clinical teaching and advanced clinical teaching series, administrative didactics series, teaching innovation series, quality improvement and patient safety series, and a teaching essentials series. In addition, I have managed large scale projects such as the Conference on Teaching and Learning, the Celebration of Women in Science and Medicine, and have been responsible for the curriculum mapping for the last two academic years.

Prior to joining the University of California School of Medicine, I worked with the ITS team at the Bellarmine College of Liberal Arts for Loyola Marymount University in Los Angeles, CA. I developed all professional development and training materials to support a campus wide change in learning management system from Blackboard to D2L. I taught both face-to-face and online courses for 18 years at the Fashion Institute of Design and Merchandising where I also served as an Instructional Specialist for 14 years and the eLearning Instructional Specialist for 4 years. While at the Fashion Institute, I developed a six-week fully online new faculty orientation course for online educators.

My primary research focus is involves the assessment of teaching and how to use the assessment to improve teaching and learning outcomes. I am currently involved in research projects related to
immersive learning, and the Student Evaluation Data Informed Coaching protocol (SEDIC) which is a pilot program being developed at UCR.

B. Positions and Honors

Positions

1985-1987 Instructor, University of San Diego Extension, San Diego
1985-1997 Instructor, San Diego Community College District, San Diego
1994-1999 Instructor, Kelsey-Jenney College, San Diego
1990-2008 Executive Director, Icarus Puppet Company, San Diego
2006-2008 Instructor, Non-Profit Management Center, San Diego
1998-10/2016 Instructor, The Fashion Institute of Design and Merchandising, San Diego
2001-06/2016 Instructional Specialist, The Fashion Institute of Design and Merchandising, San Diego
07/2016-11/2016 Instructional Technologist, Loyola Marymount University, Bellarmine College of Liberal Arts
11/2016-present Director of Faculty Development, University of California, Riverside School of Medicine

Selected Honors

Faculty Member of the Year: 2001, 2000, 1999
Living Legacy Award: 1999
CORO Fellow: 2002
Charles I Jenney Award for Outstanding Performance for Faculty: 1991

C. Peer Reviewed Publications or Manuscripts in Press


D. Research Support

No research support over the past three years.
Appendix B: Letters of Support from Faculty within UCR

Deborah Deas, MD, MPH, Vice Chancellor for Health Sciences, Dean of UCR School of Medicine ..................43

Brigham Willis, MD, Senior Associate Dean Medical Education.................................................................45

Rosemary Tyrrell, Ed.D, Director of the Office of Faculty Development......................................................46
August 26, 2021

Dear Members of the UCR Graduate Council,

I am writing to express my support of the proposal from a School of Medicine (SOM) committee, led by Rosemary Tyrrell, Ed.D., Health Sciences Assistant Professor and Director of Faculty Development to establish a Master of Medical Education (M.M.Ed.) program at the University of California, Riverside (UCR) in the School of Medicine.

As a community-based medical school which engages a significant number of community physicians, as well as SOM biomedical scientists and clinicians in the education of our medical students, a medical education degree program with emphasis on teaching education theory and experiential application is imperative. This program will train clinicians, scientists, and graduates interested in careers in medical education. This master’s degree program aligns with the SOM’s 2020-2025 Strategic Plan for Sustainability as well as the University’s Strategic Plan. The M.M.Ed. program will also advance a number of institutional goals articulated in UCR’s Strategic Plan, including furthering “distinctive, transformative research and scholarship,” “a rigorous, engaging, and empowering learning environment,” “a welcoming, inclusive, and collaborative community,” and “advancing the public good.”

Furthermore, the proposed M.M.Ed. program will build on and complement:

- Existing School of Medicine (SOM) and campus educational and research programs, which will help fulfill its mission of training the next generation of health professionals.
- Campus-wide faculty expertise in academic medicine.
- Recent campus-wide expansions in and focus on improving student education and engagement in research, training, and service in the health of communities and populations.
- Recent campus-wide expansions in research, training, and service in the health of communities and populations. These include resources provided by the Office of Faculty Development, access to research funding and expanding collaborative research and innovation with other UCR academic units, community-based organizations, and other higher education and research-focused institutions to improve upon healthcare delivery.
I understand the value of training the next generation of academic medical leaders and the benefits it provides to our University and our ability to serve the academic and medical needs of Inland Southern California and beyond. The proposed M.M.Ed. program provide students with an exemplary education to prepare them for successful and impactful careers in healthcare and academic leadership.

I enthusiastically support the program for establishing a Master of Medical Education degree program in the School of Medicine at the University of California Riverside.

Sincerely,

[Signature]

Deborah Deas, MD, MPH
Vice Chancellor for Health Sciences
Mark and Pam Rubin Dean
8/24/2021

Dear Members of the UCR Graduate Council,

I am writing to express my support for the proposal to establish a Master’s in Medical Education (M.M.Ed.) program here at the University of California, Riverside (UCR).

As the Senior Associate Dean for Medical Education here at the UCR School of Medicine (SOM) I have a strong interest in the proposed M.M.Ed. program, and feel it is a worthwhile endeavor. I have been intimately involved in its design, and feel it would be an exciting addition to the curricular offerings here at UCR.

Currently the number of medical schools is continuing to increase, including here in Southern California. Despite this increase, there is no concomitant increase in programs to train medical educators. Currently in Southern California, despite the presence of over a dozen medical schools, there are only two Master’s programs in medical education. Establishing more of these programs is a key strategy to contribute to a health professional’s conversion from competent clinician to transformational academic leader to meet the demands of a growing industry.

Specific training in medical education is essential for skilled academic teachers and administrators. Leaders in modern medical schools need training in myriad subjects, most of which they get no exposure to in medical school. Educational law, finance, leadership, learning theory, pedagogy, curriculum design, assessment methods, and accreditation are only a few of such subjects. The establishment of a M.M.Ed. program here at UCR will serve this need and establish UCR as a leader in the provision of a solid foundation from which to begin a career in leadership in medical education.

Please do not hesitate to contact me if you have any questions or if I can provide any additional information on the commitment of the UCR School of Medicine to this critical initiative.

Sincerely,

Brigham Willis, MD, MEd
Senior Associate Dean for Medical Education
Professor of Pediatrics
Dear Graduate Council:

As the Director of the Office of Faculty Development at the University of California Riverside School of Medicine, I am writing this letter to enthusiastically support the proposal for the Master’s in Medical Education being submitted to the graduate council for consideration by the School of Medicine.

The goals of this new Master’s degree is consistent with both the UCR strategic plan and the mission of the School of Medicine. The proposed degree fits within UCR’s desire to create more professional graduate degree programs. At the same time, this proposed degree also matches the mission of the UCR School of Medicine by improving teaching to train a diverse workforce, meet the needs of the medically underserved, and to become a model throughout the state and nation.

Research has consistently shown the importance of high-quality teaching. Nowhere is this more important than in the field of medical education where teaching environments are diverse and teaching methods must be adaptable and nuanced. As in most fields of higher education, few health professionals who engage in teaching on a regular basis have any formal education related to teaching and learning. This degree provides the necessary education for health professionals to be high quality teachers whether they are teaching in a classroom, lab, or clinical environment.

As the Director of the Office of Faculty Development at the UCR School of Medicine, I enthusiastically support this new Master’s Degree in Medical Education proposal. I believe the creation of this new program will provide opportunities for many health care professionals to enhance their teaching skills and broaden their perspectives on medical education.

Regards,

Rosemary Tyrrell, Ed.D.
Director of the Office of Faculty Development
University of California Riverside School of Medicine

951-827-2381
Rosemary.Tyrrell@medsch.ucr.edu
Appendix C: External Letters of Support

Khanh-Van Le-Bucklin, MD, MEd, Vice Dean Medical Education UCI School of Medicine

........................................48
September 1, 2021

RE: Master’s in Medical Education at the University of California, Riverside (UCR)
School of Medicine

Dear Members of the UCR Graduate Council,

I am writing to express my support for the proposal by the University of California, Riverside (UCR) School of Medicine (SOM) to establish a Master’s in Medical Education (M.M.Ed.) program.

As the Associate Vice Chancellor for Education, UCI Health Affairs and Vice Dean for Medical Education, UCI School of Medicine, I have a strong interest in the proposed M.M.Ed. program, and feel it is a worthwhile endeavor.

The proposed M.M.Ed. program would function as a resource for working professionals and educators for the region. It would address the increasing local and national demand for academic medical professionals; build on existing strengths of the UC-system, specifically in faculty, research and teaching; and provide students with an exemplary education to prepare them for successful and impactful careers in healthcare and academic leadership.

Prospective physicians must acquire a large body of knowledge and incorporate it into a working framework of clinical reasoning that in turn informs effective medical practice. Most physicians receive minimal or no training in theory or on the ground methods of education. The proposed M.M.Ed. program provides a way to train academic medical professionals with the skills, techniques, and mindsets to cultivate the transformation of students into physicians. With the projected growth of the medical education market, the M.M.Ed. program is well positioned to capitalize on and function as a needed resource in the niche market of a graduate program in medical education that will contribute to a health professional’s conversion from competent clinician to transformational academic leader to meet the demands of a growing industry.

Being a working clinician and a leader in medical education, I understand the value of training the next generation of academic medical leaders and the benefits it can provide our region and beyond. I have personally pursued an advanced degree in education, and my institution has benefited greatly from my knowledge, skills, and scholarship in this domain. I fully support
the proposed M.M.Ed. program at the UCR SOM, and I look forward to collaborating with the UCR SOM once the program is approved and functional.

Please do not hesitate to contact me if you have any questions or if I can provide any additional information in support of this exciting initiative.

Sincerely,

Khanh-Van Le-Bucklin, MD, MEd

Associate Vice Chancellor, Education
UCI Health Affairs Office of Education

Vice Dean, Medical Education
UCI School of Medicine
Appendix D: Sample M.M.Ed. Program Outline

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