THE OHIO STATE UNIVERSITY
COLLEGE OF MEDICINE

Tania (Tatiana) Oberyszyn, PhD
Vice Dean for Faculty Affairs

230 Meiling Hall
370 West 9th Avenue
Columbus, OH 43210
614-685-3584
Tatiana.Oberyszyn@osumc.edu

March 12, 2022

To: Council on Academic Affairs

From: Tania (Tatiana) Oberyszyn, PhD
Vice Dean for Faculty Affairs

RE: Request for the formation of a Department of Molecular Medicine and Therapeutics (MMT)

Attached are documents requesting the formation of a Department of Molecular Medicine and Therapeutics in the College of Medicine. The College of Medicine's College Council unanimously approved the request on February 16, 2022.

Thank you for your consideration of this request.

Sincerely,

Tatiana M Oberyszyn

Tania (Tatiana) Oberyszyn, PhD
Vice Dean for Faculty Affairs, COM
Professor
Department of Pathology

Name: Department of Molecular Medicine and Therapeutics

***Introduction*:** To achieve its goal of being a top 20 College of Medicine, research at Ohio State University would be enhanced by a new basic science department focused on foundational research in specific areas of scientific emphasis for future growth. The proposed department is designed to achieve high impact basic science, education, and service in key gap areas in which Ohio State University (OSU) can rapidly expand and develop strong teams for high impact science and expand its national/international reputation.

1. Rationale

Mission: To augment research, creative expression, education, and service through new discovery in fundamental biomedical research

Vision: To create and develop a basic science department emphasizing fundamental science that can foster translational research and education through collaboration and synergies within the broader OSU environment.

Areas of Emphasis

- Foundational Therapeutics: Design, develop, and validate therapies for disease using novel methods and models to improve translational research.
- Regenerative Medicine: Advance programs in stem cell biology and tissue engineering across diseases.
- Molecular Medicine: Advance fundamental biology to whole organ/body models and clinical correlates using preclinical modeling and systems biology approaches.

Department Goals:

1. Perform high quality transformative research in basic science areas of emphasis in relevant model systems.
2. Recruit basic and translational scientists around key scientific areas. Serve as a nidus for group funding opportunities (P and U award).
3. Establish a cross-cutting T32 and support graduate programs within the college, including clinical Departments and College/University Centers
4. Emphasize Diversity, Equity, and Inclusion in hiring focused on basic science tenure-track and tenured faculty as part of new COM and University-wide programs such as RAISE and INSPIRES.
5. Open new education opportunities for medical students and practicing physicians in molecular medicine
6. Development and expansion of cross-college collaborations with Engineering, Arts and Sciences, Veterinary Medicine, Pharmacy, and other OSU Colleges emphasizing translational sciences and technology transfer

2. Define the purpose of the unit (investigate overlap with other academic units already established at the University and include letters of interest or objection)

The purpose of the MMT will enhance biomedical basic science focusing on key areas of scientific emphasis designed to enhance the College of Medicine's reputation and impact and produce high-impact science. It will play a role in complementing the existing efforts in multiple units in the College of Medicine. It will serve as a nidus for new training opportunities and will provide a basic and early translational scientific environment to support the OSU COM research ecosystem. A new department is required to address key and unaddressed scientific areas including but not limited to broad regenerative medicine, molecular therapeutics, and molecular medicine. It also will serve a role to support diversity, equity, and inclusion in tenure-track basic science faculty and training programs, an area of key focus of the College and the University. It will enable increased medical student and professional education in the molecular aspects of medicine. We have investigated areas of potential overlap for this department with both basic science and clinical department chairs, University leadership, and leaders in the Colleges of Pharmacy, Arts and Sciences, Veterinary Medicine, and Engineering. The areas of emphasis were informed by these discussions and were designed for complementary expertise that would

support and expand scientific growth. For basic science departments, anticipated specific interactions will include: 1) Biochemistry and Pharmacology through expansion of drug design, delivery, and stem cell biology along with systems biology; 2) Cancer Biology and Genetics through growth and expertise in tissue engineering, stem cell biology, and systems biology; 3) Microbial infection and Immunity in systems biology and drug development/design; 4 and 5) Physiology and Cell Biology and Neurosciences in the area of stem cell biology, aging, and drug design; and 6) Bioinformatics, systems biology approaches to link basic and translation efforts would be highly beneficial. For clinical departments, MMT would provide a basic/translational scientific partnerships to enable strategic partnerships supporting research growth. It is anticipated that there would be robust interactions with the Department of Internal medicine including Diabetes and Endocrinology, Cardiovascular disease, medical oncology and hematology, nephrology, pulmonary and rheumatology in the Drug design, in some cases stem cell biology and in systems biology particular with medical genetics and clinical outcome and epidemiology research. The Departments of Surgery, Orthopedic Surgery, ENT/Head and Neck Cancer, Anesthesia and Plastic Surgery would be areas of emphasis for the stem cell biology work, in some cases drug development and with systems biology. Robust interactions are likely in all areas with Neurology, Neurosurgery, Psychiatry, Pathology, and Radiation Oncology. Finally, the department will have strong interactions with multiple centers including the Comprehensive Cancer Center with its current focus areas in immune-oncology, cancer engineering, translational genomics, and drug design (with the College of Pharmacy); the CCTS, Davis Heart and Lung Research Institute through the emphasis on Drug Development and tissue engineering, and neurosciences and aging

It is anticipated that the new department will receive interest for research, recruiting, and education collaborations across the College. Intercollege collaborations also are likely for Department members that will be facilitated by space allocation and through shared resource use across our One University campus. This includes potential interactions with the College of Arts and Sciences with Chemistry and Biological Chemistry, Physics, Mathematics, Molecular Genetics, and others, the College of Engineering with Biomedical Engineering, Computer Sciences and Engineering, and Chemical and Biochemical Engineering, and Mechanical and Aerospace Engineering; the College of Pharmacy with Medicinal Chemistry, and the College of Veterinary Medicine, among others. **Our desire is to complement and partner, but not compete with high quality and current programs housed in other Colleges.**

Part of the goal of the Department will be to support new strategic new faculty hiring into the areas of emphasis of the Department and support transformational growth in basic science. An additional facet for this department is to support Diversity, Equity, and Inclusion in tenure-track faculty in basic sciences on campus in alignment with the RAISE initiative and programs in the College of Medicine. The College of Medicine has committed that there will be 10-12 new faculty hired over 4-5 years. Details of the planned structure are outlined in later sections of this document.

3. Describe the role of the new unit in relationship to the larger administrative unit of which it will be a part

MMT would be a Basic Science Department in the College of Medicine. The Chair will report to the Dean of the College of Medicine.

4. Describe similar units at other universities in Ohio, in the Big Ten, and in the United States and their levels of success

While there are no similar Departments in Ohio, there are components of similar programs within Departments in the State (Case Western/CCF and Ohio University). In the Big Ten, there are individual Divisions within Departments serving those Departments at Minnesota and Michigan, as well as education programs around Molecular Medicine at University of Maryland. In the Big Ten only Rutgers School of Medicine has a similarly named Program but this also encompasses the Department of Cell Biology (see below). Nationally, there are a number of highly successful Departments with similar scopes of emphasis with different Department titles. These were reviewed for best practices and approaches as summarized below.

Department Mission Statements/scientific overview (if available on line quoted from current websites)

Departments:

Mayo Clinic: "The Department of Molecular Medicine at Mayo Clinic is led by a team of experts with a wide range of disciplines to find new treatments by promoting research in virus and gene therapy."

Scripps Research Institute: Department of Molecular Medicine: "Our cells hold the secrets to a healthy life—and those secrets are molecules. At Scripps Research, we strive to explain how molecules work together to keep us healthy and how they cease to function correctly with age or illness. But we don't stop there. Using what we discover about cellular processes and disease mechanisms at the molecular level, we educate future scientists and pursue development of novel therapies to counter disease. From cancer to diabetes, Alzheimer's to arthritis, we're taking knowledge about molecules and turning it into medicines."

University of California, San Diego: Department of Cellular and Molecular Medicine: "Our mission is to support and promote research and teaching in cell biology and related disciplines at UC San Diego and beyond. Our 32 faculty and over 200 postdoctoral scholars, graduate students, and research staff work at the cutting edge of biology, cutting across fields from basic biochemistry and genetics to genomics, systems biology and stem cell biology"

University of California, Davis. Department of Biochemistry and Molecular Medicine: "Our Mission is to conduct world-class research in biochemistry and molecular medicine. To excel in undergraduate, graduate and medical education, and to serve the university through leadership in forums committed to graduate and professional school admissions and curriculum."

University of Southern California: Biochemistry and Molecular Medicine: "Our work focuses on understanding the underlying mechanisms for studying human disease and leads to high-impact breakthroughs in drug discovery, therapeutics, disease etiology and prevention. Access to a renowned, diverse faculty along with cutting edge equipment and facilities creates a unique, hands-on experience for students and researchers interested in pushing the boundaries of genomic studies, technologies and their applications."

University of Arizona: Department of Cellular and Molecular Medicine: "The mission of the Department of Cellular and Molecular Medicine (CMM) is to provide pre- and post-doctoral, medical and graduate education in an interdisplinary environment through research activities, to advance knowledge of biological structure as related to function and disease from the molecular level to the whole organism."

City of Hope/Beckman Research Institute: Department of Molecular Medicine. "The Department of Molecular Medicine within the Beckman Research Institute of City of Hope advances translational medicine through breakthroughs in basic science using chemical biology and genomic approaches. Our investigators lead cutting-edge research to determine the mechanisms underlying cancer and other serious diseases such as diabetes. The goal of the department is to customize prevention and treatment of such illnesses by developing targeted therapies for an individual's genomic profile. Success produces more effective clinical responses to our treatments and less drug toxicity and resistance."

University of Texas, San Antonio: Department of Molecular Medicine and Institute of Biotechnology: "The Department of Molecular Medicine/the Institute of Biotechnology (IBT) was established in 1994 to administer a program to train graduate students at the interface of basic and clinical sciences with an emphasis on biomedical research focused on discovering the molecular mechanisms underlying human disease and to serve as a platform for the development of novel treatment or prevention approaches. "

University of South Florida: Department of Molecular Medicine: ***"To Discover,*** apply and disseminate knowledge of the molecular basis of health and disease. ***To Translate,*** this knowledge into innovative tools for the diagnosis, treatment and prevention of disease. ***To Train,*** and mentor future scientists and health care professionals. ***To Provide,*** a collegial and scholarly environment where students, faculty and staff thrive."

Rutgers University: Department of Cell Biology and Molecular Medicine: "The department is committed to understanding the molecular mechanisms of disease by bridging the gap between physiology and molecular

biology. The research activities of our department include physiology, functional genomics, proteomics, developmental biology, cell biology and cell signaling. Our belief is that the understanding of disease can be achieved optimally by integrating the different aspects of the disease, i.e., from the whole organism to subcellular components, and by the use of complementary techniques to acquire a global view of the problem."

Rush University: Department of Cellular & Molecular Medicine: **"**The Department of Cell & Molecular Medicine is committed to fulfilling our threefold mission of education, research, and service through innovation, collaboration and teaching excellence. CMM is the home department for the Joint Health NIH T32 training grant."

The following have multidisciplinary centers, institutes or graduate programs centered on Molecular Medicine:

Johns Hopkins, University of Washington, Yale

Departmental Areas of Scientific Emphasis, Education, and full time faculty size (non-emeritus) estimated based on website, it is not certain all are primary appointments

Mayo Clinic: Viral Delivery and gene therapy for human disease. Regenerative medicine focused on cancer. **6** full time faculty as TIU.

Scripps Research Institute: "Five main areas of focus:1) state of the art chemical biology to decipher cellular signaling and transcriptional processes; 2) multidisciplinary approaches to discover new therapeutic targets and identify drug leads; 3) biology of human cancers; 4) age-related physiology that leads to disease and physical and cognitive decline; and 5) autoimmune and genetic disorders." **54** full-time faculty on CA Campus plus emeritus faculty. Large graduate and postdoctoral research programs.

University of California, San Diego: "Modern cell biology is a multi-disciplinary affair. Our faculty study fundamental cellular processes and pathways using a variety of techniques from classical genetics and fluorescence microscopy to high-throughput genomics, systems biology, and crystallography. While at the cutting edge in many areas, particular strengths of the department include Glycobiology and Stem Cell Biology." **32** faculty. Graduate students are part of existing college wide programs. No specific T32 for post-docs

University of California, Davis. "The **research interests** of the departmental faculty are focused in the fundamental molecular aspects of cell biology, gene expression, cancer biology, membrane biology, glycobiology, neurobiology, muscle physiology, human genetics, chemical and structural biology, molecular imaging and drug development. In addition to innovative research activities, faculty are involved in the teaching and training of medical and doctoral students." **25** faculty on two campuses (Davis and Sacramento). Participate in graduate and medical education programs. No specific graduate degree program.

University of Southern California: "Research thesis mentors conduct internationally recognized research in the biochemistry, genetics and cell biology of various human diseases including cancer, Mendelian and complex disorders." Department-specific Master's program. PhD students in larger college-wide programs. **15** full time faculty.

University of Arizona: "Scientifically, Cellular Medicine at the University of Arizona is extremely inclusive. The intellectual life of the Department is being increasingly enriched as our faculty actively participate in the development of interdisciplinary centers such as the Arizona Cancer Center, Sarver Heart Center, Arizona Respiratory Center and BIO5. Our Department is recognized internationally for research in deciphering mechanisms underlying the pathogenesis of human complex diseases. The mission of CMM is carried out through its teaching, research and service activities. Our expertises encompass cellular, molecular, and developmental biology, genetics, bioinformatics, toxicology, parisitology, and neurobiology, with a strong emphasis in imaging. Our research faculty are highly collaborative and take multidisciplinary approaches to their research." **32** primary faculty. PhD and Master's program, no specific postdoc program.

City of Hope/Beckman Research Institute: "The department is composed of a carefully crafted team of experts in chemistry, biology, biochemistry and biophysics that identifies new target molecules to treat cancer, creates personalized medicines from natural products, develops bioorganic approaches for cancer therapy, and evaluates genomic markers to predict cancer risk and response to therapy. By collaborating with multidisciplinary groups that include basic, translational and clinical researchers throughout City of Hope, we transform our key findings into novel therapies that improve the quality of life for patients everywhere. The department has a robust pipeline of novel, molecularly targeted therapeutics that includes engineered antibodies and small molecules. To facilitate the translation of these and other clinical candidates, the department is home to the Chemical GMP Synthesis Facility (CGSF), which is a 3000-square-foot, state-of-the-art manufacturing facility where our small and large molecule therapeutics are prepared for phase I and II clinical trials. The CGSF plays a key role in bridging basic science and translational medicine at City of Hope and allows more efficient and cost-effective means to translate our science into clinical practice. To accomplish our mission, the Molecular Medicine team uses approaches and technologies that include: sophisticated organic synthesis and medicinal chemistry; high-tech protein engineering; functional genomics, proteomics, and microarray gene expression profiling; high throughput screens of plant extracts and chemical libraries; advanced NMR spectroscopy and computational modeling; state-of-the-art X-ray crystallography; leading-edge super-resolution microscopy." **10** Faculty no listed graduate or postdoctoral programs are provided.

University of Texas, San Antonio: "Located in the South Texas Research Facility (STRF), we offer a research-oriented, interdisciplinary program of study in the areas of cancer and aging and their prevention. Specific areas of study include cell (and hormone) signaling, systems biology, gene expression, epigenetics, cell cycle and checkpoint controls, DNA damage repair and associated stress responses, and regulated protein turnover. It is the home of a U54 in systems biology and the single cell sequencing core facility. It is home to the Graduate Program in Molecular Medicine that was established in 1994 as a forward-looking academic program designed to train students at the interface of basic and clinical sciences. Its inception marked the first such program in the State of Texas and was rooted in the firm belief that rigorous training of scientists in the genetic and biochemical basis of human disease would provide an effective means to translate rapid advances in basic research into practical health benefits for the 21st-century public." **31** faculty. Graduate school PhD program

University of South Florida: Research focus are disease oriented in neurodegenerative disease, cancer biology, infectious disease and diabetes/metabolic disorders. They are a core area in the Master's and PhD programs in Medical Science that are College-wide. **32** faculty

Rutgers University: "The research activities of our department include physiology, functional genomics, proteomics, developmental biology, cell biology and cell signaling. We have created research institutes to gather together faculty with common research interests but complementary views and technical approaches. For example, the Cardiovascular Research Institute is dedicated to the understanding of molecular mechanisms in adult and congenital cardiovascular disease. The department is currently in an expansion phase with the creation of a division for cancer research and the recruitment of several new faculty members. There is a PhD in the department as part of the Graduate School." **22** full time faculty. Emphasis a cardiovascular disease, signal transduction, and wound healing.

Rush University: "The objective is to identify therapeutic targets and biomarkers which, after appropriate clinical investigation, will improve human health. Thus, projects run the spectrum from fundamental molecular biology and genetics to cell signaling to tissue, organ, and organismal level responses. Studies are conducted using cell culture, model organisms, and human subjects. There are four current areas of emphasis: cancer biology, musculoskeletal tissue injury and regeneration, movement disorders, and medical education research. " Graduate teaching as part of college-wide program. No specific post-doctoral program. **22** faculty with emphasis on cancer biology, bone biology, and education evaluation

The following have multidisciplinary centers, insitutes or graduate programs centered on Molecular Medicine in Colleges of Medicine:

Johns Hopkins, University of Washington, University of Maryland, Yale

5. Enumerate Major Proposed programs

a. Research Areas of Emphasis: We have investigated areas of potential overlap and opportunities for growth of this department with department chairs and College leadership and reviewed the areas and names with leaders in Colleges with departments most aligned with the areas of emphasis. The areas of emphasis were informed further by these discussions. Thus, they were designed for complementary expertise that would support and expand scientific growth of basic science with high scientific impact and translational opportunities.

Areas of Emphasis

- Foundational Therapeutics: Design, develop, and validate therapies for disease using novel methods and models to enable translational research
- Regenerative Medicine: Advance programs in stem cell biology and tissue engineering across diseases.
- Molecular Medicine: Advance fundamental biology to whole organ/body models and clinical correlates using preclinical modeling and systems biology approaches

b. Administrative Structure

Department Chair focused on molecular medicine from bench to bedside

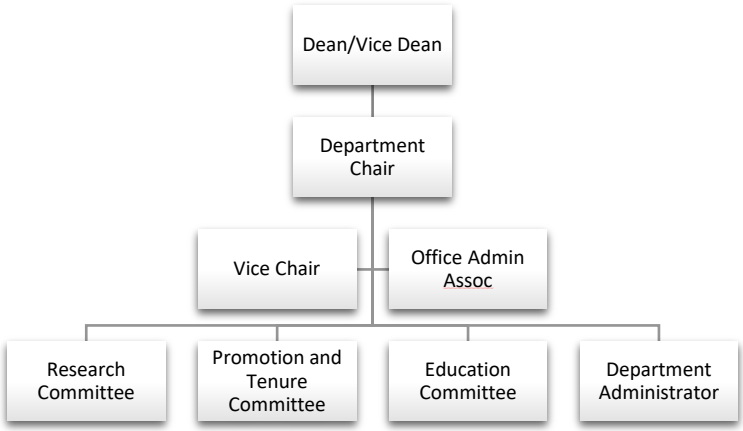
Vice Chair of Academic Affairs and Diversity, Equity, and Inclusion: This will be full professor who will direct the Promotion and Tenure Committee, lead DEI efforts, and work with the Department Chair as part of the Executive Team of the Division.

Key Committees: Executive Committee: Dept. Chair, Vice Chair, Education Committee, Appointment Promotion and Tenure Committee, Research Committee

Administrative Team: Department Administrator (shared with second basic science department); Assistant to the Chair

Department Structure:

Department of Molecular Medicine and Therapeutics (MMT)



c. Promotion and Tenure: Promotion and Tenure documents that conform with the College of Medicine and University have been developed. Expectations have been developed with the COM Vice Dean for Academic Affairs and University level review. Faculty hires will be tenure-track to start with potential research track hires over time. Emphasis will be placed on team science in addition to individual achievements. Documents will be approved through the College and University as appropriate.

d. Education Programs and enrollment projections:

It is anticipated that all faculty in the Department will be involved in the teaching mission and that excellence in teaching will be a core component of the promotion and tenure process. There will be an Education Committee to coordinate the teaching efforts. New major or minor programs are not anticipated for the Department. However, the presence of a new department focused on molecular medicine will enable new courses in the medical school as well as professional certificate training opportunities. We anticipated that some faculty members will be engaged with the education mission of collaborating departments and/or existing programs in the COM. There are opportunities for potential involvement in existing undergraduate education programs across the University in collaboration within the existing structures. MMT members will plan for appropriate inter-department and inter-college agreements if those are pursued.

Faculty Training: All new faculty will attend the College of Medicine FAME program including the series on teaching education methods for graduate and medical students. For those focusing on education as career pathways, additional training will be expected in the OSU Academy of Teaching. All faculty will have required training and continued education regarding Diversity, Equity, and Inclusion.

Postdoctoral Education Program: We anticipate an emphasis on postdoctoral research education. We will plan to develop a formal postdoctoral support program with a curriculum for grant and paper writing and career mentoring with a goal to attain a new T32 program. They also will attend translational lecture series' from the Department as well as through clinical collaborators. There will be emphasis on Diversity, Equity, and Inclusion in the trainees at all levels with emphasis on individual supplements, F31 proposals to NIH and coordination with efforts on campus such as RAISE and INSPIRES. We expect that between this program and individual recruiting ~15-20 postdoctoral researchers to be in the Department once it is fully recruited. In addition, through interactions with clinical departments, faculty in MMT may also be members of disease-oriented T32 grants and have clinical and translational fellows in their laboratories for 1-2 years.

Graduate Student Education: Faculty are expected to be excellent advisors for graduate students once accepted with P-level appointment in the graduate school. Faculty will be expected to be members of the Biomedical Sciences Graduate Program (BSGP). If appropriate, they also may be members of other graduate programs such as the Ohio State Biochemistry Program (OSBP) or others. It is anticipated they will propose and teach courses in the BSGP program as per program-specific expectations. They also may teach in the medical school curriculum for a course in molecular medicine, or in the basic science component for their organ system of emphasis. We anticipate that faculty will be mentors for ~10-15 graduate students, including MD, PhD students. We will create Department-specific mentoring programs for Graduate Students and also will work with the appropriate Graduate program to support proposals and teaching in the programs.

Undergraduate Student Education: Undergraduate students interested in biomedical research may express an interest in working with MMT faculty for research experiences. We will work actively with the appropriate colleges and departments in the undergraduate university to be certain students are aware of opportunities in the Department. We will create a "pipeline" research pathway focused on URM, women, and first-in-college students with an expressed interested in MMT for a career pathway.

e. Goals for Enrollees in the Education Programs: The primary Department-specific program is a postdoctoral training program with a goal to obtain a T32. By training with faculty in MMT, leaners will have the opportunity to be in an environment of innovative basic/early translational discovery that will expose them to the excitement of performing cutting-edge research with clinical implications. They will have received specific mentoring and teaching for grant writing, manuscript writing, and oral presentations that will serve them will in the future. They will receive training for future careers in academic clinical medicine, pharmaceutical companies, academic

research, and other opportunities in biomedical sciences and related fields. Undergraduate and graduate students will have received outstanding mentorship in a supportive and inclusive environment. For graduate students, they will be very well positioned for their careers having gained experience working with physician-scientists and basic scientists as well as clinical faculty to enable careers in translational medicine.

f. Impact on existing educational programs: It is not anticipated that the programs above will have a negative impact on existing education programs; but rather will allow for new education focused on molecular medicine knowledge of medical students, and create new opportunities to attract postdoctoral trainees with translational interests from basic science or clinical backgrounds. There is not a plan for new undergraduate or graduate programs in MMT. For undergraduate and graduate students, the new faculty will be involved in existing programs and will increase options for research advisors and mentoring not currently available. The new postdoctoral program will be expected to increase the number of highly qualified applicants to OSU and provide a potential pathway for new faculty recruitment. This is particularly important with the planned emphasis on women and URM applicants.

6. State opportunities provided for study or application of the subject beyond the structure of the classroom

Most education for postdoctoral researchers and graduate students occurs outside of the classroom. In addition to individual teaching between mentors and mentees, along with required lectures and seminars for Graduate students, the Department will provide opportunities for trainees to present journal clubs, research in progress seminars and formal presentations within the Department structure. In addition, for postdoctoral fellows, the curriculum will include annual presentations to the faculty and more frequent meetings with mentoring committees comprised of faculty members to critique research as well as presentation styles. It is anticipated that students and postdoctoral trainees will present at internal research days and fora, in addition to presenting original data at national and international meetings.

7. Estimate the potential to develop national or international recognition as an academic discipline

This innovative department will raise the profile of the OSU College of Medicine and OSU in several manners. First, by recruiting a strong faculty with growth in key areas of research, the reputation of OSU in areas such as drug design, stem cell biology and regenerative medicine and disease-oriented systems biology translation will be notable since there are no similar coordinated departments within Ohio or the Big Ten footprint. Thus, the creation of this Department will give strong recognition of the excellence of OSU in basic science in these key areas. Second, it is anticipated that the MMT department will raise the profile of the collaborating departments by creating a powerful research environment for top translational researchers with links to clinically-focused departments. Finally, the creation of this department will enable additional focus on Diversity, Equity, and Inclusion the tenure-track scientific faculty, a key benchmark and measure for success for OSU. It is anticipated that the outstanding faculty recruited into MMT will serve on NIH panels, be editors of journals, and be visible members of professional societies. Mid-career faculty will be mentored in this manner with an organized program to nominate faculty to key societies, a critical factor in raising the institutional profile.

Additional Programs:

Clinical Programs: As a basic science program we do not anticipate having our own clinical practice.

Faculty Mentoring Programs: A formal faculty mentoring program will be an intrinsic component of the MMT Department. All new non-tenured faculty will not only attend the FAME program but also will have a formal committee organized by the Vice Chair for Academic Affairs, Diversity, Equity, and Inclusion. Mentoring is a process that includes not only professional mentoring, but also personal mentoring and leadership training. This holistic approach will be the approach including benchmarks to achieve promotion and tenure, mentoring new faculty about laboratory management and personnel decisions and supervision, faculty well-being and work-life balance, as well as specific mentoring for URM and women faculty with involvement of resources beyond the Department when appropriate. All faculty will be expected to be trained by University teams in recognizing their own implicit biases and on how to manage microaggressions or other workplace issues should they arise.

Finally, mentoring also will continue for those mid-career faculty involved in team science and also interested in leadership opportunities through the OSU GRO program and CTSA-sponsored programs.

Faculty Well-being: This is a critical issue for faculty at all levels. Work-life balance is at the forefront to avoid faculty fatigue and burnout. This has been particularly evident during COVID-19. We will plan to have a faculty wellness strategies. We will plan for twice a year faculty and family get togethers and also teach strategies for faculty to ensure "down time" from work. It is critical for the Department to be a family-friendly environment that is supportive of the needs of faculty and trainees.

Diversity Equity and Inclusion: The MMT Department will have an emphasis on Diversity, Equity, and Inclusion in its faculty, students, staff, and in its welcoming environment for individuals of all races, ethnicities, and sexual orientation. One of the benchmarks for the Department will be recruiting an academically outstanding diverse faculty that can serve as a nidus for sustaining transformation of faculty diversity. The goal will be to attain diversity at all academic levels and within the leadership structure. We will work with College and University leadership and programs to recruit faculty interested in supporting College and University-wide programs in this key area of emphasis for the University.

Pilot Funding Program: Many highly productive faculty will have high risk/high reward research that requires preliminary data for funding agencies. The Department would like to fund one proposal annually that must have a PI in the MCM Department but can be multi-PI with another department (basic or clinical) within the COM.

Bridge Funding: It is likely that faculty may run into gaps in funding. To enable continued support for preliminary data and successful funding long-term, such funding is provided by the College of Medicine through formal programs.

Equipment funds: two expenses often not included or allowed in proposals include service contracts and large equipment purchases. A funding strategy (created through fundraising and outreach) will be developed within the Department to support service contracts and maintenance costs for the department

8. Describe previous submittals of the same or similar unit proposals (indicate reasons for withdrawal or disapproval)

Not applicable.

Demand
1. Give evidence of sufficient demand by students, faculty, general public, and/or business
2. Estimate the duration of demand (long/short term)
3. State the reasons that other units are not able to meet the demand

As the College of Medicine continues to grow its basic science departments to achieve its goal to reach the top 20 ranked institutions, it is clear that there are some key areas of strength required across specialties and to maximize innovation and impact for the future. Moreover, the current number of basic science departments in the College of Medicine is smaller than peers and with the recent growth of faculty, the existing Departments are large. Thus, for growth, there is a need for a new basic science Department in the COM. The areas of emphasis are aligned with current and future scientific growth in the biomedical research and enable will serve as a basis for excellence in research across organ and disease sites. This new Department will immediately place Ohio State as the leader of this approach within our Ohio and Big Ten footprint. The impact of strong departments of molecular medicine can be seen at some of the institutions described above such as UCSD and Scripps where Nobel laureates have made key discoveries advancing biomedical research, or in institutions such as City of Hope where they enable more rapid drug design and technology transfer and UT San Antonio where it has been a nidus for U54 awards and training programs. There is demand for these types of integrated programs by students and faculty, as well as by the general public as the ability to respond quickly to medical emergencies has been so apparent in response to the COVID-19 pandemic.

This will be long-standing as the need for innovative basic science is crucial to improve health. Importantly, the work that leads to these advances requires seamless integration between basic scientists, physician scientists, and clinicians. By having a department dedicated basic science with translational intent, the pace of discovery, and the flexibility to support multiple disease entities based on the scientific mission areas of the department is broadened. Similarly, working with the College of Pharmacy and the Drug Development Institute, a chemistry-based Drug design platform team can work with the Department of Biochemistry and Pharmacology and Medicinal Chemistry to create disease-related models informed using systems biology approaches and clinicians to identify drug targets and develop inhibitors for drug development for multiple diseases. Finally, the emphasis in systems biology linking basic science to clinical data, genomic, radiomic, and pathology data with clinical scientists enables reconstruction of the basic science in a clinically directed manner. This will include three dimensional tissue scaffolds and other technologies developing as part of the organoid program growing out of the Center for Cancer Engineering. Thus, MMT will enhance translational discovery will align innovative basic and translational science with clinical applications across diseases in focused areas of emphasis. Finally, it will enable a unique training environment for postdoctoral researchers, and a strong environment for students desiring a broad variety of careers in biomedical translational research.

Cost

1. Describe anticipated internal funding and external funding potential

The future department has secured commitments between the College of Medicine, the Cancer Center and the Davis Heart and Lung Research Institute to establish the Department in terms of administrative support and future faculty and staff. There are MOUs with commitments to support start-up costs for selected candidates provided by the Comprehensive Cancer Center (n=6); Davis Heart and Lung Research Institute (n=4). While Centers and Institutes will fund start-up support, the College of Medicine will provide on going faculty and staff costs. These costs will be offset by future return of costs through faculty teaching, research, and service activities.

General categories of Funding needs will include the following:
Salary and benefits for new faculty and staff positions partly offset by funding with an expectation of 50% salary coverage (see below)
Recruitment costs and relocation expenses
Faculty start up and equipment needs commensurate with their level of recruitment and scientific needs with commitments to offset these costs.

All faculty will be recruited in conjunction with the College of Medicine with expectations for extramural funding at the time of hiring for established faculty. In addition, long term and continued external funding potential is very high. It is anticipated that a few faculty will move to the department to begin the program. This will be made-up of independently funded investigators. Faculty (10-12) will be recruited from outside institutions or from our own training programs (in addition to Dr Ringel). Senior faculty hires will be expected to have R01 level grants or components or PI of team award such as U or P series award from NIH or their equivalents from other institutions. Junior faculty will be expected to be highly well trained and, in general, be recipients of K awards, K99/R00 awards, or first R01 awards (although extramural funding will not be required of highly qualified junior recruits).

1 Department Chair: Matthew D. Ringel, Professor of Medicine who will continue with NIH funding, maintain partial salary support through his current endowed chair and will continue a 10% clinical practice in the Department of Internal Medicine.
10-12 total recruits (below may vary based on recruitment pool).
Year 1: One vice chair (professor) and one early career recruit
Year 2: One senior and two assistant professors
Year 3: One senior and two assistant professors
Year 4: two-three assistant professors
Year 5: two additional faculty recruits per business plans or additional business plans.

2. Compare cost of proposed unit with that of like institutions with similar academic units

There are few directly comparable departments in institutions as noted above. This budget proposal is similar to existing basic science departments in the College of Medicine.

3. Evaluate cost of additional faculty that may be needed
Faculty Need
All faculty will be appointed to 12-month faculty appointments that conform with COM policies and guidelines.

Estimated cost: Salaries will be commensurate with the AAMC basic science salaries as per Basic science departments in the College of Medicine. Salaries will be partially covered by extramural funds.

Recruitment and relocation costs including start-up funds, large equipment if needed, laboratory relocation, and family relocation

4. State adequacy and availability of facilities as well as faculty

The department will adhere to established COM and OSU space metrics, the use of core labs and equipment, and will make group decisions regarding core equipment needs. The Department will require administrative staff in addition thus office space for each faculty, office space for administrative staff, and conferencing space for staff and students will be required.

PI space profile:
~10-12 faculty
1 Department Chair: Full Professor with space based on funding and one Department Chair office with space for individual meetings.
2 Full Professors: Space per faculty member depending on funding and each with one office;
1-2 Associate Professors: Space per faculty member depending on funding and each with one office;
7-8 Assistant Professors: Space per faculty member depending on funding and each with one office;

Additional shared space is also needed so that all Department personnel have adequate access to cold rooms, sterile/glass washing stations, lounge space, and meeting areas.

Other:

1. Computers and printers for all faculty, a large color printer and services for the department. IT support. Updates to computers. Paper and other consumables.
2. Office and laboratory furniture with updates as needed
3. Meeting space to include large computer screen for conferencing in the division and for outside speakers
4. Funds for monthly grand rounds, food for internal monthly faculty meetings and grand rounds, strategic planning and an annual retreat along with two wellness
5. Office space for Administrative assistant to the Department Chair near Chair office
6. Office space for Department Administrator

Include information regarding the use of consultants or advisory committees in the development of the proposal, with copies of reports from such consultants or advisory committees

This was developed as a new basic science department in conjunction with the College of Medicine Dean and the Vice Deans for Research and Academic Affairs. There were initial presentations and discussions with the Basic Science Chairs and Clinical Department Chairs in the College of Medicine. Individual meetings were held with all Basic Science Chairs and most of the Clinical Chairs to obtain feedback and inform the final model. Individual discussions also occurred with Dr. Mohler, Raphael Pollock, Director of OSUCCC, and Thomas Hund, Interim Director of DHLRI to ensure agreement on scientific areas and alignment with the model. Dr. Ringel also met with the ADRs of the Colleges of Engineering, Pharmacy, and Veterinary Medicine, and with the Dean of the Natural Science Colleges of the College of Arts and Sciences to identify any potential concerns or areas of synergy with their Colleges. All agreed that MMT was not conflicting or overlapping in scope, science, or name and that the Department offered opportunity for synergies and growth. Letters are attached to this document. Finally, on 2/16/2022 the Department was presented formally to College Council and approved unanimously.

THE OHIO STATE UNIVERSITY

Carol R. Bradford, MD, MS, FACS
Dean

College of Medicine

250 Meiling Hall
370 W. 9th Avenue
Columbus, OH 43210

614-292-2600
carol.bradford@osumc.edu

March 4, 2022

Matthew D. Ringel, MD
Professor of Medicine
The Ohio State University College of Medicine

RE: Department of Molecular Medicine and Therapeutics

Dear Matt,

I am pleased to send this letter confirming my strongest support, and the support of the College of Medicine, for the formation of a new Basic Science Department, Molecular Medicine and Therapeutics (MMT), in the College of Medicine. A new basic science department is needed for us to achieve our recruitment plans to achieve our goal to be a top 20 College of Medicine in research and foundational and early translational research and to extend our efforts to improve health across the disease spectrum. We have together strategically identified key areas of emphasis: therapeutics development, tissue engineering and stem cell biology, and molecular medicine to grow basic sciences across the College. The need for a new department, its leadership and these areas of emphasis all were discussed with Chairs of the Basic Science and Clinical Departments, along with other College leaders, starting in November, 2021 in both group and individual meetings. Input was obtained which informed the final approach that was presented to College Council for vote in February, 2022. It received unanimous approval from Council.

The College of Medicine is committed to supporting the initiation and growth of the Department of MMT. This includes administrative support for the department including a Department Administrator and Office Associate, lines of support for faculty salaries, office and research space, which we anticipated to be located primarily in the new Interdisciplinary Research Facility, and full access to core facilities.

You currently have several leadership roles; one of which is serving as the Director of the Division of Endocrinology, Diabetes, and Metabolism (EDM) for the past 11 years. You will need to transition out of this role as you become a Department Chair. EDM is a flagship division in the College and Department of Internal Medicine that under your leadership has achieved high national rankings and has become a highly recognized and leading program in research, education and clinical care. I am aware that you have been working with Dr. Rama Mallampalli, MD, the Chair of the Department of Internal Medicine, who is highly supportive of your new role, to devise an approach to enable continuity during your transition to become Department Chair of MMT. This may require a period of time where you serve in both roles during the transition to eliminate gaps. We are supportive of the plan you and Dr. Mallampalli are devising and recognize your commitment to enabling EDM to continue its tremendous growth trajectory that you have worked hard to build over the past decade.

I am very excited about the establishment of this new Basic Science Department and am confident it will grow into a robust and highly impactful department under your leadership. I look forward to supporting its growth in alignment with the strategic plan of the College of Medicine and the University. You have my strongest possible support and the unanimous support of the College leadership.

Sincerely,

Carol R. Bradford, MD, MS, FACS
Dean, College of Medicine
Vice President for Health Sciences, Wexner Medical Center
Leslie H. and Abigail S. Wexner Dean's Chair in Medicine
Professor of Otolaryngology – Head & Neck Surgery

The James

THE OHIO STATE UNIVERSITY
COMPREHENSIVE CANCER CENTER

The Ohio State University
Comprehensive Cancer Center –
Arthur G. James Cancer Hospital and
Richard J. Solove Research Institute

Raphael E. Pollock, MD, PhD, FACS
Comprehensive Cancer Center Director
Professor, Division of Surgical Oncology
Klotz Chair in Cancer Research

James Cancer Hospital
460 W. 10th Ave, Ste. D920
Columbus, Ohio 43210

March 8, 2022

Matthew D. Ringel, MD
Ralph W. Kurtz Chair & Director
Division of Endocrinology, Diabetes, and Metabolism
Professor of Medicine, OSU College of Medicine
Co-Leader Cancer Biology Program
Co-Director Center for Cancer Engineering
Deputy Director, Center for Clinical and Translational Sciences

Re: Molecular Medicine and Therapeutics

Dear Dr. Ringel:

I am pleased to send this letter confirming my strongest support and enthusiasm for the proposed formation of a new Basic Science Department, Molecular Medicine and Therapeutics (MMT) in the College of Medicine. The areas of emphasis for this Department align very well with the strategic plan of the OSUCCC-James. Foundational therapeutics development, tissue engineering and stem cell biology, as well as molecular medicine all are areas of planned growth for the CCC. Through your continuous leadership in the CCC as well as the CCTS and Department of Medicine, you are uniquely positioned to grow basic sciences across the College and collaborate across the University.

The OSUCCC has agreed to commit to at least 6 start-up packages for cancer researchers into the Department over the first 5 years including two at the associate/full professor level and 4 at the assistant professor level. We anticipate they will be in the IRF CCC space and will be OSUCCC members having full access to our support and shared resources.

Best wishes to you and your proposal for the establishment of the MMT Department. The proposal has my full support, and we look forward to supporting its growth.

Sincerely,

Raphael E. Pollock, MD, PhD, FACS
Director, The Ohio State University
Comprehensive Cancer Center

THE OHIO STATE UNIVERSITY
WEXNER MEDICAL CENTER

College of Medicine
Davis Heart and Lung Research Institute
110 DHLRI
473 West 12th Avenue
Columbus, OH 43210
614-247-7766

Thomas J. Hund, PhD
Interim Director
Thomas.hund@osumc.edu

March 7, 2022

Matthew D. Ringel, MD
Ralph W. Kurtz Chair & Director Division of Endocrinology, Diabetes, and Metabolism
Professor of Medicine
Co-Leader Cancer Biology Program
Co-Director Center for Cancer Engineering
Deputy Director, Center for Clinical and Translational Sciences
The Ohio State University Wexner Medical Center & Comprehensive Cancer Center

RE: Molecular Medicine and Therapeutics

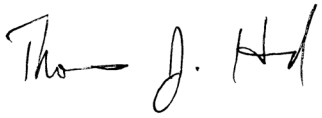
Dear Matt,

I am writing to express my strong support for the proposed formation of a new Basic Science Department, Molecular Medicine and Therapeutics (MMT) in the College of Medicine. The Davis Heart and Lung Research Institute (DHLRI) is embarking on an expansion of science through recruiting over the next 5 years. The areas of emphasis for MMT in therapeutics development, tissue engineering/stem cell biology, and molecular medicine align well with our planned future directions. Over the past 11 years, you have recruited a number of well-funded and high impact basic scientists with DHLRI into basic and clinical departments in the college of medicine as part of our joint emphasis on Diabetes and Metabolism. This has led a new NIH-funded T32 as well. Thus, I am very enthusiastic to continue this successful trajectory with you in this new role.

The DHLRI agrees to fund 4 start-up packages for researchers focused on heart and lung disorders into the MMT Department over its first 5 years. We feel that the areas of focus in the department will enable growth of cardiovascular and pulmonary research across the College of Medicine and the University

Best wishes to you and your proposal for the establishment of the MMT Department. I am highly supportive of this proposal and look forward to working together in this endeavor.

Sincerely,



Thomas Hund, Ph.D.
Interim Director and William D. and Jacquelyn L. Wells Chair,
Dorothy M. Davis Heart and Lung Research Institute
Professor, Departments of Biomedical Engineering and Internal Medicine
The Ohio State University

THE OHIO STATE UNIVERSITY

College of Arts and Sciences

186 University Hall
230 North Oval Mall
Columbus, OH 43210
614-292-1667 Phone
614-292-8666 Fax

artsandsciences.osu.edu

02/21/2022

Matthew D. Ringel, MD
Ralph W. Kurtz Professor of Medicine
Director Division of Endocrinology, Diabetes, and Metabolism
Co-Leader Cancer Biology Program
Co-Director Center for Cancer Engineering
Deputy Director, Center for Clinical and Translational Sciences
The Ohio State University Wexner Medical Center & Comprehensive Cancer Center
College of Medicine

Dear Matt,

I am writing on behalf of the College of Arts and Sciences in support of the formation of the department of Molecular Medicine and Therapeutics (MMT) in the College of Medicine.

We understand that this will be a basic science department in the College of Medicine with initial anticipated recruitment of approximately 12 faculty over 5 years. The areas of research emphasis of this department will include therapeutic design and development, tissue engineering and stem cell biology, molecular medicine with particular focus on complex disease models and systems biology.

The educational efforts will include focused fellowship opportunities with no plans to start new graduate or undergraduate programs or course offerings.

As the department develops, the College of Arts and Sciences faculty look forward to potential opportunities to partner with these new colleagues on innovative research.

We understand that you will be the first chair of this new department. Congratulations and good luck in assembling an outstanding team!

Sincerely,

Susan V. Olesik
Distinguished University Professor
Dean of Natural and Mathematical Sciences
College of Arts and Sciences

THE OHIO STATE UNIVERSITY

College of Pharmacy

Office of the Dean
217 Parks Hall
500 West 12th Avenue
Columbus, OH 43210

614-292-1715 Phone
614-292-3113 Fax

carnes.4@osu.edu
http://pharmacy.osu.edu

February 18, 2022

Matthew D. Ringel, MD
Ralph W. Kurtz Professor of Medicine
Director Division of Endocrinology, Diabetes, and Metabolism
Co-Leader Cancer Biology Program
Co-Director Center for Cancer Engineering
Deputy Director, Center for Clinical and Translational Sciences
The Ohio State University Wexner Medical Center & Comprehensive Cancer Center

Dear Dr. Ringel,

I am writing to affirm that the College of Pharmacy is in full support of the proposed new Department of Molecular Medicine and Therapeutics. This is a strategic direction of growth for our campus, and we expect that close collaborations would occur between members of this new department and our college. In addition, this direction is well-aligned with our college strategic plan in research and innovation.

Thank you for the opportunity to discuss this proposal.

Sincerely,

Cynthia Carnes, PharmD, PhD, FAHA, FHRS
Senior Associate Dean, Research and Graduate Education
Professor, Outcomes and Translational Sciences

Clinical pharmacy specialist,
Ross Heart Hospital, Ambulatory Care Center

Program Director,
KL2 Program
Center for Clinical and Translational Science

Cc: Dean Mann

THE OHIO STATE UNIVERSITY

College of Veterinary Medicine

Office of Research and Graduate Studies
127N Veterinary Medicine Academic Building
1900 Coffey Road
Columbus, OH 43210
Phone (614) 292-9203
Fax (614) 292-7185

February 19, 2022

Matthew D. Ringel, MD
Ralph W. Kurtz Chair & Director Division of Endocrinology, Diabetes, and Metabolism
Professor of Medicine
Co-Leader Cancer Biology Program
Co-Director Center for Cancer Engineering
Deputy Director, Center for Clinical and Translational Sciences
The Ohio State University Wexner Medical Center & Comprehensive Cancer Center

RE: Molecular Medicine and Therapeutics

Dear Matt,

I am sending this letter to provide my strong support for your efforts to develop a new basic science department, Molecular Medicine and Therapeutics (MMT), in the College of Medicine. The proposed areas of emphasis in therapeutic development, tissue engineering and stem cell biology, and molecular medicine align remarkably well with the College of Veterinary Medicine (CVM). I am excited that you are taking the lead in this effort due to your very strong relationship with our College including holding P-status in the CVM Comparative Biomedical Sciences Graduate Program in which you currently are the primary advisor/mentor for one pathology resident/PhD graduate student, serving as the primary mentor for early career CVM faculty, and by supporting our scientists through your roles in the Comprehensive Cancer Center as well as in the Center for Clinical and Translational Sciences.

As noted above, all of the areas of emphasis in the proposed MMT Department align well with the interest of our College and Faculty. I see major synergistic opportunities particularly in the areas of molecular medicine and therapeutics. I wish you the best with this timely endeavor and strongly support the formation of this important new Department.

With best regards,

Patrick Green

Patrick L. Green, PhD
Professor and Associate Dean for Research and Graduate Studies
Robert H. Rainier Chair in Industrial Veterinary Medicine and Research
Director, Center for Retrovirus Research
Associate Director for Basic Sciences, Comprehensive Cancer Center

THE OHIO STATE UNIVERSITY

William G. Lowrie Department of Chemical and Biomolecular Engineering

452 Koffolt Laboratories, CBEC
151 West Woodruff Avenue
Columbus, OH 43210-1350

614-292-6033 Phone
614-292-3769 Fax
palmer.351@osu.edu E-mail

February 20, 2022

Matthew D. Ringel, M.D.
Ralph W. Kurtz Chair & Director Division of Endocrinology, Diabetes, and Metabolism
Professor of Medicine
Co-Leader Cancer Biology Program
Co-Director Center for Cancer Engineering
Deputy Director, Center for Clinical and Translational Sciences
The Ohio State University Wexner Medical Center & Comprehensive Cancer Center

RE: Molecular Medicine and Therapeutics

Dear Matt,

I am pleased to write this letter confirming my strong support and enthusiasm for the proposed formation of a new Basic Science Department, Molecular Medicine and Therapeutics (MMT) in the College of Medicine. The areas of emphasis for this Department align very well with the goals of the College of Engineering and offer an opportunity to expand our already strong interactions with the College of Medicine. I am particularly pleased you have taken the lead on the Department due to the strong collaborative relationship we have developed through your cross-campus leadership as Co-Director of CCE-CURES and as Deputy Director of the CCTS, as well as your service to our College including on a number of search committees and co-mentoring students and faculty.

The areas of emphasis in the proposed MMT Department align well with the interests of our COE faculty particularly in the areas of tissue engineering and stem cells as well as therapeutic development. The opportunities for collaborative growth in these areas with medical applications are substantial and align with our current strategic plan.

Best wishes to you and your proposal for the establishment of the MMT Department. The proposal has my full support.

Sincerely,

Andre Palmer, Ph.D.

Associate Dean for Research
Fenburr Ohio Eminent Scholar in Nanotechnology: Molecular Self-Assembly
Professor of Chemical and Biomolecular Engineering