



**MEMORANDUM**

**To:** Donna E. Shalala, President

**From:** Richard L. Williamson  
Chair, Faculty Senate

A handwritten signature in blue ink, appearing to read 'Richard L. Williamson'.

**Date:** March 1, 2013

**Subject:** Faculty Senate Legislation #2012-24(B) – Establish a Master’s Degree in Vision Science and Investigative Ophthalmology within the Miller School of Medicine

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At its February 27, 2013 meeting, the Faculty Senate unanimously approved the proposal to establish a Master’s degree in Vision Science and Investigative Ophthalmology within the Miller School of Medicine. The degree is proposed to fulfill an unmet need in the field that will impart a unique training and skill set. It is seen as a bridge for students in preparation for Medical School, and is expected to draw students involved in the industry especially pharmacy, and appeal to practicing ophthalmologists in the US and the rest of the world.

The supporting materials are enclosed for your reference.

This legislation is now forwarded to you for your action.<sup>1</sup>

RW/rh


Enclosure

cc: Thomas LeBlanc, Executive Vice President and Provost  
Pascal Goldschmidt, Senior Vice President and Dean, Miller School of Medicine  
Eduardo Alfonso, Professor and Chair, Department of Ophthalmology  
Sanjoy Bhattacharya, Presenter and Associate Professor, Department of Ophthalmology  
Richard Lee, Presenter and Associate Professor, Department of Ophthalmology  
M. Brian Blake, Dean, The Graduate School  
Karen Beckett, Registrar

<sup>1</sup> Graduate programs also require further approval by the Board of Trustees.

CAPSULE: Faculty Senate Legislation #2012-24(B) – Establish a Master’s Degree in Vision Science and Investigative Ophthalmology within the Miller School of Medicine

PRESIDENT’S RESPONSE

APPROVED:  DATE: 3/8/2013  
(President’s Signature)

OFFICE OR INDIVIDUAL TO IMPLEMENT: DEAN GOLDSCHMIDT

EFFECTIVE DATE OF LEGISLATION: IMMEDIATELY  
(if other than June 1 next following)

NOT APPROVED AND REFERRED TO: \_\_\_\_\_

REMARKS (IF NOT APPROVED): \_\_\_\_\_



## Proposal for a Master's Degree in Vision Science and investigative Ophthalmology

### 1) Rationale

a) Title of the Degree. Master of Science in Vision Science and investigative Ophthalmology (MVSIO).

b) Purpose and Goals. Part of the strategic vision of the University of Miami, as outlined by the Provost at the annual faculty meeting on May 24<sup>th</sup>, 2011, is to have nationally prominent graduate programs. The proposed MVSIO program is one step towards such a plan. It is expected to serve as a model Masters program in the visual sciences and also as a feeder program for a planned PhD-level graduate program in Vision Science and investigative Ophthalmology. Graduates of medical school (MDs) and practicing ophthalmologists from foreign countries (foreign medical graduate: FMG) frequently seek to enrich themselves with research training. Currently, a formal mechanism to accommodate such comprehensive training in research and allied aspects is lacking for persons primarily trained as clinicians. This proposed Master of Science program will serve as a formal mechanism for these individuals and will fulfill position of unmet need in the visual sciences and ophthalmology.

Vision science and ophthalmology researchers require skills from different disciplines, such as electrophysiology (for example, analyzing electroretinograms of the eye), biochemistry, molecular biology, and exposure to ocular clinical details and ocular anatomy and pathology. Training in all these aspects are currently not provided by any single program in the US. Thus, a Master's program in Vision Science and investigative Ophthalmology will impart a unique training and skill set. Growing academic practices in the US and in the rest of the world, as well as device and drug companies, need such trained personnel. The proposed courses will also offer essential management and administrative skills that will be helpful for individuals desiring a vision science and ophthalmology oriented career in start-up companies or management of non-profit philanthropies.

Consistent with the university's strategic vision, the goals of the programs are:

- (i) Train Master's students in research and research management skills
- (ii) Prepare students for a future PhD-level program in Vision Science and investigative Ophthalmology
- (iii) Generate revenue that will more broadly support the graduate (PhD) program

As stated above, initiating a Master's program will provide FMGs a formal mechanism to be trained in research, grant mechanisms and other management skills. The program will judiciously use course work, lab modules and problem based learning (PBL) mechanisms elaborated below. Using PBL, the students will also be trained in management skills that will prepare them for development of, or employment in, start-up enterprises. The proposed program will be of great interest to international students, both clinicians and non-clinicians. The Bascom Palmer Eye Institute, with a #1 ranking in *US News and World Report* for the past nine years (and always #1 or #2 since the inception of this ranking), attracts clinicians and non-clinicians interested in formal courses offered by the institute. Courses for clinicians are already



offered that help strengthen their clinical skills, such as the annual Angiogenesis meeting (which offers Continuing Medical Education – CME – credits), and the Pan American Association of Ophthalmology-associated BPEI Curso meeting, which attracts hundreds attendees from all over Central and South America. The Master's program will not only be a formal first step towards the eventual development of a PhD graduate program in the visual sciences, but it will also provide a formal mechanism for teaching FMGs and other individuals who are interested in this unique and useful training for their careers. The proposed program is unique in its breadth, covering not only basic science and laboratories, but also covering aspects such as management skills, grant overview, regulatory issues and enterprise formation issues, using PBLs. Program will also train individuals to use animals in vision and ophthalmic research following IACUC guidelines and supplanted by exiting web-based training modules and other resources/protocols already in place and supervised by IACUC. No U.S. university has a similar program and none of the international master's programs cover all these issues, nor do they infuse PBL mechanisms in their course curricula. This program is also consistent with the University's vision of building an academic and research profile consistent with AAU membership criteria by initiating nationally prominent Master's and PhD graduate programs.

c) Demand and Job Market. Demand for Masters level trained personnel exists in industry, in academic research settings, in regulatory bodies and in philanthropic missions/non-profit bodies. A summer training course is held every year at the Marine Biology laboratory in Woods Hole, Massachusetts (sponsored by the National Eye Institute) where students are introduced to vision research and ophthalmology, and these students are encouraged to pursue an academic or industrial career related to ophthalmology and vision research. Two other categories of individuals are also interested in such a program: (a) medical students who are keen on matriculating to an ophthalmology residency and (b) undergraduate students who intend to improve their breadth of medical knowledge and enter into medical school.

A great deal of interest exists from foreign countries in training their medical students and clinical personnel to improve their knowledge of ophthalmology and vision science enabling them to pursue research within their countries after training.

We have performed due diligence about job prospects. We have made inquiries in large established ophthalmic pharmaceutical companies such as "Alcon" (now Novartis) and "Allergan" as well as smaller medical device companies such as "Ephios AB". We determined that individuals in this training program will fill a void for industry jobs that require training higher than at the undergraduate level and will be suitable for someone at the Master's level. Usually in industry, this results in recruitment of doctoral-trained personnel who are over-trained for these kinds of jobs. Also, we have had opportunities to communicate with venture capital and other fund managers who have pointed out a need for personnel with training in grants, business, regulatory and management issues, and accordingly "problem based learning (PBL)" modules have been incorporated in the course curriculum. A number of philanthropic or non-profit organizations such as the "American Health Assistance Foundation (now BrightFocus Foundation)" and "Unite for Sight" in informal discussion pointed out the utility of such trained individuals as officers for their organizations. Currently, such personnel are not available with the appropriate field specific training.

While no US universities or institutes are currently offering a Master's program in ophthalmology and vision research, a number of prominent international universities do offer such a program, notable among them are: The University of Manchester, University College London (UCL),



United Kingdom, University of Melbourne, Australia and Dalhousie University, Canada. These programs were designed to meet a demand and indicate the presence of the job market for a Master's program in ophthalmology and vision research at UM.

d) Relationship to Other fields and Interaction with Departments. The Master's in Vision Science and investigative ophthalmology will have core courses in cell biology, neuroscience, human genetics, ocular microbiology and immunology as well as biochemistry. The students will also undertake courses in biostatistics, and PBL in management skills and tools (such as grant writing, budgeting, writing business plans and knowledge of elements of merger and acquisitions), in animal use and regulatory issues. Guest faculty will be invited from the Departments of Cell Biology, Microbiology and Immunology, Biochemistry and Molecular Biology, Human Genetics, and Epidemiology and Public Health. In addition, guest faculty will be invited from the UM School of Business Administration (for example, Drs. Steven Ullman and Joseph Johnson). Faculty members from Department of Ophthalmology graduate faculty currently participate in teaching courses in Biochemistry and Molecular Biology as well as in the Neuroscience program. Opportunities will also be provided to senior graduate students and postdoctoral fellows in teaching and conducting laboratory courses. In cases where an overlapping but equivalent course is offered by another department, we will seek permission from the course coordinator to allow these Master's students to take such courses. The participation by different graduate departments will also enable expanding course offerings. Another avenue for training is that the Master's degree students will perform laboratory research for the thesis year (second year). Expanding participation by including faculty members from other graduate departments will help place the maximum number of students in mentor's labs (see 5a: Number and pool of students), because host faculty members will be a potential limiting step in the intake of students. Notably, Dr. Sharon Elliot (Division of Nephrology, Department of Medicine) and Dr. Vladlen Z. Slepak (Department of Molecular and Cellular Pharmacology) are examples of faculty members who have had research funded by the National Eye Institute and who are outside the department of Ophthalmology with research programs relevant for vision science and who would be potential mentors for thesis research for the second year.

e) Relationship to Undergraduate and Professional Programs. Two main pathways exist for participation in the undergraduate and professional programs:

(i) Supplying prerequisites to our students. The Departments of Biology and Chemistry and the School of Business can provide courses that may be prerequisite to our programs. We expect no overlap in course content between our program and undergraduate programs. If there is any overlap that will be for remedial reasons (after a period of gap as necessary to catch up with advanced topics or courses).

(ii) Interdepartmental collaborations/interactions. Existing programs may include courses offered by our program or may desire joint teaching of some portions of the courses.

**2) Physical Resources** In addition to classrooms, books and course material, we will need an experimental laboratory. The experimental laboratory may be shared with degree programs of other departments, for whom intake remains small because the experimental laboratory will



enable teaching techniques that will be common with other programs (such as biochemistry, neuroscience, pharmacology and cell biology).

a) Teaching, Computer infrastructure. We propose to dedicate a laboratory space in the 5<sup>th</sup> floor McKnight Building with a table and 10 chairs and lab space for experiments as detailed in (b) below. In addition, conference/board rooms both in the McKnight and ABLEH buildings and the Norton Library space, will be available if needed. The Norton Library, within the ground floor of the ABLEH, contains the most extensive collection of ophthalmology and visual sciences texts and journals in the world. Each student will be provided with a laptop from the program with encryption from Med IT with software (Endnote, Photoshop) installed as needed.

b) Laboratories. We will use a dedicated laboratory space on the 5<sup>th</sup> floor McKnight Building with a table and 10 chairs that will serve both as teaching class room as well as for the basic experiments. These experiments will need instruments that will incur an expense in the range of \$ \* for equipment. This expense will be subsidized by a grant/donation. Additional costs of animals and lab supplies for class practice experiments will be met from tuition fees. For each student, the thesis expense (in the second year) of \$ \* . will go to the mentor's laboratory. This fee will be subsidized by a grant/donation.

c) Other resources. The program will need a full-time coordinator or secretary who will ensure the attendance of students, that all assignments are fulfilled, class/courses are run on time, the student projects are floated on time and selected, and students and research mentors are paired right at the time, and the course-credits are entered. The Norton and Calder libraries will suffice for reading material and library support and each student will be provided with a Med IT approved laptop equipped with Microsoft Suite software, Endnote, Adobe Photoshop and any other software package recommended by the teaching faculty. (An informal assessment from the library was sought which has indicated the sufficient reading material exists in the combined repertoire of resources of the Calder and Norton Libraries at UMMSM). Students will also need dedicated locker and desk place and this will be provided in the individual laboratories of research mentors. Since research mentors for the second year will be selected in the first year itself, this will become the responsibility of research mentors from the beginning of training.

### 3) Curriculum

No undergraduate courses in ophthalmology and vision science currently exist at UM. There are courses taught for medical residents and advanced undergraduates in biochemistry and biology which may have some common elements, but the proposed master's course will be advanced and specialized.

a) Prerequisites for the entrance to the program. Successful applicants to the program will be people who have completed undergraduate programs and have taken courses in Biology, Biochemistry and/or Chemistry. Having taken courses in anatomy and physiology will be advantageous. Since this is a new program, the pre-requisites will be relaxed initially and will be revised from time to time with experience gained through running the program. Students found deficient in any curricular aspects will be offered remedial courses in the undergraduate or graduate programs as necessary. Some courses or portions of courses such as BMB609, BMB545 may serve as remedial courses for select students. Alternatively, remedial courses will

\* financial info redacted



be offered for select students in consultation with other departments on the medical (such as BMB or cell biology department) or Coral Gables (chemistry, biology) campuses.

b) Structure and unique aspects of the curriculum. A unique feature of this M. Sc. Program is problem based learning (PBL) courses. The PBL will not be formal didactic courses; rather, they will take a pertinent relevant problem and demonstrate solutions to that problem. In the process, students will familiarize themselves with learning objectives and problem solving approaches and techniques. The assignments used for assessment of learning will present similar problems and will determine whether the student had been able to learn the methods identified. Three two-credit PBL modules will be offered to educate students in (1) high throughput approaches in genomics, genetics and proteomics. This PBL will be taught by interdisciplinary participation from faculty in our department. Guest faculty from other departments or from visiting faculty lecturers will be invited for supplementation of the curriculum as necessary. (2) Management tools for academia and industries. The course will present problems in (a) grant writing (research and SBIR), (b) writing a business plan and (c) mergers and acquisition (for example, between an ophthalmic drop-making enterprise and a device maker who makes intraocular pressure or electroretinographic equipment). Teaching this PBL based course will involve collaboration between departments such as Prof. Ken Colwell and Professor Jeffrey L. Kerr, from the Business school. (3) Students will be taught issues pertaining to animal use in research. For this purpose, regulatory requirements and allied issues will be taught using a PBL module. Dr. Julia Zaias from the Department of Veterinary Resources will be invited for a guest lecturing. Also, students will be required to attend a course in responsible conduct of research and research ethics offered by PIBS (also available online through CITI website).

c) The laboratory courses. Three laboratory courses will be required. Lab I will involve classes in biochemistry, microbiology and pathology as applicable to ophthalmology (3 credits). The courses will be taught by faculty members from the Department of Ophthalmology. For example, Drs. Darlene Miller (Director, ophthalmic microbiology) and Sander Dubovy (Director, Ocular Pathology) will participate in microbiology and pathology and are clinical faculty of the ophthalmology. For specific courses, guest lectures may be sought from the Department of Physics. Lab III, electrophysiology, will be taught by ophthalmology graduate faculty (i.e. Drs. Rong Wen and Vittorio Porciatti; 1 credit). For all lab courses, a dedicated lecture and lab will be set up at on the 5<sup>th</sup> floor of the McKnight building. A list of equipment has been assembled. Additional equipment will be added if necessary for routine class-based teaching, with consultation from the teaching faculty.

d) Thesis. A 7 credit thesis course will be required in the second year. Research work will be performed for a 9-10 month period. For timing reasons, students will choose a mentor's lab in the first year and select a thesis proposal after rotation through the prospective mentor's lab. Students will be required to provide a proposal to a three member thesis committee drawn from members of program faculty. The majority of these mentoring faculty are admitted members of the UM Graduate Faculty with a track record of graduate level teaching, extramural funding, and/or have graduate students in their labs. The thesis proposal should be written such that the data collection will be completed within ~9 months and should be publishable. Mentors will assure that they can financially support a Master's program student with reagents, supplies, equipment, etc. necessary for completion of the thesis project. The committee will monitor the student closely for the first two months and will also identify an alternate lab, should the project



did not make satisfactory progress within first two months. The committee will also evaluate three months prior to the second year to determine if students have spent time with prospective mentor's lab, evaluated the prospect of a project, and worked towards defining and completing a thesis project.

*A summary of courses and their credits for this program is provided below.*

	<b>Name of the course</b>	<b>Credits</b>
OPH1	Anatomy, physiology and pathology of the eye	1
OPH2	Pathophysiology of eye diseases	1
OPH3	Ocular epidemiology and biostatistics	0.5
OPH4	Microbiology and immunology of the eye	1
OPH5	Clinical ophthalmology update	0.5
OPH6	Ocular pharmacology and therapeutics	0.5
OPH7	Ophthalmic genetics	1
OPH8	Electrophysiology	0.5
OPH9	Vision and optics	1
OPH10	Biochemistry, Cellular and Molecular ophthalmology	2
OPHL1	Lab I: Basic Biochemistry, Microbiology and Pathology	3
OPHL2	Lab II: Basic and applied optics and Statistics	2
OPHL3	Lab III: Electrophysiology	1
OPH-PBL1	PBL I: Advanced and high throughput approaches in science	2
OPH-PBL2	PBL II: Management skills and tools for academia and enterprises	2
OPH-PBL3	PBL III: Animal models, regulatory issues and research methods	2
	<b>Total Credits</b>	<b>21</b>
OPH-D	<b>Thesis</b>	<b>7</b>
	Grand total of credits	<b>28</b>

e) Teaching style. The teaching style will be didactic lectures and seminars. Students will be required to present papers in select courses and attending seminars and present at journal clubs as part of courses OPH1-10. Lab courses will be conducting using instructional lectures and direct demonstrations and through supervised hands-on experimental sessions. PBL courses will be problem based with instructional lectures and through assignments and solution presentations. Students will be assessed in separate grading assignments once a module is completed.

#### 4) Faculty

a) CV's of the teaching and advising faculty - see attached.



For each proposed course, at least 3-4 faculty members are available who are capable of teaching. Most of the faculty members have experience in teaching/advising master's or graduate level courses and most are members of the teaching Graduate Faculty at UM. The Ophthalmology Program Committee (OPC) will consider qualifications and decide which faculty members are most appropriate for teaching each required component of the Master's degree program. For example, lectures on anatomy and diseases of the eye may be taught by one of the clinical faculty, whereas courses on more basic aspects may be taught by a member of the Bascom Palmer Eye Institute who is also on the Graduate Faculty and trains graduate students and who could be a lab mentor to a student (i.e. Drs. Vittorio Porciatti or Richard Lee). Only faculty with research laboratories or research facilities will be allowed to mentor students during the thesis portion of the curriculum, i.e. clinical faculty who are solely clinicians will not be appropriate thesis mentors.

b) Estimated need of additional faculty/need of the faculty for remedial courses. The proposed Master's program has enough faculty members in the Department of Ophthalmology to run and teach the Master's program curriculum. For remedial purposes, if additional teaching is necessary for specific areas of deficit, guest faculty members can be drawn from medical school departments such as Human Genetics, BMB and Cell Biology Departments.

c) Interaction with other graduate programs. There will be interaction with the PIBS program in which some overlapping portion of courses may be arranged for combined classes. In particular, students are likely to attend common courses such as those on responsible conduct in research taught by PIBS. Guest faculty members for 1-4 lectures may also be drawn from other departments as stated above.

## **5) Students**

a) Number and Pool. A maximum of 10 students will be admitted per year. Fewer than the student maximum may be accepted per year. The maximum number of students admitted each year will be contingent on the number of available mentors for accepting students for thesis projects in the second year. Students will be admitted once a firm commitment from mentors for the upcoming academic year has been obtained. Applicants with undergraduate education with some work experience and interest in vision and ophthalmology, and persons with clinical backgrounds (foreign medical graduates), will constitute the majority of the applicant pool. In exceptional instances, persons with relevant undergraduate education without work experience may also be accepted.

b) Requirements for Admission and Retention. There will be one Ophthalmology Program Committee (OPC). OPC will consist of a minimum of 3 members (one clinician, one basic scientist and the vice chair for research for the Department of Ophthalmology). The OPC members will be chosen by the vice chair for research in consultation with one senior clinician and one basic science faculty member for an initial term of three years. The OPC will be headed by a tenured Associate or Full professor who will report to the vice chair for research unless the OPC director (also termed MPD or MSc program director) is also the vice chair for research. Dr. Sanjoy K. Bhattacharya will be the founding director of the OPC/MPD.

All applicants considered for admission will have demonstrated proficiency in the English language. This will be assessed using TOEFL score and/or through written/oral



communications. Students with a cumulative grade point average of 3.5 and above in their undergraduate degree will be eligible for admission provided they have relevant work experience. A GRE score will be instituted for recruitment after an assessment of two years pool of students. The requirement of 3.5 GPA may be waived by the OPC/admission committee, especially in situations such as with FMGs where GPAs are not available from their training institutions. A candidate who has a Master's degree in any branch of experimental sciences encompassing any area of biological or biochemical sciences will also be eligible for admission provided they have an equivalent of a 3.5 GPA. Candidates with MD degrees from US or from foreign institutions will also be eligible for admission. All candidates should have some exposure to biochemical or biological sciences. Knowledge of chemistry and biochemistry is a requirement, as indicated by successful completion of previous coursework in these topics. Candidates who have insufficient background in biochemistry or lack understanding of optics will be admitted provided the admissions committee believes that such a candidate will be able to successfully complete the first year of the program. Exceptions can be granted by the committee for a specific student for admission based on assessment of competency and intelligence, prior course work and relevant experience. A personal statement required as part of the application for evaluating experience.

All applicants will be ranked by three members of the review committee. At least two members of the committee will review each applicant and the top ranking candidates will be made an admission offer until the capacity of program (up to 10 students) is met. To matriculate from first year to the second year of the program, the student must complete all courses in the first year with a grade B or better. The OPC will review the students' grades at monthly meetings during the first year to discuss the progress of all students in the program. If a student appears to be doing poorly at any stage during the first year, the OPC members can suggest remedial work of the students with a measurable supplementary test so that students will be allowed to continue, provided the student shows sufficient progress in supplementary testing. A student will not be allowed to take more than one supplementary test and such tests will remain limited to only three courses (any three courses). A student making insufficient progress may be required to leave the program provided a majority of OPC members have voted for such an outcome.

c) Teaching Assistants and Teaching support. Normally, teaching assistantships or teaching support will not be available for students in the MSc in Vision Science and investigative ophthalmology. However, a principal investigator supported by an extramural grant may offer a research assistantship at a rate for students that is university approved for either work study or as part time summer or winter employment as appropriate and applicable. The student undertaking such assistantship will be required to have prior approval of the OPC/MPD director. Teaching assistants for this program will be drawn from the ranks of postdoctoral fellows or graduate students of the participating faculty. Research assistant professors or assistant scientists of the Department will also be eligible to serve as teaching assistant or faculty as determined by the OPC.

## **6) Administration**

a) Administrative increments.



i) Secretarial/Administrative assistance. Student admissions is administered by the Miller School of Medicine Office of Graduate and Postdoctoral studies. In addition, we will need a full-time Program Coordinator/secretary to manage admission related decisions, functioning of the program, student supervision (i.e. students are attending courses, completing assignments on time, that their course evaluations are performed and records are properly entered), supervising course credit completion, and addressing questions and issues regarding the operations of the program. The program coordinator also plays an important role in recruitment and retention since he/she may often be the person who first interacts with a prospective graduate student. The Program Coordinator will also need a budget for phone calls both nationally and internationally. He/she will also provide support to the Master's degree Program Director for managing the program and providing support for the overall mission. The cost of a well rounded full time secretary may be around \$50-\$60K (including fringe), The salary range depends on degree of experience and capability as well as on detailed description of duties. The program coordinator have ongoing training such as in language skills, changing needs and standardized testing needs, procedures, computation systems and overview of laboratory needs.

ii) Laboratory equipment, consumables and other resources. Together with lab course instructors and the Program Director, the program coordinator will ensure that lab curriculum is developed, arrangements for a TA and course director has been made, consumables have been ordered and received, and equipment are functioning. He/she will also ensure that lab course related assignments are performed, that all IACUC protocols needed for animal experiments are up to date and approved, and that course credits are properly entered into the system. Consumables and equipment maintenance will be incorporated in a recurring budget. The program director is a full time faculty graduate program director. The program coordinator will be a full time staff/employee. Courses will be designed in a fashion that does not need IRB approval. If a student research project needs IRB approval, this will be the responsibility of the student and his/her mentor.

iii) Office equipment and supplies. Computers with printer and secured storage have been made available. The documents pertaining to grading sheets, exam reports and assignment records will be properly and securely stored. The program coordinator may need to travel to acquire additional skills or for recruitment purposes. Thus, a budget will need to have provision for these expenses.

iii) Promotional costs. The Department of Ophthalmology will also prepare, update and mail out information to applicants, other universities and institutions for advertising this training program. The Master/Graduate Program Director (MPD/GPD) or his/her designate may need to communicate or speak directly with prospective students. The Program director or program coordinator may need to attend conferences such as SACNAS or job fairs for student recruitment or to provide students campus interviews for jobs.

b) Administration and Academic Direction. The administration and direction of the Masters program will be under the MPD/GPD. The MPD will report to the vice chair of research of the Department of Ophthalmology. The MPD and members of the OPC will be selected by the vice chair of research in the Department of Ophthalmology in consultation with senior clinical and a basic sciences faculty of the department. Approval from Associate Dean for graduate studies



will be obtained for membership of OPC members and for the graduate program director. There will be three members of the OPC committee. Any faculty member can be appointed by the Vice chair of research if he/she is an appropriate candidate (but when possible the members will be largely drawn who are tenured associate or full professors and members of the Graduate Faculty of UM). Once the program is functional, the vice chair of research along with a senior clinical and basic sciences faculty will make approved changes periodically which will enable functioning of the program. An OPC/MPD director will oversee all the operations. Emergency decision making will be vested in the OPC director. Each OPC member is to serve three year term. OPC members can be reappointed without a break in service.

i) Day-to-day administration. The OPC is responsible for recruitment, admission and initial academic advising of admitted students. An initial orientation of incoming students to the program structure, appropriate course selection, and familiarization to laboratory and computer systems will be performed by the course coordinator and at least two faculty members under the direction of the OPC. Accordingly, while the coordinator will provide a general overview of the program at orientation, an overall view and resources of the program will be explained either by the OPC director or a faculty member entrusted with this responsibility by the OPC director. A two member team of faculty members, termed the councilor committee (CC) under the direction of the OPC and selected by the OPC, will devote specified time to guide selection of elective courses (PBLs) and projects. This CC will meet with the students every three months to monitor their progress and provide feedback to the OPC. The CC thus acts as a subcommittee of the OPC, but if a problem arises OPC decisions will prevail over CC decisions.

The thesis is an important and integral part of the Master's program, thus it will be specially monitored. This program will depend upon the success of the second year thesis. To that effect, the CC will aid students in project selection and will be empowered to suggest changes in the mentors, if needed when progress is an issue. The CC will meet with the students more frequently if it is found reasonable to do so and advise the OPC accordingly. Thus the CC will be acting as a formal advisor for the students. The CC and OPC will monitor progress of the students in the program every three months helping to ensure that students seek and find advisors for their theses, make research progress, and complete courses and theses in a timely fashion. OPC will seek the potential mentors (i.e. especially members of the Graduate Faculty) a year ahead of time, within a semester of the first year. All students will be assigned to mentors within the second semester. The faculty members willing to participate will have to provide a title, and an abstract of the plan. The plan will be reviewed by a two member CC or OPC to evaluate its timely completion. With the thesis planned a year in advance and again within the first semester, students will have choices and lab rotation experience. Thus, within the first three months of active involvement in the second year, students will have an opportunity to complete their work research work. The expectation will be for the student to publish a paper by the end of the second year. The CC and OPC will consider changing the mentor and project up to first three months of the rotation in the second year, if the considered opinion of two monitoring faculty members converge that (a) sufficient progress has not been made and, (b) cannot be made for rest of the duration. The CC/OPC will record observations for first two years of thesis to categorize the problems experience and this will be used for guidance for periodic evaluations in subsequent years between students and faculty mentors.

The OPC will be entrusted with student orientation, coordination of the courses, fine adjustments of courses, and ensuring that a journal club is run. The OPC will also coordinate



departmental guest faculty lectures, coordination of PBL courses, and selection and conduct of thesis proposals. Since lab and animal work is involved, an orientation component by the environmental safety personnel will be provided. If a faculty member intends to hire a MSc program student as student employee, it will be coordinated with the OPC. The OPC chaired by the vice chair of research will act as the highest dispute solving body should any complaint from students about the conduct of teaching or other aspect of the graduate program cannot be resolved satisfactorily by the regular OPC. OPC will be otherwise empowered to resolve any immediate disputes.

At present, the proposed course structure is rigid. We have designed our program with some flexibility in the PBL and thesis proposal only. However, after some experience is gained, we will revisit the program curriculum. Periodic review of the program and its curriculum will be a key feature of the program.

ii) Policy making mechanism. As stated above, monitoring will be at three months intervals by a councilor committee (CC) reporting to the OPC. If an immediate change is needed in light of CC opinion, the OPC will act upon it. However, a meeting at the end of each semester after the course marks are submitted will convene at which decisions about individual students can be made. These will be conducted according to Robert's Rules of Order. A majority of all the teaching faculty of the master's degree program will vote in favor or against of any given motion, action or committee recommendation.

However, a three member ophthalmology program committee (OPC) will be further reconsider all the decisions and a majority vote of OPC will finally decide the conclusion of the recommendations. The exception to this will apply to emergency disputes that will need satisfactory resolution. For such exceptional problems an OPC session with the vice chair of research will be highest dispute resolution body as stated above. The program coordinator will maintain a record of all such motions and resolutions. All course structure change related decisions other policy decisions taken at a meeting of the all teaching faculty will need to be voted and finalized by the three member OPC.

**7) Budget** The proposed Master's program budget is planned to be self-sustaining by year 2. Each year's budget will include all anticipated income sources (using current-year tuition credit costs and projected overhead) and all anticipated incremental costs, e.g., new teaching faculty with fringe, library additions, teaching assistantships, laboratory equipment, staff, travel funds, etc. The annual costs for this program fall into two main categories: personnel (program administration and teaching) and supplies. As documented in earlier sections, adequate classroom, office, and laboratory space exist to support the program. An expense of \$75,000 for lab set up and starting equipment will be met with a grant promised from the Ophthalmology Research Foundation (ORF). The two-year totals in the tables below take into account a ramp-up of costs each year, as new courses are developed and offered.

Program Expenses

Year 1

Teaching (14 credits per year)	\$	*
Program Coordinator	\$	* -



Program Director	\$ *
Seminar speaker	\$ *
Chemical supplies and animals	\$ *
Minor equipment and supplies	\$ *

Total \$ \*

Year 2

Teaching (14 credits per year including thesis)	\$ *
Other costs as above + 2% inflation	\$ *

Total \$ \*

Program Revenue. Students enrolling in the MVSIO program will be charged the UMMSM out-of-state tuition rate, a significant portion of which will be allocated by the Dean of the Miller School of Medicine for program support. In year 2, we project having enrolled enough students (16-20 total, at 8-10 students per year) for the program to be self-sustaining from tuition revenue.

A grant by the ORF will provide \$ \* in the first year. This grant will have a potential for renewal in subsequent years. Coupled with tuition receipts, the program should be adequately funded in the first two years. In start up phase, any shortfall in tuition revenue or grant funding will be covered by the ORF.

**8) Comparison with Other Master's program in Ophthalmology and Vision Science**

There are prominent Master's degree programs in Ophthalmology and Vision Science in Europe, Canada and Australia. However, there is no active Master's degree programs in Ophthalmology and Vision Science exist in US. Nova Southeastern University in Miami has a MS in Clinical Vision Research program which is mostly online based. A few other US universities have an approval for a Master's program in ophthalmology/vision research (for example, Emory University). However, they are not active programs, meaning they are not actively rolling students. Most such programs are kept as an option to provide a potential graduate student a master's degree in the event the PhD cannot be awarded or candidate decides to quit after completion of coursework for some reason. Our program is unique in a few respects compared with all these programs: (a) course structure-ours is a more modern course structure which includes PBL modules and teaches relevant animal and regulatory issues, management modules including grant writing and budget and also include unique PBL based hands on high throughput courses. (b) second year of our two year curriculum is entirely devoted to research.

\*financial info redacted






**MEMORANDUM**

DATE: September 25, 2012

TO: Richard Williamson  
Chair, Faculty Senate

FROM: M. Brian Blake   
Dean, The Graduate School

SUBJECT: New Degree Program – Master of Science in Vision Science and  
Ophthalmology

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The proposal for the new Master of Science in Vision Science and Ophthalmology was discussed at the September 20, 2012, meeting of the Graduate Council. An electronic vote was conducted and the new Master of Science in Vision Science and Ophthalmology was approved, the second reading was waived.

cc: Pascal Goldschmidt, Ph.D., Dean  
Zafar Nawaz, Ph.D., Senior Associate Dean  
Edwardo Alfonso, Ph.D., Chair  
Vittorio Portiatti, Ph.D., Vice Chair for Research  
Sanjoy K. Bhattacharya, Ph.D., Professor  
David Tse, Ph.D., Professor  
Office of Planning, Institutional Research and Assessment



April 25, 2012

Professor Richard Williamson  
Chair, Faculty Senate  
University of Miami

Dear Professor Williamson,

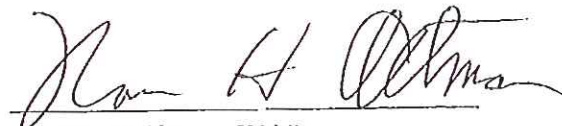
This is to inform the Faculty Senate that the Medical School Faculty Council met on April 24<sup>th</sup>, 2012 to review the Proposal for a *Master's Degree Program in Vision Science and Ophthalmology*. The Council members discussed the program in detail and voted to approve it.

The program is directed at three types of candidates:

- (a) Medical graduates who intend to be leaders in ophthalmology and to play a role in future catalysis of vision science and/or enterprise formation;
- (b) Science graduates who wish to extend their intellectual horizons in vision science; and
- (c) Science graduates who intend to be entrepreneurs in vision care and wish to acquire specialized knowledge in regulatory affairs, grant management and aspects of business plans.

The Bascom Palmer Eye Institute has a critical mass of clinical and research faculty and other resources for the proposed program. The formation of the proposed program is inspired, in part, by multiple inquiries from foreign graduates and from universities who encourage their graduates to pursue vision research training in our department.

Respectfully Submitted,



Norman H. Altman, V.M.D.  
Speaker, Medical School Faculty Council



UNIVERSITY OF MIAMI  
SCHOOL of BUSINESS  
ADMINISTRATION



Department of Marketing  
P.O. Box 248147  
Coral Gables, FL 33124-6554

Phone: 305-284-5935  
Fax: 305-284-5326

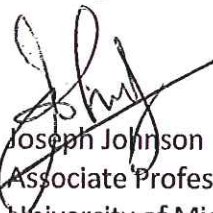
March 21, 2012

Dr. Sanjoy Bhattacharya  
Associate Professor,  
Bascom Palmer Eye Institute,  
University of Miami.

Dear Sanjoy:

It was a pleasure discussing with you the possibility of teaching business school topics at the med school in your new program. Such a cross-disciplinary approach is a great way to expose our students to the faculty expertise that we have across our University. I will be happy to teach in your program if there are no scheduling conflicts.

Looking forward to hearing from you.



Joseph Johnson  
Associate Professor  
University of Miami  
Department of Marketing  
501 Kosar Epstein Building  
5250 University Drive  
PO Box 248147  
Coral Gables, Florida 33124



**From:** [Van Schaik, Jo Ann](#)  
**To:** [Bhattacharya, Sanjoy](#)  
**Cc:** [Birch, Cynthia](#)  
**Subject:** Ophthalmology Journals and Books/UM Libraries  
**Date:** Wednesday, March 28, 2012 5:48:26 PM  
**Attachments:** [OphthalmologyElectronicBooksJournals.xlsx.html](#)  
[OphthalmologyPrintJournals.xlsx.html](#)

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Dear Dr. Bhattacharya,

I have attached two spreadsheets. The first attachment is a list of eye related electronic journals and electronic books accessible from the UM Miller School Libraries. The second attachment lists print journals available at the Norton Library at Bascom-Palmer. If you would like a list of print books added to the collections during the past five years, it can be provided as well. We can also send a list of databases to which the libraries subscribe.

Please let Cynthia and me know if there is anything else we can do in support of the proposed Vision Science and Ophthalmology program.

Sincerely yours,

JoAnn

**JoAnn Van Schaik, M.L.S.**  
Director of Library Operations  
Louis Calder Memorial Library  
Miller School of Medicine  
University of Miami  
P.O. Box 016950 (R-950)  
Miami, FL 33101

[JVanSchaik@med.miami.edu](mailto:JVanSchaik@med.miami.edu)

305-243-6441 (Voice)

305-325-8853 (Fax)



Pascal J. Goldschmidt, M.D.  
*Senior Vice President for Medical Affairs and Dean*  
*Chief Executive Officer, University of Miami Health System*

September 12, 2012

Sanjoy K. Bhattacharya, Ph.D  
Associate Professor  
Department of Ophthalmology  
University of Miami Miller School of Medicine  
McKnight-Vision Research Center, 7<sup>th</sup> Floor  
Miami, FL 33136

Dear Sanjoy,

On behalf of the University of Miami Miller School of Medicine (UMMSM), I wish to express my strong support for the development of a Master's degree program in Vision Science and Ophthalmology.

The *US News and World Report* has ranked Bascom Palmer Eye Institute the number one eye hospital in the United States for nine consecutive years, and the *Ophthalmology Times* rated Bascom Palmer the best overall ophthalmology program in the nation with the best eye hospital and the best clinical and residency programs. The Institute also has advanced in the National Institutes of Health (NIH) ranking for ophthalmic research funding, rising from #34 in 2001 to #10 in 2011. It is, therefore, evident that the Institute is in the forefront of vision science research and ophthalmic education. The clinical and research faculty recognizes its responsibility in training the next generation of clinicians and thought leaders in ophthalmic research, and believes a master's program in vision science to be a complementary platform in achieving this goal. Your proposed program will provide industry and academia vision science and ophthalmology trained professionals for fulfilling the need in this area.

While similar programs are offered by universities in the United Kingdom, Canada, Australia, New Zealand, and Hong Kong, the proposed master program in vision science and ophthalmology by the Bascom Palmer Eye Institute will be the first of such program in the U.S. The Bascom Palmer program is unique in its scope and structure - imparting education not only in the science of vision research but also entrepreneurship, grants management and regulatory affairs.

You have my full support in your efforts.

With best regards,



Pascal J. Goldschmidt, M.D.  
Senior Vice President for Medical Affairs and Dean  
Chief Executive Officer, University of Miami Health System



UNIVERSITY OF MIAMI  
SCHOOL of BUSINESS  
ADMINISTRATION



Programs in Health Sector Management and Policy  
P.O. Box 248223  
Coral Gables, FL 33124

Phone: 305-284-9746  
Fax: 305-284-3762  
sullmann@miami.edu

July 23, 2012

Dr. Sanjoy Bhattacharya, Associate Professor  
Bascom Palmer Eye Institute  
University of Miami  
1638 NW 10<sup>th</sup> Avenue, Suite 707A  
Miami, FL 33136

Dear Sanjoy,

It was a pleasure discussing with you the concept of a cross-disciplinary approach to expose students to a Master's program in Visions Science and Ophthalmology which would include a business perspective. I believe that program would serve a very useful purpose. I will be happy to guest lecture in your program subject to no scheduling conflicts.

Looking forward to future communication.

Please be well,

Steven G. Ullmann, PhD, Professor and Director  
Programs in and Center for Health Sector Management and Policy and  
Special Assistant to the Provost

SGU/mbr



September 13, 2012

Dr. Sanjoy Bhattacharya, Associate Professor

Bascom Palmer Eye Institute

University of Miami

Miami, FL 33136

Dear Sanjoy,

It would be my pleasure to participate in the Master's program in Vision Science and Ophthalmology. As you know I have studied age-related macular degeneration and could act as a mentor for second year students. Please keep me informed of this important addition to our school and let me know if I can be of further assistance.



Sharon Elliot, Ph.D.

Professor Department of Surgery



# THE OPHTHALMOLOGY RESEARCH FOUNDATION, INC.

October 15, 2012

Eduardo Alfonso, M.D.  
Chairman  
Department of Ophthalmology  
University of Miami, Miami, FL

RE: Affirming funding support for Master's program in Vision Science and Ophthalmology

Dear Dr. Alfonso,

This letter is to affirm Ophthalmology Research Foundation's (ORF) support for proposed Master degree in vision science and ophthalmology program with admission of a maximum of ten students per year. The students are expected to provide the full tuition fee to defray the costs associated with the program. Ophthalmology Research Foundation agrees to provide the following support for the proposed Master's degree program:

- (a) \$100,000 in year one to procure instruments and refurbish wet lab space prior to due commencement of the program;
- (b) \$10,000 per student to provide support for their dissertation work for a limited number (up to 5) of students; and
- (c) to provide funding to cover any shortfall in tuition revenue up to a maximum of \$50,000 for the first three years of the program.

Thank you.

Sincerely,



John G. Clarkson  
President  
Ophthalmology Research Foundation





**Jeffrey L. Kerr, Ph.D.**  
Associate Professor

Dr. Sanjoy Bhattacharya, PhD  
Associate Professor  
Department of Ophthalmology  
University of Miami

Dear Sanjoy,

It would be my pleasure to participate in the Master's program in Vision Science and Ophthalmology. I could potentially be a guest lecturer for a session on mergers and acquisitions for a PBL course. Please keep me posted about this program as it develops.

Sincerely,

A handwritten signature in cursive script, appearing to read "Jeffrey Kerr".

Jeffrey Kerr, Ph.D.  
Professor

Department of Management  
School of Business Administration  
414 Jenkins Building  
Coral Gables, Florida 33124-9145  
Phone 305/284-2607  
Fax 305/284-3655  
e-mail: JKERR@SBA02.MSMAIL.MIAMI.EDU

MILLER  
SCHOOL OF MEDICINE  
UNIVERSITY OF MIAMI

Vladlen Z. Slepak, Ph.D.  
*Professor and Program Director*  
*Department of Molecular and Cellular Pharmacology*

October 5, 2012

Dr. Sanjoy Bhattacharya, PhD  
Associate Professor  
Department of Ophthalmology  
University of Miami

Dear Sanjoy,

I write to confirm my interest in participating in the Master's program in Vision Science and Ophthalmology. Some projects in my lab pursue basic research in vision science and so I could potentially act as a mentor for second year students. Please keep me posted about this program as it develops.

Sincerely,



Vlad



**Eduardo C. Alfonso, M.D.**  
Professor of Ophthalmology  
Kathleen and Stanley J. Glaser Chair in Ophthalmology  
Chairman, Bascom Palmer Eye Institute

[www.bascompalmer.org](http://www.bascompalmer.org)  
Phone: 305-326-6303  
Fax: 305-326-6308  
Email: [ealfonso@med.miami.edu](mailto:ealfonso@med.miami.edu)  
Please respond to: P.O. Box 016880, Miami, FL 33101-6880

February 19, 2013

Richard Williamson, J.D.  
Senate Chair  
Faculty Senate Office  
University of Miami

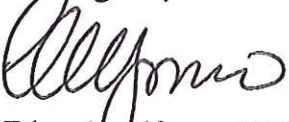
Re: M.Sc. Vision Science and Ophthalmology Program

Dear Dr. Williamson:

This letter is to convey that I have discussed the M.Sc. Vision Science and Ophthalmology Program with key members of our faculty. We have approved the program proposal forwarded to faculty senate for consideration. The proposal has been approved by both Medical School faculty council and Graduate School council.

Please feel free to contact me should you have any question about this program.

Best regards,

  
Eduardo Alfonso, MD