

IUPUI APPLICATION FORM FOR MINORS

I. School Medicine Department Cellular & Integrative Physiology

II. Proposed Minor Cardiovascular Sciences

III. Related Major Cellular & Integrative Physiology

IV. Projected Date of Implementation January 1, 2010

V. List the major objectives of the proposed minor and describe its chief features briefly.

The major objective of the Cardiovascular Sciences minor is to provide graduate students with a more comprehensive background and understanding of integrative cardiac, vascular, renal and pulmonary (patho)biology. This objective will be accomplished by providing students with a wide variety of options to advance their education in the area with advanced didactic coursework as well as student driven journal clubs.

The core requirements for the Cardiovascular Sciences minor are outlined on the accompanying page.

VI. Why is the minor needed?

This minor will provide graduate students and interested post-doctoral fellows with an avenue to significantly enhance their understanding of cardiovascular, renal and/or respiratory sciences. Furthermore, this minor will formally document our commitment to a strong training program in these areas. Cardiovascular complications remain the leading cause of morbidity and mortality in the US and will continue to represent a significant research challenge for the future. The IUSM is well poised to grow strongly in this area as a significant number of faculty are scattered throughout multiple departments and carry out research related to cardiovascular sciences. The development of this new minor will highlight the integrated cross-departmental commitment to this area of research and serve to attract interested students. We anticipate the formalization of this training program will directly strengthen our extramural training applications and individual pre-doctoral training grants as we make a concerted effort to increase the training environment.

VII. Describe the student population to be served and market to be targeted.

The Cardiovascular Sciences minor will primarily serve IBMG graduate students who are interested in cardiac, vascular endothelium and smooth muscle, renal and/or respiratory research. The courses outlined in this minor discipline would also be beneficial to post-doctoral fellows.

VIII. How does this minor complement the departmental and campus missions? Address how it conforms with IUPUI's Principles of Undergraduate Learning.

Given that the majority of the courses that will be required for this minor are advanced graduate courses, that are largely student driven discussion of subject material and/or pertinent research papers, the Cardiovascular Sciences minor conforms with IUPUI's principles of core communication, development of critical thinking skills, integration and application of knowledge, intellectual adaptiveness and ethics.

IX. List and indicate the sources (including reallocation) of any resources (personnel, financial, learning, library holdings, equipment, etc.) required to implement the proposed program.

The proposed minor includes a variety of courses offered in the graduate school as well as two additional new courses added recently to the graduate school for the purpose of being requisite courses for this minor. These new courses are G830 and G831.

We do not anticipate additional financial obligations, library holdings, or equipment for the establishment of this program.

X. Describe any innovative features of the program (e.g., involvement with local or regional agencies, offices, etc., cooperative efforts with other institutions, etc.)

None

XI. List the major student outcomes (or set of performance-based standards) for the proposed minor. That is, what learning will the program produce in a comprehensive sense? (See Attachment following XII for a model that incorporates illustrations of the outcomes and assessment mechanisms specified in Items XI and XII.). (See table under XII)

XII. Explain how each of the student learning outcomes identified in XI above will be assessed using, for example, course-embedded assessments, graduate follow-up, employer surveys, standardized tests, etc? Will assessment take place in courses? in practice settings? in a culminating project or seminar? (Please use the matrix in the Attachment to indicate how the outcomes will be assessed and in what setting(s).) On what basis will you demonstrate that this program has been successful? What performance indicators will you use?

The student objectives and outcomes will be evaluated as outlined in the following table.

We will gage the success of the program on a number of tangible outcomes that we hope to track with the help of the graduate office. These will be based on both short term and long-term objectives.

- a) Short term objectives (up to 5 years post graduation) will be to determine the success of our students to
 - a. Attract outside funding, related to cardiovascular sciences such as might occur in the form of an individual NRSA, a CTSI sponsored student support for translational research, or a predoctoral grant from the American Heart Association or similar funding agency.
 - b. Additional objectives will be tracked by the Student ability to be retained in a field related to cardiovascular science and on their post graduate productivity. For example, if a student enters a post-doc, do they stay in cardiovascular science area. Are they productive on the basis of publications and obtaining post-doctoral funding? If they move outside of academics, is there evidence that they future careers relate to cardiovascular science?
- b) Long-term objectives will be track student careers between 5-10 years and determine if their career relates to cardiovascular science (on the basis of evidence of teaching, research or commercial related activity in an area broadly related to cardiovascular science).

Student Outcome: (Use action verbs to indicate what students should know and be able to do)	Where will students learn this knowledge or skill? (in courses? in practice settings? in a culminating experience?)	How will student achievement of the outcome be assessed?	In what setting will the assessment take place? (in a course? in a practice setting? in a culminating experience?)
1) Establish a graduate level understanding of the fundamental aspects of systems physiology impacting the cardiovascular system.	G735 (Required) G830 (Required)	Exams, Labs. Exams, Written papers	G735 G830
2) Increase current understanding of modern research problems and new areas of investigation. To increase writing and oral communication skills.	G831 (Required) G667	Journal Club Oral presentations. Written term paper on relevant topics	G831 G667
3) Increase didactic knowledge in specialty areas of Cardiovascular science and areas that effect cardiovascular health, such as Neuroscience, Endocrinology, Pharmacology, diabetes, smooth muscle, ion transport, advanced renal physiology, angiogenesis.	G74X G747 G825 K535 G805 G848 F592 G667	Varies depending on course, but a combination of exams, written papers and oral presentations.	G74X G747 G825 K535 G805
4) Lab practical- To increase knowledge in modern tools being utilized in modern biological sciences impacting cardiovascular science. Exposure to background and practical information in Imaging, Bioinformatics, and translations research	G708 G713 G714 G703 G706	Varies depending on course, but a combination of exams, written papers and oral	G848 F592 G667

	G707 G761 G762 G782	presentations. Varies depending on course, but a combination of exams, written papers and oral presentations.	G708 G713 G714 G703 G706 G707 G761 G762 G782
5) Expose students to in depth and lab practical information in a number of specialized research fields related directly or indirectly to cardiovascular science; Including 1-1 discussion with faculty and in lab practical experience with related techniques. Available options will be in the form of Exercise physiology, Coronary circulatory control, Proteomics epithelial cell biology, transgenic mice techniques, smooth muscle physiology, renal physiology, lipid rafts.			

2/15/08