

## TRANSMITTAL AND ABSTRACT OF SENATE REPORT

**Date Presented to the Senate:** April 6, 2009

**Presenter:** Carmen Balthrop, Chair, Senate Programs, Curricula, and Courses Committee

**Subject of Report:** Proposals pertaining to the reorganization of the biological sciences graduate programs in the College of Chemical and Life Sciences; including:

1. Proposal to rename the Ph.D. in Biology as the Ph.D. in Biological Sciences
2. Proposal to rename the Areas of Concentration in the Ph.D. in Biology
3. Proposal to rename the M.S. in Biology as the M.S. in Biological Sciences, and eliminate all Areas of Concentration

**Senate Document Number:** 08-09-23

**Voting:** (a) on resolutions or recommendations one by one, or  
(b) in a single vote  
(c) to endorse entire report

### A. Statement of Issue:

The College of Chemical and Life Sciences has reorganized its graduate programs in the biological sciences into a new umbrella program. The renamed graduate degrees in Biological Sciences subsume a number of smaller programs, thereby increasing flexibility, coherence, synergy, impact, and administrative efficiency. The creation of the BISI program will greatly enhance the ability of the college to attract the best and brightest graduate students in the country, increase total enrollment in its Ph.D. programs to levels comparable to those of peers, expand the scope of its training programs, and ultimately, strengthen research programs and rankings.

Currently, for many areas of study within CLFS, there are several possible degree-granting graduate programs through which students could obtain a doctorate, while studying approximately the same material with the same advisor. The proposed actions are intended to eliminate redundancies in the degree programs, simplify administration, and clarify offerings for prospective students. Moreover, the proposed changes allow for far greater flexibility in the future by allowing the College to develop new scholarly areas for training within the new program. These actions are not intended to change the material and scholarly opportunities offered through the existing degree programs.

The College proposes to implement this reorganization by creating an umbrella degree program under which specific areas of study can be offered

as formal Areas of Concentration, and to modify the master's degree accordingly. The actions proposed would also bring the names of the graduate degrees into alignment with the existing undergraduate B.S. in Biological Sciences.

1. Proposal to rename the Ph.D. in Biology as the Ph.D. in Biological Sciences

This renaming action creates the “umbrella” that will house several formal Areas of Concentration (described below) that will reflect current areas of study.

2. Proposal to rename the Areas of Concentration in the Ph.D. in Biology

Currently, the Areas of Concentration (AOC) formally listed under the Ph.D. in Biology are out-of-date. The proposed changes will reflect the new organization and are as follows:

- a. The AOC in “Ecology” will become “Behavior, Ecology, Evolution, and Systematics”
- b. The AOC in “Cell Biology” will become “Molecular and Cellular Biology”
- c. The AOC in “Systematics and Evolutionary Biology” will be renamed “Computational Biology, Bioinformatics, and Genomics”

These Areas of Concentration will serve as the means for students to identify their particular area of study in the biological sciences, and will replace several discrete degree programs. When this suite of proposals receives final approval, the University will administratively suspend the M.S. and Ph.D. programs in Cell Biology and Molecular Genetics (CBMG); the M.S. and Ph.D. programs in Behavior, Ecology, Evolution and Systematics (BEES); and the Ph.D. program in Molecular and Cellular Biology (MOCB). Students who would have entered into these programs will now enter into the Ph.D. in Biological Sciences, and will choose the appropriate Area of Concentration. Current students will be allowed to stay in their current programs or switch to the new program without any loss of their status in their degree programs.

Other graduate programs in the College, such as Entomology (shared with the College of Agriculture & Natural Resources), Chemistry, and Biochemistry, will remain as they are. The M.S. in Sustainable Development & Conservation Biology program (CONS) will be evaluated after a self-study and external review that is forthcoming.

3. Proposal to rename the M.S. in Biology as the M.S. in Biological Sciences, and to eliminate the concentrations.

The M.S. degree in Biology would be renamed to bring it into alignment with the Ph.D. program. The concentrations, which are not currently used at all, would be officially eliminated.

The proposals were submitted to the Senate by the Office of Academic Affairs following favorable recommendation by the Academic Planning Advisory Committee (APAC) on February 2, 2009, the Graduate Council Programs, Curricula and Courses Committee on February 19 (with email notification to the full Graduate Council) and the Senate Programs, Curricula & Courses Committee on February 27. If the Senate approves the proposals, they would still require further approval by the President and the Chancellor (with notification to the Maryland Higher Education Commission).

#### **B. Recommendation:**

The Senate Committee on Programs, Curricula, and Courses recommends that the Senate approve these three proposals as outlined above.

#### **C. Committee Work:**

The Committee considered the proposal at its meeting on February 27, 2009. Arthur Popper (Associate Dean, College of Chemical and Life Sciences, and Professor of Biology), Richard Payne (Professor and Chair, Department of Biology) and Jonathan Dinman (Professor, Department of Cellular Biology & Molecular Genetics) were present to answer questions. After discussion, the Committee voted unanimously to recommend approval of the reorganization and renaming actions.

#### **D. Alternatives:**

The Senate could decline to approve the new program names.

#### **E. Risks:**

If the Senate does not approve the changes, the program names will be out-of-date, will not accurately reflect the curricula, and will continue to confuse prospective students.

#### **F. Financial Implications:**

There are no indications of a financial risk.

*College of Chemical and Life Sciences*  
*University of Maryland, College Park*  
**Graduate Program in Biological Sciences (BISI)**  
January, 2009

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## Executive Summary

The College of Chemical and Life Sciences (CLFS) is proposing a very substantial change in the way it organizes its graduate programs in the biological sciences. The purpose of this document is to provide an overview of the proposed organization as well as a discussion of the rationale behind its development. Four accompanying PCC documents address:

1. The renaming of the current Ph.D. program from “Biology” to “Biological Sciences” (PCC document 1 – page 13);
2. Renaming of current Biology Ph.D. Areas of Concentration to better reflect the training and research areas within the new Biological Sciences graduate program (PCC document 2 -- page 15);
3. Suspension of the current independent Ph.D. and M.S. programs in Behavior, Ecology, Evolution, and Systematics (BEES), Cellular and Molecular Biology (CBMG), and the Ph.D. program in Molecular and Cellular Biology (MOCB). In the future, all students who would have entered those independent programs will instead matriculate into Biological Sciences (PCC document 3 – page 24); and
4. The renaming of the current M.S. program from “Biology” to “Biological Sciences.” The current Areas of Concentration for the M.S. will be eliminated (PCC document 4 – page 26).

CLFS graduate programs in the biological sciences have a strong focus on the Ph.D. degree. Students are typically admitted directly into a Ph.D. program and graduate with that degree only (e.g., they do not obtain a master’s degree along the way). Very few students are admitted directly into the master’s degree programs.

## MISSION AND PURPOSE OF REORGANIZATION

### *Background*

Currently, CLFS has six graduate programs in the biological sciences, many of which overlap and duplicate one another. These programs include: Biology (BIOL); Behavior, Ecology, Evolution, and Systematics (BEES); Cell Biology and Molecular Genetics (CBMG); Entomology (ENTM); Molecular and Cell Biology (MOCB); and Sustainable Development and Conservation Biology (CONS). The issues that resulted in our developing the proposed program include:

- The programs often overlap in the areas of biology in which they train student;
- Prospective graduate students often find it difficult to determine which programs are most appropriate for them;
- Each program requires a duplicative set of administrative and governance resources;
- Each program has different policies and procedures;
- Faculty are often in multiple programs and have to deal with very different policies and procedures for their students from different programs;

- Faculty often find the overlap between program areas hard to differentiate; and
- The programs vary in the sense of “community” provided to their students.

In effect, the present graduate program organization in CLFS reflects the history of growth of biological sciences on campus rather than a rational plan. This has resulted in the current programs being unnecessarily redundant and having a division of content that is unclear to potential applicants, current students, and, at times, to our faculty.

### ***Solution***

To rectify the current situation, and to enhance the quality of graduate education in CLFS, the faculty of CLFS has designed unified M.S. and Ph.D. degree programs in Biological Sciences (BISI)<sup>1</sup> to replace the current structure.<sup>2</sup> Significantly, the proposed program will have a single administrative structure and a *flexible* academic framework that promotes outstanding training and research opportunities for graduate students in area of the biological sciences embraced by CLFS faculty.

### **VISION FOR THE Ph.D. PROGRAM IN BIOLOGICAL SCIENCES**

The proposed Ph.D. Biological Sciences Graduate Program of the College of Chemical and Life Sciences will provide doctoral training in a broad spectrum of biological research areas. The goal of BISI is to provide outstanding disciplinary and interdisciplinary opportunities for graduate research and training and for developing and fostering new research and graduate programs that will meet the changing interests of faculty and the scholarly community over the next decades. *BISI is designed to readily collaborate with faculty and other units and programs at the University and with off-campus research organizations* (see page 7).

The proposed BISI Ph.D. program seeks to attract and train exceptionally talented doctoral graduate students. After attaining the doctorate, graduates are expected to be competitive for the most desirable positions in research, teaching, and other scholarly activities at academic institutions, in industry, and in governmental and nongovernmental agencies.<sup>3</sup>

An additional motivation for the transition to a new organization is to achieve a level of excellence that is among the highest at the University and in the United States. We expect that BISI will be ranked in the top five among institutions of higher education in the Carnegie Foundation classification (Comprehensive Doctorate/No Medical or Veterinary Degree) within five years of inception, and in the top 15 among all (public and private) institutions of higher

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<sup>1</sup> Pronounced BĪSĪ. Alternatively, Bi-Sci.

<sup>2</sup> With the exception of Entomology (ENTM) and Sustainable Development and Conservation Biology (CONS), as discussed later in this section (see page 5).

<sup>3</sup> Often, doctoral graduates will pursue postdoctoral training prior to entering the job market. The Ph.D. program therefore may not be directly responsible for job placement, but for placement of graduates in excellent postdoctoral positions from which they will pursue a career path.

education without medical schools within eight years of inception.<sup>4</sup>

### ***Overview of the Proposed Structure and Relationship to Current Structure***

The current organization for CLFS graduate degree programs is shown in Figure 1 (page 10), while Figure 2 (page 11) gives the proposed CLFS organizational structure that includes the unified BISI and other related Ph.D. programs.

The leadership structure for the unified Biological Sciences degree programs (Figure 3 (page 12) consists of a central leadership/administrative “umbrella” that includes a Program Director, an Associate Director (AD), and a program office (PO). This group of faculty and staff is responsible for the major areas of program administration. The Program Director is also part of the Academic Executive Leadership Team (AcELT) of CLFS, thereby ensuring that leadership of the College is fully informed of BISI-related issues.

Doctoral training and research takes place in several Areas of Concentration (CAs) that are identified and developed by the faculty. Each Area of Concentration<sup>5</sup> is led by a Concentration Area Director (CAD) who is responsible for scholarly and administrative leadership of the Area of Concentration.

A Leadership Council that includes the Program Director, the Concentration Area Directors, and the Associate Director (*ex officio non-voting*) provides policy and scholarly leadership.

The Program Director is a regular tenured faculty from one of the departments of CLFS. The Concentration Area Director is a regular UMD tenured faculty member in the Areas of Concentration. The Associate Director (AD) may be a Professional Staff Position or a regular faculty member.

### ***Proposed Changes from Current Organization***

We are proposing to change the names of the current M.S. and Ph.D. programs in Biology to Biological Sciences and to change the names of several of the currently approved Ph.D. Areas of Concentration within Biology, to better reflect the training that students will receive in BISI. We will also eliminate the current Biology M.S. Areas of Concentration since they have not been used in many decades (indeed, there is no record of their inception).

It should be noted that the major degree given in CLFS is the doctorate. Very few students (other than in the CONS program) are accepted for the M.S. degree, and the vast majority of our doctoral students go straight for the Ph.D.

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<sup>4</sup> Our graduate programs are classified by the Carnegie Foundation as Comprehensive Doctoral/No Medical-Veterinary Degree. - <http://www.carnegiefoundation.org> - 76 institutions are so classified - 55 public; 21 private.

<sup>5</sup> Note in terminology. The formal MHEC terminology is Area of Concentration. We use that term when appropriate in this document. However, it is used synonymously with Concentration Area.

## ***Rationale for BISI***

The issue of giving one Ph.D. in Biological Sciences with formal Areas of Concentration has been considered extensively by our faculty over the past few years, and it is very clear that prospective Ph.D. students seek out programs that have distinct disciplines (as do our Areas of Concentration) and that the students want degrees that reflect the name of their distinct disciplines.

Most importantly, BISI will provide:

- uniform standard of excellence for the training of students in distinct areas of the biological sciences;
- better and more flexible training opportunities for graduate students;
- a common point of entry for Areas of Concentration; and
- savings in scarce resources.

*Training Standards:* While each Area of Concentration will designate course and seminar requirements and the mechanism of selecting the Ph.D. advisor, BISI will set a common set of overall requirements *vis a vis* exams and their structure, learning outcome assessments, etc. In addition, BISI will provide a few courses of general interest including professional development and scientific ethics. Under a single umbrella Ph.D. program, all of the Areas of Concentration will share a common set of expectations and goals, thereby providing a common standard of excellence.

*More Flexible Training Opportunities:* By having a single Ph.D. degree rather than a series of separate degrees, we will be better able to quickly change, add, or remove specific training areas as student and faculty interests and demand change. Developing a new independent degree program takes a good deal of time, and old programs are cumbersome to eliminate. However, with a structure using an umbrella degree with concentrations, we will be able to more quickly develop, modify or discontinue training in a particular area and remain up-to-date and responsive to campus and national needs.

*Common Point of Entry:* Currently, students see CLFS and the campus as having a large number of different graduate programs in the biological sciences, the majority of which are housed in CLFS. Since the programs themselves actually overlap considerably in disciplines covered, students are often confused as to where to apply, and even faculty members are sometimes not sure about the distinctions. Plus, each program has dramatically different requirements and expectations. Under the Biological Sciences umbrella structure, there will be a single entry point (“umbrella”) for all CLFS programs in the discipline, and an easy determination of where students fit best. Most importantly, there will be basic requirements and expectations for students that will be shared across all parts of BISI.<sup>6</sup>

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<sup>6</sup> A further goal is to make this common point of entry available to other biological sciences-related units on campus, so that prospective students (and others) will be able to search a database of research interests and be



*Resources:* The resource savings is based upon our being able to merge our current limited staff resources currently spread across the various programs into a unified BISI structure.<sup>7</sup> This will result in staff being able to operate more programs in a more efficient manner than now possible, and will allow for better training and cross training of staff.

### ***Relationship to Other CLFS Units Not in BISI***

CLFS has four additional graduate programs that will remain independent: Entomology (ENTM); Sustainable Development and Conservation Biology (CONS); Chemistry (CHEM); and Biochemistry (BCHM). However, they will be included, as appropriate, in the common web portal for BISI. The relationship between BISI and inter-college programs in the biological sciences (broadly defined) is discussed below (page 8).

*Entomology (ENTM):* The Entomology Ph.D. and M.S. programs are unique in that they serve faculty and students in CLFS as well as in the College of Agriculture and Natural Resources, and they have strong ties to Land Grant traditions. The graduate degrees in ENTM often focus on applied entomology, with the research approach and student interest generally being directed towards questions that relate to agricultural or environmental issues. At the same time, faculty members in ENTM provide both applied and basic science research opportunities to students (often in the same lab and with the same mentor). It has generally been the case that students with basic science interests enter the laboratories of ENTM faculty through interdepartmental programs (e.g., BEES, MEES, or MOCB), whereas students with interests in applied entomology enter through the ENTM doctoral program.

We expect this tradition to remain, and that ENTM faculty will be heavily involved in BISI and train many of their doctoral students through BISI.<sup>8,9</sup> At the same time, maintaining the Entomology degree will enable the ENTM faculty to continue to serve the larger entomology community. However, if over the next several years we find that students do their research with ENTM faculty primarily through the ENTM program or through BISI, the relationship of ENTM and BISI will be re-evaluated. The ENTM doctoral program will be part of the general Biological Sciences web portal, and BISI will serve to help ENTM recruit students to that program.

*Sustainable Development and Conservation Biology (CONS):* The CONS program offers the M.S. degree to students interested in entering government and non-government agencies involved in various aspects of conservation biology. The CONS program is undergoing external review this year and a new director will be joining the program. She will, based on the external

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pointed to the appropriate faculty and the graduate programs with which they are associated, no matter whether the program is associated with CLFS or not.

<sup>7</sup> Note that Biology is also being merged into BISI, but its name is being changed to Biological Sciences rather than suspending the program per se.

<sup>8</sup> See support letter from Entomology chair Dr. Charles Miter.

<sup>9</sup> This is to be expected since ENTM faculty now train over half of their students through BEES, MOCB, and other

review, develop a strategic plan for CONS. Since there are a number of potential avenues for CONS to take in its strategic plan, it was decided that it would be best not to alter CONS in any way until we can determine its future structure. This is particularly important since CONS is generally considered one of the premier programs of its type in the United States, and we do not want to do anything that could impact the quality of training it offers, or its reputation, without very careful consideration of a strategic plan.

At the same time, CONS, like ENTM, will be included in the Biological Sciences web portal to facilitate the application process. Moreover, since there is significant overlap between the CONS faculty and faculty in the BEES Area of Concentration, we anticipate that the close working and educational relationship between BISI and CONS will continue, much to the benefit of CONS students.

*Chemistry and Biochemistry:* In addition to the above programs, Chemistry and Biochemistry will remain as distinct programs since their research and training extends beyond biological systems. At the same time, faculty with interests in biological questions (e.g., biochemists) will be included in the BISI web portal, and CHEM/BCHM faculty will be most welcome to be part of the Areas of Concentration in BISI.<sup>10</sup>

## **RELATIONSHIPS TO FACULTY AND PROGRAMS OUTSIDE OF CLFS**

### ***Involvement of Faculty from Other Colleges and Off-Campus***

The various graduate programs in CLFS have a long history of strong and positive relationships with faculty and programs outside of the college. Many of our current programs have very active faculty participants in graduate training from other colleges (e.g., AGNR, CMPS) and units in USM (e.g., especially the Center for Advanced Research in Biotechnology [CARB]<sup>11</sup>). Moreover, there are strong relationships, and participation in graduate education, by adjunct faculty from other area institutions including, but not limited to, the National Institutes of Health (NIH), the National Institutes of Standards and Technology (NIST), and the Smithsonian Institution. UMD faculty from non-non-CLFS programs serve as full members of the various current programs, while faculty from outside serve as adjuncts or affiliates, following UMD policies.<sup>12</sup>

These campus and off-campus relationships provide striking benefits to graduate students. These relationships also benefit faculty and research programs in CLFS as well as other colleges at UMD and at the partner institutions.

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<sup>10</sup> Indeed, as pointed out by Dr. Michael Doyle, chair of CHEM/BCHM, in his letter of support for BISI, CHEM faculty have been very involved in the inception and development of BISI.

<sup>11</sup> CARB is part of UMBI – The University of Maryland Biotechnology Institute, one of the 13 campuses in the University System of Maryland.

<sup>12</sup> Methods for inviting non-CLFS faculty from outside of current programs are decided by the programs and it is expected that BISI will develop similar policies and procedures. Moreover, BISI will have mechanisms in place for evaluation of the participation in, and contributions of, *all* faculty to the Program.

Thus, it is the intent and goal of BISI to firmly maintain and, whenever possible, strengthen these relationships. Indeed, *it is integral to BISI that current and future faculty from other units that now actively participate in, and benefit from, working with CLFS Ph.D. and M.S. programs will continue to have the same strong relationships and be involved in BISI in ways that are similar to, or enhanced from, current relationships.* This includes, but is not limited to, full voting rights, participating in student selection, maintaining access to potential graduate students, and service on all governance committees.

### ***Interactions with Non-CLFS Graduate Programs***

Many CLFS faculty participate in other inter-college graduate programs that are administered by other colleges, such as Neuroscience and Cognitive Sciences (NACS), Biophysics, Chemical Physics, Bioengineering, and others. Indeed, many CLFS faculty have students in their laboratories who receive their degrees from these programs as well as from CLFS programs. These relationships will continue, and the non-CLFS programs will benefit by being included (at their wish) on the common BISI portal, and students with appropriate interests will be directed to those programs.

BISI will not have specific Areas of Concentration that “compete” with our inter-college programs. Instead, the inter-college programs are viewed as integral to the broad training we can offer in biological sciences and so we view BISI and these programs as partners.

We have shared the proposals with leaders in the other colleges and programs, and with external programs, with whom the current CLFS programs interact. Letters of support for BISI from many of these leaders are attached to this proposal package since they are relevant to all of our PCC proposals (page 28).

## **RELATIONSHIP OF NEW PROGRAM TO UM STRATEGIC PLAN**

The proposed change brings the graduate programs in the biological sciences in CLFS very much in line with the intent of the campus strategic plan, in that the new Ph.D. program in Biological Sciences is designed to:

- attract the very best students by showing them the breadth, depth, and quality of the research and training opportunities for them at College Park;
- be forward-thinking and flexible so that BISI stays at the forefront of 21<sup>st</sup> century biological sciences training and research;
- position itself to enhance the research programs of our faculty;
- set up research foci<sup>13</sup> that are aimed at obtaining external support for training (e.g., NIH Training grants or NSF IGERT training grants);

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<sup>13</sup> Referred to as “Research Clusters”

- use resources, such as staff, efficiently and effectively; and
- develop a national and international reputation for excellence overall, and in many of BISI's individual research/training components.

## **PROGRAM AND PROPOSAL DEVELOPMENT AND SUPPORT**

The proposed graduate program in Biological Sciences (BISI) is the result of a year-long review of current CLFS graduate programs in various aspects of the biological sciences, as well as a detailed and extensive evaluation of the structure of graduate training in the biological sciences at over 50 other institutions, including all UM peers. This was done by a Blue Ribbon Committee of faculty representing all of the CLFS biological sciences units. The organization of the programs at other institutions varies considerably, with some retaining a departmental/program structure somewhat similar to our current organization, while many others are moving towards having an “umbrella” single point of entry and an overall organization that parallels the one we are proposing. However, there is a strong trend towards umbrella organizations to make the diversity of biological sciences more accessible. Examples of “umbrella” organizations include:

University of North Carolina - <http://www.bio.unc.edu/graduate/>  
Stanford - <http://med.stanford.edu/biosciences/>  
Indiana University - <http://www.bio.indiana.edu/gradprograms/index.html>  
New York University - <http://biology.as.nyu.edu/page/graduate.program>  
University of Michigan - <http://www.med.umich.edu/pibs/>

It should be noted, however, that our Blue Ribbon Committee found that the specific organization at the universities surveyed varied considerably and that it was often very difficult, if not impossible, to determine organizational details from the web presence of the programs.

The initial evaluation by a Blue Ribbon Committee was presented to CLFS faculty. In a series of meetings the faculty concluded that CLFS efforts in training and research in the biological sciences would be best served by having a single umbrella structure for admissions and administration, and flexible Areas of Concentration for graduate work. Subsequently, a faculty group met weekly over the summer of 2008 to develop a plan for the BISI. The work of this group was given considerable feedback by a larger faculty implementation group, by the chairs of CLFS departments, and by the College's Board of Visitors. Early in the Fall 2008 semester, this plan was presented to the faculty in CLFS. Following an all-college meeting and several surveys, the plan evolved further. This culminated in an all-college meeting on December 8, 2008, to decide on the most critical aspects of BISI including the scientific scope and names of the proposed Areas of Concentration.

A secret ballot vote of all tenured/tenure track faculty in CLFS was taken from December 12-15, 2008, with over 80% of the voting faculty voting in favor of the plan that we are now putting forward for Campus approval.

Figure 1: Current CLFS Organization with graduate programs. BEES and MOCB are graduate programs run within CLFS, although faculty from other colleges and programs (including off-campus) are very involved in all aspects of the programs including student training, student selection, etc. NACS is an inter-college program while MEES is an inter-system program.

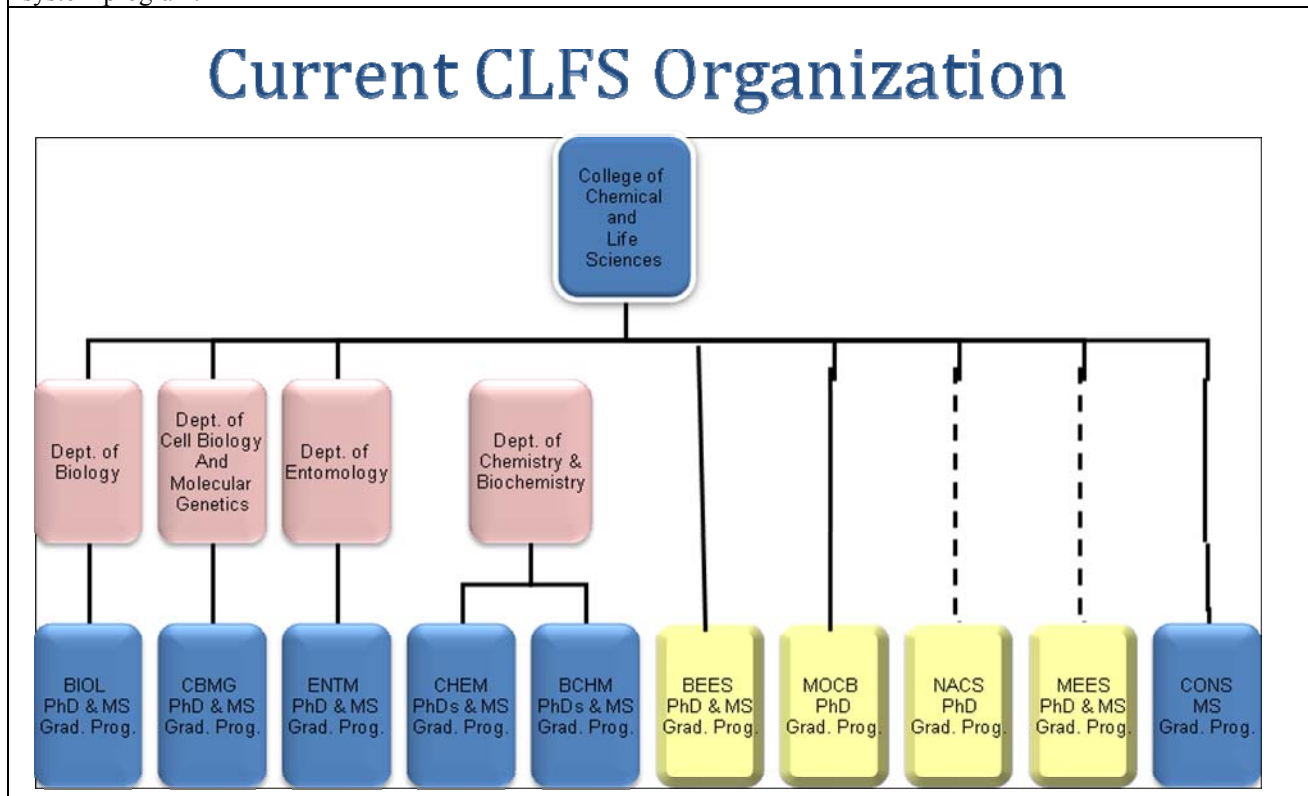


Figure 2: Proposed CLFS Organization with Graduate Program in Biological Sciences. Programs linked to Biological Sciences by dashed lines are organized separately from BISI but will be able to use the admissions umbrella for soliciting students. These programs have, and will continue to have, strong interactions with BISI, and BISI is designed to work closely and collaborate with the inter-college and inter-system units to ensure the best possible training and research opportunities for students and research collaborations for faculty.

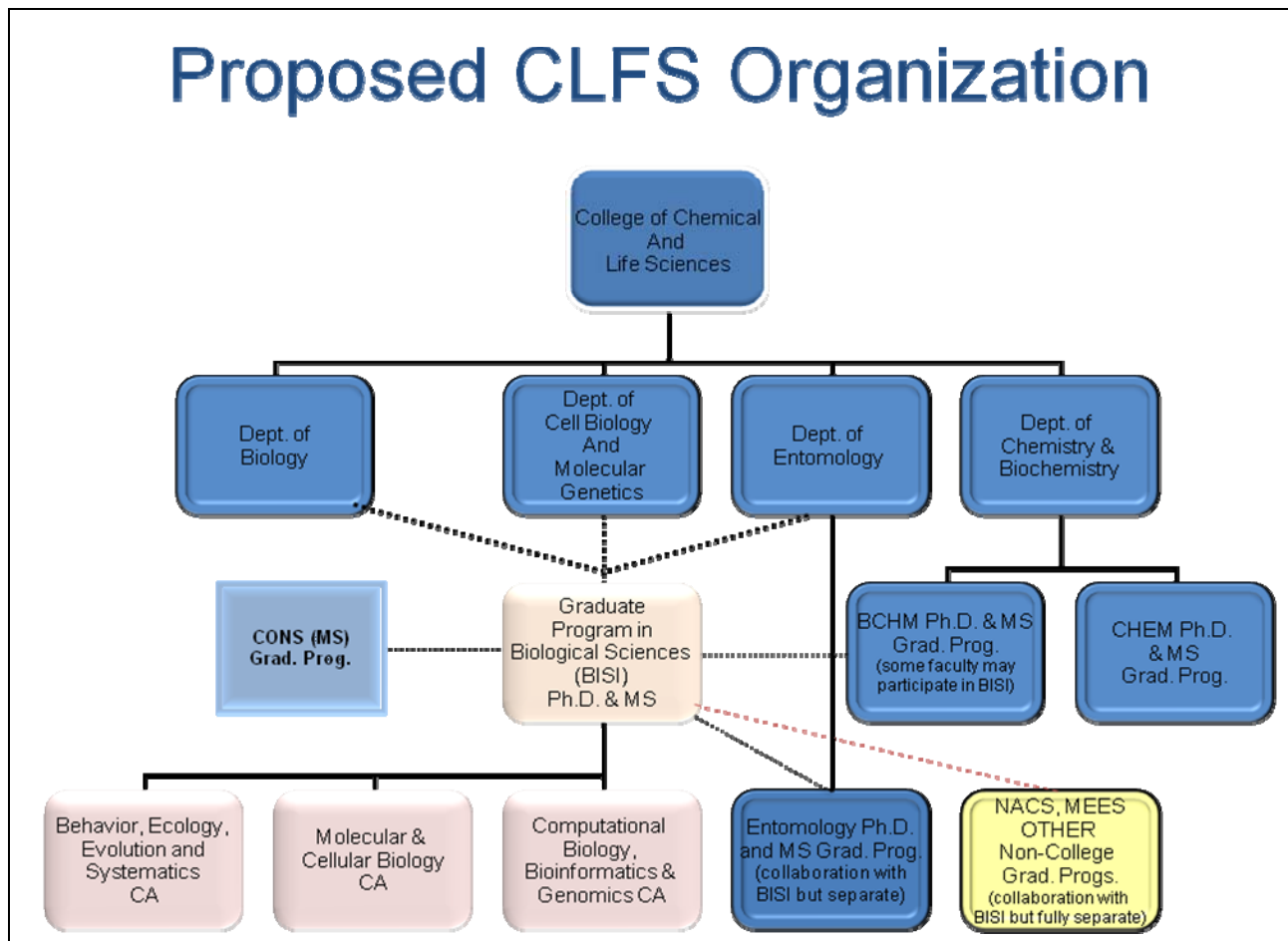
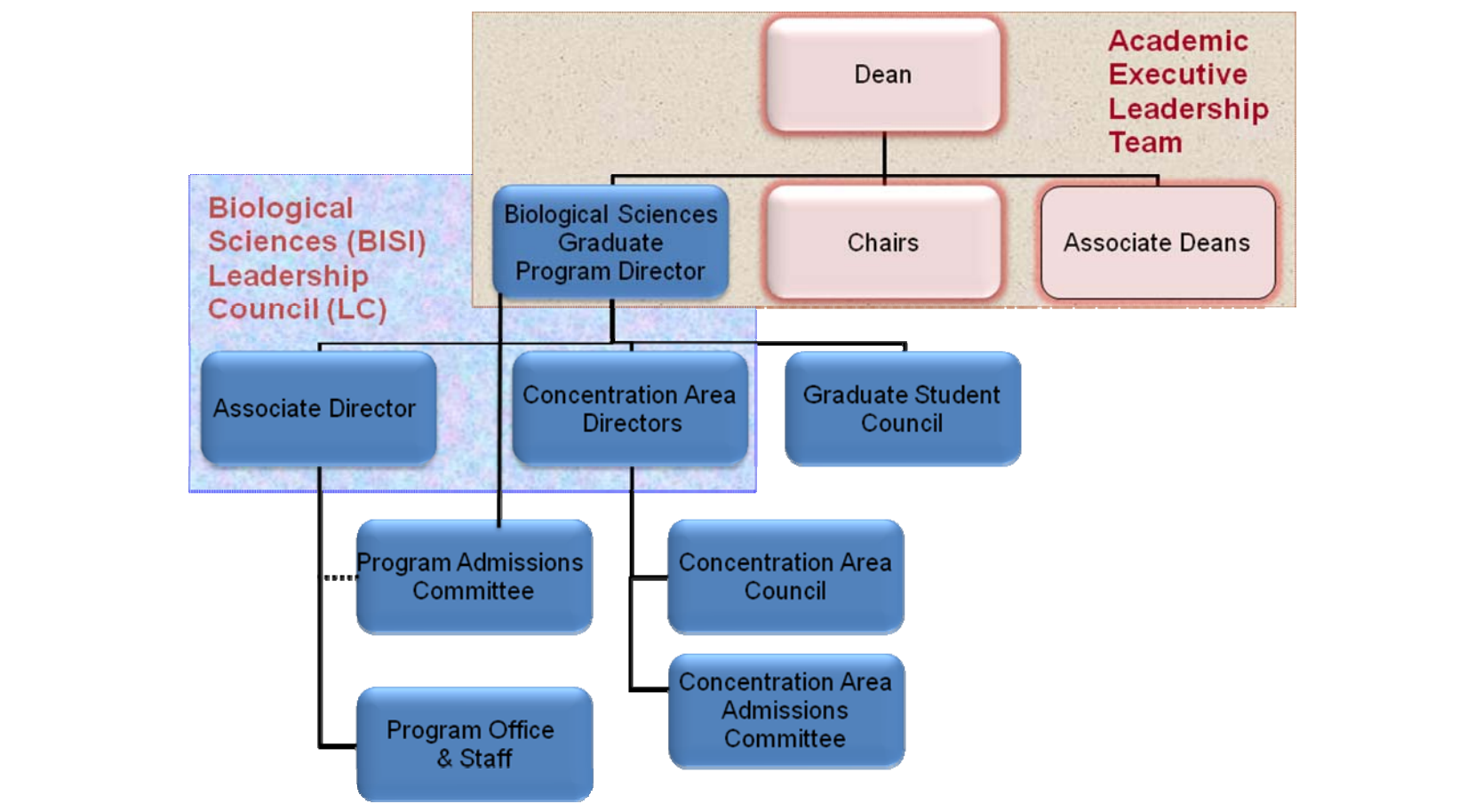


Figure 3: Organization Chart for BISI. The Program Director will sit on the Academic Executive Leadership Team of CLFS to ensure strong collaborations with the Dean, Associate Dean, and department Chairs. BISI will be run by a leadership council that includes the directors (faculty selected) of each of the Areas of Concentration. BISI itself will have an Associate Director, an umbrella admissions committee that will work closely with the admissions committees of each Area of Concentration, and a BISI office that will be responsible for BISI administration. Each Area of Concentration will have an elected director, an elected Council representing faculty, and an admissions committee. Graduate students in each Area of Concentration will select representatives to a BISI Graduate Student Council, the leader of which will serve on the BISI leadership committee.





**THE UNIVERSITY OF MARYLAND, COLLEGE PARK  
PROGRAM/CURRICULUM PROPOSAL**

**DIRECTIONS:**

- Provide one form with original approval signatures in lines 1 - 4 for **each** proposed action. Keep this form to one page in length.
- Early consultation with the Office of the Associate Provost for Academic Planning & Programs is strongly recommended if there are questions or concerns, particularly with new programs.
- Please submit the signed form to Claudia Rector, Office of the Associate Provost for Academic Planning and Programs, 1119 Main Administration Building, Campus.
- Please email the rest of the proposal as an MSWord attachment to [pcc-submissions@umd.edu](mailto:pcc-submissions@umd.edu).

DATE SUBMITTED \_\_\_\_\_

PCC LOG NO.

08041

COLLEGE/SCHOOL **College of Chemical and Life Sciences (CLFS)**  
DEPARTMENT/PROGRAM NA

PROPOSED ACTION (*A separate form for each*) ADD \_\_\_ DELETE \_\_\_ CHANGE X \_\_\_


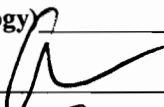
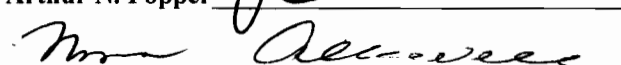
DESCRIPTION (*Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide **old** and **new** sample programs for curriculum changes.*)

**Change of name of the Ph.D. degree: in Biology to Biological Sciences (BISI). Several current graduate programs in CLFS will be moved into the new Biological Sciences graduate program. The resultant Ph.D. program will have several Areas of Concentration that will enable students to obtain a Biological Sciences degree with a formal Area of Concentration in their chosen sub-field.**

JUSTIFICATION/REASONS/RESOURCES (*Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.*)

**We are replacing the current name "Biology" with "Biological Sciences" to indicate a broader and inclusive program. The name also reflects the breadth of the biological sciences training and research in the College of Chemical and Life Sciences.**

APPROVAL SIGNATURES - *Please **print** name, sign, and date*

1. Department Committee Chair: NA \_\_\_\_\_
2. Department Chair: **Richard Payne** (Chair, Biology)  \_\_\_\_\_ 1/21/09
3. College/School PCC Chair: **Arthur N. Popper**  \_\_\_\_\_ 1/21/09
4. Dean: **Norma Allewell**  \_\_\_\_\_ 1/21/09
5. Dean of the Graduate School (if required) \_\_\_\_\_
6. Chair, Senate PCC \_\_\_\_\_
7. Chair of Senate \_\_\_\_\_
8. Vice President for Academic Affairs & Provost \_\_\_\_\_

VPAAP 8-05



The College of Chemical and Life Sciences is proposing to *change* the name of Ph.D. programs in Biology to Biological Sciences. (An accompanying document changes the name of the M.S. degree.)

The purpose of the change is to:

- Make the name of the programs more encompassing of the breath of biological sciences research in the college and on campus.
- Provide an umbrella program (Biological Sciences -- BISI) in which many of the current areas of Ph.D. training in the college will be merged as a single program. This will enable us to suspend and eventually eliminate graduate programs in: Biology; Behavior, Ecology, Evolution, and Systematics (BEES); Cell Biology and Molecular Genetics (CBMG); and Molecular and Cellular Biology (MOCB) at College Park (see other proposals).
- Enable prospective students to enter BISI through a single “portal” and then be placed into Areas of Concentration that are most suited to their interests and needs. This is particularly important in the biological sciences where fields are evolving rapidly and where the scholarly interests of faculty often are highly diverse. By having a single degree program, and a single point of entry, there will not only be less confusion for students, but also opportunities for students to develop unique and individual training opportunities that fit their specific interests and career goals.

# THE UNIVERSITY OF MARYLAND, COLLEGE PARK PROGRAM/CURRICULUM PROPOSAL

DIRECTIONS:

- Provide one form with original approval signatures in lines 1 - 4 for **each** proposed action. Keep this form to one page in length.
- Early consultation with the Office of the Associate Provost for Academic Planning & Programs is strongly recommended if there are questions or concerns, particularly with new programs.
- Please submit the signed form to Claudia Rector, Office of the Associate Provost for Academic Planning and Programs, 1119 Main Administration Building, Campus.
- Please email the rest of the proposal as an MSWord attachment to [pcc-submissions@umd.edu](mailto:pcc-submissions@umd.edu).

DATE SUBMITTED \_\_\_\_\_

PCC LOG NO.

08042

COLLEGE/SCHOOL College of Chemical and Life Sciences (CLFS)

DEPARTMENT/PROGRAM NA

PROPOSED ACTION (A separate form for each) ADD \_\_\_\_\_ DELETE \_\_\_\_\_ CHANGE X \_\_\_\_\_

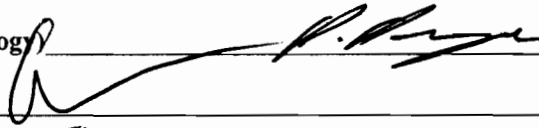
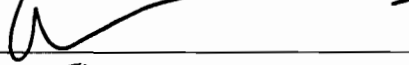

DESCRIPTION (Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide **old and new** sample programs for curriculum changes.)

**Change of names of current Areas of Concentration in the Ph.D. Program in Biology (to be renamed Biological Sciences in a separate action).**

JUSTIFICATION/REASONS/RESOURCES (Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.)

**The name changes in Areas of Concentration much better reflect the current training areas within the biological sciences in the College of Chemical and Life Sciences than do the old names.**

APPROVAL SIGNATURES - *Please print name, sign, and date*

1. Department Committee Chair NA \_\_\_\_\_
2. Department Chair **Richard Payne (Chair, Biology)**  \_\_\_\_\_ 1/21/09
3. College/School PCC Chair **Arthur N. Popper**  \_\_\_\_\_ 1/21/09
4. Dean **Norma Allewell**  \_\_\_\_\_ 1/21/09
5. Dean of the Graduate School (if required) \_\_\_\_\_
6. Chair, Senate PCC \_\_\_\_\_
7. Chair of Senate \_\_\_\_\_
8. Vice President for Academic Affairs & Provost \_\_\_\_\_

VPAAP 8-05

## I. PURPOSE OF PROPOSAL

This proposal changes the names of existing Areas of Concentration in the Ph.D. in Biology (to be renamed as the Ph.D. in Biological Sciences in a separate action) to better reflect Areas of Concentration that are emphasized in the College of Chemical and Life Sciences, and the training and research interests of our faculty. While the overall themes of the new names for Areas of Concentration are similar to those of the old names, the new names far better reflect 21<sup>st</sup> century biological sciences, and the strengths of CLFS.

The following current Biology Areas of Concentration will be changed as follows:

1. “Ecology” to “*Behavior, Ecology, Evolution, and Systematics*”
2. “Cell Biology” to “*Molecular and Cellular Biology*”
3. “Systematics and Evolutionary Biology” to “*Computational Biology, Bioinformatics, and Genomics*”

## II. CHARACTERISTICS OF THE PROPOSED PROGRAM

### *Educational Objectives*

The educational objectives for the proposed changes are no different from those of our current graduate programs – to provide for the best possible training for doctoral students in the biological sciences.

*Brief Catalog Description* – The Biological Sciences graduate program (BISI) offers a wide range of research and training opportunities for students who are interested in pursuing doctoral-level research in very diverse areas within the biological sciences. Faculty research interests extend from molecules to ecosystems, and include all intermediate levels of organization. Research approaches extend from the most modern approaches for studying molecules to sophisticated methods for examining global-scale climate change. Research takes place within the laboratories of faculty in the departments in the College of Chemical and Life Sciences, as well as in laboratories of participating faculty in other colleges and institutes of the University of Maryland. In addition, students have the opportunity to work with participating faculty from near-by research institutions such as the National Institutes of Health, Smithsonian Institution, and Beltsville Agricultural Research Center. The goal of BISI is to enable students to obtain the best training in their intended research areas, and to work with outstanding faculty. More information can be found at [www.chemlife.umd.edu/BiSci/](http://www.chemlife.umd.edu/BiSci/).

### *General Requirements for the Ph.D. Degree*

Each student will generally be part of, and advised through, one of the BISI Areas of Concentration (CA). Students with interests that overlap Areas of Concentration, or do not fit into a regular Area, will be initially will be advised by a faculty member and committee appointed by the Program Director.

Typically, course requirements are completed within two years of starting Ph.D. study.

Before the end of the second semester in BISI, the Ph.D. student should select a dissertation advisor, and by the end of the fourth semester, the student and advisor should select the other faculty members who will serve as the student's Research Committee. The student's research advisor serves as the chair of this committee, and it becomes the responsibility of the committee to guide the student through the remainder of the graduate program.

All Ph.D. students will be required to complete a minimum of 26 credits to meet degree requirements.<sup>1</sup> This will include a minimum of 9 credits of advanced course work, 3 credits of graduate seminars, a 2-credit Professional Development seminar, and at least 12 credits of 899 Doctoral Dissertation Research. Specific course/credit requirements, including additional credit requirements and the courses that are to be included within the advanced courses, may be established by the individual Areas of Concentration.

Each student will have yearly meetings with her/his advisory committee for advising and for examinations. By the end of the student's third year in BISI, she/he will present a research proposal to the committee that will summarize the relevant literature, objectives, experimental methods, and significance of a research project that the student and the advisor believe is appropriate for a Ph.D. dissertation. This meeting, which is held no later than by the end of the student's sixth semester, is chaired by the student's advisor and is attended by all members of the research committee. During the meeting, the student is examined on the research proposal. Passing the exam will allow the student to advance to doctoral candidacy.

The ability to do independent research must be demonstrated as well by an original dissertation which must be successfully defended before an examining committee in order for the student to fulfill the degree requirements. Students are required to present a public seminar during the semester in which they intend to hold the defense.

***Proposed Changes in Program Name*** – Name changes in Areas of Concentration, as described in Section I above.

***Proposed Changes in Area of Concentration Names*** – As listed above.

### ***Requirements of Each Area of Concentration***

- ◆ Each Area of Concentration will focus on distinctly different areas of the biological sciences.
- ◆ With rare exception, there is no need to develop new courses (Table 1, page 20) for the Ph.D. degree. The exception may be in the area of *Computational Biology, Bioinformatics, and Genomics* where there may be the need for a general overview course. But, this has yet to be determined. If developed, it will be through reassignment of faculty currently teaching courses with low graduate enrollments.
- ◆ All current CLFS graduate courses will be offered under the BISI rubric.
- ◆ While each Area of Concentration has its own group of courses, it will be common for students to take courses across areas, depending on the specific scholarly interests of the student. Thus, since students in the BEES Area of Concentration may be incorporating topics as

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<sup>1</sup> At the same time, policies will be in place to allow exceptions to required courses, such as for students who enter the programs having already had similar courses in other (UMD or non-UMD) programs.

diverse as genomics and development in their dissertation research, the students may very well include courses in those areas as part of their program. Indeed, this overlap reflects the complexity of modern biology, and is encouraged to develop the most broadly trained students.

- ◆ Courses for each Area of Concentration are shown in Table 1 (page 20). As demonstrated in the Table, each Area of Concentration has a unique set of courses from which students may choose after discussion with their mentor and advisory committee. In some cases, Areas of Concentration may stipulate that one or more of these courses are required of every student in that area.
- ◆ It is expected that the number of courses required in any Area of Concentration will not exceed current requirements for comparable programs. Thus, changes in course requirements will not change the time to degree. Moreover, current students who choose to move to the new BISI structure to complete their degrees will *not* have additional courses/requirements imposed upon them.<sup>2</sup>

At the same time, it should be noted that the most important differences between Areas of Concentration is *not* in course requirements or expectations, but in the nature of the research training that students receive, the seminars they attend, the meetings they go to, and the collaborations they develop with their faculty. In effect, at least in the biological sciences, who a student ultimately becomes evolves from her/his community, and the Areas of Concentration represent those communities.

### ***Learning Outcome Assessment***

CLFS has been very successful in developing Learning Outcome Assessment tools for its graduate programs. The LOA for the proposed Biological Sciences graduate program is found in Table 2 (page 21).

***Library Requirements*** - No additional library requirements are needed. BISI continues to serve the same faculty and student pool as in the past, and the library needs will not change (though we, of course, would like to see an increase in library holdings in biological sciences, this is not needed to initiate or maintain BISI).

***BISI Faculty*** – No change from current faculty.

***BISI Courses*** – It is recognized that while courses are needed by the Areas of Concentration, faculty time and teaching obligations are controlled by the departments. In fact, this is not a new issue since we have had courses in several of the current areas (e.g., BEES, MOCB) for many years, and there has never been a “conflict” between faculty teaching departmental vs. program courses. Indeed, since faculty members normally teach at least one graduate course each year, their teaching would naturally be in BISI courses. Most importantly, however, our experience has been that since our Chairs have a “stake” in the graduate programs, and that they work hard to ensure that faculty are able to teach the needed graduate courses. Moreover, since the BISI Director will meet regularly with the Chairs (see organization chart, page 12), any issues arising

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<sup>2</sup> Status of current students in BISI is discussed in detail in the PCC document suspending several programs – see page 26.

will be easily and collegially dealt with (as they have in the past).

**Resources Required** - No additional resources are required for BISI. Current staff support will become BISI staff. The BISI Director will be a regular tenured faculty member in CLFS, as will be the Concentration Area Directors. Indeed, fewer program directors will be needed under BISI than are needed in current programs.

### ***BISI Admissions***

One of the critical features of the BISI is that we will now have a single “face” for all graduate programs in the Biological Sciences on the web and in print. Students potentially interested in doing graduate work at UMD in the biological sciences (and related fields) will see a single home page that will have search engines designed to help them not only find potential mentors with interests similar to their own, but also to find the appropriate program at UMD to which they would make their application. Assuming that the student was interested in programs within Biological Sciences, they would be directed to the appropriate Area of Concentration.

Applications for admissions would be made through the common portal to the Graduate School’s online application system, and the program admissions office would manage applications. Actual decisions on students would be made by the Area of Concentration that is most appropriate for the student’s interests. Once the Concentration Area committees have recommendations for admissions, the BISI admissions committee would make final decisions based on student ranking by the Areas of Concentration, and provide financial support for incoming students.<sup>3</sup> It is policy in CLFS that no doctoral student is admitted without guarantee of financial support (e.g., TA, fellowship, research assistantship), typically for five years in biology programs.

A critical part of this process is that we will invite related programs that are not within BISI, such as CONS, Entomology, NACS, MEES, and Biophysics, to participate in our home page and be part of our search engine. This will help students find the faculty and graduate programs that most fit their needs. While it is possible that a student will choose to go to one of our partner programs rather than BISI, one of our goals with the common portal is to bring the very best graduate students to UMD in the broad areas of the biological sciences, and our view is that the most important thing is to get excellent students to come to UM, no matter where they wind up.

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<sup>3</sup> Using currently available funds.

Table 1: Courses for each Area of Concentration. The specific courses a student takes will be decided upon by the faculty in the Areas of Concentration and by the students individual advisory committee.

CA – Behavior, Ecology, Evolution, and Systematics				CA – Computational Biology, Bioinformatics, and Genomics				CA – Molecular and Cellular Biology			
Course #		Title	Credits	Course #		Title	Credits	Course #		Title	Credits
BEES	608	Introduction to BEES	1	BIOL	708	Genetics & Genome Data	4	CBMG	688	Genetics: Research Exp	3
BIOL	608	Genetic Adaptive Evolution	2	BIOL	608	Human Evol Genetics	2	CBMG	688	Microbial Pathogenesis	2
BEES	609	Paleobiology	2	CBMG	688	Genetics II	2	CBMG	688	Cell Biology I	2
BIOL	608	Behavior Ecology	2	CBMG	688	General Bioinformatics: Comp Meth	2	CBMG	688	Cell Biology II	2
BIOL	608	Invasions & Invasive	2	CBMG	688	Grad Bioinformatics: Comp Meth	2	CBMG	688	Genetics: Cell Bio II	2
BIOL	608	Evolution & Development	2	CBMG	688	Bioinformatics And Molecular Systems	3	CBMG	688	Gen I:Gene Expression	2
BIOL	608	Marine Ecology & Evolution	2	CBMG	688	Comp Bioinformatics	3	CBMG	688	Genetics I: Gene Exp	2
BIOL	608	Molecular Ecology	2	CBMG	699	Bioinformatics & Comp Bio	1	CBMG	688	Immunology & Host Defense – Part 1	2
BIOL	608	Evolution of Regeneration	2	CBMG	699	Bioinformatics & Computational Biology	1	CBMG	688	Immunology & Host Defense – Part 2	2
BIOL	608	Adv Theoretical Ecology	2	CBMG	688	Genetics: Plant I	2	CBMG	688	Microbial Genetics	2
BIOL	662	Concepts In Animal Ecology	4	CBMG	699	Eukaryotic Model Systems	1	CBMG	688	Plant I Development & Physiology	2
BIOL	665	Behavioral Ecology	4	CBMG	699	Genetics Eukaryotic Syst	1	CBMG	688	Plant II: Dev And Phys	
BIOL	671	Molecular Evolution	3	CMCS	828N	Computational Gene Finding And Genome Assembly	3	CBMG	688	Developmental Biology	2
BIOL	760	Plant Population Biology	3	CMCS	858L	Graphs And Networks In Computational Biology	3	CBMG	688	Principles Of Microscopy	2
BIOL	608	Behavioral Evolution	2	CMCS	858E	Algorithms For Biosequence Analysis	3	CBMG	688	Molecular Virology	2
								NACS	644	Cellular & Molecular Neuroscience	1
								BIOL	622	Biophysics for Biologists	3
								BSCI	651	Membrane Transport Phenomena	3



**TABLE 3: ASSESSMENT PLAN**

**BIOLOGICAL SCIENCES (BISI)/PH.D.**

(Program of Study / Major / Degree Level, etc.)

Program Contact: \_\_\_\_\_ Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Date submitted to Academic Unit Head: \_\_\_\_\_

Program Goals: The goals of BISI are to provide access to world-class research facilities, facilitate communication and collaboration among faculty and students, and provide an incomparable environment for training independent scientists such that they are able to make significant contributions to the fields of behavioral, ecological, evolutionary and systematic biology.

Relevance of goals to the mission statements and/or strategic plans of the University, College, or Program as applicable:

<b>Student Learning Outcomes</b> (list the three-to-five most important)	<b>Assessment Measures and Criteria</b> (describe one or more measures for each outcome and criteria for success)	<b>Assessment Schedule</b> (initial year, and subsequent cycle)
<p>1. <b>General knowledge</b> of biological sciences topics sufficient to support their dissertation research.</p> <p>Students will demonstrate knowledge in five key areas of biological sciences content, identified by their preliminary exam committee. Three of the key areas will represent the three required areas chosen by the student and their committee for general study in the graduate program. Students obtain general knowledge from course work and from independent reading, but general knowledge assessment will take place in an oral preliminary exam, usually completed by the end of the student's second year in BISI.</p>	<p><b>General knowledge</b> will be assessed in an oral preliminary exam.</p> <p>The specific areas of knowledge required for each student will vary depending upon the input of the preliminary qualifying exam committee, but will include at least three of the five core areas agreed upon by the BISI faculty.</p> <p><b>Measure</b> Each member of the preliminary exam committee for a student will rate the general knowledge proficiency exhibited during the exam. Each student's general knowledge will be rated as excellent, adequate, or unacceptable. Every student's general knowledge proficiency will be included in the LOA analysis.</p> <p>The results from all rating sheets for each student will be compiled in a spreadsheet. To summarize the ratings for each student the median rating will be used.</p>	<p>2010, yearly</p>



	<p>The goal of the program is for:</p> <p><b>Criteria</b> 10% or fewer students have a median rating of unacceptable.  90% or more students have a median rating of at least adequate  25% or more students have a rating of excellent.  If these criteria are not met the BISI faculty will determine measures to improve general knowledge of BISI students. These might include:  Changing the content of key BISI courses  Being more explicit about the expectations of the prelim exam  Providing more explicit direction in independent readings that students can utilize to learn general knowledge.</p>	
<p>2. Ability to <i>plan a research program in the biological sciences</i></p> <p>Students will demonstrate the ability to plan a research program by formulating a problem for their dissertation topic, develop a research plan to address this problem and communicate this topic and plan to a technical audience. This is accomplished through completion of a written preliminary exam proposal, an oral presentation of the research plan, and defense of the research proposal in the preliminary exam. This is generally accomplished by the end of the third year in BISI.</p>	<p>The ability of students to <i>plan a research program in the biological sciences</i> will be assessed in two venues: a written research proposal and during the oral preliminary exam.</p> <p><b>Measures.</b> Both the written research proposal and the oral preliminary exam for each student will be assessed by each member of the preliminary exam committee. Ratings will be made in the following areas on the research proposal:  Background Literature  Research Problem  Methods  Significance  Feasibility  Student performance on each will be rated as excellent, adequate, or unacceptable.  The results from all rating sheets for each student will be compiled in a spreadsheet. To summarize the ratings for each student the median rating will be used.</p> <p><b>Criteria:</b> The goal of the program is for:  10% or fewer students have a median rating of unacceptable.  90% or more students have a median rating of at least adequate  25% or more students have a rating of excellent.</p>	<p>2006, yearly</p>

<p>3. Students demonstrate the ability to implement and complete independent scientific research. The research conducted is summarized in a dissertation and presented in a professional manner in front of a public audience.</p>	<p><b>Measures:</b>  Assessment of the oral public seminar and the written dissertation will be judged on the following criteria:  Background Literature  Research Problem  Methods  Significance of Research  Conclusions  Future Directions  Student performance on each will be rated as excellent, adequate, or unacceptable.  The results from all rating sheets for each student will be compiled in a spreadsheet. To summarize the ratings for each student the median rating will be used.  <b>Criteria:</b> The goal of the program is for:  10% or fewer students have a median rating of unacceptable.  90% or more students have a median rating of at least adequate  25% or more students have a rating of excellent.</p>	<p>2006, yearly</p>
<p>4. Students make significant scholarly contributions to the field.</p>	<p><b>Measure:</b> Number of publications and presentations authored by students.  <b>Criteria:</b> By the end of the program for each cohort, 80% of Ph.D. graduates will publish at least two articles in a refereed journal and make at least one presentation at a national conference.</p>	<p>2006, yearly</p>

**THE UNIVERSITY OF MARYLAND, COLLEGE PARK  
PROGRAM/CURRICULUM PROPOSAL**

**DIRECTIONS:**

- Provide one form with original approval signatures in lines 1 - 4 for **each** proposed action. Keep this form to one page in length.
- Early consultation with the Office of the Associate Provost for Academic Planning & Programs is strongly recommended if there are questions or concerns, particularly with new programs.
- Please submit the signed form to Claudia Rector, Office of the Associate Provost for Academic Planning and Programs, 1119 Main Administration Building, Campus.
- Please email the rest of the proposal as an MSWord attachment to [pcc-submissions@umd.edu](mailto:pcc-submissions@umd.edu).

DATE SUBMITTED \_\_\_\_\_

PCC LOG NO.

08044

COLLEGE/SCHOOL **College of Chemical and Life Sciences (CLFS)**

DEPARTMENT/PROGRAM NA

PROPOSED ACTION (*A separate form for each*) ADD     DELETE     CHANGE X

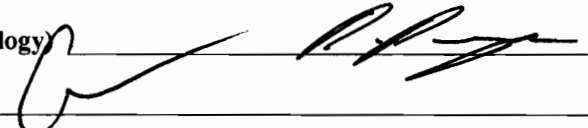
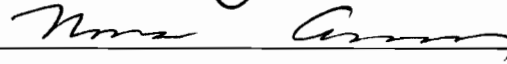
DESCRIPTION (*Provide a succinct account of the proposed action. Details should be provided in an attachment. Provide **old** and **new** sample programs for curriculum changes.*)

**Change of name of the M.S. degree in Biology o Biological Sciences (BISI) and eliminate all formal Areas of Concentration currently listed under Biology.**

JUSTIFICATION/REASONS/RESOURCES (*Briefly explain the reason for the proposed action. Identify the source of new resources that may be required. Details should be provided in an attachment.*)

**We are replacing the current name “Biology” with “Biological Sciences” for the M.S. program to bring it into alignment with the change in the name of the associated Ph.D. program. No other changes will be made in the M.S. programs. The Areas of Concentration currently listed are not used, and are generally out of date in the field.**

APPROVAL SIGNATURES - *Please **print** name, sign, and date*

1. Department Committee Chair: NA \_\_\_\_\_
2. Department Chair: **Richard Payne (Chair, Biology)**  \_\_\_\_\_ 1/21/09
3. College/School PCC Chair: **Arthur N. Popper** \_\_\_\_\_ 1/21/09
4. Dean: **Norma Allewell**  \_\_\_\_\_ 1/21/09
5. Dean of the Graduate School (if required) \_\_\_\_\_
6. Chair, Senate PCC \_\_\_\_\_
7. Chair of Senate \_\_\_\_\_
8. Vice President for Academic Affairs & Provost \_\_\_\_\_

VPAAP 8-05

The College of Chemical and Life Sciences is proposing to *change* the name of the M.S in Biology to Biological Sciences. This brings the M.S. program name into alignment with the name of the Ph.D. program that is being proposed concurrent to the M.S. change.

CLFS also proposes to eliminate all formal Areas of Concentration currently listed for the M.S. program under MHEC. The rationale is that the concentrations as listed are very old (indeed, there are no records of their inception) and out of date. Unlike the Ph.D. program, formal concentration areas have never been used at the master's level (i.e., the M.S. degree in Biology has always been granted without concentrations).

All other aspects of the M.S. in Biology will be carried over to the proposed M.S. in Biological Sciences including all requirements, learning outcome assessments, etc.

## Letters of Support for Proposed Changes

### College of Chemical and Life Sciences

1. Dr. Norma Andrews, Chair, Cell Biology and Molecular Genetics (CBMG)
2. Dr. Charles Mitter, Chair, Entomology (ENTM)
3. Dr. Richard Payne, Chair, Biology (BIOL)
4. Dr. Michael Doyle, Chair, Chemistry and Biochemistry (CHEM/BCHM)
5. Dr. Michele Dudash, Director, Behavior, Ecology, Evolution, and Systematics Graduate Program (BEES)
6. Dr. Jonathan Dinman, Director, Molecular and Cellular Biology Graduate Program (MOCB)
7. Dr. Jeffrey DeStefano, Director, CBMG Graduate Program

### External to CLFS

8. Dean Cheng-I Wei, Agriculture and Natural Resources (AGNR)
9. Dean Steven Halperin, Computer, Mathematics, and Physical Sciences (CMPS)
10. Dean Robert Gold, School of Public Health (SPH)
11. Dr. John Moulton, Director, Center for Applied Research in Biotechnology (CARB)
12. Dr. Tom Porter, Chair, Department of Animal and Avian Sciences (AGNR)
13. Dr. Frank Coale, Chair, Department of Environmental Sciences and Technology
14. Dr. Steven Salzberg, Director, Center for Bioinformatics and Computational Biology (CMPS)
15. Dr. Robert Dooling, Director, Neuroscience and Cognitive Science Program (NACS)
16. Dr. William Bentley, Chair, Fischell Department of Bioengineering
17. Dr. Kennedy Paynter, Director, Marine, Estuarine, Environmental Sciences Program (MEES)
18. Dr. Davarajin Thirumalai, Director, Biophysics Graduate Program



# UNIVERSITY OF MARYLAND

DEPARTMENT OF CELL BIOLOGY AND MOLECULAR GENETICS

1109 Microbiology Building  
College Park, Maryland 20742  
301.405.5435 TEL 301.314.9489 FAX  
www.cbmg.umd.edu

January 6, 2009

Norma Allewell  
Professor and Dean  
College of Chemical and Life Sciences  
2300 Symons Hall  
University of Maryland, College Park

Dear Norma,

As the new Chair of CBMG, I am writing to express my enthusiastic support for the new BISI Graduate Program. I think this is a very timely reorganization of the graduate training in biological sciences offered by CLFS and the campus. Having followed closely a similar and very successful consolidation of the biological sciences programs at Yale University several years ago, I feel strongly that the BISI program will greatly improve the quality of graduate education at UMCP. In addition to eliminating redundancy in human and financial resources, I am confident that the new program will play a major role in attracting stronger students. I am thus fully in favor of consolidating the existing graduate programs within CBMG into BISI. As you know, many top institutions have implemented similar "umbrella" programs in recent years, and there is no doubt that this arrangement is strongly favored by the best candidates for graduate school, in the US and abroad. This restructured program will also put us in a much stronger position to compete for training funds, since it will ensure uniform high standards for requirements and evaluation.

Although I have only recently joined CLFS, during the last few months I had the opportunity to follow closely the evolution the new BISI program. I was very impressed by the transparency of the process, and also by the collegiality demonstrated by the faculty at all planning steps. There were extensive opportunities for the faculty to provide input, and I could see clearly how the different views effectively shaped BISI. I was delighted to see how the initial discussions rapidly evolved into extensive, solid support for the new program. I am particularly excited with the fact that BISI incorporates very effectively the unique research strengths found at UMCP. I am convinced that it is exactly what we need, to fully prepare the next generation of graduate students for the exciting new biological challenges of the future.

With best regards,

A handwritten signature in cursive script that reads "Norma Andrews".

Norma Andrews  
Chair, Cell Biology and Molecular Genetics  
University of Maryland, College Park

Cc Arthur Popper



UNIVERSITY OF  
MARYLAND

COLLEGE OF CHEMICAL AND LIFE SCIENCES  
DEPARTMENT OF ENTOMOLOGY

4112 Plant Sciences Building  
College Park, Maryland 20742-4454  
301.405.3911 TEL 301.314.9290 FAX  
www.entomology.umd.edu

12 January 2009

Dr. Norma Allewell  
Dean, College of Chemical and Life Sciences  
University of Maryland

Dear Dr. Allewell:

I write to strongly endorse College implementation of the new “umbrella” graduate program in the biological sciences. My department participated actively in the process of developing this program, which included an abundance of opportunities for faculty input, and remains very supportive. The new program will bring many advantages to the College. It will reduce the redundancy among our current array of smaller programs, and standardize the processes of admission and of tracking student progress, making program administration more efficient. The resources thereby freed should help to alleviate our current dearth of infrastructure support for large integrative efforts such as training grant and multi-investigator research proposals. By gathering nearly all biological fields under a single umbrella, the new program will promote interdisciplinary interactions among faculty and students alike. The resulting synergy promises to increase the rate at which we collectively generate novel ideas and initiatives. Entomology faculty already train about half their students in the current inter-departmental programs, and look forward with enthusiasm to enjoying the improvements in student recruitment and professional success which the new structure seems sure to foster.

Sincerely,


Charles Mitter  
Professor and Chair  
Department of Entomology



UNIVERSITY OF  
MARYLAND  
DEPARTMENT OF BIOLOGY

1210 Biology Psychology Building  
College Park, Maryland 20742-4415  
301.405.6887 TEL 301.314.9358 FAX

MEMORANDUM

To: Normal Allewell, Dean, College of Chemical and Life Sciences  
From: Richard Payne, Chair, Biology Department   
Re: BISI Graduate Program

Dear Dean Allewell:

The proposed graduate program in Biological Sciences (BISI) promises to enhance the quality and reputation of graduate training in the biological sciences at the University of Maryland. The document that has been prepared for approval is strong and sets appropriately high goals. I support the implementation of this plan and the change of the name of the Biology M.S. and Ph.D. graduate programs to Biological Sciences, the changes in the names of the Ph.D. Areas of Concentration, and the elimination of the M.S. areas of concentration. The proposed changes have a number of advantages including: better organization, a hierarchical structure, uniform requirements, and more focused areas of training. It also proposes to reduce duplication and to consolidate staff. At the same time the new system retains the essential features of a graduate program such as preliminary examinations, training by a primary advisor, support by an advisory committee, a public seminar, and the defense of a thesis.

The BISI Program proposes to set up three initial Areas of Concentration for the Ph.D.. Two of them, BEES and Molecular and Cellular Biology appropriately encompass the two largest faculty groups within the College. Biology faculty contribute to both of these areas. The third Area of Concentration, in Computational Biology, Bioinformatics and Genomics, represents an exciting new area that the Biology Department is enthusiastic about contributing to, with Biology faculty taking leadership roles.

Amongst our faculty, those deeply involved in the current BEES graduate program should have the smoothest transition to the new program because a BEES concentration area is proposed. The portion of our faculty who work in the area of Neuroscience will probably continue to receive students primarily through NACS. The Department also looks forward to continuing to participate in and develop the Biophysics graduate program on campus.

Beyond and within these faculty groups a significant fraction of our students and faculty work in areas that cross the intellectual dividing line between the BEES and Molecular and Cellular Biology areas. I am pleased to note that the proposal supports



educating students using courses chosen from more than one concentration area. This feature will be important for those faculty.

Biology faculty have been very active in the past in developing new interdisciplinary graduate programs. BISI facilitates this process by allowing the creation of research clusters that cross concentration areas as well as entirely new concentration areas. The Biology Department anticipates taking advantage of this feature and looks forward to exploring a new area for faculty whose interests lie in the mechanistic investigation of physiological systems

One major strength of the proposed BISI program is to bring together faculty now residing in different departments under a single umbrella. This will foster collaboration and cross-fertilization of ideas and techniques. While the department will lose the autonomy inherent in directly controlling its own graduate program, that program currently provides only a fraction of the students studying under Biology Department faculty members. The rest are training within BEES, NACS, MOCB, and MEES. Having the majority of faculty members instead participating in several Areas of Concentration within BISI should facilitate these departmental functions.

Overall, the proposed program is an exciting beginning. Every effort must be made to make it work.



DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY

College Park, Maryland 20742

Michael P. Doyle  
Chair and Professor  
(301) 405-1788 tel.  
(301) 314-2779 fax  
January 15, 2009

Dr. Norma Allewell, Dean  
College of Life Sciences  
University of Maryland  
College Park, Maryland 20742

Dear Dean Allewell:

I am writing in support of the Graduate Program in Biological Sciences. The revised program not only unifies previously widely distributed graduate programs but also bring to the college a new vision that can be expected to attract a higher quality of graduate student and faculty. I know from my reviewing experience with the National Institutes of Health that the consolidated program will be more attractive in proposal review, especially for Training Grants and Center Grants. Furthermore, the efficiencies that result from this consolidation are certain to bring unexpected benefits to the college and program.

The Department of Chemistry and Biochemistry has played a minor conceptional role in the development of the Graduate Program in Biological Sciences, but we were happy to have had the opportunity to assist by having an organizational role. In the future we see closer interaction between the graduate programs that reside in the College of Chemical and Life Sciences. The new Graduate Program in Biological Sciences allows us to coordinate transfer of applicants, enlist introductory events for new graduate students, and organize programmatic events through the year more efficiently and effectively. The Department of Chemistry and Biochemistry and its faculty support the change enthusiastically.

Yours truly,

Michael P. Doyle



1210 Biology Psychology Building  
College Park, Maryland 20742-4415  
301.405.6887 TEL 301.314.9358 FAX

Behavior, Ecology, Evolution and Systematics Graduate Program

Dr. Norma Allewell, Dean  
College of Chemical and Life Sciences  
Symons Hall  
University of Maryland  
College Park, MD 20742

9 January 2009

Dear Norma,

I am writing in strong support of the proposal to restructure a number of the graduate programs in the College of Chemical and Life Sciences into one large umbrella program entitled Biological Sciences (BISI). The BEES community is supportive of this initiative for a number of reasons. First, it provides for a central office to handle applications for admission, administrative questions, student progress and data collection. This central office would be a great improvement over running the BEES office with part-time staff that turns over quite frequently resulting in a lot of training time compared to an office where full time staff are jointly trained to handle the myriad of tasks necessary to keep a graduate program running smoothly. Second, our successful BEES program would be allowed to retain all of the positive attributes that make it competitive with the top graduate programs in the country in the broad areas of ecology and evolution, but also allow it to be modified to encompass the overall vision of the proposed concentration areas within BISI. Third, this restructuring removes the redundancy among our current group of graduate programs and brings all students together with common intellectual interests, which we believe will strengthen the quality of their academic training as well as improve their quality of life in our college at Maryland.

We had a number of full faculty meetings within our college to discuss this reorganization in light of its potential advantages for the overall visibility of our graduate programs on the national level. I also discussed the proposed reorganization at a BEES faculty meeting and at a meeting with the BEES graduate students. Therefore, I can comfortably support the proposed Biological Sciences Graduate program and the suspension of the BEES degree granting PhD and MS programs at this time.

Sincerely,

Dr. Michele R. Dudash  
Director, BEES Graduate Program

cc: Dr. Arthur Popper



# UNIVERSITY OF MARYLAND

DEPARTMENT OF CELL BIOLOGY AND MOLECULAR GENETICS

2135 Microbiology Building  
College Park, Maryland 20742  
301.405.0918 TEL 301.314.9489 FAX  
dinman@umd.edu

To: Norma Allewell, Ph.D.  
Dean, CLFS

From: Jonathan D. Dinman, Ph.D.  
Professor and Director, MOCB Graduate Program

Re: The consolidated graduate program in the Biological Sciences (BISI)

Date: January 6, 2009

I wish to indicate my strongest support for BISI as director of MOCB . When I arrived here at U. MD. seven years ago, I was perplexed by the large degree of overlap between the CBMG and MOCB graduate programs. This arrangement struck me as redundant, wasteful, confusing, and unnecessary. The more I came to learn about all of the different graduate programs in the CLFS, the more I became convinced that they only existed because of an accumulation of historical accidents. All of these programs have been competing against one another for the pool of potential graduate students, diluting their ability to effectively compete against comparable graduate programs nationwide. This has seriously hurt our ability to recruit the best and brightest graduate students. We need to speak with one voice, to consolidate this jumble of programs, if we are to be nationally competitive. I witnessed firsthand a similar graduate program consolidation process at Rutgers/UMDNJ in the mid-1990's, and saw the quality of the graduate students significantly increase. In my opinion, the proposed BISI program will help us to be more competitive nationally, to attract better students, and will dramatically improve the quality of graduate education in the biological sciences both within the CLFS, in other units on campus, and beyond (e.g. CARB). It will bring order to a confusing system full of redundancies (including multiple overlapping course offerings, administrative structures and human resources), order and commonality to the standards of what we expect the Ph.D. degree to represent, and enable us to set meaningful standards for program assessment and evaluation. Lastly, in these times of financial austerity, consolidation of administrative functions will save us money.

I have been actively involved in designing the BISI program at multiple levels over the past year. I see BISI as a tremendous gain for all of us, and my colleagues in CBMG are also highly supportive of the program. The great majority of the MOCB faculty at CARB and UMBI also favor the new program, and we agree with the suspension of the MOCB doctoral program. BISI will enable us to speak to the world with one voice. Its highly flexible nature will provide the faculty with a greater range of options and choices. It will make us more competitive at the national and international levels. In sum, I strongly believe that the proposed program will provide us with a platform to bring our graduate training into the 21<sup>st</sup> century.

cc. Dr. Arthur Popper



# UNIVERSITY OF MARYLAND

DEPARTMENT OF CELL BIOLOGY AND MOLECULAR GENETICS

Jeffrey DeStefano, Ph.D.  
3130 Bioscience Research Building  
College Park, Maryland 20742  
301-314-2594  
jdestefa@umd.edu

<http://www.cbmg.umd.edu>

Dr. Norma M. Allewell  
Dean, College of Chemical and Life Sciences  
2300 Symons Hall  
University of Maryland  
College Park, MD 20742

January 12, 2009

Dear Dr. Allewell:

As the Director of Graduate Students in the Department of Cell Biology and Molecular Genetics (CBMG) I would like to convey my strong support for the creation of the new BISI Graduate Program in the College of Chemical and Life Sciences (CLFS). This “umbrella” program will serve to consolidate several biological sciences programs (departmental, interdepartmental, and inter-campus) that currently exist in CLFS into a single unit. As part of the process, I agree that the current CBMG graduate Ph.D. and M.S. programs should be suspended upon initiation of the new BISI Graduate Program. The current BISI plan resulted from a long process initiated by CLFS through the formation of a Blue Ribbon Committee made up of representatives from the current biological graduate programs and including representatives from the Chemistry and Biochemistry Department. Most CBMG faculty felt that the process was transparent and collegial, with ample opportunity for input from graduate programs and individual faculty.

Though the faculty in CBMG generally felt that our departmental graduate program was reasonably successful and solid, we also recognized the need for improvement in order to reach the level of aspirational peers. A strong majority of CBMG faculty believe the BISI Graduate Program will help move biological sciences at UMCP to a higher level enabling us to attract the best graduate students and offer a better training environment for students. Through providing a centralized administrative unit in charge of applications, program evaluation, teaching assistantship assignment, and rules and procedures, the BISI should help alleviate much of the current confusion regarding these issues. It should also help with human and financial resources by minimizing duplication of activities that occurs in the current system, especially with regard to the application and recruiting processes. Importantly, BISI incorporates designed plasticity and fair representation, necessities for a new program that will undoubtedly have to change some of the original rules and add others depending on what works.

In closing, I strongly support the proposal for a new BISI Graduate Program. Formation of the BISI Graduate Program is an important step toward our goal of moving biological sciences at College Park into the upper echelon of national university programs.

Sincerely,

A handwritten signature in blue ink that reads "Jeff DeStefano".

Jeffrey DeStefano  
Associate Professor and Graduate Director  
Cell Biology and Molecular Genetics



# UNIVERSITY OF MARYLAND

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

*Office of the Dean and Director  
Agricultural Experiment Station  
Maryland Cooperative Extension*

1296 Symons Hall  
College Park, Maryland 20742-5551  
301.405.2072 TEL  
301.314.9146 FAX

January 13, 2009

Dr. Norma M. Allewell  
Dean  
College of Chemical & Life Sciences  
2300B Symons Hall  
University of Maryland  
College Park, MD 20742-5568

Dear Dean Allewell:

I am writing to express my support of the College of Chemical & Life Sciences' proposal to establish a Graduate Program in Biological Sciences. I support the planned change and am in agreement with the proposal that the consolidation of the six current graduate programs in CLFS will be more effective and efficient in strengthening current and future graduate training in the biological sciences on campus and in attracting excellent graduate students.

Chairs of AGNR's Departments of Nutrition & Food Science, Animal & Avian Sciences, Environment Science & Technology, Veterinary Medicine, and Plant Science & Landscape Architecture have also expressed to me their support of the new program. As it relates to the College of Agriculture & Natural Resources, we are optimistic that the proposed graduate program will provide opportunities for our AGNR faculty to be involved in the new concentration areas, to train students via the program, and to have a voice in programmatic decisions. Such collaborative efforts will serve to benefit faculty and students and will strengthen our university as a result.

The proposal represents much careful planning, and AGNR will look forward to working with CLFS upon approval of the Graduate Program in Biological Sciences.

Sincerely,

A handwritten signature in black ink that reads "Cheng-i Wei".

Cheng-i Wei  
Dean

CW/lc  
cc: Leon Slaughter

January 14, 2009

Norma Allewell, Ph.D.  
2300B Symons Hall  
College Park, MD  
CAMPUS

Dear Norma:

I write to express my strong support for the changes you propose to make to your graduate programs in the biological sciences. I see these as a major step in improving graduate education in the biological sciences on campus, and am particularly happy that the revised program will integrate much better programs within CMPS, most especially the graduate program in computer science through our joint center, CBCB. This will undoubtedly enhance our ability to attract and train outstanding doctoral students.

Once the program is approved I would ask that your office work with the Computer Science Department to ensure that we are able to accommodate a potential additional enrollment in their graduate courses.

Sincerely yours,

A handwritten signature in cursive script that reads "Steve Halperin".

Steve Halperin, Dean



School of Public Health  
Office of the Dean

January 15, 2009

Arthur N. Popper  
Associate Dean, College of Chemical and Life Sciences  
Professor, Department of Biology  
Campus Mail

**Re:** Letter of Support For Reorganization of the Biological Sciences Graduate Program

After reviewing the materials provided me by Dr. Art Popper, and in following up with an in-person meeting with both the Dean and the Associate Dean of the College of Chemical and Life Sciences, I write this letter in full support of the proposed reorganization of the Biological Sciences Graduate Program. I should add that I consulted with the Chairs of each of the academic units in the School of Public Health and no objections to this reorganization were raised.

The proposal is the result of an 18-month examination of the development and current substance of their existing degree programs; and in a participatory process produced a program that will be consistent with disciplinary need while at the same time reducing redundancy and confusion among potential students in the program. I congratulate the leadership and members of the College in their effort and in the result. I also believe that the resulting program will be more amenable to interdisciplinary collaboration among units in the College and across schools and colleges at the University.

I also applaud the openness of the process that was used in the effort to redesign their graduate programs. It appears to be a model worth looking at for other academic units examining graduate programs. Finally, I would add that in light of the expectations raised by the University's new strategic plan – that this effort is both forward looking and likely to improve the program overall.

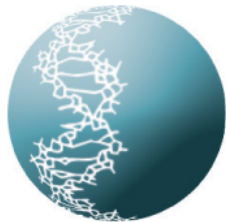
I will close by again saying that this proposal has my full support.

Sincerely,

A handwritten signature in blue ink, appearing to read "Robert S. Gold".

Robert S. Gold  
Dean





**UMBI**  
SHADY GROVE



**CARB**

Center for Advanced Research  
in Biotechnology  
9600 Gudelsky Drive  
Rockville, Maryland 20850  
TEL 240-314-6000  
FAX 240-314-6255  
<http://carb.umbi.umd.edu>

13<sup>th</sup> January, 2009

Professor Norma Allewell  
Dean, College of Chemical and Life Sciences  
University of Maryland College Park

Dear Norma:

I am writing in strong support of the proposed reorganization of the Biological Sciences graduate programs within the College. As you know, the Center for Advanced Research in Biotechnology has been a major participant in the Molecular and Cell Biology Program since its inception, almost all our faculty are active members, we have a number of graduate students, and we teach the core course in protein structure and function. Thus the reorganization is something we are able to consider in an informed manner, and something of very considerable importance to us.

I have consulted with the faculty on the proposed new organization, and there is broad agreement the changes are both needed and well thought out. The unified program in Biological Sciences will make it easy for perspective students to find what is on offer, and lead to a significant increase in intake quality. The nice balance between a large overall program and the roles of the concentration areas should result in more integration while at the same time maintaining appropriate specialized elements. It obviously increases flexibility and efficient use of resources in a number of ways. We particularly appreciate the emphasis the importance of interactions with units outside the College.

In short, I think this is a very well conceived plan, and look forward to working within the new system, together with our much valued colleagues on the College Park campus.

Sincerely,

John Moulton  
Professor and Director, Center for Advanced Research in Biotechnology,  
University of Maryland Biotechnology Institute



# UNIVERSITY OF MARYLAND

DEPARTMENT OF ANIMAL AND AVIAN SCIENCES

Animal Sciences Center  
College Park, Maryland 20742-2311  
301.405.1366 TEL 301.314.9059 FAX

1/14/2009

Dr. Art Popper  
Department of Biology  
2225 Biology-Psychology Building  
University of Maryland  
College Park, MD 20742

Dear Dr. Popper:

I have reviewed the proposal prepared by the College of Chemical and Life Sciences (CLFS) to establish a Graduate Program in Biological Sciences (BISI) with Concentration Areas in 1) Behavior, Ecology, Evolution, and Systematics (BEES), 2) Molecular and Cellular Biology (MOCB), and 3) Computational Biology, Bioinformatics, and Genetics (CBBG). In the proposal, the MOCB concentration area would replace the existing interdepartmental, inter-college, inter-university MOCB Graduate Program. The MOCB Graduate Program was established to foster discourse and intellectual collaborations across campus and among campuses and institutions in the area. Our department and college have been very active in the MOCB program since its inception, with the first Director of the MOCB program, Dr. Inder Vijay coming from our department. Currently, five of our faculty members are faculty members in the MOCB program, and I personally have three MOCB graduate students currently working toward their Ph.D. in my laboratory. In my opinion, the MOCB program is the premier program of its kind on this campus and a model that should be followed by all other inter-departmental programs. To that end, I applaud the efforts of the faculty of CLFS to reorganize their graduate programs into a single graduate program with inter-departmental concentration areas. I believe that more of our graduate programs should be inter-departmental, as described in the proposal.

There are certain statements in the proposal that are particularly important to me and to the faculty of our department, because of our long history and participation in the MOCB program. One critical point of the proposal, in the "RELATIONSHIPS TO FACULTY AND PROGRAMS OUTSIDE OF CLFS" section, is summarized in the statements "...that current and future faculty from other units that now actively participate in, and benefit from, working with CLFS doctoral and MS programs will continue to have the same strong relationships and be involved in BISI in ways that are similar to, or enhanced from, current relationships. This includes, but is not limited to, full voting rights, participation in student selection and access to potential graduate students, and service on all governance committees." This passage ensures that faculty from other units, such as our department and college, will be able to join the faculty of the concentration areas, recruit graduate students through the concentration areas, and vote on policies governing each of the concentration areas, now and in the future. Without this passage, our faculty would be excluded from the program and I could not support the proposal. However, inclusion of our faculty in the proposed BISI program will serve to increase our participation, and as a result the proposal has my full support.

The proposal will have a dramatic effect on the CLFS graduate programs, and it will solidify the home of the MOCB program within CLFS. The MOCB program was formed as an inter-college program, but under the proposal it would be clearly based in CLFS. Again, from my perspective the most important consideration is not the history of the MOCB program but whether or not it will continue to function as a conduit for collaborations and interactions across campus. The language cited above clearly indicates that this is the intent of the proposal and that faculty from departments outside of CLFS will be able to join as faculty members of the concentration areas in the new BISI Graduate Program, that they will be able to recruit graduate students through the new program, and that they will have voting rights within the concentration areas of the BISI program, such as the MOCB concentration area.

I am very impressed with the proposal. It is bold and transformational in the way that graduate programs are offered on this campus. Rather than restricting interactions across campus, it will likely increase participation and intellectual exchange across campus. I support the proposal whole-heartedly. I wish you success in gaining approval for the proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Porter", written in a cursive style.

Tom E. Porter, Ph.D.  
Professor and Chair



1109 H. J. Patterson Hall  
College Park, MD 20742  
Phone 301-405-1306  
FAX 301-314-2763

*Department of Environmental Science and Technology*

January 13, 2009

Dean Norma Allewell  
College of Chemical and Life Sciences  
University of Maryland  
College Park, MD 20742

Dear Dean Allewell:

I appreciate the opportunity to review the proposed plan of reorganization of the MS and PhD programs in the College of Chemical and Life Sciences (January 2009). The proposed new structure is logical, coordinated and will better serve future graduate students in the biological sciences. The proposal has our support. Our faculty in Environmental Science and Technology will undoubtedly be active collaborators within the reorganized CLFS graduate programs and concentration areas, as we have been in the past. As discussed previously, we are looking forward to working with CLFS to develop linkages from the Biological Sciences web portal to other relevant graduate programs in the biological sciences, such as Environmental Science and Technology.

Best wishes for success,

A handwritten signature in black ink, appearing to read "Frank J. Coale".

Frank J. Coale  
Professor and Chair



# UNIVERSITY OF MARYLAND

3125 Biomolecular Sciences Building #296  
College Park, Maryland 20742  
Voice: 301.405.5936 Fax: 301.314.1341  
[www.cbcb.umd.edu](http://www.cbcb.umd.edu)

CENTER FOR BIOINFORMATICS AND COMPUTATIONAL BIOLOGY  
INSTITUTE FOR ADVANCED COMPUTER STUDIES

*Steven L. Salzberg, Ph.D.*  
*Horvitz Professor of Computer Science*  
<http://cbcb.umd.edu/~salzberg>

January 6, 2009

Norma M. Allewell  
Dean, College of Chemical and Life Sciences  
2300 Symons Hall  
University of Maryland  
College Park, MD 20742

Dear Norma:

I'm writing to express my strong support for the proposed new Biological Sciences (BISI) graduate program and for the concentration area within it, Computational Biology, Bioinformatics, and Genomics (CBBG).

I have discussed the program with several faculty, and it is clear to me that my colleagues in CBCB and in the Computer Science Department will have multiple opportunities to be involved with this new program. The proposed concentration in CBBG covers areas of science that are central to many of the latest advances in biological sciences, and I think the addition of this area will strengthen the overall biology program at the University as well as help us in attracting new graduate students.

I look forward to working with you and other faculty as we build and strengthen this new program.

Sincerely,

A handwritten signature in cursive script that reads "Steven Salzberg".

Steven Salzberg, Ph.D.  
Horvitz Professor, Department of Computer Science  
Director, Center for Bioinformatics and Computational Biology



# UNIVERSITY OF MARYLAND

NEUROSCIENCE AND COGNITIVE SCIENCE PROGRAM

Biology-Psychology Building  
College Park, Maryland 20742-4415  
301.405.8910 TEL 301.314.9566 FAX  
www.nacs.umd.edu

January 7, 2009

Dear Norma:

The Neuroscience and Cognitive Science (NACS) graduate program is delighted with the proposed changes in the structure of the graduate programs in CLFS into a comprehensive Biological Sciences graduate program (BISI).

As you know, NACS is a Campus-wide, interdisciplinary graduate program that currently reports to the Dean of the College of Behavioral and Social Sciences. Almost half of the 80+ NACS faculty on campus are either in CLFS departments or have close inter-disciplinary collaborations with faculty in CLFS departments. Thus, NACS is strongly supportive of the proposed new integrated structure. There is no question that this new structure will enhance existing collaborations and facilitate new collaborations between NACS faculty and faculty in CLFS.

I'm delighted the new umbrella structure for the program, with its single web page for attracting graduate students to UMD, will allow NACS to participate so as to attract new graduate students to its program through this new, unified view of the biological sciences at UMD.

It's also clear that NACS will continue to be closely linked to BISI faculty through a wide variety of research clusters that overlap several BISI and NACS Concentration Areas such as auditory neuroscience, neuroethology, motor systems, and vision neuroscience. I expect that once BISI gets running, other research clusters will quickly develop which also involve NACS faculty and graduate students.

In sum, I am tremendously supportive of your efforts and I see BISI as being a real benefit to the way we train students in the biological sciences not only in CLFS but also across the campus. This is truly a forward leaning program that will benefit all of us.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Dooling".

Robert J. Dooling  
Professor of Psychology  
Director of the Neuroscience and Cognitive Science Program, and  
Associate VP for Research



# UNIVERSITY OF MARYLAND

A. JAMES CLARK SCHOOL OF ENGINEERING  
FISCHELL DEPARTMENT OF BIOENGINEERING  
William E. Bentley  
Robert E. Fischell Distinguished Professor & Chair

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College Park, MD 20742  
301.405.4321 TEL 301.314.6868 FAX

bentley@umd.edu  
www.bioe.umd.edu (Dept.)  
www.cbr.umbi.umd.edu (CBR)  
www.cbr.umbi.umd.edu/~bentley (Group)

January 9, 2009

Dr. Arthur N. Popper  
Associate Dean, College of Chemical and Life Sciences Professor,  
Department of Biology  
2225 Biology/Psychology Bldg  
University of Maryland  
College Park, MD 20742

Dear Art,

I have read your plan for a revised graduate curriculum within the College of Chemical and Life Sciences for the coalescence of those current programs principally focused on biology. I think the plan is well written and I particularly like the proposed organization of the new program. As you've mentioned, and I agree, there will be much less confusion for prospective students (as well as affiliate faculty – like myself!).

I am delighted that you will include links to Bioengineering and look forward to continued collaboration. I wish you every success in moving the revised program through the campus committees.

Sincerely,

A handwritten signature in black ink, appearing to read "William E. Bentley".

William E. Bentley  
Robert E. Fischell Distinguished Professor &  
Chair  
Affiliate Member, Molecular and Cell Biology Program



January 18, 2009

Dr. Arthur Popper  
Associate Dean  
College of Chemical and Life Sciences  
University of Maryland  
College Park, MD 20742

Dear Dr. Popper,

I am writing to support the new graduate program in biological sciences (BISI) in the College of Chemical and Life Sciences that has resulted from the reorganization of several graduate programs in CLFS. The administrative changes integral to the new program should create great improvement in the organization and quality of the subsumed programs. The administrative structure, as you know, is similar to the organization of the MEES program and it is a structure that has worked well for the MEES program.

The BISI structure should help attract better applicants, facilitate the recruitment of outstanding candidates and match them with highly relevant mentors and programs of study. It will maximize the ability of students to create the most valuable advisory committees across disciplines, strengthen program assessment and evaluation, and allow the faculty to provide flexible guidance in 21<sup>st</sup> century research.

The BISI structure will also create a more streamlined administration, relieving redundancy of staff and effort. Thus, it will save financial resources and result in a highly efficient graduate program.

Although MEES, since it is a system-wide program, remains outside of BISI, I think that BISI will help MEES identify and recruit high quality applicants and perhaps create more interest amongst CLFS faculty for collaboration and interaction with MEES students and faculty. I look forward to helping them work together.

Good luck with shepherding the program through the approval process.

Sincerely,

Kennedy T. Paynter  
Director





UNIVERSITY OF  
MARYLAND

INSTITUTE FOR PHYSICAL SCIENCE AND TECHNOLOGY

College Park, Maryland 20742  
301.405.4874 TEL 301.314.9363 FAX  
301.314.9404 FAX

January 20, 2009

Dr. Norma Allewell  
Dean, CLFS  
University of Maryland  
College Park, MD 20742

Dear Norma:

I write as Director of the new Biophysics graduate program to express my strong support for the changes being made in the graduate programs in the biological sciences. I view these as major steps in greatly improving graduate education in the biological sciences on campus. I believe that a unified biological science program in CLFS will enable the faculty members in the Biophysics program to collaborate effectively with colleagues in your college as the opportunities present themselves.

As you know, perhaps half of the Biophysics faculty members are in CLFS, and so the collaboration between BISI and Biophysics is natural, collegial, and important. While it is important that Biophysics, as an inter-college program, maintain its independence, all faculty gain a great deal by having a shared portal to attract graduate students, and opportunities for shared research through the Research Clusters that I know are part of your overall design for BISI.

My colleagues and I in the Biophysics Graduate Program are enthusiastic about BISI, and we look forward to the benefits that the new program will bring to us and to our students.

Let me wish you great success in developing the BISI program.

With regards,

D. Thirumalai