FAU
BOARD OF TRUSTEES
Florida Atlantic University

Item: AS: A-2

COMMITTEE ON ACADEMIC AND STUDENT AFFAIRS

Tuesday, June 4, 2019

SUBJECT: REQUEST FOR APPROVAL OF A NEW DEGREE PROGRAM - CIP 30.0101

PROPOSED COMMITTEE ACTION

Request for approval of the following New Degree Program – CIP 30.0101:

- Bachelor of Arts (BA) and Bachelor of Science (BS) in Biological and Physical Sciences

BACKGROUND INFORMATION

The Wilkes Honors College is a selective college within FAU located in Jupiter, Florida on the same campus with the Scripps Research Institute, Max Planck Institute, the Florida Brain Institute, and the Jupiter Life Science Initiative, and its students take advantage of research opportunities with scientists at these entities. The purpose of this proposal is to designate existing STEM concentrations (Biology, Biological Chemistry, Environmental Science, Marine Biology, Mathematics, Neuroscience, and Physics) currently under CIP 24.01, Liberal Arts and Sciences to a CIP (30.0101) that better describes their STEM status. Assigning a new ClP for these areas of concentrations will further promote the national preeminence of the Wilkes Honors College. In addition, assigning a new ClP for Biological and Physical Science Areas of Concentration will affirm their status as STEM degrees and directly contribute to the goal of increasing the number of STEM degrees awarded at FAU.

There are currently over 200 students who are either currently declared in one of the concentrations that will be assigned the CIP Biological and Physical Sciences or who are anticipated to declare one of these concentrations when entering their junior year. Enrollment in Honors College courses in the biological and physical sciences is larger than in non-STEM areas, and additional sections have already been added to accommodate the strong and growing demand for these concentrations.

IMPLEMENTATION PLAN/DATE

Effective Fall 2019, pending approval by the Florida Atlantic University Board of Trustees.

FISCAL IMPLICATIONS

Assigning a new CIP to these existing concentrations will not impact the university's fiscal liability or obligation.

Supporting Documentation: New Degree Proposal Form
Presented by: Dr. Bret Danilowicz, Vice President for Academic Affairs & Provost
Phone: 561-297-6350

Board of Governors, State University System of Florida

Request to Offer a New Degree Program

(Please do not revise this proposal format without prior approval from Board staff)

Florida Atlantic University	**Fall 2018**
University Submitting Proposal	**Proposed Implementation Term**
Wilkes Honors College	**Natural Sciences and Mathematics**
Name of College(s) or School(s)	**Name of Department(s)/ Division(s)**
Biological and Physical Sciences	**B.A. and B.S. in Biological and Physical Sciences**
Academic Specialty or Field	**Complete Name of Degree**
30.0101	
Proposed CIP Code	

The submission of this proposal constitutes a commitment by the university that, if the proposal is approved, the necessary financial resources and the criteria for establishing new programs have been met prior to the initiation of the program.

Date Approved by the University Board of Trustees		**President**	**Date**
Signature of Chair, Board of Trustees	**Date**	**Vice President for Academic Affairs**	**Date**

Provide headcount (HC) and full-time equivalent (FTE) student estimates of majors for Years 1 through 5. HC and FTE estimates should be identical to those in Table 1 in Appendix A. Indicate the program costs for the first and the fifth years of implementation as shown in the appropriate columns in Table 2 in Appendix A. Calculate an Educational and General (E&G) cost per FTE for Years 1 and 5 (Total E&G divided by FTE).

Implementation Timeframe	Projected Enrollment (From Table 1)		Projected Program Costs (From Table 2)				
	HC	FTE	E&G Cost per FTE	E&G Funds	Contract & Grants Funds	Auxiliary Funds	Total Cost
Year 1	114	100.3	20,835	2,083,507	22, 870		2,106,377
Year 2	137	120.56					
Year 3	162	142.56					
Year 4	185	162.8					
Year 5	206	181.28	16,662	3,015,891	24,755		3,040,645

Note: This outline and the questions pertaining to each section must be reproduced within the body of the proposal to ensure that all sections have been satisfactorily addressed. Tables 1 through 4 are to be included as Appendix A and not reproduced within the body of the proposals because this often causes errors in the automatic calculations.

INTRODUCTION

I. Program Description and Relationship to System-Level Goals

A. Briefly describe within a few paragraphs the degree program under consideration, including (a) level; (b) emphases, including majors, concentrations, tracks, or specializations; (c) total number of credit hours; and (d) overall purpose, including examples of employment or education opportunities that may be available to program graduates.

This is a B.A. and B.S. level degree that assigns a new CIP, 30.0101, to appropriate concentrations in STEM fields that are currently a part of CIP 24.01, Liberal Arts and Sciences. These concentrations are Biology, Biological Chemistry, Environmental Science, Marine Biology, Mathematics, Neuroscience, and Physics (hereafter these will be referred to as the Honors College STEM concentrations).
The purpose of this proposal is to designate existing STEM concentrations under a CIP that suitably describes their STEM status, which is an Area of BOG strategic emphasis.

B. Please provide the date when the pre-proposal was presented to CAVP (Council of Academic Vice Presidents) Academic Program Coordination review group. Identify any concerns that the CAVP review group raised with the pre-proposed program and provide a brief narrative explaining how each of these concerns has been or is being addressed.

The Pre-proposal was presented to the CAVP Curriculum working group on 9/28/2018 and received strong support with no concerns raised.

C. If this is a doctoral level program please include the external consultant's report at the end of the proposal as Appendix D. Please provide a few highlights from the report and describe ways in which the report affected the approval process at the university.

N/A

D. Describe how the proposed program is consistent with the current State University System (SUS) Strategic Planning Goals. Identify which specific goals the program will directly support and which goals the program will indirectly support (see link to the SUS Strategic Plan on the resource page for new program proposal).

Reclassifying the Concentrations in biological and physical science so they have a CIP reflecting their STEM status is consistent with the SUS Strategic Planning Goals.
Among the pertinent guiding principles of the SUS Strategic Plan are to:
"Support institutions in their efforts to achieve state, national, and/or international preeminence in key academic, research, and public service programs"; and "maintain a commitment to excellence and continuous improvement."
A specific goal as part of the strategic priority for a knowledge economy is to "Increase the Number of Degrees Awarded in STEM and Other Areas of Strategic Emphasis"(p. 15).
The Wilkes Honors College is a selective college within FAU located in Jupiter, Florida on the same campus with the Scripps Research Institute, Max Planck Institute, the Florida Brain Institute, and the Jupiter Life Science Initiative, and its students take advantage of research opportunities with scientists at these entities. Assigning a new ClP for these Areas of concentrations will further promote the national preeminence of the Wilkes Honors College. In addition, assigning a new ClP for Biological and Physical Science Areas of Concentration will affirm their status as STEM degrees and directly contribute to the

goal of increasing the number of STEM degrees awarded.

E. If the program is to be included in a category within the Programs of Strategic Emphasis as described in the SUS Strategic Plan, please indicate the category and the justification for inclusion.

The Programs of Strategic Emphasis Categories:

1. Critical Workforce:
   - Education
   - Health
   - Gap Analysis
2. Economic Development:
   - Global Competitiveness
3. Science, Technology, Engineering, and Math (STEM)

Please see the Programs of Strategic Emphasis (PSE) methodology for additional explanations on program inclusion criteria at the resource page for new program proposal.

The ClP in Biological and Physical Sciences is identified as a STEM Area of Programmatic strategic emphasis. The Areas of Concentration that will be included in the Biological and Physical Sciences CIP are all STEM concentrations.

F. Identify any established or planned educational sites at which the program is expected to be offered and indicate whether it will be offered only at sites other than the main campus.

The program will continue to be offered on the Jupiter campus of FAU that houses the Wilkes Honors College.

INSTITUTIONAL AND STATE LEVEL ACCOUNTABILITY

II. Need and Demand

A. Need: Describe national, state, and/or local data that support the need for more people to be prepared in this program at this level. Reference national, state, and/or local plans or reports that support the need for this program and requests for the proposed program which have emanated from a perceived need by agencies or industries in your service area. Cite any specific need for research and service that the program would fulfill.

There is substantial employment growth in STEM fields and the US Bureau of Labor Statistics (BLS) projects employment growth rates in occupations associated with various degrees to be significant in STEM areas: https://www.bls.gov/spotlight/2017/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future/home.htm (accessed 3/26/2018)

Occupation	Projected growth rates 2014 to 2024
STEM related postsecondary teachers	13.4
Mathematical Science	28.2
Life Scientists	6.1
Physical Scientists	6.7
Life and Physical Science technicians	5.3

While enrolled as undergraduates, Honors College Biological and Physical Sciences students work in paid and unpaid internships at local and national research facilities supporting the research projects of principal investigators.

B. Demand: Describe data that support the assumption that students will enroll in the

proposed program. Include descriptions of surveys or other communications with prospective students.

There are currently over 200 students who are either declared in one of the concentrations that will be assigned the CIP Biological and Physical Sciences or who anticipate declaring one of these concentrations when entering their junior year. Enrollment in Honors College courses in the biological and physical sciences is larger than in non-STEM areas, and additional sections have been added to accommodate the strong demand, as students are increasingly attracted to the Honors College STEM concentrations in part because of the synergies the College has with the Scripps Research-Florida and Max Planck Florida Institute in Neuroscience as well as the FAU Brain Institute, Jupiter Life Science Initiative, and Harbor Branch Oceanographic Institute.

Since its first graduating class in 2003, 46% of Honors College graduates completed a concentration in a STEM concentration. While the average class size at the Honors College has ranged from 16-18 from Fall 2014 to Spring 2017, the average class size for freshman pre-med students has ranged from 25-44 over this same period (referring to class sizes in introductory Biology and Chemistry classes, Pre-Calculus, Calculus, Statistics, Organic Chemistry, and Physics).

In the most recent indication from applicants to the Honors College when they designated their planned area of study, of 1268 students admitted, 176 indicated 'Undecided'; of the 1092 who indicated a concentration of interest, 700 selected a STEM concentration. This is 64% of those indicating a preference, and 55% of all admitted students.

The Honors College plans on significant growth and we expect the relative % of students in STEM areas to continue to increase.

C. If substantially similar programs (generally at the four-digit CIP Code or 60 percent similar in core courses), either private or public exist in the state, identify the institution(s) and geographic location(s). Summarize the outcome(s) of communication with such programs with regard to the potential impact on their enrollment and opportunities for possible collaboration (instruction and research). In Appendix C, provide data that support the need for an additional program.

The Honors College has offered STEM concentrations since its opening in 1999 without a significant impact on the enrollment of other universities offering similar degrees such as New College. Assigning a new CIP to these existing concentrations will not impact these enrollments.

D. Use Table 1 in Appendix A (1-A for undergraduate and 1-B for graduate) to categorize projected student headcount (HC) and Full Time Equivalents (FTE) according to primary sources. Generally undergraduate FTE will be calculated as 30 credit hours per year and graduate FTE will be calculated as 24 credit hours per year. Describe the rationale underlying enrollment projections. If students within the institution are expected to change majors to enroll in the proposed program at its inception, describe the shifts from disciplines that will likely occur.

We do not expect students to change majors to enroll in the proposed program. The areas of concentration that will be grouped under the Biological and Physical Sciences CIP will continue to have steady enrollments and these are projected to increase due to state and national emphasis on STEM areas of study and employment.

E. Indicate what steps will be taken to achieve a diverse student body in this program. If the proposed program substantially duplicates a program at FAMU or FIU, provide, (in consultation with the affected university), an analysis of how the program might have an impact upon that university's ability to attract students of races different from that which is predominant on their campus in the subject program. <u>The university's Equal Opportunity Officer shall review this section of the proposal and then sign and date Appendix B to indicate that the analysis required by this subsection has been completed</u>.

The Honors College will continue to encourage applications from all qualified applicants as well as its policy of non-discrimination on the basis of race, color, religion, national origin, sex, age, disability, genetic information, or veteran status. The Honors College program does not duplicate a program at FAMU or FIU given its unique structure of offering an all-honors program in which all 120 credits are taken at the honors level and a senior thesis is required for graduation.

III. Budget

A. Use Table 2 in Appendix A to display projected costs and associated funding sources for Year 1 and Year 5 of program operation. Use Table 3 in Appendix A to show how existing Education & General funds will be shifted to support the new program in Year 1. In narrative form, summarize the contents of both tables, identifying the source of both current and new resources to be devoted to the proposed program. (Data for Year 1 and Year 5 reflect snapshots in time rather than cumulative costs.)

Current E&G and other funds that support the STEM concentrations will be reassigned to the new Biological and Physical Sciences CIP.

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B. Please explain whether the university intends to operate the program through continuing education, seek approval for market tuition rate, or establish a differentiated graduate-level tuition. Provide a rationale for doing so and a timeline for seeking Board of Governors' approval, if appropriate. Please include the expected rate of tuition that the university plans to charge for this program and use this amount when calculating cost entries in Table 2.

No new methods of determining tuition will be pursued, only the methods used for our current program.

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C. If other programs will be impacted by a reallocation of resources for the proposed program, identify the impacted programs and provide a justification for reallocating resources. Specifically address the potential negative impacts that implementation of the proposed program will have on related undergraduate programs (i.e., shift in faculty effort, reallocation of instructional resources, reduced enrollment rates, greater use of adjunct faculty and teaching assistants). Explain what steps will be taken to mitigate any such impacts. Also, discuss the potential positive impacts that the proposed program might have on related undergraduate programs (i.e., increased undergraduate research opportunities, improved quality of instruction associated with cutting-edge research, improved labs and library resources).

Other programs will not be impacted.

D. Describe other potential impacts on related programs or departments (e.g., increased need for general education or common prerequisite courses, or increased need for required or elective courses outside of the proposed major).

As this proposal is for a reassignment of existing funds for the same purposes under a different CIP there will be no impacts on related programs or departments.

E. Describe what steps have been taken to obtain information regarding resources (financial and in-kind) available outside the institution (businesses, industrial organizations, governmental entities, etc.). Describe the external resources that appear to be available to support the proposed program.

The Honors College has in the past sought to tap resources to support STEM education and will continue to do so.

IV. Projected Benefit of the Program to the University, Local Community, and State

Use information from Tables 1 and 2 in Appendix A, and the supporting narrative for "Need and Demand" to prepare a concise statement that describes the projected benefit to the university, local community, and the state if the program is implemented. The projected benefits can be both quantitative and qualitative in nature, but there needs to be a clear distinction made between the two in the narrative.

The Biological and Physical Sciences program began when the Honors College opened in 1999, with concentrations offered in Biology, Chemistry, Physics, and Mathematics. Since then we have expanded to include Marine Biology, Neuroscience, Biological Chemistry, and Environmental Science.
The Honors College has issued degrees to over 1000 students, 46% of whom concentrated in STEM fields. Nearly 70% of our graduates have continued on to graduate or professional schools.

The Honors College has benefitted the University by attracting strong undergraduates many of whom continue on in graduate programs at FAU. It has benefitted the local community in many ways, through providing students to participate in internships. Students in the laboratory sciences have gained extensive training that lets them contribute to cutting edge scientific research.

College graduates in Biological and Physical Sciences contribute to the local community and the state through their post baccalaureate accomplishments in graduate studies and careers, and provide a stream of talent for jobs in high-need areas. The US Bureau of Labor Statistics projects growth rates in STEM related jobs from 2014 to 2024 from 5 to 28% depending on the specific focus.

V. Access and Articulation – Bachelor's Degrees Only

A. If the total number of credit hours to earn a degree exceeds 120, provide a justification for an exception to the policy of a 120 maximum and submit a separate request to the Board of Governors for an exception along with notification of the program's approval. (See criteria in Board of Governors Regulation 6C-8.014)

All the STEM concentrations proposed for the new CIP program can be completed with 120 credits.

B. List program prerequisites and provide assurance that they are the same as the approved common prerequisites for other such degree programs within the SUS (see link to the Common Prerequisite Manual on the resource page for new program proposal). The courses in the Common Prerequisite Counseling Manual are intended to be those that are required of both native and transfer students prior to entrance to the major program, not simply lower-level courses that are required prior to graduation. The common prerequisites and substitute courses are mandatory for all institution programs listed, and must be approved by the Articulation Coordinating Committee (ACC). This requirement includes those programs designated as "limited access."

If the proposed prerequisites are not listed in the Manual, provide a rationale for a request for exception to the policy of common prerequisites. NOTE: Typically, all lower-division courses required for admission into the major will be considered prerequisites. The curriculum can require lower-division courses that are not prerequisites for admission into

the major, as long as those courses are built into the curriculum for the upper-level 60 credit hours. If there are already common prerequisites for other degree programs with the same proposed CIP, every effort must be made to utilize the previously approved prerequisites instead of recommending an additional "track" of prerequisites for that CIP. Additional tracks may not be approved by the ACC, thereby holding up the full approval of the degree program. Programs will not be entered into the State University System Inventory until any exceptions to the approved common prerequisites are approved by the ACC.

There are no specified common prerequisites for this major. All Florida College system students are encouraged to complete the Associate Degree.

C. If the university intends to seek formal Limited Access status for the proposed program, provide a rationale that includes an analysis of diversity issues with respect to such a designation. Explain how the university will ensure that Florida College System transfer students are not disadvantaged by the Limited Access status. NOTE: The policy and criteria for Limited Access are identified in Board of Governors Regulation 6C-8.013. Submit the Limited Access Program Request form along with this document.

Not applicable.

D. If the proposed program is an AS-to-BS capstone, ensure that it adheres to the guidelines approved by the Articulation Coordinating Committee for such programs, as set forth in Rule 6A-10.024 (see link to the Statewide Articulation Manual on the resource page for new program proposal). List the prerequisites, if any, including the specific AS degrees which may transfer into the program.

Not applicable.

INSTITUTIONAL READINESS

VI. Related Institutional Mission and Strength

A. Describe how the goals of the proposed program relate to the institutional mission statement as contained in the SUS Strategic Plan and the University Strategic Plan (see link to the SUS Strategic Plan on the resource page for new program proposal).

The University strategic plan includes the following goals which relate to the proposed program:
a) Recruit and retain nationally competitive students. The STEM CIP will help to continue to attract strong students in the sciences to the Honors College.
b) Synergy between prominent teams of researchers and scholars. The proposed STEM CIP draws on the synergies between the Honors College, the Scripps Research Institute and Max Planck Institute campuses in Jupiter, FL, and the Harbor branch Oceanographic Institute, as well as with the FAU Brain Institute and Jupiter Life Science Initiative. Students in the STEM concentrations may take courses from scientists at these other institutes, or conduct research for credit with their scientists.
c) Building out the capabilities of FAU's branch campuses. The Jupiter campus is the site of the Honors College and the STEM program that is proposed draws on resources found on the Jupiter campus and would be the beneficiary of a concerted effort to take advantage of these remarkable resources.

B. Describe how the proposed program specifically relates to existing institutional strengths, such as programs of emphasis, other academic programs, and/or institutes and centers.

The program proposal draws on resources from other programs and institutes sharing the Jupiter

campus, as discussed in VI A. and elsewhere. The Neuroscience concentration relates to one of the existing Pillars at FAU, Neuroscience, a key component of which is the FAU Brain Institute located on the Jupiter campus.

C. Provide a narrative of the planning process leading up to submission of this proposal. Include a chronology in table format of the activities, listing both university personnel directly involved and external individuals who participated in planning. Provide a timetable of events necessary for the implementation of the proposed program.

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Planning Process

Date	Participants	Planning Activity
3/23/2018	FAU Honors College Faculty Assembly	Reviews and approves a proposal to develop a new STEM C.I.P. for existing concentrations.

Events Leading to Implementation

Date	Implementation Activity
9/28/2018	Pre-proposal presented to CAVP Curriculum working group

VII. Program Quality Indicators - Reviews and Accreditation

Identify program reviews, accreditation visits, or internal reviews for any university degree programs related to the proposed program, especially any within the same academic unit. List all recommendations and summarize the institution's progress in implementing the recommendations.

The Honors College underwent two comprehensive Program reviews, in 2005 and 2012 that reviewed all aspects of the College including its STEM concentrations, and will be undergoing another program review in 2018-19.
The latter program review included a study of the tentative major of high school students who made contact with the Honors College since its inception to that point (1999-2011) and indicated that the top 7 most popular tentative majors were:

Premed	5628
Biology	2709
Business	2653
Psychology	2082
Engineering	2061
Undecided	2053
Law	1721

In the 2012 report it was noted that in the past we have had to tell prospective students interested in Business or Engineering that they cannot undertake their studies at the Honors College and must go to the Boca campus of FAU. Many of these high ability students ended up at another university.
We addresses this concern shortly after by adopting a Business concentration that has students take 5 to 6 courses in the College of Business and the rest of their coursework at the Honors College. Our pathway program with the College of Engineering allows students to receive an AA degree from the Honors College and seamlessly transfer to the College of Engineering, with their math and physics honors

coursework counting towards their engineering degree.
Most recently, we continue to address the goal of drawing in more STEM students. In 2018 we have proposed with the College of Engineering six 4+1 BA/BS to MS combined degree programs where students take prerequisites for Masters coursework while pursuing their undergraduate STEM concentration at the Honors College, and with an additional 30 credits receive a Masters degree in Data Analysis, Bio Engineering, Computer Engineering, Computer Science, Advanced Information Technology, or Electrical Engineering.
In the 2012 Report we noted that another significant development in expanding honors options at FAU overall is that the Honors College has opened sections of its courses to non-honors students and has made efforts to cross list several of its courses with cognate departments at the Boca campus, to increase the opportunity for non-Honors College students to take our courses. We continue to do so.

Part 2: Findings of the 2012 program review

A. Strengths

- The College fully meets its mission and serves as bench mark against which other existing and aspiring colleges can measure themselves with regard to the standards established by the National Collegiate Honors Council's Basic Characteristics of a Fully Developed Honors College.
- Strong student body
- Faculty enthusiasm, commitment, and degree of academic involvement with students
- Genuine sense of community and energy manifested by students, faculty, and staff
- Students did not view distance to the main campus and the full array of student life opportunities (such as Greek organizations and intercollegiate sports) as a disadvantage.
- Strong advisory board
- Students, and alumni, note a very high degree of satisfaction with regard to:
  - High academic rigor and faculty expectations
  - Interdisciplinary focus
  - Intellectually vibrant atmosphere
  - Opportunity to engage with faculty and faculty mentorship
  - Opportunity to prepare a thesis and get work published
  - Staff involvement in the life of the college and its students
  - Small size and close knit environment of the college community
  - Educational opportunities equivalent to those provided in the best colleges
  - Leadership opportunities

B. Weaknesses

- Physical distance between the Jupiter and Boca Raton campuses adds a layer of complexity in ensuring clear communications, understanding, and coordination between college and university administration.
- Enrollment numbers and coordination of recruitment efforts
- Preserving the liberal arts foundation of the college while capitalizing on scientific linkages and opportunities provided by the proximity and interactions with private partners – Max Planck, Scripps, and others.
- Reduction in faculty lines (10%) and resulting heavier workloads on remaining faculty.
- Perception by WHC faculty that their unique contributions to the College are not recognized in promotion and tenure.
- Continuing budget reductions and declining funding for student scholarships

C. Recommendations

- Initiatives that involve travel between campuses must be carefully planned to maximize time and effort.

- Utilize electronic meeting format when possible to reduce logistical problems.
- Identify and implement new strategies to enhance marketing and recruitment initiatives to targeted students, including non-resident students.
- Include WHC students in admissions/recruitment initiatives.
- Expand faculty contacts between the Jupiter and Boca Raton campuses.
- Recognize the unique contributions that Wilkes faculty make to the College and the University in the reward structure, especially in promotion and tenure.
- The College must continue to look for ways to maintain and enhance its level of financial support for students.

The Honors College has made progress in addressing the weaknesses and otherwise following the recommendations of the report:
A shuttle service has been instituted between Jupiter and Boca Raton to allow students more readily to take courses at either campus.
We have hired a new admissions director and staff and starting 2018 are using the Common App for admissions. The last several years have seen among the highest number of incoming students.
We have been a part of the universities new marketing efforts that have included revamping our website.
We have taken advantage of interaction with STEM-geared institutions on the Jupiter campus through join appointments with the Brain Institute and Jupiter Life Sciences Initiative; we also have added joint appointments with Harbor branch Oceanographic Institute. We continue to draw on researchers at Max Planck and Scripps to advise honors theses and supervise internships.
We have been able to add to our tenure-lines with new hires, including the joint-hires mentioned above.
Together with the Boca campus, we have consulted with Ruffalo Noel Levitz (RNL) for financial aid leveraging advice that will let us more efficiently use our scholarship dollars to attract students who are the most price-sensitive.

VIII. Curriculum

A. Describe the specific expected student learning outcomes associated with the proposed program. If a bachelor's degree program, include a web link to the Academic Learning Compact or include the document itself as an appendix.

Students in each of the concentrations in this new degree program are expected to achieve the following learning outcomes, which are assessed through the production of an honors thesis in the senior year, and through a submitted writing portfolio in their sophomore year. The sophomore portfolio allows faculty to assess whether students are making sufficient progress to be ready to do the honors thesis.
The learning outcomes are as follows:

CONTENT KNOWLEDGE (Declarative Knowledge, Research Skills, Technical Skills): Through the writing of an honors thesis, students will demonstrate a thorough knowledge of the fundamental concepts and methods in the student's area of study as well as the ability to draw on ideas and methods from related disciplines where appropriate.

COMMUNICATION (Written Communication): Through the writing of an honors thesis, and submission of a sophomore writing portfolio, students will demonstrate proper use of grammar, syntax, structure and style in the creation of a persuasive argument, and/or will meet criteria of competent communication appropriate to the concentration for which the thesis is written.

COMMUNICATION (Collaborative Skills): Through the process of conducting research and formulating the thesis in collaboration with the thesis advisors, students will demonstrate the ability to interact with faculty by communicating ideas in the process of researching and writing the thesis, responding to criticisms from faculty advisors, taking the initiative, and meeting deadlines.

CRITICAL THINKING (Analytical Skills; Creative Skills): Through the writing of an honors thesis, students will demonstrate the ability to raise appropriate questions and use in-depth analysis in order to make an original contribution to existing scholarship, and/or demonstrate the application of critical thinking skills to the completion of a creative project.

The academic learning compact is available online at http://www.fau.edu/honors/academics/alc/

B. Describe the admission standards and graduation requirements for the program.

The admissions standards for the Biological and Physical Sciences degree are the same as the admission standards for all Honors College students.
Students must be admitted to FAU. Requirements for admission into FAU are as follows:
Initial application review is based on the applicant's academic profile as represented by the high school grade point average, rigor of curriculum and/or performance on standardized tests (SAT or ACT). An SAT or ACT is required of all applicants for freshman admission.

1. Test scores: the following are the minimum required.

	Writing and Language	Math	Reading
rSAT	25	24	24
	English and Writing	Math	Reading
ACT	18	19	19

FAU will use the highest sub-scores from multiple test dates to create the ACT composite and the SAT total to satisfy admission requirements. The writing sections of the ACT or rSAT are not required.

2. High School Grade Point Average
The high school grade point average is calculated by the University using grades from academic courses. Dual Enrolled, Advanced, Honors, Gifted, Advanced Placement, International Baccalaureate and Advanced International Certificate in Education (AICE) courses are given additional weight in the University's calculation of the grade point average. A minimum high school grade point average of 2.6 is required of all applicants.

3. High School Units
Most successful applicants have taken a rigorous course load and have challenged themselves by taking courses with additional weight. Applicants are expected to have completed the following 18 (minimum) high school units:

English	4 Carnegie units
(3 with substantial writing)	
Mathematics	4 units (at the level of Algebra 1 or higher)
Natural Science	3 units (at least 2 with laboratory)
Social Science	3 units
Foreign Language	2 units (of the same foreign language)
Academic Electives	2 units

Appropriate academic and elective courses are listed in the Counseling for Future Education Handbook, published by the Florida Department of Education.

Students are not required to fill out an additional application in order to be evaluated for admission to the Wilkes Honors College; instead they may simply indicate their interest in being evaluated by the Wilkes Honors College within their online application to FAU. Or they may use the Common Application.
However, all applicants are encouraged to submit an academic paper and résumé to bolster their application. These supplemental documents are helpful in assessing a student's readiness for the rigorous academic environment of the Wilkes Honors College. The College seeks students who demonstrate an

active approach to learning and potential for outstanding academic growth. The Wilkes Honors College conducts a holistic review of each applicant directly following their admission to the University; for this reason it is highly recommended that all supplemental documents are submitted to the Wilkes Honors College in Jupiter at the same time that students submit their online applications to FAU. Each application is read by a member of the admissions staff or by members of the faculty admission committee. For additional information, visit the College's website.
The Wilkes Honors College is also home to the Wilkes Medical Scholars Program, a highly-selective 7- or 8-year BS/MD degree pathway. Students admitted to the program are conditionally admitted to FAU's College of Medicine. Students may replace the required thesis with the first year of medical school coursework. The Wilkes Medical Scholars Program is administrated by the College of Medicine, which also oversees the program admission process.

Requirements
1. Acceptance to FAU.
2. Indication of Harriet L. Wilkes Honors College preference on honors section of undergraduate application.
Recommended
1. A student résumé detailing extracurricular activities, community involvement, work experience, honors and awards.
2. A graded academic research paper (a typed, analytical paper of at least 500 words, preferably including instructor comments).

C. Describe the curricular framework for the proposed program, including number of credit hours and composition of required core courses, restricted electives, unrestricted electives, thesis requirements, and dissertation requirements. Identify the total numbers of semester credit hours for the degree.

All students in the Biological and Physical Sciences program must complete the Honors College Core and Graduation requirements, in addition to the specific requirements for the concentration.
All students must successfully complete 120 credits to graduate. Of these, at least 36 credits are in the Honors Core. The Honors Core is devoted to obtaining a broad-based education in the liberal arts and sciences through courses that emphasize critical thinking and communication skills. These courses introduce students to ways of thinking about science, politics, history, ethics, culture, visual images, the environment, and literature. Some of these courses serve as introductions to a specific discipline. Others approach problems and themes in ways that cross traditional disciplinary boundaries. In addition, students fulfill other graduation requirements: they write an honors thesis, take a study abroad or internship, and complete coursework in their concentration.

Transfer students with an A.A. degree need only satisfy the non-core graduation requirements. For all other transfer students, transfer credits can satisfy core requirements where the course number is identical to a core course number, or if approved by the petitions committee.

Core Requirements (36 credits):
Written Communication (1 course, 3 credits; in addition, students must complete 3 additional WAC-designated courses)
Writing Portfolio
Mathematics and Quantitative Reasoning (6-8 credits, two courses)
Natural Sciences (6-8 credits, two courses)
Social and Behavioral Analysis (6 credits, 2 courses)
Humanities (6 credits, 2 courses)
Global Citizenship (6-7 credits, 2 courses)
Additional Humanities or Social and Behavioral Analysis course (3 credits, 1 course)

Other Graduation Requirements (23 credits):
Humanities and Social Science Distribution Electives (6 credits, two courses, must be taken at the Honors College)
Foreign Language (8 credits, two courses)
Critical Inquiry Seminars (5 credits, three courses)
Internship or Study Abroad (3 credits)
Honors Forum (1 credit, one course)

Concentration with Honors Thesis (36-73 credits; students entering Fall 2005 or later must receive a "C" or higher in all courses counting towards concentration)
Academic Learning Compact (completion of thesis assessment form)
Additional University graduation requirements (HC students need not satisfy the 'Intellectual Foundations program' requirements as they satisfy the HC Core instead)

In addition, the following are requirements for each of the concentrations in the proposed degree. Note that these are the same requirements as currently exist and that in many cases at least 16 credits will already be satisfied through the Core.

Biology
8 credits of introductory Biology courses with labs
8 credits of General Chemistry with labs
Calculus I
Statistics
Physics with Calculus and lab (5 credits)
8 credits of Organic Chemistry with labs
Honors Biochemistry (3 credits)
Honors Genetics (4 credits)
18 credits of Biology electives
6 credits of Honors Thesis in Biology
Total Credits 67 (15 of which will be counted for the Core)

Biological Chemistry
4 credits of introductory Biology with lab
Honors Genetics (4 credits)
Honors Cell Biology (4 credits)
8 credits of General Chemistry with labs
8 credits of Organic Chemistry with labs
Biochemistry with lab (4 credits)
Statistics
Calculus 1 and 2
10 credits of Physics with calculus, and labs
12 credits of electives, half in biology, half in chemistry, with at least one chemistry lab
Honors thesis in Biology or Chemistry (6 credits)
Total credit: 71 credits (16 of which will be counted for the core)

Chemistry
8 credits of general chemistry with labs
8 credits of Organic Chemistry with labs
Intro to Physical Chemistry (3 credits)
Inorganic Chemistry with lab (4 credits)
Instrumental Methods of Analysis with lab (4 credits)
8 credits of Calculus (1 and 2)
10 credits of Physics with calculus, and labs

10-11 credits of Chemistry electives, one of which must include a lab.
Honors thesis in Chemistry (7 credits)
Total Credits: 62-3 (16 of which will be counted for the core)

Environmental Science
Honors Environment and Society (3 credits)
Ecology course (3 credits)
Environmental Philosophy (3 credits)
4 credits of Introductory Biology/lab (BSC 1011/L)
8 credits of General Chemistry with labs
4 credits of Organic Chemistry with lab
Environmental Economics
Microeconomics (prereq for Environmental Economics)
Statistics (3 credits)
Geographic Information Systems (3 credits)
12-16 credits of science electives from 2 or more disciplines
3 credits of Humanities/Social Science electives
6 credits of Honors Thesis in Environmental Science
Total credits: 58-62 (at least 17 credits will be counted for the Core)

Marine Biology
8 credits of introductory biology with labs
8 credits of general chemistry with labs
Calculus 1
Statistics
5 credits of Physics with calculus, with lab
Honors Genetics (4 credits)
16 credits of Marine Science courses, 3 of which include labs
15 credits of electives in biology
Honors thesis in marine biology (6 credits)
Total credits: 69

Mathematics
8 credits of Calculus
Three intermediate mathematics courses (9 credits)
3 upper division mathematics electives (9 credits)
One additional mathematics elective (3 credits)
Modern Algebra (3 credits)
Modern Analysis (3 credits)
Honors thesis in mathematics (6 credits)
Total credits: 41

Neuroscience
A. Neuroscience - Cellular Neuroscience track
Introductory psychology (3 credits)
4 credits of introductory Biology and lab
Human Morphology and Function with lab (4 credits)
8 credits of general chemistry with labs
Statistics
6 credits of Honors thesis in biology
8 credits of calculus

8 credits of organic chemistry with labs
10 credits of physics with calculus with labs
Honors Biochemistry (3 credits)
Honors Genetics (4 credits)
Honors Cell Biology (4 credits)
9 credits of Cellular Neuroscience Electives
Total credits: 74 (at least 18 credits will be counted toward the Core)

B. Neuroscience - Neuroscience, Cognition, and behaviour
Introductory psychology (3 credits)
4 credits of introductory Biology and lab
Human Morphology and Function with lab (4 credits)
8 credits of general chemistry with labs
Statistics
6 credits of Honors thesis in psychology
9 credits of upper level coursework in behavioral neuroscience and psychology
4 credits in Research methods (including lab)
1 Credit of advanced writing in Psychology
Drugs and Behavior (3 credits)
6 credits of Psychology electives
9-11 credits of Neuroscience electives
Total credits: 60-62 (at least 14 credits will be counted toward the Core)

Physics
8 credits of calculus
10 credits of introductory physics with calculus, with labs
15 credits of Physics electives
3 credits of Mathematics electives
6 credits of Honors thesis in physics
Total credits: 42 credits (at least 9 of which will be counted toward the Core)

D. Provide a sequenced course of study for all majors, concentrations, or areas of emphasis within the proposed program.

Biology

Year 1		
BSC 1010, 1010L	Honors Biological Principles with Lab	4
BSC 1011, 1011L	Honors Biodiversity with Lab	4
CHM 2045, 2045L	Honors General Chemistry I with Lab	4
CHM 2046, 2046L	Honors General Chemistry II with Lab	4
MAC 2311	Honors Calculus I	4
Year 2		
STA 2023	Honors Introductory Statistics	3
PHY 2048, 2048L	Honors General Physics I with Lab	5
CHM 2210, 2204L	Honors Organic Chemistry I with Lab	4
CHM 2211, 2205L	Honors Organic Chemistry II with Lab	4
Year 3		
BCH 3033	Honors Biochemistry	3
PCB 3063	Honors Genetics	4

9 credits of Biology Electives

Year 4
9 credits of Biology Electives
Honors Thesis

Biological Chemistry

Year 1

BSC 1010, 1010L	Honors Biological Principles with Lab	4
CHM 2045, 2045L	Honors General Chemistry I with Lab	4
CHM 2046, 2046L	Honors General Chemistry II with Lab	4
MAC 2311	Honors Calculus I	4
MAC 2312	Honors Calculus II	4

Year 2

CHM 2210, 2204L	Honors Organic Chemistry I with Lab	4
CHM 2211, 2205L	Honors Organic Chemistry II with Lab	4
STA 2023	Honors Introductory Statistics	3
BCH 3033, 3033L	Honors Biochemistry with Lab	4

Year 3

PCB 3063	Honors Genetics	4
PCB 4102	Honors Cell Biology	4
PHY 2048, 2048L	Honors General Physics I with Lab	5
PHY 2049, 2049L	Honors General Physics II with Lab	5

Year 4
2 Electives in Biology
2 Electives in Chemistry
Honors Thesis

Chemistry

Year 1

CHM 2045, 2045L	Honors General Chemistry I with Lab	4
CHM 2046, 2046L	Honors General Chemistry II with Lab	4
MAC 2311	Honors Calculus I	4
MAC 2312	Honors Calculus II	4

Year 2

CHM 2210, 2204L	Honors Organic Chemistry I with Lab	4
CHM 2211, 2205L	Honors Organic Chemistry II with Lab	4
PHY 2048, 2048L	Honors General Physics I with Lab	5
PHY 2049, 2049L	Honors General Physics II with Lab	5

Year 3

CHM 3400	Honors Intro to Physical Chemistry	3
CHM 3609, 3609L	Honors Inorganic Chemistry with Lab	4
CHM 4135, 4135L	Honors Instr Methods/Analysis	4

1 Chemistry Elective

Year 4
2 Chemistry electives, at least one with lab
Honors Thesis in Chemistry

Environmental Science

Year 1

BSC 1011, 1011L	Honors Biodiversity, with Lab	4
CHM 2045, 2045L	Honors General Chemistry I, with Lab	4
CHM 2046, 2046L	Honors General Chemistry II, with Lab	4
EVR 2017	Honors Environment and Society	3
STA 2023	Honors Introductory Statistics	3

Year 2

Ecology course

ECO 2023	Honors Microeconomic Principles	3
CHM 2210, 2210L	Honors Organic Chemistry I, with Lab	4

Year 3

ECP 4302	Honors Environmental Economics	3
PHI 3682	Honors Environmental Philosophy	3
GEO 3144C	Honors Geographic Info Systems	3

2 Science electives

1 Elective in Humanities or Social Science

Year 4

Honors Thesis in Environmental Science

2 Science Electives

Marine Biology

Year 1

BSC 1010, 1010L	Honors Biological Principles with Lab	4
BSC 1011, 1011L	Honors Biodiversity with Lab	4
CHM 2045, 2045L	Honors General Chemistry I with Lab	4
CHM 2046, 2046L	Honors General Chemistry II with Lab	4
MAC 2311	Honors Calculus I	4

Year 2

STA 2023	Honors Introductory Statistics	3
PHY 2048, 2048L	General Physics I with Lab	5
OCB 3012, 3012L	Honors Marine Biology and Ocean/L	4

Year 3

OBE 4008	Marine Science (HBOI)	4
OCB 4032, 4032L	Marine Biodiversity and Lab (HBOI)	4
OCB 4633, 4633L	Marine Ecology and Lab (HBOI)	4
PCB 3063	Honors Genetics	4

3 credits of Marine Biology electives

Year 4

Honors Thesis in Biology

12 credits of Marine Biology Electives

Mathematics

Year 1

MAC 2311	Honors Calculus I	4
MAC 2312	Honors Calculus II	4

Year 2

Three Intermediate Mathematics Courses from Group A 9

Year 3

MAS 4301	Honors Modern Algebra	3
MAA 4200	Honors Modern Analysis	3

1 upper division math elective

Year 4

Honors Thesis in Mathematics
2 Upper Division Math electives
1 Additional Math elective

Neuroscience

Neuroscience - Cellular Neuroscience

Year 1

PSY 1012	Honors General Psychology	3
BSC 1010/L	Honors Biological Principles/L	4
CHM 2045/L	Honors General Chemistry 1/L	4
CHM 2046/L	Honors General Chemistry 2/L	4
MAC 2311	Honors Calculus 1	4

Year 2

MAC 2312	Honors Calculus 2	4
Honors Organic Chemistry 1 and 2, with labs		8

Year 3

Honors Physics 1 and 2 with labs		10
BCH 3033	Honors Biochemistry	3
PCB 3063	Honors Genetics	4
PCB 3703/L	Honors Human Morphology 1/L	4

3 credits of cellular neuroscience electives

Year 4

PCB4102	Honors Cell Biology	4

Honors Thesis
6 credits of Cellular Neuroscience electives

Neuroscience - Neuroscience, Cognition, and behaviour

Year 1

PSY 1012	Honors General Psychology	3
BSC 1010/L	Honors Biological Principles/L	4
CHM 2045/L	Honors General Chemistry 1/L	4
CHM 2046/L	Honors General Chemistry 2/L	4

Year 2

PCB 3703/L	Honors Human Morphology I/L	4

STA2023	Honors Statistics	3

3 credits of Psychology electives

Year 3

PSY3213/L	Honors Research Methods in Psych/L	4
PSB3340	Honors Behavioral Neuroscience	3
CLP4144	Honors Psychopathology	3
EXP3604	Honors Cognition	3

6 credits of Psychology electives
3 credits of Neuroscience electives

Year 4

PSY4933	Honors Adv Writing in Psych	1
PSB 3441	Honors Drugs and Behavior	3

6-9 credits of neuroscience electives
Honors Thesis

Physics

Year 1

MAC 2311	Honors Calculus I	4
MAC 2312	Honors Calculus II	4

Year 2

PHY 2048, 2048L	Honors General Physics I with Lab	5
PHY 2049, 2049L	Honors General Physics II with Lab	5

Year 3
9 credits of Physics Electives
3 credits of Math electives
Year 4
6 credits of Physics electives
Honors Thesis in Physics

E. Provide a one- or two-sentence description of each required or elective course.

- Honors Introduction to Plant Biology: The primary objective of this course is to introduce students to plant anatomy, physiology, diversity, ecology, and evolution

- Honors Life Science: A survey of life on earth for non-majors. Evolution, anatomy, physiology, genetics, reproduction, and ecology are stressed. Lectures and discussions also demonstrate how biological knowledge is relevant to social, economic environmental and philosophical problems.

- Honors Life Science Lab: Laboratory investigation of biological knowledge relevant to social, economic, environmental and philosophical problems.

- Honors Biological Principles: A comprehensive treatment of biological principles, including the scientific method, evolution and natural selection, cell biology, energy transformation, reproduction, development, genetics and molecular biology.

- Honors Biological Principles Lab: An introduction to general laboratory procedures to demonstrate the basic principle of biology.

- Honors Biodiversity: An introduction and survey of organismal diversity, including fungi, protists, plants and animals. Phylogenetic relationships, evolutionary mechanisms, and ecological processes are emphasized. Origins of life and human evolution.

- Honors Biodiversity Lab: A survey of the diversity of eukaryotic organisms.

- Honors Freshman Seminar in Biology: Special topics course for freshmen in which the approach is generally philosophical and/or historical, focusing on basic questions and issues of enduring importance related to the topic. The course emphasizes improvement of students' critical thinking and writing skills.

- Honors Essentials of Human Anatomy and Physiology: A one-semester course that presents, in a comprehensive manner, the structure and function of the human body. Topics include skeletal, muscular, nervous, cardiovascular, lymphatic, respiratory, digestive, reproductive, and urinary systems. This course is designed for students interested in the health sciences.

- Honors Essentials of Human Anatomy and Physiology Lab: A one-semester lab that presents, in a comprehensive manner, the structure and function of the human body. Topics include skeletal, muscular, nervous, cardiovascular, lymphatic, respiratory, digestive, reproductive, and urinary systems. This course is designed for students interested in the health sciences.

- Honors Anatomy and Physiology 2: A study of the structure and functions of the following systems in the human body: cardiovascular, lymphatic, respiratory, digestive, urinary and reproductive.

- Honors Fluorescence Microscopy Lab: An introduction to the major techniques of fluorescent staining and analysis using the fluorescence microscope. Students will learn to stain fixed and living cells and observe structures within the cell as well as to devise a research scheme to determine the identity of an unknown cell line.

- Honors Biotechnology 1 Lab: This course covers basic techniques in molecular genetics, including those for the isolation and characterization of bacteria, plasmids, and transposons.

- Honors Directed Independent Research in Biology: Students work with research mentors to conduct research and inquiry in Biology. Requirements for the course and the criteria for evaluation are agreed upon by the mentor and student. A directed independent research form is completed for each DIR student.

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- Honors Special Topics in Biology: Special topics of interest to biological sciences students.

- RI: Honors Thesis in Biology: Students complete an honors thesis based upon original research. This course is research intensive (RI).

- Honors General Microbiology: This course surveys the fundamentals of microbiology, including classification of microbial types, microbe-host interactions, microbes in disease, and applied and environmental microbiology.

- Honors General Microbiology Lab: The application of fundamental techniques in the isolation, cultivation, and identification of microorganisms.

- Honors Survey of Marine Biology: A survey of life in the sea and the relationships between marine organisms and their environment.

- Honors Marine Biology and Oceanography: Discussions of major concepts of modern marine biology with emphasis on life in subtropical and tropical seas.

- Honors Marine Biology and Oceanography Lab: Laboratories, including field studies and field trips of the varied marine habitats of southern Florida.

- Honors Introduction to Oceanography (OCE 2001) 3 credits
- (See Ocean Engineering courses, College of Engineering and Computer Science section)

- Honors Genetics: An in-depth analysis of the mechanisms that operate in transmission genetics and an introduction to eucaryotic molecular genetics.

- Honors Tropical Rainforest: An introduction to ecology, evolution, biodiversity, and environmental science in the tropical rainforest. This course will prepare students for fieldwork in the tropics.

- Honors Tropical Rainforest Field Lab: An immersion into the biology of a New World tropical rainforest and an introduction to field research in ecology, evolution, biodiversity, and environmental science.

- Honors Issues in Human Ecology: A discussion and analysis of the major environmental issues confronting modern humans, with emphasis on southern Florida.

- Honors Animal Behavior: A one-semester, advanced-level course that surveys modern approaches to the study of animal behavior, emphasizing the integration of ecological, evolutionary, ethological, and physiological approaches.

- Honors Human Morphology and Function 1: Normal structure and physiology of the human skeletal, muscle and nervous systems. Lecture format. Designed for the pre-professional student planning admission to a graduate clinical program.

- Honors Human Morphology and Function 1 Lab: The normal structure and physiology of the human skeletal, muscle and nervous systems are discussed in a laboratory format. Designed for the pre-professional student planning admission into a clinical graduate program.

- Honors Human Morphology and Function 2: Normal structure and physiology of the human skeletal, muscle and nervous systems. Lecture format. Designed for the pre-professional student planning admission to a graduate clinical program.

- Honors Human Morphology and Function 2 Lab: The normal structure and physiology of the human cardiovascular, renal, respiratory, gastrointestinal, endocrine and reproductive systems are discussed in a laboratory format. Designed for the pre-professional student planning admission into a clinical graduate program.

- Honors Molecular Cell Biology: An in-depth analysis of the organization and function of cells.

- Honors Principles of Ecology: A functional approach to the basic principles and concepts of modern ecology. Lecture and field trips.

- Honors Cell Biology: An examination of the structure and function of major classes of molecules found within a call. Examining the cytoskeleton, endomembrane system and cell signaling pathways permits students to learn how these diverse systems interact to form a functional cell.

- Honors Biology of Cancer: Developmental biology is the branch of biology that examines the development of an organism from a single cell to an adult organism. Emphasis on the molecular pathways that drive development and the model organisms used to research these pathways.

- Honors Behavioral Ecology: Behavioral adaptations of organisms to their ecological settings and their significance as evolutionary responses to processes guided by natural selection.

- Honors Evolution: An in-depth examination of the mechanisms that operate in the evolutionary process.

- Honors Vertebrate Zoology: A study of the structure, relationships and natural history of the vertebrates with special emphasis on the ecology of subtropical and neotropical species.

- Honors Vertebrate Zoology Lab: A laboratory examination of selected topics in the biology of vertebrates, including formal surveys of the taxa and occasional weekend field trips.

- Honors Coral Reef Ecology: Explores both the physical and biological aspects of coral reef ecosystems, including associated seagrass and mangrove habitats. Lectures and field trips are used to cover the ecologically relevant aspects of coral reef systems.

- Honors Principles of Human Neuroanatomy: This course focuses on the basic structural components and interconnections of the human brain, spinal cord and peripheral nervous system at the level of functional circuits. A discussion of diseases and injuries that disrupt the morphological integrity of the human nervous system is included.

- Honors Biochemistry: An introduction to biochemistry taught for honors students. Course examines the structure of proteins and enzymes, nucleic acids, carbohydrates, and lipids.

- Honors Biochemistry Lab: Focuses on standard biochemical laboratory techniques of isolation of proteins, purification, and separation of proteins.

- Honors Contemporary Chemical Issues: Basic chemical principles behind contemporary chemical issues facing the local community, state, nation and the world. Topics will include water management, global warming, depletion of the ozone layer and its consequences. This is a General Education course.

- Honors Introductory Chemistry: Introductory readiness course in general chemistry for students with weaker but satisfactory backgrounds in high school chemistry and algebra.

- Honors General Chemistry 1: An introduction to chemical principles, including atomic structure, chemical bonding, kinetics, thermodynamics and properties of the elements. A prerequisite to all other chemistry courses in science programs. This is a General Education course.

- Honors General Chemistry 1 Lab: An introduction to experimental techniques in chemistry designed to demonstrate basic chemical principles. This is a General Education course.

- Honors General Chemistry 2: An introduction to chemical principles including atomic structure, chemical bonding, kinetics, thermodynamics and properties of the elements. A prerequisite to all other chemistry courses in science programs.

- Honors General Chemistry 2 Lab: An introduction to experimental techniques in chemistry designed to demonstrate basic chemical principles. Qualitative analysis of selected anions and cations.

- Honors Organic Chemistry: An introduction to organic chemistry lab. Course covers basic organic chemistry techniques such as thin layer chromatography, extraction, recrystallization, melting point and distillation as well as an introduction to molecular modeling. Concepts covered in CHM 2210 will be further covered in this laboratory.

- Honors Organic Chemistry 2 Lab: This course covers application of basic organic chemistry techniques learned in CHM 2204L, chemistry of functional groups, and additional topics such as spectroscopy.

- Honors Organic Chemistry 1: A study of the compounds of carbon and their physical properties, structures, chemical behavior and reaction mechanisms.

- Honors Organic Chemistry 2: Continuation of Organic Chemistry 1

- Honors Environmental Chemistry: The chemistry of the environment. Includes processes in the atmosphere, hydrosphere, and geosphere, and their interactions. Selected emphasis on the physical processes that distribute materials through the environment. Topics include ozone, smog, greenhouse gases, global warming, energy, pE/pH, gas laws, redox cycling of elements, organic matter, chemistry of drinking and waste waters, biocides, and green chemistry.

- Honors Environmental Chemistry Lab: Principles of analysis; gravimetric, volumetric and instrumental methods.

- Honors Quantitative Analysis Lab: Experiments in volumetric, gravimetric, and instrumental methods of analysis.

- Honors Chemistry of Natural Products: Study of natural products whose molecules are synthesized by living organisms and that consequently are of interest as possible pharmaceuticals themselves or lead to compounds for the development of new pharmaceuticals. Uses and abuses of natural products and their derivatives will be explored.

- Honors Introduction to Physical Chemistry: Principles of physical chemistry with special attention to applications in earth science and oceanography. For students in earth sciences, oceanography, and engineering. This course is also intended for B.A. candidates in Chemistry.

- Honors Inorganic Chemistry: A study of periodicity in the chemistry of the elements, descriptive inorganic chemistry, synthesis of inorganic compounds. For B.A. candidates in Chemistry.

- Honors Inorganic Chemistry Lab: Experiments in inorganic chemistry.

- Honors Instrumental Methods of Analysis: Introduction to the principles of instrumental chemical analysis. Topics covered will include a variety of atomic and molecular spectroscopic methods, electroanalytical methods, and chemical separation methods.

- Honors Instrumental Methods of Analysis Lab: Introduction of several instrumental methods for chemical analysis.

- Honors Spectroscopy: Course explores the branch of physical chemistry that is concerned with the properties of atoms and molecules and examines the nature of the chemical bond.

- Honors Directed Independent Study in Chemistry: Students work with research mentors to conduct research and inquiry in Chemistry. Requirements for the course and the criteria for evaluation are agreed upon by the mentor and student.

- Honors Research in Chemistry: Students participate in an original research project.

- Honors Research and Writing in Chemistry: Introduces students to scientific methodologies and communication. Students learn how to collect data and keep laboratory notebooks, prepare a poster and give a presentation. Students conduct research, keep comprehensive records, write and revise monthly reports and submit a final report.

- Honors Directed Independent Research in Chemistry: Students work with research mentors to conduct research and inquiry in Chemistry. Requirements for the course and the criteria for evaluation are agreed upon by the mentor and student. A directed independent research form is completed for each DIR student.

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- Honors Special Topics in Chemistry: Special topics course in chemistry.

- RI: Honors Thesis in Chemistry: A comprehensive and balanced review of medicinal chemistry beginning with fundamental principles, pharmacokinetics, and drug metabolism and progressing to principal methods used in drug design.

- Honors Scientific Writing 1: This class covers the essentials of scientific writing in theory and in practice.

- Honors Sciences and Mathematics Study Abroad: Credit for enrollment in approved study abroad programs.

- Honors Interdisciplinary Science and Mathematics Seminar: An interdisciplinary seminar designed primarily for students concentrating in science and math, this course is open to both juniors and seniors. It provides preparation for developing a senior thesis proposal. Students should enroll for this course in the year prior to the academic year that they will begin their thesis.

- Honors Special Topics in Science and Mathematics: Juniors and seniors in science and mathematics will present seminars based upon literature and laboratory research.

- Honors Scientific Writing 2: This class covers advanced issues in scientific writing in theory and practice.

- Honors Interdisciplinary Science and Mathematics Seminar: Juniors and seniors in science and mathematics present seminars based upon literature and laboratory research.

- Honors Internship in Science and Mathematics: Provides students with an opportunity to gain first-hand experience in science and mathematics beyond the university, for example, in a government or corporate setting. It contributes to the mission of the Honors College by encouraging students to explore interdisciplinary connections in their work and to discuss these in a detailed essay.

- Honors Sciences and Mathematics Study Abroad: Credit for enrollment in approved study abroad programs.

- Honors Foundations of Programming: An introduction to the fundamentals of modern computer programming with emphasis on visual design, problem solving, coding style, and structured programming. Topics include decision and repetition statements, data types and arrays, procedures, event-driven programming, and testing and debugging. Optional topics: graphics, Web page programming, objects and classes, and files and databases.

- Honors Introduction to Programming in C: Introduction to programming in C. Variable types, arithmetic statements, input/output statements, loops, conditional statements, functions, arrays and structures. Programming projects in C.

- Honors Topics in Computer Programming: Special current topics in introductory-level computer programming, such as (but not restricted to) Web programming, script programming, database programming, modeling, and specialized software tools. Since the content will vary, the course may be repeated for credit.

- Honors Advanced Programming: The second-semester course advances students' basic programming skills with emphasis on user interface design, problem solving, and coding style in an object-oriented language, such as C++ or Java. Topics include abstract data types and structures, recursion, special algorithms, objects, classes and events, and testing and debugging. Optional topics: graphics, web page programming, and databases.

- Honors Self-Paced C++ Programming: This is a self-paced course designed to teach the fundamentals of the C++ language and object-oriented programming to students who already have some programming experience.

- Honors Self-Paced Java Programming: This is a self-paced course designed to teach the fundamentals of the Java language and object-oriented programming to students who already have some programming experience. The course will cover both stand-alone applications and Web-based applets. Grading: Pass/Fail

- Honors Topics in Computer Science: Study relating to specialized topics.

- Honors Modern Analysis: Basic properties of real numbers. Functions. Limits and properties of continuous functions. Differential calculus.

- Honors Modern Analysis 2: Rigorous development of the key concepts and theorems of integral calculus. Topics include the Riemann integral and its properties, a restatement of the key concepts of the real analysis in the context of metric spaces and function spaces and an introduction to measure theory and the Lebesgue integral.

- Honors Introductory Complex Analysis: An introduction to complex analysis, analytic functions, Taylor series, Cauchy's theorem. Calculus of residues. Recommended for engineering and science majors.

- Honors Precalculus Algebra and Trigonometry: Polynomial, rational, and other algebraic functions; trigonometric, inverse trigonometric, exponential and logarithmic functions; piecewise-defined functions. Properties and graphs of functions. Polynomial and rational inequalities. Trigonometric identities. Conditional trigonometric equations. Conic sections. Solutions of triangles. Vector algebra. Parametric equations. Polar coordinates. Matrices and determinants. Sequences and series. Mathematical induction. Binomial theorem. Applications.

- Honors Calculus with Analytic Geometry 1: Continuity, differentiability, differential approximation, optimization and curve sketching of functions and inverse functions of a single variable, including treatment of trigonometric functions. Mean value theorem and L'Hopital's Rule. Introduction to integration. This is a General Education course.

- Honors Calculus with Analytic Geometry 2: Continuation of MAC 2311. Logarithmic, Exponential, hyperbolic, and inverse trigonometric functions, techniques of integration, partial fractions, area, trapezoid and Simpson's rules, volume, work; analytic geometry; Taylor approximations; sequences and series; polar representation of complex numbers. This is a General Education course.

- Honors Calculus with Analytic Geometry 3: Vector space, inner product, length, cross product, curves in space; functions of several variables: differentiability, gradient, tangent planes, differential approximation, surfaces, optimization with constraints, multiple integrals, theorems of Green, Stokes and Gauss.

- Honors Discrete Mathematics: A proof-oriented approach to and applications of propositional logic, sets, functions, relations, combinatorics, graphs and trees.

- Honors Graph Theory: A first course in theory and applications of graphs including basic properties; coloration; algebraic and geometric aspects; enumeration; algorithms; network flows.

- Honors Differential Equations: An introduction to ordinary differential equations stressing basic techniques and applications.

- Honors Matrix Theory: Vectors and vector spaces. Linear transformation and matrices. Rank and determinants. Systems of linear equations. Diagonalization. Characteristic values.

- Honors Introduction to Number Theory: The basic theory of divisibility and congruences. The theorems of Fermat, Euler and Wilson. Quadratic residues.

- Honors Differential Equations 2 : Further techniques in ordinary differential equations and an introduction to partial differential equations.

- Honors Modern Algebra: Elementary number theory. Groups, rings and ideals, polynomials, and fields.

- Honors Modern Algebra 2: A continuation of Honors Modern Algebra, MAS 4301. Covers basic structures of abstract algebra, such as groups, rings and ideals, fields, polynomials and factorization and the classical Galois theory of fields and equations.

- Honors Topics in Mathematics: Topics of interest to lower-division students.

- Honors Freshman Seminar in Mathematics: Special topics course for freshmen in which the approach is generally philosophical and/or historical, focusing on basic questions and issues of enduring importance to the topic.

- Honors Directed Independent Research in Mathematics: Students work closely with research mentors to conduct research and inquiry in Mathematics. Requirements for the course and the criteria for evaluation are agreed upon by the research mentor and the student. A directed independent research form is completed for each DIR student.

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- Honors Directed Independent Study in Mathematics: Study of topics relating to the special needs and interests of individual students.

- Honors Special Topics in Mathematics: Lectures on specialized topics.

- RI: Honors Thesis in Mathematics: Students complete an honors thesis in mathematics. This is a research-intensive (RI) course.

- Honors Mathematics for Liberal Arts: Systematic counting, probability, statistics, history of mathematics, geometry, sets, logic. This is a General Education course.

- Honors General Topology: Introduces the fundamentals of point-set topology and topological spaces, essential material for any student who wishes to study topology or analysis at the graduate level.

- Honors Introductory Statistics: An introductory course covering descriptive statistics, probability, binomial and normal distributions, sampling distributions and hypothesis tests, and sampling procedures. Laboratory required.

- Honors Intermediate Statistics: Large-sample estimation and tests of hypotheses, t-tests, chi-square tests, one-way ANOVA, linear and multiple regression, correlation, and experimental designs. Laboratory includes use of statistical software to organize, describe, present, and analyze data.

- Honors Introduction to Astronomy: The development and present state of our understanding of the universe.

- Honors Introduction to Astronomy Lab: Measurement and observational techniques to accompany AST 2002. Hands-on exposure to astronomy concepts. Some day and night observing.

- Honors Topics in Physics: A seminar in the University Honors Program on topics in physics.

- Honors Conceptual Physics: Introduction to classical and modern physics for non-science majors. Significant emphasis is placed on scientific reasoning and the history and evolution of physics.

- Honors General Physics 1: This is the first course in a two-semester sequence on calculus-based introductory physics. Covers mechanics, linear and rotational motion, fluids, waves, and heat. There is an emphasis on mathematical analysis of physical problems.

- Honors General Physics 1 Lab: Experiments in mechanics, fluids, heat, wave motion and sound comprise this course. Several classes cover developing theoretical problem solving techniques.

- Honors General Physics 2: Intended for science majors, the course surveys fundamental laws and phenomena of electricity, magnetism, and optics. Emphasis on mathematical analysis of physical problems.

- Honors General Physics 2 Lab: Experiments in electricity and magnetism, optics, and modern physics comprise this course. Several classes cover developing theoretical problem solving techniques.

- Honors Introduction to Modern Physics: Experimental foundations of quantum physics; optical and X-ray spectra, interaction and duality of particles and radiation; vector model of the atom, exclusion principle, periodic table of elements; molecular structure, electrical properties of metals and semiconductors; elementary nuclear and particle physics.

- Honors Intermediate Mechanics: Vector algebra; particle dynamics, Newton's law of gravitation, Kepler's laws; systems of particles, conservation laws; introduction to generalized mechanics, Lagrangian mechanics; tensor algebra; rigid body motion.

- Honors Thermal Physics: Treatment of classical thermodynamics, including fundamental postulates, entropy, equations of state, thermodynamic equilibrium and potentials, Maxwell relations, and phase transitions.

- Honors Electricity and Magnetism: Introduction to classical electrodynamics, including vector calculus, electrostatics, magnetostatics, Maxwell's equations, and electromagnetic radiation.

- Honors Statistical Physics: Review of classical thermodynamics; ideal gas kinetic theory; Maxwell-Boltzmann distribution; the partition function; Bose-Einstein and Fermi-Dirac distributions; ensembles, fluctuations and irreversible processes.

- Honors Introductory Quantum Physics: An introduction to quantum physics with emphasis on one-dimensional problems, wave-particle duality, the Schrodinger equation, measurement, and the formalism and interpretation of quantum theory.

- Honors Directed Independent Study in Physics: Study of topics in physics relating to the special needs and interests of individual students.

- Honors Directed Independent Research in Physics: Students work with research mentors to conduct research and inquiry in Physics. Requirements for the course and the criteria for evaluation are agreed upon by the mentor and student. A directed independent research form is completed for each DIR student.

- Honors Directed Independent Research in Physics: Students work with research mentors to conduct research and inquiry in Physics. Requirements for the course and the criteria for evaluation are agreed upon by the mentor and student. A directed independent research form is completed for each DIR student. Grading: S/U

- Honors Special Topics in Physics: Lectures and directed reading on topics of contemporary interest in physics.

- RI: Honors Thesis in Physics: Independent research leading to the completion of an honors thesis in physics. This course is research intensive (RI).

- Honors Introduction to Relativity: An introduction to special and general relativity.

- Honors Physical Science: A self-contained course for non-science majors that emphasizes analytical thinking and problem solving. It covers essential concepts in astronomy, physics, chemistry, geology and meteorology.

- Honors Energy and the Environment: A laboratory-based course introducing the physical principles underlying energy production and use and its effect on the environment.

F. For degree programs in the science and technology disciplines, discuss how industry-driven competencies were identified and incorporated into the curriculum and indicate whether any industry advisory council exists to provide input for curriculum development and student assessment.

Disciplines follow the guidelines of their respective national societies such as the American Chemical Society, the American Society for Biochemistry and Molecular Biology, and the American Mathematics Society. These societies ensure that their guidelines satisfy the requirements of industries. The Business Development Board of Palm Beach County identified the life sciences as a cluster bringing together education and research and care/cure organizations. The Honors College Social Entrepreneurship program takes advantage of industry including entities in FAU's Tech Runway to identify industry competencies and bring incorporate them into the classroom.

G. For all programs, list the specialized accreditation agencies and learned societies that would be concerned with the proposed program. Will the university seek accreditation for the program if it is available? If not, why? Provide a brief timeline for seeking accreditation, if appropriate.

We do not plan to seek separate accreditation of the Biological and Physical Sciences degree program.

H. For doctoral programs, list the accreditation agencies and learned societies that would be concerned with corresponding bachelor's or master's programs associated with the proposed program. Are the programs accredited? If not, why?

N/A

I. Briefly describe the anticipated delivery system for the proposed program (e.g., traditional delivery on main campus; traditional delivery at branch campuses or centers; or nontraditional delivery such as distance or distributed learning, self-paced instruction, or external degree programs). If the proposed delivery system will require specialized services or greater than normal financial support, include projected costs in Table 2 in Appendix A. Provide a narrative describing the feasibility of delivering the proposed program through collaboration with other universities, both public and private. Cite specific queries made of other institutions with respect to shared courses, distance/distributed learning technologies, and joint-use facilities for research or

internships.

The program will be delivered in the traditional manner, as our existing programs are delivered.

IX. Faculty Participation

A. Use Table 4 in Appendix A to identify existing and anticipated full-time (not visiting or adjunct) faculty who will participate in the proposed program through Year 5. Include (a) faculty code associated with the source of funding for the position; (b) name; (c) highest degree held; (d) academic discipline or specialization; (e) contract status (tenure, tenure-earning, or multi-year annual [MYA]); (f) contract length in months; and (g) percent of annual effort that will be directed toward the proposed program (instruction, advising, supervising internships and practica, and supervising thesis or dissertation hours).

See Appendix A Table 4.

B. Use Table 2 in Appendix A to display the costs and associated funding resources for existing and anticipated full-time faculty (as identified in Table 4 in Appendix A). Costs for visiting and adjunct faculty should be included in the category of Other Personnel Services (OPS). Provide a narrative summarizing projected costs and funding sources.

Costs will be reallocated, and will be met using existing sources. Additional funds for 6 adjunct courses in future to cover anticipated higher enrollment will be covered through increased tuition revenue.

C. Provide in the appendices the abbreviated curriculum vitae (CV) for each existing faculty member (do not include information for visiting or adjunct faculty).

D. Provide evidence that the academic unit(s) associated with this new degree have been productive in teaching, research, and service. Such evidence may include trends over time for average course load, FTE productivity, student HC in major or service courses, degrees granted, external funding attracted, as well as qualitative indicators of excellence.

Department	Annual FTE* 15-16	Annual FTE 16-17	Annual FTE 17-18
Biology	2031	2103	2323
Chemistry	1775	1840	1796
Envt Studies	267	198	225
Math	2092	1075	922
Physics	374	531	606
Psychology	740	800	869
Div of Math/Sci	260	261	231
Sub-total	7539	6808	6972
College Total	12257	11653	12028
% of Total	61%	58%	58%

*FTE refers to State fundable SCH

Teaching/Sponsoring Activity	Number of students enrolled for 2017-18 in the Biological and Physical Sciences areas of concentration in:
Directed Independent Study or Research	33
Thesis*	138

Internship	112

*students typically enroll twice, in Fall and in Spring (or Summer).

In the most recent annual tally of faculty productivity in research and service, conducted in December 2017 for the prior academic year, the faculty present in the proposed program published 1 book, 18 peer-reviewed articles, had 9 other publications, 19 presentations at professional conferences, served on 58 college or university committees and 6 community or professional committees, and 10 served as referees for professional publications.

Current grants:

Faculty	**Role**	**Funding Source**	**Type of Funding**	**Amount for 18-19FY**
Lucia Carvelli	PI	NIH (NIDA)	R01	$336,375
Erik Duboue	PI	NIH (NIMH)	R15	$445,794
Gregory Macleod	PI	NIH (NINDS)	R01	$394,704
Jon Moore	Co-PI/Task Co-Lead	Gulf of Mexico Research Initiative (GoMRI)	Year 5-7 Consortia Grants (RFP-IV)	$23,172
Johanna Kowalko	PI	NSF	Div. Evolutionary Biology	$200,000
			Total NIH Funding	**$1,176,873**
			%NIH of FAU at WHC	10%
			TOTAL External Funding for 18-19FY	**$1,400,045**

X. Non-Faculty Resources

A. **Describe library resources currently available to implement and/or sustain the proposed program through Year 5. Provide the total number of volumes and serials available in this discipline and related fields. List major journals that are available to the university's students. Include a signed statement from the Library Director that this subsection and subsection B have been reviewed and approved**.

[Signed statement from Library Director is included in Appendix B]

- Volume count in the selected subject areas: **40,875**
- Electronic Journal Titles (subscriptions and archives) in the selected subject areas: **4,953**
- Print Journal Titles (subscriptions) in the selected subject areas: **7**
- Databases in the selected subject areas: **52**

Major journals available to the university's students:

The Astronomy and Astrophysics Review
Autonomic Neuroscience
Behavioral neuroscience
Biochemical Genetics
Brain and Neuroscience Advances
Cell Biochemistry and Function
Cell research
Computational Mathematics and Modeling

European journal of physics
The Journal of Chemical Physics
Journal of experimental marine biology and ecology
The Journal of Membrane Biology
Journal of Mathematical Cryptology
Journal of medicinal chemistry
Marine Biology
Mathematics and Mechanics of Solids
Mathematics of Computation
Nature
Nature Cell Biology
Nature Chemistry
Nature Neuroscience
Nature Protocols
The Neuroscientist: Reviews at the Interface of Basic and Clinical Neurosciences
Physical Review A: Atomic, Molecular, and Optical Physics
The Quarterly Journal of Experimental Psychology
Quarterly Journal of Mathematics
Technical physics
Trends in neurosciences
Visual Neuroscience

B. Describe additional library resources that are needed to implement and/or sustain the program through Year 5. Include projected costs of additional library resources in Table 2 in Appendix A. Please include the signature of the Library Director in Appendix B.

N/A.

C. Describe classroom, teaching laboratory, research laboratory, office, and other types of space that are necessary and currently available to implement the proposed program through Year 5.

The physics program's new active learning **Physics lab** has the potential for a diverse set of laboratory applications and classroom capabilities for undergraduate teaching and learning. The new layout is less constricted and much more modular than conventional lab arrangements. Each table can be moved and rotated, thus optimizing the layout of each lab based on the activities to be run that day. This flexibility can be used to minimize congestion, allow students to interact with an experiment from all sides, and allow the instructor to better track students' progress. Each table is equipped with a large touchscreen that can be used as a workstation to collect, record, visualize, and annotate data. The instructor can utilize his/her onscreen touch system to draw on a whiteboard, use a browser, or send files from a USB or the cloud to any, or all, of the five screens in the room. Students at any of the five mobile tables/workstations can receive materials sent by the instructor as well as collaborate with one another and their instructor by sharing content directly from laptops, tablets, and phones to the screens. This media system is complemented by ample white board space (a full wall) to let the instructor and lab TAs to work together and convey different bits of information to different groups of students at the same time without getting in each other's way. The interactive classroom opens new doors for the potential introduction of some of the concepts in modern physics, many of which are difficult to reproduce in a traditional lab.

The **biology teaching laboratories** are used for both lower and upper level biology courses such as Biological Principles, Biodiversity, General Microbiology, Field Ecology, Human Morphology and Function, Biotechnology, Marine Biology, Zoology, Biology of Fishes, etc. There are 2 teaching lab spaces

(each holding 24 capacity) located in the main HC building, with an adjoining equipment room.

The **Chemistry teaching laboratories** at the Wilkes Honors College are used for the General Chemistry 1&2 courses, Organic Chemistry and Biochemistry courses, and advanced chemistry courses such as Instrumental Methods, Quantitative Analysis, Inorganic Chemistry and Physical Chemistry, to provide excellent teaching and research facilities. There are 2 teaching labs, with capacity of 20 and 16, located both in the main HC building, with an adjoining equipment room.

Research laboratories: The Kowolko, Duboue and Macleod laboratories are located on the second floor of the Research Expansion building (RE, MC19), and are part of the Jupiter Life Science Initiative. Laboratory space and equipment is shared among lab, as well as with the Keene and Godenschwege laborites. Each faculty member occupies an office (average size 169 sq. ft.), and there are additional offices for students and postdoctoral fellows (approximately 120 sq. ft. each). The laboratory space, which is shared among all groups, is located adjacent to the offices, and occupies in total 3926 sq. ft. In addition to laboratory and office space, there are three fish facilities: 2 rooms are devoted to cavefish (sp. *Astyanax mexicanus*; 248 sq. ft. and 214 sq. ft.) and 1 is devoted to zebrafish (221 sq. ft.). Each fish facility is equipped with a custom designed recirculating filtration system, and holds various genetically distinct lines of the corresponding species. There is also a room devoted to working with the genetically amendable model, *Drosophila melanogaster*. This room is equipped with 5 work stations, shelves for the entire fly collection, GFP stereomicroscope, and two climate-controlled incubators (18^{o}C, 25^{o}C).

D. Describe additional classroom, teaching laboratory, research laboratory, office, and other space needed to implement and/or maintain the proposed program through Year 5. Include any projected Instruction and Research (I&R) costs of additional space in Table 2 in Appendix A. Do not include costs for new construction because that information should be provided in response to X (E) below.

We anticipate using existing facilities and spaces through Year 5.

E. If a new capital expenditure for instructional or research space is required, indicate where this item appears on the university's fixed capital outlay priority list. Table 2 in Appendix A includes only Instruction and Research (I&R) costs. If non-I&R costs, such as indirect costs affecting libraries and student services, are expected to increase as a result of the program, describe and estimate those expenses in narrative form below. It is expected that high enrollment programs in particular would necessitate increased costs in non-I&R activities.

N/A

F. Describe specialized equipment that is currently available to implement the proposed program through Year 5. Focus primarily on instructional and research requirements.

Instructional:

Biology labs are equipped with a variety of microscopes including compound light microscopes, stereomicroscopes, dark field and phase contrast compound microscopes, as well as compound microscopes that convert to fluorescent student microscopes. Students also have an access to a research grade Olympus fluorescent microscope with a digital imaging computer, in order to offer a broad and rich learning experience. In addition, the biology teaching laboratories have various heating and chilling incubators, shaking and stationary water baths, and a maxi rotator incubator for culturing organisms. The labs are outfitted with nanopure water technology and several autoclaves. Students interested in field ecology and marine biology have access to a variety of sampling equipment including secchi discs,

sediment plates, DO meters, portable temperature and pH meters, various pocket meters, salinometer/conductive meters, Nansen bottles, plankton nets, various other sampling nets, aquariums with filtration units, transects, quadrats, beach sienes, binoculars, hanging scales, digital calipers, underwater and terrestrial digital cameras, mobile phone microscope attachments for the field, and a full spectrum ultrasonic recorder with digital analysis software. Our teaching labs also store hundreds of zoological skeletons and specimens ranging from microscopic invertebrates to large vertebrates. In the biology teaching laboratories and associated equipment room, extensive equipment is available for molecular biology projects. Equipment for analyzing DNA, RNA, and proteins includes various sizes of vertical and horizontal gel boxes for electrophoresis, high voltage power supplies, western transfer boxes, centrifuges, microcentrifuges, a hybridization incubator, UV cross-linker, vacuum oven, spectrophotometer, and automatic pipettes and manual micropipettes. Thermocyclers for performing the polymerase chain reactions (PCR), a laminar flow for eukaryotic cell culture, as well as a Bio Doc-It Imaging System are also available. Premed students are provided with a fully functional Anatomy & Physiology Lab complete with skeletons, models, portable ECG monitors, pulse oximeters, digital blood pressure monitors, sphygmomanometers, stethoscopes, digital spirometers, urinometers, and a zip-o-crit blood centrifuge.

Physics lab equipment is geared towards supporting General Physics Labs. Additional supplies include setups for Optics, Electronics, and Alternative Energy. The General Physics Lab 1 materials comprise various types of sensors (gas pressure, light, motion, force, voltage, barometers, ramps, magnetic carts, force tables to demonstrate Newton's Laws, rotational inertia sets for measuring center of mass, and resonance tubes for measuring waves. The materials for General Physics 2 include various types of wires, circuits, multi-meters, calorimeters, light sources, and lasers to demonstrate electromagnetic theory. Many of the items used in the Physics 2 Lab are applicable to experiments in optics, which are used for independent study or in-class demonstrations. Equipment for energy analysis such as hydrogen fuel cells and solar cells are available to measure different types of energy usage. All sensors and much of the electrical equipment is developed by Vernier, which enables students to use the accompanying program, Graphical Analysis, for lab reports.

For Chemistry: The laboratories are equipped with analytical balances, pH meters, spectrophotometers, chromatographs, specialized glassware, and electrophoresis equipment. In the beginner labs students learn to use techniques such as titrations, pH measurements, separations, and analysis, and also the synthesis, isolation, and identification of compounds. In the advanced chemistry lab courses, students learn electrophoresis, spectral analysis, chromatography and electrochemistry; they use gas chromatography and high-pressure liquid chromatography for separations, and Nuclear magnetic resonance, infrared, ultraviolet-visible spectroscopy, flame absorption, fluorescence, and mass spectrometry for identification and characterization of molecules.

In addition, the advanced Instrumental lab is equipped with the following state-of-the-art equipment to facilitate advanced classes, and for faculty and students to carry out research:

- Agilent gas chromatograph/mass spectrometer 6890n/5973 with autosampler and Wiley library
- HP 5890 GC with flame ionization detector
- HP 1100 HPLC with variable wavelength detector and autosampler
- Thermo scientific evolution 600 UV-visible spectrophotometer
- Perkin Elmer spectrum one Fourier transform infra-red spectrophotometer for functional group analysis of organic compounds
- Perkin Elmer 343 digital polarimeter
- Perkin Elmer LS55 fluoresence spectrometer
- Perkin Elmer atomic absorption spectrometer
- GOW-MAC gas chromatograph.
- EFT-60 NMR spectrometer
- Maker Bot 2x 3D printer

Research:

Molecular Biology: Laboratories are equipped with various equipment, including centrifuges, standard

laboratory benches, sinks, cabinets, 4°C refrigerators, -20°C and -80°C freezers, various PCR machines including those for performing quantitative real-time PCR, biophotometer, light box, gel boxes, power supplies and pipettes. There is also equipment for working with chemicals, which includes chemical shelves, fire-proof cabinets, corrosion proof cabinets, scales, pH meters, and fume hoods. Other shared equipment includes gel electrophoresis equipment, high-precision balances, a gel doc for imaging gels, a Leica Cryostat, freezers, refrigerators, an incubator shaker, a hybridization oven, a MilliQ water purification system.

Microscopy: Various microscopy suites are also present in various rooms throughout the RE building. Microscopes include 5 stereomicroscopes for handling fish embryos and larvae, 5 stereo-microscopes for handling fruit flies, a Zeiss Axio Zoom V16 epifluorescent microscope, and a Leica MZFLIII fluorescent microscope with a mounted Nikon D200 D-SLR. The Macleod lab also possesses a Nikon A1R confocal microscope with 4 laser lines, resonant scan head, GaAsP detectors, and wet stage with nerve stimulation equipment to enable physiology experiments. JLSI also has a Nikon AR1 MP+ two-photon microscope for performing fast volumetric functional imaging of neural activity. Nikon AR1-MP+ upright microscope is equipped with a tunable femtosecond pulse laser (Coherent), a wide modular stage with space to fit a camera below (used to simultaneously monitor behavior of zebrafish while recording neural activity), a piezo z-drive for fast collection of z-planes, and the software package, Nikon Elements. The camera has a 25X, 1.1 NA objective, and a 16 X, 0.8 NA objective.

Electrophysiology: 2 physiology "rigs" are also available, 1 of which is configured for high-speed dual EMCCD imaging and the other is configured for electrophysiology with optogenetics. A computer is integral to each rig. Further details regarding the *equipment* in these rigs can be found in the list of major items of equipment. The room also houses two dissection stations with dissection scopes. The electrophysiology rigs in this room and room 3 are supported with peripheral equipment for micropipette fabrication.

Behavior: There are various behavioral 'rigs' for performing behavioral analysis on fruit flies and fish. Each workstation for performing behavioral analysis is equipped with a high-performance computer (Dell) equipped with hardware specially designed for high frame rate cameras, a high-speed camera (PointGrey), an infrared box for IR illumination, and LEDs for illumination and optogenetic stimulation. Additional workstations are equipped with a proprietary tracking software (Noldus). Equipment for shock experiments include an SD9 Grass stimulator and a custom-built behavioral chamber fitted with two-pairs of opposing stainless steel plates. We also have a 2,000 frame per second camera, which is used for high time-resolution of zebrafish behavior in response to stressful cues. An additional workstation is available, which is equipped with LabView (National Instruments), and hardware for controlling temperature, pH, osmolarity which is controlled through a LabView compatible DAQ board; most hardware was custom built to our specifications by ALA Scientific. These behavioral set-ups allow fine scale application of a variety of stressors. The lab also possesses a 3D printer (MakerBot), which is used for generating most behavioral apparatus.

G. Describe additional specialized equipment that will be needed to implement and/or sustain the proposed program through Year 5. Include projected costs of additional equipment in Table 2 in Appendix A.

The chemistry program would need to purchase two essential instruments to be used for teaching and research in chemistry. One of them, a GC-MS (gas chromatograph-mass spectrometer) has currently reached the end of its useful life and needs to be replaced as it is one of the most fundamental instruments in the chemistry laboratory used in both introductory and advanced chemistry courses, as well as student thesis projects. The other instrument needed is the atomic spectrometer, also used in chemistry courses and research projects.

Projected costs:

- Mass spectrometer - $90,000

- Atomic spectrometer - $60,000

Research laboratories have most equipment to carry out the proposed experiments for the next 5-years. There are a few optional items:

1. Inverted compound microscope with epifluorescence
   Nikon Eclipse - TS2 $11,300.00
2. Micromanipulator with 2 3-axis "mechanicals"
   Sutter Instruments - MPC-385-2 $15,300.00
3. Microelectrode Amplifier
   Molecular Devices – Axoclamp 900A $13,000.00
4. Anti-vibration Table
   TMC – 3'x2' $6,000.00
5. Vibrating microtome
   Leica, VT1000S $18,091.00

H. Describe any additional special categories of resources needed to implement the program through Year 5 (access to proprietary research facilities, specialized services, extended travel, etc.). Include projected costs of special resources in Table 2 in Appendix A.

N/A

I. Describe fellowships, scholarships, and graduate assistantships to be allocated to the proposed program through Year 5. Include the projected costs in Table 2 in Appendix A.

Students will continue to receive merit scholarships drawing on the Honors College's existing endowment (hence no new projected costs). This allocation was $1,455, 411 in 2017-18.
Some scholarships are targeted specifically to STEM students including the Alice and Don Hudson Scholarship at the Edna Runner Center, a gift of $200,000 that provides up to $2500/semester, renewable 6 semesters, for STEM students engaged in education and outreach activities.

J. Describe currently available sites for internship and practicum experiences, if appropriate to the program. Describe plans to seek additional sites in Years 1 through 5.

Students in the new CIP have access to internships with the Scripps Research Institute, Florida, and Max Planck Institute, both located on the Jupiter campus, as well as with FAU's Brain Institute and Jupiter Life Science Initiative, also located on the Jupiter campus. Students also have the opportunity to work with scientists at the Harbor Branch Oceanographic Institute.

Appendix A: Faculty CVs

Lucia Carvelli, Ph.D.

Education

Ph.D. in Molecular Pharmacology	1999
Institute of Pharmacological Research Mario Negri, Milan (Italy)	
Laura in Biological Science, University of Calabria (Italy)	1995
B.S. Liceo Scientifico Raffaele Lombardi Satriani (Italy)	1988

Appointments

Associate Professor of Neuroscience (with Brain Institute)	2017-
FAU Wilkes Honors College	present
Associate Professor	
Department of Biomedical Sciences	2016-17
University of North Dakota, School of Medicine and Health Sciences	
Assistant Professor	2010-
Department of Pharmacology, Physiology & Therapeutic/Biomedical Sciences	2016
University of North Dakota, School of Medicine and Health Sciences	
Assistant Professor	2005-
Department of Pharmacology	2010
Vanderbilt University Medical School	
Research Associate	2001-
Department of Pharmacology	2004
Vanderbilt University Medical School,	
Postdoctoral Fellow	1999-
Department of Pharmacology University of Texas H.S.C.	2001

Honors and Awards

AURA Award (EPSCoR)	2015
Editor in Chief of the special issue Epigenetic Mechanisms of Drugs Addiction at the Journal Addiction and Prevention	2014
Experimental Meeting - ASBMB THEMATIC Best Poser	2014
AURA Award (EPSCoR)	2013
UND Senate Scholarly Activity Committee (SSAC) Travel Award	2011
AURA Award (EPSCoR)	2011
Best PhD Student/Alfredo Leonardi Award - Milan (Italy)	1999
European Union Training Grant	1997

Grants

NIH/R01 (DA042156) – Award Period 2016-2018 - $1,737,500
The goal of this grant is to characterize the long-term and transgenerational effects of chronic amphetamine exposure during early development.
NIH/Cobre Grant (PA-GM104360) Epigenomics of Development and Disease - - - - - - - - $10,500,000
Awarded 2013-2018. The goal of this grant is to identify epigenetic factors responsible of amphetamine-induced transgenerational effects in C. elegans.

Publications

McCowan T, Dhasarathy A and **Carvelli L**. Epigenetics mechanisms of amphetamine. *Journal* Addiction and Prevention. 2015; S(1):7
Hardaway AJ, Whitaker SM, Snarrenberg CL, Li Z, Xu S, Bermingham DP, Odiase P, Spencer WC, Miller DM III, **Carvelli L**, Hardie SL, Blakely RD. Glia expression of the *Caenorhabditis elegans* gene Swip-10 supports glutamate dependent control of extrasynaptic dopamine signaling. *J. Neurosci.2015;35(25):9409-23*

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Hossain M, Wickramasekara RN and **Carvelli L**. β-phenylethylamine requires the dopamine transporter to increase extracellular dopamine in *C. elegans* dopaminergic neurons. *Neurochem Internat* 2014 Jul;73:27-31
Safratowich BD, Lor Chee, Bianchi L and **Carvelli L**. Amphetamine activates an amine-gated chloride channel to generate behavioral effects in *Caenorhabditis elegans*. *J Biol Chem.* 2013 Jul 26;288(30)21630-7
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Carvelli L, Matthies D.S. and Galli A. Molecular Mechanisms of Amphetamine Action in C. elegans. *Mol. Pharmacol*. 2010 Jul; 78(1):151-6.
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Nass R, Hahn M., Jessen T., McDonald P., **Carvelli L.** and Blakely R.D. A genetic screen in *C. elegans* for dopamine neuron insensitivity to 6-Hydroxydopamine identifies dopamine transporter mutants impacting transporter biosynthesis and trafficking. *J Neurochem*. 2005 Aug; 94(3):774-85.
Carvelli L, McDonald PW, Blakely RD, DeFelice LJ. Caenorhabditis elegans Dopamine Transporters depolarize neurons by a channel mechanism. *PNAS*. 2004 Nov 9;101(45):16046-51
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Bendotti C, Tortarolo M, Suchak S, Calvaresi N**, Carvelli L**, Bastone A, Rizzi M, Rattray M, Mennini T. Transgenic SOD1 G93A mice develop reduced GLT-1 in spinal cord without alterations in cerebrospinal fluid glutamate levels. *J. Neurochem*, (2001) 79, 737.
Saunders C., Ferrer JV., Shi L., Chen L., Merril G., Lamb ME., L.M. Leeb-Lundberg F, **Carvelli L.**, Javitch JA. and Galli A. Amphetamine-induced loss of human dopamine transporter activity: an internalization-dependent and cocaine-sensitive mechanism. *PNAS* 97(12):6850-6855. (2000).
D. Agnello, **L. Carvelli**, V. Muzio, P. Villa, B. Bottazzi, N. Polentarutti, T. Mennini, A. Mantovani, P. Ghezzi. Increased peripheral benzodiazepine binding sites and pentraxin 3 expression in the spinal cord during EAE: relation to inflammatory cytokines and modulation by dexamethasone and rolipam. *J. Neuroimmunol*. (2000) 109, 105-111
T.Mennini, A.Cagnotto, **L.Carvelli**, D.Comoletti, C.Manzoni, V.Muzio, M.Rizzi and A.Vezzani. Biochemical and pharmacological evidence of a functional role of AMPA receptors in motor neuron dysfunction in mnd mice. *Eur.J.Neurosci*.(1999).May;11(5):1705-10.

Andia Chaves Fonnegra Resume

Florida Atlantic University
Assistant Professor of Biology
Wilkes Honors College/Harbor Branch Oceanographic Institute
5600 N US Highway 1 Fort Pierce, FL 34946
Email: andia.chaves@fau.edu
Personal website: http://andiacfonnegra.weebly.com/

EDUCATION

2009-2014 Ph.D. Marine Biology/Oceanography. Nova Southeastern University. Halmos College of Natural Sciences and Oceanography.

2003-2006 M.Sc. Marine Biology. Universidad Nacional de Colombia. Department of Biology. Cum Laude honors.

1997-2003 B.Sc. Marine Biology. Universidad de Bogotá Jorge Tadeo Lozano. Faculty of Marine Biology.

PROFESSIONAL EXPERIENCE

2018 Postdoctoral Research Associate. University of Mississippi.
2016- 2017 Postdoctoral Research Associate. University of the Virgin Islands.
2014-2015 Postdoctoral Researcher and Adjunct Faculty. Nova Southeastern University.
2009-2014 Research and Teaching Assistant. Nova Southeastern University.
2007 Voluntary Field Assistant. Calidris and Malpelo Foundations.
2006 Short Term Fellow. Smithsonian Tropical Research Institute.
2005 Summer Intern. Harbor Branch Oceanographic Institution.
2004–2005 Research Assistant. Universidad Nacional de Colombia,INVEMAR.
2001 Intern and Research Assistant. INVEMAR.

RECENT PUBLICATIONS

Chaves-Fonnegra, A., Riegl, B, Zea, S., Lopez, J.V., Brandt, M., Smith, T. and Gilliam, D.S. Accepted. 2018. Bleaching events regulate shifts from coral to excavating sponges. Global Change Biology, 24(2):773-785. https://onlinelibrary.wiley.com/doi/full/10.1111/gcb.13962

Halperin, A.A, Chaves-Fonnegra, A., Gilliam, D.S. 2017. Coral-excavating sponge Cliona delitrix: current trends of space occupation on high latitude coral reefs. Hydrobiologia, 790(1):299-310. https://link.springer.com/article/10.1007/s10750-016-3042-x

St. Gelais. A.T., Chaves-Fonnegra, A., Kosmynin, V.N., Moulding, A.L. and Gilliam D.S. 2016. Siderastrea siderea spawning and oocyte resorption at high latitude. Invertebrate Reproduction and Development, 60 (3): 212-222.
https://www.tandfonline.com/doi/abs/10.1080/07924259.2016.1194334

Torsten, T., Moitinho-Silva, L., Lurgi, M., Björk, J.R., Easson, C., Astudillo, C., Olson, J.B., Erwin, P.M., López-Legentil, S., Luter, H., Chaves-Fonnegra, A., Costa, R., Schupp, P., Steindler, L., Erpenbeck, D., Gilbert, J., Knight, R., Ackerman, G., Lopez, J.V., Taylor, M.W., Thacker, R.W., Montoya, J.M., Hentschel, U., and Webster, N. 2016. Global Sponge Microbiome: Diversity, structure and convergent evolution of the global sponge microbiome. Nature Communications 7, article number 11870.
https://www.nature.com/articles/ncomms11870

Chaves-Fonnegra, A., Maldonado, M. and J.V. Lopez. 2016. Asynchronous reproduction and multi-spawning in the coral excavating sponge Cliona delitrix. Journal of the Marine Biological Association, UK 96(2): 515-528. https://doi.org/10.1017/S0025315415000636

Chaves-Fonnegra, A., Feldheim, K.A., Secord, J. and J.V. Lopez. 2015. Population structure and dispersal of the coral-excavating sponge Cliona delitrix in the Greater Caribbean Sea. Molecular Ecology, 24(7): 1447–1466. https://doi.org/10.1111/mec.13134

RESEARCH GRANTS AND FELLOWSHIPS

2011-2013. UNESCO-L'Oréal Fellowship for Young Women in Science. 2010. NSU Chancellor´s Faculty Research and Development Grant. 2006. Short Term Fellowship. Smithsonian Tropical Research Institute. 2002. SIGMA XI (The Scientific Research Society) Grant.

TEACHING

University of the Virgin Islands Independent Research Study DIR BIO 495 (Summer and Fall 2016) Research Methods II MEMS 504 – Multivariate Statistics Laboratory in R- (Spring 2017) Sponge ID Laboratory – (Fall 2017)

Nova Southeastern University Introduction to Biological Sciences Laboratory (Winter 2015) Invited Lecturer Histology (Fall 2013, 2014, 2015) TA Population Ecology (Fall 2010, 2011 and 2012) TA Biostatistics I. (Fall 2009)

COMMUNITY INVOLVEMENT/OUTREACH

Publication of articles in Spanish for "Biólogos Genetistas Colombianos (BIOGENIC)" blog http://www.biogeniccolombia.org/ and for the Colombian newspaper "El Tiempo" blog: http://blogs.eltiempo.com/biogenic-colombia/

Chitra Chandrasekhar

Instructor, Harriet L. Wilkes Honors College of Florida Atlantic University
5353 Parkside Drive, Jupiter, FL 33458 (561) 799-8637 cchandr1@fau.edu

Education:

- B.S. Education — Clarion University of Pennsylvania, Clarion, PA — 2002- 2003
  Certification Area: Florida Professional Education- **Chemistry**
- Post Doctoral — Eli Lilly and Company, Indianapolis, IN — 1992- 1993
  Purdue University, West Lafayette, IN — 1991- 1992
- Ph.D. Chemistry — Wesleyan University, Middletown, CT — 1986- 1991
- M.Sc. Chemistry — Indian Institute of Technology, Madras, India — 1983- 1985
- B.Sc. Chemistry — Queen Mary's College, Madras, India — 1980- 1983

Teaching Experience:

- Instructor of Chemistry, Wilkes Honors College of Florida Atlantic University, August 2005 – Present
  Supervised student thesis and internships; Second reader for student theses in Chemistry, Biological Chemistry, and Biology
- Student Advisor since 2005, advising an average of 15 students each Lab Supervisor for the Honors Organic Chemistry Labs since Fall 2013, overseeing adjuncts and student TAs
- Served as interim coordinator for the Medical Scholars program, advising medical scholars and liaising with the FAU College of Medicine
- Visiting Assistant Professor, Harriet L.Wilkes Honors College of FAU, August 2004 – May 2005
  Teaching Honors General Chemistry Lab I, Honors Spectroscopy, Honors Environmental Chemistry, Honors Contemporary Chemical Issues, Honors Inorganic Chemistry, Honors Inorganic Chemistry Lab
- Teacher, Olympic Heights High School, Boca Raton, FL, Aug 2003 – June 2004
  Taught Chemistry I, Honors Chemistry and Integrated Earth/Physical Science
- Adjunct Lecturer in Chemistry, Pennsylvania State University, DuBois Campus, teaching an Introductory Chemistry course, several semesters, from January 1997 – May 2002.

Service and Professional Development:

- Served seven years on the Symposium Committee, Symposium Committee Chair in 2013, 2 years on Finals Tree Committee, 2 years on e-Learning Committee, 2 year in By-Laws Committee, 2 years on Faculty Development Awards Committee, 2 years on Academic Affairs Committee, 1 year on Admissions Committee, and 1 year on Curriculum Committee
- Served twice on the Physics Search Committee, and on the WHC Dean Search Committee, Biogeochemistry Search Committee (joint WHC/Harbor Branch position)
- Participated in college fairs representing WHC; Served on the Scholars Day Interview Committee, March 2016
- WAC Certified; Certified in Lab Safety & Hazardous Waste Awareness and Handling

Research Experience:

- Leaching of hormone disrupting chemicals from plastic cling wraps, 2014-2015.
- Laser Induced Fluorescence Spectroscopy, Multiphoton Ionization Spectroscopy, Zero Electron Kinetic Energy Photoelectron Spectroscopy of small aromatic compounds, 1986 – 1991.
- Multiphoton ionization spectroscopy of Diacetylene, with reference to understanding of planetary atmospheres, 1991 – 1992.
- Doppler Electrophoretic Light Scattering Analysis of Biosynthetic Human Insulin, 1992 – 1993.

Conferences:

1. Pittcon, Orlando, FL, March 2006 – Chaperoned students from Harriet L.Wilkes Honors College
2. Presented paper titled **"**Arson Analysis by Static Head Space Enrichment and Gas Chromatography using Simplex Optimization" at the Forensic Sciences Symposium, American Chemical Society South Florida Section, at Nova Southeastern University, Fort Lauderdale, FL, January 19, 2007
3. Participated in the First Annual Career Showcase, Suncoast Community High School, Riviera Beach, FL, January 9, 2009, and January 8, 2010.

Publications:

1. *Luminescence Spectra and Lifetimes of Cerium(III) Compounds as Indicators of Solution Behavior and Radiation Efficiency* Paulette Hazin, Chitra Lakshminarayan, Linda S. Brinen, Joseph L. Knee, Joseph W. Bruno, William E.Streib and Kristen Folting, *Inorganic Chemistry*, **27**, 1393 (1988).

2. *Spectroscopy and Dynamics of the S_1 State of Jet Cooled 1-Naphthol* Chitra Lakshminarayan, Joseph L. Knee, *J. Phys. Chem*., **94**, 2637 (1990).

3. *Picosecond Measurement of Vibrational Dynamics using Pump-Probe Laser Photoelectron Spectroscopy* Jonathan M. Smith, Chitra Lakshminarayan and Joseph L. Knee, *J. Chem. Phys*., **93**, 4475 (1990).

4. *Laser Photoelectron Spectroscopy of 1- and 2-Naphthol: Relative Stability of the cis and trans Cation Rotamers* Chitra Lakshminarayan, Jonathan M. Smith and Joseph L. Knee, *Chem. Phys. Lett*, **182**, 656 (1991).

5. *Spectroscopy and Photophysics of the $^1S_g^+$ - ^1D_u Transition of Jet Cooled C_4H_2, C_4HD and C_4D_2* Ralph E. Bandy, Chitra Lakshminarayan and Timothy S. Zwier, *J. Phys. Chem*., **96**, 5337 (1992).

6. *Direct Detection of C_4H_2 Photochemical Products: Possible Routes to Complex Hydrocarbons in Planetary Atmospheres* Ralph E. Bandy, Chitra Lakshminarayan, Rex K. Frost and Timothy S. Zwier, *Science*, **258**, 1630 (1992).

7. *The Ultraviolet Photochemistry of Diacetylene: Direct Detection of Primary Products of Metastable $C_4H_2^*$ + C_4H_2 Reaction* Ralph E. Bandy, Chitra Lakshminarayan, Rex K. Frost and Timothy S. Zwier, *J. Chem. Phys*., **98**, 5362 (1993).

8. *Electronic Spectroscopy of Four Conformers of Jet Cooled 1,6-Dihydroxynaphthalene* Jonathan M. Smith, Xu Zhang, Andrew Thompson, Chitra Lakshminarayan and Joseph L. Knee, *J. Phys. Chem*., **97**, 3990 (1993).

9. *Reversible Adsorption of Soluble Hexameric Insulin onto the Surface of Insulin Crystals Cocrystallized with Protamine: An Electrostatic Interaction* Stephen W. Dodd, Henry A. Havel, Paul M. Kovach, Chitra Lakshminarayan, Martin P. Redmon, Charlene M. Sargeant, Gary R. Sullivan and John M. Beals, *Pharmaceutical Research*, **12**, 60 (1995).

10. *Reaction of bromine with 4,5-dimethyl-1,4-cyclohexadiene-1,2-dicarboxylic acid: A green chemistry puzzle for organic chemistry students* Chitra Chandrasekhar, Veljko Dragojlovic, *Green Chemistry Letters and Reviews,* **DOI:** 10.1080/17518250903410090 , 02 December 2009

Veljko Dragojlovic (abbreviated CV)

EDUCATION

1987/1993 Ph.D.–Organic Chemistry, University of British Columbia, Vancouver, Canada
1982/1986 B.Sc. – Chemistry, University of Belgrade, Belgrade, Serbia

EMPLOYMENT

2016/present Professor
Wilkes Honors College of Florida Atlantic University
Jupiter, Florida

2006/2016 Associate Professor
Wilkes Honors College of Florida Atlantic University
Jupiter, Florida

2002/2006 Associate Professor
Nova Southeastern University
Ft. Lauderdale-Davie, Florida

1998/2002 Assistant Professor
Nova Southeastern University
Ft. Lauderdale-Davie, Florida

1997/1998 Chemistry Instructor
Northwest Community College
Terrace, BC, Canada

1997 (summer) and 1998 (summer) Chemistry Instructor
School District 46 (Delta)
Delta, BC, Canada

1996/1997 Post Doctoral Fellow (with S. Hatzikiriakos)
Department of Chemical Engineering
The University of British Columbia,
Vancouver, BC, Canada

1995/1996 External Teaching Assistant
Undergraduate Chemistry Laboratory
Simon Fraser University,
Burnaby, BC, Canada

1994/1995 Post Doctoral Fellow (with Y.L. Chow)
Department of Chemistry
Simon Fraser University
Burnaby, BC, Canada

1987/1993 Teaching Assistant
Department of Chemistry
The University of British Columbia
Vancouver, BC, Canada

1986/1987 Research Chemist
Institute of Chemistry, Technology and Metallurgy
Belgrade, Serbia

SELECTED PUBLICATIONS (undergraduate co-authors are given in bold)

1. **Parsons, B.A.**; **Smith, O.L.**; Dragojlovic, V. An Optimized Procedure for PTFE Phase Vanishing Reactions: An Improved Reaction Design and the Use of Reagents Adsorbed on Silica. *J. Chem. Res.* **2015***, 39*, 574–581.
2. **Parsons, B.A.**; **Smith, O.L.**; **Chae, M.**; Dragojlovic, V. Properties of PTFE Tape as a Semipermeable Membrane in Fluorous Reactions. *Beilstein J. Org. Chem.,* **2015,** *11*, 980-993. (doi:10.3762/bjoc.11.110)
3. **Brettler, S.**; **Van Zee, N.**; Dragojlovic, V. Synthesis of Jasminaldehyde by a Crossed Aldol Condensation: An Experiment for Undergraduate Organic Chemistry Students. *The Chemical Educator*, **2015**, *20*, 314-320..
4. Dragojlovic, V. Conformational Analysis of Cycloalkanes. *ChemTexts* **2015**, 1:14 (DOI 10.1007/s40828-015-0014-0)
5. Dragojlovic, V. Improving a Lecture-Size Molecular Model Set by Repurposing Used Whiteboard Markers. *J. Chem. Educ.*, **2015**, *92*, 1412–1414. (DOI: 10.1021/ed500964n)
6. Dragojlovic, V. Investigation of Intermolecular Interactions by Determination of the Heat of Mixing of Organic Liquids: An Undergraduate Organic Chemistry Experiment. *The Chemical Educator* **2015**, *20*, 30-33.
7. **Abney, A.J.**; Dragojlovic*, V. A PTFE-Sealed Vial for Delivery of Bromine. *J. Chem. Educ.*, **2012**, *89*, 293-295.
8. **Parsons, B.A.**; Dragojlovic*, V. Demonstration of a Runaway Exothermic Reaction: Diels-Alder Reaction of (2*E*,4*E*)-2,4-Hexadien-1-ol and Maleic Anhydride. *J. Chem. Educ.*, **2011***, 88,* 1553-1557. (**DOI:** 10.1021/ed100129z)
9. **Van Zee, N.J.**; Dragojlovic*, V. Design of Phase-Vanishing Reactions. *Chemistry - A European Journal* **2010**, *16***,** 7950-7958. (DOI: 10.1002/chem.201000269).
10. Chandrasekhar, C.; Dragojlovic*, V. Reaction of bromine with 4,5-dimethyl-1,4-cyclohexadiene-1,2-dicarboxylic acid: A green chemistry puzzle for organic chemistry students. *Green Chemistry Letters and Reviews*, **2010**, *3*, 39-47. (DOI: 10.1080/17518250903410090).
11. **Soto, K.** and Dragojlovic*, V. A Laboratory Demonstration of Synthesis of Bromoalkanes: Free Radical Bromination of an Alkylbenzene and Addition of Hydrogen Bromide to 2,3-Dimethyl-2-butene. *The Chemical Educator* **2010**, *15*, 247-250; (DOI 10.1333/s00897102283a)
12. **Pels, K.**; Dragojlovic*, V. Solvent-free phase-vanishing reactions with PTFE (Teflon) as a phase screen. *Beilstein J. Org. Chem*. **2009**, *5*, No. 75. (DOI:10.3762/bjoc.5.75)
13. **Van Zee, N.J.**; Dragojlovic*, V. Phase-Vanishing Reactions with PTFE (Teflon) as a Phase Screen. *Organic Lett.*, **2009**, *11*, 3190-3193. (doi: 10.1021/ol901450h).
14. **Huertas**, **D.; Florscher, M.;** Dragojlovic*, V. Solvent-free Diels-Alder Reactions of *in situ* Generated Cyclopentadiene. *Green Chemistry*, **2009**, *11*, 91-95 (DOI:10.1039/B813485E).
15. **Windmon, N.;** Dragojlovic*, V. Diels-Alder reactions in the presence of a minimal amount of water. *Green Chemistry Letters and Reviews*, **2008**, *1*, 155-163. (DOI: 10.1080/17518250802482505).
16. **Windmon, N.;** Dragojlovic*, V. The role of neat substrates in phase-vanishing and tandem phase-vanishing reactions. *Tetrahedron Lett.* **2008**, *49*, 6543-6546. (DOI 10.1016/j.tetlet.2008.09.007)

17. **Windmon, N.;** Dragojlovic*, V. Phase-vanishing halolactonization of neat substrates. *Beilstein J. Org. Chem*. **2008**, *4*, No. 29. (DOI 10.3762/bjoc.4.29)

Invited book chapters:

1. Dragojlovic, V. Structural Characterization of Kerogen by Ruthenium Tetroxide Oxidation, in *Geochemistry Research Advances*, Editor: Ólafur Stefánsson, Nova Science Publishers, Hauppauge NY, 2008, pp. 93-117. ISBN: 978-1-60456-215-6.
2. McCarty, J.L. and Dragojlovic, V. Demonstrating Allotropic Modifications of Sulfur: Re-creating Io's Volcanic Surface, in *Favorite Demonstrations for College Science*, Editor: Brian R. Shmaefsky, NSTA Press Arlington, VA, 2004, pp. 143-145. ISBN: 0-87355-242-3.

Erik R. Duboué, Ph.D.

EDUCATION AND TRAINING

2000-2006 B.A., Philosophy, Tulane University, New Orleans, LA 2000-2006 B.S., Neuroscience, Tulane University, New Orleans, LA

2006-2007 M.S., Neuroscience, Tulane University, New Orleans, LA Advisor: Dr. Fiona Inglis, Ph.D.

2007-2012 Ph.D., Biology, New York University, New York, NY
Focus: Neuroscience
Advisor: Dr. Richard Borowsky, Ph.D.
Thesis: Evolutionary Convergence on Sleep loss in Cavefish Populations
2012- Postdoctoral Associate, Carnegie Institution for Science, Baltimore, MD Advisor: Dr. Marnie E. Halpern, Ph.D.

EMPLOYMENT AND POSITIONS

2003-2005 Undergraduate research Louisiana State University, Health Science Center Advisor: Dr. William Claycomb, Ph.D.

2005-2006 Undergraduate Research University of Memphis (During Hurricane Katrina) Advisor: Dr. Charles Blaha, Ph.D.

2006-2007 Masters research Tulane University Advisor: Dr. Fiona Inglis, Ph.D.

PUBLICATIONS

Keene A. C, Duboué, E. R, McDonald D. M, Dus M, Suh G. S, et al. (2010) Clock and cycle limit starvation-induced sleep loss in Drosophila. Curr Bio/ 20: 1209—1215.

Duboué, E.R., Keene, A.C., and Borowsky, R. (2011) Evolutionary convergence on sleep lose in Cavefish Populations. Curr Biol 21: 671-6.

Duboué, E.R. and Borowsky, R.L. (2012) Altered Rest-Activity patterns evolve via circadian independent mechanisms in cave adapted balitorid loaches. PLoS One, 7(2):e30868.

Duboué, E.R., Borowsky, R.L., and Keene, A-C. (2012) P-adrenergic signaling regulates evolutionarily derived sleep loss in the Mexican Cavefish. Brain Behavior and Evolution, 80(4):
233-43.

Yoshizawa M., Robinson B.C., Duboué E.R., Masek P., Jaggard J.B., O'Quin K.E., Borowsky R.L., Jeffery W.R., Keene A.C. (2015) Distinct genetic architecture underlies the emergence of sleep loss and prey-seeking behavior in the Mexican cavefish. BMC Biology, 13-15.

Facchin, Duboué, E.R.*, Halpern, M.E. (2015) Disruption of epithalamic left-right asymmetry increases anxiety in zebrafish. Journal of Neuroscience. 35(48):15847-59 (Featured as Editor's Choice in Science Jan 1., 2016: Vol. 351, Issue 6268, pp. 38).

Duboué, E.R. and Keene A.C. (2016) Investigating the Evolution of Sleep in the Mexican Cavefish. In Biology and Evolution of the Mexican Cavefish, Academic Press, pages 291-308, ISBN 9780128021484

Duboué, E.R. and Halpern M.E. (In press) Genetic and transgenic approaches to study laterality in zebrafish. In Lateralized Brain Functions. Eds. Lesley Rogers and Giorgio

Vallortigara, Springer.

Duboué, E.R., Hong, E, Eldred, K. and Halpern, M.E. (under revision). Lateralized habenular activity expedites recovery from fear. Current Biology
*indicates authors contributed equally

AWARDS AND HONORS

2006 Faculty for Undergraduate Neuroscience Research Award, Society for Neuroscience
2007-2011 Henry M. MacCracken Fellowship, New York University
2011 Society for Developmental Biology travel award, Astyanax International meeting
2011 Steven Kazianis Research Award, for a "senior doctoral student who presented the best research with the greatest potential to have a significant impact in their field.

JULIE L. EARLES

Wilkes Honors College
Florida Atlantic University
jearles@fau.edu

Education:

1994 - Ph.D. in Experimental Psychology from The Georgia Institute of Technology
1992 - M.S. in Experimental Psychology from The Georgia Institute of Technology
1990 - B.A. with Honors in Psychology from Davidson College (Phi Beta Kappa, Magna Cum Laude)

Employment History:

2016 to present - Professor of Psychology, Wilkes Honors College of Florida Atlantic University
2016 to present - Associate Graduate Faculty, Department of Psychology, Charles E. Schmidt College of Science, Florida Atlantic University
2004 to 2016 - Associate Professor of Psychology, Wilkes Honors College of Florida Atlantic University
1999 to 2004 - Assistant Professor of Psychology, Wilkes Honors College of Florida Atlantic University
1994 to 1998 - Assistant Professor of Psychology, Furman University
1990 to 1994 - National Institutes of Health Pre-doctoral Research Training Fellowship, National Institute on Aging

Recent Publications:

Kersten, A. W., Earles, J. L., McRostie, N., Brydon, C., & Adarukov, J. (in press). Influences of executive memory functioning on memory for the sources of actions. *Psychology and Aging*.

Kersten, A.W., Earles, J.L., & Negri, L. (2018). Who was that masked man? Conjoint representations of intrinsic motions with perpetrator appearance. *Memory*.

Vernon, L. L. & Earles, J. L. (2018). The perils and payoffs of conducting clinical trials: Equine-assisted therapy case study. *Sage Research Methods Cases: Psychology*. doi: **10.4135/9781526438430**

Earles, J. L., & Kersten, A.W. (2017). Why are verbs so hard to remember? Effects of semantic context on memory for verbs and nouns. *Cognitive Science, 41,*780-807. doi: 10.1111/cogs.12374

Kersten, A.W., & Earles, J.L. (2017). Feelings of familiarity and false memory for specific associations resulting from mugshot exposure. *Memory & Cognition 45,* 93-104. doi: 10.3758/s13421-016-0642-7

Earles, J. L., Kersten, A. W., Vernon, L. & Starkings, R. (2016). Memory for positive, negative, and neutral events in younger and older adults: Does emotion influence binding in event memory? *Cognition and Emotion, 30, 378-388*. doi: 10.1080/02699931.2014.996530

Recent Books:

Bjorklund, B. R. & Earles, J. L. (To be released in 2019). *The Journey of Adulthood – REVEL access* (9th edition). Pearson.

Recent National and International Presentations:

Kersten, A.W., Earles, J.L., Perry, J. (2018, November). Influences of actor appearance and movement features on action recognition. Poster to be presented at the Meeting of the Psychonomic Society, New Orleans, LA.

Kersten, A.W., Earles, J.L., Aucello, K., & Tautiva, E. (2018, April). Neuropsychological correlates of source memory for actions depend upon the number of sources. Plenary presentation at the Cognitive Aging Conference, Atlanta, GA.

Kersten, A.W., Earles, J.L., Vernon, L.L., McRostie, N., & Riso, A. (2017, November). Effects of emotional context on false memory for person/action conjunctions. Poster presented at the Meeting of the Psychonomic Society, Vancouver, BC.

Pruzansky. R.M., Kersten, A.W., & Earles, J.L. (2017, April). Children and adults benefit from object consistency when learning novel verbs. Paper to be presented at the Biennial Meeting of the Society for Research in Child Development, Austin, TX.

Kersten, A.W., & Earles, J.L. (2016, November). Executive function in older adults predicts source memory for actions only for small numbers of sources. Paper presented at the Meeting of the Psychonomic Society, Boston, MA.

Kersten, A.W., & Earles, J.L. (2016, May). Feelings of familiarity and false memory for specific associations resulting from mugshot exposure. Paper presented at the Fishschrift: Applied Cognition and the Cognitive Interview: A Conference in Honor of Dr. Ron Fisher. Miami, FL.

Recent Undergraduate Research Presentations at FAU:

Spring, 2018

Adaryukov, J., Tarleton, H., Reisner, J., Figueroa, S. Virtual communication and face-to-face encounters.

Batista, Y., Ouillette, Z., Jean-Baptiste, B., & Ali, A. The immediate effects of mindfulness on stress, anxiety, and affect.

Brydon, C., McRostie, N., & Adarukov, J. Age differences in feature and source memory.

Brydon, C., Batista, Y., & Jean-Baptiste, J. The bystander effect: Effects of gender.

Carrillo, J., Halstead, G., & Rosas-Merritt, A. The effect of mindfulness meditation on recall memory for positive, negative, and neutral stimuli.

Chae, M. Impulsivity in mice with Rum3/Rum5 Isoforms of Syngap1 Gene.

Jean-Baptiste, B., Ali, A., Batista, Y., & Ouillette, Z. Meditation: Following the wandering mind.

McRostie, N. Memory for verbs and nouns.

Michels, A. & Irmiter, J. Disgust and cognitive function.

Perry, J. Eyewitness memory: Manner of motion in perpetrator identification.

Riso, A. Characterizing the overactivation of microglia during development. (FAU Undergraduate Researcher of the Year, 2017-2018)

Rosas-Merritt, A., Carrillo, J., Hauser, K., & Randhikaa N. Effects of time constraints on working memory.

Seepersad, V. & Welliever, B. We had no eye-dea; Effects of Enchroma glasses on the perception of art.

Trulson, H., Stamos, H., & Ragnarsson, S. When are people generous?

Welliever, B. & Seepersad, V. Effects of color blindness on visual search tasks.

Spring, 2017

Beazley, J. Memory for license plates.

Benedict, C. Conservation behavior intervention.

Adaryukov, J., Riso, A., & McRostie, N. Effects of emotion on memory for events.

Recent Honors and Awards:

2017 Florida Atlantic University Distinguished Undergraduate Mentor of the Year Award
2017 COSO Jupiter Advisor of the Year
2013 Florida Atlantic University Excellence and Innovation in Undergraduate Advising Award
2010 Florida Atlantic University Excellence and Innovation in Undergraduate Teaching Award
2010 Florida Atlantic University MacArthur Campus Exceptional Faculty Award

Yaouen Fily

Assistant Professor of Physics
Wilkes Honors College Florida Atlantic University
5353 Parkside Drive, HC 151 Jupiter, FL 33458 USA
yfily@fau.edu

Research Areas

Nonequilibrium Statistical Mechanics; Active Matter; Geometry; Biophysics; Soft Matter; Complex Fluids; Granular Matter; Disordered Media.

Technical Expertise

Theory: Statistical Mechanics; Hydrodynamics of Complex Fuids; Elasticity; Differential Geometry.
Computation: Brownian Dynamics; Monte Carlo Simulations; Partial Differential Equations; Data Analysis.

Education

Ph.D. in Condensed Matter Physics, Université de Tours, France 2009
Master Dynamical systems and statistics of complex matter, Université Paris VI, France 2006
Agrégation de Sciences Physiques, option Physique1 2005
Licence in Physics, Université Paris VI / Ecole Normale Supérieure de Cachan, France 2003

Research Experience

Assistant Professor 2017-present At Wilkes Honors College, Florida Atlantic University. Soft active matter in curved environments. Postdoctoral Researcher
2012-2017 At Brandeis University, with Michael Hagan & Aparna Baskaran. Confined active particles, flagellar beating, chiral self-assembly. Postdoctoral Researcher
2009-2012 At Syracuse University, with Cristina Marchetti. Self-propelled particles, viscous fluid dynamics, linear elasticity, cell motion, jamming transition. Graduate Student
2006-2009 At Université de Tours, France, with Jean-Claude Soret & Enrick Olive. “Depinning and high velocity dynamics of vortex lattices in type II superconductors – A numerical study”.

Teaching Experience

Assistant Professor 2017-present Wilkes Honors College, Florida Atlantic University.
Fall 2018: Programming for biologists, 3 credits. Electricity/Magnetism, 4 credits. Spring 2018: General Physics 2, 4 credits. Statistical Physics, 4 credits. Fall 2017: Computational Physics, 3 credits. Moniteur 2006-2009 Université de Tours, France. Introductory physics (mathematical tools, classical mechanics, geometrical optics), 192h (lectures and labs).

1 Agrégation is a highly selective French exam of teaching ability that covers all core undergraduate physics classes and some chemistry. It is taken after a year-long preparation that involves theory as well as giving practice lectures critiqued by experienced educators.

Outreach

A piece of the pie chart Designed software to operate a robotic arm as part of art project “A piece of the pie chart”, a robotic installation by Artist and Syracuse University Professor Annina Ruest that addresses gender disparities at technical institutions. Co-wrote a blog post explaining the functioning of it. Computational Introduction to Active Matter Designed computational experiment for researchers from diverse background in the context of a transdisci- plinary workshop.2 Levitating train Designed and built

experiment to illustrate superconductivity and engage prospective students and the gen- eral public. Presented it at university open house day and French national science fair.2

Scholarships

Full PhD scholarship from Région Centre (France) 2006-2009
Full scholarship from École Normale Supérieure de Cachan (France) 3 2002-2006

Selected Publications

Citations: 1231. H-index: 10. Source: Google Scholar profile (9/28/2018).
S. Henkes, D. A. Quint, Y. Fily, J. M. Schwarz, Rigid Cluster Decomposition Reveals Criticality in Frictional Jamming, Phys. Rev. Lett. 116, 028301 (2016).
A. P. Solon, Y. Fily, A. Baskaran, M. E. Cates, Y. Kafri, M. Kardar, J. Tailleur, Pressure is not a state function for generic active fluids, Nature Physics 11, 673 (2015).
Y. Fily, A. Baskaran, M. F. Hagan, Dynamics of self-propelled particles under strong confinement, Soft Matter 10, 5609 (2014).
Y. Fily, M. C. Marchetti, Athermal Phase Separation of Self-Propelled Particles with No Alignment, Phys. Rev. Lett. 108, 235702 (2012).
S. Henkes, Y. Fily, M. C. Marchetti, Active jamming: Self-propelled soft particles at high density, Phys. Rev. E 84, 040301 (2011).

Recent Talks Seminars Physics Department, Florida Atlantic University, Jupiter FL 2018

Conferences and workshops Collective behavior of soft and active matter under confinement, Mainz, Germany (invited speaker) 2018 Fundamental Problems in Active Matter, Aspen CO 2018

Recent Mentoring

Adam Patch (postdoc) 2018-present Social behavior in Asyanax fish. Force on a colloid in an active bath. Austin Henriksen (undergraduate student) 2018-2019 Density profile of very persistent active particles in a 1D confining potential. Genevieve Kunkel (undergraduate student) 2018-2019 Typology of neuronal responses to a stressor in zebra fish.

2 Videos available on the youtube channel “yaouen fily”. 3 ENS Cachan is one of a handful of French schools to pay a salary to their students.

CURRICULUM VITAE
Terje Hõim

Associate Professor of Mathematics, Chair of Sciences and Mathematics

Wilkes Honors College, Florida Atlantic University, 5353 Parkside Dr., Jupiter, FL 33458
(561) 799-8673, thoim@fau.edu

Education

2000 **Ph.D.** Pure Mathematics, Kent State University, Ohio, USA
1997 **M.A.** Mathematics, Kent State University, Ohio, USA
1995 **M.Sc.** Mathematics, CUM LAUDE, University of Tartu, Estonia
1993 **B.Sc.** Mathematics, CUM LAUDE, University of Tartu, Estonia, Minor: Math Education

Academic Positions

2008 – present **Associate Professor of Mathematics,** Wilkes Honors College, FAU, Jupiter, FL
2014 – 2016 **Associate Professor of Mathematics and Math Education**
College of Science and Technology, University of Tartu, Estonia
2010 – 2011 **Joint Visiting Associate Professor/Guest Lecturer of Mathematics/Statistics**
Estonian University of Life Sciences/University of Tartu, Estonia
2003 – 2008 **Assistant Professor of Mathematics,** Wilkes Honors College, FAU, Jupiter, FL
2000 – 2003 **Harold L. Dorwart Visiting Assistant Professor of Mathematics**
Trinity College, Hartford, Connecticut

Professional Leadership Positions

2016 – present **Chair of Sciences and Mathematics**, Wilkes Honors College, FAU
2014 – 2016 **Director of the Center of School Mathematics and Informatics**, University of Tartu
2014 – 2016 **Coordinator of the Master Program in Mathematics Education**, University of Tartu

Extramural Funding

2016 - 2017 Principal Investigator (PI) for a project titled *"Innovative teaching materials - Computer-based statistics project in Estonia"* (budget €173,047)
2015 PI for a project titled *"Developing assessment methodologies and assignments for middle school computer based statistics course"* (budget €18,720)
2014 – 2015 PI for a project titled *"Preparation of services and training materials for implementing computer based statistics education"* (budget €36,665)
2011 – 2014 Co-PI for *"iTeach Geometry Partnership Project"* ($500,000)

Awards, Grants, Fellowships

2016 **Nominee for the Distinguished Teacher of the Year Award,** University of Tartu,

Estonia
2015 **Nominee for the Teacher of the Year Award,** Department of Mathematics, University of Tartu
2014 **Nominee for the Jupiter Campus Exceptional Faculty Award,** FAU
2013 **Distinction through Discovery Curriculum Grant,** FAU, $2000
2012 **Distinction through Discovery Faculty Learning Community Fellow**, FAU
2012 **Excellence in Undergraduate Advising Award,** FAU, $2000
2011 **iTeach Geometry Partnership Grant**, FAU and PB School District, $500,000
2010 **MAA Florida Section Award for Distinguished University Teaching of Mathematics**
2007 **Excellence in Undergraduate Advising Award,** FAU, $2000
2007 **American Council of Learned Societies Contemplative Practices Grant**, $10,000

Selected Publications (2010-2018)

1. **T. Hõim**, D. Robbins, *A note on irreducible representations of some vector-valued function algebras*, to appear in Advances in Operator Theory.
2. **T. Hõim**, D. Robbins, *Cover topologies, ideals, and quotients for some spaces of vector-valued functions*, Advances in Operator Theory 3 (2018), no. 2, 26-39.
3. **T. Hõim**, D. Robbins, *Cover-strict topologies, ideals, and quotients for some spaces of vector-valued functions*, Banach J. of Math. Anal., Volume 10, Number 4 (2016), 783-799.
4. **T. Hõim**, M. Saulep, *Are we succeeding with context-based teaching in Mathematics?*, Teaching Mathematics: Retrospective and Perspectives, Tallinn University, (2016), 58-68.
5. **T. Hõim**, C. Hommik, & Ü. Kikas *Changing mathematics education in Estonia. Computer-based statistics project,* Proceedings of the CIDREE-STEM expert meeting (2016), 23-29.
6. **T. Hõim**, D. Robbins, *Amenability as hereditary property in some algebras of vector-valued functions*, American Mathematical Society, (2015) 135−144.
7. C. Hommik, **T. Hõim**, *Teachers' Feedback to Secondary-Level Statistics Course Innovation: Computer-Based Education Pilot in Estonia*, Proceedings of the 14th European Conference on e-Learning, United Kingdom, (2015), 705−711.
8. **T. Hõim**, D. Robbins, *Spectral synthesis and other results in some topological algebras of vector-valued functions*, Quaestiones Mathematicae, 34 (2011), 1-16.
9. **T. Hõim**, D. Robbins, *Strict topologies on spaces of vector-valued Functions*, Acta et Commentationes Universitatis Tartuensis de Mathematica, 14 (2010), 1-16.

Graduate and Honors Theses

I have supervised over 30 honors theses, 5 masters' theses, and I'm currently co-advising two graduate theses.

Professional Societies and Honoraries

American Mathematical Society, Association for Women in Mathematics, The Mathematical Association of America, Council on Undergraduate Research, Phi Beta Delta Honor Society

Johanna Elizabeth Kowalko

Education

2013	Ph.D., Genetics	Harvard University, Boston MA
2005	B.A., Biology	Brown University, Providence MA

Research Experience

2018-present **Assistant Professor**, Wilkes Honors College at Florida Atlantic University

2014-2018 **Adjunct Assistant Professor**, Iowa State University

2013-2018 **Assistant Scientist (Independent Postdoc)**, Iowa State University

Research mentor: Dr. Jeffrey Essner

2007-2013 **Graduate Research**, Harvard University

Research mentor: Dr. Clifford Tabin

Thesis: The genetic basis of behavior in the blind Mexican cavefish, *Astyanax mexicanus*

2005-2007 **Research Technician**, Children's Hospital of Philadelphia

Research supervisor: Dr. Michael Sebert

Publications

Gunesch JT, Angelo LS, Mahaptra S, Deering RP, **Kowalko JE**, Sleiman P, Tobias JW, Monaco-Shawver L, Orange JS, Mace EM. Genome-wide analysis and functional profiling of human NH cell lines. Mol Immunol. 2018 Jul 24.

Tabin JA, Aspiras A, Martineau B, Riddle M, **Kowalko J**, Borowsky R, Rohner N, Tabin CJ. Temperature preference of cave and surface populations of *Astyanax mexicanus*. Dev Biol 2018 April 25.

Klaassen H, Wang Y, Adamski K, Rohner N, **Kowalko JE**. CRISPR mutagenesis confirms the role of *oca2* in melanin pigmentation in *Astyanax mexicanus.* Dev Biol 2018 Mar 16.

Kowalko JE, Ma L, Jeffery WR. Genome Editing in *Astyanax mexicanus* Using Transcription Activator-like Effector Nucleases. J Vis Exp 2016 June 20; (112).

Ma L, Jeffery WR, Essner JJ, **Kowalko JE**. Genome editing using TALENs in blind Mexican cavefish, *Astyanax mexicanus*. PLoS One 2015 Mar 16; 10(3): e0119370.

Kuo T, **Kowalko JE**, DiTommaso T, Nyambi M, Montoro DT, Essner JJ, Whited JL. TALEN-mediated gene editing of the *thrombospondin-1* locus in axolotl. Regeneration 2015 Feb; 2(1): 37-43.

Rohner N, Jarosz DF, **Kowalko JE**, Yoshizawa M, Jeffery WR, Borowsky RL, Lindquist S, Tabin CJ. Cryptic variation in morphological evolution: HSP90 as a capacitor for the loss of eyes in cavefish. Science 2013 Dec 13; 342(6164): 1372-5.

Commentaries in:
Cavefish study supports controversial evolutionary mechanism (Science 2013)
Evolution: An eye for cryptic variation (Nat Rev Genet. 2014)

Kowalko JE, Rohner N, Linden TA, Rompani SB, Warren WC, Borowsky R, Tabin CJ, Jeffery WR, Yoshizawa M. Convergence in feeding posture occurs through different genetic loci in independently evolved cave populations of *Astyanax mexicanus*. PNAS 2013 Oct 15; 110(42): 1633-8.

Kowalko JE, Rohner N, Rompani SB, Peterson BK, Linden TA, Yoshizawa M, Kay EH, Weber J, Hoekstra HE, Jeffery WR, Borowsky R, Tabin CJ. Loss of schooling behavior in cavefish through sight-dependent and sight-independent mechanisms. Curr Biol 2013 Oct 7; 23(19): 1874-83.

Commentary in:
Evolution: skipping school (Curr Biol 2013)

Kowalko JE, Sebert ME. The Streptococcus pneumoniae competence regulatory system influences respiratory tract colonization. Infect Immun 2008 Jul;76(7):3131-40.

Undergraduate mentee co-authors are underlined.

Grants

Uncovering the contributions of albinism to the evolution of the Mexican cavefish
PI: Johanna Kowalko
Co-PI: Alex Keene, Florida Atlantic University

Teaching Experience

Falls 2013-2017	**Instructor for Introductory Biology**, undergraduate non-majors, Iowa State University
Spring 2013-14, 16	**Guest lecturer for Developmental Biology**, undergraduates, Iowa State University
Fall 2012	**Grader for Life Sciences IA**, undergraduates, Harvard University
Fall 2011	**Teaching Fellow for Life Sciences IA**, undergraduates, Harvard University
2009-2010	**Tutor for Hinton Scholars AP Biology**, high school students, Harvard University
Fall 2009	**Tutor for Genetics,** graduate students, Harvard University
Fall 2008	**Teaching Fellow for Genetics**, graduate students, Harvard University

Other Professional Experience

2014	National Academies Education Fellow in the Life Sciences

2010-2013 Harvard Division of Medical Sciences Education Path leader

Kevin Lanning

Education

Ph.D. in Psychology (Personality), University of California, Berkeley, December 1986.
A.B. in Psychology, University of California, Berkeley, December 1978

Academic positions

Associate to Full Professor, Wilkes Honors College of Florida Atlantic University (1998– present).
Assistant to Associate Professor, Oregon State University (1987-1998).
Lecturer, University of New South Wales, Sydney, Australia (1992-93).
Lecturer, University of California, Berkeley (1987).

Administrative positions

Faculty Assistant to the President (2012–2013)
Director, Honors Summer Institute (2007)
Faculty co-chair (division head) (2001-03), all at Florida Atlantic University.

Editorial positions

Editor, Analyses of Social Issues and Public Policy (2010 - 2014).
Associate Editor, Behavioral Sciences of Terrorism and Political Aggression (2008 - 2013).
Consulting Editor, Journal of Research in Personality (1998-2001, 2009 -).
Member, NSF review panel (2013).
Ad hoc reviewer, many journals, funding agencies, and convention programs. Co-chair, Division 9 (SPSSI) APA 2006 conference program.

Selected publications

1. Lanning, K., Pauletti, R., King, L. A., & McAdams, D. P. (2018) Personality development through natural language. Nature Human behaviour. http://bit.ly/Lanning2018Personality.
2. Lanning, K., Baron, S., & Webster, G. D. (2018). The network structure of personality psychology: What The Sage Handbook of Personality and Individual Differences tells us about the nature of the field. In V. Zeigler-Hill & T. Shackelford, Eds., The Sage Handbook of Personality and Individual Differences, Volume 1. Thousand Oaks, CA: Sage. (p. 384-406).
3. Lanning, K. (2017). What is the relationship between "personality" and "social" psychologies? Network, community, and whole text analyses of the structure of contemporary scholarship. Collabra, 3(1), 8. DOI:10.1525/collabra.70.
4. Lanning, K. (2014). The social psychology of the 2012 U.S. Presidential election. Analyses ofSocial Issues and Public Policy.
5. Lanning, K. (2012). Social psychology and contemporary immigration policy: An introduction. Analyses of Social Issues and Public Policy, 12, 1-4. DOI: 10.1111/j.1530-2415.2011.01271.x
6. Lanning, K. & Maruyama, G. (2010). The social psychology of the 2008 U.S. Presidential election. Analyses of Social Issues and Public Policy, 10, 171-181. DOI: 10.1111/j.1530- 2415.2010.01215.x
7. Lanning, K. & Rosenberg, A. (2009). The dimensionality of American political attitudes: Tensions between equality and freedom in the wake of September 11. Behavioral Sciences of Terrorism and Political Aggression, 1, 84-100. DOI: 10.1080/19434470902771667
8. Lanning, K. (2008). Democracy, voting and disenfranchisement in the United States: A social psychological perspective. Journal of Social Issues, 64, 431-446. DOI: 10.1111/j.1540-4560.2008.00571.x wise.fau.edu/~lanning lanning@fau.edu orcid.org/0000-0001-7707-3070
9. Lanning, K, Colucci, J., & Edwards, J. A. (2007). Changes in ego development in the wake of September 11. Journal of Research in Personality, 41, 197-202. DOI: 10.1016/j.jrp.2005.12.002
10. Lanning, K. (2005). The social psychology of the 2004 U. S. Presidential Election. Analyses of

Social Issues and Public Policy, 5, 145-204.
11. Edwards, J. A., Lanning, K, & Hooker, K. A. (2002). The MBTI and Social Information Processing: An Incremental Validity Study. Journal of Personality Assessment, 78, 432-450.
12. Lanning, K. (2002). Reflections on September 11th: Lessons from four psychological perspectives. Analyses of Social Issues and Public Policy, 2, 27-34. DOI: 10.1111/j.1530- 2415.2002.00023.x
13. Hogansen, J. & Lanning, K. (2001). Five factors in Sentence Completion Test categories: Towards rapprochement between trait and maturational approaches to personality. Journal of Research in Personality, 35, 449-462.
14. Einstein, D. & Lanning, K. (1998). Shame, guilt, ego development, and the five factor model of personality. Journal of Personality, 66, 555-582.
15. Lanning, K. (1996). Robustness is not dimensionality: On the sensitivity of component comparability coefficients to sample size. Multivariate Behavioral Research, 31, 33-46.
16. Lanning, K. (1994). The dimensionality of observer ratings on the California Adult Q-Set. Journal of Personality and Social Psychology, 67, 151-160. DOI: 10.1037/0022-3514.67.1.151
17. Lanning, K. (1991). & Gough, H. G. Shared variance in the California Psychological Inventory and the California Q-set. Journal of Personality and Social Psychology, 60, 596-606. DOI: 10.1037/0022-3514.60.4.596
18. Lanning, K. (1989). The detection of invalid response patterns on the California Psychological Inventory. Applied Psychological Measurement, 13, 45-56.
19. Lanning, K. (1988). Individual differences in scalability: An alternative conception of consistency for personality theory and measurement. Journal of Personality and Social Psychology, 55, 142-148. DOI: 10.1037/0022-3514.55.1.142
20. Lanning, K. (1987). Some reasons for distinguishing between "non-normative response" and "irrational decision." Journal of Psychology: Interdisciplinary and Applied, 121, 109-117.
21. Lanning, K. (1986). Traits, trait words, and the explanation of behavior. Theoretical and Philosophical Psychology, 6, 108-111.

Other scholarly products
Data sets and code for 26 projects housed at Open Science Foundation page https://osf.io/nmu7y/.
Sample video clips include On Barack Obama (2008, interview), The network structure of universities (2013, TEDx talk), and The Rise of Rage (2016, lecture).

GREGORY T. MACLEOD

CURRICULUM VITAE

Associate Professor
Harriet L. Wilkes Honors College & Department of Biology - CoS
Florida Atlantic University Jupiter, FL. 33458 USA
macleodg@fau.edu tel: +1 561 799 8205

Education

Ph.D. University of Sydney 1995-99 Neuroscience
M.B.A. AGSM - Australian Graduate 1989-90 General Management School of Management
B.Sc. Hons. University of Sydney 1986 Plant Physiology & Biophysics
B.Sc. University of Sydney 1983-85 Cell Biology & Plant Physiology

Research & Professional Experience

Associate Professor 2014-present Florida Atlantic University, Department of Biology Jupiter, FL. USA
Assistant Professor 2006-13 UTHSCSA, Department of Physiology San Antonio, TX. USA
Postdoctoral Fellow 2004-06 University of Arizona, Division of Neurobiology
mentor: Konrad E. Zinsmaier Postdoctoral Fellow 2000-04 University of Toronto, Department of Physiology
Harold L. Atwood & Milton P. Charlton Research Assistant 1994-99 University of Sydney, Department of Physiology

(Graduate Studies) supervisor: Maxwell R. Bennett

Memberships in Professional and Scientific Societies The Genetics Society of America, The Society for Neuroscience

Peer Review Service

Funding Agencies

National Institute of Health (NIH) - (CMND) 2012, 2013; (MDCN F/T(02/03)N) 2016, 2017; (BNPS) 2017; (F03A) 2016, 2017. National Science Foundation (NSF) - (IOS) 2008, 2009, 2010, 2011, 2012; American Heart Association (AHA) - (BRAIN 5) 2013; Italian Ministry of Health (MOH) - 2010, 2011; German Research Foundation - 2018

Journals

Brain Research, British Journal of Pharmacology, European Journal of Neuroscience, eLife, eNeuro, Frontiers in Synaptic Neuroscience, Journal of Insect Physiology, Journal of Neurogenetics, Journal of Neurophysiology, Journal of Neuroscience, Neurochemistry International, Molecular Biology of the Cell, PLoS One, Proceedings of the National Academy of Sciences of the USA, Synapse

Most Recent Research Articles (6 of 42)

1. Stawarski, M., Justs, K.A., Hernandez, R.X., Macleod, G.T. (2018) The application of 'kisser' probes

for resolving the distribution and microenvironment of membrane proteins in situ. Journal of Neurogenetics, doi: 10.1080/01677063.2018.1503260.

2. Ugur, B., Bao, H., Stawarski, M., Duraine, L.R., Zuo, Z., Lin, Y.Q., Neely, G.G., Macleod, G.T.,

Chapman, E.R., Bellen, H.J. (2017) The Krebs Cycle Enzyme Isocitrate Dehydrogenase 3A Couples Mitochondrial Metabolism to Synaptic Transmission. Cell Reports, 21: 3794-3806.

3. Rossano, A.J., Kato, A., Minard, K.I., Romero, M.F., Macleod G.T. (2017) Na+/H+-exchange via the Drosophila vesicular glutamate transporter (DVGLUT) mediates activity-induced acid efflux from presynaptic terminals. Journal of Physiology, 595: 805-824.

4. Ivannikov M.V. & Macleod G.T. (2017). Examining mitochondrial function at synapses in situ. In,

Yuriy M. Usachev & Stefan Strack (Eds.), Neuromethods: Techniques to investigate mitochondrial function in neurons. Springer Science + Business Media.

5. Gratz, S.J., Bruckner, J.J., Hernandez, R.X., Khateeb, K., Macleod, G.T., O'Connor-Giles, K.M.

(2017) Calcium channel levels at single synapses predict release probability and are upregulated in homeostatic potentiation. bioRxiv, doi: https://doi.org/10.1101/240051

6. Lu, Z., Chouhan, A.K., Borycz, J.A., Lu, Z., Rossano, A.J., Brain, K.L., Zhou, Y., Meinertzhagen,

I.A., Macleod, G.T. (2016) High-probability neurotransmitter release sites represent an energy- efficient design. Current Biology, 26: 2562-2571.

Current Research Funding

Title: The Impact of Synaptic Cleft pH Fluctuations on Short Term Synaptic Plasticity Reference: NIH R56 NS103906, Role: PI (25% effort), Date: 02/01/2018-01/31/2019 Granting Agency: National Institute of Neurological Disorders and Stroke (NINDS)

Teaching

At Florida Atlantic University I am teaching the Honors Cell Biology course (PCB4102) at the Harriet L. Wilkes Honors College on the MacArthur campus at Jupiter in the spring semester. It is a 4 credit hour course involving 50 hours of lectures. I also mentor up to 5 undergraduate students each semester in my laboratory in Honors Research in Biology (BSC4915) and Honors Thesis in Biology (BSC4970).

Previously, at the UTHSCSA, I was involved in 5 courses either as a lecturer or a director, with over 20 contact hours per year as a lecturer and directing two courses with a total of 52 contact hours. I also directed the Drosophila Neurobiology summer course at the Cold Spring Harbor Laboratory (CSHL) with 160 contact hours: https://meetings.cshl.edu/courses.aspx?course=C-DROS&year=19

Most Recent Invited Talks (3 of 10 in last 5 years)

Neuronal bioenergetics: Coordinating mitochondrial number and function with the energy requirements of nerve terminals – Oct 2018. University of Pittsburgh School of Medicine. Host – Edwin Levitan

Neuronal bioenergetics: Coordinating mitochondrial number and function with the energy requirements of nerve terminals – Oct 2018. UTHSC - Houston, McGovern Medical School. Host – Kartik Venkatachalam

Alkalinization of the synaptic cleft during burst firing; a phenomenon that ameliorates frequency depression – Feb 2018. University of Miami, Miller School of Medicine. Host – Daniel Isom

Dr. Warren Wm. McGovern, Ph. D.

Harriet L. Wilkes Honors College
Florida Atlantic University
e-mail: warren.mcgovern@fau.edu
(561) 799-8028 (office) http://home.fau.edu/wmcgove1/web/index.html
Office: HC 101

RESEARCH & TEACHING EXPERIENCE

Associate Prof. of Math., Florida Atlantic University — August 2012 - Present
H. L. Wilkes Honors College

Assistant Prof. of Math., Florida Atlantic University — August 2010 - May 2012
H. L. Wilkes Honors College

Research Prof. of Math., Florida Atlantic University — November 2010 - Present
Department of Mathematical Sciences

EDUCATION

Ph. D., Mathematics, University of Florida — May 1998

THESIS and DISSERTATION STUDENTS

(1) I am currently the first reader of the thesis for the students: Maxwell Ksasell, Richard Krogman, William Parker. I was the first reader of their thesis.
(2) Ms. Bettina Teng graduated in December of 2016 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of her thesis.
(3) Mr. Brian Evans graduated in May of 2016 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of his thesis.
(4) Ms. Colleen Sanders graduated in May of 2016 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of her thesis.
(5) Ms. Chastity Jhingree graduated in May of 2016 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of her thesis.
(6) Ms. Rachel Rohan graduated in May of 2016 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of her thesis.
(7) Mr. Kurt Kepfer graduated in December of 2015 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of his thesis.
(8) Mr. Alden Sharp graduated in May of 2015 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of his thesis.
(9) Mr. Shan Raja graduated in May of 2015 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of his thesis.
(10) Ms. Jessica Garafola graduated in May of 2015 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of her thesis.
(11) Dr. Madhav Sharma graduated with a Ph.D. in Mathematics (August 2015) from Florida Atlantic University. I was the co-adviser with Dr. L. Klingler.
(12) Ms. Madeleine Lenke graduated in December of 2012 from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader of her thesis.

(13) Mr. Robert Lang graduated in May (2011) with a Bachelor of Liberal Arts from the H.L. Wilkes Honors College of Florida Atlantic University. I was the first reader for the thesis titled *The Minimum Rank Problem for Chordal Graphs*.

REFEREED PUBLICATIONS

See http://home.fau.edu/wmcgove1/web/Papers/pub.html for copies of the following list of articles.

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(1) P. Bhattacharjee and W. Wm. McGovern, *Maximal d-subgroup and ultrafilters*, Rendiconti del Circolo Matematico di Palermo Series, to appear.

(2) L. Klingler and W. Wm. McGovern, *Pseudo-valuation rings and C*(*X*), J. Algebra, to appear.

(3) W. Wm. McGovern, The group ring Z_pC_q and Ye's Theorem, J. Alg. Appl, to appear.

(4) P. Bhattacharjee and W. Wm. McGovern, *Lamron `-groups*, Quast. Math., **40** (2017), no. 1, 5761.

(5) J.J. Ma and W. Wm. McGovern, *Division closed partially ordered rings*, Alg. Univ., **78** (2017), no. 4, 515532.

(6) A.W. Hager and W. Wm. McGovern, *The projectable hull of an archimedean `-group with weak unit* , Categories and General Alg. Struct. Appl., **7** (2017), no. 1, 165179.

(7) R.N. Ball, A.W. Hager, D. Johnson, J. Madden, and W. Wm. McGovern, *The Yosida space of the vector lattice hull of an archimedean `-group with unit*, Houston J. of Math, 43 (2017), no. 3, 10191030.

(8) A.W. Hager and W. Wm. McGovern, *The Yosida representation of the projectable hull of an archimedean `-group with weak unit*, Quaest. Math. 40 (2017), no. 1, 5761.

(9) E. Ghashghaei and W. Wm. McGovern, *Fusible rings*, Comm. Alg., **45** (2017), no. 3, 11511165.

(10) W. Wm. McGovern and M. Sharma, *Gaussian properties of the rings R*(*X*) *and R* , Comm. Alg. **44** (2016), no. 4, 16361646.

(11) A. J. Diesl, T.J. Dorsey, W. Iberkleid, R. Lafuente-Rodriguez, W. Wm. McGovern, *Strongly clean triangular matrices over abelian rings*, J. Pure Appl. Algebra **219** (2015) 4889-4906.

(12) W. Wm. McGovern and R. Raphael, *Considering semi-clean rings of continuous functions*, Topology Appl. **190** (2015) 99-108.

(13) W. Wm. McGovern, S. Raja, and A. Sharp, *Commutative nil clean group rings*, J. Algebra and its Applications, **14** (2015).

GRANT PROPOSALS

(1) (Funded) FAU, Discovery through Distinction, 2013-2015

(2) (Funded) Florida Department of Education, "i-teach geometry", December 2011-2014.

Tracy John Mincer

Marine Microbiologist and Chemist
email: tmincer@fau.edu
Department of Math and Sciences
Florida Atlantic University
Harriet L. Wilkes Honors College/Harbor Branch Oceanographic Institute

Education:
B.S. Chemistry/Biochemistry, University of California, San Diego. Spring, 1995
Ph.D. Oceanography, Scripps Institution of Oceanography, University of California, San Diego. Advisor, Professor William H. Fenical. Degree awarded Fall 2004

Professional Experience:
Staff Research Associate I/II, University of California San Diego, Department of Biology, Laboratory of Professor Donald R. Helinski. Spring 1995 – Fall 1998
Postdoctoral Associate/Lecturer, Massachusetts Institute of Technology. Advisor, Professor Edward F. DeLong. October, 2004 – March, 2008
Assistant/Associate Scientist, Woods Hole Oceanographic Institution, Department of Marine Chemistry and Geochemistry, June 01, 2008 – January 31, 2018
Assistant Professor Florida Atlantic University, Wilkes Honors College (with Harbor Branch Oceanographic Institute)--April 9, 2018 – Present

Selected Awards and Recognition:
Pre-doctoral Fellowship, Living Oceans Foundation: $ 25,000/year fellowship (Fall 2001 – Spring 2004) covering stipend and expenses, 36 months of support
Faculty of 1000, Biology, "Exceptional," "Must Read" or "Recommended" critical recognition for 4 peer-reviewed publications, indicated below

Professional Affiliations:
Association for the Sciences of Limnology and Oceanography (ASLO) 2012–present
American Society for Microbiology (ASM) 2014–present
American Chemical Society (ACS) 2016–present

Research Interests:
–Chemical ecology of microbes: chemical communication, host-microbiome interactions, and deterrence of grazing
–Applications of chemical ecology for drug-discovery and biotechnology
–Mining and bioengineering of natural microbial 'feedstocks' for development of therapeutic small molecules and enzymes

Patents Awarded:
1. "Marine actinomycete taxon for drug and fermentation product discovery." Inventors: **Mincer, T. J.**; Jensen, P. R. & Fenical, W. H. United States Patent number**:** 7,144,723 Issued**:** December 5, 2006
2. "Salinosporamides and methods for use thereof" Inventors: Feling, R. H., **Mincer, T. J.**; Jensen, P. R. & Fenical, W. H. United States Patent number: 7,176,233 Issued**:** February 13, 2007
3. "Methods and Compositions for Increasing Antibiotic Activity" Full-US Patent Filed, July 13, 2015. Inventors: **Mincer, T. J.**, Whalen, K. E. United States Patent number: US9820967B2 Issued**:** November 21**,** 2017

Patent Applications:
1. **Mincer, T. J.**, Whalen, K. E., LaPlante, K. L., Deering, R., & Rowley, D. C. "Small Molecule Growth Inhibitors of Microbial Pathogens" Filed, November 8, 2016. U.S. Provisional Patent Application No. 62/419,112

Academic Leadership:
Advisor/Consultant: World Business Council for Sustainable Development, Tire Industry Project for understanding fate of Tire Road Wear Particles
• Invited Editor, Special Issue of Marine Drugs: "Antibacterial Marine Pharmacology"

• Editorial Board Member- *Frontiers in Microbiology*
• Ad Hoc Reviewer: National Science Foundation, Maryland Sea Grant, California Sea Grant
• Panelist and Proposal Reviewer for National Institutes of Health- International Cooperative Biodiversity Group program
• Reviewer: *Proceedings of the National Academy of Sciences, Applied and Environmental Microbiology, Aquatic Microbial Ecology, The ISME Journal, Environmental Microbiology, Environmental Microbiology Reports, Geomicrobiology Journal, Deep Sea Research, Limnology and Oceanography, Marine Pollution Bulletin, FEMS Microbial Letters, Journal of Chemical Ecology.*

Current and Recent Major External Research Support:

- American Chemistry Council, Mincer (Co-PI with 3 other collaborators) 08/01/17- 07/31/19 Plastic Marine Debris Fragmentation, Density, and Deposition $150,000 (funded)
- NOAA, Marine Debris Program, Mincer (PI) 08/01/17-07/31/19 Assessment of Plastic Marine Debris Export Mechanisms and Risk to Sea Scallop Fisheries of the Mid-Atlantic Bight $385,380 (funded)
- NIAID-NIH, R21 AI119311, Mincer (PI) 07/01/15-06/30/17 Discovery and development of RND pump inhibitors from marine microbial sources $159,238
- Flatley Discovery Lab, Mincer (PI) 08/25/11-06/24/16 Microbial Bioactive Natural Products from the Marine Environment $1,532,917
- Gordon and Betty Moore Foundation, Mincer (Co-PI with 4 other collaborators) 10/09/12-09/30/15 Infochemical Control of Microbial Interactions and Nutrient Cycling in the North Atlantic $2,423,000
- OCE-1131415, National Science Foundation, Mincer (PI) 09/01/11-08/31/14 Microbial Supply and Demand of Methanol in the Marine Euphotic Zone $493,910
- OCE-1155671, National Science Foundation, Mincer (PI) 03/01/12-02/28/15 Microbial Interactions with Marine Plastic Debris: Diversity, Function and Fate $247,908

Peer-Reviewed Publications:
*corresponding or co-corresponding author; +advisee in Mincer Laboratory

44. Field-based Evidence for Microplastic in Marine Aggregates and Mussels: Implications for Trophic Transfer Shiye Zhao, J. Evan Ward, Meghan Danley, Tracy J. Mincer, *Environmental Science and Technology*, DOI: 10.1021/acs.est.8b03467

43. Lamborg, C., **Mincer, T. J.**, Buchanan, W., Collins, C., Swarr, G., Ganguli, P., Whalen, K. E.+, Bothner, M., and Valiela, I. "Mercury Speciation and Retention in a Salt Marsh Undergoing Long-term Fertilization" April 2018. Provisionally accepted (August 2018): *Estuarine, Coastal and Shelf Science*

42. Lanctôt, C., Danis, B., **Mincer, T. J.**, Catarino, A. I., Cresswell, T., Oberhaensli, F., Metian, M., Karapanagioti, H., Swarzenski, P., Tolosa, I., Al-Sid-Cheikh, M. "Application of nuclear techniques to environmental plastics research." *Accepted*: Journal of Environmental Radioactivity, February, 2018. Submission no: JENVRAD_2018_122

And 41 other publications

Jon A. Moore
Florida Atlantic University
Wilkes Honors College
5353 Parkside Drive
Jupiter, FL 33458
e-mail: jmoore@fau.edu

a. Professional Preparation

Univ. Arizona	Geosciences	B.S., 1983
Univ. Arizona	Ecology & Evolutionary Biology	B.S., 1983
Yale University	Biology	M.S., 1987
Yale University	Biology	Ph.D., 1993

b. Primary Appointments (*academic or professional appointments*)

2013-present, Professor of Biology, Wilkes Honors College, Florida Atlantic University
2005-2013, Associate Professor of Biology, Wilkes Honors College, Florida Atlantic University
2000-2005, Assistant Professor of Biology, Wilkes Honors College, Florida Atlantic University
1998-2000, NRC Post-doctoral Fellow, National Marine Fisheries Service, Woods Hole, MA.
1994-1997, Lecturer, Department of Ecology and Evolutionary Biology, Yale University

c. **Other Appointments**

Faculty member, Marine Science and Oceanography MS program at HBOI (since 2017)
Faculty member, Integrative Biology Ph.D. program at FAU Boca (since 2014)
Faculty member, Environmental Science MS program at FAU Davie (since 2008)
Curatorial Affiliate, Div. VZ, Yale Univ., Peabody Museum of Natural History (since 1994)

d. **Publications** (undergraduate student names with *, grad students with **)

>65 peer-reviewed papers, books chapters, and books
>85 conference presentations

Cardenas, P. and J.A. Moore. 2017. First records of *Geodia* demosponges from the New England Seamounts, an opportunity to test the use of DNA mini-barcodes on museum specimens. Marine Biodiversity DOI 10.1007/s12526-017-0775-3

Moore, J.A., A.C. Hipps**, C. Reiland-Smith**, and L. Fremont*. 2017. *Leiocephalus carinatus* (Northern Curlytail Lizard). Gopher Tortoise burrow associate. Herp. Rev. 48(4): 848.

Dornburg, A, J. A. Moore, J. M. Beaulieu, R. Eytan, and T. J. Near. 2015. The impact of shifts in marine biodiversity hotspots on patterns of range evolution: evidence from the Holocentridae (squirrelfishes and soldierfishes). Evolution 69(1):146-161.

Moore, J. A. and A. Dornburg. 2014. Ingestion of fossil seashells, stones, and small mammal bones by gravid gopher tortoises (*Gopherus polyphemus*) in South Florida. Bull. Peabody Museum of Natural History. 55(1):55-63.

Near, T. J. R., I. Eytan, A. Dornburg, K. L. Kuhn, J. A. Moore, M. P. Davis, P. C. Wainwright, M. Friedman, and W. L. Smith. 2012. Resolution of ray-finned fish phylogeny and timing of diversification. Proceedings of the National Academy of Sciences 109(34):13698-13703.

Moore, J. A., M. Strattan*, and V. Szabo*. 2009. Evidence for year-round reproduction in a population of the gopher tortoise from southern Florida. Bulletin of Peabody Museum Natural History (Yale University) 50(2):387-392.

Dornburg, A., J. A. Moore, G. J. Watkins-Colwell. 2009. Distribution of freshwater fishes in Connecticut based on specimens in the Yale Peabody Museum and other collections. Bulletin of Peabody Museum of Natural History (Yale University) 50(2):347-379.

Meshaka, W. E., Jr., H. T. Smith, E. Golden, J. A. Moore, S. Fitchett, E. M. Cowan, R. M. Engeman, S. R. Sekscienski**, and H. L. Cress. 2007. Green iguanas (*Iguana iguana*): unintended consequence of sound wildlife management practices in a South Florida park. Herpetological Conservation and Biology 2(2):149-156.

Moore, J. A., P. J. Auster, D. Calini, K. Heinonen, K. Barber, and B. Hecker. 2008. The false boarfish, *Neocyttus helgae*, in the western North Atlantic. Bulletin of the Peabody Museum of Natural History (Yale University) 49(1):31-41.

Wetterer, J. K. and J. A. Moore. 2005. Fire ants on gopher tortoise burrows in southern Florida. Florida Entomologist 88(4):349-354.

Goethel*, C. A., H. T. Smith, and J. A. Moore. 2007. *Ophisaurus ventralis* (Eastern Glass Lizard). A review of road-kill mortalities and occurrence in Florida with notes on an unusual event. Journal of Kansas Herpetology 22:13.

Marti*, D, W. O'Brien, H. Smith, J. Moore, and S. Fitchett. 2005 Endangered species, prescribed fires, and public resistance in a Florida scrub community. Endangered Species Update 22(1):18-28.

Moore, J. A., K. E. Hartel, J. E. Craddock, and J. K. Galbraith. 2003. An annotated list of deepwater fishes from off New England, with new area records. Northeastern Naturalist 10(2):159-248.

Moore, J. A., M. Vecchione, K. E. Hartel, B. B. Collette, J. K. Galbraith, R. Gibbons, M. Turnipseed, M. Southworth, and E. Watkins. 2003. Biodiversity of Bear Seamount, New England seamount chain: results of exploratory trawling. Journal of Northwest Atlantic Fisheries Science 31:363-372.

e. Synergistic Activities

25 at-sea oceanographic research expeditions with NOAA & WHOI (327 days at sea)
18 years of gopher tortoise ecology research in southeastern Florida
9 years of manatee photoidentification at HBOI

f. Teaching Activities

Teach a wide array of biology courses (Marine Biology & Oceanography, Coral Reef Ecology, Biology of Fishes, Evolution, Animal Behavior, Conservation Biology, Marine Conservation, Vertebrate Zoology, History of Life) and an interdisciplinary biological illustration course (Audubon's Nature)

Supervised 92 completed honors theses and second reader on 39 other honors theses

Currently supervising 10 more honors theses

Supervised 8 completed MS thesis students, 2 non-thesis MS students, and served as committee member for 7 completed MS thesis students and 3 Ph.D. students

g. University Service

Typically serve on 2-3 College standing committees each year (Admissions and P&T this year)

Served on faculty search committees in 2017 (chair, biogeochemist for WHC/HBOI), 2013 & 2014 (fish nutritionist & fish ecologist for HBOI), 2013 (American literature for WHC)

Served on graduate admissions committee for Environmental Science MS Program since 2011

WILLIAM EUGENE O'BRIEN

Harriet L. Wilkes Honors College Florida Atlantic University 5353 Parkside Dr.
Jupiter, FL 33458
561-799-8033 w
561-222-3160 c wobrien@fau.edu

EDUCATION

Ph.D. Virginia Polytechnic Institute and State University. Environmental Design and Planning. 1997.
M.S. Virginia Polytechnic Institute and State University. Geography. 1991.
B.S. Radford University. Major: Geography. 1985.

ACADEMIC EMPLOYMENT

2007-present. *Associate Professor of Environmental Studies*, Wilkes Honors College, FAU.
2009-2011. *Chair of Social Sciences and Humanities*, Wilkes Honors College, FAU.
2001-2007. *Assistant Professor of Environmental Studies*, Wilkes Honors College, FAU.
2000-01. *Visiting Assistant Professor of Environmental Studies*, Wilkes Honors College, FAU.

PUBLISHED SCHOLARSHIP (*co-authorship with an undergraduate student; name in italics)

REFEREED PUBLICATIONS IN PRINT BOOK

Forthcoming. *Landscapes of Exclusion: State Parks and Jim Crow in the American South*. University of Massachusetts Press/Library of American Landscape History. Summer 2015.

Articles

2012. State Parks and Jim Crow in the Decade before *Brown v. Board of Education*. *Geographical Review* 102(2): 166-179.

2012. Marginal Voices in 'Wild' America: Race, Gender, Ethnicity, and 'Nature' in *The National Parks. Journal of American Culture* 35(1): 15-25 (William O'Brien and Wairimũ Ngarũiya Njambi).

*2012. Olympic Legacy: A Comparison of Barcelona 2002 and Athens 2004. *FAU Undergraduate Research Journal* 1(1): 19-22. (*Emma Nunan* and William O'Brien).

Book chapters

2008. Hearts, Minds, and Wetlands: Stakeholders and Ecological Restoration from the Everglades to the Mesopotamian Marshlands. In *Burden or Benefit? Imperial Benevolence and its Legacies.* eds. Helen Gilbert and Chris Tiffin, 198-213.

Bloomington and Indianapolis: Indiana University Press.

Refereed Publications Currently in Progress

In revision. Making Tracks in Pursuit of the Wild: Mobilizing Natureculture on a (Com)modified African Savanna. In eds. Jillian M. Rickly, Kevin Hannam, and Mary Mostafanezhad. *Tourism and Leisure Mobilities: Politics, Work, and Play*. New York and London: Routledge. (William O'Brien and Wairimũ Ngarũiya Njambi). Expected publication 2016.

In preparation. Aesthetics of Nature and Race in State Park Landscapes in the Segregated American South. In eds. Yolonda Youngs and Geoffrey Buckley, *The American Environment Revisited*. New York: Rowman & Littlefield Publishers. Expected publication 2017.

GRANTS

External

David R. Coffin Publication Grant 2012. Foundation for Landscape Studies. $3,500.

Association of American Geographers (AAG) Research Grant 2012. $1000.

National Science Foundation. Project title: Discovery-Based Science and Mathematics in an Environmental Context. 2001. $187,054. (Invited to participate in 2002 after the grant start date).

Internal

Faculty Development Award. Harriet L. Wilkes Honors College, FAU. Conference Travel: International Conference of Historical Geographers, London, UK, July 2015. $1000.

Faculty Development Award. Harriet L. Wilkes Honors College, FAU. Conference travel: George Wright Society, Denver, CO, March 2013. $1000.

Faculty Development Award. Harriet L. Wilkes Honors College, FAU. Project title: Landscapes of Exclusion: State Parks and Jim Crow in the American South 2012. $500.

Eugene T. Smith

Phone: (561)799-8023
E-mail: esmith@fau.edu

Education

UW-Madison, Food Science	B.A., 1983
UW-Milwaukee, Chemistry	Ph.D., 1991
University of Georgia, Biochemistry	Post Doc, 1991-1993

Appointments

2009-2011, Professor, Wilkes Honors College, FAU, Jupiter, FL
2003-2009, Associate Professor, Wilkes Honors College, FAU, Jupiter, FL
2002-2003, Visiting Professor, Eckerd College, Tampa, FL
1998-2002, Assistant Professor, Hamline University, St. Paul, MN
1993-1998, Assistant Professor, Florida Tech, Melbourne, FL
1983-1986, Quality Control Supervisor, Hawthorn Mellody Farms Dairy, Whitewater, WI

Selected publications from past 5 years

63 Refereed Publications, 15 Educational, 30 Undergraduate co-authors (names in italics)
22 International, 24 National, and 59 Regional presentations
92 Undergraduate coauthors on presentations

54. E.T. Smith. Examination of n = 2 reaction mechanisms that reproduce pH-dependent reduction potentials. *Anal. Chim. Acta*, **572**, 259-264 (2006).
55. M.E. Rupright and E.T. Smith**.** Processing Noisy Signals-A Computer Laboratory Exercise. *Chem. Ed*., **11**, 1-4 (2006).
56. *L. J. Owens* and E.T. Smith. Construction of an Inexpensive Portable Fume Hood Suitable for Small Classroom Demonstrations. *Chem. Ed*., **12**, 266-268, 2007.
57. *G.T. Whitaker*, E.A. Belogay, and E.T. Smith. Spectroelectrochemical Determination of the Redox Potential of Cytochrome c via Multiple Regression. *Chem. Ed*., **12**, 392-395 (2007).
58. E.R. Malinowski, M. Barber, *G. Whitaker*, and E.T. Smith. Factor analysis of spectroelectrochemical reduction of FAD reveals pK_a of the reduced state and reduction pathway. *Chemometrics*, **21**, 520-528 (2007).
62. **Eugene T. Smith**,***** Eugene A. Belogay, and Terje Hõim. Using Multiple Linear Regression to Analyze Mixtures: An Excel Spreadsheet Exercise for Undergraduates. *Chem. Ed.*, **15**, 103-107 (2010).

Teaching Support

Six grants (two internal (PI, 3.5K), four external (PI, 65K))
Hewlett Packard Equipment Grant (PI, 38K, 1997)
NSF-STEM (co-PI, $500K/2007-2012)

Research Support

Eight research grants (two NIH, AREA (PI, 75K), R-01 (co-PI, 930K), two ACS-PRF (PI, 50K), two FSEC (PI, 33K), internal FAU (PI, 10K)

LAURA L. VERNON

PROFESSIONAL POSITIONS

2006 – present **Florida Atlantic University Jupiter, FL**

- 2010-present Associate Professor, Wilkes Honors College
- 2006-2010 Assistant Professor, Wilkes Honors College

2002 – 2006 **Auburn University Auburn, AL**

- Assistant Professor, Department of Psychology

2004 – 2006 **Psychological Associates, LLC Auburn, AL**

- Licensed Clinical Psychologist, Alabama Board of Examiners in Psychology, License #0001248

EDUCATION AND TRAINING

2001 – 2002 **Central Michigan University Mt. Pleasant, MI**

- Postdoctoral Fellow, Trauma and Anxiety Disorders Clinic

2000 – 2001 **San Francisco Veterans Affairs Medical Center San Francisco, CA**

- Clinical Psychology Intern

Major Rotations: Posttraumatic Stress Disorder Clinical Team, Substance Use/PTSD Team, Neuropsychological and Psychological Assessment, Health Psychology and Behavioral Medicine. Minor Rotations: Substance Abuse Outpatient Clinic, Memory Disorders Clinic, Evidence-based Psychodynamic Psychotherapy, Family Therapy.

1995 – 2000 **University of Illinois at Urbana-Champaign Urbana, IL**

- Ph.D. 2000 Clinical Psychology

Thesis: The effects of attributions and trauma characteristics on emotion
Chair: Howard Berenbaum, Ph.D.

- M.A. 1998 Clinical Psychology

Thesis: Disgust and fear in response to spiders
Chair: Howard Berenbaum, Ph.D.

1991 – 1995 **Northwestern University Evanston, IL**

- B.A., Psychology, Honors

Honors Thesis: Context effects on return of fear, with caffeine as an internal context
Chair: Susan Mineka, Ph.D.

- B.A., Sociology, Honors

Honors Thesis: The effects of self-consciousness on charismatic religious behavior Chair: Arthur Stinchcombe, Ph.D.

RESEARCH AND TEACHING GRANTS

2015 Smith Innovation Fund, with Jacqueline Fewkes. *The Gamification of Education. $10,000.*

2013-2014 e-Learning Curriculum Design Grant, with Jacqueline Fewkes. *Super Thesis World. $10,000.*

2013-2014 Florida Atlantic University Wilkes Honors College Faculty Development Award, with Julie Earles. *Equine Assisted Therapy.* $640.

2003-2004 Principal Investigator, Auburn University Competitive Research Grant. *The Effects of Disgust on Attention and Memory. $7,089.*

HONORS AND AWARDS

2018 Distinguished Teacher of the Year Award, Florida Atlantic University

2016 Excellence and Innovation in Undergraduate Advising Award, Florida Atlantic University
2016 Exceptional Faculty Award, Northern Campuses Teaching Award, Florida Atlantic University
2013 Excellence and Innovation in Undergraduate Teaching Award, Florida Atlantic University
2009 Excellence and Innovation in Undergraduate Teaching Award, Florida Atlantic University
2008 Exceptional Faculty of the Year, MAC Awards, Wilkes Honors College, Florida Atlantic University

PUBLICATIONS

INTERNATIONAL PEER-REVIEWED JOURNAL ARTICLES

Supervised student contributions are denoted as follows: *undergraduate student, **graduate student

Hirai, M., Vernon, L.L., **& Clum, G. A. (in press). Factor structure and administration measurement invariance of the Beliefs Toward Mental Illness Scale in Latino college samples: Paper-pencil vs. internet administrations.** ***Assessment.*** **First Published July 28, 2016. DOI: https://doi.org/10.1177/1073191116661630**

Vernon, L. L., **& Earles, J. L. (2018). The perils and payoffs of conducting clinical trials: Equine assisted therapy case study.** ***Research Methods Cases in Psychology*****. DOI: http://dx.doi.org/10.4135/9781526438430**

Earles, J. L., Kersten, A. W., Vernon, L. L.**, & *Starkings, R. (2016). Memory for positive, negative, and neutral events: Does emotional valence influence binding in event memory?** ***Cognition and Emotion, 30(2),*** **378-88. DOI: 10.1080/02699931.2014.996530**

Earles, J. L., Vernon, L. L.**, & Yetz, J. P. (2015). Equine-assisted therapy as an effective treatment for anxiety and posttraumatic stress symptoms.** ***Journal of Traumatic Stress, 28(2),*** **149-52. doi: 10.1002/jts.21990**

Hirai, M., Vernon, L.L., **Popan, J.R., & Clum, G. A. (2015). Acculturation and enculturation, stigma toward psychological disorders, and treatment preferences in a Mexican American sample: The role of education in reducing stigma.** ***Journal of Latina/o Psychology, 3(2),*** **88-102. doi: 10.1037/lat0000035**

Vernon, L. L.**, & Hirai, M. (2012). Considering ethnicity and gender effects in disgust propensity and spider and snake phobia: Comparing Asian Americans and European Americans.** ***Journal of Experimental Psychopathology, 3(3),*** **409-422. doi: 10.5127/jep.015911**

Hirai, M., & Vernon, L. L. **(2012). The role of disgust propensity in blood-injection-injury phobia: Comparisons between Asian Americans and Caucasian Americans.** ***Cognition and Emotion,*** **25(8), 1500-1509. doi:10.1080/02699931.2010.547564**

James K. Wetterer

Wilkes Honors College, Florida Atlantic University
5353 Parkside Drive, Jupiter, FL 33458
Phone: (561) 799-8648; FAX: (561) 799-8602; e-mail: wetterer@fau.edu

EDUCATION

UNIVERSITY OF WASHINGTON, Seattle, WA, 9/83 - 8/88
Ph.D., Zoology: Ecology and Evolution; Advisor: Gordon H. Orians.

MICHIGAN STATE UNIVERSITY, East Lansing, MI, 9/81 - 9/83
M.S., Zoology: Ecology; Advisors: Earl E. Werner and Donald J. Hall.

CORNELL UNIVERSITY, Ithaca, NY, 9/76 - 5/79
A.B., Biology: Ecology and Systematics.

WORK EXPERIENCE

FLORIDA ATLANTIC UNIVERSITY, Wilkes Honors College
8/04 - present: **Professor**; 7/98 - 7/04: **Associate Professor**

COLUMBIA UNIVERSITY, Department of Earth and Environmental Science
7/96 - 6/98: **Assistant Professor**

WHEATON COLLEGE, Department of Biology
8/94 - 6/96: **Visiting Assistant Professor**

HARVARD UNIVERSITY, Museum of Comparative Zoology
8/91- 6/94: **Post-doctoral Fellow**; Behavior, ecology, and evolution of fungus-growing ants

PRINCETON UNIVERSITY, Department of Ecology and Evolutionary Biology
7/89 - 7/91: **Research Associate**; Ecology and evolution of leaf-cutting ants

VANDERBILT UNIVERSITY, Department of Psychology
9/88 - 7/89: **Post-doctoral Fellow**; Visual psychophysics of fish and horseshoe crabs

SELECTED PUBLICATIONS

1. Wetterer, J.K., and C.J. Bishop. 1985. Planktivore prey selection: the reactive field volume model versus the apparent size model. Ecology 66: 457-464.
5. Wetterer, J.K. 1989. Mechanisms of prey choice by planktivorous fish: perceptual constraints and rules of thumb. Animal Behaviour 37: 955-967.
6. Wetterer, J.K. 1989. Central place foraging theory: when load size affects travel time. Theoretical Population Biology 36: 267-280.
9. Wetterer, J.K. 1991. Allometry and the geometry of leaf cutting in *Atta cephalotes.* Behavioral Ecology and Sociobiology 29: 347-352.
16. Wetterer, J.K. and G. Nevitt. 1993. The stream where they live. Journal of Irreproducible Results 38: 12.
23. Wetterer, J.K. 1995. Forager size and ecology of *Acromyrmex coronatus* and other leaf-cutting ants

in Costa Rica. Oecologia 104: 409-415.

29. Wetterer, J.K., T. R. Schultz, and R. Meier. 1998. Phylogeny of fungus-growing ants (Tribe Attini) based on mtDNA sequence and morphology. Molecular Phylogenetics and Evolution 9: 42-47.

30. Wetterer, J.K. 1998. Nonindigenous ants associated with geothermal and human disturbance in Hawai'i Volcanoes National Park. Pacific Science 52: 40-50.

35. Wetterer, J.K., P.D. Walsh, and L.J.T. White. 1999. *Wasmannia auropunctata* (Roger) (Hymenoptera: Formicidae), a destructive tramp ant, in wildlife refuges of Gabon. African Entomology 7: 292-294.

46. Wetterer, J.K. 2002. Ants of Tonga. Pacific Science 56: 125-135.

52. Wetterer, J.K., and S. D. Porter. 2003. The little fire ant, *Wasmannia auropunctata*: distribution, impact, and control. Sociobiology 42: 1-41.

56. Wetterer, J.K. 2005. Worldwide distribution and potential spread of the long-legged ant, *Anoplolepis gracilipe*s. Sociobiology 45: 77-97.

63. Wetterer, J.K. 2006. Quotation error, citation copying, and ant extinctions in Madeira. Scientometrics 67: 351-372.

66. Wetterer, J.K. and A.L. Wetterer. 2006. A disjunct Argentine ant metacolony in Macaronesia and southwestern Europe. Biological Invasions 8: 1123-1129.

74. Wetterer, J.K., L. D. Wood, C. Johnson, H. Krahe, and S. Fitchett. 2007. Predaceous ants, beach replenishment, and nest placement by sea turtles. Environmental Entomology 36: 1084-1091.

80. Wetterer, J.K. 2008. Worldwide spread of the longhorn crazy ant, *Paratrechina longicornis* (Hymenoptera: Formicidae). Myrmecological News 11: 137-149.

111. Wetterer, J.K. 2013. Exotic spread of *Solenopsis invicta* (Hymenoptera: Formicidae) beyond North America. Sociobiology 60: 53-63.

117. Wetterer, J.K., L. Davis, and G.L. White. 2014. Spread of the South American fire ant *Solenopsis invicta* (Hymenoptera: Formicidae) in Trinidad. Florida Entomologist 97: 238-241.

119. Wetterer, J.K., O. Davis, and J.R. Williamson. 2014. Boom and bust of the tawny crazy ant, *Nylanderia fulva*, on St Croix, US Virgin Islands. Florida Entomologist 97: 1099-1103.

125. Wetterer, J.K. 2015. Geographic origin and spread of cosmopolitan ants (Hymenoptera: Formicidae). Halteres 6: 66-78.

132. Wetterer, J.K., D. Lubertazzi, J. Rana, and E.O. Wilson. 2016. Ants of Barbados (Hymenoptera: Formicidae). Breviora 548: 1-34.

145. Rosselli, D. & **J.K. Wetterer**. 2017. Stings of the ant *Wasmannia auropunctata* (Hymenoptera: Formicidae) as cause of punctate corneal lesions in humans and other animals. Journal of Medical Entomology 54: https://doi.org/10.1093/jme/tjx167.

152. Wetterer, J.K. 2018. Native and exotic ants (Hymenoptera: Formicidae) nesting in red mangroves (Malpighiales: *Rhizophora mangle*) of eastern Florida. Transactions of the American Entomological Society 144: 345-356.

153. Wetterer, J.K., M.A. Deyrup, and A. Bryant. 2018 Spread of the non-native trap-jaw ant *Anochetus mayri* (Hymenoptera: Formicidae) in Florida. Transactions of the American Entomological Society 144: 437-441.

APPENDIX A

TABLE 1-A
PROJECTED HEADCOUNT FROM POTENTIAL SOURCES
(Baccalaureate Degree Program)

Source of Students (Non-duplicated headcount in any given year)*	Year 1		Year 2		Year 3		Year 4		Year 5
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC
Upper-level students who are transferring from other majors within the university**	1	0.9	1	0.9	2	1.8	2	1.8	3
Students who initially entered the university as FTIC students and who are progressing from the lower to the upper level***	87	76.6	105	92.4	122	107.4	140	123.2	155
Florida College System transfers to the upper level***	23	20.2	27	23.8	32	28.2	37	32.6	41
Transfers to the upper level from other Florida colleges and universities***	1	0.9	1	0.9	2	1.8	2	1.8	2
Transfers from out of state colleges and universities***	2	1.8	3	2.6	4	3.5	4	3.5	5
Other (Explain)***	0	0.0	0	0.0	0	0.0	0	0.0	0
Totals	**114**	**100.3**	**137**	**120.56**	**162**	**142.56**	**185**	**162.8**	**206**
	114	100	137	121	162	143	185	163	206

* List projected annual headcount of students enrolled in the degree program. List projected yearly cumulative ENROLLMENTS instead of admissions.

** If numbers appear in this category, they should go DOWN in later years.

*** Do not include individuals counted in any PRIOR CATEGORY in a given COLUMN.

APPENDIX A

TABLE 1-B

PROJECTED HEADCOUNT FROM POTENTIAL SOURCES

(Graduate Degree Program)

Source of Students (Non-duplicated headcount in any given year)*	Year 1		Year 2		Year 3		Year 4		Year 5	
	HC	FTE	HC	FTE	HC	FTE	HC	FTE	HC	FTE
Individuals drawn from agencies/industries in your service area (e.g., older returning students)	0	0	0	0	0	0	0	0	0	0
Students who transfer from other graduate programs within the university**	0	0	0	0	0	0	0	0	0	0
Individuals who have recently graduated from preceding degree programs at this university	0	0	0	0	0	0	0	0	0	0
Individuals who graduated from preceding degree programs at other Florida public universities	0	0	0	0	0	0	0	0	0	0
Individuals who graduated from preceding degree programs at non-public Florida institutions	0	0	0	0	0	0	0	0	0	0
Additional in-state residents***	0	0	0	0	0	0	0	0	0	0
Additional out-of-state residents***	0	0	0	0	0	0	0	0	0	0
Additional foreign residents***	0	0	0	0	0	0	0	0	0	0
Other (Explain)***	0	0	0	0	0	0	0	0	0	0
Totals	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

* List projected annual headcount of students enrolled in the degree program. List projected yearly cumulative ENROLLMENTS instead of admissions.

** If numbers appear in this category, they should go DOWN in later years.

*** Do not include individuals counted in any PRIOR category in a given COLUMN.

APPENDIX A

TABLE 2
PROJECTED COSTS AND FUNDING SOURCES

Instruction & Research Costs (non-cumulative)	Year 1 Funding Source								Year 5 Funding Source						
	Reallocated Base* (E&G)	Enrollment Growth (E&G)	New Recurring (E&G)	New Non-Recurring (E&G)	Contracts & Grants (C&G)	Philanthropy Endowments	Enterprise Auxiliary Funds	**Subtotal coulumns 1+…+7**	Continuing Base** (E&G)	New Enrollment Growth (E&G)	Other*** (E&G)	Contracts & Grants (C&G)	Philanthropy Endowments	Enterprise Auxiliary Funds	**Subtotal coulumns 9+…+ 14**
Columns	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Faculty Salaries and Benefits	1,933,507	0	0	0	22,870	0	0	**$1,956,377**	2,988,891	0	0	24,755	0	0	**$3,013,645**
A & P Salaries and Benefits	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
USPS Salaries and Benefits	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Other Personal Services	0	0	0	0	0	0	0	**$0**	27,000	0	0	0	0	0	**$27,000**
Assistantships & Fellowships	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Library	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Expenses	150,000	0	0	0	0	0	0	**$150,000**	0	0	0	0	0	0	**$0**
Operating Capital Outlay	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Special Categories	0	0	0	0	0	0	0	**$0**	0	0	0	0	0	0	**$0**
Total Costs	**$2,083,507**	**$0**	**$0**	**$0**	**$22,870**	**$0**	**$0**	**$2,106,377**	**$3,015,891**	**$0**	**$0**	**$24,755**	**$0**	**$0**	**$3,040,645**

*Identify reallocation sources in Table 3.

**Includes recurring E&G funded costs ("reallocated base," "enrollment growth," and "new recurring") from Years 1-4 that continue into Year 5.

***Identify if non-recurring.

Faculty and Staff Summary

Total Positions	Year 1	Year 5
Faculty (person-years)	14.13	14.13
A & P (FTE)	0	0
USPS (FTE)	0	0

Calculated Cost per Student FTE

	Year 1	Year 5
Total E&G Funding	$2,083,507	$3,015,891
Annual Student FTE	100	181
E&G Cost per FTE	$20,835	$16,662

Table 2 Column Explanations

Reallocated Base* (E&G)	1	E&G funds that are already available in the university's budget and will be reallocated to support the new program. Please include these funds in the Table 3 – Anticipated reallocation of E&G funds and indicate their source.	
Enrollment Growth (E&G)	2	Additional E&G funds allocated from the tuition and fees trust fund contingent on enrollment increases.	
New Recurring (E&G)	3	Recurring funds appropriated by the Legislature to support implementation of the program.	19335.0736
New Non-Recurring (E&G)	4	Non-recurring funds appropriated by the Legislature to support implementation of the program. Please provide an explanation of the source of these funds in the budget section (section III. A.) of the proposal. These funds can include initial investments, such as infrastructure.	16513.2074
Contracts & Grants (C&G)	5	Contracts and grants funding available for the program.	1933507.36
Philanthropy Endowments	6	Funds provided through the foundation or other Direct Support Organizations (DSO) to support of the program.	2988890.55
Enterprise Auxiliary Funds	7	Use this column for continuing education or market rate programs and provide a rationale in section III.B. in support of the selected tuition model.	
Subtotal coulumns 1+…+7	8	Subtotal of values included in columns 1 through 7.	
Continuing Base** (E&G)	9	Includes the sum of columns 1, 2, and 3 over time.	
New Enrollment Growth (E&G)	10	See explanation provided for column 2.	
Other*** (E&G)	11	These are specific funds provided by the Legislature to support implementation of the program.	
Contracts & Grants (C&G)	12	See explanation provided for column 5.	
Philanthropy Endowments	13	See explanation provided for column 6.	
Enterprise Auxiliary Funds	14	Use this column for continuing education or market rate programs and provide a rationale in section III.B. in support of the selected tuition model.	
Subtotal coulumns 9+…+ 14	15	Subtotal of values included in columns 9 through 14.	

APPENDIX A

TABLE 3
ANTICIPATED REALLOCATION OF EDUCATION & GENERAL FUNDS*

Program and/or E&G account from which current funds will be reallocated during Year 1	Base before reallocation	Amount to be reallocated	Base after reallocation
Honors College Base Budget	4,788,666	1,933,507	**$2,855,159**
	0	0	
	0	0	
	0	0	
	0	0	
	0	0	
Totals	$4,788,666	$1,933,507	**$2,855,159**

*** If not reallocating funds, please submit a zeroed Table 3**

APPENDIX A

TABLE 4
ANTICIPATED FACULTY PARTICIPATION

Faculty Code	Faculty Name or "New Hire" Highest Degree Held Academic Discipline or Speciality	Rank	Contract Status	Initial Date for Participation in Program	Mos. Contract Year 1	FTE Year 1	% Effort for Prg. Year 1	PY Year 1	Mos. Contract Year 5	FTE Year 5	% Effort for Prg. Year 5	PY Year 5
A	Carvelli, Lucia, Ph.D. Neuroscience	Professor	Tenure	Fall 2019	9	0.75	50%	0.38	9	0.75	50%	0.38
A	Chaves Fonnegra, Andia, Ph.D. Biology	Asst Prof	Tenure	Fall 2019	9	0.75	50%	0.38	9	0.75	50%	0.38
A	Dragojlovic, Velkjo, Ph.D. Chemistry	Professor	Tenure	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Duboue, Erik, Ph.D. Biology	Asst Prof	Tenure-track	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Earles, Julie, Ph.D. Academic Discipline	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Fily, Yaouen, Ph.D. Physics	Asst Prof	Tenure-track	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Hoim, Terje, Ph.D. Mathematics	Professor	Tenured	Fall 2019	12	1.00	100%	1.00	12	1.00	100%	1.00
A	Kowalko, Johanna, Ph.D. Biology	Asst. Prof.	Tenure-track	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Lanning, Kevin, Ph.D. Psychology	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Macleod, Gregory, Ph.D. Biology	Professor	Tenured	Fall 2019	9	0.75	75%	0.56	9	0.75	75%	0.56
A	McGovern, Warren, Ph.D. Mathematics	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Mincer, Tracy, Ph.D. Biology-Biogeochemistry	Assist Prof	Tenure-track	Fall 2019	9	0.75	50%	0.38	9	0.75	50%	0.38
A	Moore, Jon, Ph.D. Biology	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	O'Brien, William, Ph.D. Environmental Studies	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Smith, Eugene, Ph.D. Chemistry	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Vernon, Laura, Ph.D. Psychology	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Wetterer, Jim, Ph.D. Biology	Professor	Tenured	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
A	Chandrasekhar, Chitra, Ph.D. Chemistry	Instructor	MYA	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
B	New Hire, Ph.D. Mathematics	Instructor	MYA	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
B	New Hire, Ph.D. Biology	Instructor	MYA	Fall 2019	9	0.75	100%	0.75	9	0.75	100%	0.75
C	New Hire, Ph.D. Physics	Prof.	Tenure-track	Fall 2022	9	0.75	100%	0.75	9	0.75	100%	0.75
C	New Hire, Ph.D. Mathematics	Instructor	MYA	Fall 2022	9	0.75	100%	0.75	9	0.75	100%	0.75
C	New Hire, Ph.D. Math/Data Science	Prof.	Tenure-track	Fall 2022	9	0.75	100%	0.75	9	0.75	100%	0.75
C	New Hire, Ph.D. Chemistry	ab	MYA	Fall 2020	12	1.00	100%	1.00	12	1.00	100%	1.00
	Total Person-Years (PY)							**17.19**				**17.19**

Faculty Code		Source of Funding	PY Workload by Budget Classsification Year 1	Year 5
A	Existing faculty on a regular line	Current Education & General Revenue	12.63	12.63
B	New faculty to be hired on a vacant line	Current Education & General Revenue	1.50	1.50
C	New faculty to be hired on a new line	New Education & General Revenue	0.00	0.00
D	Existing faculty hired on contracts / grants	Contracts / Grants	0.00	0.00
E	New faculty to be hired on contracts / grants	Contracts / Grants	0.00	0.00
		Overall Totals for	**Year 1 14.13**	**Year 5 14.13**

BG Notes

		Plus Fringes	Percentage				
	Carvelli, Lucia, Ph.D.	130,000	166,400	83,200	JLSI/Grant - Not HC		
	Chaves Fonnegra, Andia, Ph.D.	80,000	102,400	51,200	50/50 Ocean		
	Dragojlovic, Velkjo, Ph.D.	82,564	105,682	105,682			
	Duboue, Erik, Ph.D.	75,000	96,000	96,000			
	Earles, Julie, Ph.D.	81,002	103,683	103,683			
	Fily, Yaouen, Ph.D.	68,000	87,040	87,040			
	Hoim, Terje, Ph.D.	85,492	109,430	109,430			
	Kowalko, Johanna, Ph.D.	75,000	96,000	96,000	JKA? - Not HC		
	Lanning, Kevin, Ph.D.	93,534	119,724	119,724			
	Macleod, Gregory, Ph.D.	71,468	91,478	68,609	25% on Grant:	23,823	30,493	22,870
	McGovern, Warren, Ph.D.	78,538	100,529	100,529			
	Mincer, Tracy, Ph.D.	80,000	102,400	51,200	50/50 ocean		
	Moore, Jon, Ph.D.	81,456	104,264	104,264			
	O'Brien, William, Ph.D.	119,805	153,350	153,350			
	Smith, Eugene, Ph.D.	86,351	110,529	110,529			
	Vernon, Laura, Ph.D.	71,109	91,020	91,020			
	Wetterer, Jim, Ph.D.	92,984	119,020	119,020			
	Chandrasekhar, Chitra, Ph.D.	61,117	78,230	78,230			
	New Hire, Ph.D.	80,000	102,400	102,400			
2019	New Hire, Ph.D.	80,000	102,400	102,400			
2022	New Hire, Ph.D.	90,000	115,200	115,200			
	New Hire, Ph.D.	90,000	115,200	115,200			
	New Hire, Ph.D.	90,000	115,200	115,200			
	New Hire, Ph.D.	80,000	102,400	102,400			
			2,589,977	**2,381,507**			

Projected Program Cost Page 1

	FTE	E&G per FTE	E&G	Grant	Total Cost
2019	100	20,835.07	2,083,507	22,870	2,106,377
Year 5	181	16,513.21	2,988,891	24,755	3,013,645

Add A&P, Monica, April, Shree, All OPS budgets?
Increase E&G funds to match enrollment?
Add salary increases per year?
Base budget estimate ok at median?

With 2% salary increase:	2,540,891			
	2	1,972,178		23,327
	3	2,011,621		23,794
	4	2,051,853		24,269
	5	2,092,891		24,755