

## COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./DUE DATE		<input type="checkbox"/> Special Exception to Deadline Date Policy		<b>FOR NSF USE ONLY</b>	
				<b>NSF PROPOSAL NUMBER</b>	
FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)					
<b>HRD - CENTERS FOR RSCH EXCELL IN S&amp;T</b>					
DATE RECEIVED	NUMBER OF COPIES	DIVISION ASSIGNED	FUND CODE	DUNS# (Data Universal Numbering System)	FILE LOCATION
				<b>071298814</b>	
EMPLOYER IDENTIFICATION NUMBER (EIN) OR TAXPAYER IDENTIFICATION NUMBER (TIN)		SHOW PREVIOUS AWARD NO. IF THIS IS <input type="checkbox"/> A RENEWAL <input type="checkbox"/> AN ACCOMPLISHMENT-BASED RENEWAL		IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES <input type="checkbox"/> NO <input type="checkbox"/> IF YES, LIST ACRONYM(S)	
		<b>1547798</b>			
NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE <b>Florida International University</b>			ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE <b>Florida International University 11200 SW 8TH ST Miami, FL. 331990001</b>		
AWARDEE ORGANIZATION CODE (IF KNOWN) <b>0096354000</b>					
NAME OF PRIMARY PLACE OF PERF			ADDRESS OF PRIMARY PLACE OF PERF, INCLUDING 9 DIGIT ZIP CODE		
IS AWARDEE ORGANIZATION (Check All That Apply) <input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> MINORITY BUSINESS <input type="checkbox"/> IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE <input type="checkbox"/> FOR-PROFIT ORGANIZATION <input type="checkbox"/> WOMAN-OWNED BUSINESS					
TITLE OF PROPOSED PROJECT <b>CREST: Center for Aquatic Chemistry and the Environment</b>					
REQUESTED AMOUNT \$ <b>180,904</b>	PROPOSED DURATION (1-60 MONTHS) <b>0</b> months	REQUESTED STARTING DATE	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE		
THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW					
<input type="checkbox"/> BEGINNING INVESTIGATOR		<input type="checkbox"/> HUMAN SUBJECTS Human Subjects Assurance Number _____ Exemption Subsection _____ or IRB App. Date _____			
<input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES		<input type="checkbox"/> INTERNATIONAL ACTIVITIES: COUNTRY/COUNTRIES INVOLVED _____			
<input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION		<input type="checkbox"/> COLLABORATIVE STATUS _____			
<input type="checkbox"/> HISTORIC PLACES					
<input type="checkbox"/> VERTEBRATE ANIMALS IACUC App. Date _____ PHS Animal Welfare Assurance Number _____					
<input type="checkbox"/> TYPE OF PROPOSAL _____					
PI/PD DEPARTMENT <b>Southeast Environmental Research Center</b>		PI/PD POSTAL ADDRESS <b>11200 SW 8th St. Modesto A Maidique OE-148 Miami, FL 33199 United States</b>			
PI/PD FAX NUMBER <b>305-348-4094</b>					
NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Email Address	
PI/PD NAME <b>Todd A Crowl</b>	<b>PhD</b>	<b>1989</b>	<b>305-348-1666</b>	<b>tcrowl@fiu.edu</b>	
CO-PI/PD					
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## CERTIFICATION PAGE

### Certification for Authorized Organizational Representative (or Equivalent) or Individual Applicant

By electronically signing and submitting this proposal, the Authorized Organizational Representative (AOR) or Individual Applicant is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding conflict of interest (when applicable), drug-free workplace, debarment and suspension, lobbying activities (see below), nondiscrimination, flood hazard insurance (when applicable), responsible conduct of research, organizational support, Federal tax obligations, unpaid Federal tax liability, and criminal convictions as set forth in the NSF Proposal & Award Policies & Procedures Guide (PAPPG). Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001).

### Certification Regarding Conflict of Interest

The AOR is required to complete certifications stating that the organization has implemented and is enforcing a written policy on conflicts of interest (COI), consistent with the provisions of PAPPG Chapter IX.A.; that, to the best of his/her knowledge, all financial disclosures required by the conflict of interest policy were made; and that conflicts of interest, if any, were, or prior to the organization's expenditure of any funds under the award, will be, satisfactorily managed, reduced or eliminated in accordance with the organization's conflict of interest policy. Conflicts that cannot be satisfactorily managed, reduced or eliminated and research that proceeds without the imposition of conditions or restrictions when a conflict of interest exists, must be disclosed to NSF via use of the Notifications and Requests Module in FastLane.

### Drug Free Work Place Certification

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent), is providing the Drug Free Work Place Certification contained in Exhibit II-3 of the Proposal & Award Policies & Procedures Guide.

### Debarment and Suspension Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency?

Yes

No

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant is providing the Debarment and Suspension Certification contained in Exhibit II-4 of the Proposal & Award Policies & Procedures Guide.

### Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding \$100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

### Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

### Certification Regarding Nondiscrimination

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is providing the Certification Regarding Nondiscrimination contained in Exhibit II-6 of the Proposal & Award Policies & Procedures Guide.

### Certification Regarding Flood Hazard Insurance

Two sections of the National Flood Insurance Act of 1968 (42 USC §4012a and §4106) bar Federal agencies from giving financial assistance for acquisition or construction purposes in any area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards unless the:

- (1) community in which that area is located participates in the national flood insurance program; and
- (2) building (and any related equipment) is covered by adequate flood insurance.

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant located in FEMA-designated special flood hazard areas is certifying that adequate flood insurance has been or will be obtained in the following situations:

- (1) for NSF grants for the construction of a building or facility, regardless of the dollar amount of the grant; and
- (2) for other NSF grants when more than \$25,000 has been budgeted in the proposal for repair, alteration or improvement (construction) of a building or facility.

### Certification Regarding Responsible Conduct of Research (RCR)

**(This certification is not applicable to proposals for conferences, symposia, and workshops.)**

By electronically signing the Certification Pages, the Authorized Organizational Representative is certifying that, in accordance with the NSF Proposal & Award Policies & Procedures Guide, Chapter IX.B., the institution has a plan in place to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduates, graduate students and postdoctoral researchers who will be supported by NSF to conduct research. The AOR shall require that the language of this certification be included in any award documents for all subawards at all tiers.

**CERTIFICATION PAGE - CONTINUED**

**Certification Regarding Organizational Support**

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that there is organizational support for the proposal as required by Section 526 of the America COMPETES Reauthorization Act of 2010. This support extends to the portion of the proposal developed to satisfy the Broader Impacts Review Criterion as well as the Intellectual Merit Review Criterion, and any additional review criteria specified in the solicitation. Organizational support will be made available, as described in the proposal, in order to address the broader impacts and intellectual merit activities to be undertaken.

**Certification Regarding Federal Tax Obligations**

When the proposal exceeds \$5,000,000, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal tax obligations. By electronically signing the Certification pages, the Authorized Organizational Representative is certifying that, to the best of their knowledge and belief, the proposing organization:

- (1) has filed all Federal tax returns required during the three years preceding this certification;
- (2) has not been convicted of a criminal offense under the Internal Revenue Code of 1986; and
- (3) has not, more than 90 days prior to this certification, been notified of any unpaid Federal tax assessment for which the liability remains unsatisfied, unless the assessment is the subject of an installment agreement or offer in compromise that has been approved by the Internal Revenue Service and is not in default, or the assessment is the subject of a non-frivolous administrative or judicial proceeding.

**Certification Regarding Unpaid Federal Tax Liability**

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal Tax Liability:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

**Certification Regarding Criminal Convictions**

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Criminal Convictions:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has not been convicted of a felony criminal violation under any Federal law within the 24 months preceding the date on which the certification is signed.

**Certification Dual Use Research of Concern**

By electronically signing the certification pages, the Authorized Organizational Representative is certifying that the organization will be or is in compliance with all aspects of the United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE		SIGNATURE		DATE
NAME				
TELEPHONE NUMBER	EMAIL ADDRESS		FAX NUMBER	

## SUMMARY OF SUPPLEMENT

### FIU-UPR CREST Partnership Enhancement Supplemental Request

#### *Intellectual Merit:*

The FIU CREST Center for Aquatic Chemistry and Environment (CACHE) is designed to measure the levels of contaminants in the fragile aquatic ecosystem, and develop appropriate remediation strategies for them. Specifically, CACHE will characterize and quantify contaminants and excessive nutrients, measure their transport and transformations, and model their likely impacts on ecosystem services in a gradient of aquatic ecosystems. In 2016, we expanded our scope by creating formal partnerships with the recently renewed CREST and LTER programs at University of Puerto Rico (UPR), with the specific goal of comparing coastal mangrove ecosystems and creating a student exchange program between UPR and FIU. In this Supplement, we seek to further expand our research areas into investigating the role of contaminants and pollutants on estuary and coral reef ecosystems, through an enhanced collaboration with additional UPR collaborators. FIU CREST researchers currently utilize metagenomics methodologies to identify early indicators of ecosystem impacts due to anthropogenic stressors. The UPR CREST program investigates similar phenomena in river, estuarine and coral reef systems, but utilizes neurologic indicators to predict stress. Our two complementary approaches in common, aquatic habitats make for a highly synergistic collaboration. This supplement will also further our collaborations with UPR by bringing graduate students and faculty from the recently renewed UPR CREST Center to FIU. This is a timely request due to the impacts of Hurricane Maria on Puerto Rico, which has left most of the island without power, cell service, or Internet. Puerto Rican students and faculty have little access to essential lab facilities or libraries. This supplement will: 1) initiate new, collaborative research projects, which add the dimension of investigating the impacts of contaminants and pollutants on near-shore coral reef ecosystems and their neurobiological impacts; 2) enhance our collaborative partnership with the University of Puerto Rico CREST Center for neurobiology in coral reefs; 3) enable research productivity of UPR students and faculty currently impacted by Hurricane Maria through access to essential laboratory and Internet/library facilities; 4) provide funding for travel, stipends and living costs for UPR students and faculty to collaborate with FIU CREST and LTER students and faculty. This supplement will provide enhanced research and education opportunities for both the new partner and the existing CREST participants equally.

*Broader Impacts:* This Partnership supplement will enhance the broader impacts of the CREST centers at FIU and UPR, which are both majority, minority institutions. Of particular importance is the opportunity for FIU CREST to provide students and faculty in Puerto Rico access to essential laboratory and communication facilities currently unavailable due to the impacts of Hurricane Maria. In addition, by expanding our partnership with the recently renewed UPR CREST center, FIU CREST will add additional expertise in coral reef ecology and neurobiology.

## **FIU-UPR CREST Partnership Supplement**

### **JUSTIFICATION for SUPPLEMENT REQUEST**

#### **Background and Purpose**

The FIU CREST Center for Aquatic Chemistry and Environment (CACHÉ) was designed to measure the levels of contaminants in fragile South Florida aquatic ecosystems, and develop appropriate remediation strategies for them. Specifically, CACHÉ will characterize and quantify contaminants and excessive nutrients, measure their transport and transformations, and model their likely impacts on ecosystem services in a gradient of aquatic ecosystems. In 2016, we expanded our scope by creating a formal partnership with the University of Puerto Rico (UPR) CREST and LTER programs with the specific goal of comparing coastal mangroves in Puerto Rico with South Florida and creating a student exchange between UPR and FIU. In this Supplement, we seek to further enhance the UPR-FIU partnership by expanding into the new research area of investigating the role of contaminants and pollutants on estuary and coral reef ecosystems. FIU CREST researchers currently utilize metagenomics methodologies to identify early indicators of ecosystem impacts due to anthropogenic stressors (Gonzalez-Romero et al., 2017; Suarez-Ulloa et al., 2015). The UPR CREST program investigates similar phenomena in river, estuarine, and coral reef systems but utilizes neurologic indicators to predict stress. Our two complementary approaches in common, aquatic habitats make for a highly synergistic collaboration. Specifically, in this FIU-UPR Supplement proposal, we seek to expand the scope of our existing FIU CREST Center to include neurological measurements of freshwater and coastal marine organisms' responses to contaminants and pollutants, while also providing experience and expertise to the UPR CREST center in epigenetic indicators of aquatic stressors and impacts.

To accomplish these goals, we will enhance our current expertise and technological approaches by including new collaborators from the University of Puerto Rico associated with the recently renewed UPR CREST Center. Linking FIU's CREST programs with the University of Puerto Rico's CREST research programs will greatly enhance our abilities to broaden both Centers' ability to measure and understand the role of aquatic contaminants, pollutants and climate stressors on stream, estuarine, and near-shore marine habitats.

This is an extremely timely and time-sensitive supplement request due to the extensive impacts of Hurricane Maria. The majority of Puerto Rico is still without water or electricity and there is virtually no Internet connectivity established. The UPR universities will be closed for the foreseeable future. For graduate students who are finishing their dissertations and theses, access to the Internet and library resources are especially essential, not to mention electricity for computers. For students with labile field or lab samples, access to storage and laboratory analytic equipment is paramount. One-hundred percent of the funds in this supplement are thus dedicated to bringing UPR students, post-docs, and faculty to FIU to provide access to laboratory facilities, library resources, and general computing capabilities, so they can continue their research and enhance their collaborative research network.

#### **Contaminant-neurobiological interactions in near shore coral reefs**

UPR CREST faculty and students are conducting research on community and neural responses to contaminants and climate stressors in river, estuarine, and near-shore marine communities. FIU CREST faculty and students conduct similar research but concentrate more on the chemical nature of contaminants (Fernando-Lima et al., 2009; Wang & Gardinali, 2014) and

transport, as well as ecosystem and genomic responses (Ross et al., 2001). The laboratory and computational facilities needed are similar for both centers. Bringing students, post-docs, and faculty from UPR CREST to FIU will result in significant cross-fertilization of ideas and approaches associated with important anthropogenic stressors (e.g., contaminants, acidification, temperature increases, and pollutants) on aquatic ecosystems. Collaborations aimed at including both neural and epigenetic responses to these stressors greatly benefits both CREST Centers.

### **Visiting Researchers/Students**

We will identify 10 PhD students, two post-docs and up to five faculty from the UPR CREST Center that are in critical phases of their research both in terms of completion and critical, time-sensitive analyses. These scientists will be supported at FIU with offices, laboratory facilities, and computing resources associated with the Institute for Water and Environment (InWE) that houses the FIU CREST program. With over 100 faculty performing research in water-related science, we can easily integrate our UPR colleagues and provide technical support as well as collaborative research interactions.

In turn, the students and faculty that visit FIU will undoubtedly bring new, exciting perspectives from the neural physiology perspective, which will greatly broaden the approaches currently used by FIU students and faculty.

### **Proposed 2017 Supplement Management and Activities**

The FIU CREST PI will oversee and coordinate all CREST Center activities. Professors Rita Teutonico (Education Coordinator) and Dr. Eirin-Lopez (coral reef ecologist and epigenetics expert) will coordinate the placement of students, post-docs and faculty in the appropriate laboratory groups and ensure access to necessary laboratory facilities and computing/library resources.

Specific activities include:

1. Identify students, post-docs and faculty that will most benefit from immediate access to FIU laboratory, computing and library resources. We have been in contact with colleagues at the recently renewed UPR CREST Center and they, with their respective deans, are meeting to identify their best candidates.
2. Once identified, FIU will organize all travel and living arrangements, as well as determine the individual's needs for access to laboratories and other facilities.
3. Hold a joint FIU-UPR workshop on current research activities in the two centers and to identify new collaborative partnerships for future research and proposals.
4. Identify FIU students and faculty that would most benefit from visiting the UPR CREST Center, once the island and university is fully functional again.

### **Broader Impacts**

This Partnership supplement will enhance the broader impacts of the originally proposed CREST Center by adding opportunities for students and faculty in Puerto Rico to participate in CREST-CACHE research and education activities. The FIU center will also be greatly enhance by having the expertise on neural and behavioral responses from our UPR colleagues.

Both UPR and FIU are majority, minority institutions. Both universities provide unique opportunities and approaches to training and mentoring underrepresented student in STEM

careers. Providing immediate support to students and faculty that have their research programs virtually shut down from Hurricane Maria will provide the resources necessary to potentially save up to a year in terms of completion time of students and possibly some samples and analyses that may be permanently lost.

### **Data Management Plan**

Data will be managed in accordance with both FIU and UPR CREST established data management plans, submitted with our initial NSF proposals.

### **References Cited**

Fernandez-Lima, F.A., C. Becker, A.M. McKenna, R.P. Rodgers, A.G. Marshall and D.H. Russell. 2009. Petroleum Crude Oil Characterization by IMS-MS and FTICR MS, *Analytical Chemistry* 81:9941-9947.

Gonzalez-Romero R., Suarez-Ulloa V., Rodriguez-Casariago J., Garcia-Souto D., Diaz G., Smith A., Pasantes J.J., Rand G., and J.M. Eirin-Lopez. 2017. Effects of Florida Red Tides on histone variant expression and DNA methylation in the Eastern oyster *Crassostrea virginica*. *Aquatic Toxicology* 186:196-204.

Ross, M.S., P.L. Ruiz, G.J. Telesnicki, and J.F. Meeder. 2001. Estimating aboveground biomass and production in mangrove communities of Biscayne National Park, Florida (USA). *Wetlands Ecology and Management*. 9:27-37.

Suarez-Ulloa V., Gonzalez-Romero R., and J.M. Eirin-Lopez. 2015. Environmental epigenetics: a promising venue for developing next-generation pollution biomonitoring tools in marine invertebrates. *Marine Pollution Bulletin* 98:5-13.

Wang, J. and P.R. Gardinali. 2014. Identification of phase II pharmaceutical metabolites in reclaimed water using high resolution benchtop Orbitrap mass spectrometry. *Chemosphere* 107:65-73.

## BIOGRAPHICAL SKETCH

### Jose M. Eirin-Lopez, Ph.D.

Assistant Professor, Department of Biological Sciences, Florida International University  
305-919-4000, [jeirinlo@fiu.edu](mailto:jeirinlo@fiu.edu) [chromevol.com](http://chromevol.com)

## PROFESSIONAL PREPARATION

University of A Coruna (Spain)	Biology	B.S.	1999
University of A Coruna (Spain)	Genetics	M.S.	2001
University of A Coruna (Spain)	Biology	Ph.D.	2005
University of Victoria (Canada)	Biochemistry	Post-doc	2005-2008

## ACADEMIC/PROFESSIONAL APPOINTMENTS

2013-present	Assistant Professor of Biological Sciences, Florida International University
2009-2013	Assistant Professor of Biology, University of A Coruna, Spain
2005-2008	Marie Curie Postdoctoral Fellow, University of Victoria, Canada
2005	Research Assistant, University of Victoria, Canada
2000/05	Graduate Research Fellow, Government of Spain.

## RESEARCH EXPERTISE RELATED TO THE PROPOSAL

Epigenetics, marine biology, genetics, toxicology, physiology and ecology of marine invertebrates

## PRODUCTS (total 63 peer-reviewed papers, h-index = 27)

### *Five relevant publications related to proposal*

1. Rivera-Casas C., Gonzalez-Romero R., Garduño R., Cheema M.S., Ausio J., and **J.M. Eirin-Lopez**. **2017**. Molecular and biochemical methods useful for the epigenetic characterization of chromatin-associated proteins in bivalve molluscs. **Frontiers in Physiology** 8:490.
2. Gonzalez-Romero R., Suarez-Ulloa V., Rodriguez-Casariago J., Garcia-Souto D., Diaz G., Smith A., Pasantes J.J., Rand G., and **J.M. Eirin-Lopez**. **2017**. Effects of Florida Red Tides on histone variant expression and DNA methylation in the Eastern oyster *Crassostrea virginica*. **Aquatic Toxicology** 186:196-204.
3. Prego-Faraldo V., Vieira L.R., **Eirin-Lopez J.M.**, Mendez J., and L. Guilhermino. **2017**. Transcriptional and biochemical analysis of antioxidant enzymes in the mussel *Mytilus galloprovincialis* during experimental exposures to the toxic dinoflagellate *Prorocentrum lima*. **Marine Environmental Research** 129:304-315.
4. Prego-Faraldo V., Valdiglesias V., Laffon B., Mendez J., and **J.M. Eirin-Lopez**. **2016**. Early genotoxic and cytotoxic effects of the toxic dinoflagellate *Prorocentrum lima* in the mussel *Mytilus galloprovincialis*. **Toxins** 8:159.
5. Rivera-Casas C., Gonzalez-Romero R., Vizoso-Vazquez A., Cheema M.S., Cerdan M.E., Mendez J., Ausio J., and **J.M. Eirin-Lopez**. **2016**. Characterization of mussel H2A.Z.2: a new H2A.Z variant preferentially expressed in germinal tissues from *Mytilus*. **Biochemistry and Cell Biology** 16:1-11.

### *Other five significant publications*

1. Rivera-Casas C., Gonzalez-Romero R., Cheema M.S., Ausio J., and **J.M. Eirin-Lopez**. **2016**. The characterization of macroH2A beyond vertebrates supports an ancestral origin and conserved role for histone variants in chromatin. **Epigenetics** 11:415-425.
2. Suarez-Ulloa V., Fernandez-Tajes J., Aguiar-Pulido V., Prego-Faraldo V., Florez-Barros F., Sexto-Iglesias A., Mendez J., and **J.M. Eirin-Lopez**. **2015**. Unbiased high-throughput characterization of mussel transcriptomic responses to sublethal concentrations of the biotoxin okadaic acid. **PeerJ** 3:e1429.



3. Suarez-Ulloa V., Gonzalez-Romero R., and **J.M. Eirin-Lopez. 2015.** Environmental epigenetics: a promising venue for developing next-generation pollution biomonitoring tools in marine invertebrates. **Marine Pollution Bulletin** 98:5-13.
4. **Eirin-Lopez J.M. 2013.** A computer lab exploring evolutionary aspects of chromatin structure and dynamics for an undergraduate chromatin course. **Biochemistry and Molecular Biology Education**, 41:95-102.
5. Gonzalez-Romero R., Rivera-Casas C., Frehlick L.J., Mendez J., Ausio J., and **J.M. Eirin-Lopez. 2012.** Histone H2A (H2A.X and H2A.Z) variants in molluscs: molecular characterization and potential implications for chromatin dynamics. **PLoS ONE** 7(1):e30006.

### **SYNERGISTIC ACTIVITIES**

#### *Professional service*

Executive Associate Editor for AgriGene (Elsevier), Editorial Board for Environmental Epigenetics (Oxford Univ. Press), Toxins (MDPI) and Frontiers in Genetics (Frontiers Media).

Reviewer for more than 30 different scientific journals including Nature Climate Change, Nature Structural and Molecular Biology, Bioessays, Briefings in Functional Genomics, and PLoS One, among others.

Panelist for NSF-IOS, reviewer for NSF, NOAA, and for national research agencies in France, Austria, Spain and Portugal.

Executive organizing committee for the Asilomar Chromatin, Chromosomes and Epigenetics Conference (ACCEC 2014-2016). Chair in the 17th (2009) and 20th (2012) Meetings of the Society for Molecular Biology and Evolution (SMBE), the 2010 Meeting of the Society for the Study of Evolution (SSE), and in the 13th Evolutionary Biology Meeting at Marseilles in 2008.

Member of Graduate Committee (Dept. of Biological Sciences), and Diving Advisory Board at FIU.

#### *Undergraduate, Graduate and Postdoc training:*

Training of 16 undergraduates, 6 graduate Ph.D. students (4 already graduated in 2011, 2015, 2016, 2017), 3 graduate M.S. students (graduated in 2008, 2011, 2013) and 2 post-docs. Currently advising 1 post-doc and 3 Ph.D. students at FIU.

Mentored 2 McNair Minority Fellows (2016, 2017) and Honors Minority Student (2017) recipient of College and Departmental awards.

Member of Graduate Committee of 7 graduate students (Ph.D.) at different Institutions in U.S. and Europe.

Development of Chromatin and Epigenetics course for graduates (since 2014). Teaching of core requirements including Genetics and Evolution. Upper electives including Population Genetics, Introductory Genomics, Cytogenetics.

Development of first Epigenetics course for undergraduates in the state of Florida (2017).

Development hybrid version of the course Evolution.

Development of different educational strategies and tools specifically tailored for different populations of students, improving their guidance and feedback, most notably e-learning courses for undergraduates as well as a computer lab on chromatin evolution for graduate students (Eirin-Lopez, 2013. *Biochemistry and Molecular Biology Education* 41:95-102).

#### *Outreach:*

Constant annual outreach talks including Rookery Bay National Estuarine Research Reserve, Broward College, Ocean Lecture Series Speaker at Key Largo, among many others.

Publication of two outreach books on genetics of bivalve mollusc (2012) and evolution (2013).

Publication of outreach epigenetics paper in the spanish edition of Scientific American (2011).

Dissemination of research to local civic groups, organizations and local K12 schools, including Sea Corps program at MAST@FIU, the Marine Academy of Science and Technology at the Biscayne Bay Campus of Florida International University, the only university-based public high school in Florida.

Bilingual release of dissemination materials (English/Spanish) facilitating access to hispanic minorities.

Development of opportunities for high school students to participate in STEM courses and research in my lab.

## Biographical Sketch

### Rita A. Teutonico

College of Arts, Sciences, & Education  
STEM Transformation Institute  
Florida International University  
Miami, FL 33199  
305-348-2719  
rteutoni@fiu.edu;

### A. PROFESSIONAL PREPARATION

<u>College/University</u>	<u>Major</u>	<u>Degree &amp; Year</u>
Cornell University, Ithaca, NY	Nutrition and Food Science	B.S., 1980
University of Delaware, Newark, DE	Food Science and Nutrition	M.S., 1984
University of Pennsylvania, Philadelphia, PA	Biological Sciences	Ph.D., 1990
University of Wisconsin, Madison, WI	Plant Breeding & Plant Genetics	Post-PhD, 1994

### B. ACADEMIC/PROFESSIONAL APPOINTMENTS

2016-present	Associate Dean of Research, College of Arts, Sciences, & Education and STEM Transformation Institute, FIU
2014-2016	Director of Strategic Research Initiatives, College of Arts, Sciences, & Education and STEM Transformation Institute, FIU
2012-2014	Utah EPSCoR State Director and Associate Director, iUTAH Utah EPSCoR Research Infrastructure Improvement Track 1, \$20M award
2011-2014	Director of Research Development, Office of Research and Graduate Studies; Utah State University
2006-2012	Senior Science Advisor; Directorate for Social, Behavioral, and Economic Sciences; National Science Foundation
2009-2011	Coordinator; Science, Engineering, Education for Sustainability Program (SEES) National Science Foundation, \$500M portfolio
2010	Embassy Science Fellow, U.S. Embassy, Oslo, Norway
2005-2006	Teaching Faculty, Advanced Biotechnology Studies Graduate Program; Johns Hopkins University
2005-2006	Deputy Director, Division of Molecular and Cellular Biology, Senior Executive Service, National Science Foundation, \$110M Division budget
2002-2005	Program Officer, Genes and Genome Systems Cluster, Division of Molecular and Cellular Biosciences, National Science Foundation, \$14M program budget
1998-2004	Associate Professor, Integrated Science & Technology, James Madison University

### C. PRODUCTS

**(i) Most Closely Related to Proposal**

1. Borrego, M., Garner, J., Porter, A., Tran, E., Teutonico, R. 2013. Facilitating Social and Natural Science Cross-Disciplinarity: Assessing the Human and Social Dynamics Program. *Research Evaluation* 22(1): 1.
2. Garner, J. G., Porter, A. L., Teutonico, R. 2012. Visualizing Cross-disciplinarity: Assessing the US National Science Foundation Human & Social Dynamics Program. In: *Proceedings of the 17th International Conference on Science and Technology Indicators (STI)*, sticonference.org.
3. Smith-Doerr, L., Kemekliene, G., Teutonico, R., Lange, L., Villa-Komaroff, L., Matthiessen-Guyader, L., Murray, F. 2011. A global need for women's biotechnology leadership. *Nature Biotechnology* 29: 948
4. SEES Implementation Group, Chair. 2011. Sustainability Research Networks (SRN) solicitation, <http://www.nsf.gov/pubs/2011/nsf11574/nsf11574.htm>.

**(ii) Other Significant Products**

1. Teutonico, R.A. (Ed.), AGRA Task Group. 2007. Agricultural Biotechnology Risk Analysis Research of the U.S. Federal Agencies, <http://www.nsf.gov/pubs/2007/nsf07208/nsf07208.pdf>
2. Himelblau, E.T., Lauffer, D., Teutonico, R.A., Pires, J.C., and Osborn, T.C. 2004. Rapid-cycling Brassica in research and education. In: E. Chong, ed., *Brassica Biotechnology*, Springer-Verlag, Heidelberg, p. 13.
3. Warren, G., McKown, R., Marin, A., Teutonico, R.A. 1996. Isolation and mapping of mutations affecting the freezing tolerance of *Arabidopsis thaliana* (L.) Heynh. *Plant Physiol.* 111(4): 1011.
4. Teutonico, R.A., Yandell, B., Satagopan, J.M., Ferreira, M.E., Palta, J.P., Osborn, T.C. 1995. Genetic analysis and mapping of genes controlling freezing tolerance in oilseed Brassica. *Molecular Breeding* 1: 329.
5. Teutonico, R.A., Osborn, T.C. 1994. Mapping of RFLP and qualitative loci in *Brassica rapa* and comparison to the linkage maps of *B. napus*, *B. oleracea*, and *Arabidopsis thaliana*. *Theor. Appl. Genet.* 89: 885.

**D. SYNERGISTIC ACTIVITIES**

1. Large, interdisciplinary project management – Associate Director of Utah's Research Infrastructure Improvement Track I award (2012 to 2014); Coordinator of NSF SEES portfolio (2009 to 2011) across all NSF Directorates and Offices with over 16 different working groups of Program Officers; Coordinator of NSF Climate Research Investment program (2008 to 2010); Coordinator of NSF Human and Social Dynamics priority area (2006 to 2009); Director of NSF Genetics Program (2002-2005)
2. Broadening participation – Education, Outreach, and Diversity (EOD) Coordinator for iUtah EPSCoR (2012-2014); Steering Committee member for the Utah Governor's Commission on Women in Higher Education (2012-2013)
3. Advisory experience – New Mexico EPSCoR External Advisory Board member (2012-2014)
4. NSF Reviewer and Committee of Visitors' member
5. Invited Judge, Intel National Science Talent Search Competition, Environmental Sciences Section