

Joseph S. Pitula

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Education

Rutgers State University of New Jersey, BS in Biology, 1989
State University of New York at Buffalo, MA in Microbiology, 1998
State University of New York at Buffalo, PhD in Microbiology, 2001.

Appointments/Employment

- 8/11-present University of Maryland Eastern Shore, *Associate Professor*, Department of Natural Sciences, UMES
- 8/05-7/11 University of Maryland Eastern Shore, *Assistant Professor*, Department of Natural Sciences, UMES
- 1/04-5/05 University of Maryland Eastern Shore, *Lecturer*, Department of Natural Sciences, UMES
- 2/01-12/03 University of Wisconsin, Madison, *Post Doctoral Research Associate*, Department of Nutritional Sciences
- 8/95-1/01 State University of New York at Buffalo, *Graduate Research Assistant*
- 8/89-8/95 Eurofins Food and Nutrition Testing Laboratory, Dayton, NJ. Quality Control Analytical Chemistry *Lab Technician*

Other Appointments/Responsibilities

- 8/18-present **Project Director** UMES NSF Bridge to Doctorate Program
- 1/12-present University System of Maryland Marine, Environmental, and Estuary Sciences (MEES) *Graduate Program Campus Director; EMST AOS Committee.*
- 8/13-12-13 *Interim Director* UMES MARC Program
- 7/09-present National Park Service North Atlantic Coast Cooperative Ecosystems Studies Unit, *Director of UMES Unit*
- 1/08-present University of Maryland Center for Environmental Sciences, Institute of Marine and Environmental Technology, *Adjunct Faculty*

Academic Teaching Experiences

1. **Bio 111:** Principles of Biology I
2. **Bio 222 and 223:** Genetics and Genetics Lab
3. **Bio 326, 327:** Cell Biology and Cell Biology Lab
4. **Bio 601:** Environmental Microbiology
5. **Toxicology 688:** DNA Damage and Repair
6. **Toxicology 688:** Graduate Cell Biology

Publications since promotion to Associate Professor at UMES

1. Chung JS, Huang X, Bachvaroff T, Lawrence A, **Pitula JS**, Jagus R. (2019) Infection by a reovirus changes transcript levels of eukaryotic translation initiation factor 4E (eIF4E) family members and eIF4E-binding protein (4E-BP) in the blue crab, *Callinectes sapidus* *Journal of Shellfish Research*. 38: 23-34.
2. Lewis NI, Wolny JL, Achenbach JC, Ellis L, **Pitula JS**, Rafuse C, Rosales DS, [McCarron P. (2018) Identification, growth and toxicity assessment of *Coolia* Meunier (Dinophyceae) from Nova Scotia, Canada. *Harmful Algae*, 75: 45-56.
3. Lycett KA, Chung JS, and **Pitula JS**. (2018) The relationship of blue crab (*Callinectes sapidus*) size class and molt stage to disease acquisition and intensity of *Hematodinium perezii* infections. *PLoS One*. doi.org/10.1371/journal.pone.0192237
4. Lycett KA and **Pitula JS**. (2017) Disease ecology of *Hematodinium perezii* in a high salinity estuary: investigating seasonal trends in environmental detection. *Dis Aquat Org*, 124:169-179. doi: 10.3354/dao03112.
5. Kang X, Xia M, **Pitula JS**., and Chigbu, P. (2017) Dynamics of water and salt exchange at Maryland Coastal Bays. *Estuarine, Coastal and Shelf Science*, 189: 1-16.
6. Chung JS, **Pitula JS**, Schott E, Alvarez JV, Maurer L, Lycett KA.(2015) Elevated water temperature increases the levels of reo-like virus and selected innate immunity genes in hemocytes and hepatopancreas of adult female blue crab, *Callinectes sapidus*. *Fish Shellfish Immunol*. 47:511-20. doi: 10.1016/j.fsi.2015.09.027.
7. Hanif AW, Dyson WD, Bowers HA, **Pitula JS**, Messick GA, Jagus R, Schott EJ. (2013) Variation in spatial and temporal incidence of the crustacean pathogen *Hematodinium perezii* in environmental samples from Atlantic Coastal Bays. *BMC Aquat Biosyst*. 9:11. doi: 10.1186/2046-9063-9-11.
8. **Pitula JS**, Dyson WD, Bakht HB, Njoku I, and Chen F. (2012) Temporal distribution of genetically homogenous 'free-living' *Hematodinium* sp. in a Delmarva coastal ecosystem. *Aquat Biosyst*. 8:16; doi: 10.1186/2046-9063-8-16.

9. Chung JS, Maurer L, Bratcher M, **Pitula JS**, and Ogburn MB. (2012) Cloning of aquaporin-1 of the blue crab, *Callinectes sapidus*: its expression during the larval development in hyposalinity. *Aquat Biosyst.* **8**:21 doi:10.1186/2046-9063-8-21.

Publications prior to promotion and tenure at UMES

1. Hearne, JL and **Pitula JS**. (2011) Identification of Two Spliced Leader RNA Transcripts from *Perkinsus marinus*. *J Eukar Microbiol.*58: 266-268.
2. Nagle L, Place AR, Schott, EJ, Jagus R, Messick G, and **Pitula JS**. (2009) A Real-time PCR-based Assay for Quantitative Detection of *Hematodinium* sp. in the Blue Crab (*Callinectes sapidus*) *Dis Aquat Org*, 84: 79-87.
3. Clarke SL, Vasanthakumar A, Anderson SA, Pondarre C, Koh CM, Deck KM, **Pitula JS**, Epstein CJ, Fleming MD, and Eisenstein RS. (2006) Iron-responsive degradation of iron-regulatory protein 1 does not require a Fe-S cluster. *EMBO J.* 25:544-53.
4. **Pitula JS**, Deck KM, Clarke SL, Anderson SA, Vasanthakumar A, and Eisenstein RS. (2004) Selective inhibition of the citrate-to-isocitrate reaction of cytosolic aconitase by phosphomimetic mutation of serine-711. *Proc Nat Acad Sci, U.S.A.* 101: 10907-10912.
5. **Pitula J**, Ruyechan WT, Williams N. (2002) Two novel RNA binding proteins from *Trypanosoma brucei* are associated with 5SrRNA. *Biochem Biophys ResComm.* 290:569-76.
6. **Pitula J**, Park J, Parsons M, Ruyechan WT, and Williams N. (2002) Two novel families of RNA binding proteins from *Trypanosoma brucei* associate through a direct protein-protein interaction. *Mol. Biochem. Parasitol.* 122, 81-89.
7. Connell T, Dickinson A, Martone AJ, Militello KT, Filiatraut MJ, and **Pitula J**. (1998) Iron starvation of *Bordetella avium* stimulates expression of five outer membrane proteins and regulates a gene involved in acquiring iron from serum. *Infect. Immun.* 66, 3597-3605.
8. **Pitula J**, Ruyechan WT, and Williams N. (1998) *Trypanosoma brucei*: identification and purification of a poly (A)-binding protein. *Exp. Parasitol.* 88, 157-160.

Grants awarded since promotion to Associate Professor

a) **NSF Award: 1036586** 11/2010-11/2015

Center for Research Excellence in Science & Technology (CREST): Center for the Integrated Study of Coastal Ecosystem Processes and Dynamics in the Mid-Atlantic region.

Role: Co-PI in Collaboration with Dr. Sook Chung

Subproject entitled: *Effects of Environmental Factors on Blue Crab (C. sapidus) and its Relation to Infection by Hematodinium sp.*

In our sub aim, we will a) Determine abundance and distribution of blue crabs in the Maryland Coastal Bays b) Determine prevalence and intensity of *Hematodinium* sp. infection on blue crabs c) Determine the utility of using stress biomarkers in monitoring infection in an ecological setting and d) Perform controlled infection studies on *Hematodinium* on blue crabs in a laboratory setting. PI: Paulinus Chigbu

b) NOAA NA060AR4810163 09/2012-08/2013

“Dinoflagellate community structure within a Maryland Coastal Bay ecosystem”

NOAA LMRCSC TAB Proposal.

Awarded 9/12-8/13

\$30,760

In collaboration with Dr. Feng Chen of IMET and the National Park Service (NPS)

c) NOAA NA060AR4810163 09/2013-08/2014

“*Dinophysis* sp. in the Maryland Coastal Bay Ecosystem” NOAA LMRCSC TAB Proposal.

\$37,607

Role: Co-PI In collaboration with Dr. Sook Chung of IMET

d) NSF 1511738: 8/2016-8/2021

CREST Center for the Integrated Study of Coastal Ecosystem Processes and Dynamics in the Mid-Atlantic Region

Role: **Co-PI in collaboration with Dr. Salina Parveen UMES and Dr. Sook Chung IMET**

In our sub-aim, we will be looking at co-infection between *Vibrio* species and known pathogens such as RLV and *Hematodinium perezii*.

PI: Paulinus Chigbu

e) USDA Capacity Building Grants; 9/2015-9/2018

Role: Co-PI. \$499,956

An examination of the autochthonous sources of urea in watersheds and potential role of microbial activity

PI: Eric May

f) NOAA NA060AR4810163 09/2015-08/2016

“Searching the coastal bay food web for reservoirs of a virus lethal to blue crab, *Callinectes sapidus*” NOAA LMRCSC TAB Proposal.

Role: Co-PI In collaboration with Dr. Eric Schott of IMET; \$13,300

g) NOAA NA060AR4810163 09/2017-09/2018.

Assessing the Impacts of Harmful Dinoflagellates and *Vibrio* spp. on Oyster Aquaculture in the Delaware Inland Bays. (2018): Source: TAB, LMRCSC; \$20,000 FUNDED.

Role: Co-PI In collaboration with Detbra Rosales \$20,000

h) NSF 1810890; June 1, 2018-May 31, 2020
LSAMP Bridge to the Doctorate at UMES
Role: Co-PI and UMES project leader; \$2 million
PI: Freeman Hrabowski

Grants awarded prior to promotion to Associate Professor

a) NSF Award: 1036586 11/2010-11/2015

Center for Research Excellence in Science & Technology (CREST): Center for the Integrated Study of Coastal Ecosystem Processes and Dynamics in the Mid-Atlantic region.

Role: **Co-PI.** \$5 million

Subproject entitled: *Effects of Environmental Factors on Blue Crab C. sapidus and its Relation to Infection by Hematodinium sp.*

In my sub aim, we will a) Determine abundance and distribution of blue crabs in the Maryland Coastal Bays b) Determine prevalence and intensity of Hematodinium sp. infection on blue crabs c) Determine the utility of using stress biomarkers in monitoring infection in an ecological setting and d) perform controlled infection studies on Hematodinium on blue crabs in a laboratory setting

b) NOAA NA060AR4810163 12/2009-12/2010

Role: **Co-PI;** \$24,000

Measuring environmental and physiological stress and its impact on the infection of the blue crab, Callinectes sapidus, by Hematodinium sp.

We aim to measure stress levels and to identify critical infectious stages to *Hematodinium sp.* using hatchery raised blue crabs as a model organism. These data will allow us to correlate stress-induced infection and mortality in crustacean disease.

c) NOAA NA060AR4810163 12/09-12/10

Role: **PI** of institutional grant; \$40,000.

Correlation of Biotic and Abiotic Factors in Environmental Presence of Hematodinium sp.

This collaboration between COMB, UMES and the National Park Service (NPS) will seek to correlate environmental and biological parameters that favor the presence of putative free-living dinospores of *Hematodinium sp* in Atlantic coastal bays. We will thus gain greater understanding how parasite transmission to blue crab hosts occurs.

d) The Maryland Technology Development Corporation (TEDCO), – Maryland Research and Applied Sciences Consortium (MRASC), 12/2009-12/2010

Role: **PI,** \$59,381

Identification and Characterization of PEPCK in Leishmania tarentolae

Purchase equipment for the microbiology/biochemistry laboratory located in Carver Hall 2113/3108, supported one graduate student, Habibul Bakht, and one undergraduate student, Victoria Bartlett.

e) Identification of a GST in Leishmania tarentolae,

TEDCO-MRASC, 12/2008-8/2010

Role: Co-PI, \$81,290

Purchase equipment for the microbiology/biochemistry laboratory located in Carver Hall 2113/3108, supported one graduate student, Amakoe Ajavon, and one undergraduate student, Nana Yaw Osei-Owusu.

f) **Cloning of cis-aconitase from *Leishmania tarentolae***, PI, TEDCO-MRASC, \$2,950
March 2008-May 2008

g) **NOAA NA060AR4810163** 11/06-11/09

Role: Co-PI of institutional grant; ~\$21,000/yr.

Development of strain- and species-specific probes to investigate reservoirs and genetic diversity of the Blue Crab parasite, Hematodinium sp.

The goal of this project is to apply the use of sensitive detection assays for *Hematodinium perezii* infections in the discovery of reservoirs of the parasite and understanding ecological relationships of infection. PI: Eric Schott.

h) **NSF RIG; Award ID: 0614882** 10/06-08/08

Role: PI. \$75,000/yr.

Discovery of Novel RNA Polymerase III Transcription Factors in Trypanosomatids

The goal of this project is to identify unique RNA polymerase III transcription factors from Trypanosomatids, and to generate preliminary data regarding whether they function in an analogous fashion to that of higher eukaryotes, or with significantly different mechanisms.

i) **NOAA NA17AE162** 11/04-11/06

Role: Co-PI of institutional grant; ~\$30,00/yr.

Hematodinium perezii: Development of detection assays, prevalence, and effect on crab species structure

The goal of this project is to develop sensitive detection assays for *Hematodinium perezii* infections of Chesapeake Bay crabs, and to develop biochemical and immunological tools for future molecular studies of the parasite. PI: Rosemary Jagus.

Educational Funding and Awards

University System of Maryland (USM) Carnegie Course Redesign Awards for Bio I and II and Genetics; 2011-2014. Participated in efforts to enhance and update the educational experiences for undergraduate students; 120K for 3 years

This project has funded the PI to incorporate modern pedagogical techniques to enhance student learning outcomes through increased student engagement and interactive lessons. This initiative has incorporated methods learned through the PI's association with the National Center of Academic Transformation.

USM/Coursera Partnership Award. Initiative to incorporate Massive Open Online Courses (MOOC) within the curriculum. Spring 2013.

USM Course Redesign Fellow; 2013-2015. Recognition for participation in program; responsible for leading discussions at yearly workshops.

Invited Seminar Speaker

Center of Marine Biotechnology Adjunct Professor Interview Seminar, 11/2007

Application of a QPCR-based Assay for Enhanced Detection of Hematodinium sp. in the Blue Crab (Callinectes sapidus) 11/2007

Horn Point Laboratory Seminar Series, University of Maryland Center for Environmental Sciences, Cambridge MD 1/2011

The Genetics of Marine Protozoan Parasites: from Basic Biology to Diagnostic Tool

UMCES-IMET Seminar Series, Baltimore, MD. 3/2013

Bioinformatics and Protista: What Do We Really Know?

Salisbury University Seminar Series; 9/2013

Genetic and Ecological Studies of a Dinoflagellate Parasite of Blue Crabs

SANS Seminar Series, UMES; 9/2014

Discovery of a Novel PEPCCK Enzyme from Leishmania tarentolae

Old Dominion University Spring Seminar Series, 10/2014

Ecology and Enzymes: evolution in two Protista parasites

2015/16 Chesapeake Biological Laboratory Seminar Series, 9/2015

Hematodinium perezii: Is there such a thing as a free-living parasite?

Virginia Institute of Marine Science Departmental Seminar, 9/2016

Hematodinium in the water column: what is it doing there?

Smithsonian Environmental Research Center Seminar, 10/2017

Size class and molt status influences on Hematodinium perezii infections in the blue crab

Department of Pharmaceutical Sciences Seminar, UMES; 11/2017

Conserved and variant features in protist metabolism

Horn Point Laboratory Spring Seminar Series, (upcoming; 2/2019)

Hematodinium perezii: recent insights in disease dynamics of a blue crab parasite

Conference/Workshop Special Session Oral Presentation Invitations

37th Annual Eastern Fish Health Workshop, Lake Placid, New York , 23 - 27 April 2012

Genetic Variation Of Environmental-Derived Hematodinium sp. in Chincoteague Bay.

Maryland Coastal Bays Science and Technical Advisory Board Committee Meeting,

Horn Point Laboratory, University of Maryland Center of Environmental Science, 06/12.

Hematodinium in the Context of other Dinoflagellate Populations in the MCBs.

Annual Meeting of NAC-CESU, Narragansett, RI. 6/13
Hematodinium in the Context of Other Dinoflagellate Populations in the Maryland Coastal Bays

SxSWedu Meeting, Austin, TX; 3/14
Incorporation of a MOOC into Genetics at the University of Maryland Eastern Shore

2016 Atlantic Estuarine Research Society Meeting, 3/16, Norfolk, VA
Possible nutrient release correlated with a harmful algal bloom event

Professional Affiliations

American Society for Biochemistry and Molecular Biology
2003-2013

National Shellfisheries Association
2010-present

University Service

Faculty and Staff Search Committees

- Biology Lecturer (chair) 1/2012
- Geoscientist Assistant Professor 2/2012
- Living Marine Resources Cooperative Science Center Program Manager 10/2012
- Toxicology Tenure Track Hire (chair) 9/2014
- Living Marine Resources Cooperative Science Center Post-Doctoral Research Associate (chair) 12/2016
- Office of Sponsored Research Grants and Contracts Associate (Chair) 6/2017

Other Departmental and University Service

- 2011/2012 UMES Honors Convocation Committee
- 2011/2012 UMES Institutional Animal Care Use Committee
- DNS Education and Scholarship Committee 2012-present
- UMES MBRS Rise Program Advisory Committee 5/2012
- DNS Promotion and Tenure Document Review Committee 2012/2013
- USM MEES Ecology/EMST Co-Chair 10/2012-present
- SANS Farm Planning Committee 7/2013
- USM MEES Curriculum Restructuring Committee 6/2013
- 2013/14 University Research Council
- SANS Coastal and Marine Resources Cluster Committee 11/2013
- SANS Infectious Disease Cluster Committee 11/2013
- UMES Graduate Council 9/2014-present
- Graduate Education Week Committee (chair) 1/2016
- 2017/18 UMES Promotion and Tenure Review Committee
- SANS Committee on Academic Dishonesty 1/2019

REFERENCES

Rosemary Jagus, Ph.D. -Professor and Director of LMRCSC program at UMCES-IMET. (410-234-8822); rjagus@umces.edu

Russell Hill, Ph.D. -Professor and Director of UMCES-IMET. (410-234-8802); rhill@umces.edu

Kennedy Paynter, Ph.D- Associate Professor and Director of MEES Graduate Program, University of Maryland College Park. (301-405-7684); paynter@umd.edu