

Faculty



Contact Information

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Rank/Discipline

Assistant Professor
Medicinal Chemistry
Department of Pharmaceutical
Sciences

Education & Specialty Certification

PhD, UC San Diego, 2014.
Post Doc, Arena Pharm. Inc, 2015.
Post-Doc, Center for Marine
Biotechnology and Biomedicine,
Schriber Inst. of Ocean., 2018

School of Pharmacy
Medical Sciences Campus
University of Puerto Rico

Eduardo J.E. Caro-Díaz, Ph. D.

Research Areas and Active Projects

Isolation, biological characterization and medicinal chemistry of marine natural products for development of therapeutic leads. In our laboratory we are currently working on two major projects:

Isolation of new biologically active secondary metabolites from marine organisms

Our lab is interested in the chemicals produced via the secondary metabolism of marine algae. We specifically are looking to natural product made by cyanobacteria that grow in shallow waters of Puerto Rico's coastline. Additionally, we have begun looking into *sargassum* species of macroalgae that have recently become a major problem in the Caribbean and represents a large quantity of biomass for natural product investigations. We are a highly collaborative team and have several ongoing collaborations that facilitate screening our extracts, fractions and pure compounds for a wide range of bioactivity related to human health.

Synthesis and medicinal chemistry of cyanobacterial natural products

Having isolated new scaffolds with human health-oriented bioactivity we are interested in gaining access to large quantities of the natural product by synthetic chemistry and strive to improve the drug-like characteristics of these compounds via medicinal chemistry modifications. We are currently working on building a small library of natural product analogues derived and/or inspired by cyanobacterial secondary metabolites that show selective cytotoxicity towards PANC-1 cell lines.

Publications

Caro-Díaz, E.J.E., Valeriote, F., Gerwick, W.H., "Highly Convergent Total Synthesis and Assignment of Absolute configuration of Majusculamide D, a potent and selective cytotoxic metabolite for Moorea Sp." *Org. Lett.* **2018**, 21 (3), 793–796.

Naman, C. B., Almaliti, J.; Armstrong, L., Caro-Díaz, E. J., Pierce, M. L., Glukhov, E., Fenner, A., Spadafora, C., Debonisi, H. M., Dorrestein, P. C., Murray, T. F., Gerwick, W. H. "Discovery and Synthesis of Caracolamide A, an Ion Channel Modulating Dichlorovinylidene Containing Phenethylamide from a Panamanian Marine Cyanobacterium cf. *Symploca* Species." *J. Nat. Prod.* **2017**, 80 (8), 2328–2334.

Caro-Diaz, E.J.E., Urbano, M., Buzard, D.J., Jones, R.M. "C-H activation reactions as useful tools for medicinal chemistry", *Bioorg. Med. Chem. Lett.*, **2016**, 26, 5378–5383.

Caro-Diaz, E.J.E., Aung, Xu, J., Varghese, S., Theodorakis, E.A. "Fusarisetins: structure–function studies on a novel class of cell migration inhibitors" *Org. Chem. Front*, **2014**, 1, 135–139.

Shih, Y.-R. V; Hwang, Y.; Phadke, A.; Kang, H.; Hwang, N. S.; Caro, E. J.; Nguyen, S.; Siu, M.; Theodorakis, E. A.; Gianneschi, N. C.; Vecchio, K. S.; Chien, S.; Lee, O. K.; Varghese, S. "Calcium phosphate-bearing matrices induce osteogenic differentiation of stem cells through adenosine signaling" *Proc. Natl. Acad. Sci.* **2014**, 111, 990–995.

Caro-Diaz, E.J.E., Xu, J., Lacoske, M. H., Hung, C.-I., Jomora, C., Theodorakis, E. A. "Fusarisetin A: scalable total synthesis and related studies" *Chem. Sci.*, **2012**, 3, 3378–3386.

Xu, J., Caro-Diaz, E.J.E., Trzoss, L., Theodorakis, E. A. "Nature-Inspired Total Synthesis of (–)-Fusarisetin A" *J. Am. Chem. Soc.*, **2012**, 134, 5072–5075.

Xu, J., Caro-Diaz, E.J.E., Batova, A., Sullivan, S. D. E., Theodorakis, E. A. "Formal Synthesis of (–)-Englerin A and Cytotoxicity Studies of Truncated Englerins" *Chemistry, Asian J.* **2012**, 7, 1052–1060.

Xu, J., Caro-Diaz, E.J.E., Theodorakis, E. A. "Enantioselective Formal Synthesis (–)-Englerin A via a Rh-catalyzed [4+3] Cycloaddition Reaction" *Org. Lett.* **2010**, 12, 3708–3711.

Presentations

American Society of Pharmacognosy-Annual Meeting,
Madison, WI.

July 14th, 2019

Poster Presentation

RISE Seminar – UPR Rio Piedras, San Juan, PR.

Sept 14, 2018

Oral Presentation

American Society of Pharmacognosy-Annual Meeting,

Lexington, KY. July 23rd, 2018

Oral Presentation

GRC: Marine Natural Products, Ventura, CA.

March 5th, 2018

Poster Presentation

American Society of Pharmacognosy-Annual Meeting,

Portland, OR. July 30th, 2017

Poster Presentation

ACS Spring Meeting, San Francisco, CA.

April 2nd, 2017

Poster Presentation, Medicinal Chemistry Group

Scripps Institution of Oceanography, La Jolla, CA.

Oct 14th, 2016

Natural Products Affinity Group Seminar Series

Scripps Institution of Oceanography, La Jolla, CA.

April 6th, 2016

Seminar in Marine Chemical Biology and Natural Products

UPR of Puerto Rico-Mayagüez, Mayagüez, PR.

Sept. 12th, 2014

Seminario Departamental, Departamento de Química