

## **CURRICULUM VITAE**

**JOHN J. GAYNOR, Ph.D.**

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### **EDUCATION**

#### **A. DEGREES**

1971 - 1975	B.S. Biology, Saint Joseph's College, Philadelphia, PA
1975 - 1978	M.S. in Plant Biology, Rutgers, The State University, New Brunswick, NJ
1978 - 1981	Ph.D. in Plant Biology, Rutgers, The State University, New Brunswick, NJ

#### **B. POSTDOCTORAL POSITIONS**

1981 - 1982	Postdoctoral Fellow, Yale University, New Haven, CT. Department of Biology. Laboratory of Dr. Arthur W. Galston.
1982 - 1984	Postdoctoral Fellow, The Rockefeller University. Laboratory of Plant Molecular Biology. Laboratory of Dr. Nam-Hai Chua.

### **PROFESSIONAL EXPERIENCE**

1984 - 1991	Assistant Professor, Department of Biological Sciences, Rutgers University
1992 - 1996	Assistant Professor, Department of Biology, Montclair State University
1997 - present	Associate Professor, Department of Biology and Molecular Biology, Montclair State University

### **PUBLICATIONS**

1. Price, C.A., Ortiz, W., and J.J. Gaynor. 1978. Regulation of protein synthesis in isolated chloroplasts of *Euglena gracilis*. In: Chloroplast Development (G. Akoyunoglou et al., eds.). Elsevier/North Holland Biomedical Press, The Hague. Pp. 257-266.
2. Gaynor, J.J., and C.C. Still. 1980. Subcellular localization of chicken kidney aryl acylamidase activity. *Biochem. J.* 186:507-513.
3. Gaynor, J.J. 1982. Synthesis of proteins by chloroplasts from iron-deficient *Euglena gracilis*. *Arch. Biochem. Biophys.* 218:309-319.

4. Gaynor, J.J., and C.C. Still. 1983. Subcellular localization of rice leaf aryl acylamidase activity. *Plant Physiol.* 72:80-85.
5. Bates, G.W., Gaynor, J.J., and N.S. Shekhawat. 1983. Fusion of plant protoplasts with an electric field. *Plant Physiol.* 72:1110-1113.
6. Gaynor, J.J., and A.W. Galston. 1983. Purification and characterization of amyloplasts from etiolated epicotyls of *Pisum sativum*. *Plant and Cell Physiol.* 24:411-421.
7. Gaynor, J.J., and R.-K. Sawhney. 1985. Production of novel crops by somatic hybridization. In: *Biochemical Basis of Plant Breeding* (C.A. Neyra, ed.). CRC Press, Boca Raton, FL. Pp. 10-21.
8. Slocum, R.D., Gaynor, J.J., and A.W. Galston. 1985. Experiments on plants grown in space. V. Cytological and ultrastructural studies on root tissues. *Ann. Botany* 54:65-76.
9. Gaynor, J.J. 1985. Electrofusion of plant protoplasts. In: *Handbook of Plant Cell Culture, Volume 4* (Evans, D.A., Sharp, W.R., and P.V. Ammirato, eds.). Macmillan, New York. Pp. 149-171.
10. Broglie, K.E., Gaynor, J.J., Durand-Tardif, M., and R. Broglie. 1985. Regulation of chitinase gene expression by ethylene. In: *Biotechnology in the Plant Sciences* (P. Day, M. Zaitlin, A. Hollaender, eds.). Academic Press, New York, NY. pp. 247-258
11. Broglie, K.E., Gaynor, J.J., and R. Broglie. 1986. Ethylene regulated gene expression: Molecular cloning of the genes encoding an endochitinase from *Phaseolus vulgaris*. *Proc. Natl. Acad. Sci., USA*, 83:6820-6824.
12. Gaynor, J.J., and R. Broglie. 1986. Defense genes in bean seedlings: Induction of chitinase by ethylene. In: *Plant Genetics* (M. Freeling, ed.). Alan R. Liss, Inc., New York, NY. pp. 617-627.
13. Gaynor, J.J. 1988. Primary structure of an endochitinase mRNA from *Solanum tuberosum*. *Nuc. Acids Res.* 16:5210-5210.
14. Gaynor, J.J., and K.M. Unkenholz. 1989. Sequence analysis of a genomic clone encoding an endochitinase from *Solanum tuberosum*. *Nuc. Acids Res.* 17:5855-5856.
15. Roby, D., Broglie, K., Gaynor, J.J., and R. Broglie. 1991. Regulation of a chitinase gene promoter by ethylene and elicitors in bean protoplasts. *Plant Physiology*, 97:433-439.
16. Campbell, M.A., Gaynor, J.J., and E.G. Kirby. 1992. Culture of cotyledons of *Douglas fir* on a medium for the induction of adventitious shoots induces rapid changes in polypeptide profiles and mRNA populations. *Physiologia Plantarum* 85:180-188.
17. Miao, Z. and J.J. Gaynor. 1993. Molecular cloning, characterization and expression of Mn-superoxide dismutase from the rubber tree (*Hevea brasiliensis*). *Plant Mol. Biol.*, 23:267-277.

18. Fox, M., Gaynor, J.J., and J. Shillcock. 1995. The Ammonia Lava Lamp: A Colorful Demonstration of Diffusion. *Journal of College Science Teaching* 25(4):286-288.
19. Gaynor, J.J., and M. Fox. 1996. Uptake of bacteriophage  $\lambda$  in *Escherichia coli* by electroporation: an alternative to *in vitro* packaging. *Biotechnology Techniques* 10(6):463-467.
20. Fox, M., and J.J. Gaynor. 1996. A cDNA encodes the *Drosophila* homolog of yeast 60S ribosomal protein YL43. *DNA Sequencing*, 7:123-125.
21. Gaynor, J.J., and M. Fox. 1996. Identification of a new ribosomal protein in *Drosophila melanogaster*. *Insect Biochem. & Mol. Biol.*, 27:223-228.
22. Fox, M., and J.J. Gaynor. 1996. A Demonstration of the Molecular Basis of Sick Cell Anemia. *Journal of College Science Teaching*, 26(2):147-149.
23. Fox, M., Gaynor, J.J., and L. Cribben. 1997. A Botanical Treasure Hunt: A Novel Tree Identification Exercise. *American Biology Teacher*, 19:42-46.
24. Chu, T., Lee, L.H. and S. Srinivasan. 2005. Bioinformatic Analysis of the Metal-Binding Protein Families and Heavy Metal Resistance amongst Cyanobacteria. *Proceedings of ICISIP (International Conference of Intelligent Sensing and Information Processing) – 2005*, 32-36.
25. Kight, S.L., Gaynor, J.J., and S.D. Adams. 2006. Undergraduate Research Communities: A Powerful Approach to Research Training. *Journal of College Science Teaching*, 35: 34-39.
26. Crum K.P., Fuchs H.L., Bologna P.A.X., and J.J. Gaynor. 2014. Model-to-data comparisons reveal influence of jellyfish interactions on plankton community dynamics. *Mar. Ecol. Prog. Ser.* 517:105-119.
27. Bologna, P.A.X., Gaynor, J.J., Castellano, C., and D. Restaino. (In review). Direct and indirect predatory impacts of gelatinous zooplankton on pelagic community structure.
28. Meredith, R., Gaynor, J.J., and P.A.X. Bologna. (In review). Diet Assessment of the Atlantic Sea Nettle *Chrysaora quinquecirrha* in Barnegat Bay, New Jersey using Next Generation Sequencing.

#### **MS STUDENTS MENTORED (COMPLETED 2010 - 2015)**

I have mentored a total of 9 Masters students (Malkowitz, Restaino, Burns, Lozano, Buschgans, Shchegolev, Medina, Casanova, Cropley) in my laboratory during the past 5 years. All but one of them has worked on the jellyfish project. Four have defended their theses and have graduated; four are still in progress. An additional one finished with a non-thesis option during this period (Buschgans). Titles of their theses are provided below:

Lorraine Malkowitz. 2012. PCR Amplification and DNA Sequence Analysis of the b-Actin Gene from a Scyphozoan Jellyfish (*Chrysaora quinquecirrha*). January 2012.

Dena Restaino. 2013. qPCR Detection of Early Life History Stage *Chrysaora quinquecirrha* (Sea Nettles) in Barnegat Bay, New Jersey. May 2013.

Caitlin Burns. 2013. PCR Amplification and DNA Sequence Analysis of the 45S Ribosomal DNA Cassette of *Chrysaora quinquecirrha*. August 2013.

Ivonne Lozano. 2013. Studies of the Cnidocyst of the Atlantic Sea Nettle, *Chrysaora quinquecirrha*. August 2013.

Kate Buschgans. 2013. Mitogenomics of the Atlantic Sea Nettle, *Chrysaora quinquecirrha*. August 2013. (Non-thesis option).

### **MS STUDENTS MENTORED (IN PROGRESS)**

Currently I have four current Master's students working in my laboratory and expect to defend their thesis by May of 2016. Three are working on our jellyfish; another is working on examining microbial diversity in on-street Manhattan hot dog water using Next-Generation DNA sequencing methodologies. See below.

George Shchegolev. 2016. Transcriptome Analysis of the Atlantic Sea Nettle (*Chrysaora quinquecirrha*). May 2016 (expected).

Jonathan Medina. 2016. Transposable Elements in the Genome of the Atlantic Sea Nettle, *Chrysaora quinquecirrha*. May 2016 (expected).

Nelson Casanova. 2016. Love that Dirty Water: Potential microbial diversity in on-street Manhattan hot dog water. May 2016 (expected).

Zachary Cropley. 2016. Purification and Characterization of Venom Proteins from the Atlantic Sea Nettle, *Chrysaora quinquecirrha*. May 2016 (expected).

### **UNDERGRADUATE STUDENTS MENTORED: INDEPENDENT RESEARCH (2010 - 2015)**

In addition to my graduate students, I have mentored 16 undergraduate students (Biology Molecular Biology, or Biochemistry majors) in my laboratory from 2010 to present. Their names and research topics are provided below. Several of these undergraduate students were also hired as summer research assistants on our NJDEP grant in summers of 2012, 2013 and 2014 (Carvalho, Dondero, Ferrara, Fetske, Lussier, Pastor).

Anne Borja – Drosophila bioassay for toxic proteins in jellyfish venom.

Maria Carvalho - qPCR analysis of eDNA samples.

Jennifer E. Catuzzi – Sequencing of the 18S rDNA gene from the Barnegat Bay Sea Nettle (*Chrysaora quinquecirrha*)

AnnaMaria DeBari – Dirty Water Dog Project (2 semesters)

Julia Dondero – qPCR analysis of eDNA samples

Nashali Ferrara\* – qPCR analysis of eDNA samples

Zachary Fetske\* – qPCR analysis of eDNA samples

Victoria Lussier – Production of a cDNA library from *Chrysaora quinquecirrha*  
Duston Ndreu – Sequencing of the mitochondrial genome of *Chrysaora quinquecirrha*  
Sabby Olivera – Developing a barcode for the Sea Nettle (*Chrysaora quinquecirrha*)  
Isabella Pastor - Dirty Water Dog Project  
Kenny Pavan – Development of algorithms for analysis of NextGen sequencing data from *Chrysaora quinquecirrha*  
Kimberly Pierre – Total DNA content of water samples from Banegat Bay, NJ.  
Jessica Rajchel – Dirty Water Dog Project (2 semesters)  
Atikur Rahman – In vitro culture of *Chrysaora quinquecirrha* polyps  
Janette Wycoco - Sequencing of the mitochondrial genome of *Chrysaora quinquecirrha*

\*Biochemistry majors

### **PRESENTATIONS AT SCIENTIFIC MEETINGS**

I have a total of 32 presentations since this FSP cycle was initiated in 2010 (6 in 2012; 9 in 2013; 11 in 2014; and 6 in 2015). All of these presentations include our graduate and undergraduate students. Details are provided below.

#### **2012 MEETING PRESENTATIONS**

George Shchegolev, Archana Tare, Paul A.X. Bologna and John J. Gaynor. 2012. PCR-Based Detection of Sea Nettle (*Chrysaora quinquecirrha*) DNA in Environmental Samples. Poster presentation at the Annual New Jersey Academy of Sciences (NJAS), Seton Hall University, West Orange, NJ. April 2012.

Lorraine Malkowitz, George Shchegolev, and John J. Gaynor. 2012. Sequencing of the b-Actin Gene from the Sea Nettle (*Chrysaora quinquecirrha*). Poster presentation at the Annual New Jersey Academy of Sciences (NJAS), Seton Hall University, West Orange, NJ. April 2012.

Christie L. Castellano, Paul A.X. Bologna, and John J. Gaynor. 2012. Distribution of sea nettles (*Chrysaora quinquecirrha*) and impacts on zooplankton in Northern Barnegat Bay, New Jersey. Presented at the Annual New Jersey Academy of Sciences (NJAS), Seton Hall University, West Orange, NJ. April 2012.

Dena Restaino, George Shchegolev, Victoria Lussier, Archana Tare, Paul A.X. Bologna and John J. Gaynor. 2012. PCR-Based Detection of Sea Nettle (*Chrysaora quinquecirrha*) DNA in Environmental Samples. Poster presentation at the Annual AERS (Atlantic Estuarine Research Society) Conference, Chincoteague, VA. October, 2012.

Paul A.X. Bologna, John J. Gaynor, and Christie L. Castellano. 2012. Spatial and Temporal Distribution of Gelatinous Zooplankton in Barnegat Bay, New Jersey. Poster presentation at the Annual AERS (Atlantic Estuarine Research Society) Conference, Chincoteague, VA. October, 2012.

George Shchegolev, Dena Restaino, Victoria Lussier, Archana Tare, Paul A.X. Bologna and John J. Gaynor. 2012. PCR-Based Detection of Sea Nettle (*Chrysaora quinquecirrha*) DNA in Environmental Samples. Poster presentation at the Annual MACUB Conference, Adelphi University, Garden City, NY. November 2012. *In Vivo* 34(2):45. 2013.

## **2013 MEETING PRESENTATIONS**

Dena J. Restaino, George Shchegolev, Victoria Lussier, Paul A.X. Bologna, John J. Gaynor. 2013. qPCR-Based Assay for the Temporal and Spatial Distribution of Early Life History Stages of *Chrysaora quinquecirrha* in Barnegat Bay. Annual Benthic Ecology Meeting (BEM), Savannah, GA. March 2013.

Christie L. Castellano, Paul A.X. Bologna, and John J. Gaynor. 2013. Distribution of sea nettles (*Chrysaora quinquecirrha*) and impacts on zooplankton in Northern Barnegat Bay, New Jersey. Presented at the Annual Benthic Ecology Meeting (BEM), Savannah, GA. March 2013.

Dena J. Restaino, George Shchegolev, Victoria Lussier, Paul A.X. Bologna, John J. Gaynor. 2013. qPCR-Based Assay for the Temporal and Spatial Distribution of Early Life History Stages of *Chrysaora quinquecirrha* in Barnegat Bay. Annual Student Research Symposium, Montclair State University, Montclair, NJ. April 2013.

Katlyn Buschgans and John J. Gaynor. 2013. The Mitochondrial Genome of the Atlantic Sea Nettle (*Chrysaora quinquecirrha*). Poster presented at the Annual Student Research Symposium, Montclair State University, Montclair, NJ. April 2013.

Ivonne Lozano and John J. Gaynor. 2013. Preliminary Characterization of a Hemolytic Activity in the Cnidocysts of the Jellyfish *Chrysaora quinquecirrha* from Barnegat Bay. Poster presented at the Annual Student Research Symposium, Montclair State University, Montclair, NJ. April 2013.

Victoria Lussier and John J. Gaynor. 2013. Construction of a cDNA Library of the Sea Nettle (*Chrysaora quinquecirrha*) from Barnegat Bay. Poster presented at the Annual Student Research Symposium, Montclair State University, Montclair, NJ. April 2013.

Dena Restaino, George Shchegolev, Victoria Lussier, Paul A.X. Bologna, John J. Gaynor. 2013. qPCR-Based Assay for the Identification of Early Life History Stages of *Chrysaora quinquecirrha* in Barnegat Bay. Annual New Jersey Academy of Sciences Meeting, Kean University, Union, NJ. April 2013.

Lozano, Ivonne, and John J. Gaynor. 2013. Preliminary Characterization of a Hemolytic Activity in the Cnidocysts of the Jellyfish *Chrysaora quinquecirrha* from Barnegat Bay. Poster presented at The Annual New Jersey Academy of Sciences Meeting, Kean University, Union, NJ. April 2013.

Paul Bologna and John J. Gaynor. 2013. Modeling Sea Nettle (*Chrysaora quinquecirrha*) Blooms through Molecular Identification of Early Stage Individuals. Oral presentation (PB) at 4th International Jellyfish Bloom Symposium, Hiroshima, Japan. June, 2013.

## **2014 MEETING PRESENTATIONS**

Idali M. Rios, Paul A.X. Bologna, and John J. Gaynor. 2014. Diet Analysis of the Atlantic Sea Nettle, *Chrysaora quinquecirrha*, in Barnegat Bay, NJ. Presented at the Annual Benthic Ecology Meeting, Jacksonville, FL. March 2014.

Christie Castellano, Paul A.X. Bologna, and John J. Gaynor. 2014. Direct and Indirect impacts of gelatinous zooplankton on pelagic community structure. Presented at the Annual Benthic Ecology Meeting, Jacksonville, FL. March 2014.

Dena Restaino, John J. Gaynor, and Paul A.X. Bologna. 2014. Potential Impacts of Superstorm Sandy on Sea Nettle (*Chrysaora quinquecirrha*) Early Life History Stage in Barnegat Bay, NJ. Presented at the Annual Benthic Ecology Meeting, Jacksonville, FL. March 2014.

Natalia Aristizaba, Paul A.X. Bologna, and John J. Gaynor. 2014. Experimental Colonization of Hard Substrate in a Coastal New Jersey Lagoonal System. Presented at the Annual Benthic Ecology Meeting, Jacksonville, FL. March 2014.

Paul A. X. Bologna, John J. Gaynor, Christie Castellano, and Dena Restaino. 2014. Range expansion of the Sea Nettle (*Chrysaora quinquecirrha*) and impacts on pelagic food webs. Oral presentation (PAXB) at 2014 International Council for the Exploration of the Sea Meeting in A Coruna, Spain in September, 2014.

Maria Carvalho, Dena Restaino, Nashali Ferrara, Zachary Fetske, Isabella Pastor, Paul A.X. Bologna, and John J. Gaynor. 2014. Use of qPCR to Map the Distribution and Seasonal Changes in Early Developmental Forms of the Atlantic Sea Nettle (*Chrysaora quinquecirrha*) in Barnegat Bay, New Jersey. Poster presentation at the Annual MACUB Conference, Adelphi University, Garden City, NY. November 2014.

Dena Restaino, John J. Gaynor, Paul A.X. Bologna, and Maria Carvalho. 2014. Potential Impacts of Superstorm Sandy on Sea Nettle (*Chrysaora quinquecirrha*) Early Life History Stage in Barnegat Bay, NJ. Presented at the Atlantic Estuarine Research Society Meeting (AERS) at Stockton College, Galloway, NJ. October 2014.

Christie Castellano, Paul A.X. Bologna, and John J. Gaynor. 2014. Direct and Indirect Impacts of Gelatinous Zooplankton on Pelagic Community Structure in Barnegat Bay, NJ. Presented at the Atlantic Estuarine Research Society Meeting (AERS) at Stockton College, Galloway, NJ. October 2014.

Joseph McGinnis, Paul A.X. Bologna, John J. Gaynor, and Robert Meredith. 2014. Seagrass Wrack as a Potential Benthic-Pelagic Link in Barnegat Bay, NJ. Presented at the Atlantic Estuarine Research Society Meeting (AERS) at Stockton College, Galloway, NJ. October 2014.

Christie Castellano, Paul A.X. Bologna, and John J. Gaynor. 2014. Direct and Indirect impacts of gelatinous zooplankton on pelagic community structure. Poster presented at the Annual Student Research Symposium, Montclair State University, Montclair, NJ. April 2014.

Christie L. Castellano, Paul A. X. Bologna and John J. Gaynor. 2014. Direct and Indirect Impacts of Gelatinous Zooplankton on Pelagic Community Structure. Presented at The Annual New Jersey Academy of Sciences Meeting, Raritan Valley Community College, Branchburg, NJ. April 2014.

## **2015 MEETING PRESENTATIONS**

Dena Restaino, Paul A.X. Bologna, John J. Gaynor, and Robert W. Meredith. 2015. Temporal and Spatial Relationship of Adult and Planula *Chrysaora quinquecirrha* Barnegat Bay, NJ. Presented at the 44th Annual Benthic Ecology Meeting, Université Laval, Quebec City, Canada. March 2015.

Christie L. Castellano, Paul A.X. Bologna, John J. Gaynor, and Robert W. Meredith. 2015. Impacts of major storm events on gelatinous zooplankton and planktonic community structure in Barnegat Bay, NJ. Presented at the 44th Annual Benthic Ecology Meeting, Université Laval, Quebec City, Canada. March 2015.

Dena Restaino, Paul A.X. Bologna, John J. Gaynor, and R.W. Meredith. 2015. Temporal and Spatial Relationship of Adult and Planula *Chrysaora quinquecirrha* Barnegat Bay, NJ. Presented at the Annual Student Research Symposium, Montclair State University, Montclair, NJ. April 2015.

Joseph R. McGinnis, Paul A.X. Bologna, John J. Gaynor, and Robert W. Meredith. 2015. Seagrass Wrack as a Potential Benthic-Pelagic Link in Barnegat Bay, NJ. Presented at the Annual Student Research Symposium, Montclair State University, Montclair, NJ. April 2015.

Dena J. Restaino, John J. Gaynor, Paul A. X. Bologna, Maria Carvalho, and Robert W. Meredith. 2015. Temporal and Spatial Relationship of *Chrysaora quinquecirrha* in Barnegat Bay, NY Following Superstorm Sandy. Presented at The Annual New Jersey Academy of Sciences Meeting, Kean University, Union, NJ. April 2015.

Joseph R. McGinnis, Paul A.X. Bologna, John J. Gaynor, and Robert W. Meredith. 2015. Seagrass Wrack as a Potential Benthic-Pelagic Link in Barnegat Bay, NJ. Presented at The Annual New Jersey Academy of Sciences Meeting, Kean University, Union, NJ. April 2015.