

GOVIND S. NADATHUR, Ph.D.

(787) 899-2048 ext.259

govind.nadathur@upr.edu

Department of Marine Sciences
University of Puerto Rico
Isla Magueyes Marine Station
P.O. Box 9000
Mayaguez, P.R. 00681.

Research Interests: Molecular Microbiology/Biotechnology with special interest in the heterologous gene expression, discovery of natural products from microorganisms, and microbial genomics and genomic diversity.

Educational Qualifications: Ph.D. **Microbiology** M.S. University, India, 1982
M.S. **Microbiology** Gujarat University, India, 1977
B.S. **Microbiology** Gujarat University, India, 1975

Current Position:

1993
Initial hire **Tenured Professor**, Department of Marine Sciences,
University of Puerto Rico, Mayaguez Campus.

1998
Awarded Tenure *Responsibilities:* to provide leadership and encourage academic excellence in our department through strategic planning, implementation of instructional programs and educational objectives, management and supervision of support personnel, attention to faculty and staff development, supervision of physical structure, budget and resource allocation, direction of graduate students, graduate teaching (courses in molecular marine biology), secure extramural funding for research and committee work as follows: Marine Station Planning Committee, Department Personnel, Hiring and Promotions Committee and Institutional Assessment Committee.

1998-2000 &
2012-2014
Associate Director

Accomplishments: have established successful collaborations with local business, industry, and academic constituencies to promote science and technology in Puerto Rico through the following appointed positions:

***Advisor to the President of the University of Puerto Rico** for the Government's Strategic Planning Committee for Science and Technology in Puerto Rico

***Consultant to the Department of Commerce and Economic Development**, Government of Puerto Rico, in Biotechnology for economic development

***Record of Extramural Funding Support For Research & Development** (approximately \$3,000,000 in federal funds over the last ten years)

Extramural Funding and Research Collaborations:

1. *Office of Naval Research* to develop the marine yeast *Debaryomyces hansenii* as a model system for marine molecular biology (1989-1992)
2. *National Science Foundation EPSCoR Program* to study signally induced genes in marine yeasts (1993-1995)
3. *Sea Grant College Program* seed money for start-up funds (1993, 2004)
4. *Environmental Protection Agency Exploratory Grants Program* to

- study bacterial vectors in Ciguatera Sea Food Poisons (1995-1998)
5. *National Institute of Health MBRS Program* to study environmentally-induced genes in *Debaryomyces hansenii* (1995-1999)
 6. *National Renewable Energy Laboratories* subcontract for the discovery of novel carbohydrases from tropical environments (1999-2004).
 7. *National Science Foundation EPSCoR Program* Instrumentation Grant for the acquisition of an automated sequencer (1999)
 8. *U.S. Department of Agriculture*: Cooperative agreement to isolate mutants of *Trichoderma reesei* that cannot utilize glucose (2001-2004).
 9. *National Institute of Health MBRS Program* to study environmentally-induced genes in *Debaryomyces hansenii* (2003-2007)
 10. *Air Force Research Laboratories* to study microalgae as sources for C10+ Biofuels (2008-2012)
 11. Sustainable Cellulosics Inc and Sustainable AgroBiotech to develop bio-catalysts and microorganisms for fuel development (2008-2012)
 12. *Joule Unlimited Technologies Inc.* Isolation and characterization of cyanobacteria for fuel production (2012-2013)
 13. *NSF Emerging Frontiers in Research Innovation* for the direct production of hydrocarbons in yeasts (2009-2014)
 14. *Ciris Energy Inc.* Biodiversity Partnership for the isolation and characterization of Coal degrading microbes (2012-2014)
 15. *Weyerhaeuser Corporation.* Isolation of Coelenterazine based Luciferases from deep sea invertebrates(2105-present).

Private Sector and other Collaborative Agreements

Industry collaborations:

- Diversa Corporation (2003-2007)
- Sustainable Cellulosics Inc. and Sustainable AgroBiotech (2007-2012)
- Joule Unlimited Technologies Inc. (2012-2013)
- Ciris Energy Inc (2012-present)

All the above agreements with the private sector included research funding and profit sharing with the university.

Academic collaborations:

- The University of Puerto Rico Mayaguez/Universidad Autónoma de Nuevo León (Monterrey, Mexico) Cooperative Agreement to establish a collaborative effort for faculty and student exchange.

Administrative Experience:

1998-2000 **Associate Director**, Department of Marine Sciences, University of Puerto Rico
2012-2014

Responsibilities: In charge of day to day operations of the marine station including maintenance and marine sections. Liaison between the employees and university administration.

2001-2012 **Program Director**, National Institutes of Health, Minority Biomedical Research Support Program (Support for Continued Research Excellence---SCORE) at the University of Puerto Rico, Mayagüez Campus.

Responsibilities: The MBRS Program Director reports to the Research and Development Director and has direct liaison with finance, accounting, purchasing, and personnel departments of the CID for administrative support. The Program Director also interacts directly with the Dean of Administration, Property Office, Buildings and Grounds, as well as with other academic deans and department chairmen. Program records are maintained in the Program Office. All program fiscal documents and reports, including purchase orders, payrolls, and travel requests are sent by Principal Investigators to the Program Office for processing and forwarding to appropriate administrative offices. Financial balance ledger sheets are maintained in the Program Director's office where they are available to Project Leaders. The program's administrative officer and assistant help Project Leaders with fiscal and other administrative matters including compliance with NIH and University regulations.

Accomplishments: The last two renewal cycles of the program (2003-2011) have generated over \$8,000,000 in extramural funding for biomedical research. During this period two programs aimed at increasing the number of underrepresented minorities involved in biomedical research have been designed and implemented with University funding. These are :

1. Seed money funding to encourage junior minority researchers to establish a biomedically oriented research program.
2. Graduate fellowships to encourage minority students to enter this area and start a career.

Training Programs Provided:

1999, 2001, 2003, 2006 2009	Invited lecturer of the Joint Agriculture Research Service—Universidad Autonoma de Nuevo Leon, Monterrey, Mexico sponsored International Course on Agricultural Biotechnology. The lectures and the laboratories were conducted in Spanish.
2002-2005	Member graduate committee of three students (1 Ph.D and 2 Masters) at Monterrey, Mexico.
2005	Provided a two day course on environmental Biotechnology at Universidad Autonoma de Nuevo León, Monterrey, Mexico. The course was conducted in Spanish.

Special Projects:

Production of a video entitled “Biofuels in Puerto Rico” by the American Society for Microbiology in their section Microbe World. <http://www.youtube.com/watch?v=f4YlugHvoBM>

Our laboratory's collaborative efforts with the company Sustainable AgroBiotech LLC., is mentioned in the U.S. President's taskforce report on Puerto Rico's Status (pages 80-81).

[http://www.whitehouse.gov/sites/default/files/uploads/Puerto Rico Task Force Report.pdf](http://www.whitehouse.gov/sites/default/files/uploads/Puerto_Rico_Task_Force_Report.pdf)

Related Experience:

- 1989-1993 **Assistant Research Biologist II**, Marine Science Institute and the Department of Biological Sciences, University of California, Santa Barbara.
- Responsibilities:* Principal Investigator of a project funded by the Office of Naval Research to develop the marine yeast *Debaryomyces hansenii* as a model system for molecular marine biology.
- Accomplishments:* Successful development of molecular techniques for the yeast *Debaryomyces hansenii*. Development of plasmid vectors, transformation systems and the isolation of auxotrophs.
- 1987-1989 **Postgraduate Research Biologist** with Dr. E. L. Triplett, Marine Science Institute and the Department of Biological Sciences, University of California, Santa Barbara.
- Responsibilities:* To study light-regulated genes in marine dinoflagellates.
- Accomplishments:* Our group successfully isolated and raised antibodies against the family of proteins that are activated by changes in light. We isolated several cDNA clones encoding for these proteins and studied the regulation of the genes by light.
- 1985-1986 **Postdoctoral Associate** with Dr. M. Jayaram, Molecular Biology Department, Scripps Clinic and Research Foundation, La Jolla, California
- Responsibilities:* To decipher the molecular mechanisms involved in the interaction of DNA and proteins using the 2u circle FLP recombinase as the protein that binds specific sites on the plasmid. The study introduced random mutations in the FLP gene and studied how the mutation affected the binding, cutting and rejoining activity of the protein.
- Accomplishments:* Our group successfully devised *in vivo* bioassays to study the activity of the wild type and the mutant proteins in *Escherichia coli*.
- 1982-1985 **Postdoctoral Associate** with Dr. E. Cerda Olmedo, Department of Genetics, University of Seville, Spain.
- Responsibilities:* To isolate strains of the fungus *Phycomyces blakesleeanus* for the industrial production of Beta carotene. This project was partly funded by Hoffman La Roche, Switzerland. To teach Masters courses in classical genetics.
- Accomplishments:* A strain that could produce 25000 ppm of the carotenoid was isolated by utilizing techniques such as chemical mutagenesis, heterokaryosis and sexual crosses.

Honors and Awards:

- 1975-1977 Awarded the Gujarat University Merit Scholarship for Graduate Studies
- 1977 Stood first in the graduating class of 1977 earning an M.S. degree

- 1978-1982 Recipient of the Graduate Merit Scholarship by the Department of Atomic Energy, Government of India.
- 2005-present Member of the External Advisory Board of the Institute of Biotechnology, Universidad Autónoma de Nuevo León, Monterrey, Mexico.
- 2013 Honored for contribution in strengthening research in environmental biotechnology at the Institute of Biotechnology, Universidad Autónoma de Nuevo León, Monterrey, Mexico

Memberships to Professional Societies:

- American Society for Microbiology
- Society for Industrial Microbiology

Invited Appointments to Grants Review Panels:

- NIH--MBRS Biochemistry review panel, Bethesda, Maryland, February, 1995
- Interamerican Institute for Global Change review panel, Sao Jose dos Campos, Brazil, August, 1996
- Adhoc reviewer for FEBS Microbiology Letters, NOAA/Sea Grant Program, National Science Foundation.
- EPA Graduate fellowship program evaluation committee (2009)

Memberships to Conference Committees:

- Member organizing committee of the 30th Annual meeting of the Association Marine Laboratories of the Caribbean, June, 2001.
- Co-convenor of a session at the ASM conference on Biodegradation, Biotransformation and Biocatalysis, October 2001.
- Co-chair, session on Marine Biotechnology, 30th Annual Meeting of the Association of Marine Laboratories of the Caribbean, June 2001.

Professional Collaborations:

- Dr. Hugo Luna, Instituto de Biotecnología, **Universidad Autónoma Nuevo León**, Monterrey Mexico
- Dr. Amit Vasavada, **General Atomics, Inc.** San Diego
- Dr. Arup Sen, STI Minerals Inc., Gainesville Florida

Publications

Guma-Cintron, Y., Bandopadhyay, A., Rosado, W., Shu-Hu, W., and **Govind S. Nadathur** (2015) Transcriptomic analysis of cobalt stress in the marine yeast *Debaryomyces hansenii*. *FEMS yeast Research* doi 10.1093/femsyr/fov099.

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Bracero-Acosta V., Rosado W. and **Govind N.S.** (2014) Rapid procedure for separating high lipid containing microalgae. *Caribbean Journal of Science* 48:76-80.

Luna Olvera, H.A., Elias Santos, M., Morales Ramos, L.H. and **Nadathur S. Govind** (2009) in : *Aplicaciones de la Biotecnología contra el cáncer: empresas y medicamentos*. Luis J. Galan Wong (ed.) UANL Press, Monterrey Mexico, pp. 267-325.

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Jasmine Seda Miro and **Nadathur S. Govind** (2009) Bacterial vectors in dinoflagellate Ciguatoxin production, in “*Marine Phytoplankton*” (Kersey, W.T. and Munger, S.P.eds) Nova Publishers New York., pp. 223-240.

Nadathur S. Govind and Arup Sen (2009) Combining Agriculture and Microbial Genomics to produce sustainable fuels. *Microbe*, 4:269-274.

Nancy Arroyo Gonzalez, Adrinel Vázquez, Humberto G. Ortiz Zuazaga, Arup Sen, Hugo Luna Olvera, Sandra Peña de Ortiz, and **N.S. Govind** (2009) Genome wide expression profiling of the osmoadaptation response of *Debaryomyces hansenii*. *Yeast* 26: 111-124.

L. Perez-Guzman, A. Perez-Matos, W. Rosado, T.R.Tosteson and **N.S. Govind** (2008) Bacteria associated with toxic clonal cultures of the dinoflagellate *Ostreopsis lenticularis*. *Marine Biotechnology*, 10:492-496..

J. Seda-Miro, N. Arroyo-Gonzalez, A. Perez-Matos and **N.S. Govind** (2007) Impairment of metal-induced riboflavin biosynthesis in a *Debaryomyces hansenii* mutant. *Canadian Journal of Microbiology*, 53:1272-1277.

A. Perez-Matos, W. Rosado and **N.S. Govind** (2007) Bacterial Diversity associated with the Caribbean tunicate *Ecteinascidia turbinata*. *Antonie van Leeuwenhoek*, 92: 155-164.

O. Tirado, W. Rosado and **N. S. Govind** (2005) Characterization of bacteria with carbohydrase activities from tropical ecosystems. *J. Mar. Biol Ass. U.K.* 85: 269-275.

R. G. Maggi and **N.S. Govind** (2004) Regulated expression of green fluorescent protein in *Debaryomyces hansenii*. *Journal of Industrial Microbiology and Biotechnology* 31: 301-310.

R. Maggi-Ledda and **N. S. Govind** (2004) Developing biotechnological innovations for the synthesis of biological products. Proceeding of the 5th international course in Agricultural Biotechnology, Monterrey, Mexico.

M. Ashton, W. Rosado, **N. S. Govind** and T. R. Tosteson (2003) Culturable and nonculturable bacterial symbionts in toxic benthic dinoflagellate *Ostreopsis lenticularis*. *Toxicon*, 42: 419-424.

W. Rosado and **N. S. Govind** (2003) Identification of carbohydrate degrading bacteria in sub-tropical regions. *International Journal of Tropical Biology and Conservation*, **51**: 205-210.

R. Zaidi, L.M. Hinkey, N. R. Rodriguez, **N. S. Govind** and S. H. Imam (2002) Biodegradation of toxic chemicals in Guayanilla bay, Puerto Rico: Confirmation of identity of phenanthrene-degrading bacterium by molecular techniques. *Marine Pollution Bulletin*, 46:418-423.

N. S. Govind, W. Rosado and O. Tirado (2002) Biodiversidad en el Caribe: Identificación de microorganismos degradadores de carbohidratos. *Revista Latinoamericana de Microbiología*, 44: 160.

T. D. Leathers, **N. S. Govind** and R. V. Greene (2000) Biodegradation of poly (3-hydroxybutyrate-co-3-hydroxyvalerate) by a tropical marine bacterium, *Pseudoalteromonas* sp. NRRL B-30083. *Journal of Polymers and the Environment* 8: 119-124.

S.H. Gordon, S.H. Imam, R.L. Shogren, **N.S. Govind** and R.V. Greene (1999) A Semi-empirical model for predicting biodegradation profiles of individual polymers in starch-poly (B-hydroxybutyrate-B-hydroxyvalerate) bioplastic. *Journal of Applied Polymer Science*, 76: 1767-1776.

M.L. Ricaurte and **N.S. Govind** (1998) Construction of a Plasmid Vector and Transformation of the Marine Yeast *Debaryomyces hansenii*. *Journal of Marine Biotechnology*, **1**:15-19.

R.V. Greene, S.H. Imam, S.H. Gordon, R.L. Shogren, J.L. Willet, T.R. Tosteson and **N.S. Govind**(1997) Biodegradable Performance of Starch-poly (hydroxybutyrate-covalerate) in Tropical Marine Environments. *Applied and Environmental Microbiology*, **65**:431-437.

M. D. de Jesus, **N. S. Govind**, R. V. Agbunag, R. Kahn, E. Avani-Aghajani, R. K. Trench, D. J. Chapman and C. F. Brunck (1995) The Small Subunit Ribosomal RNA Gene of *Tetraselmis convolutae*-- a Feed Alga for Invertebrate Mariculture. *Journal of Applied Phycology*, **7**: 109-120.

K. L. McNally, **N. S. Govind**, P. E. Thome and R. K. Trench (1994) Small Subunit Ribosomal DNA Analyses and a Reconstruction of the Inferred Phylogeny Among Symbiotic Dinoflagellates (Pyrrophyta). *Journal of Phycology*, **30**: 316-329.

E. L. Triplett, R. V. M. Jovine, **N. S. Govind**, S. J. Roman, S. S. Chang and B. B. Prezlin (1993) Characterization of Two Full Length cDNA Sequences Encoding for the Apoprotein of peridinin Chlorophyll *a* (PCP) Complex. *Molecular Marine Biology and Biotechnology*, **2**: 246-254.

E. L. Triplett, **N. S. Govind**, S. J. Roman, R. V. M. Jovine and B. B. Prezlin (1993) Characterization of the Sequence Organization of DNA from the Dinoflagellate *Heterocapsa pygmaea* (a.k.a. *Glenodinium* sp.). *Molecular Marine Biology and Biotechnology*, **2**: 239-245.

R. Iglesias-Prieto, **N. S. Govind** and R. K. Trench (1993) Isolation and Characterization of three Membrane-bound Chlorophyll-protein Complexes from Four Dinoflagellate Species. *Philosophical Transactions of the Royal Society of London (B)*, **340**: 381.

R. E. Kochevar, **N. S. Govind** and J. J. Childress (1993) Identification and Characterization of two Carbonic Anhydrases from the Vent Tubeworm *Riftia pachyptila*. *Molecular Marine Biology and Biotechnology*, **2**: 10.

N.S. Govind, K.L. McNally and R.K. Trench (1992) Isolation and Sequence Analysis of the small Subunit Ribosomal RNA Gene from the Euryhaline Yeast *Debaryomyces hansenii*. *Current Genetics*, **22**: 191.

N. S. Govind and A. T. Banaszak (1992) Isolation and Characterization of an Autonomously Replicating Sequence (ARSD) from the Marine Yeast *Debaryomyces hansenii*. *Molecular Marine Biology and Biotechnology*, **1 (3)**: 215.

J.L. Matta, **N.S. Govind** and R.K. Trench (1992) Polyclonal Antibodies Against Fe-SOD from *Escherichia coli* Cross-react with Superoxide Dismutases from the Symbiotic Dinoflagellate *Symbiodinium microadriaticum*. *Journal of Phycology*, **28**: 343.

L.A. Sadler, K. McNally, **N.S. Govind**, C.L. Brunk and R.K. Trench (1992) The Nucleotide Sequence of the 17s Ribosomal RNA Gene from *Symbiodinium pilosum*, a Symbiotic dinoflagellate. *Current Genetics*, **21**: 409.

R. Iglesias-Prieto, **N.S. Govind** and R.K. Trench (1991) Apoprotein Composition and Spectroscopic Characterization of the Water Soluble Peridinin- Chlorophyll *a* Proteins from three Symbiotic Dinoflagellates. *Proceedings of the Royal Society of London (B)*, **246**: 275.

N.S. Govind, S.J. Roman, R. Iglesias-Prieto, R.K. Trench, E.L. Triplett and B.B. Prezelin (1990) An Analysis of the Light Harvesting Peridinin-Chlorophyll *a* Proteins from Dinoflagellates by Immunoblotting Techniques. *Proceedings of the Royal Society of London (B)*, **240**: 187.

S.J. Roman, **N.S. Govind**, E.L. Triplett and B.B. Prezelin (1988) Light Regulation of Peridinin-Chlorophyll *a* Protein (PCP) Complexes from the Dinoflagellate, *Glenodinium* sp.: use of anti-PCP antibodies to detect gene products in cells grown in different light conditions. *Plant Physiology*, **88**: 594.

N.S. Govind and M. Jayaram (1987) Rapid Localization and Characterization of Random Mutations Within the 2 Micron Circle Site Specific Recombinase: a general strategy for the analysis of protein function. *Gene*, **51**: 31.

E.R. Bejarano, **N.S. Govind** and E. Cerda Olmedo (1987) Zeta carotene and other carotenes in a *Phycomyces* Mutant. *Phytochemistry* **26**: 2251.

N.S. Govind and E. Cerda Olmedo (1986) Sexual Activation of Carotenogenesis in *Phycomyces*. *Journal of General Microbiology*, **132**: 2775.

N.S. Govind, B.J. Mehta and V.V. Modi (1983) Regulation of Carotenogenesis, Trisporic acid Synthesis and Sexual Reproduction in *Blakeslea trispora*. Proceedings-- II Reunion Cientifica de Microbiologia Industrial, Sevilla, Spain.

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N.S. Govind, A.R. Amin and V.V. Modi (1982) Stimulation of Carotenogenesis in *Blakeslea trispora* by Cupric Ions. *Phytochemistry* **21**: 1043.

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N.S. Govind, Bina Mehta, Meenakshi Sharma and V.V. Modi (1981) Protease and Carotenogenesis in *Blakeslea trispora*. *Phytochemistry*, **20**: 2483.

N.S. Govind and V.V. Modi (1981) Regulation of Trisporic Acid Synthesis in *Blakeslea trispora*. *Indian Journal of Experimental Biology*, **19**: 544.

Invited Talks and presentations in National and International Forums:
(over 150)

References

Dr. Gagan A. Pandya
Scientific Review Officer
Center for Scientific Review, NIH
6701 Rockledge Dr., Rm 3200
Bethesda, MD 20892
Pandyaga@csr.nih.gov
301-435-1167 (office)
301-801-5759 (mobile)

Dr. Arup Sen
Co-founder and Chief Executive Officer
Solutions Technology Inc.
3499 N.W. 97th Blvd., Suite 15
Gainesville, FL 32606
Arup725@gmail.com
832-465-2723.

Dr. John Kubaryk
Professor, Department of Marine Sciences

Govind Nadathur

University of Puerto Rico
P.O.Box 9000
Mayaguez PR 00681.
John.kubaryk@upr.edu
787-265-3838
787-899-2048 ext. 246