

Madhavi Nayar

EDUCATION

- Ph.D.** **Cell & Molecular Biology, University of Houston, Texas**
Exploration of the *Vibro* region of 5S ribosomal RNA structure space
August 2000 – June 2005
- M.Sc.** **Microbiology, Haffkine Institute, Mumbai India**
August 1997 – July 1999
- B. Sc.** **Microbiology, Ramnarain Ruia College, Mumbai India**
June 1994 - May 1997

TEACHING EXPERIENCE

Faculty, Biology

Department of Biology and Physical Sciences (August 2016- current)
Biology Program Coordinator (August 2021- current)
Anatomy and Physiology subcommittee Co-chair (August 2019- August 2021)
Houston Community College, Houston, Texas

Adjunct Faculty, Biology

Department of Biology and Physical Sciences (2004, January 2015- August 2016)
Houston Community College, South West and Central Campuses, Houston, Texas

Adjunct Faculty, Biology/Microbiology

Division of Biology and Chemistry (September 2010 – July 2014)
Essex County College, Newark New Jersey

Lecturer, Microbiology

Department of Microbiology (1999)
MVLU College, University of Mumbai, Mumbai, India

RESEARCH EXPERIENCE

Graduate Research Assistant, Molecular Biology

Department of Biology and Biochemistry
University of Houston, Houston, Texas
Advisor: Dr. George E. Fox, Ph.D.

- Trained students on molecular biology techniques
- Developed an electronic tool to maintain extensive data generated during research.
- Assisted students prepare posters for presentation.
- Wrote scientific papers and reports for publishing.
- Assisted in designing rRNA mutation database.

PUBLICATIONS

Faculty Awards and Students Engagement Symposium- October 20, 2020- Presenter, The Students'WAY- **Madhavi Nayar** & Pauline Ward

Use of Virtual Reality for Active Learning, Student Engagement and Collaboration in the Health sciences. Pauline Ward, **Madhavi Nayar**, Renu Jain-HAPS 34th Annual Conference- May 23-27, 2020 Ottawa, Ontario, Canada- Special Conference Edition.

“I am thinking of a....” **Madhavi Nayar**, Houston Community College; 72nd **Annual Convention** February 28 – March 2nd, **2019**. Westin Galleria and Westin Oaks Houston at the Galleria 5060 West Alabama, Houston, TX

Mars and Space Exploration Program: Empowering Undergraduate Stem Education through Hands-On Collaborative Projects, Olga Bannova^{a*}, Irina Mullins^b, Pedro Mateo Alvarez^a, Spencer McClain Stanford^a, Kazuhiko Momose^a, Pauline Ward^b, **Madhavi Nayar^b**, Karolos Grigoriadis; 69th International Astronautical Congress (IAC), Bremen, Germany, 1-5 October 2018.

Defining 5S rRNA Structure Space: Point Mutation Data Can be Used to Predict the Phenotype of Multi-change Variants **Madhavi Nayar**; George E. Fox (Molecular Biology and Evolution Vol 28(9), 2011, pg. 2629-2636) first published online April 5, 2011 doi: 10.1093/molbev/msr090)

A novel method for screening 5S rRNA sequence variants *in vivo*, Zhengdong Zhang, **Madhavi A. Nayar**, David Ammons, Joanne Rampresad and George E. Fox. (Journal of Microbiological Methods; Vol 76, 2009, pg. 181-187)

Exploration of the *Vibrio* region of 5S rRNA structure space, **Madhavi A. Nayar**, PhD Defense Thesis, University of Houston, Houston Texas, August 2005

A novel method to characterize 5S rRNA sequence variants *in vivo*, **Madhavi S. Arikath**, Zhengdong Zhang, David Ammons, Joanne Rampersad and George E. Fox, 8th Annual Structural Biology Symposium, UTMB, Galveston Texas, May 2-4, 2003.

Characterization of a 5S ribosomal RNA neutral network, an *in vivo* approach, **Madhavi S. Arikath** and George E. Fox, Texas Branch Meeting of The American Society for Microbiology. Houston, Texas, November 4-6, 2004.

In vivo characterization of 5S ribosomal RNA neutral network, **Madhavi S. Arikath** and George E. Fox, Lost Pines Conference, Smithville, Texas, October 22-24, 2004.

CERTIFICATION

- New Jersey Certificate of Eligibility to teach Biological Science
- Praxis II-General Sciences, Biology, Recognition of Excellence

ACTIVITIES

1. Worked on a NASA TSGC grant project, designed 2 separate learning activities for astronomy students

A. pertaining to the search for traces of life on Mars

B. activity emphasizing how life sciences are important to the manned exploration of Mars

o These activities incorporate educational outreach materials developed by scientists from NASA Human Research Program and posted on the NASA HRP website. The students will learn about the challenges of manned space flight, from providing nutrition for astronauts to handling the environmental risks posed by space radiation.

o The students will have to use the information from NASA's previous missions to Mars in order to identify and describe conditions on Mars that could potentially affect astronauts. The students will then learn how HRP scientists and engineers predict, assess, and solve the problems that humans can encounter in space travel and on the surface of Mars.

2. Supplemental Instructional leaders are used in Lab and Lecture classes. SI leaders are provided with review materials for the sessions they hold after class to enhance student understand of the subject.

3. HCC 3D-Virtual lab training- Every semester students visit the 3D Virtual reality lab at HCC. Students have a 3D expcience of cell structure and various anatomical structures like the brain and heart.

4. Classes conducted in a Flipped classroom style where students spent time in group activities which include modelling, discussions, Jeopardy, worksheets, case studies, drawing, questioning other students, explaining concepts to each other. Short videos with questions and textbook sections are assigned to the students to watch before they come to the class, especially if the topics covered are typically challenging for the students.

5. Human Anatomy and Physiology Society Annual Meeting at Salt Lake City Utah- Implemented active learning strategies in the classroom, networked with Biology Faculty from colleges all over the Country.

6. Anatomy and Physiology Subcommittee Co chair- Fall 2019- present

7. Exemplary Service Award- Faculty Awards and Students Engagement Innovation Symposium, October 2020.