

**TODD GARY, Ph.D.**  
Director, Community and Research Development  
School of Applied Computational Sciences  
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**Areas of Expertise:** Healthcare Data Science (specifically, machine learning for identifying sepsis), Molecular Biology, and developing interdisciplinary scientific research and educational programs at minority serving institutions. *Experience includes funding for HBCU projects from NSF, NIH, and NASA. Received recognition from the National Academy of Sciences, NASA, the congressional black caucus, and the 100 Black Men of Silicon Valley.*

### Career Highlights

- Contributed to the submission of *more than 150* requests for funding to foundations, local, state and federal agencies resulting in awards totaling \$40M. **PI** on \$3M in awards.
- Part of 4 different world-class research teams: virology, medicine, astronomy and science education.
- Managed a national program providing funding to support research at Minority-Serving Institutions.
- Co-organized NASA workshop on strengthening collaborations with minority serving institutes.
- Mentored more than 100 undergraduate and graduate students in research.

### Education

Point Loma Nazarene University, San Diego, CA **Bachelors of Science in Biology/Chemistry** (*cum laude*)

**Research Project:** Characterizing Bacteriophage epsilon-15 and its bacterial host, *pseudomonas areogenosis*, with implications for treating cystic fibrosis.

**Advisor:** Dr. Michael McConnell, Chair, Dept. of Biology

Vanderbilt University **Doctor of Philosophy, Molecular Biology** 1992

**Research Project:** The role of DNA recombination in the evolution of new viral strains

**Advisor:** Dr. Gisela Mosig, Professor of Molecular Biology, trained by Nobel Laureate Al Hershey

Vanderbilt University Medical Center **Research Fellowship in Cardiology** 1992 – 1994

**Research Project:** Molecular analysis of humans lacking norepinephrine and epinephrine

**Advisor:** Dr. David Robertson, Elton Yates Professor of Medicine & Pharmacology  
Director, Clinical Research Center & Center for Space Medicine

University of California, Los Angeles **NASA Astrobiology Faculty Sabbatical** 2002

**Research Project:** The role of horizontal gene transfer in the evolution of new genomes

**Advisor:** Dr. James Lake, Distinguished Professor of Molecular, Cell and Developmental Biology

### Other Educational Experiences

**Grant and Research Administration:** Participated in the submission of more than 150 grants to agencies such as NSF, NASA, USDA, NIH, National Endowments for the Arts, WalMart Foundation, ExxonMobil Foundation, and TN Dept. of Education. Participated on six NSF panel reviews and reviewed proposals for NASA. Program director for NASA Astrobiology Sabbatical Program (NAI\_MIRS) providing 20 competitive awards nationally (2005-2010). Attended NCURA (National Council on University Research Administrators), presented programs to the National Research Council Committee on Assessing the NASA Astrobiology Institute and co-organized a NASA national conference on collaborations with Minority Institutions.

**Higher Education Administration:** TSU Presidential Fellow Program (2010 – 2011)

## Professional Experience

**Director**, Community and Research Development, School of Applied Computational Sciences (SACS), Meharry Medical College (2020 – present).

In this role, I am working to:

- increase SACS's external partners, community engagement, research funding and competitiveness,
- build closer linkages within the Middle Tennessee healthcare and technology industries and among research innovation centers,
- promotes a culture of excellence and innovation in data science education and research, and
- fosters cutting-edge graduate programs that are closely integrated with industry and research activities.

**Associate Vice President for Research & Community Development**, Trevecca Nazarene University (2017-2020)

- Established community partners in the area of healthcare, IT, service learning, internships, engineering and business.
- University representative to the Nashville Promise Zone, the Tennessee Independent Colleges and University (TICUA), AmeriCorp VISTA program, and Equal Chance for Education.
- Worked to increase diversity and established a partnership with Tennessee Educators of Color Alliance
- Supported grants and initiatives focused on diversity, community health, social justice, and first generation colleges students.

**Consultant**, Intermedix IT & Analytics (2017-18)

- Educated the medical community in the use of machine learning in clinical diagnosis
- Authored white paper titled “*Methods to Improve the Diagnosis and Treatment of Sepsis*”

**Visiting Scholar in Data Science and Director of Research**, WPC Healthcare (2016-2017)

- Using the most advanced data science methods and technology helped create and market a data science product for early detection of patients at risk of sepsis. This was done to lower the numbers and cost of sepsis which has a \$23 billion dollar financial burden annually in the US.
- Sepsis Project was named the “2017 Best Use of AI in Medicine” by AI Global and recognized by the National Sepsis Alliance
- Nominated for 2017 Nashville Business Journal’s Healthcare Hero in Research
- Work contributed to WPC Healthcare being purchased by Intermedix IT & Analytics

**Adjunct Faculty, Master’s Degree in Data Science**, Lipscomb University (2014-present)

- Assisted Lipscomb University in receiving \$750,000 in external funding from NSF, TN Dept. of Education and the Nissan Foundation.
- Taught 23 graduate courses in Data Science: 12 courses of Research Methods in Data Science and 11 courses of Research Practicum I.
- Advised 86 master’s students on the development of their data science research projects. Several projects were developed with billion dollar companies including Genesco, Bridgestone Deloitte Consulting.

- Helped students present their data science research at local and national conferences and publish in a peer review journals.
- Engaged in active research and presented findings at three national NSF SENCER conferences.
- Additionally, taught 3 physics courses in the Tennessee Prison for Women

**Special Assistant to the Vice Provost for Research, Middle Tennessee State University (2013-17)**

- Participated in proposals requesting \$40M and resulting in \$5.3M in awards. Areas included precision agriculture, cybersecurity in aviation, mechatronics engineering, data science and international collaborations with Chile and Argentina.
- Helped developed partnerships with 8 other institutions of higher education resulting in 15 submitted proposals. Helped win two international NSF awards.
- Participated in strategies to leverage internal resources to increase external funding to MTSU by 25% within 5 years. Achieved 23% increase in 2 years.
- Helped create a Research Advisory Board for MTSU's Office of Research
- External evaluator on USDA award focused on machine learning and precision agriculture.
- Helped created a Data Science Institute for multi-college collaborations
- Coordinated the VPR Graduate Research Development Assistant's Program
- Selected as WPC Visiting Scholar in Data Science using the most advanced data science methods and technology to lower the numbers and cost of sepsis which has a \$23 billion dollar financial burden annually in the US. The project was recognized by the National Sepsis Alliance.

**Tennessee State University (1997-2011)**

While at TSU, I was able to be PI or assisted on awards that totaled more than \$30M.

**Director, Undergraduate Research & Creative Activities Program, and Campus wide Research Development, Office of Research, 2008 – 2011**

Newly created position at TSU focuses on coordinating and sustaining university wide undergraduate research activities in both STEM and non-STEM areas. Highlights include:

- Increasing the number of undergraduates presenting research at TSU by 50%
- Supporting the submission of more than 40 proposals to support student research and creative activities including the TSU UReCA scholar's program
- Helping create the Music and Arts Research Forums
- Helping TSU obtain first federal funding from National Endowments for the Arts
- Creating and publishing the scholar's experience at TSU (Gary, et. al., 2008)

**Founding Director, Center for Astrobiology Research and Education, TSU, 2001 – 2011**

Position created by NASA award to TSU and approved by the Tennessee Board of Regents as a self-sustaining center for the development of research and educational programs in astrobiology, biotechnology and science education. The center was originally called the Institute for Understanding Biological Systems (IUBS) and the name was changed in 2010 to reflect a stronger focus on astrobiology. The center interacted closely with nanotechnology and biotechnology research facilities and the astronomy research group at TSU. The IUBS has contributed to the submission of more than 70 proposals and the creation of a national scientific network MIAC (the Minority Institution Astrobiology Research Collaborative).

**Director, National Minority Research Program for NASA Astrobiology Institute (2005-2011)**

As PI on the NAI-MIRS program, I helped design and direct a program to develop astrobiology research programs at Minority Serving Institutions. The following scientists were recruited, selected, funded and advised in astrobiology. 100% of these scientist received external funds from NSF and other programs at NASA. *The success of this program was presented at the National Academies of Science.*

<b>Area of Science: Project</b>	<b>Scientist / University</b>
<b>Astronomy:</b> Chemical Composition of Comets	Don Walter, South Carolina State University
<b>Biology:</b> Viruses from extreme environments	Michael Ceballos, Native American Research Laboratory
<b>Biology:</b> Planetary Protection	Rakesh Mogul, California State University, Pomona
<b>Computational Science:</b> Bioinformatics	Lee Ann Martinez, Colorado State University, Pueblo
<b>Computational Science:</b> Computational Modeling of Planetary Habitability	Abel Mendez, University of Puerto Rico at Aercibo
<b>Engineering:</b> Designing Instrumentation for Mars Science Laboratory Rover Curiosity	Prabhakar Misra, Howard University
<b>Geology:</b> Precise measurement of geological samples	Aaron Cavosie, University of Puerto Rico at Maguez
<b>Geology:</b> Determining ages of geological samples	Erik Melchiorre, California State University, San Bernadino

#### **Additional Experiences:**

**Director**, NASA SEMAA Program and Aerospace Education Laboratory (2003-2011)

**Member**, Space Studies Board Committee to Review Science Missions Enabled by the NASA Constellation System for the National Academy of Science (2008 – 2009)

**Panel Reviewer**, National Science Foundation, (2004 – 2010)

**Co-Director**, Minority Institution Astrobiology Collaborative (2002 – present)

**Director**, Molecular Biology Summer Institute for High School Teachers (1998 – 2008)

#### **Research Project Director, & Scientist in Residence, TSU, 1997-2000**

- Position created by TSU NSF award supporting science education reform in five school districts
- Supported the professional development of 3,000 teachers in this project
- Authored nine funded proposals focused on teacher summer science institutes (elementary physical science and high school biotechnology)

#### **Austin Peay State University (2011-2012)**

**Grant Writer and Visiting Scientist** Assisted Office of Grants and the College of Science and Mathematics in obtaining external funds for STEM initiatives involving first generation, nontraditional and military veterans. Also engaged in research to support APSU's GIS Center's Dept of Homeland Security SERRI award and taught Planetary Astronomy for the Dept. of Physics & Astronomy.

#### **O'More College of Design (1995-2013)**

**Adjunct Professor of Science**, Taught Survey of Physical and Life Sciences. Appointed Master Teacher (2006 – 2011) and recipient of Outstanding Teaching Award (1997). Assisted with successful \$150,000 Cultural Education Partnership award from the TN Arts Commission.

#### **Vanderbilt University (1994-97)**

##### **Lecturer, Depts. of Chemistry and Molecular Biology**

- Position supported by NSF award to Vanderbilt University for curriculum innovation
- Received national recognition by NCATE for course on Human Gene Therapy

##### **Coordinator, Vanderbilt Student Volunteers for Science (VSVS)**

- Authored six funded proposals to support VSVS
- Coordinated the day to day activities of one of the largest science outreach programs utilizing college students in the nation. From 1994-1997

- Organized 1,500 visits to local classrooms by more than 400 Vanderbilt undergraduate, graduate and medical students involving supplies for 42,000 individual science activities.
- Chosen by Vanderbilt student association as Organization of the Year (1997)
- Now in its 23rd year of operation (<https://studentorg.vanderbilt.edu/vsvs> )

### Research Grants and Funded Programs

- Contributed to the submission of *more than 175* requests for funding to foundations, local, state and federal agencies including NIH, NASA, NSF, USDA, the National Endowments for the Arts, ExxonMobil and Walmart Foundations.
- Assisted MTSU in the submission of 30 proposals to federal agencies and 5 to state agencies. Most of these proposals were interdisciplinary in nature and the requests were between \$500k and \$2M. Of these submission, 9 proposals were awarded for a total of \$5.3M.
- Established a TBR approved research institute solely funded by external funds. This involved **22 awards as PI** totaling more than \$3M (see table below) and supporting 10 large collaborative awards totaling more than \$20M that brought another \$1M into the institute.

**Table 1: External Awards as PI**

Title	Award Amount	Award Period
<b>NASA Awards (11 awards)</b>		
NASA Science, Engineering, Mathematics and Aerospace Academy at TSU -Seven concurrent awards (FY2003-11)	\$1,050,000	2003 - 2011
Minority Institution Research Support Program	\$ 780,000	2005 - 2011
NASA URC: Center for Automated Astronomy supplement for astrobiology research	\$ 300,000	2001 - 2006
MIAC Astrobiology Conference & Astrobiology Faculty Sabbatical	\$ 50,000	2002
NASA Ames Conference and Travel Awards (Astrobiology Science Conferences 2002 -2015)	\$ 80,000	2002 - 2015
<b>NSF Awards (2 awards)</b>		
Astrobiology in the Secondary Classroom Project: An interdisciplinary curriculum developed by a collaboration of scientists and educators from three different minority communities. Award # 0733188	\$ 300,000	2007 - 2011
Increasing the Participation of African Americans and Native Americans in Geoscience through a Innovative Partnership between an HBCU and a Tribal College. Award #0608069.	\$ 150,000	2005 -2011
<b>State-level Awards (9 awards)</b>		
TSU UReCA Scholars Program (Two TBR Access and Diversity Awards FY 2009 and 2010)	\$ 100,000	2008 - 2010
Secondary Health Science Teacher Professional Development.	\$ 90,000	2005 - 2006
Molecular Biology Summer Institutes for Middle and High School Teachers (Six consecutive awards FY1998 – 2003)	\$ 200,000	1998 - 2003

**Table 2: Supporting role on the following awards:**

<b>Title</b>	<b>Award Amount</b>	<b>Award Period</b>
USDA: Integrating Agricultural Remote Sensing, Landscape Flux Measurements, and Agroecosystem Modeling in Research and Teaching. PI: Cui	\$ 714,023	2016 - 2018
NSF: Enhancing Engineering Talent in Tennessee. PI F Gwinn	\$ 611,517	2015 - 2018
US Dept. of Homeland Security & FEMA: DMARK Disaster Mitigation and Recovery Kit PI M Wilson	\$ 700,000	2010 - 2012
USDA: Strengthening Teachers Knowledge of Agricultural Biotechnology PI Tegenue Co-PI: T Gary	\$ 200,000	2004 - 2006
USDA: Strengthening Teachers Knowledge of Agricultural Biotechnology PI Tegenue Co-PI: T Gary	\$ 200,000	2004 - 2006
Tennessee Space Grant Consortium PI: Mike Busby	\$ 300,000	2002 – 2010
NASA URC: Center for Automated Astronomy PI: Mike Busby	\$ 5,000,000	1998 - 2003
NSF Metro Nashville Area Local Systemic Change Project Award # 9553905. PI. B. Nye	\$ 5,000,000	1996 - 2001
NSF GK12 Award: Alliance for Enhancement of Science Education and Technology. PI Virginia Shepherd (Two awards: NSF #0231969 and NSF #9979578)	\$ 3,325,000*	2003 - 2007
NSF IGERT: Astrobiology PI:W Sullivan, Univ. of Washington	\$ 3,200,000*	2004 - 2009
NASA Astrobiology: The Origin and Evolution of Organics and Planetary Systems. PI Mike Mumma, NASA Goddard Space Flight Center.	\$ 6,500,000*	2003 - 2008
NASA Astrobiology: From genes to stars: An integrated study of the prospects for life in the cosmos. PI Ed Young, UCLA	\$ 5,000,000*	2003 - 2008
Physical Science Institutes PI B Nye and M Busby (four awards)	\$ 100,000	1997-2000
NIH Clinical and Molecular Biology Studies on Dopamine-Beta-Hydroxylase Deficiency in Humans. PI. D. Robertson	\$ 1,000,000	1992-1997

\*collaborative proposals lead by another institution.

- Twenty years of career (1992-2011) salary was supported entirely by external funding sources (see table below)

**Table 3: Source of Salary**

<b>Year</b>	<b>Position</b>	<b>Main Funding</b>	<b>PI</b>
1992- 1994	Research Fellow	NIH	D. Robertson
1994- 1997	Coordinator, VSVS / Lecturer	Chancellor / NSF	M. Joseten
1997- 2000	Research Project Director / Scientist in Residence	NSF	B. Nye
1998- 2005	Director, Biotech Summer Institute	TN Dept. of Ed./ USDA	T. Gary
2001-2011	Director, IUBS	NASA & NSF	T. Gary
2002	Astrobiology Sabbatical	NASA	T. Gary
2004- 2011	Director, NASA SEMAA Program	NASA & NSF	T. Gary
2012 – 2017	MTSU Office of Research	MTSU F&A	MTSU VPR

## Publications & Presentations

Total Number of Publications in Refereed Journals and Conference Proceedings: 55

Total Number of Presentations: 200+

### **Significant publications include:**

Gary, T., Mingle, D., Yenamandra A (2016). The Evolving Definition of Sepsis. *International Clinical Pathology Journal* 2(6):63-69. **Significance:** This article highlights the fact that sepsis is not well understood, and there is no standard approach to diagnosis and treatment and suggests ways data science can be used in clinical decision making to save lives.

Gary, T., Anrino de la Rubia, L., Brinkley, M., & Thompson, M. (2010). The Scholar's Experience at TSU. *Council on Undergraduate Research (CUR) Focus* 31(1): 6-10. **Significance:** A research tested model created at TSU for increasing retention and graduation of undergraduates involving research, service learning, leadership, travel abroad, career development and internships.

Space Study Board ad hoc Committee on Science Opportunities Enabled by NASA's Constellation System *Launching Science: Science Opportunities Provided by NASA's Constellation System* (2008). National Research Board The National Academies Press, Washington, D.C., 2008. 156 pages. ([http://books.nap.edu/catalog.php?record\\_id=12554](http://books.nap.edu/catalog.php?record_id=12554)) **Significance:** A national report exploring large multi-billion dollar research projects in astronomy, astrophysics and astrobiology that could benefit from NASA's Atlas I and V rockets be developed.

Taylor, T., Henry, G., Gary, T., and Burks, G., (2004). Solar Brightness Variability and the Evolution of Life on Earth, *International Journal of Astrobiology* 3, 46. **Significance:** First publication examining the impact of the age of the sun on the evolution of advanced life on Earth.

Butler, J., Myles, L., & Gary, T. (2005). Changing the Public Perception of the Contributions of Astrobiologists from Minority Institutions. *Astrobiology* 5: 235. **Significance:** Illustrating significant research contributions from under-funded programs.

Gary, T, Colowick, N., & Mosig, G. (1998). A species barrier between bacteriophage T4 and T2: recombination, mutagenesis and exclusion in the dCTPase genes and implications for the evolution of species at the molecular level. *Genetics* 148: 1461-1473. **Significance:** This published work was one of the first to describe how new strains of viruses evolve at the DNA level.

Gary, T, & Robertson, D. (1993). Lessons learned from DbH deficiency in man. *News in Physiological Sciences*, 9:35-39. **Significance:** Investigated the gene expression from humans lacking adrenaline changed how we view the human nervous system.

Collins, A., Bercaw, L., Gary, T., Palmeri, A., Altman, J. & Marcy Singer-Gabella. (1999). *Good Intentions are not enough: A study of Collaboration in Science, Education, and Technology*. *Journal of Science Teacher Education*, 10(1): 3-20. **Significance:** Paper presented at the National Association for the Research in Science Teaching (NARST) Annual Meeting and nominated for outstanding paper. The award is given to the paper with the greatest significance and potential in the field of science education during that year.

Gary, T. "The Human Genome Project and the Future of Medicine." (2001) *Tennessee Nurse* 64: 8-10. **Significance:** Important contribution to nursing education and featured as a continuing education presentation on *Tennessee Nurse On-Line*

Gary, T., Butler, J., Kirven-Brooks, M., Bell, B., Coulter, G. and **Arino de la Rubia, L.** (2007). The NASA Astrobiology Institute-Minority Institution Research Support Program: Strengthening the Astrobiology Community. *Astrobiology* vol. 7 pg. 499. **Significance:** Led to presentation at the National Academy of Science

### **Recent publications/presentations**

**Gary, T.,** and Mingle, D. (2016). Visiting Scholar Program in Data Science Focused on Lowering Healthcare Costs and Improving Patient Outcomes. Presented at the Nashville Analytics Summit.

Brandt T., Diaz G., Jones J., **Gary T.,** & Yenamandra A. (2016). Data Analysis of CDC Data of Death: Education, an Important Factor in the Increase of Suicides Rates in USA. Presented at the Cell Symposia: Technology. Biology. Data Science, Berkeley, California, USA

**Gary T.,** Bell B., Mendez, A., Ceballos M., Kirven-Brooks M. & Bradford, K. (2015). The NASA Astrobiology Program-Minority Institution Research Support (MIRS) Program: A Dozen Years of High Return on NASA's Investment. Proceedings of the Astrobiology Science Conference 2015: Habitability, Habitable Worlds, and Life.

Hutchinson, B., Marshall, A., Goode, R. & **Gary, T** (2014) An Integrated Science Course Offered for Inmates at a Women's Prison. Presented at the NSF SENCER (Science Education for New Civic Engagement and Responsibilities) National Conference, UNC Asheville.

### **Student Research Program**

- In data science, advised 86 graduate students on their capstone research projects.
- At TSU advised or Co-advised 30 minority students in research. These students have made 75 presentations including 25 presentations at national meeting. This has resulted in 15 awards including travel scholarships
- Former student, LaTasha Taylor, featured in the journal *Science* (*Science 312:1454 2006*) as an example of interdisciplinary training in science and role of TSU astrobiology research found at ([www.nasa.gov/audience/forstudents/postsecondary/features/passion-for-NASA.html](http://www.nasa.gov/audience/forstudents/postsecondary/features/passion-for-NASA.html))

### **Selected publications with students as co-authors (in bold)**

**Glock, K., Napier, C., Louie, A., Gary, T.,** Gigante, J., Schaffner, W. & Wang, Q. (2020). Measles Rash Image Detection Using Deep Convolutional Neural Network. *arXiv preprint arXiv:2005.09112*. and submitted to the IEEE Journal of Biomedical and Health Informatics.

**Holt, R., Aubrey, S., DeVille, A., Haight, W., Gary, T., & Wang, Q.** (2019). Deep Autoencoder Neural Networks for Detecting Lateral Movement in Computer Networks. In *Proceedings on the International Conference on Artificial Intelligence (ICAI)* (pp. 277-283).

**Diaz, G., Jones, J., Brandt, T., Gary, T., & Yenamandra, A.** (2017). Translating data into discovery: Analysis of 10 years of CDC data of mortality indicates level of attainment of education as a suicide risk factor in USA. *Soc. Behav. Res. Pract*, 2, 1-17.

**Brandt T., Diaz G., Jones J., Gary T., & Yenamandra A.** (2016) A Data Science Approach to Identify Previously Unknown Indicators that Could Lead to the Prevention of Suicide in USA. *International Clinical Pathology Journal* 2:47-53.



Gary, T., Butler, J., Kirven-Brooks, M., Bell, B., Coulter, G. and **Arino de la Rubia, L.** (2007). The NASA Astrobiology Institute-Minority Institution Research Support Program: Strengthening the Astrobiology Community. *Astrobiology* vol. 7 pg. 499.

**Arino de la Rubia, L.**, Butler, J., Stockman, S., Gary, T., Mumma, M., Piffner, S., Davis, K. & Edmonds, J. (2007). Development, Evaluation, and Dissemination of an Astrobiology Curriculum for Secondary Students: Establishing a successful model for increasing the use of scientific data by underrepresented students. *Astrobiology* vol. 7 pg. 502.

**Maseko, Chazile**, Gary, T. & Stolc, V. (2003). The Verification and Insertion Sequences in the *Saccharomyces* Genome Through PCR and Sanger Sequencing in Preparation for Functional Analysis of the Yeast Genome. *Astrobiology* 2: 490.

**Taylor, LaTasha**, Wade, M., Gary, T. & Lew, J. (2003). Applications of Inflatable Solar Arrays in Astrobiology. *Astrobiology* 2: 507.

**Taylor, LaTasha**, Prieto-Ballesteros, O., Gómez-Elvira, J., Fernández-Remolar, D., Gómez, F., Parro, V., Amils, R., Myles, L., & Gary, T. (2004). Using Fluorescence Biological Analysis (FBA) to Examine the Subsurface of Europa for Signs of Life. *International Journal of Astrobiology Supplement 2004: 54*

**Taylor, Tanisha**, Henry, G., Gary, T., Myles, L., & Burks, G. (2004). Solar Brightness Variability and the Evolution of Life on Earth. *International Journal of Astrobiology Supplement 2004: 46*

### **Selected Student Presentations**

**Brandt T., Diaz G., Jones J., Gary T., & Yenamandra A.** Data Analysis of CDC Data of Death: Education, an Important Factor in the Increase of Suicides Rates in USA. Accepted to present at the Cell Symposia: Technology. Biology. Data Science, Berkeley, California, USA, Oct. 10-12, 2016.

**DeGray, B.** “On Determining the Viability of Parametric Cost Forecasting of Agile Software Development Projects to Improve Project Cost Forecasts. Presented at the Nashville Analytics.” Presented at the Alabama Simulation and Modeling (AlaSim) International Conference. Huntsville, AL, May 4-5, 2016.

**DeGray, B.** “Designing a Better Method to More Accurately Forecast the Total Cost of Software Development Projects.” Presented at the Lipscomb University’s 5<sup>th</sup> Annual Student Scholar’s Symposium on April 14, 2016. *Awarded 1<sup>st</sup> place in graduate student presentations.*

**Valkenburg, M.** “Developing a data science model to gain insights from social reactions following six school shootings that have occurred since the inception of Twitter.” Presented at the Alabama Simulation and Modeling (AlaSim) International Conference. Huntsville, AL, May 4-5, 2016.

**Cleveland, Alicia**, Gary, T. & Myles, L. "The Expression of C/EBP Alpha and C/EBP Beta in the Cancer Cell Line BT 549 after Exposure to the Plant Extract of *Hypericum Anthos*." Presented at the 4th Annual NASA/NSF/TSU Research Symposium, Nashville, TN, April 15-17, 2004.

**Lane, Rhonda**, Gary, T. and Myles, L. "Viruses of Microbial Extremophiles." Presented at the 4th Annual NASA/NSF/TSU Research Symposium, Nashville, TN, April 15-17, 2004.

**Marner, J., Hancock, D., Gary, T, and Myles, L.** “ Anti-microbial effects of green and black teas on Salmonella Typhimurium and Baccilus Subtilus.” Presented at the Tennessee Academy of Science, Nashville, TN April 18, 2008.

### **Invited Editorials**

Gary, T. (2006, Dec. 23). Beginning of an Era Unlike Any Other *The Tennessean*, p. A13. An invited editorial on the future of NASA. The other invited editorial writer on this subject was Congressman Bart Gordon (D-TN).

Gary, T. (2005, Oct. 16). Science, faith deserving of awe. *The Tennessean* p. A21. An invited editorial panelist debating intelligent design vs evolution.

## **Teaching**

### **Awards:**

- Appointed Master Teacher at O’More College (2006 – 2010). Honor given to top 5% of faculty
- Recipient of O’More College Outstanding Teaching Award (1997)

### **National Recognition:**

- Vanderbilt course (Molecular Biology 106) uses as best practice case study in NCATE (National Council for the Accreditation of Teacher Education) publication.

### **NSF Funded Courses:**

- Helped develop and teach five courses supported by NSF  
Molecular Biology 101 & 106 (Vanderbilt), EDCI 390, (TSU), LUMS 2002 LUMS 2003 (Lipscomb)
- The course outcomes resulted in several publications.

### **Courses Taught:**

- Total number of classes taught: 54    Different courses taught: 16
- Prepared and taught the following undergraduate and graduate courses

### **Lipscomb University**

MSDS 5053 Research Methods in Data Science and MSDS 5143 Data Science Practicum I.  
LUMS 2002 and LUMS 2003 Integrated Sciences Part 1 and 2

### **Vanderbilt University**

VSVS Medical School Elective Course.

Molecular Biology 101: Fundamentals of Biology

Molecular Biology 106: Introduction to Human Gene Therapy

This 3 credit hour course integrated science content, science methods and technology and was a case illustration of the best use nationwide of technology in a teacher preparation program by NCATE (National Council for the Accreditation of Teacher Education) in their publication *Technology and the New Professional Teacher: Preparing for the 21<sup>st</sup> Century Classroom*.

Results of this course was also presented at three national conferences:

Collins, A., Bercaw, L., **Gary, T.**, & Palmeri, A. (1997, May). *Uncommon Ground: Collaboration in Science, Education and Technology*. Paper presented at the American Educational Research Association Annual Meeting, Philadelphia, PA.

**Gary, T.**, Collins, A., & Palmeri, A. (1997, October). *Interactive CD-ROM on Cystic Fibrosis Created at Vanderbilt University*. Presented at the North American Cystic Fibrosis Conference, Nashville, TN.

Collins, A., Bercaw, L., **Gary, T.**, Palmeri, A., Altman, J. & Marcy Singer-Gabella. (1999). *Good Intentions are not enough: A study of Collaboration in Science, Education, and Technology*. Journal of Science Teacher Education, 10(1): 3-20.

- Nominated for outstanding paper by the National Association for the Research in Science Teaching (NARST).

### **O'More College of Design in Franklin, TN**

#### Liberal Arts 3020: Survey of Physical and Life Science

Created this 3-credit hour required science course for design majors as a science appreciation course covering the fundamental principals and experiments in biology, chemistry and physics.

- Received by Outstanding Teaching Award (1997), recognized as a Master Teacher (2007-2010)

### **Tennessee State University**

#### **A. Courses Taught for Dept. of Biological Sciences**

BIO 111: General Biology I & BIO 112: General Biology II.

BIO 450: Virology Dr. Baruch Blumberg, '72 Nobel Laureate, was a guest lecturer in this class

BIO 712: Molecular Biology

#### **B. Courses Taught for College of Education**

EDCI 390: Methods in Elementary Teaching: Science, Mathematics and Technology.

EDAD 712: Advanced Methods of Research

#### **C. Course developed & taught for the College of Education as part of an NSF Award**

EDCI 683: Advanced Science in the Elementary School.

## **Curriculum Development**

### National

- Astrobiology for the Secondary Classroom (\$500,000 in NSF and NASA funding)  
Piloted in Native, Hispanic and African American Communities

### State-wide

- High School Forensic Science (co-authored TN teaching standards)
- High School Biomedical Research Applications (co-authored TN teaching standards)
- Biomedical Technicians Program (developed for TN Colleges of Applied Technology)
- Molecular Biology Summer Institutes for Middle & High School Teachers
- Forensic and Biomedical Summer Institutes for C&T High School Teachers

### Middle Tennessee

- Physical Science Summer Institutes for K-6 Teachers
- Hands-on Science Professional Development for 3,000 teachers

### Vanderbilt

Introduction to Human Gene Therapy (highlighted by NCATE, 3 publications)

### TSU

Advanced Methods in Teaching Science (presented results Mid-South AERA)

## Service

### National Level

- Member, Center for Digital Education Advisory Board
- Member, Society for Data Science
- Member, Space Studies Board Ad Hoc Committee to Review the NASA Constellation Science Missions, **National Academy of Science**
- Peer Reviewer, **National Science Foundation**
  - 6 different panels for NSF Discovery Research, Geoscience, & Cyberinfrastructure Programs
- Member, NASA SEMAA National Sustainability Committee
- Member, MSI/NASA Ames Research Center Collaboration Workshop Planning Committee
- Co-Director, Minority Institution Astrobiology Collaborative

### State Level

- Member, Health Science Education Advisory Committee, TN Dept. of Education (2005-2011)
- Member, Health Science Teacher Symposium Planning Committee (2005-2011)
- Member, Forensic Science Curriculum Development Committee (2005)
- Member, Biomedical Research Applications Science Curriculum Development Committee (2005)
- Member, Biotechnology Technicians' Program Curriculum Development Team (2008-2009)
- Member, Minds 2 Marketplace (service on both Education and Biotechnology subcommittee)

### University/Regional Level

- Member, Nashville Technology Council (Analytic Summit Planning Committee) (2015-2017)
- Member, Nashville Area Data Science Meetup (2014-2017)
- Member, Metro Nashville Open Data Advisory Committee (2016-2017)
- TSU University-wide Research Symposium planning committee (2000-2011)
- Search committees for administrative positions including provost (2008-2011)

## Honors and Awards

2017	Nominated for Healthcare Hero of the Year in Research by the Nashville Business Journal
2016 - 2017	WPC Visiting Scholar
2016	Mentor to 1 <sup>st</sup> place recipient in Graduate Research, Lipscomb Scholar Symposium
2012	O'More College of Design Teaching Fellows Program (in partnership with Oxford U.)
2010 – 2011	TSU Presidential Fellowship Program
2008	NASA Group Achievement Award (SEMAA) given by NASA Administrator, Michael Griffin
2008	NASA Student Pipeline Award (Given by the National SEMAA Office)
2008	Outstanding Faculty Mentor, TSU Association of Pre-professional Life Scientists
2008	Selected to serve on an ac hoc committee for the National Academies of Science
2007	Certificate of Appreciation, NASA Glenn Research Center
2007 – 2010	Master Teacher, O'More College of Design
2000 – 2011	Mentor to 15 TSU students receiving awards at TSU Research Symposium
2006	Former student, LaTasha Taylor, appear in the journal <i>Science</i> ( <i>Science: 312:1454</i> )
2006	Certificate of Appreciation, Tennessee Department of Education Health Science Division
2005	NASA Judge, Intel International Science and Engineering Fair (Intel ISEF)
2005	TSU Blue and White Award for Outstanding Organization, NASA SEMAA Program

2005 TSU Blue and White Certificate of Recognition, Molecular Biology Summer Institute  
2002 Selected as the first NASA Astrobiology Institute MIRS Faculty Sabbatical Recipient  
2000 Member of a team of scientists and educators selected to attend the summer  
course at Cold Spring Harbor Laboratory on Human Genomics (July 15-22)  
1997 Manuscript nominated for paper of the year by Natl. Association of Research in Science  
Teaching  
1997 Outstanding Teaching Award, O'More College of Design  
1995 Nominated into Sigma Xi Scientific Honor Society  
1992 - 1994 NIH National Research Service Award