

Manpreet K. Semwal, PhD

Assistant Professor, University of Mumbai, India

(2008)

University of Mumbai, India

(2006)

Teaching Experience

Assistant Professor of Biology at Our Lady of the Lake University Aug 2024-Current

- ¼ Teaching Biology subjects including General Biology, Molecular and cellular biology, Biochemistry, Genetics, Immunology, both lectures and laboratory sessions.

- ¼ Developed and currently teaching the first-ever Immunology course at OLLU.

Guest Lecture, Obesity week at St. Mary's University, San Antonio Nov 2023

- ¼ Implications of obesity in metabolic diseases and its role in immune system

Guest Instructor, ELECTIVE 506: Basic Science Training for Medical Students, Sep-Nov 2023

- ¼ Taught Fluorescence microscopy lecture and conducted hands-on training for 2

nd
year medical students at UT Health San Antonio.

Adjunct Instructor, St. Mary's University, San Antonio, Aug 2021-December 2021

- ¼ Taught General Biology Lab of 30 Freshmen students.

Instructor for Learning Enhancement for Achievement in Dentistry (LEAD) program, UT Health San Antonio 2021.

- ¼ Designed and taught 8-hour Cell Biology course to the undergraduates from different universities in Texas.

Co-instructor, PhD Pre-matriculation Molecular Biology, UT Health San Antonio 2020
¾ Designed and taught a 2-week virtual classroom course on Molecular Biology for first year PhD students at UT Health San Antonio

Guest lecture on 'T-cell development' at Texas A&M, San Antonio, 2019

Coordinator and Lecturer, Department of Microbiology and Biotechnology, S.S. & L.S.

Semwal, M. K., Hester, A. K., Xiao, Y., Udeaja, C., Cepeda, S., Verschelde, J. S., ... & Griffith, A. V. (2022). Redox status regulates autophagy in thymic stromal cells and promotes T cell tolerance. *Proceedings of the National Academy of Sciences*, 119(40), e2204296119.

*Hester, A.K., *Semwal, M.K., Cepeda, S., Xiao, Y., Rueda, M., Wimberly, K., Venables, T., Dileepan, T., Kraig, E. and Griffith, A.V., (2022). Redox regulation of age-associated defects in generation and maintenance of T cell self-tolerance and immunity to foreign antigens. *Cell reports*, 38(7), p.110363.

*Equal Contribution

Semwal M.K., Jones N.E. and Griffith, A.V. Metabolic regulation of thymic stromal cell function (2021) *Frontiers in Immunology*,12:636072. doi: 10.3389/fimmu.2021.636072.

Cepeda, S., Cantu, C., Orozco, S., Xiao, Y., Brown, Z., Semwal, M.K., Venables, T., Anderson, M.S. and Griffith, A.V. (2018). Age-associated decline in thymic B cell expression of aire and aire-dependent self-antigens. *Cell reports*, 22(5), pp.1276-1287.

Vartak, R. S., Semwal, M. K., & Bai, Y. (2014). An update on complex I assembly: the assembly of players. *Journal of bioenergetics and biomembranes*, 46(4), 323-328.

Professional Development

CIMER Research Mentor Training Workshop, October 2024

¾ This one-day workshop strengthened my mentoring skills and supported my development in bio STEM research. The training emphasized effective mentorship practices to promote successful research and learning outcomes.

Courage-based undergraduate research experiences (CURE) workshop, May 2024

¾ This three-day workshop provided valuable insights into integrating course--

Research Experience

Post-Doctoral Fellow: UT Health San Antonio, Nicolas Musi Lab, June 2021-July 2024

My post-doctoral research focused on understanding the molecular modifications that increases the risk of metabolic disorders and disability related to aging including diabetes, obesity and sarcopenia using cell cultures, animal model and conducting investigations in human subjects. My project involved cellular and molecular approach to understand the cellular complexity and plasticity in adipose and muscle tissues of obese individuals. Additionally, I worked on understanding the implications of aging and obesity in senescence. My postdoctoral research work resulted in 5 posters at local and national conferences and one publication is under review.

Ph.D. Candidate: UT Health San Antonio, Ann Griffith Lab, 2015-2021

My pre-doctoral research was focused on studying the roles of the redox regulation in thymus function. My study involved using mouse models to measure autophagy flux, mitochondrial hydrogen peroxide levels in the stromal cells of the mouse thymus in wildtype and transgenic mice overexpressing human catalase (an antioxidant) and a mouse model with beclin 1 knock-in (Becn1F121A/F121A) to study constitutively high levels of autophagy uncovers a novel aspect of thymus biology and new mechanisms moderating the risks for autoimmunity.

Non-Degree Student: UT Health San Antonio, Yidong Bai Lab, 2013-2015

I was involved in the studies pan 4 Tc -.35 0 Td (s) 1: (u) 11/10/10: 40 Td 0 Tw 0.7804 9d () Tj -0.008

- ¾ Rosie Sosa, Undergraduate student, Texas A&M, San Antonio, 2018
- ¾ Allison Hester, Ph.D. rotation student, UT Health San Antonio, 2016
- ¾ Jake Gonzales, Ph.D. rotation student, UT Health San Antonio, 2016

The Centers for Applied Science and Technology (CAST) Med Mentor, 2021

- ¾ Served as a mentor to aid and help in the pathway of creating more diversified health care professionals by providing insights of my career pathways and tips for success to high school students.

Science Expo, 2019

- ¾ About 1,500 high school and college students visiting UT Health San Antonio for interactive, hands-on activities and presentations related to research careers. A multidisciplinary event where I hosted a table display with hands-on demonstrations and conversations with students. Additionally, I presented a lecture to 126 high school students discussing the fundamentals of microbiology and immunology.

STEM Scholar's program, 2019

- ¾ An interprofessional team of UT Health students collectively developed a one hour lesson plan to be delivered to an after-school setting for 5th graders. I, along with other students from different science backgrounds, delivered a lesson plan focused on diabetes and obesity to around fifty 5th grade students attending Basis San Antonio Primary School at the Medical Campus.

Think Science and Discovery Day at the Tobin Center: UT Health San Antonio partnered with Texas Public Radio and the Tobin Center for a Think Science and Discovery Day at the Tobin Center for the performing arts, 2019

- ¾ I volunteered to showcase scientific innovations and discoveries through interactive exhibits and booths prior to the Science Friday – Live! show. Activities included DNA candy models to explain the DNA structure to the youth of San Antonio. Directions on building a powerful microscope and creating brain hats. Activities offered both kids and adults a chance to experience science in a very hands-on approach.

Thesis Supervisor of Master's thesis at University of Mumbai, India

- ¾ Mansi Gaonkar, MS student, University of Mumbai, 2011-2013 Co-supervisor, thesis titled, 'Biological and Chemical synthesis of gold nanoparticles and their applications'.
- ¾ Manisha Atos, MS student, University of Mumbai, 2011-2013 Supervisor, thesis titled, 'Production and extraction of violacein pigment from *Chromobacterium violaceum* and its applications'.
- ¾ Supriya Karbele, MS student, University of Mumbai, 2011-2013 Supervisor, thesis titled, 'Production of pigment from *Pseudomonas aeruginosa* NCIM 2863 its application.'

Honors and Awards

Publications Reviewed

Reviewed over 50 publications in following journals :

1. Journal of Immunology Research

Semwal, M.K., Hester, A.K., Cepeda, S., Xiao, Y., Venables, Udeaja, C., T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the San Antonio Postdoctoral Research Forum conference Sep 2022

Semwal, M.K., Hester, A.K., Cepeda, S., Xiao, Y., Venables, Udeaja, C., T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the San Antonio Postdoctoral Research Forum conference Dec 2021.

Semwal, M.K., Liang, H., Baeuerle, E., Musi, N. Methyl Palmitate and sodium undecylenate decrease insulin stimulated glucose uptake in L6 cells. Presented at the 24th Annual Medical Research Day conference Dec 2021.

Semwal, M.K., Hester, A.K., Cepeda, S., Xiao, Y., Venables, Udeaja, C., T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the American Association of Immunologists (AAI) conference 2021

Semwal, M.K., Hester, A.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the American Association of Immunologists (AAI) conference 2019.

Semwal, M.K., Hester, A.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the Vaccine Development Center of San Antonio Conference, 2018.

Semwal, M.K., Hester, A.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the Microbiology, Immunology and Molecular Genetics Annual retreat, 2017.

Semwal, M.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the Microbiology, Immunology and Molecular Genetics Annual retreat, 2016.

Semwal, M.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the Vaccine Development Center of San Antonio Conference, 2016.

Semwal, M.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the American Association of Immunologists (AAI) conference 2015.

Semwal, M.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of stromal cell function in thymus. Presented at the Microbiology, Immunology and Molecular Genetics Annual retreat, 2015.

Invited Oral Presentations:

Semwal, M.K ., Hester, A.K., Xiao, Y., Venables, T., Griffith, A.V. Redox regulation of

SACNAS (Society for Advancing Hispanics/Chicanos and Native Americans in Science)
2019-2021

¾ July 2019-Present: National Liaison, Society for Advancing
Hispanics/Chicanos and Native Americans in Science (SACNAS)
Chapter at UT Health San Antonio

Mahogany Scholars at UT Health at San Antonio

- July 2019 –Sept 2019: Vice-President, Mahogany Scholars
¾ Became interim

Community Engagement: Volunteer Activities

Science Fair Judge at the Alamo Regional Academy of Science and Engineering Fair (ARSEF), 2019

Volunteer at the Community Service Learning (CSL) conference, trauma-informed care.

Science Fair Judge at the Harmony Science Academy, San Antonio, 2019.

Science Fair Judge at John Jay Science & Engineering academy school, San Antonio, 2019

Volunteer at Castle Hills Elementary School Career Night, 2019

¾ Discussed with around 100 kids between the ages of six years old and up the day in the life of a Scientist Encouraged children to pursue a field in science. Explained to children what Scientist do.

Volunteer at the culturally diverse event 'Diwali' organized by the Office of International Services, UT Health San Antonio, 2017-2019.