This is my story

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center
Making Cancer History®

Ashutosh Rao, Ph.D.
Chief, Laboratory of Applied Biochemistry
Co-Chair – Center for Excellence in Tumor Biology
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Silver Spring, Maryland

Ashutosh Rao, Ph.D.

Adversity was his greatest teacher

Growing up, Ashutosh was influenced by his love of nature and fascination with all living things. His father, a veterinarian and toxicologist, inspired him to appreciate the complexity and wonder of living organisms and life sciences. His mother, a food scientist, studied ways to increase shelf-life of crops so farmers could better store produce. And alongside clinicians in the family, Ashutosh spent time in their clinics and witnessed the real impact they, as physicians, have on people's health and wellbeing. Ashutosh was surrounded by many who were making significant differences in people's lives and cumulatively those influences led him to pursue a career in biomedical sciences. After moving to the United States from India, Ashutosh quickly immersed himself in the scientific opportunities available at M.D. Anderson Cancer Center. Ashutosh had something new to learn at every turn. He found the American spirit of freedom and *can do* attitude to be contagious and inspiring. Today, Ashutosh lives with his family in the suburbs of Washington DC.

Ashutosh credits MD Anderson as being a great launch pad for his professional career. Upon completion of his Ph.D. in Molecular Pharmacology at MD Anderson, Ashutosh was a Fellow at the National Institute of Health for almost four years before joining the US Food & Drug Administration (FDA). Today, Ashutosh directs multiple FDA laboratory programs studying drug quality, safety, and efficacy. His laboratory investigates the structural and functional consequences of protein oxidation. Specifically, his laboratory studies how mitochondrial dysfunction, protein aggregation and irreversible protein carbonylation are linked to autophagy and apoptosis in breast cancer models. The work of Ashutosh's labs has resulted in reporting on several novel mechanisms related to mitochondrial dysfunction and autophagy, as well as on potential targets for mitochondrially targeted therapies for cancer with reduced cardiotoxic adverse events. His work on protein oxidation has also helped the development and regulation of high quality, therapeutic proteins.

Ashutosh's research and regulatory achievements are many yet one of his proudest accomplishments is his role as an expert reviewer during FDA's

	approval of several drugs for lethal and rare genetic disorders in pediatric patients. Ashutosh is quick to point out that his achievements have not come without significant challenges and adversities. As a graduate student, the challenges of adapting to a new culture coupled with the rigors of his academic pursuits pushed Ashutosh to reconsider his career choices many times. Early in his graduate student career, most of his laboratory experiments were inconclusive which led to many tough yet insightful conversations with one of his most influential MD Anderson professors, Dr. Bill Plunkett. During the tough times he learned to internally refocus, persevere, and push through toward the end goal. And while Ashutosh credits his MD Anderson education as the foundation of his career success, he also recognizes that some of the best education came from his struggles and challenges, many of which turned into life-long lessons in the conduct and performance of good science. Ashutosh's grit and determination has earned him a solid spot in his family's legacy of making a significant difference in the lives of many.
MD Anderson School(s) from which I graduated	The University of Texas MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences
MD Anderson Degree	Ph.D. – Biomedical Sciences
Graduation Year	2003
Current Employer	United States Food & Drug Administration
Current City	Silver Spring, Maryland
Current Position	*Chief, Laboratory of Applied Biochemistry* *Co-Chair – Center for Excellence in Tumor Biology* *Silvio O. Conte Senior Biomedical Research and Biomedical Product Assessment Service Expert* *Office of Biotechnology Products, Center for Drug Evaluation and Research* *United States Food and Drug Administration*
Academic area of specialization	Molecular Pharmacology
Who are your mentors?	One of the best decisions I made after joining GSBS was to rotate through **Dr. Bill Plunkett's** lab, where I stayed and earned most of my

	training. Mentoring under Dr. Plunkett laid a solid foundation in the performance and evaluation of good science. During my graduate career, productive collaborations were built with multiple scientists and clinicians at MD Anderson such as **Dr. Gigi Lozano**, and mentoring by world-class scientists such as **Drs. Varsha Gandhi, David McConkey, Tim McDonnell, Zahid Siddik, Peng Huang**, the late **Agnes Schonbrunn** and the late **Ray Meyn**. ***William Plunkett, Ph.D.,*** *is an MD Anderson professor in the Department of Experimental Therapeutics, Division of Cancer Medicine.* **Guillermina (Gigi) Lozano, Ph.D.**, is a professor in MD Anderson's Department of Genetics, Division of Basic Sciences. ***Varsha Gandhi, Ph.D.****, is a former chair of the executive committee of The University of Texas Graduate School of Biomedical Sciences and Professor and Chair Ad Interim for the* Department of Experimental Therapeutics, Division of Cancer Medicine. ***David J. McConkey, Ph.D.,*** *formerly with MD Anderson, is d*irector of the Johns Hopkins Greenberg Bladder Cancer Institute and a professor in the Department of Urology at Johns Hopkins Medicine. ***Timothy J. McDonnell, M.D., Ph.D.*** *is a* Professor with Tenure, Department of Hematopathology, Division of Pathology/Lab Medicine*, MD Anderson Cancer Center.* ***Zahid Hussain Siddik, Ph.D.*** *is a Professor of Medicine (Pharmacology), Department of Experimental Therapeutics, Division of Cancer Medicine, MD Anderson Cancer Center.* ***Peng Huang, M.D., Ph.D****, is a former professor in the Department of Translational Molecular Pathology, MD Anderson Cancer Center.* ***The late Agnes Schonbrunn*** *was a professor of integrative biology and pharmacology and vice chair of the Department of Integrative Biology and Pharmacology, The University of Texas Health Science Center at Houston.* ***The late Raymond E. Meyn Jr.*** *was a cancer researcher and professor in Experimental Radiation Oncology Department at MD Anderson Cancer Center.*
Works of interest	• Doxorubicin-induced carbonylation and degradation of cardiac myosin binding protein C promote cardiotoxicity • Mitochondrial dysfunction generates aggregates that resist lysosomal degradation in human breast cancer cells • Iron chelators with topoisomerase-inhibitory activity and their anticancer applications • FDA Researchers Explore Fundamental Chemical Reaction that Could Threaten the Quality of Therapeutic Protein Products • CDER Scientists Investigate Critical Cellular Functions That Can Be Targeted to Kill Cancer Cells
Graduate school(s) from which I received a degree(s).	• The University of Texas MD Anderson Cancer Center UTHealth Graduate School of Biomedical Sciences, 2003

	Ph.D. – Biomedical Sciences
Undergraduate school(s) from which I received a degree(s).	• The University of Bombay (Mumbai), 1997 Bachelor of Science in Pharmaceutical Sciences
High school from which I received a degree.	• New Bombay (Navi Mumbai) High School – 1991 Bombay, India

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