

# CELL REDOX BIOLOGY AND THERAPEUTICS

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## Overview

The cellular redox environment is a balance between the production of reactive oxygen species (ROS), reactive nitrogen species (RNS), and their removal by antioxidant enzymes and smallmolecular-weight antioxidants. Redox networks in the cell integrate signaling pathways that control metabolism, energetics, cell survival, and death. A loss in the redox control of the cell cycle could lead to aberrant proliferation, a hallmark of various human pathologies like cancer and many other diseases like diabetes, dementia, cardiovascular diseases and degenerative diseases. Pathology occurs when reactive species are produced in excess of the endogenous antioxidants, and this leads to indiscriminate damage to cellular macromolecules (proteins, lipids, and DNA) and kills cells. Therefore, a clear understanding cell specific redox processes can delineate disease mechanisms and uncover new opportunities for therapeutics development. This class will introduce students to fundamental concepts of redox biology systems, outline redox metabolism, its bioenergetics and redox cycles. It will also provide an overview of broad based interdisciplinary methodologies adopted in labs around the world and provide an insight into redox-based therapies in clinical trials. The course session will include discussions on novel therapeutic developments and thus will help to review current knowledge in the field of redox systems and cell physiology.

Course participants will learn these topics through lectures and tutorials.

<b>Modules</b>	A: Duration : July 16 <sup>TH</sup> to July 20 <sup>TH</sup> , 2018 B: Venue : Crystal Growth Auditorium, Anna University – Guindy campus, Chennai *(Number of participants for the course will be limited to 50)
<b>You Should Attend If...</b>	<ul style="list-style-type: none"><li>• You are an engineer or scientist from Biological Sciences engaged in Redox biology and free radical research</li><li>• You are a student ( BTech/MTech/PhD/Post-Doctoral Fellows) or faculty from academic institution engaged in or interested in Redox biology</li></ul>
<b>Fees</b>	The participation fees for taking the course is as follows: Academic Institutions Students - Rs. 1000/- Academic Institutions Staffs - Rs. 2000/- Industry/ Research Organizations - Rs. 3000/- Participants from abroad - US \$500  The above fee includes all course materials. The participants will be provided with accommodation and food on payment basis.

## The Faculty



**Dr. Jeannette Vasquez-Vivar**, PhD., is a Professor in the Department of Biophysics, Medical College of Wisconsin; and the Associate Director of Redox Biology Program, Medical College of Wisconsin. Her Scientific interests are in Superoxide and uncoupling mechanisms of nitric oxide synthases, role of tetrahydrobiopterin cofactor in oxidant stress and prevention of neuronal and cardiac dysfunction, metabolic regulation of NOX activity by NADPH and also in the hypoxia and metabolic control of hematopoietic stem cell self-renewal. Her research work is focused on understanding the cell-specific redox mechanisms disrupting normal cellular homeostasis



**Dr. C.D. Anuradha**, M.Phil., PhD., is the Director and Head of the Department, Centre for Biotechnology, Anna University. She obtained her M.Phil and Ph.D. degree in Biochemistry. She has more than 25 years of research experience in the field of Apoptosis, Cancer therapeutics, Stem cell technology and Cardiovascular therapy. She has more than 40 research articles in International peer reviewed journals like JBC, PLOS and American Journal of Physiology and also has several ongoing research projects. She collaborates with various labs in the UK and USA and has great passion for research in cell signaling mechanism.



## Course Coordinator

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<https://www.annauniv.edu/gjan/course.html>