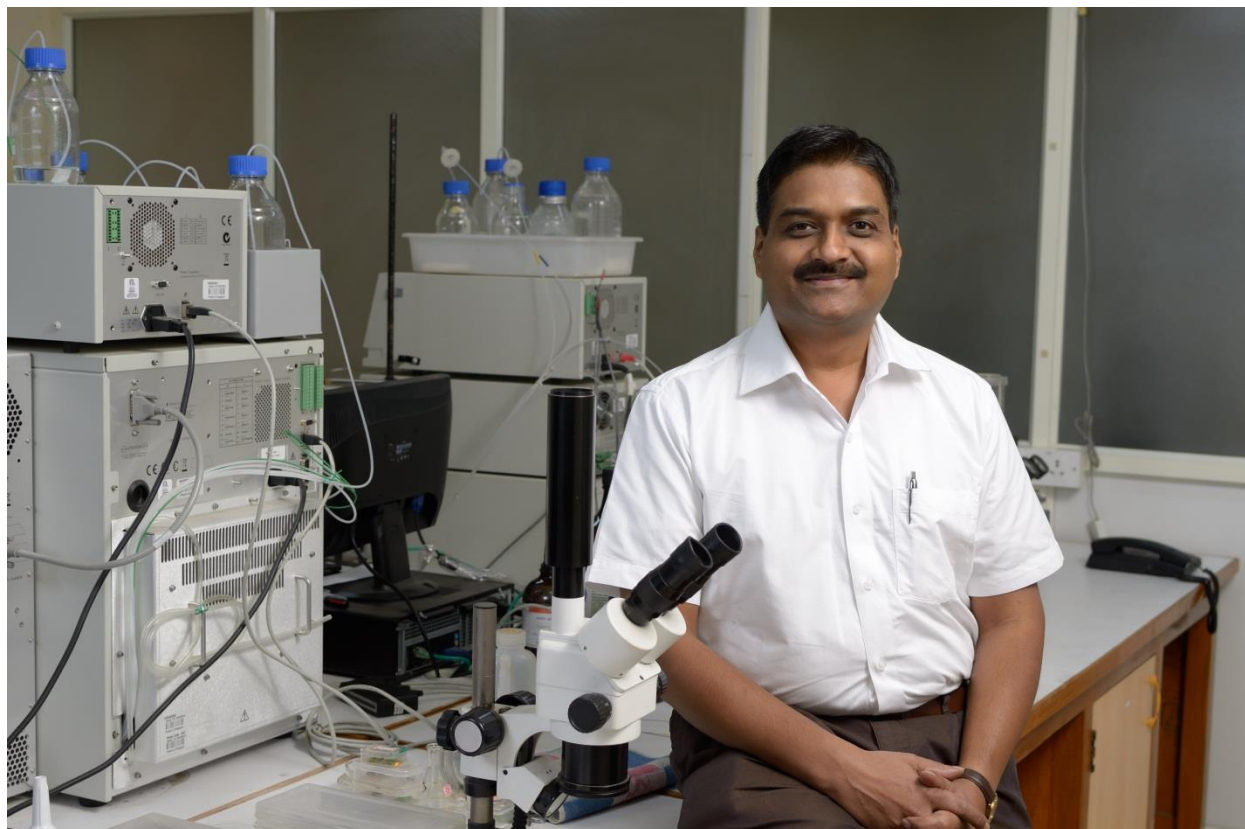


COMPILED AND EDITED BY THE **CONNECT TEAM** BASED ON INPUT FROM THE
FEATURED **RESEARCHERS**

G MUGESH (PROFESSOR, DEPARTMENT OF INORGANIC AND PHYSICAL CHEMISTRY)



(MANOJ SUDHAKARAN)

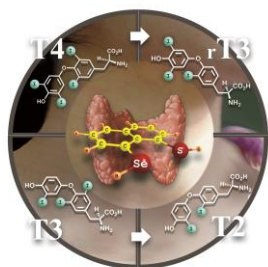
Helping develop new drugs

G Mugesh's laboratory works on developing new therapeutic agents to battle diverse diseases. For instance, cancer, renal disease, and neurodegenerative disorders such as Alzheimer's and Parkinson's are all associated with reactive oxygen species (ROS)—chemically reactive molecules containing oxygen that are important in cell signaling—and oxidative stress. Oxidative stress is an imbalance between the production of free radicals (highly reactive and short-lived molecules) and the ability of the body to neutralize their harmful effects through antioxidants. Mugesh's group has developed compounds that efficiently mimic antioxidant

enzymes and combat oxidative stress without affecting the cellular antioxidant systems. These include several biocompatible selenium compounds and nanomaterials, which exhibit remarkable antioxidant activity and protect human cells against ROS-mediated damage. The new compounds are being evaluated to determine whether they can inhibit the aggregation of amyloid β -peptides, a biomarker of Alzheimer's disease, and whether they can prevent the inactivation of eNOS, an enzyme essential for a healthy cardiovascular system.

Mugesh's group has received worldwide attention for their seminal contributions in understanding the mechanism of thyroid hormone action. This understanding will help in designing and synthesizing novel compounds that can control thyroid levels through regioselective deiodination—the selective removal of an iodine atom from a molecule. As abnormal thyroid levels have adverse effects in different disease conditions, such as hypoxia, myocardial infarction, neuronal ischemia, tissue injury and cancer, the novel compounds developed in his laboratory are candidates for further drug discovery studies.

Besides authoring more than 115 research papers in international peer reviewed journals, Mugesh is also on the editorial boards of many international journals. He has received several awards such as the Shanti Swarup Bhatnagar Prize and the Ramanna and Swarnajayanti Fellowships from the Government of India. Mugesh has also been elected as a Fellow of the National Academy of Sciences, India, and the Indian Academy of Sciences.



**Enzyme Mimetic deiodination of
Thyroid Hormones (COURTESY:
G MUGESH)**



Mugesh with his team (MANOJ SUDHAKARAN)