Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Internal Webinar

Micronutrient homeostasis in malnutrition: Insights from pre-clinical and paediatric models

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Metal ions are crucial for physiological homeostasis. Trace metals such as iron, zinc, copper, and selenium play tightly regulated roles in growth, development, and disease resistance. Disruptions in their homeostasis due to deficiency, overload, or imbalance can lead to significant metabolic and functional consequences.

Iron, in particular, stands out due to its role in oxygen transport, energy metabolism, and immune function. However, iron metabolism is especially vulnerable to changes in nutritional status. Our work investigates how chronic macronutrient malnutrition disrupts iron homeostasis, using two experimental models: (1) chronic sucrose-water overconsumption and (2) maternal mild malnutrition during gestation and lactation. These models simulate long-term dietary stress and reveal consistent dysregulation across key aspects of iron handling. In parallel, we analysed the relationship between anthropometric measurements and trace metal concentrations in paediatric samples using inductively coupled plasma mass spectrometry (ICP-MS).

The talk will highlight how trace elements, especially iron, respond to dietary stress and may result in subclinical metabolic shifts, particularly in malnourished or metabolically vulnerable populations.

Wednesday, Jun 18th 2025

18:00 Hrs