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**M. N. V. Ravi Kumar**

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*„Imaginary Logic and The Art of Science“*

## Abstract

This presentation explores how unconventional thinking and rigorous methodology intersect to solve complex biomedical challenges. At the heart of scientific discovery is the capacity to conceptualize systems that navigate biological barriers without triggering adversarial immune responses. Through a decade and a half of imagination and execution, this work examines a cutting-edge frontier currently being explored at the laboratory level: engineered treatments designed to interact with biological environments via selective, non-disruptive mechanisms. By operating independently of native pathways, these early-stage designs seek to achieve therapeutic goals while minimizing interference with normal physiological processes. Traditionally, ingestible pharmaceutical formulations relied on excipients (fillers) to function as passive vehicles, inert and without pharmacological activity, assisting with manufacturing, protecting active ingredients from enzymatic degradation, and facilitating absorption. However, modern engineered polymers blur these lines, requiring rigorous investigation as they circulate through dynamic biological systems. Balancing these innovations ultimately returns to the core principle of medicine: the delicate calculus of risk versus benefit. Building on this philosophy of precision and non-interference, the discussion highlights how novel polymer design provides unprecedented control over drug delivery in a benchtop setting, bridging creative laboratory concepts with future clinical applications.

**SHORT CV**

Dr. M. N. V. Ravi Kumar is a Distinguished University Research Professor and Associate Vice President for Interdisciplinary Research at The University of Alabama. His research focuses on drug delivery, biomaterials, and translational science.

He founded the Center for Convergent Bioscience and Medicine in 2021 and directed it until July 2026. He also established the Department of Translational Science and Medicine at The University of Alabama, serving as its interim chair until August 2026. His previous academic appointments include Professor of Pharmaceutical Sciences at Texas A&M University (2013-2021), Professor of Drug Delivery at the University of Strathclyde (2008-2013), and Assistant Professor at the National Institute of Pharmaceutical Education and Research (NIPER) in India (2003-2007).

Dr. Kumar earned his Bachelor of Science from Nagarjuna University and his PhD from the Indian Institute of Technology, Roorkee. He completed postdoctoral fellowships in Dr. Ramesh Gupta's lab at the University of Kentucky Lexington Medical Center (2000-2002) and as an Alexander von Humboldt Fellow in Professor Claus-Michael Lehr's lab at Saarland University (2002-2003). He also received the Humboldt Research Prize (2021), jointly hosted by Professor Udo Bakowsky (Marburg) and Professor Brigitte Voit (Dresden).