

## **Photolabile probes to control cellular chemistry and drug discovery**

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Used in conjunction with other technologies the light beam becomes a uniquely powerful tool to study cells. Currently light source is used not only to observe cells, but also to stimulate cellular chemistry. This area of biophotonics is called “caged compounds” as synthetic organic chemistry say “Photolabile compounds” is used to make biologically signalling molecules functionally inert. Irradiation with light liberates the caged molecules, thus “switching on” a chosen signaling pathway. Such light-triggered release of molecules from “caged” forms also offers the potential to deliver innocuous agents to cells, tissues, and organisms, where they can be unmasked to their active states. Because light can be readily tuned and focused, it can be spatially and temporally controlled to provide “on-command” drug delivery, unmasking of biochemical agents for enzyme and protein activation, and other biochemical and physiological studies.

We have developed many caged compounds for stimulating both intracellular and extracellular receptors. The present talk will be focused with reference to IP3-Calcium signalling cascade. Here I describe few examples of caged compounds, their design features, synthesis and some extent their applicability in living cells. Fluorescent imaging probes are also playing vital role in recent years and becoming a part in the process of drug discovery and development. Also describe here on the development of imaging probes in reference to the Alzheimer Disease (AD) for diagnosis and drug development.

### **Biography**

KANTEVARI SRINIVAS obtained his Ph.D. degree (1996) from Department of Chemistry, Indian Institute of Technology (IIT), New Delhi. He was research associate (1996-97) at National Institute of Immunology (NII) New Delhi. Later he was a post-doctoral Fellow (2001-2003) and Research Associate (2006-2008) with Prof. Graham Ellis-Davies, Department of Pharmacology and physiology, Drexel University College of Medicine, Philadelphia, USA. He has been associated with Indian Institute of Chemical Technology (IICT) since 1997. Presently he is Sr. Scientist at Indian Institute of Chemical Technology (IICT), Hyderabad. His research interests are broad based, (1) Development of new photolabile compounds to control cellular chemistry (2) development new drug candidates and imaging agents for probing Alzheimer's Disease (AD) (3) Receptor targeted approaches for the development of new chemical entities (4) Fragment based approaches for drug design and discovery. Presently 7 students are working for Ph.D. and 4 students for Master's dissertation work. He has 54 Publications and 5 patents for his credit. He is an editorial board member for open Journal of catalysis, member, and editorial board of reviewers for ARKIVOC, and expert reviewer for various journals international reputation. He was also developed several processes for APIs and drug molecules of interest and involved in transferring the technologies.

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