

# Organic, Bioorganic, and Medicinal Chemistry

## Organofluorine Chemistry

- Synthetic organofluorine chemistry
- Organofluorine compounds for biochemical and medicinal applications
- Synthesis and computational and mechanistic studies of organofluorine compounds as cell-cycle inhibitors

## Medicinal Chemistry

- Design, Molecular dynamics simulations, and synthesis of tau-kinase inhibitors as therapeutics for Alzheimer's disease (AD), traumatic brain injury (TBI), and cancer
- AGE-inhibitors and AGE-breakers: mechanistic and pharmacokinetic studies
- Cell-cycle inhibitors in cancer and neurological disorders

## Facilities

Multinuclear NMR; GC/MS; ESI/MS; HPLC; FT-IR, UV-Vis, Fluorescence Spectroscopy; photochemical and Microwave Reactors; Elemental Analyzer; Supercomputing Clusters,

## PoC: V. Prakash Reddy, Ph.D., FAAAS

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Technology

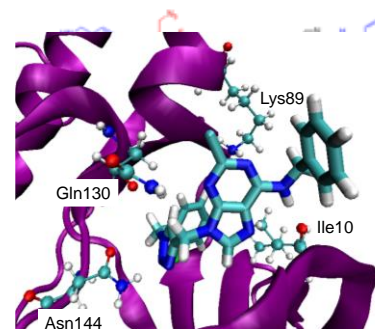
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## Funding

Department of Defense; NASA STTR; ACS-Petroleum Research Fund; Schwab Foundation; UM Interdisciplinary Research; MS&T Technology Acceleration

## Design and synthesis of AD-Therapeutics



*Organofluorine Compounds in Biology and Medicine,*

Reddy, V. Prakash, Elsevier; Amsterdam, 2015

## Keywords

Synthetic organic chemistry; organofluorine chemistry; drug discovery; Alzheimer's disease; oxidative stress; cell-cycle inhibitors; AGE-inhibitors and AGE breakers; NMR; catalysis; nonaqueous electrolytes; lithium-ion batteries; superacids; carbocations and reactive intermediates; ionic liquids.; ab initio calculations and molecular dynamics simulations.

## Recognitions/Significant achievements

- Fellow of the American Association for the Advancement of Science
- NASA Faculty Fellow, Jet Propulsion Laboratory
- Golden Key National Honor Society, Honorary Member, CWRU
- Purine-based Triazoles., Reddy, V. Prakash; Nair, Nanditha, G.; Smith, Mark, A.; Kudo, Wataru, 2015, US 8969556 B2; U.S. Patent number: US8,969,556 B2; WO 2012051296; A 20120419; US 2010-61392237.
- Books: Reddy, V. Prakash. *Organofluorine Chemistry in Biology and Medicine*, Elsevier; Amsterdam, 2015; Reddy, V. Prakash. *Organofluorine Chemistry: Synthesis and Applications*, Elsevier, 2020.