Curiosity and Application-Driven Organic Synthesis: Natural Products and Beyond

Prof. Emmanuel N. Pitsinos
Department of Chemistry, National and Kapodistrian University of Athens

Abstract

This presentation provides an overview of Prof. Pitsinos' career and showcases ongoing research in two complementary directions that bridge fundamental synthetic organic chemistry with biomedical and practical applications.

The first research direction focuses on **Taepeenin D**, a vouacapan (cassane-type furanoditerpenoid) that exhibits significant Hh/Gli-mediated transcription inhibitory activity and selective cytotoxicity toward cancer cells with elevated Hedgehog (Hh) signaling.[1–4] This work exemplifies how natural products synthesis can simultaneously serve as a testing ground for synthetic methodologies and as a source of novel drug leads or molecular probes for interrogating biological processes.

The second research direction demonstrates synthetic organic chemistry's contribution to sports safety and analytical method validation.[5–8] Application-driven research on **LGD-4033 (Ligandrol)**, a non-steroidal selective androgen receptor modulator (SARM), has enabled the identification and full structural characterization of Phase-1 metabolites and provided reference materials crucial for anti-doping purposes.

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