Seminar

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April 10, 2019 at 4:00-5:00pm

In Widtsoe 330

Host: Tom Chang

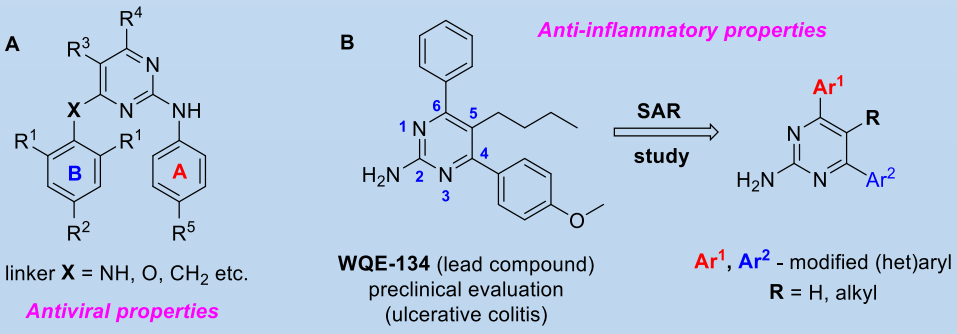
Chemical and biological potential of polysubstituted pyrimidines

Pyrimidines are well known not only for their importance as elemental building blocks of nucleic acids but also for their broad range of biological properties. Pyrimidine ring really proved to be an important and quite common pharmacophore which can be conveniently modified at up to four carbon atoms (C2, C4, C5, and C6). From the combinatorial viewpoint, there is an enormous chemical space for a design and synthesis of polysubstituted pyrimidines (PoPyr) with desired physicochemical as well as biological properties.

In my research group, PoPyr play a key role in several research projects:

A) We study PoPyr as potent non-nucleoside reverse transcriptase inhibitors (NNRTIs) that exhibit potent anti-HIV-1 activity. Within the diarylpyrimidine (DAPY) series we study the influence of various substituents and various linkers **X** on their antiviral properties.[1,2]

B) We carry out an extensive structure-activity relationship (SAR) study (and lead optimization) of 4,6-diarylpyrimidines which are potent inhibitors of prostaglandin E_2 (PGE_2) production. The exact mechanism of anti-inflammatory action of the compounds seems to be quite complex and its evaluation is currently in progress.[3,4]



C) We study polysubstituted 5-nitrosopyrimidines[5,6] and 5-phenylazopyrimidines[7,8] with switchable intramolecular hydrogen bonds (IMHBs) using NMR spectroscopy as well as other analytical and computational methods.

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