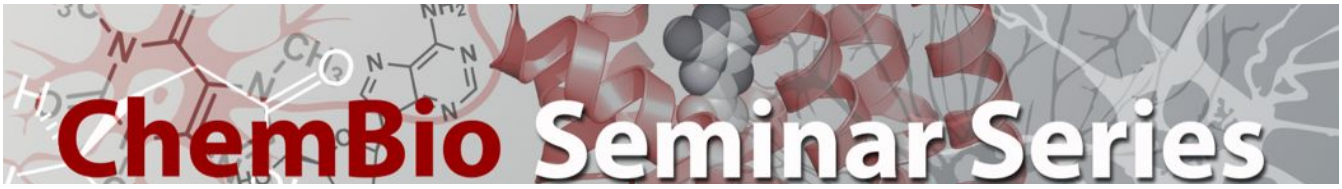

Thursday, April 6, 2017, 12:30 pm
Seaver Science Library, Room 150
SSC Auditorium next to the library

Professor Eranthie Weerapana

Chemical Biology and Biochemistry
Boston College

Chemical Proteomic Strategies to Investigate Reactive Cysteines

Abstract:

Cysteine residues regulate the activity of diverse proteins via posttranslational modification by endogenous electrophiles and reactive oxygen species. These modified cysteine residues do not conform to a conserved sequence or structural motif, rendering the global identification of regulatory cysteines a considerable challenge. To identify regulatory cysteines in human proteomes, we have developed chemical-proteomic tools to monitor cysteine reactivity both in vitro as well as directly in living cells. These global profiling methods have been applied to monitor the susceptibility of cysteines to S-nitrosation and to identify redox-active disulfides induced by epidermal-growth factor (EGF) stimulation. In order to identify cysteine residues hypersensitive to S-nitrosation, we developed a chemical-proteomic platform that ranks cysteines in the human proteome by sensitivity to a variety of transnitrosating agents. Our proteomic studies identified several previously unannotated cysteines, which we proceeded to demonstrate were important regulators of protein activity. Overall, our studies aim to unearth novel functional cysteine residues in the proteome, with the long-term goal of identifying new modes of protein regulation through reactive cysteines.

Hosted by Professor Matt Pratt

The scientific community is invited

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