DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE
VIRTUAL SEMINAR SERIES
SPRING 2021

DATE: WEDNESDAY, MARCH 31

TIME: 12:30-1:50pm

LOCATION:
https://njit.webex.com/njit/j.php?MTID=mdfe4f718778e9a7ffb4eefa8ea5acb98

Meeting number: 1202085541
Meeting password: yaP9itPpR74

Join by video system:
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GUEST SPEAKER

Professor, Arthur Winter
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TOPIC

New Strategies to Achieve Photoactivation Using Visible Light

ABSTRACT

Photoactivactivation is an excellent way to control biomolecules in space and time in a cell because light is an orthogonal external control that can be focused and pulsed. Unfortunately, the ability to externally control biological phenomena using light activation is severely hampered by numerous limitations in existing photoactivation strategies. The most general approach to achieve photoactivation is by using photocages, which are light-sensitive chemical protecting groups that are covalently linked to a biomolecule, rendering it inert. Upon irradiation, photocages release the biomolecule, restoring activity. Known photocages are prized for their ability to provide high spatiotemporal resolution in cells using pulses of focused light, but have chromophores that only absorb cell-damaging UV wavelengths. This talk focuses on my lab's development of new photocages

that release biomolecules in cells with light wavelengths spanning the visible to near-IR. Such wavelengths eliminate these phototoxicity problems and result in photocages that can release biomolecules with different colors of light.

BIO

Research in the Winter lab focuses on the development of new chemical tools for biological and materials applications. Philosophically, we take the view that many problems in biology and materials science are at heart problems in mechanistic physical organic chemistry. Using a joint theoeretical/experimental approach, we design and synthesize chemical tools for biological applications, including photoactivatable biomolecules and biological sensors. On the materials science side, we are working on the synthesis of next-generation dynamic plastics that change properties in response to environmental stimuli.

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