ACS Chemical Neuroscience

In This Issue

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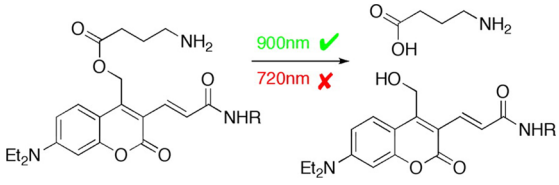
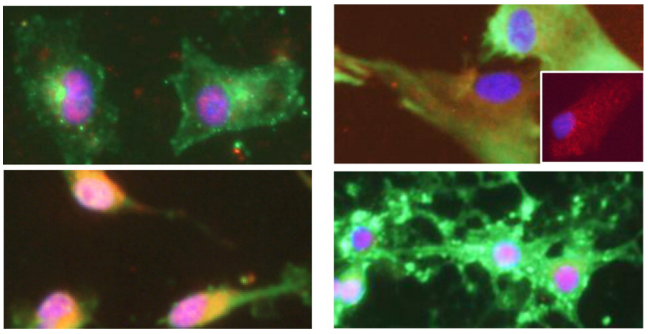
NEW CAGING CHROMOPHORE FOR NEUROTRANSMITTERS



Fluorescence imaging takes advantage of the chromatic diversity of optical probes to decipher the function and location of multiple cellular constituents. While fluorescent imaging may monitor many colors simultaneously, in contrast optical probes that are used to stimulate cells have a relatively restricted color palate; as few as two probes cannot be easily used at the same time. In the current issue, Amatrudo et al. (DOI: 10.1021/cn400185r) describe the development of a new photoactivable γ-aminobutyric acid (GABA) probe that allows wavelength-selective control of this important inhibitory neurotransmitter.

The authors describe the development of photolabile 7-diethylamino (DEAC) derivatives that release GABA with linear and nonlinear excitation. Special lasers were employed to activate receptors in living cells. This promising new tool showed excellent spatial resolution and chromatic selectivity.

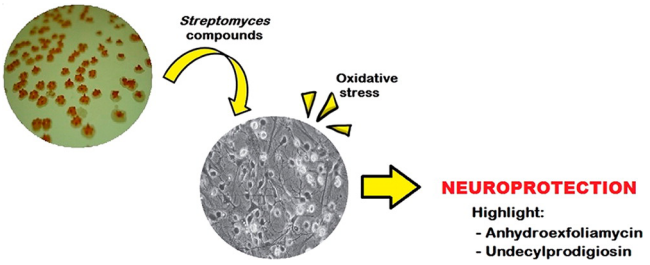
NEURAL TARGETS OF CORTICOSTEROID THERAPY



Corticosteroids (CS) are used widely in the treatment of neurological disease/injury. They alter gene expression in target cells and reduce immune system reactions. Such effects aid neurological recovery, but several studies show aberrant myelin formation after CS-treatment for which the underlying mechanisms are not understood. In the current issue, Jenkins et al. (DOI: 10.1021/cn400167n) aim to determine which brain cells are CS targets of during myelin production.

The authors used microscopical and gene expression analyses to establish the mechanisms of adverse CS effects on myelin production. They show that the two major cell types that participate in forming myelin do not respond significantly to CS, suggesting they are not direct targets of drug action. This unexpected finding suggests that CS effects are mediated indirectly by other neural cells. Such information can aid the pharmaceutical industry in the development of new drugs and novel immunotherapies that limit adverse effects.

NEUROPROTECTIVE ROLE OF *STREPTOMYCES* NATURAL PRODUCTS



Previous studies have demonstrated the ability of natural products from *Streptomyces* to act as anti-inflammatory, antiviral, antimicrobial, anticancer agents and also to protect against neurodegenerative diseases. These compounds are therefore promising candidates for drug development. In the current issue, Leirós et al. (DOI: 10.1021/cn4001878) provide new information on the neuroprotective activity of seven metabolites obtained from several Atacama desert *Streptomyces* species.

The authors screened seven natural products from *Streptomyces* sources against hydrogen peroxide insult in primary cortical neurons, an oxidative stress in vitro model, and showed the ability of these compounds to inhibit neuronal cytotoxicity and to reduce ROS release after 12 h treatment.

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