ACS Chemical Neuroscience

In This Issue

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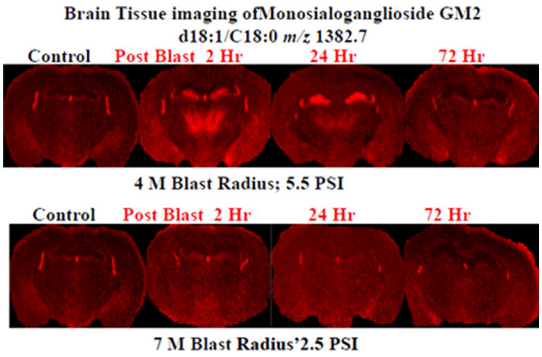
BIOMARKER FOR NEUROLOGICAL DISORDERS CAUSED BY BOMB BLASTS

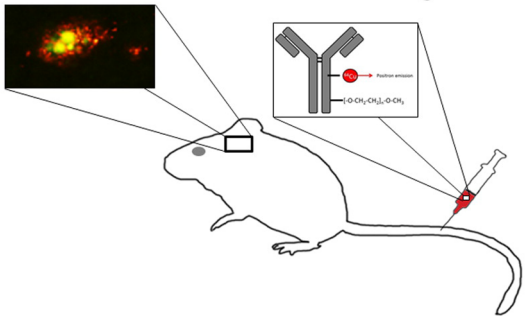


Shock waves, blast wind, and electromagnetic pulses from explosive device detonations lead to traumatic brain injuries with physical and psychological consequences. However, behavioral changes associated with blast-induced mild traumatic brain injuries (bTBI) syndrome have been difficult to diagnose. In the current issue, Woods et al. (DOI: 10.1021/cn300216h) report promising biomarkers for bTBI syndrome.

Mouse brain tissue exposed to a single, low level blast exposure showed significant increase in ganglioside GM2 in several brain regions. A decrease in ceramides was also observed. These observations support the notion that low-level, nonpenetrating blasts cause distinct biochemical changes in the brain.

IMAGING AGENTS TO MONITOR ALZHEIMER'S DISEASE PROGRESSION

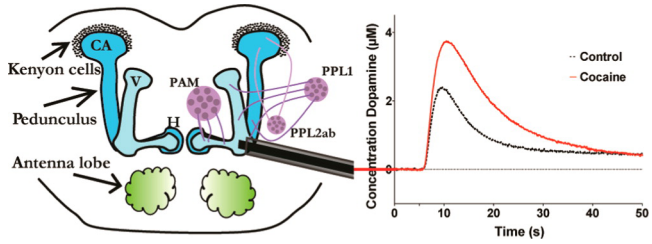
Targeting specific forms of amyloid-β with PET compatible radiolabelled antibodies in brains of living animals



Imaging tools for following Alzheimer's disease progression is an unmet need. Current strategies include targeting misfolded amyloid-β (Aβ). However, Aβ is present in a variety of isoforms, making it difficult to target a specific type. Now, McLean et al. (DOI: 10.1021/cn300226q) report specific antibody-based imaging agents in an Alzheimer's disease mouse model.

The authors developed a novel bioengineered and radio-labeled antibody−polymer conjugate that can specifically detect two types of amyloid pathology (parenchymal and vascular) in a mouse model using live animal positron emission tomography. The antibodies were modified with polyethylene glycol to enhance circulation time and ^{64}Cu for positron emission tomography imaging.

DROSOPHILA MODEL SYSTEM TO STUDY DRUG ADDICTION



Cocaine affects multiple transporters in the brain, including dopamine. In the current issue, Berglund et al. (DOI: 10.1021/cn3002009) study the effects of the human dopamine transporter inhibitor, methylphenidate, and its effects on cocaine uptake using fast-scan cyclic voltammetry (FSCV) in the *Drosophila* brain.

The authors used an oral delivery method, introducing methylphenidate in fly food. Capillary electrophoresis coupled to mass spectrometric analysis determined postfeeding in vivo concentration of methylphenidate in the fly brain. Using FSCV, the authors demonstrated that methylphenidate is capable of blocking the *Drosophila* dopamine transporter in a similar way to cocaine, thus inhibiting the actions of this drug.

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