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REVIEW ARTICLE
137  Chemical contrast for imaging living systems: molecular vibrations drive CARS microscopy
John Paul Pezacki, Jessie A Blake, Dana C Danielson, David C Kennedy, Rodney K Lyn & Ragnunath Singaravelu

The nonlinear variant of Raman spectroscopy, coherent anti-Stokes Raman scattering (CARS) microscopy, combines powerful Raman signal enhancement with several other advantages such as label-free detection and has been used to image various cellular processes including host-pathogen interactions and lipid metabolism.
ARTICLES

147 NMR analysis demonstrates immunoglobulin G N-glycans are accessible and dynamic
A W Barb & J H Prestegard
Antibody glycans play important biological roles, but these functions are hard to reconcile with the current picture of carbohydrates tightly bound to the protein surface. Advanced NMR techniques and chemoenzymatic labeling strategies now point to large dynamic motions in these glycan chains.
▶ N&V p131

154 Radical-mediated enzymatic carbon chain fragmentation-recombination
Q Zhang, Y Li, D Chen, Y Yu, L Duan, B Shen & W Liu
Radical SAM enzymes are famous for catalyzing chemically diverse reactions. A mechanistic investigation of NosL, responsible for functionalizing the indole precursor of nosiheptide, now shows that this enzyme catalyzes an unusual fragmentation-recombination reaction that is tolerant to non-natural halogen substituents.
▶ N&V p133

161 Defining the geometry of the two-component proteasome degron
T Inobe, S Fishbain, S Prakash & A Matouschek
The geometric relationship between the two protein degradation signals of proteasome substrates, the polyubiquitin chain and the unfolded region, is dictated by the locations of their recognition sites on the proteasome.

168 Structural landscape of isolated agonist-binding domains from single AMPA receptors
C F Landes, A Rambhadran, J N Taylor, F Salatan & V Jayaraman
Single-molecule FRET experiments monitoring AMPA receptor dynamics reveal the energy landscape that the receptor samples and establish that agonists control the level of activation by modulating the fraction of protein in the closed cleft conformation.
▶ N&V p130
Hijacking a biosynthetic pathway yields a glycosyltransferase inhibitor within cells
T M Gloster, W F Zandberg, J E Heinonen, D L Shen, L Deng & D J Vocadlo

Feeding of modified carbohydrates has previously led to metabolic incorporation of these compounds into cellular glycans. Now the strategic use of a thiol analog that can be converted into an activated sugar but not incorporated into glycans provides a potent intracellular glycosyltransferase inhibitor.

XPB, a subunit of TFIIH, is a target of the natural product triptolide
D V Titov, B Gilman, Q-L He, S Bhat, W-K Low, Y Dang, M Smeaton, A L Demain, P S Miller, J F Kugel, J A Goodrich & J O Liu

Triptolide is a bioactive natural product isolated from plants used in traditional Chinese medicine. A target identification approach shows that triptolide modulates RNA transcription and nucleotide excision repair by covalent binding to the XPB subunit of the transcription factor TFIIH.

CLASSIFIEDS
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