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Targeting Trends

Reporting the latest news in Molecular Surgery

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Newsletter Highlights

Denise Higgins, Editor

ADVANCED TARGETING SYSTEMS

Biotinylated targeting: A viable option?

For the IB4-SAP illustration (Figure 1), our thanks to Christopher N. Honda, Ph.D., Associate Professor, Department of Neuroscience, University ofMinnesota, 6-145 Jackson Hall, 321 Church Street, Minneapolis, MN 55455

This issue of our quarterly newsletter addresses the use of biotinylated materials in targeting. ATS is now offering a biotinylation service (see p. 7) that gives scientists options for expanding their experimental capabilities. In this first example, Dr. Honda presents data using the targeted toxin IB4-SAP and biotinylated IB4. His laboratory used IB4-SAP to investigate the role of IB4-binding neurons in nociception.

Figure 1 shows ipsilateral dorsal root ganglion (DRG) neurons 3 days after a sciatic nerve injection of IB4-SAP (A, B, E, F), unconjugated IB4 (C), or unconjugated SAP (D). Anti-BSI (*Bandaireae simplicifolia I*) was used to label neurons that internalize IB4 after a sciatic nerve injection (A and C), and biotinylated IB4 was used to label all IB4-binding neurons regardless of internalization (E). The images were adjusted for contrast and brightness, and double-labeled images were pseudocolored and digitally merged (Adobe Photoshop).

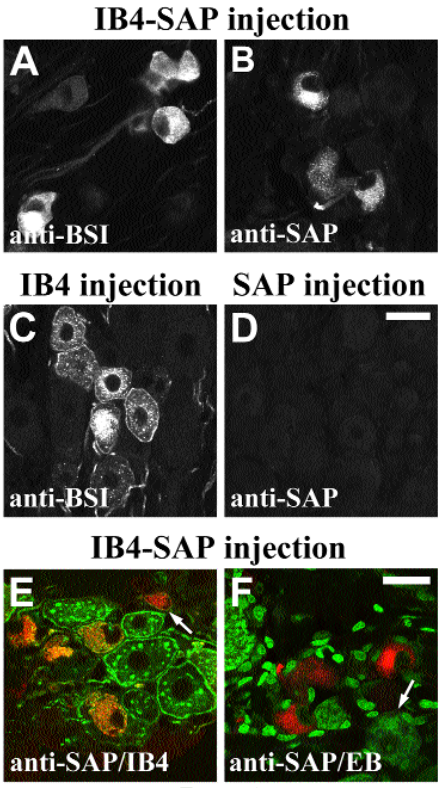

Figure 1

(A, B) IB4-SAP injected into sciatic nerve was detected in DRG neurons 3 days later using anti-BSI (A) or anti-SAP (B). The pattern of staining of the two antisera in neurons was similar. The staining was diffusely distributed throughout the cytoplasm or aggregated in the center of the cell. Labeled neurons had irregular eccentric nuclei and irregular cell perimeters.

(C) Unconjugated IB4 injected into sciatic nerve was detected in DRG neurons 3 days later using anti-BSI. Anti-BSI staining was seen near the cell perimeter and in well-defined puncta surrounding the nuclei of neurons.

(D) Unconjugated SAP injected into sciatic nerve was not detected in DRG.

(E) Double labeling with anti-SAP (represented in red) and biotinylated IB4 (represented in green) after IB4-SAP injection.

The majority of anti-SAP-stained neurons were also labeled by biotinylated IB4, as indicated by the presence of red and green puncta in the same neurons. IB4-binding neurons that did not internalize IB4-SAP are shown in green. The arrow indicates an example of disfigured neurons that were positive only for anti-SAP.

(F) Double labeling with anti-SAP (represented in red) and ethidium bromide (EB); represented in green). The neurons containing IB4-SAP were not stained by EB, as indicated by the lack of overlap of red and green pseudo-colored neurons. The arrow indicates an example of the normal appearance of EB staining in sensory neurons. Scale BARS=20 mm.[1]

This figure demonstrates the internalization of IB4-SAP and its selectivity for IB4-binding neurons.

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