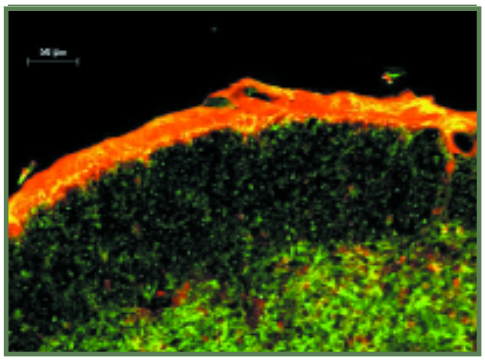
SBIR Grant Funded: *Selective Activation in Neuronal Populations*

ATS has been awarded a Phase I SBIR grant to develop a new line of products. Dr. Douglas Lappi is the Principal Investigator and Brian Russell is the Lead Scientist on the project. Molecules targeted towards cell surface markers have been used for years to identify specific cell types. It has been demonstrated over the course of the past decade that biologically-active molecules, when attached to these cell surface-binding molecules, can be delivered in a specific manner, utilizing the tendency of a bound receptor to be internalized. Frequently, delivery of biologically-active molecules has resulted in cell death or inhibition. It is proposed in this project to direct this technology toward specific neuronal populations with the intention of activating these cells temporarily, thereby increasing neurotransmission.

The proof of concept will include synthesis of a conjugate of an antibody to the mouse low-affinity neurotrophin receptor (p75; Cat. #AB-N01AP) and the enzymatic A1 fragment of cholera toxin (CTA1), and examination of the effects on neuronal cells that express the p75 receptor. In previous trials with CTA attached to Substance P, Caudle *et al*. have shown the conjugate to be useful for stimulating NK1 receptor-expressing neurons in the dorsal horn. SP-CTA (Cat. #IT-39) has been tested both *in vivo* and *in vitro* and provided excellent results in both venues.

The success of this funded project would revolutionize targeted conjugate technology. The ability for researchers to study the effects of an activated or amplified neuronal system, rather than the results of a neuronal deficit through transgenics or immunotoxins, would allow for greater understanding of the neuronal function and physiology. The application of proven ATS research tools could significantly enhance the possibility of success in therapeutic applications for the treatment of neuropsychiatric and other maladies.

Caudle R.M., Mannes AJ, Keller J, Perez FM, Suckow SK, Neubert JK. Sensitization of spinal cord nociceptive neurons with a conjugate of substance P and cholera toxin. *BMC Neurosci*, 8:30 (2007).



SP-CTA (10 μg) injected intracisternally into rats via a percutaneous puncture under isoflurane anesthesia. 1h later animals were euthanized and sections (20 μm) of the brain stem and cervical spinal cord prepared for immunohistochemistry. Immunofluorescence co-labeling for the NK1 receptor (Green) and for the A subunit of cholera toxin (Red) was performed. The cholera toxin subunit was found only in neurons co-labeled with NK1 receptor.

New Antibodies -

BDNF	Mouse Anti Human Brain-Derived Neurotrophic Factor
c-Myc	Mouse Anti Human c-Myc
CD11a	Rat Anti Mouse CD11a
CD1A	Mouse Anti Human CD1A (T6, LEU6)
CD2	Mouse Anti Human CD2 (T11, LFA-2)
CD20	Recombinant Anti Human CD20 Antibody
CD3	Mouse Anti Human CD3
CD4	Mouse Anti Human CD4
CD5	Mouse Anti Human CD5
CD62E	Mouse Anti Human E-Selectin
CD8	Mouse Anti Human CD8
CD80	Rat Anti Mouse CD80
EGF	Mouse Anti Human Epidermal Growth Factor
EPO	Mouse Anti Human Erythropoietin
GMCSF	Mouse Anti Human Granulocyte Macrophage-Colony Stimulating Factor
IFN-a Neut	Mouse Anti Human Interferon-alpha Neutralizing
IFN-b	Mouse Anti Human Interferon-beta
IFN-g	Mouse Anti Human Interferon-gamma
IL-10	Mouse Anti Human Interleukin-10
IL-15	Mouse Anti Human Interleukin-15
IL-2	Mouse Anti Human Interleukin-2
IL-2r	Mouse Anti Human Interleukin-2 receptor
IL-3	Mouse Anti Human Interleukin-3
IL-4	Mouse Anti Human Interleukin-4
IL-6	Mouse Anti Human Interleukin-6
IL-7	Mouse Anti Human Interleukin-7
IL-8	Mouse Anti Human Interleukin-8
Leptin	Mouse Anti Human Leptin
Myc	Mouse Anti Myc
NT-4	Mouse Anti Human Neurotrophin-4
p53	Recombinant Anti p53 scFv (Cat. #AB-301)
TGF-beta	Mouse Anti Human Transforming Growth Factor-beta
TNF-a	Mouse Anti Human Tumor Necrosis Factor-alpha
VEGF	Mouse Anti Human Vascular Endothelial Growth Factor

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http://www.atsbio.com/catalog/new-abs.html