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Symposium FA-3  
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## **Recent Discoveries in Vasopressin Neurobiology and Aggressive Behavior**

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Vasopressin and related peptides comprise a phylogenetically old super family of chemical signals in both vertebrates and invertebrates. The conservation and dispersion of vasopressin signaling systems across the animal kingdom attests to their functional significance in evolution. Indeed, they are involved in the physiology of fluid balance, carbohydrate metabolism, thermoregulation, immunity and reproduction. In addition, vasopressin peptides evolved to play an important role in the regulation of social behaviors. This symposium focuses on the role of vasopressin in the regulation of offensive aggression with an eye toward understanding the etiology and pathophysiology of inappropriate aggressive behavior and its treatment.

Vasopressin facilitates aggression by binding to the V1A receptor. The VP system, i.e. peptide expression, release and binding, is highly plastic as reported in numerous studies showing that androgenic hormone levels, drugs of abuse, stressful environments and maternal care can alter VP neurotransmission and aggressive behavior. This neuroplasticity will be addressed in two presentations: one discussing the impact of social and environmental conditions on V1A receptor binding and the second on the effects of anabolic steroids and cocaine exposure during adolescence on vasopressin expression and release. Until recently, all efforts to block the V1A receptor have been limited to antagonists with peptidic structures necessitating their direct injection into the brain to achieve any biological effect. In a third presentation, work will be presented on a novel, high affinity, V1A receptor antagonist that is orally active, readily passes the blood-brain barrier and selectively reduces offensive aggression without altering other behaviors. In a final presentation, functional magnetic resonance imaging will be introduced as a new, non-invasive technology for studying the neurocircuitry and neurochemical control of vasopressin facilitated aggression.