

## 4<sup>th</sup> International Conference and Exhibition on **Addiction Research & Therapy**

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### **New strategies to study alcoholism by genetic and epigenetic analysis**

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**A**lcoholism is an etiologically and clinically heterogeneous disorder in which compulsive alcohol seeking and use represent core symptoms. Exposure to alcohol is a necessary precondition, but environment and heritability factors can also play a dramatic role in controlling individual vulnerability to develop alcohol abuse. Increasing evidence shows that the endogenous opioid system (EOS) is implicated in the development and maintenance of alcoholism, but molecular mechanisms underlying ethanol-induced adaptive transformations in the EOS are not sufficiently well understood. In this study we attempted to investigate the association between alcoholism and genetic and epigenetic regulation of the opioid peptide precursor prodynorphin (PDYN) gene in peripheral blood mononuclear cells (PBMCs). TaqMan Single Nucleotide Polymorphism (SNP) Genotyping Assays (Life Technologies) were used for genotyping PDYN SNPs in Swedish patients with DSM-IV diagnosis of alcohol dependence. Methylation analysis was conducted using Pyrosequencing (Qiagen) in a subset of our sample and matched non-alcoholic controls. We have observed the association of alcohol-dependence with PDYN rs2281285, just in the females, and rs2235751 variants. The methylation analysis revealed increased in DNA methylation at PDYN gene promoter in alcoholics when compared to healthy controls. Moreover, we have observed that the presence of the minor allele in rs2281285 and rs2235751 was linked with a reduced methylation of PDYN gene promoter. Our findings suggest a complex relationship between genetic and epigenetic markers at PDYN gene, which may enhance or mask a possible predisposition effect on the risk for alcoholism. Further research is needed to investigate the nature of the complex genetic and epigenetic interactions and their relevance for individual differences in susceptibility to alcohol dependence and selection of treatment strategies.

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### **Criminal justice realignment: Addiction and rehabilitation in the 21<sup>st</sup> century**

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**T**he war on drugs has been upended in California with the Supreme Court holding of *Brown vs. Plata* in 2011. The historic decision, the initiation of the Affordable Care Act, and recent voter passing of Proposition 47 that reduces felonies to misdemeanors has created all eyes on California. An alert was created to determine the possible impact of sentence reform in the country. Sentence reform is a national consideration. Even President Obama made history as the first President ever to raise the issue of sentence reform at the last State of the Union address. California's shift on treatment policies regarding substance abuse and mental health has influenced service delivery alternatives among the formerly incarcerated. As individuals are released back into the community, challenges are faced on multiple levels that include treatment options, public empathy, community safety and consequences of exposure to complex trauma during incarceration. Research will need to be explored to identify treatment approaches that are best suitable for this population to help train clinicians to identify pre-incarceration versus post incarceration cognitive distortions and the ability to identify "Scarface syndrome" pretentiousness. Understanding the process of arrest, booking, jail politics, gang intimidation, defeat and surrender, conduct vs. anti-social disorder, behind the wall rehabilitation, failed jail discharge plans, the facing of environmental stressors, and the impact of stigma and perception is more crucial in the 21<sup>st</sup> century than in previous years. In addition treatment cultures private and public will be impacted.

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