

## **Role of DJ1 gene in cocaine addiction and HIV-associated cognitive impairment**

Jesus Hernandez and Upal Roy\*

Department of Health and Biomedical Sciences, University of Texas Rio Grande Valley,  
Brownsville, Texas, USA. \*Presenter.

HIV-associated cognitive impairment (HAND) has been recognized as a consequence of Human Immunodeficiency Virus (HIV) infection in the brain even in Combined Antiretroviral Therapy (ART) treated patients. The pathology of the HAND gets more complicated with the patients with the substance of abuse. One of the substances of abuse that often found concurrently with HIV infection is cocaine. Cocaine addiction and HIV-1 infection have directly or indirectly targeted the brain's reward system by flooding the brain with dopamine (DA). DA is a neurotransmitter that regulates the overall health of dopaminergic neurons (DAN). HIV-1 infection or cocaine addiction can cause potential damage to these neurons and that can accelerate the progression of HAND. Recent studies have suggested multiple genetic influences involved in the pathology of HAND but only a fraction of the entire genetic risk has been investigated so far. In this regard, the role of DJ1 protein in regulating DA transmission and oxidative stress will be worth investigating in HIV infected microenvironment exposed to cocaine. DJ-1, a gene linked to autosomal recessive early-onset Parkinson's disease (PD), is a multifunctional gene shown to be involved in DA neurotransmission and neuronal protection by regulating the oxidative stress of DAN. It has been observed that increase oxidative stress and changes in DA level in neurons are also hallmark of the HAND, however role of DJ1 in HAND pathology has not been investigated. Being a very abundant protein in the blood and the brain, DJ1 could be a potential marker for early detection of HAND in HIV infected and cocaine-addicted patients.