J Biotechnol Biomater 2015, 5:6
http://dx.doi.org/10.4172/2155-952X.C1.044

OMICS International
conferenceseries.com

6th World Congress on
Biotechnology
October 05-07, 2015 New Delhi, India

Unraveling the Alzheimer's neuronal microcircuitory through pseudotyped Vesicular stomatitis virus

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Microcircuitory of neocortex in context of neurodegenerative diseases is vaguely defined. Regarded as an issue of public health, neural degeneration in Alzheimer's is still feebly understood ascribing to its profoundly complex microcircuitory. Several attempts have been made to decipher various microneuronal pathways with the help of viral tracers like adeno-associated virus, herpes simplex virus and many more, one such virus being VSV, owing to its relatively low virulence in humans with rapid replication cycle and ease of delivery. We will hypothesize the use of VSV to study neural degeneration, elucidate the microcircuitory involved and the minute receptor expression polymorphisms associated with cortical neurons in case of susceptible cohorts for early and differential diagnosis. Pseudotyping VSV and substituting its G protein with that of a laboratory "fixed" strain of rabies virus, namely, CVS II (Ugolini, 2011) and introducing luciferase tagging for efficient tracing of infected neurons will enable it to travel transsynaptically in a retrograde fashion across cortical neurons. The pseudotyped VSV may target and infect neurons actively displaying the nACh receptor, whose surface expression tends to decrease with progression of Alzheimer's in affected cohorts. Metabolic viability of infected neurons could be maintained by manipulating the pseudotyped VSV's polymerases to decrease the rate of its replication in a highly regulated time frame. Decrease in the nAChR expression may help us to determine the extent of viral tracer infection in targeted neurons as well as establish a relation between receptor expression and disease progression to determine Alzheimer's mircocuitory pathway.

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Screening of L-asparaginase producing microorganisms using different dyes

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L-asparaginase is an enzyme of clinical significance and highly applicable in the food industry with huge market demand. It is mainly used in the treatment of acute lymphoblastic leukemia. Till date, the major sources for commercial production of L-asparaginase are *Escherichia coli* and *Erwinia carotovora* bacteria. But, due to low yield and intracellular production, the problem arises in the extraction and purification of this enzyme. Side effects like thrombosis, pancreatitis, hepatotoxicity arises during course of treatment is also associated with it. To overcome these problems, industry is in constant search of better L-asparaginase producer strains with minimum toxicity. Rapid screening of L-asparaginase producing microorganisms is typically done on phenol red containing medium and identified by the change in color from yellow to pink and pink zone formation in the plate. The zone obtained is not very clear and sharp serves the basis of exploring other dyes for better contrasting zones and easy screening. In the present study different dyes like methyl red, bromocresol green, phenophthelin, bromocresol purple are investigated to detect the L-asparaginase producer strains with better resolution of zone formed compared to phenol red. These dyes could be used as an alternative and prove more accurate and sensitive to detect the presence of extracellular L-asparaginase produced.

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