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REVAMPING OPTOGENETICS TOWARDS BRAIN METS OR CANCER THERAPY: A POSSIBLE REVOLUTIONARY BREAKTHROUGH MODEL

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Recent emergence of optogenetic tools as genetically encoded switches that allow neurons to be turned on or off with bursts of light promises to revolutionize the study of how neurons operate singly and as members of larger networks. These optogenetic tools also hold clinical promise, with the potential for modulating activity of brain circuits involved in neurological disorders or restoring vision loss. A modification of the original method of optogenetics integrated with anti-neoplastic molecules is proposed as a promising avenue towards treating hard-to-reach cancers like brain cancer. The key drivers along with the revolutionary personalized medicine strategy are used to deduce key molecular targets for better precision and accurate targetable regions. Genes coding for these light-sensitive proteins are delivered to the target cells by transfection, viral transduction or the creation of transgenic animal lines. The light activatable protein encoding gene to activate the worked out target channel is conjugated with an (through precision medicine, favourably) anti-neoplastic expressing gene characteristic killer to the brain tumor cell\brain Mets cell identified through precision medicine to form ANCLAP (Anti-Neoplastic Light-activatable Protein) which is the game-changer with its activity being sensitive to light. In this oral presentation, the author details on this process which is a first-of-its-kind in the world and will open up a new avenue for development of newer class of therapeutics over-riding the current limitations in treating complex cases.

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