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ProMIS Neurosciences creates novel intrabodies for ALS, frontotemporal dementia and other neurodegenerative diseases

Selectivity for toxic TDP-43 makes new intrabodies ideal candidates for gene therapy vectors

TORONTO and CAMBRIDGE, Mass., April 30, 2020 (GLOBE NEWSWIRE) -- ProMIS Neurosciences, Inc. (TSX: PMN) (OTCQB: ARFXF), a biotechnology company focused on the discovery and development of antibody therapeutics targeting toxic oligomers implicated in the development of neurodegenerative diseases, has generated intrabodies highly selective for misfolded forms of TAR DNA-binding protein 43 (TDP-43) implicated in amyotrophic lateral sclerosis (ALS), frontotemporal dementia (FTD) and several other neurologic disorders. Early data support the use of these intrabodies within gene therapy vectors based on their selectivity and ability to promote degradation of toxic species of TDP-43 while preserving normal forms of the protein. Normal TDP-43 is essential for proper cell function.

Intrabodies are antibody therapies intended to work inside a cell, blocking toxic proteins, accelerating their degradation and preventing their spread to healthy cells. Intrabodies require a vector to directly enter the affected cells of the central nervous system, and published data show the use of gene therapy vectors is a promising strategy to both neutralize and stop toxicity at its source. ProMIS has generated several highly selective intrabodies that bind to toxic TDP-43 protein aggregates within cells and promote their degradation without affecting normal TDP-43. These early data represent a promising first step in the eventual development of a safe and effective therapy for ALS, FTD and other TDP-43-driven disorders.

“The results obtained with ProMIS’ TDP-43 intrabodies show—once again—the strength and versatility of our drug discovery and development platform, which identifies novel binding targets on complex protein structures and allows us to create antibody and now intrabody candidates that target those specific sites,” said Dr. Neil Cashman, ProMIS Neurosciences’ Co-Founder and Chief Science Officer. “We can apply our platform to the biology of any misfolded protein to develop antibody and intrabody candidates that are highly selective for only toxic species so as to preserve normal protein function. We’ve used our platform to produce novel antibody candidates for several neurodegenerative diseases, including Parkinson’s and Alzheimer’s. We’re currently also helping the COVID-19 effort by using our platform to identify unique binding sites on the protein halo of the virus which can be used for accurate testing of virus-reactive antibodies in the blood.”

Generation of the new intrabodies closely follows publication of an abstract on ProMIS' TDP-43 antibody candidates in Neurology, the journal of the American Academy of Neurology. In the abstract, Dr. Cashman reveals a family of antibodies reactive with a defined region of TDP-43 that becomes exposed on misfolded/aggregated, disease-associated TDP-43 but not on the properly folded healthy protein. The new intrabodies embody these unique attributes.

To learn more about intrabodies and how this exciting new approach maybe helpful for patients with ALS and other neurodegenerative diseases, listen to the podcast, Saving Minds, at iTunes or Spotify.

About ProMIS Neurosciences

ProMIS Neurosciences, Inc. is a development stage biotechnology company whose unique core technology is the ability to rationally predict the site and shape (conformation) of novel targets known as Disease Specific Epitopes (DSEs) on the molecular surface of proteins. In neurodegenerative diseases, such as Alzheimer's, ALS and Parkinson's disease, the DSE's are misfolded regions on otherwise normal proteins. In the infectious disease setting, these disease-specific epitopes represent peptide antigens that can be used as an essential component to create accurate and sensitive serological assays to detect the presence of antibodies that arise in response to a specific infection, such as COVID-19. These peptide antigens can also be used to create potential therapeutic antibodies to treat active infection, as well as serve as the basis for development of vaccines. ProMIS is headquartered in Toronto, Ontario, with offices in Cambridge, Massachusetts. ProMIS is listed on the Toronto Stock Exchange under the symbol PMN, and on the OTCQB Venture Market under the symbol ARFXF

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