Isolation and Identification of Alzheimer’s Disease-Specific Neuronal Auto-Antigens with Serum Antibodies from Alzheimer’s Disease Patients for Development of Simple, Reliable and Accurate Blood Antibody Test(s) for Alzheimer’s Disease Diagnosis, Screening and Early Detection

There are 3 key pathological features in Alzheimer’s (Alz) brain: 1) Aβ plaques, 2) tau tangles, and 3) antibody-positive diseased neuronal cells. In contrast to plaques and tangles, which are also present in normal brains and neurons, respectively, normal neurons are totally antibody negative, even in Alz brain. The presence of antibodies in diseased neurons but not in healthy neurons of Alz brain demonstrates that certain Alz-specific proteins are autoantigens and further provides the basis for isolation and identification of these Alz-specific proteins and their corresponding genes with Alz patients’ self-serum antibodies. In turn, these Alz autoantigens can be utilized as critically needed reagents to detect presence or absence of their corresponding antibodies in subjects’ sera in diagnosis of the disease. The notion that it takes over 20 years for the disease to develop for a person to develop early stage dementia symptoms indicates that Alz antibodies very likely appear in patients’ blood prior to onset of symptoms and some of the autoantigens, especially those from hippocampus, which expresses genes distinctively and is believed to be one of the first regions affected by the disease, can potentially be used in early detection and screening of the disease.

Therefore, identification and isolation of these antigenic neuronal proteins and their genes with Alz patients’ own serum antibodies, in comparison with non-Alz serum antibodies, are critical in exploration of their applications in both diagnostic and therapeutic development, and further our understanding of the disease.

BioPegasus’ proprietary and transformative lambda phage cDNA expression library technology expresses the entire repertoire of disease- or tissue-specific, for example, hippocampus proteins in a form and level allowing better accessibility and detection by Alz antibodies and at the same time solving intractable problems. These problems have been making the technology perplexingly difficult with very high failure rate.

cDNA expression library technology is straightforward and low-cost with high-throughput capacity. It is as powerful, flexible, and versatile as in principle. There is no need to have any prior knowledge of both the proteins expressed in the library and the antibodies present in patient serum; and there is no need to have highly specialized equipment and multiple disciplinary team for data analysis.

If you are interested in learning more about the technology and the related work published by Alz experts, please contact Tianlin Ma, Ph.D. at tianlinma@yahoo.com, or 215-791-1111 (c).

Dr. Ma has been making a continual effort since 2001 in seeking opportunities in implementing the proprietary and transformative lambda phage cDNA expression library technology with broad applications in therapeutic and diagnostic development and is actively seeking partners and collaborators, especially in the area of Alzheimer’s disease, which she has become very interested in since 2008.

BioPegasus is a small company registered in Pennsylvania in September, 2005 as a sole proprietor first, and later became a limited liability company (LLC) in October, 2006. It is operated by Dr. Ma, the sole member of the company.

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