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Abstract

Human Leukocyte Antigen DRB1*13:02 Protects Against Dementia

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Abstract:

Human Leukocyte Antigen (HLA) class II genes play a critical role in immune protection from foreign antigens. Recent evidence documents protective effects of the HLA DRB1*13:02 allele, in particular, against age-related brain atrophy and neural network deterioration, suggesting a possible protection against dementia. Here we utilized a genetic epidemiological approach to investigate the association of DRB1*13:02 frequency and dementia prevalence globally. Results demonstrated that the prevalence of dementia decreases exponentially with increasing frequency of DRB1*13:02, even when adjusted for the prevalence of apolipoprotein E4 allele, a known risk factor for Alzheimer's disease. This finding documents the protective effect of DRB1*13:02 on dementia prevalence. Since the function of HLA class II genes is to aid in the elimination of pathogens by enabling the production of antibodies against their antigens in specific immunity, the protective effect of DRB1*13:02 points to the presence of persistent harmful antigens as causal factors in development of dementia, antigens specific to DRB1*13:02 that could not be eliminated in its absence.

Biography:

Dr. James is the Kunin Professor in Women's Healthy Brain Aging at the University of Minnesota and Director of the Brain Resilience Initiative at the Brain Sciences Center of the Minneapolis VA Medical Center. Her research combines neuroimaging with genetic, behavioral,

and lifestyle data to comprehensively assess brain status and identify factors that promote brain health across the lifespan.

Publication of speakers:

1. James LM, Christova P, Lewis SM, Engdahl BE, Georgopoulos A, Georgopoulos AP. Protective effect of human leukocyte antigen (HLA) allele DRB1* 13: 02 on age-related brain gray matter volume reduction in healthy women. EBioMedicine 2018;29:31-37.
2. James LM, Dolan S, Leuthold AC, Engdahl BE, Georgopoulos A, Georgopoulos AP. The effects of human leukocyte antigen DRB1* 13 and apolipoprotein E on age-related variability of synchronous neural interactions in healthy women. EBioMedicine. 2018;35, 288-94.
3. James LM, Georgopoulos AP. Human leukocyte antigen as a key factor in preventing dementia and associated apolipoprotein E4 risk. [published online April 12, 2019]. Front Aging Neurosci

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