

Associations of Foxo3a and Longevity in the Long Life Family Study, New England Centenarian Study, and Ashkenazi Jewish Centenarian Study

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PRESENTATION FORMAT: 15 minute oral presentation

TOPIC/TARGET AUDIENCE: Researchers interested in aging

ABSTRACT: The association of forkhead box O3 (FOXO3A), a gene in the insulin IGF1 signaling (IIS) pathway, with survival to old age has been replicated in multiple studies of different ethnic populations. However, previous results were based on relatively younger cohorts (nonagenarians) with inconsistent definitions of longevity. The aim of this work is to replicate known associations as well as to identify new variants of FOXO3A associated with longevity in three independent studies of longevity: the Long Life Family Study (LLFS), New England Centenarian Study (NECS), and the Ashkenazi Jewish Centenarian Study (AJCS). This was a nested case-control study design, in which subjects who survived past the top 5th percentile of survival were identified as cases (521, 1030, and 308 cases in the LLFS, NECS, and AJCS, respectively). Bayesian logistic regression was performed with a random effect per family in order to account for correlation within families. Among the 16 published single nucleotide polymorphisms (SNPs), 3 SNPs replicated in the LLFS, 4 SNPs replicated in the NECS, and 2 SNPs replicated in the AJCS. 15 SNPs had the consistent directions of effects in all three cohorts. These consistent results confirms the significant associations of FOXO3A and very old age.

OBJECTIVE(S): Identify new variants of FOXO3A associated with longevity as well as replicate known associations. Evaluate the associations of FOXO3A in older populations (centenarians).

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