

MEETING ABSTRACT

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Preventive, personalized medicine at the level of key regulatory proteins: updates on activity-dependent neuroprotective protein (ADNP) as a case study

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Natural ageing, neurodegenerative diseases, acute head (brain) injury and stroke as well as mental disorders are associated with nerve cell damage and death. We have discovered activity-dependent neurotrophic factor (ADNP) that is essential for brain formation, regulating >400 important genes, including the major risk gene for Alzheimer's disease, apolipoprotein E. ADNP constitutes a part of complex essential for proper gene activity [1]. In men, the ADNP gene is mutated in autism, deregulated in terms of brain expression in schizophrenia [2] and significantly reduced in the blood of patients with neurodegenerative disease such as Alzheimer's disease [3] and multiple sclerosis. New results indicate the potential of ADNP monitoring as indicator for disease progression, paving the path to preventive treatment with ADNP replacement therapies. In this respect, the ADNP peptide derivative NAP (davunetide) has shown neuroprotection in multiple animal models of neurodegeneration (protecting against axonal transport deficits) [4] as well as in a recent schizophrenia clinical trial [5]. It is thus of major interest to further investigate ADNP as a predictive marker and ADNP replacement as a personalized, preventive, protecting therapy against neurodegeneration.

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References

1. Dresner E, Malishkevich A, Arviv C, Leibman Barak S, Alon S, Ofir R, Gothilf Y, Gozes I: Novel evolutionary-conserved role for the activity-dependent neuroprotective protein (ADNP) family that is important for erythropoiesis. *J Biol Chem* 2012, **287**:40173-40185.
2. Dresner E, Agam G, Gozes I: Activity-dependent neuroprotective protein (ADNP) expression level is correlated with the expression of the sister protein ADNP2: deregulation in schizophrenia. *Eur Neuropsychopharmacol* 2011, **21**:355-361.
3. Yang MH, Yang YH, Lu CY, Jong SB, Chen LJ, Lin YF, Wu SJ, Chu PY, Chung TW, Tyan YC: Activity-dependent neuroprotector homeobox protein: A candidate protein identified in serum as diagnostic biomarker for Alzheimer's disease. *J Proteomics* 2012, **75**:3617-3629.
4. Jouroukhin Y, Ostritsky R, Assaf Y, Pelled G, Giladi E, Gozes I: NAP (davunetide) modifies disease progression in a mouse model of severe neurodegeneration: protection against impairments in axonal transportation. *Neurobiol Dis* 2013, **56**:79-94.
5. Jarskog LF, Dong Z, Kangarlu A, Colibazzi T, Girgis RR, Kegeles LS, Barch DM, Buchanan RW, Csernansky JG, Goff DC, Harms MP, Javitt DC, Keefe RS, McEvoy JP, McMahon RP, Marder SR, Peterson BS, Lieberman JA: Effects of davenetide on N-acetylaspartate and choline in dorsolateral prefrontal cortex in patients with schizophrenia. *Neuropsychopharmacology* 2013, **38**:1245-1252.

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