

Supplementary material for
**Familial Coaggregation of Alzheimer's Disease and Parkinson's Disease:
 Systematic Review and Meta-Analysis**
 by Feldman AL, *et al.*

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Supplementary table: Reasons for excluding studies selected after screening.

Name	Year	Reason for exclusion
Reed [1]	1975	Study of ALS and parkinsonism-dementia complex in Guam.
Heston[2]	1980	Study of 12 PDD cases and their FDR, no controls.
Plato [3]	1986	Studies ALS and parkinsonism-dementia complex in Guam.
Farrer [4]	1989	Study compared risk of AD among FDR of AD cases vs. FDR of PD cases, no control group.
Grufferman [5]	1989	Study of overlapping familial risk between Multiple Myeloma and PD or AD.
Marder [6]	1990	Study of risk of association between co-morbid dementia in PD and family history of PD.
Kokmen [7]	1991	Not original article.
Mayeux [8]	1991	Study of familial risk within AD. PD is discussed but family history was not worked up.
Majoor-Krakauer [9]	1994	Study of overlapping familial risk between ALS and PD or AD.
Denson [10]	1997	Study of one family.
Fahim [11]	1998	Study of overlapping familial risk between depression and PD or AD.
Cruz [12]	1999	Study of overlapping familial risk between ALS and PD or AD.
Jacobs [13]	2000	Not original article.
Plato [14]	2002	Studies ALS and parkinsonism-dementia complex in Guam.
Terry [15]	2003	Study reported risk of AD and PD in offspring if centenarians vs. controls.
Harding [16]	2004	Study of overlapping familial risk between Cortical Lewy body disease and PD.
Tsuang [17]	2004	Review of reported kindreds with DLB.
Kang [18]	2005	Reports family history of AD among PD cases, no controls.
Paleacu [19]	2005	Study of association between hallucinations in PD and family history of AD.
Kurz [20]	2006	Study of association between co-morbid dementia in PD and family history of PD.
Donker Kaat [21]	2009	Study of overlapping familial risk between dementia and PSP.
Fallis [22]	2009	Study of overlapping familial risk between ALS and PD or AD.
Farina [23]	2009	Study of overlapping familial risk between DLB and parkinsonism, no control group.
Vidal [24]	2010	Study of overlapping familial risk between dementia and PSP or MSA.
Huisman [25]	2011	Study of overlapping familial risk between ALS and PD or AD.
Nervi [26]	2011	Study compared risk of DLB in FDR of DLB cases and FDR of AD cases.
Cristalli [27]	2012	Report of several biomarkers but no disease status frequencies in FDR of AD, PD cases and controls.

AD: Alzheimer's disease, PD: Parkinson's disease, DLB: Dementia with Lewy bodies, ALS: Amyotrophic lateral sclerosis, FDR: First-degree relatives, PSP: Progressive supranuclear palsy, MSA: Multiple systems atrophy.

REFERENCES FOR SUPPLEMENTARY TABLE

- 1 Reed DM, Torres JM, Brody JA: Amyotrophic lateral sclerosis and parkinsonism-dementia on guam, 1945-1972. II. Familial and genetic studies. *Am J Epidemiol* 1975;101:302-310.
- 2 Heston LL: Dementia associated with parkinson's disease: A genetic study. *J Neurol Neurosurg Psychiatry* 1980;43:846-848.
- 3 Plato CC, Garruto RM, Fox KM, Gajdusek DC: Amyotrophic lateral sclerosis and parkinsonism-dementia on guam: A 25-year prospective case-control study. *Am J Epidemiol* 1986;124:643-656.
- 4 Farrer LA, O'Sullivan DM, Cupples LA, Growdon JH, Myers RH: Assessment of genetic risk for alzheimer's disease among first-degree relatives. *Annals of neurology* 1989;25:485-493.
- 5 Grufferman S, Cohen HJ, Delzell ES, Morrison MC, Schold SC, Jr., Moore JO: Familial aggregation of multiple myeloma and central nervous system diseases. *J Am Geriatr Soc* 1989;37:303-309.
- 6 Marder K, Flood P, Cote L, Mayeux R: A pilot study of risk factors for dementia in parkinson's disease. *Mov Disord* 1990;5:156-161.
- 7 Kokmen E: The eurodem collaborative re-analysis of case-control studies of alzheimer's disease: Implications for clinical research and practice. *Int J Epidemiol* 1991;20 Suppl 2:S65-67.
- 8 Mayeux R, Sano M, Chen J, Tatemichi T, Stern Y: Risk of dementia in first-degree relatives of patients with alzheimer's disease and related disorders. *Arch Neurol* 1991;48:269-273.
- 9 Majoor-Krakauer D, Ottman R, Johnson WG, Rowland LP: Familial aggregation of amyotrophic lateral sclerosis, dementia, and parkinson's disease: Evidence of shared genetic susceptibility. *Neurology* 1994;44:1872-1877.
- 10 Denson MA, Wszolek ZK, Pfeiffer RF, Wszolek EK, Paschall TM, McComb RD: Familial parkinsonism, dementia, and lewy body disease: Study of family g. *Ann Neurol* 1997;42:638-643.
- 11 Fahim S, van Duijn CM, Baker FM, Launer L, Breteler MM, Schudel WJ, Hofman A: A study of familial aggregation of depression, dementia and parkinson's disease. *Eur J Epidemiol* 1998;14:233-238.
- 12 Cruz DC, Nelson LM, McGuire V, Longstreth WT, Jr.: Physical trauma and family history of neurodegenerative diseases in amyotrophic lateral sclerosis: A population-based case-control study. *Neuroepidemiology* 1999;18:101-110.
- 13 Jacobs H, Viergge P: Risk of alzheimer's disease in relatives of parkinson's disease patients with and without dementia. *Neurology* 2000;54:1208-1209.
- 14 Plato CC, Galasko D, Garruto RM, Plato M, Gamst A, Craig UK, Torres JM, Wiederholt W: Als and pdc of guam: Forty-year follow-up. *Neurology* 2002;58:765-773.
- 15 Terry DF, Wilcox M, McCormick MA, Lawler E, Perls TT: Cardiovascular advantages among the offspring of centenarians. *J Gerontol A Biol Sci Med Sci* 2003;58:M425-431.
- 16 Harding AJ, Das A, Kril JJ, Brooks WS, Duffy D, Halliday GM: Identification of families with cortical lewy body disease. *Am J Med Genet B Neuropsychiatr Genet* 2004;128B:118-122.
- 17 Tsuang DW, DiGiacomo L, Bird TD: Familial occurrence of dementia with lewy bodies. *Am J Geriatr Psychiatry* 2004;12:179-188.
- 18 Kang GA, Bronstein JM, Masterman DL, Redelings M, Crum JA, Ritz B: Clinical characteristics in early parkinson's disease in a central california population-based study. *Mov Disord* 2005;20:1133-1142.
- 19 Paleacu D, Schechtman E, Inzelberg R: Association between family history of dementia and hallucinations in parkinson disease. *Neurology* 2005;64:1712-1715.
- 20 Kurz MW, Larsen JP, Kvaloy JT, Aarsland D: Associations between family history of parkinson's disease and dementia and risk of dementia in parkinson's disease: A community-based, longitudinal study. *Mov Disord* 2006;21:2170-2174.

- 21 Donker Kaat L, Boon AJ, Azmani A, Kamphorst W, Breteler MM, Anar B, Heutink P, van Swieten JC: Familial aggregation of parkinsonism in progressive supranuclear palsy. *Neurology* 2009;73:98-105.
- 22 Fallis BA, Hardiman O: Aggregation of neurodegenerative disease in als kindreds. *Amyotroph Lateral Scler* 2009;10:95-98.
- 23 Farina E, Baglio F, Caffarra P, Magnani G, Scarpini E, Appollonio I, Bascelli C, Cheldi A, Nemni R, Franceschi M, Messa G, Mantovani F, Bellotti M, Olivotto F, Alberoni M, Isella V, Regazzoni R, Schiatti E, Vismara C, Falautano M, Barbieri A, Restelli I, Fetoni V, Donato M, Zuffi M, Castiglioni S: Frequency and clinical features of lewy body dementia in italian memory clinics. *Acta Biomed* 2009;80:57-64.
- 24 Vidal JS, Vidailhet M, Derkinderen P, Tzourio C, Alperovitch A: Familial aggregation in atypical parkinson's disease: A case control study in multiple system atrophy and progressive supranuclear palsy. *J Neurol* 2010;257:1388-1393.
- 25 Huisman MH, de Jong SW, Verwijs MC, Schelhaas HJ, van der Kooi AJ, de Visser M, Veldink JH, van den Berg LH: Family history of neurodegenerative and vascular diseases in als: A population-based study. *Neurology* 2011;77:1363-1369.
- 26 Nervi A, Reitz C, Tang MX, Santana V, Piriz A, Reyes D, Lantigua R, Medrano M, Jimenez-Velazquez IZ, Lee JH, Mayeux R: Familial aggregation of dementia with lewy bodies. *Arch Neurol* 2011;68:90-93.
- 27 Cristalli DO, Arnal N, Marra FA, de Alaniz MJ, Marra CA: Peripheral markers in neurodegenerative patients and their first-degree relatives. *J Neurol Sci* 2012;314:48-56.

Supplementary figure: Funnel plot with pseudo 95% confidence limits for all studies of risk of Alzheimer's disease associated with family history of Parkinson's disease. The vertical solid black line represents the meta-estimate for all reconstructed cohort studies and case-control studies combined (1.20, 95% CI: 1.03-1.41). $P=0.244$ for funnel plot asymmetry (Egger's test). The blue circles (○) represent the reconstructed cohort studies and the red triangles (▲) represent the case-control studies. SE: Standard error.

