



Anti-DNER (anti-PCA-Tr) autoantibodies

Akronym	DNER (Delta/Notch-like epidermal growth factor-related receptor)
Synonyms	Purkinje cells (Tr)-autoantibodies (PCA-Tr)
Literature	<p>Bernal F, Shams'ili S, Rojas I, Sanchez-Valle R, Saiz A, Dalmau J, Honnorat J, Sillevs Smitt P, Graus F: Anti-Tr antibodies as markers of paraneoplastic cerebellar degeneration and Hodgkin's disease. <i>Neurology</i> (2003); 60(2): 230 - 234 (PMID: 12552036).</p> <p>Briani C, Vitaliani R, Grisold W, Honnorat J, Graus F, Antoine JC, Bertolini G, Giometto B; PNS Euronetwork: Spectrum of paraneoplastic disease associated with lymphoma. <i>Neurology</i> (2011); 76(8): 705 - 710 (PMID: 21339498).</p> <p>Chillakuri CR, Sheppard D, Lea SM, Handford PA: Notch receptor-ligand binding and activation: insights from molecular studies. <i>Semin Cell Dev Biol</i> (2012);23(4): 421 - 428 (PMID: 22326375).</p> <p>Dahm L, Ott C, Steiner J, Stepniak B, Teegen B, Saschenbrecker S, Hammer C, Borowski K, Begemann M, Lemke S, Rentzsch K, Probst C, Martens H, Wienands J, Spalletta G, Weissenborn K, Stöcker W, Ehrenreich H: Seroprevalence of autoantibodies against brain antigens in health and disease. <i>Ann Neurol</i> (2014); 76(1): 82 - 94 (PMID: 24853231).</p> <p>Eiraku M, Hirata Y, Takeshima H, Hirano T, Kengaku M: Delta/notch-like epidermal growth factor (EGF)-related receptor, a novel EGF-like repeat-containing protein targeted to dendrites of developing and adult central nervous system neurons. <i>J Biol Chem</i> (2002); 277(28): 25.400 - 25.407 (PMID: 11950833).</p> <p>Eiraku M, Tohgo A, Ono K, Kaneko M, Fujishima K, Hirano T, Kengaku M: DNER acts as a neuron-specific Notch ligand during Bergmann glial development. <i>Nat Neurosci</i> (2005); 8(7): 873 - 880 (PMID: 15965470).</p> <p>de Graaff E, Maat P, Hulsenboom E, van den Berg R, van den Bent M, Demmers J, Lugtenburg PJ, Hoogenraad CC, Sillevs Smitt P: Identification of delta/notch-like epidermal growth factor-related receptor as the Tr antigen in paraneoplastic cerebellar degeneration. <i>Ann Neurol</i> (2012); 71(6): 815 - 824 (PMID: 22447725).</p> <p>Graus F, Dalmau J, Valldeoriola F, Ferrer I, Reñe R, Marin C, Vecht CJ, Arbizu T, Targa C, Moll JW: Immunological characterization of a neuronal antibody (anti-Tr) associated with paraneoplastic cerebellar degeneration and Hodgkin's disease. <i>J Neuroimmunol</i> (1997); 74(1-2): 55 - 61 (PMID: 9119979).</p> <p>Greene M, Lai Y, Baella N, Dalmau J, Lancaster E: Antibodies to Delta/notch-like epidermal growth factor-related receptor in patients with anti-Tr, paraneoplastic cerebellar degeneration, and Hodgkin lymphoma. <i>JAMA Neurol</i> (2014); 71(8): 1.003 - 1.008 (PMID: 249358749).</p> <p>Hammack J, Kotanides H, Rosenblum MK, Posner JB. Paraneoplastic cerebellar degeneration. II. Clinical and immunologic findings in 21 patients with Hodgkin's disease. <i>Neurology</i> (1992); 42(10): 1.938 - 1.943 (PMID: 1407576).</p> <p>Hanson RL, Muller YL, Kobes S, Guo T, Bian L, Ossowski V, Wiedrich K, Sutherland J, Wiedrich C, Mahkee D, Huang K, Abdussamad M, Traurig M, Weil EJ, Nelson RG, Bennett PH, Knowler WC, Bogardus C, Baier LJ: A genome-wide association study in American Indians implicates DNER as a susceptibility locus for type 2 diabetes. <i>Diabetes</i> (2014); 63(1): 369 - 376 PMID: 24101674).</p> <p>Honnorat J: Therapeutic approaches in antibody-associated central nervous system pathologies. <i>Rev Neurol</i> (2014); 170(10): 587 - 594 (PMID: 25189679).</p>



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Kopan R, Ilagan MX: The canonical Notch signaling pathway: unfolding the activation mechanism. *Cell* (2009); 137(2): 216 - 233 (PMID: [19379690](#)).

Probst C, Komorowski L, de Graaff E, van Coevorden-Hameete M, Rogemond V, Honnorat J, Sabeter L, Graus F, Jarius S, Voltz R, Wildemann B, Franciotta D, Blöcker IM, Schlumberger W, Stöcker W, Silveis Smitt PA: Standardized test for anti-Tr/DNER in patients with paraneoplastic cerebellar degeneration. *Neurol Neuroimmunol Neuroinflamm* (2015); 2(2):e68 (PMID: [25745634](#)).

Richter HW, Wiele G: Neurologische Aspekte des Morbus Hodgkin. In: Verhandlungen der Deutschen Gesellschaft für innere Medizin. Hrsg. Professor Dr. B. Schlegel, Wiesbaden. 82. Kongress (1976): pp 657-659.

Saito SY, Takeshima H: DNER as key molecule for cerebellar maturation. *Cerebellum* (2006); 5(3): 227 - 231 (PMID: [16997755](#)).

Tohgo A, Eiraku M, Miyazaki T, Miura E, Kawaguchi SY, Nishi M, Watanabe M, Hirano T, Kengaku M, Takeshima H: Impaired cerebellar functions in mutant mice lacking DNER. *Mol Cell Neurosci* (2006); 31(2): 326 - 333 (PMID: [16298139](#)).

Trotter JL, Hendin BA, Osterland CK: Cerebellar degeneration with Hodgkin disease. An immunological study. *Arch Neurol* (1976); 33(9): 660 - 661 (PMID: [962649](#)).

Yamada K, Watanabe M: Cytodifferentiation of Bergmann glia and its relationship with Purkinje cells. *Anat Sci Int* (2002); 77(2): 94 - 108 (PMID: [12418089](#)).