
prof. MUDr. Tomáš Hájek, Ph.D.



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<https://www.researchgate.net/profile/Tomas-Hajek-3>
<https://www.nudz.cz/>

Topic title

Brain imaging studies in bipolar disorders and schizophrenia

Description of scientific activity

I received M.D. (1999) and Ph.D. in neuroscience (2003) from Charles University, Prague, trained in psychiatry and did a clinical research fellowship in mood disorders at Dalhousie University, Halifax, Canada. I am currently a professor of Psychiatry at Dalhousie University and Senior Researcher at National Institute of Mental Health, Klecany. My research has focused on studying clinical variables associated with brain changes in bipolar disorders (BD), including genetic risk, exposure to corticosteroids, treatment with Li, illness burden and most recently diabetes/prediabetes/obesity. The goal is to differentiate which of the brain changes found in BD are primary, i.e. associated with genetic risk and which are secondary, i.e. related to the presence of the illness, treatment or comorbid conditions. Whereas the primary changes could aid in early diagnosis, the secondary changes may perhaps be prevented. Through application of machine learning, we have also been testing the diagnostic use of magnetic resonance imaging of the brain in psychiatry. This effort has generated >115 publication, including manuscripts in top journals, such as JAMA Psychiatry, Biological Psychiatry, Molecular Psychiatry, Neuropsychopharmacology, >4300 citations and h index of 33 according to Scopus. My research has attracted over CAD \$5 million in research funding. I established and lead the Neuroimaging research program at Dalhousie Department of Psychiatry, where we have scanned over 400 participants for various studies. I have led several multisite international neuroimaging studies, with collaborators in Germany, Czech Republic, Austria, Poland. I am also a member of the ENIGMA-BD and ENIGMA-Schizophrenia Working groups.

For more details, please see: <https://publons.com/researcher/1199739/tomas-hajek>

Selected publications

McWhinney S, Kolenic M, Franke K, Fialova M, Knytl P, Matejka M, Spaniel F, Hajek T. Obesity as a Risk Factor for Accelerated Brain Ageing in First-Episode Psychosis-A Longitudinal Study. Schizophr Bull. 2021 Oct 21;47(6):1772-1781. doi: 10.1093/schbul/sbab064. PMID: 34080013; PMCID: PMC8530396.

McWhinney SR, Abé C, Alda M, Benedetti F, B?en E, Del Mar Bonnin C, Borgers T, Brosch K, Canales-Rodríguez EJ, Cannon DM, Dannlowski U, Díaz-Zuluaga AM, Elvs?shagen T, Eyler LT, Fullerton JM, Goikolea JM, Goltermann J, Grotegerd D, Haarman BCM, Hahn T, Howells FM, Ingvar M, Kircher TTJ, Krug A, Kuplicki RT, Landén M, Lemke H, Liberg B, Lopez-Jaramillo C, Malt UF, Martyn FM, Mazza E, McDonald C, McPhilemy G, Meier S, Meinert S, Meller T, Melloni EMT, Mitchell PB, Nabulsi L, Nenadic I, Opel N, Ophoff RA, Overs BJ, Pfarr JK, Pineda-Zapata JA, Pomarol-Clotet E, Radu? J, Repple J, Richter M, Ringwald KG, Roberts G, Salvador, R, Savitz J, Schmitt S, Schofield PR, Sim K, Stein DJ, Stein F, Temmingh HS, Thiel K, van Haren NEM, Gestel HV, Vargas C, Vieta E, Vreeker A, Waltemate L, Yatham LN, Ching CRK, Andreassen O, Thompson PM, Hajek T. Association between body mass index and subcortical brain volumes in bipolar disorders-ENIGMA study in 2735 individuals. Mol Psychiatry. 2021 Nov;26(11):6806-6819. doi: 10.1038/s41380-021-01098-x. Epub 2021 Apr 16. PMID: 33863996.

Nunes A, Schnack HG, Ching CRK, Agartz I, Akudjedu TN, Alda M, Aln?s D, Alonso-Lana S, Bauer J, Baune BT, B?en E, Bonnin CDM, Busatto GF, Canales- Rodríguez EJ, Cannon DM, Caseras X, Chaim-Avancini TM, Dannlowski U, Díaz-Zuluaga AM, Dietsche B, Doan NT, Duchesnay E, Elvs?shagen T, Emden D, Eyler LT, Fatjó-Vilas M, Favre P, Foley SF,

Fullerton JM, Glahn DC, Goikolea JM, Grotegerd D, Hahn T, Henry C, Hibar DP, Houenou J, Howells FM, Jahanshad N, Kaufmann T, Kenney J, Kircher TTJ, Krug A, Lagerberg TV, Lenroot RK, López-Jaramillo C, Machado-Vieira R, Malt UF, McDonald C, Mitchell PB, Mwangi B, Nabulsi L, Opel N, Overs BJ, Pineda-Zapata JA, Pomarol-Clotet E, Redlich R, Roberts G, Rosa PG, Salvador R, Satterthwaite TD, Soares JC, Stein DJ, Temmingh HS, Trappenberg T, Uhlmann A, van Haren NEM, Vieta E, Westlye LT, Wolf DH, Yüksel D, Zanetti MV, Andreassen OA, Thompson PM, Hajek T. Using structural MRI to identify bipolar disorders - 13 site machine learning study in 3020 individuals from the ENIGMA Bipolar Disorders Working Group. *Mol Psychiatry*. 2020 Sep;25(9):2130-2143. doi: 10.1038/s41380-018-0228-9. Epub 2018 Aug 31. PMID: 30171211; PMCID: PMC7473838.

Selected or ongoing grants/clinical studies

Uher R, Alda M, Bowen C, Hajek T, Drobinin V (2021 - 2026). Brain development and the onset of depression in youth [Grant] - CIHR - \$1,400,000.

Hajek T, Spaniel F (2020 - 2025). Obesity as a risk factor for adverse brain, cognitive and clinical outcomes in schizophrenia - prospective study [Grant] - Health Research Agency of Czech Republic - \$669,424.

Hajek T, Calkin C, Uher R, Alda M (2015 - 2022). Is type 2 diabetes mellitus a risk factor for neuroanatomical changes, cognitive impairment and oxidative stress in bipolar disorders? [Grant] - CIHR - \$864,220. Topic title and reference (to be filled in automatically after filling in the standard forms)

PhD Students

Number of PhD students currently studying : 3 PhD, 3 MSc

Number of defended students with year of defence: 3 PhD (2018, 2020, 2020)