

# Kristina Bečanović

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## EDUCATION

1999-2003 Karolinska Institutet, Stockholm, Med. Dr. in Experimental medicine. "Genetic regulation of autoimmune neuroinflammation". Supervisor Professor Tomas Olsson. Dept. of Medicine, Karolinska Institutet.

1994-1998 University of Stockholm, Master's degree in Molecular Biology. Title of Diploma work: "Characterization of Constitutional and Somatic Chromosomal Rearrangements in Human Cells Using Fluorescent in situ Hybridization." Supervisor Prof. Magnus Nordenskjöld. Dept. of Clinical Genetics, Karolinska Institutet.

1991-1994 Chemical Technology at Thorildsplan College, Stockholm, Sweden.

## PROFESSIONAL EXPERIENCE

- 2015-present Researcher, Karolinska Hospital, Neurology Unit, Sweden. European Huntington's Disease Network (EHDN) National coordinator/ Language Area Coordinator for Sweden.
- 2012-2014 Project leader, Karolinska Institutet, Department of Clinical Neuroscience.
- 2008-2012 Research Associate, Department of Medical Genetics University of British Columbia, Canada.
- 2005-2008 Post-doctoral research fellow, Department of Medical Genetics. University of British Columbia, Canada.
- 2004-2005 Post-doctoral research fellow, Department of Clinical Neuroscience, Karolinska Institutet, Sweden.

## PUBLICATIONS

- Becanovic K**, Nørremølle A, Neal S, Kay C, Collins J. A., Arenillas D, Lilja T, Manoharan S, Doty C, Beck J, Lahiri N, Portales-Casamar E, Warby S. C., Connolly C., De Souza R, REGISTRY Investigators of the EHDN, Tabrizi S. J., Hermanson O, Hayden M.R., Langbehn D.R., Wasserman W.W, Leavitt B.R. A Human SNP in the HTT promoter alters NF- $\kappa$ B binding and is a Bidirectional Genetic Modifier of Huntington Disease. *Nat Neurosci*. 2015 Jun;18(6):807-16. doi: 10.1038/nn.4014.
- Ehrnhoefer D, Skotte N, Ladha S, Nguyen Y, Qiu X, Deng Y, Huynh K, Engemann S, Borch Nielsen S, **Becanovic K**, Leavitt B, Hasholt L, Hayden M R. p53 increases caspase-6 expression and activation in muscle tissue expressing mutant huntingtin. *Hum Mol Genet*. 2013 Jul 15;21(14):3097-111.
- Tang B, **Becanovic K**, Desplats PA, Spencer B, Hill AM, Connolly C, Masliah E, Leavitt BR, Thomas EA. Forkhead box protein p1 is a transcriptional repressor of immune signaling in the CNS: implications for transcriptional dysregulation in Huntington disease. *Hum Mol Genet*. 2012 Jul 15;21(14):3097-111.
- Beyeen AD, Adzemovic MZ, Ockinger J, Stridh P, **Becanovic K**, Laaksonen H, Lassmann H, Harris RA, Hillert J, Alfredsson L, Celius EG, Harbo HF, Kockum I, Jagodic M, Olsson T. IL-22RA2 associates with Multiple sclerosis and macrophage effector mechanisms in experimental neuroinflammation. *J Immunol*. 2010 Dec 1;185(11):6883-90
- Stridh P, Thessen Hedreul M, Beyeen AD, Adzemovic MZ, Laaksonen H, Gillett A, Ockinger J, Marta M, Lassmann H, **Becanovic K**, Jagodic M, Olsson T. Fine-mapping resolves *Eae23* into two QTLs and implicates *Zeb1* as a candidate gene regulating experimental neuroinflammation in rat. *PLoS One*. 2010 Sep 15
- Becanovic K**, Pouladi M.A., Lim R.S., Kuhn A., Pavlidis P., Luthi-Carter R., Hayden M.R., Leavitt B.R. Transcriptional changes in Huntington Disease identified using genome-wide expression profiling and cross-platform analysis. *Hum Mol Genet*. 2010 Jan 20.
- Mazarei G, Neal SJ, **Becanovic K**, Luthi-Carter R, Simpson EM, Leavitt BR. Expression analysis of novel striatal- enriched genes in Huntington Disease. *Hum Mol Genet*. 2009 Dec 7
- Marta M, Stridh P, **Becanovic K**, Gillett A, Ockinger J, Lorentzen JC, Jagodic M, Olsson T. Multiple loci comprising immune-related genes regulate experimental neuroinflammation. *Genes Immun*. 2009 Aug 13
- L. Backdahl, J P Guo, M. Jagodic, **K. Becanovic**, B. Ding, T. Olsson, J C Lorentzen. Definition of arthritis candidate risk genes by combining rat linkage-mapping results with human case control association data. *Ann Rheum Dis*. 2008 Dec 23.
- A. Kuhn, D. R. Goldstein, A. Hodges, A. D. Strand, T. Sengstag, C. Kooperberg, **K. Becanovic**, M. A. Pouladi, K. Sathasivam, J-H. J. Cha, A. J. Hannan, M. R. Hayden, B. R. Leavitt, S. B. Dunnett, R. J. Ferrante, R. Albin, P. Shelbourne, M. Delorenzi, S. J. Augood, R. L.M. Faull, J. M. Olson, G. P. Bates, L. Jones, and R. Luthi-Carter. Mutant huntingtin's effects on striatal gene expression in mice recapitulate changes observed in human

Huntington's disease brain and do not differ with mutant huntingtin length or wild-type huntingtin dosage. *Hum Mol Genet.* 2007 Aug 1; 16(15):1845-61.

11. **K. Becanovic**, M. Jagodic, J.R. Sheng, I. Dahlman, F. Aboul-Enein, E. Wallstrom, P. Olofsson, R. Holmdahl, H. Lassmann, T. Olsson. Advanced intercross line mapping of *Eae5* reveals *Ncf-1* and *CLDN4* as candidate genes for experimental autoimmune encephalomyelitis. *J Immunol.*, 2006 May 15; 176(10): 6055-64.

12. J. R. Sheng, M. Jagodic, I. Dahlman, **K. Becanovic**, R. Nohra, M. Marta, E. Iacobaeus, T. Olsson and E. Wallstrom. *Eae19*, a new locus on rat chromosome 15 regulating experimental autoimmune encephalomyelitis. *Genetics.* 2005 May; 170(1): 283-9.

13. M. Jagodic\*, M. Marta\*, **K. Becanovic**, J. R. Sheng, R. Nohra, T. Olsson and J. C. Lorentzen. Resolution of a 16.8Mb autoimmunity-regulating rat chromosome 4 region into multiple encephalomyelitis QTLs and evidence for epistasis. *J Immunol.*, 2005 Jan 15; 174(2): 918-24.

14. M. Jagodic, **K. Becanovic**, J. R. Sheng, X. Wu, L. Bäckdahl, J. C. Lorentzen, E. Wallström and T. Olsson. An advanced intercross line resolves *Eae18* into two narrow QTLs syntenic to multiple sclerosis candidate loci. *J Immunol*, 2004, 173:1366-1373.

15. **K. Becanovic**, L. Bäckdahl, E. Wallström, F. Aboul-Enein, H. Lassmann T. Olsson, J. C. Lorentzen. Paradoxical effects of arthritis-regulating chromosome 4 regions on myelin oligodendrocyte glycoprotein-induced encephalomyelitis in congenic rats. *Europ J Immunol*, 2003, 33:1907-1916.

16. **K. Becanovic**, E. Wallstrom, B. Kornek, A. Glaser, K. W. Broman, I. Dahlman, P.Olofsson, R. Holmdahl, H. Luthman, H. Lassmann, T.Olsson. New loci regulating rat myelin oligodendrocyte glycoprotein-induced experimental autoimmune encephalomyelitis. *J Immunol*, 2003, 170:1062-1069.

17. **K. Becanovic\***, H-W Xu\*, E. Wallstrom, I. Dahlman and J. Lorentzen. Identification of rat quantitative loci that regulate LPS-induced pro-inflammatory cytokine responses, *Scand. J. Immunology*, 2002, 56, 248-253.

18. **K. Becanovic** & B. Leavitt. Age-related dysfunction of the cellular powerplants. *Clin Genet.* 2006 Nov; 70(5):383-5

19. **K. Becanovic**, M. Jagodic, E. Wallstrom, T. Olsson. Current gene mapping strategies in experimental models of Multiple sclerosis. *Scand. J. Immunology*, 2004, 60:39-51.

#### FELLOWSHIPS AND EXTERNAL FUNDING

2015 Towards prediction of disease progression in Parkinson's disease - Genetic and epigenetic studies. Parkinsonfonden, Sweden. Principal applicant. Total 150 000 SEK.

2012 Mechanistic studies of ACR-16 (Huntexil®) on pre- and post-synaptic dopamine and glutamate neurotransmission and on disease progression in Huntington Disease models. Berzelii funds, Stockholm Brain Institute (SBI). Stockholm, SWEDEN. Principal applicant. Total 1 875 000 SEK.

2013 Towards prediction of disease progression in Parkinson's disease - Genetic and epigenetic studies. Karolinska Institutet funds. Principal applicant. Total 30 000 SEK.

2009 Mitochondrial damage and autophagy in HD. Huntington Society of Canada (HSC). Principal applicant. Total 150 000 CAD.

2006 Global Transcription Analyses of Molecular Pathways Underlying Huntington's Disease. Swedish Postdoctoral fellowship award. Swedish Research council. Principal applicant. Total 622 000 SEK.

2004 Postdoctoral fellowship award from Swedish Brain foundation (Hjärnfonden). Principal applicant. Total 250 000 SEK.

1999 Funding received in competition for doctoral studies from Swedish foundation for Strategic research (SSF). Doctoral studies: "*Genetic regulation of autoimmune neuroinflammation*".

2000-2006 Wrote and received funding for studies on Multiple Sclerosis from the Swedish foundation for neurologically disabled (NHR). Co-applicant with Principal applicant Prof. Tomas Olsson. Total 400 000 SEK.

2006 Wrote and received funding for studies on Multiple Sclerosis from Åke Wibergs. ' Principal applicant. Total 100 000 SEK.

2006 Wrote and received funding for studies on Multiple Sclerosis from SOS foundation. Principal applicant. Total 32 400 SEK.

2005 Wrote and received funding for studies on Multiple Sclerosis from Åke Wibergs. Principal applicant. Total 100 000 SEK.

2004 Wrote and received funding for studies on Multiple Sclerosis from Karolinska Institutet funds. Principal applicant. Total 21 000 SEK.

2009 Recipient in competition of bursary from TVG-LLC and BIOTECanada to attend Biopartnering event,

Vancouver, Canada.

2000-2004 Co-applicant on several large applications by Prof. Tomas Olsson, CMM, KI, including two new five year FP6 EU integrated projects, Neuropromise and EURATools.

### RESEARCH SUPERVISION

- 2005-2010 Co-supervisor for PhD Student Pernilla Stridh-Igo, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden. "*Genetic regulation of autoimmune neuroinflammation: clues to disease mechanisms in Multiple Sclerosis*".
- 2006-2010 Co-supervisor for PhD Student: Amennai D. Beyeen, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden. "*Definition of genetic and pathogenic mechanisms that control neuroinflammation*".
- 2013 Supervisor for ERASMUS master student Maria Vittoria de Donno, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden.
- 2013 Supervisor for master student Ivana Horecny, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden.
- 2008-2011 Supervisor for undergraduate student Shiana Manoharan, Dept. of Medical Genetics, University of British Columbia, Canada.
- 2010 Supervisor for master student Elisa Göckeritz, Dept. of Medical Genetics, University of British Columbia, Canada. "*Mitochondrial dysfunction in the YAC128 mouse model of HD*".
- 2004-2005 Supervisor for undergraduate student Pernilla Stridh-Igo, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden. "*QTL and congenic mapping of EAE-regulatory loci*".
- 2005 Supervisor for undergraduate student Davor Petrovic, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden. "*Characterization of chemokine receptor expression as well as functional responses to different chemokines by human cell lines and peripheral blood mononuclear cells*".
- 2005 Co-supervisor for master thesis, Mélanie Thessén Hedreul, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden.
- 2004 Co-supervisor for master thesis, Johan Öckinger, and mentoring as PhD candidate, Dept. of Clinical Neuroscience, Karolinska Institutet, Sweden.

### INVITED SPEAKER PRESENTATIONS

- 11/2015 Department of Molecular Medicine and Surgery, Clinical Genetics, Karolinska Institutet. "Genetic variation in huntingtin promoter as a bidirectional modifier of Huntington's Disease".
- 10/2015 Huntington's Disease Society of America. HD Research Webinar Series: "Genetic variation in huntingtin promoter as a bidirectional genetic modifier of Huntington's Disease".
- 02/2014 Stockholm Brain Institute annual retreat, February 2014, Skokloster, Sweden. "New compounds for treatment of CNS disorders".
- 11/2009 Invited speaker at TGIF seminar at the Centre for Molecular Medicine and Therapeutics, University of British Columbia, Vancouver, Canada. HTT gene promoter studies: New leads to regulatory transcription factors and pathways.
- 04/2009 Invited speaker at the Neurology Unit, University of British Columbia, Vancouver, Canada. Insight into HD pathogenesis using *in vitro* and *in vivo* studies.
- 05/2004 Invited speaker at the Genetic systems in the Rat, XV<sup>th</sup> International Workshop, Copenhagen, Denmark.

### PEDAGOGIC ACTIVITIES

- 05/2013 Research Supervision course (Forskarhandledarutbildning), Karolinska Institutet, Stockholm.
- 2003-ongoing Continuously mentoring, providing laboratory supervision, continuously teaching biological sciences and statistics, planning, preparing and participating in journal and book clubs, and provide supervision of individual projects for PhD candidates, graduate- and undergraduate students and technical personnel.
- 2004 Lecture in "EAE genetics" (1h) for clinicians and research clinicians at the Neurology Unit, Karolinska Hospital, Stockholm.

- 2004 Neurogenetics lecture (1.5h) at the course *Clinical and Experimental Neuroimmunology*, Karolinska Institutet, Stockholm.
- 1999 Pedagogy, Basic course in the PhD graduate program, Karolinska Institutet, Stockholm.

#### **ORAL PRESENTATIONS AT SCIENTIFIC MEETINGS**

- 06/2011 Poster and oral presentation by BR Leavitt at the Gordon Research Conference, Lucca, Italy. Variants in the *HTT* promoter alter NF- $\kappa$ B binding and modulate age of onset in Huntington Disease. **Bečanović K**, Neal SJ, Beck J, Arenillas D, Manoharan S, Lahiri N, Portales-Casamar E, Warby SC, Collins JA, Doty C, Connolly C, De Souza R, Landwehrmeyer B, Tabrizi S, Hayden MR, Langbehn DR, Wasserman WW, and Leavitt BR.
- 03/2006 Oral presentation at the ESF-JSPS Frontier Science Meeting for young researchers: "Functional Genomics-From the Bench to Bioinformatics", Kanagawa, Japan.
- 03/2004 Oral presentation at the conference in Neuroscience, Hemsedal, Norway.
- 06/2004 Oral and poster presentation at the "7<sup>th</sup> International Congress in Neuroimmunology", Venice, Italy.
- 09/2003 Oral and poster presentation at the ESF-JSPS Frontier Science Meeting for young Researchers: "Functional Genomics - From the Bench to Bioinformatics", San Feliu de Guixols, Spain.

#### **EXTRACURRICULAR ACTIVITIES**

- 2013-ongoing Board member in the Junior Faculty steering committee Karolinska Institutet.
- 2013-ongoing Scientific Facilitator- facilitating scientific relationships and research collaboration between Karolinska Institutet and University of British Columbia, Vancouver, Canada.
- 2002-2003 Member of the Board of Research Education, Karolinska Institutet, Stockholm, Sweden.
- 2002-2003 Board member of the Graduate Student Association, Karolinska Institutet, Stockholm, Sweden.