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Curriculum Vitae

Claire Donjacour was born in Veghel April 20, 1970. In 1987 she finished secondary school at the Mgr. Zwijsen College in Veghel and started her career becoming an operating room nurse at the Academic Hospital Leiden (AZL later LUMC). She finished this training in 1991 and worked in the AZL until September 1993. Then she got employed at the OR of the Rijnland hospital Leiderdorp for six months and switched to the Westeinde hospital in The Hague. In 1995 she obtained her colloquium doctum to study psychology. Consecutively she started studying psychology at the Leiden University next to her full time job as operating room nurse at the Westeinde Hospital. In 1998 she switched to the University of Amsterdam to specialise in clinical- and neuropsychology and obtained her Master of Arts degree in 2000. She then continued working as an operating room nurse at the Westeinde hospital and got a research position supervised by prof. dr. G.A. Kerkhof, at the sleep centre of the same hospital. In 2001 she started medical school at the University of Leiden. She received her propedeuse in 2002 and her medical degree in August 2005. One month later she became an intern at the Diaconessenhuis Leiden. In this year she went to Ghana to work as a volunteer for Care to Move. During medical school she kept on working as an operating room nurse for 3 days a week. During her clinical rotations she worked one day per week in the OR and one evening as an MRI technician at the radiology department of the LUMC. In addition she worked as a volunteer for the African Albino Foundation, and was a member of the Local and National organisation of final year students (LOCA). Narcolepsy research started during her rotations and became an official PhD project in 2007. Part of her research is done in Maastricht (supervised by prof. dr. K.R. Westerterp) and at the Beth Israel Deaconess Medical Centre of Harvard university in Boston. Neurology training started October 2006 and ended in June 2014 at the LUMC (prof. dr. R.A.C. Roos). One year of this training took place at the Westeinde hospital (prof. dr. M.J.B. Taphoorn). During the final year of her neurology training she worked for 3 months at the Rijnland Hostpital in Leiderdorp (dr. A.A. vd Plas) and at SEIN Heemstede (dr. R.D. Thijs). Since August 2014 she works as a neurologist in sleep and epilepsy at SEIN Zwolle and Groningen.

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List of publications

Donjacour CE, Aziz NA, Overeem S, Kalsbeek A, Pijl H, Lammers GJ. Glucose and Fat Metabolism in Narcolepsy and the Effect Of Sodium Oxybate: A Hyperinsulinemic-Euglycemic Clamp Study. Sleep 2014; 37:795-801.

Donjacour CE*, Wamsley E*, Scammell TE, Lammers GJ, Stickgold R. Delusional Confusion of Dreaming and Reality in Narcolepsy. Sleep 2014; 37:419-422.

Tafti M, Hor H, Dauvilliers Y, Lammers GJ, Overeem S, Mayer G, Javidi S, Iranzo A, Santamaria J, Peraita-Adrados R, Vicario JL, Arnulf I, Plazzi G, Bayard S, Poli F, Pizza F, Geisler P, Wierzbicka A, Bassetti CL, Mathis J, Lecendreux M, Donjacour CE, van der Heide A, Heinzer R, Haba-Rubio J, Feketeova E, Hogl B, Frauscher B, Beneto A, Khatami R, Canellas F, Pfister C, Scholz S, Billiard M, Baumann CR, Ercilla G, Verduijn W, Claas FH, Dubois V, Nowak J, Eberhard HP, Pradervand S, Hor CN, Testi M, Tiercy JM, Kutalik Z. DQB1 Locus Alone Explains Most of the Risk and Protection in Narcolepsy with Cataplexy in Europe. Sleep 2014; 37:19-25.

Donjacour CE*, Pardi D*, Aziz NA, Frolich M, Roelfsema F, Overeem S, Pijl H, Lammers GJ. Plasma total ghrelin and leptin levels in human narcolepsy and matched healthy controls: Basal concentrations and response to sodium oxybate. J Clinical Sleep Medicine 2013; 9:797-803.

Luca G, Haba-Rubio J, Dauvilliers Y, Lammers GJ, Overeem S, Donjacour CE, Mayer G, Javidi S, Iranzo A, Santamaria J, Peraita-Adrados R, Hor H, Kutalik Z, Plazzi G, Poli F, Pizza F, Arnulf I, Lecendreux M, Bassetti C, Mathis J, Heinzer R, Jennum P, Knudsen S, Geisler P, Wierzbicka A, Feketeova E, Pfister C, Khatami R, Baumann C, Tafti M. Clinical, polysomnographic and genome-wide association analyses of narcolepsy with cataplexy: a European Narcolepsy Network study. J Sleep Research 2013; 22:482-495.

Donjacour CE, Kalsbeek A, Overeem S, Lammers GJ, Pevet P, Bothorel B, Pijl H, Aziz NA. Altered circadian rhythm of melatonin concentrations in hypocretin-deficient men. Chronobiology International 2012; 29:356-362.

Lecendreux M, Poli F, Oudiette D, Benazzouz F, Donjacour CE, Franceschini C, Finotti E, Pizza F, Bruni O, Plazzi G. Tolerance and efficacy of sodium oxybate in childhood narcolepsy with cataplexy: a retrospective study. Sleep 2012; 35:709-711.

Donjacour CE, Lammers GJ. A remarkable effect of alemtuzumab in a patient suffering from narcolepsy with cataplexy. J Sleep Research 2012; 21:479-480.

Donjacour CE, Aziz NA, Frolich M, Roelfsema F, Overeem S, Lammers GJ, Pijl H. Sodium oxybate increases prolactin secretion in narcolepsy patients and healthy controls. European J Endocrinology 2011; 164:363-370.

Donjacour CE, Aziz NA, Roelfsema F, Frolich M, Overeem S, Lammers GJ, Pijl H. Effect of sodium oxybate on growth hormone secretion in narcolepsy patients and healthy controls. Am J Physioly Endocrinoly & Metabolism 2011; 300:E1069-E1075.

Donjacour CE, Fronczek R, LE Cessie S, Lammers GJ, van Dijk JG. Month of birth is not a risk factor for narcolepsy with cataplexy in the Netherlands. J Sleep Research 2011; 20:522-525.

Overeem S, van Nues SJ, van der Zande WL, Donjacour CE, van Mierlo P, Lammers GJ. The clinical features of cataplexy: a questionnaire study in narcolepsy patients with and without hypocretin-1 deficiency. Sleep Medicine 2011; 12:12-18.

Cvetkovic-Lopes V, Bayer L, Dorsaz S, Maret S, Pradervand S, Dauvilliers Y, Lecendreux M, Lammers GJ, Donjacour CE, Du Pasquier RA, Pfister C, Petit B, Hor H, Muhlethaler M, Tafti M. Elevated Tribbles homolog 2-specific antibody levels in narcolepsy patients. J Clinical Investigation 2010; 120:713-719.

Hor H, Kutalik Z, Dauvilliers Y, Valsesia A, Lammers GJ, Donjacour CE, Iranzo A, Santamaria J, Peraita AR, Vicario JL, Overeem S, Arnulf I, Theodorou I, Jennum P, Knudsen S, Bassetti C, Mathis J, Lecendreux M, Mayer G, Geisler P, Beneto A, Petit B, Pfister C, Burki JV, Didelot G, Billiard M, Ercilla G, Verduijn W, Claas FH, Vollenweider P, Waeber G, Waterworth DM, Mooser V, Heinzer R, Beckmann JS, Bergmann S, Tafti M. Genome-wide association study identifies new HLA class II haplotypes strongly protective against narcolepsy. Nature Genetics 2010; 42:786-789.

Donjacour CE, Overeem S. Clinical and pathophysiological aspects of narcolepsy. International Journal of Sleep and Wakefulness 2007; 1:55-65.

Book chapters

Mets MA, Donjacour CE, Verster JC. Narcolepsy and traffic safety. In: Verster JC, George CFP, editors. Sleep, sleepiness and traffic safety. New York: Nova Science Publishers, 2010: 127-134. ISBN 978-1617289439.

Donjacour CE, Mets MA, Verster JC. Narcolepsy, driving and traffic safety. In: Goswami M, Pandi-Perumal SR, Thorpy MJ, editors. Narcolepsy: a Clinical Guide. New York: Humana Press, 2009: 217-222. ISBN 978-1-4419-0854-4.

References

1. Longstreth WT, Jr., Koepsell TD, Ton TG, Hendrickson AF, van BG. The epidemiology of narcolepsy. Sleep 2007; 30(1):13-26.

2. Dauvilliers Y, Montplaisir J, Molinari N et al. Age at onset of narcolepsy in two large populations of patients in France and Quebec. Neurology 2001; 57(11):2029-2033.

3. Dodel R, Peter H, Spottke A et al. Health-related quality of life in patients with narcolepsy. Sleep Med 2007; 8(7-8):733-741.

4. Broughton RJ, Guberman A, Roberts J. Comparison of the psychosocial effects of epilepsy and narcolepsy/cataplexy: a controlled study. Epilepsia 1984; 25(4):423-433.

5. Fronczek R, Middelkoop HA, VAN Dijk JG, Lammers GJ. Focusing on vigilance instead of sleepiness in the assessment of narcolepsy: high sensitivity of the Sustained Attention to Response Task (SART). Sleep 2006; 29(2):187-191.

6. Droogleever Fortuyn HA, Fronczek R, Smitshoek M et al. Severe fatigue in narcolepsy with cataplexy. J Sleep Res 2011.

7. Fortuyn HA, Lappenschaar MA, Furer JW et al. Anxiety and mood disorders in narcolepsy: a case-control study. Gen Hosp Psychiatry 2010; 32(1):49-56.

8. Aldrich MS. Automobile accidents in patients with sleep disorders. Sleep 1989; 12(6):487-494.

9. Philip P, Sagaspe P, Lagarde E et al. Sleep disorders and accidental risk in a large group of regular registered highway drivers. Sleep Med 2010; 11(10):973-979.

10. Findley L, Unverzagt M, Guchu R, Fabrizio M, Buckner J, Suratt P. Vigilance and automobile accidents in patients with sleep apnea or narcolepsy. Chest 1995; 108(3):619-624.

11. Jennum P, Knudsen S, Kjellberg J. The economic consequences of narcolepsy. J Clin Sleep Med 2009; 5(3):240-245.

12. Broughton R, Mullington J. Chronobiological aspects of narcolepsy. Sleep 1994; 17(8 Suppl):S35-S44.

13. Broughton R, Dunham W, Weisskopf M, Rivers M. Night sleep does not predict day sleep in narcolepsy. Electroencephalogr Clin Neurophysiol 1994; 91(1):67-70.

14. Overeem S, van Nues SJ, van der Zande WL, Donjacour CE, van MP, Lammers GJ. The clinical features of cataplexy: a questionnaire study in narcolepsy patients with and without hypocretin-1 deficiency. Sleep Med 2011; 12(1):12-18.

15. Thorpy M. Current concepts in the etiology, diagnosis and treatment of narcolepsy. Sleep Med 2001; 2(1):5-17.

16. Ohayon MM, Priest RG, Caulet M, Guilleminault C. Hypnagogic and hypnopompic hallucinations: pathological phenomena? Br J Psychiatry 1996; 169(4):459-467.

17. Ohayon MM, Zulley J, Guilleminault C, Smirne S. Prevalence and pathologic associations of sleep paralysis in the general population. Neurology 1999; 52(6):1194-1200.

18. Kok SW, Overeem S, Visscher TL et al. Hypocretin deficiency in narcoleptic humans is associated with abdominal obesity. Obes Res 2003; 11(9):1147-1154.

19. Dahmen N, Bierbrauer J, Kasten M. Increased prevalence of obesity in narcoleptic patients and relatives. Eur Arch Psychiatry Clin Neurosci 2001; 251(2):85-89.

20. Schuld A, Beitinger PA, Dalal M et al. Increased body mass index (BMI) in male narcoleptic patients, but not in HLA-DR2-positive healthy male volunteers. Sleep Med 2002; 3(4):335-339.

21. Lammers GJ, Pijl H, Iestra J, Langius JA, Buunk G, Meinders AE. Spontaneous food choice in narcolepsy. Sleep 1996; 19(1):75-76.

22. Poli F, Plazzi G, Di DG et al. Body mass index-independent metabolic alterations in narcolepsy with cataplexy. Sleep 2009; 32(11):1491-1497.

23. Fronczek R, Overeem S, Lammers GJ, VAN Dijk JG, Van Someren EJ. Altered skin-temperature regulation in narcolepsy relates to sleep propensity. Sleep 2006; 29(11):1444-1449.

24. Fronczek R, Raymann RJ, Overeem S et al. Manipulation of skin temperature improves nocturnal sleep in narcolepsy. J Neurol Neurosurg Psychiatry 2008; 79(12):1354-1357.

25. Fronczek R, Raymann RJ, Romeijn N et al. Manipulation of core body and skin temperature improves vigilance and maintenance of wakefulness in narcolepsy. Sleep 2008; 31(2):233-240.

26. Rogers AE, Rosenberg RS. Tests of memory in narcoleptics. Sleep 1990; 13(1):42-52.

27. Rieger M, Mayer G, Gauggel S. Attention deficits in patients with narcolepsy. Sleep 2003; 26(1):36-43.

28. Hays P. False but sincere accusations of sexual assault made by narcoleptic [correction of narcotic] patients. Med Leg J 1992; 60 (Pt 4):265-271.

29. Szucs A, Janszky J, Hollo A, Migleczi G, Halasz P. Misleading hallucinations in unrecognized narcolepsy. Acta Psychiatr Scand 2003; 108(4):314-316.

30. Kok SW, Meinders AE, Overeem S et al. Reduction of plasma leptin levels and loss of its circadian rhythmicity in hypocretin (orexin)-deficient narcoleptic humans. J Clin Endocrinol Metab 2002; 87(2):805-809.

31. Schuld A, Blum WF, Uhr M et al. Reduced leptin levels in human narcolepsy. Neuroendocrinology 2000; 72(4):195-198.

32. Dahmen N, Engel A, Helfrich J et al. Peripheral leptin levels in narcoleptic patients. Diabetes Technol Ther 2007; 9(4):348-353.

33. Arnulf I, Lin L, Zhang J et al. CSF versus serum leptin in narcolepsy: is there an effect of hypocretin deficiency? Sleep 2006; 29(8):1017-1024.

34. Overeem S, Kok SW, Lammers GJ et al. Somatotropic axis in hypocretin-deficient narcoleptic humans: altered circadian distribution of GH-secretory events. Am J Physiol Endocrinol Metab 2003; 284(3):E641-E647.

35. Kok SW, Roelfsema F, Overeem S et al. Altered setting of the pituitary-thyroid ensemble in hypocretin-deficient narcoleptic men. Am J Physiol Endocrinol Metab 2005; 288(5):E892-E899.

36. Kohsaka A, Watanobe H, Kakizaki Y, Suda T, Schioth HB. A significant participation of orexin-A, a potent orexigenic peptide, in the preovulatory luteinizing hormone and prolactin surges in the rat. Brain Res 2001; 898(1):166-170.

37. Kok SW, Roelfsema F, Overeem S et al. Pulsatile LH release is diminished, whereas FSH secretion is normal, in hypocretin-deficient narcoleptic men. Am J Physiol Endocrinol Metab 2004; 287(4):E630-E636.

38. Poli F, Pizza F, Mignot E et al. High prevalence of precocious puberty and obesity in childhood narcolepsy with cataplexy. Sleep 2013; 36(2):175-181.

39. Honda Y, Doi Y, Ninomiya R, Ninomiya C. Increased frequency of non-insulin-dependent diabetes mellitus among narcoleptic patients. Sleep 1986; 9(1 Pt 2):254-259.

40. Roberts HJ. The syndrome of narcolepsy and diabetogenic hyperinsulinism in the American negro: important clinical, social and public health aspects. J Am Geriatr Soc 1965; 13:852-885.

41. Roberts HJ. The syndrome of narcolepsy and diabetogenic (“functional”) hyperinsulinism. Observations on 190 patients, with emphasis upon its relationship to obesity, diabetes mellitus and cerebral dysrhythmias. J Fla Med Assoc 1963; 50:355-366.

42. Engel A, Helfrich J, Manderscheid N et al. Investigation of insulin resistance in narcoleptic patients: dependent or independent of body mass index? Neuropsychiatr Dis Treat 2011; 7:351-356.

43. Ghaeli P, Shahsavand E, Mesbahi M, Kamkar MZ, Sadeghi M, Dashti-Khavidaki S. Comparing the effects of 8-week treatment with fluoxetine and imipramine on fasting blood glucose of patients with major depressive disorder. J Clin Psychopharmacol 2004; 24(4):386-388.

44. Chemelli RM, Willie JT, Sinton CM et al. Narcolepsy in orexin knockout mice: molecular genetics of sleep regulation. Cell 1999; 98(4):437-451.

45. Lin L, Faraco J, Li R et al. The sleep disorder canine narcolepsy is caused by a mutation in the hypocretin (orexin) receptor 2 gene. Cell 1999; 98(3):365-376.

46. Nishino S, Ripley B, Overeem S, Lammers GJ, Mignot E. Hypocretin (orexin) deficiency in human narcolepsy. Lancet 2000; 355(9197):39-40.

47. Peyron C, Faraco J, Rogers W et al. A mutation in a case of early onset narcolepsy and a generalized absence of hypocretin peptides in human narcoleptic brains. Nat Med 2000; 6(9):991-997.

48. Thannickal TC, Moore RY, Nienhuis R et al. Reduced number of hypocretin neurons in human narcolepsy. Neuron 2000; 27(3):469-474.

49. Thannickal TC, Siegel JM, Nienhuis R, Moore RY. Pattern of hypocretin (orexin) soma and axon loss, and gliosis, in human narcolepsy. Brain Pathol 2003; 13(3):340-351.

50. Blouin AM, Thannickal TC, Worley PF, Baraban JM, Reti IM, Siegel JM. Narp immunostaining of human hypocretin (orexin) neurons: loss in narcolepsy. Neurology 2005; 65(8):1189-1192.

51. Crocker A, Espana RA, Papadopoulou M et al. Concomitant loss of dynorphin, NARP, and orexin in narcolepsy. Neurology 2005; 65(8):1184-1188.

52. Juji T, Satake M, Honda Y, Doi Y. HLA antigens in Japanese patients with narcolepsy. All the patients were DR2 positive. Tissue Antigens 1984; 24(5):316-319.

53. Mignot E, Lin L, Rogers W et al. Complex HLA-DR and -DQ interactions confer risk of narcolepsy-cataplexy in three ethnic groups. Am J Hum Genet 2001; 68(3):686-699.

54. Hallmayer J, Faraco J, Lin L et al. Narcolepsy is strongly associated with the T-cell receptor alpha locus. Nat Genet 2009; 41(6):708-711.

55. Montplaisir J, Poirier G, Lapierre O, Montplaisir S. Streptococcal antibodies in narcolepsy and hypersomnia. Sleep Res 1989; 18:271.

56. Mueller-Eckhardt G, Meier-Ewart K, Schiefer HG. Is there an infectious origin of narcolepsy? Lancet 1990; 335(8686):424.

57. Aran A, Lin L, Nevsimalova S et al. Elevated anti-streptococcal antibodies in patients with recent narcolepsy onset. Sleep 2009; 32(8):979-983.

58. Montplaisir J, Poirier G. HLA in narcolepsy in Canada. In: Honda Y, Juji T, editors. HLA in narcolepsy. Berlin: Springer-Verlag, 1988: 97-107.

59. Cvetkovic-Lopes V, Bayer L, Dorsaz S et al. Elevated Tribbles homolog 2-specific antibody levels in narcolepsy patients. J Clin Invest 2010; 120(3):713-719.

60. Kawashima M, Lin L, Tanaka S et al. Anti-Tribbles homolog 2 (TRIB2) autoantibodies in narcolepsy are associated with recent onset of cataplexy. Sleep 2010; 33(7):869-874.

61. Toyoda H, Tanaka S, Miyagawa T, Honda Y, Tokunaga K, Honda M. Anti-Tribbles homolog 2 autoantibodies in Japanese patients with narcolepsy. Sleep 2010; 33(7):875-878.

62. Lim AS, Scammell TE. The trouble with Tribbles: do antibodies against TRIB2 cause narcolepsy? Sleep 2010; 33(7):857-858.

63. Dauvilliers Y, Montplaisir J, Cochen V et al. Post-H1N1 narcolepsy-cataplexy. Sleep 2010; 33(11):1428-1430.

64. Han F, Lin L, Warby SC et al. Narcolepsy onset is seasonal and increased following the 2009 H1N1 pandemic in china. Ann Neurol 2011.

65. Tsai TF, Crucitti A, Nacci P et al. Explorations of clinical trials and pharmacovigilance databases of MF59((R))-adjuvanted influenza vaccines for associated cases of narcolepsy. Scand J Infect Dis 2011; 43(9):702-706.

66. De la Herran-Arita AK, Kornum BR, Mahlios J et al. CD4+ T Cell Autoimmunity to Hypocretin/Orexin and Cross-Reactivity to a 2009 H1N1 Influenza A Epitope in Narcolepsy. Sci Transl Med 2013; 5(216):216ra176.

67. Mullington J, Broughton R. Scheduled naps in the management of daytime sleepiness in narcolepsy-cataplexy. Sleep 1993; 16(5):444-456.

68. Lammers GJ, Overeem S. Pharmacological management of narcolepsy. Expert Opin Pharmacother 2003; 4(10):1739-1746.

69. Mitler MM, Aldrich MS, Koob GF, Zarcone VP. Narcolepsy and its treatment with stimulants. ASDA standards of practice. Sleep 1994; 17(4):352-371.

70. Practice parameters for the use of stimulants in the treatment of narcolepsy. Standards of Practice Committee of the American Sleep Disorders Association. Sleep 1994; 17(4):348-351.

71. Mereu M, Bonci A, Newman AH, Tanda G. The neurobiology of modafinil as an enhancer of cognitive performance and a potential treatment for substance use disorders. Psychopharmacology (Berl) 2013; 229(3):415-434.

72. The Xyrem International Study Group. Further evidence supporting the use of sodium oxybate for the treatment of cataplexy: a double-blind, placebo-controlled study in 228 patients. Sleep Med 2005; 6(5):415-421.

73. The Xyrem International Study Group. A double-blind, placebo-controlled study demonstrates sodium oxybate is effective for the treatment of excessive daytime sleepiness in narcolepsy. J Clin Sleep Med 2005; 1(4):391-397.

74. Husain AM, Ristanovic RK, Bogan RK. Weight loss in narcolepsy patients treated with sodium oxybate. Sleep Med 2009; 10(6):661-663.

75. Van Cauter E, Plat L, Scharf MB et al. Simultaneous stimulation of slow-wave sleep and growth hormone secretion by gamma-hydroxybutyrate in normal young Men. J Clin Invest 1997; 100(3):745-753.

76. Jensen K, Mody I. GHB depresses fast excitatory and inhibitory synaptic transmission via GABA(B) receptors in mouse neocortical neurons. Cereb Cortex 2001; 11(5):424-429.

77. Carter LP, Koek W, France CP. Behavioral analyses of GHB: receptor mechanisms. Pharmacol Ther 2009; 121(1):100-114.

78. Lopez M, Tena-Sempere M, Dieguez C. Cross-talk between orexins (hypocretins) and the neuroendocrine axes (hypothalamic-pituitary axes). Front Neuroendocrinol 2010; 31(2):113-127.

79. Pijl H. Reduced dopaminergic tone in hypothalamic neural circuits: expression of a “thrifty” genotype underlying the metabolic syndrome? Eur J Pharmacol 2003; 480(1-3):125-131.

80. Van Cauter E, Latta F, Nedeltcheva A et al. Reciprocal interactions between the GH axis and sleep. Growth Horm IGF Res 2004; 14 Suppl A:S10-S17.

81. Chabas D, Foulon C, Gonzalez J et al. Eating disorder and metabolism in narcoleptic patients. Sleep 2007; 30(10):1267-1273.

82. Higuchi T, Takahashi Y, Takahashi K, Niimi Y, Miyasita A. Twenty-four-hour secretory patterns of growth hormone, prolactin, and cortisol in narcolepsy. J Clin Endocrinol Metab 1979; 49(2):197-204.

83. Clark RW, Schmidt HS, Malarkey WB. Disordered growth hormone and prolactin secretion in primary disorders of sleep. Neurology 1979; 29(6):855-861.

84. Fitzgerald P, Dinan TG. Prolactin and dopamine: what is the connection? A review article. J Psychopharmacol 2008; 22(2 Suppl):12-19.

85. Aldrich MS, Hollingsworth Z, Penney JB. Autoradiographic studies of post-mortem human narcoleptic brain. Neurophysiol Clin 1993; 23(1):35-45.

86. Hakansson M, de LL, Sutcliffe JG, Yanagisawa M, Meister B. Leptin receptor- and STAT3-immunoreactivities in hypocretin/orexin neurones of the lateral hypothalamus. J Neuroendocrinol 1999; 11(8):653-663.

87. Yamanaka A, Beuckmann CT, Willie JT et al. Hypothalamic orexin neurons regulate arousal according to energy balance in mice. Neuron 2003; 38(5):701-713.

88. Flier JS. Clinical review 94: What’s in a name? In search of leptin’s physiologic role. J Clin Endocrinol Metab 1998; 83(5):1407-1413.

89. Yin X, Li Y, Xu G, An W, Zhang W. Ghrelin fluctuation, what determines its production? Acta Biochim Biophys Sin (Shanghai) 2009; 41(3):188-197.

90. Hosoda H, Kangawa K. The autonomic nervous system regulates gastric ghrelin secretion in rats. Regul Pept 2008; 146(1-3):12-18.

91. Toshinai K, Mondal MS, Nakazato M et al. Upregulation of Ghrelin expression in the stomach upon fasting, insulin-induced hypoglycemia, and leptin administration. Biochem Biophys Res Commun 2001; 281(5):1220-1225.

92. Toshinai K, Date Y, Murakami N et al. Ghrelin-induced food intake is mediated via the orexin pathway. Endocrinology 2003; 144(4):1506-1512.

93. Reiter RJ, Tan DX, Fuentes-Broto L. Melatonin: a multitasking molecule. Prog Brain Res 2010; 181:127-151.

94. Appelbaum L, Wang GX, Maro GS et al. Sleep-wake regulation and hypocretin-melatonin interaction in zebrafish. Proc Natl Acad Sci U S A 2009; 106(51):21942-21947.

95. Roberts HJ. The syndrome of narcolepsy and diabetogenic ("functional") hyperinsulinism, with special reference to obesity, diabetes, idiopathic edema, cerebral dysrhythmias and multiple sclerosis (200 patients). J Am Geriatr Soc 1964; 12:926-976.

96. Beitinger PA, Fulda S, Dalal MA et al. Glucose tolerance in patients with narcolepsy. Sleep 2012; 35(2):231-236.

97. Krauchi K, Cajochen C, Werth E, Wirz-Justice A. Warm feet promote the rapid onset of sleep. Nature 1999; 401(6748):36-37.

98. Carter LP, Pardi D, Gorsline J, Griffiths RR. Illicit gamma-hydroxybutyrate (GHB) and pharmaceutical sodium oxybate (Xyrem): differences in characteristics and misuse. Drug Alcohol Depend 2009; 104(1-2):1-10.

99. Kaufman EE, Porrino LJ, Nelson T. Pyretic action of low doses of gamma-hydroxybutyrate in rats. Biochem Pharmacol 1990; 40(12):2637-2640.

100. Chin RL, Sporer KA, Cullison B, Dyer JE, Wu TD. Clinical course of gamma-hydroxybutyrate overdose. Ann Emerg Med 1998; 31(6):716-722.

101. Krul J, Girbes AR. gamma-Hydroxybutyrate: experience of 9 years of gamma-hydroxybutyrate (GHB)-related incidents during rave parties in The Netherlands. Clin Toxicol (Phila) 2011; 49(4):311-315.

102. Overeem S, Mignot E, VAN Dijk JG, Lammers GJ. Narcolepsy: clinical features, new pathophysiologic insights, and future perspectives. J Clin Neurophysiol 2001; 18(2):78-105.

103. Taylor MM, Samson WK. The other side of the orexins: endocrine and metabolic actions. Am J Physiol Endocrinol Metab 2003; 284(1):E13-E17.

104. de Lecea L, Kilduff TS, Peyron C et al. The hypocretins: hypothalamus-specific peptides with neuroexcitatory activity. Proc Natl Acad Sci U S A 1998; 95(1):322-327.

105. Peyron C, Tighe DK, van den Pol AN et al. Neurons containing hypocretin (orexin) project to multiple neuronal systems. J Neurosci 1998; 18(23):9996-10015.

106. Hagan JJ, Leslie RA, Patel S et al. Orexin A activates locus coeruleus cell firing and increases arousal in the rat. Proc Natl Acad Sci U S A 1999; 96(19):10911-10916.

107. Samson WK, Taylor MM, Ferguson AV. Non-sleep effects of hypocretin/orexin. Sleep Med Rev 2005; 9(4):243-252.

108. Russell SH, Kim MS, Small CJ et al. Central administration of orexin A suppresses basal and domperidone stimulated plasma prolactin. J Neuroendocrinol 2000; 12(12):1213-1218.

109. Freeman ME, Kanyicska B, Lerant A, Nagy G. Prolactin: structure, function, and regulation of secretion. Physiol Rev 2000; 80(4):1523-1631.

110. Ben-Jonathan N, Hugo ER, Brandebourg TD, LaPensee CR. Focus on prolactin as a metabolic hormone. Trends Endocrinol Metab 2006; 17(3):110-116.

111. van den Pol AN. Excitatory neuromodulator reduces dopamine release, enhancing prolactin secretion. Neuron 2010; 65(2):147-149.

112. Maitre M. The gamma-hydroxybutyrate signalling system in brain: organization and functional implications. Prog Neurobiol 1997; 51(3):337-361.

113. Takahara J, Yunoki S, Yakushiji W, Yamauchi J, Yamane Y. Stimulatory effects of gamma-hydroxybutyric acid on growth hormone and prolactin release in humans. J Clin Endocrinol Metab 1977; 44(5):1014-1017.

114. Van Cauter E, Desir D, Refetoff S et al. The relationship between episodic variations of plasma prolactin and REM-non-REM cyclicity is an artifact. J Clin Endocrinol Metab 1982; 54(1):70-75.

115. Obal F, Jr., Garcia-Garcia F, Kacsoh B et al. Rapid eye movement sleep is reduced in prolactin-deficient mice. J Neurosci 2005; 25(44):10282-10289.

116. Spiegel K, Luthringer R, Follenius M et al. Temporal relationship between prolactin secretion and slow-wave electroencephalic activity during sleep. Sleep 1995; 18(7):543-548.

117. Parker DC, Rossman LG, Vanderlaan EF. Relation of sleep-entrained human prolactin release to REM-nonREM cycles. J Clin Endocrinol Metab 1974; 38(4):646-651.

118. American Academy of Sleep Medicine. American Sleep Association. International Classification of Sleep Disorders. Diagnostic and Coding Manual. 2nd ed. Westchester, IL: 2005.

119. Iber C, Ancoli-Israel S, Chesson A.L., Quan S. The AASM Manual for the Scoring of Sleep and Associated Events: Rules, Terminology, and Technical Specifications. Westchester, IL: American Academy of Sleep Medicine, 2007.

120. Van Cauter E, Kerkhofs M, Caufriez A, Van OA, Thorner MO, Copinschi G. A quantitative estimation of growth hormone secretion in normal man: reproducibility and relation to sleep and time of day. J Clin Endocrinol Metab 1992; 74(6):1441-1450.

121. Liu PY, Keenan DM, Kok P, Padmanabhan V, O'Byrne KT, Veldhuis JD. Sensitivity and specificity of pulse detection using a new deconvolution method. Am J Physiol Endocrinol Metab 2009; 297(2):E538-E544.

122. Page-Wilson G, Smith PC, Welt CK. Prolactin suppresses GnRH but not TSH secretion. Horm Res 2006; 65(1):31-38.

123. Brown-Borg HM, Klemcke HG, Borg KE, Klindt J. Prolactin and growth hormone clearance in neonatal boars. J Anim Sci 1993; 71(8):2055-2060.

124. Akaike H. A new look at the statistical modelindentification. IEEE 1974;(6):716-723.

125. Veldhuis JD, Straume M, Iranmanesh A et al. Secretory process regularity monitors neuroendocrine feedback and feedforward signaling strength in humans. Am J Physiol Regul Integr Comp Physiol 2001; 280(3):R721-R729.

126. Cleveland WS, Devlin S. Locally weigted regression analysis by local fitting. Journal of the American Statistical Association 1988;(83):596-640.

127. Gronfier C, Brandenberger G. Ultradian rhythms in pituitary and adrenal hormones: their relations to sleep. Sleep Med Rev 1998; 2(1):17-29.

128. Hsueh YC, Cheng SM, Pan JT. Fasting stimulates tuberoinfundibular dopaminergic neuronal activity and inhibits prolactin secretion in oestrogen-primed ovariectomized rats: involvement of orexin A and neuropeptide Y. J Neuroendocrinol 2002; 14(9):745-752.

129. Sassolas G, Chatelain P, Cohen R et al. Effects of human pancreatic tumor growth hormone-releasing hormone (hpGRH1-44-NH2) on immunoreactive and bioactive plasma growth hormone in normal young men. J Clin Endocrinol Metab 1984; 59(4):705-709.

130. Overeem S, Scammell TE, Lammers GJ. Hypocretin/orexin and sleep: implications for the pathophysiology and diagnosis of narcolepsy. Curr Opin Neurol 2002; 15(6):739-745.

131. Dauvilliers Y, Arnulf I, Mignot E. Narcolepsy with cataplexy. Lancet 2007; 369(9560):499-511.

132. Ripley B, Overeem S, Fujiki N et al. CSF hypocretin/orexin levels in narcolepsy and other neurological conditions. Neurology 2001; 57(12):2253-2258.

133. Donjacour CE, Aziz NA, Frolich M et al. Sodium oxybate increases prolactin secretion in narcolepsy patients and healthy controls. Eur J Endocrinol 2011; 164(3):363-370.

134. Besset A, Bonardet A, Billiard M, Descomps B, de Paulet AC, Passouant P. Circadian patterns of growth hormone and cortisol secretions in narcoleptic patients. Chronobiologia 1979; 6(1):19-31.

135. Okun ML, Giese S, Lin L, Einen M, Mignot E, Coussons-Read ME. Exploring the cytokine and endocrine involvement in narcolepsy. Brain Behav Immun 2004; 18(4):326-332.

136. U.S.Xyrem Multicenter Study Group. A randomized, double blind, placebo-controlled multicenter trial comparing the effects of three doses of orally administered sodium oxybate with placebo for the treatment of narcolepsy. Sleep 2002; 25(1):42-49.

137. U.S.Xyrem Multicenter Study Group. Sodium oxybate demonstrates long-term efficacy for the treatment of cataplexy in patients with narcolepsy. Sleep Med 2004; 5(2):119-123.

138. Johnson ML, Pipes L, Veldhuis PP, Farhy LS, Boyd DG, Evans WS. AutoDecon, a deconvolution algorithm for identification and characterization of luteinizing hormone secretory bursts: description and validation using synthetic data. Anal Biochem 2008; 381(1):8-17.

139. Johnson ML, Pipes L, Veldhuis PP et al. AutoDecon: a robust numerical method for the quantification of pulsatile events. Methods Enzymol 2009; 454:367-404.

140. Pincus SM, Goldberger AL. Physiological time-series analysis: what does regularity quantify? Am J Physiol 1994; 266(4 Pt 2):H1643-H1656.

141. Gerra G, Caccavari R, Fontanesi B et al. Flumazenil effects on growth hormone response to gamma-hydroxybutyric acid. Int Clin Psychopharmacol 1994; 9(3):211-215.

142. Obal F, Jr., Krueger JM. The somatotropic axis and sleep. Rev Neurol (Paris) 2001; 157(11 Pt 2):S12-S15.

143. Van Cauter E, Plat L, Copinschi G. Interrelations between sleep and the somatotropic axis. Sleep 1998; 21(6):553-566.

144. Lopez M, Nogueiras R, Tena-Sempere M, Dieguez C. Orexins (hypocretins) actions on the GHRH/somatostatin-GH axis. Acta Physiol (Oxf) 2010; 198(3):325-334.

145. Obal F, Jr., Krueger JM. GHRH and sleep. Sleep Med Rev 2004; 8(5):367-377.

146. Mamelak M. Narcolepsy and depression and the neurobiology of gammahydroxybutyrate. Prog Neurobiol 2009; 89(2):193-219.

147. Vienne J, Bettler B, Franken P, Tafti M. Differential effects of GABAB receptor subtypes, {gamma}-hydroxybutyric Acid, and Baclofen on EEG activity and sleep regulation. J Neurosci 2010; 30(42):14194-14204.

148. Veldhuis JD. Neuroendocrine control of pulsatile growth hormone release in the human: relationship with gender. Growth Horm IGF Res 1998; 8 Suppl B:49-59.

149. Schuld A, Hebebrand J, Geller F, Pollmacher T. Increased body-mass index in patients with narcolepsy. Lancet 2000; 355(9211):1274-1275.

150. Middelkoop HA, Lammers GJ, Van Hilten BJ, Ruwhof C, Pijl H, Kamphuisen HA. Circadian distribution of motor activity and immobility in narcolepsy: assessment with continuous motor activity monitoring. Psychophysiology 1995; 32(3):286-291.

151. Dahmen N, Tonn P, Messroghli L, Ghezel-Ahmadi D, Engel A. Basal metabolic rate in narcoleptic patients. Sleep 2009; 32(7):962-964.

152. Fronczek R, Overeem S, Reijntjes R, Lammers GJ, VAN Dijk JG, Pijl H. Increased heart rate variability but normal resting metabolic rate in hypocretin/orexin-deficient human narcolepsy. J Clin Sleep Med 2008; 4(3):248-254.

153. Cuneo RC, Salomon F, McGauley GA, Sonksen PH. The growth hormone deficiency syndrome in adults. Clin Endocrinol (Oxf) 1992; 37(5):387-397.

154. Salomon F, Cuneo RC, Umpleby AM, Sonksen PH. Glucose and fat metabolism in adults with growth hormone deficiency. Clin Endocrinol (Oxf) 1994; 41(3):315-322.

155. Van Cauter E, Leproult R, Plat L. Age-related changes in slow wave sleep and REM sleep and relationship with growth hormone and cortisol levels in healthy men. JAMA 2000; 284(7):861-868.

156. Burdakov D, Gonzalez JA. Physiological functions of glucose-inhibited neurones. Acta Physiol (Oxf) 2009; 195(1):71-78.

157. Sakurai T. Roles of orexin/hypocretin in regulation of sleep/wakefulness and energy homeostasis. Sleep Med Rev 2005; 9(4):231-241.

158. Kotagal S, Krahn LE, Slocumb N. A putative link between childhood narcolepsy and obesity. Sleep Med 2004; 5(2):147-150.

159. Dahmen N, Becht J, Engel A, Thommes M, Tonn P. Prevalence of eating disorders and eating attacks in narcolepsy. Neuropsychiatr Dis Treat 2008; 4(1):257-261.

160. Fortuyn HA, Swinkels S, Buitelaar J et al. High prevalence of eating disorders in narcolepsy with cataplexy: a case-control study. Sleep 2008; 31(3):335-341.

161. Tschop M, Smiley DL, Heiman ML. Ghrelin induces adiposity in rodents. Nature 2000; 407(6806):908-913.

162. Dzaja A, Dalal MA, Himmerich H, Uhr M, Pollmacher T, Schuld A. Sleep enhances nocturnal plasma ghrelin levels in healthy subjects. Am J Physiol Endocrinol Metab 2004; 286(6):E963-E967.

163. Perello M, Sakata I, Birnbaum S et al. Ghrelin increases the rewarding value of high-fat diet in an orexin-dependent manner. Biol Psychiatry 2010; 67(9):880-886.

164. Ahima RS, Prabakaran D, Mantzoros C et al. Role of leptin in the neuroendocrine response to fasting. Nature 1996; 382(6588):250-252.

165. Spiegel K, Leproult R, L'Hermite-Baleriaux M, Copinschi G, Penev PD, Van CE. Leptin levels are dependent on sleep duration: relationships with sympathovagal balance, carbohydrate regulation, cortisol, and thyrotropin. J Clin Endocrinol Metab 2004; 89(11):5762-5771.

166. Licinio J, Mantzoros C, Negrao AB et al. Human leptin levels are pulsatile and inversely related to pituitary-adrenal function. Nat Med 1997; 3(5):575-579.

167. Chaput JP, Despres JP, Bouchard C, Tremblay A. Short sleep duration is associated with reduced leptin levels and increased adiposity: Results from the Quebec family study. Obesity (Silver Spring) 2007; 15(1):253-261.

168. Ferguson AV, Samson WK. The orexin/hypocretin system: a critical regulator of neuroendocrine and autonomic function. Front Neuroendocrinol 2003; 24(3):141-150.

169. Zhang W, Sakurai T, Fukuda Y, Kuwaki T. Orexin neuron-mediated skeletal muscle vasodilation and shift of baroreflex during defense response in mice. Am J Physiol Regul Integr Comp Physiol 2006; 290(6):R1654-R1663.

170. Okun ML, Lin L, Pelin Z, Hong S, Mignot E. Clinical aspects of narcolepsy-cataplexy across ethnic groups. Sleep 2002; 25(1):27-35.

171. Nishino S, Ripley B, Overeem S et al. Low cerebrospinal fluid hypocretin (Orexin) and altered energy homeostasis in human narcolepsy. Ann Neurol 2001; 50(3):381-388.

172. Pardi D, Black J. gamma-Hydroxybutyrate/sodium oxybate: neurobiology, and impact on sleep and wakefulness. CNS Drugs 2006; 20(12):993-1018.

173. Donjacour CE, Aziz NA, Roelfsema F et al. Effect of sodium oxybate on growth hormone secretion in narcolepsy patients and healthy controls. Am J Physiol Endocrinol Metab 2011; 300(6):E1069-E1075.

174. Marzullo P, Verti B, Savia G et al. The relationship between active ghrelin levels and human obesity involves alterations in resting energy expenditure. J Clin Endocrinol Metab 2004; 89(2):936-939.

175. Silha JV, Krsek M, Skrha JV, Sucharda P, Nyomba BL, Murphy LJ. Plasma resistin, adiponectin and leptin levels in lean and obese subjects: correlations with insulin resistance. Eur J Endocrinol 2003; 149(4):331-335.

176. Willie JT, Chemelli RM, Sinton CM, Yanagisawa M. To eat or to sleep? Orexin in the regulation of feeding and wakefulness. Annu Rev Neurosci 2001; 24:429-458.

177. Brainard GC, Hanifin JP, Greeson JM et al. Action spectrum for melatonin regulation in humans: evidence for a novel circadian photoreceptor. J Neurosci 2001; 21(16):6405-6412.

178. Appelbaum L, Wang G, Yokogawa T et al. Circadian and homeostatic regulation of structural synaptic plasticity in hypocretin neurons. Neuron 2010; 68(1):87-98.

179. Fabris C, Cozzi B, Hay-Schmidt A, Naver B, Moller M. Demonstration of an orexinergic central innervation of the pineal gland of the pig. J Comp Neurol 2004; 471(2):113-127.

180. Mikkelsen JD, Hauser F, deLecea L et al. Hypocretin (orexin) in the rat pineal gland: a central transmitter with effects on noradrenaline-induced release of melatonin. Eur J Neurosci 2001; 14(3):419-425.

181. Zhang S, Blache D, Vercoe PE et al. Expression of orexin receptors in the brain and peripheral tissues of the male sheep. Regul Pept 2005; 124(1-3):81-87.

182. Kalsbeek A, Drijfhout WJ, Westerink BH et al. GABA receptors in the region of the dorsomedial hypothalamus of rats are implicated in the control of melatonin and corticosterone release. Neuroendocrinology 1996; 63(1):69-78.

183. Kalsbeek A, Cutrera RA, Van Heerikhuize JJ, Van D, V, Buijs RM. GABA release from suprachiasmatic nucleus terminals is necessary for the light-induced inhibition of nocturnal melatonin release in the rat. Neuroscience 1999; 91(2):453-461.

184. Kalsbeek A, Garidou ML, Palm IF et al. Melatonin sees the light: blocking GABA-ergic transmission in the paraventricular nucleus induces daytime secretion of melatonin. Eur J Neurosci 2000; 12(9):3146-3154.

185. Ahmed S, Sack R, Rich G, Lewy A. Twenty-four hour secretion of melatonin in normal narcoleptics. Sleep Res 1991; 20:94.

186. Birau N, Meyer C, Matsubayashi K, Meier-Ewert KH. Melatonin serum concentration during the nocturnal sleep of narcoleptics. IRCS Med Sci 1982; 10:814.

187. Birau N, Pavel C, Meyer C, Gottschalk J, Pettersen U. Melatonin serum concentration in the waking state of narcoleptics. IRCS Med Sci 1982; 10:199.

188. Blazejova K, Illnerova H, Hajek I, Nevsimalova S. Circadian rhythm in salivary melatonin in narcoleptic patients. Neurosci Lett 2008; 437(2):162-164.

189. Portaluppi F, Smolensky MH, Touitou Y. Ethics and methods for biological rhythm research on animals and human beings. Chronobiol Int 2010; 27(9-10):1911-1929.

190. Iber C, Ancoli-Israel S, Chesson AL, Quan S, for the American Academy of Sleep Medicine. The AASM manual for the scoring of sleep and associated events: rules, terminology and technical specifiations. 1 ed. Westchester IL, 2007.

191. Brown GM, Seggie J, Grota LJ. Serum melatonin response to melatonin administration in the Syrian hamster. Neuroendocrinology 1985; 41(1):31-35.

192. Novakova M, Paclt I, Ptacek R, Kuzelova H, Hajek I, Sumova A. Salivary melatonin rhythm as a marker of the circadian system in healthy children and those with attention-deficit/hyperactivity disorder. Chronobiol Int 2011; 28(7):630-637.

193. Olbrich D, Dittmar M. Older poor-sleeping women display a smaller evening increase in melatonin secretion and lower values of melatonin and core body temperature than good sleepers. Chronobiol Int 2011; 28(8):681-689.

194. Pina G, Brun J, Tissot S, Claustrat B. Long-term alteration of daily melatonin, 6-sulfatoxymelatonin, cortisol, and temperature profiles in burn patients: a preliminary report. Chronobiol Int 2010; 27(2):378-392.

195. Hajek M, Meier-Ewert K, Wirz-Justice A et al. Bright white light does not improve narcoleptic symptoms. Eur Arch Psychiatry Neurol Sci 1989; 238(4):203-207.

196. Miles A, Philbrick DR, Shaw DM, Tidmarsh SF, Pugh AJ. Salivary melatonin estimation in clinical research. Clin Chem 1985; 31(12):2041-2042.

197. Yokogawa T, Marin W, Faraco J et al. Characterization of sleep in zebrafish and insomnia in hypocretin receptor mutants. PLoS Biol 2007; 5(10):e277.

198. McGregor R, Wu MF, Barber G, Ramanathan L, Siegel JM. Highly Specific Role of Hypocretin (Orexin) Neurons: Differential Activation as a Function of Diurnal Phase, Operant Reinforcement versus Operant Avoidance and Light Level. J Neurosci 2011; 31(43):15455-15467.

199. Spiegel K, Knutson K, Leproult R, Tasali E, Cauter van E. Sleep loss: a novel risk factor for insulin resistance and Type 2 diabetes. J Appl Physiol 2005; 99(5):2008-2019.

200. Girault EM, Yi CX, Fliers E, Kalsbeek A. Orexins, feeding, and energy balance. Prog Brain Res 2012; 198:47-64.

201. Tsuneki H, Murata S, Anzawa Y et al. Age-related insulin resistance in hypothalamus and peripheral tissues of orexin knockout mice. Diabetologia 2008; 51(4):657-667.

202. Yi CX, Serlie MJ, Ackermans MT et al. A major role for perifornical orexin neurons in the control of glucose metabolism in rats. Diabetes 2009; 58(9):1998-2005.

203. Yi CX, Sun N, Ackermans MT et al. Pituitary adenylate cyclase-activating polypeptide stimulates glucose production via the hepatic sympathetic innervation in rats. Diabetes 2010; 59(7):1591-1600.

204. Shiuchi T, Haque MS, Okamoto S et al. Hypothalamic orexin stimulates feeding-associated glucose utilization in skeletal muscle via sympathetic nervous system. Cell Metab 2009; 10(6):466-480.

205. Matthews DR, Hosker JP, Rudenski AS, Naylor BA, Treacher DF, Turner RC. Homeostasis model assessment: insulin resistance and beta-cell function from fasting plasma glucose and insulin concentrations in man. Diabetologia 1985; 28(7):412-419.

206. Cowie CC, Rust KF, Byrd-Holt DD et al. Prevalence of diabetes and high risk for diabetes using A1C criteria in the U.S. population in 1988-2006. Diabetes Care 2010; 33(3):562-568.

207. Kahn SE. Clinical review 135: The importance of beta-cell failure in the development and progression of type 2 diabetes. J Clin Endocrinol Metab 2001; 86(9):4047-4058.

208. DeFronzo RA, Tobin JD, Andres R. Glucose clamp technique: a method for quantifying insulin secretion and resistance. Am J Physiol 1979; 237(3):E214-E223.

209. Andersson BL, Bjorntorp P, Seidell JC. Measuring obesity-classification and description of anthropometric data report on a WHO consultation on epidemiology of obesity. 125, 1-22. 1988. Copenhagen Nutrition unit, WHO regional office for Europe.

210. Liu D, Moberg E, Kollind M, Lins PE, Adamson U, Macdonald IA. Arterial, arterialized venous, venous and capillary blood glucose measurements in normal man during hyperinsulinaemic euglycaemia and hypoglycaemia. Diabetologia 1992; 35(3):287-290.

211. Jazet IM, Pijl H, Frolich M, Romijn JA, Meinders AE. Two days of a very low calorie diet reduces endogenous glucose production in obese type 2 diabetic patients despite the withdrawal of blood glucose-lowering therapies including insulin. Metabolism 2005; 54(6):705-712.

212. Friedewald WT, Levy RI, Fredrickson DS. Estimation of the concentration of low-density lipoprotein cholesterol in plasma, without use of the preparative ultracentrifuge. Clin Chem 1972; 18(6):499-502.

213. Steele R. Influences of glucose loading and of injected insulin on hepatic glucose output. Ann N Y Acad Sci 1959; 82:420-430.

214. Tsuneki H, Wada T, Sasaoka T. Role of orexin in the central regulation of glucose and energy homeostasis. Endocr J 2012; 59(5):365-374.

215. Matsuda M, DeFronzo RA. Insulin sensitivity indices obtained from oral glucose tolerance testing: comparison with the euglycemic insulin clamp. Diabetes Care 1999; 22(9):1462-1470.

216. Khoza S, Barner JC, Bohman TM, Rascati K, Lawson K, Wilson JP. Use of antidepressant agents and the risk of type 2 diabetes. Eur J Clin Pharmacol 2012; 68(9):1295-1302.

217. Venner A, Karnani MM, Gonzalez JA, Jensen LT, Fugger L, Burdakov D. Orexin neurons as conditional glucosensors: paradoxical regulation of sugar sensing by intracellular fuels. J Physiol 2011; 589(Pt 23):5701-5708.

218. Kalsbeek A, Yi CX, La Fleur SE, Fliers E. The hypothalamic clock and its control of glucose homeostasis. Trends Endocrinol Metab 2010; 21(7):402-410.

219. Krauchi K, Cajochen C, Werth E, Wirz-Justice A. Functional link between distal vasodilation and sleep-onset latency? Am J Physiol Regul Integr Comp Physiol 2000; 278(3):R741-R748.

220. Van Someren EJ. More than a marker: interaction between the circadian regulation of temperature and sleep, age-related changes, and treatment possibilities. Chronobiol Int 2000; 17(3):313-354.

221. Van Someren EJ. Mechanisms and functions of coupling between sleep and temperature rhythms. Prog Brain Res 2006; 153:309-324.

222. Raymann RJ, Swaab DF, Van Someren EJ. Skin temperature and sleep-onset latency: changes with age and insomnia. Physiol Behav 2007; 90(2-3):257-266.

223. Romeijn N, Raymann RJ, Most E et al. Sleep, vigilance, and thermosensitivity. Pflugers Arch 2012; 463(1):169-176.

224. Mayer G, Hellmann F, Leonhard E, Meier-Ewert K. Circadian temperature and activity rhythms in unmedicated narcoleptic patients. Pharmacol Biochem Behav 1997; 58(2):395-402.

225. Romeijn N, Van Someren EJ. Correlated fluctuations of daytime skin temperature and vigilance. J Biol Rhythms 2011; 26(1):68-77.

226. Ramautar JR, Romeijn N, Gomez-Herrero G, Piantoni G, Van Someren EJ. Coupling of infraslow fluctuations in autonomic and central vigilance markers: skin temperature, EEG beta power and ERP P300 latency. Int J Psychophysiol 2013; 89(2):158-164.

227. Billiard M, Bassetti C, Dauvilliers Y et al. EFNS guidelines on management of narcolepsy. Eur J Neurol 2006; 13(10):1035-1048.

228. Donjacour CE, Kalsbeek A, Overeem S et al. Altered circadian rhythm of melatonin concentrations in hypocretin-deficient men. Chronobiol Int 2012; 29(3):356-362.

229. Byrne C, Lim CL. The ingestible telemetric body core temperature sensor: a review of validity and exercise applications. Br J Sports Med 2007; 41(3):126-133.

230. van Marken Lichtenbelt WD, Daanen HA, Wouters L et al. Evaluation of wireless determination of skin temperature using iButtons. Physiol Behav 2006; 88(4-5):489-497.

231. Raymann RJ, Swaab DF, Van Someren EJ. Cutaneous warming promotes sleep onset. Am J Physiol Regul Integr Comp Physiol 2005; 288(6):R1589-R1597.

232. Tikuisis P, Ducharme MB. The effect of postural changes on body temperatures and heat balance. Eur J Appl Physiol Occup Physiol 1996; 72(5-6):451-459.

233. Dantz B, Edgar DM, Dement WC. Circadian rhythms in narcolepsy: studies on a 90 minute day. Electroencephalogr Clin Neurophysiol 1994; 90(1):24-35.

234. Grimaldi D, Agati P, Pierangeli G et al. Hypocretin deficiency in narcolepsy with cataplexy is associated with a normal body core temperature modulation. Chronobiol Int 2010; 27(8):1596-1608.

235. Mosko SS, Holowach JB, Sassin JF. The 24-hour rhythm of core temperature in narcolepsy. Sleep 1983; 6(2):137-146.

236. Pollak CP, Wagner DR. Core body temperature in narcoleptic and normal subjects living in temporal isolation. Pharmacol Biochem Behav 1994; 47(1):65-71.

237. Raymann RJ, Swaab DF, Van Someren EJ. Skin deep: enhanced sleep depth by cutaneous temperature manipulation. Brain 2008; 131(Pt 2):500-513.

238. Lammers GJ, Arends J, Declerck AC, Ferrari MD, Schouwink G, Troost J. Gammahydroxybutyrate and narcolepsy: a double-blind placebo-controlled study. Sleep 1993; 16(3):216-220.

239. Broughton R, Mamelak M. Effects of nocturnal gamma-hydroxybutyrate on sleep/waking patterns in narcolepsy-cataplexy. Can J Neurol Sci 1980; 7(1):23-31.

240. Lapierre O, Montplaisir J, Lamarre M, Bedard MA. The effect of gamma-hydroxybutyrate on nocturnal and diurnal sleep of normal subjects: further considerations on REM sleep-triggering mechanisms. Sleep 1990; 13(1):24-30.

241. Scrima L, Hartman PG, Johnson FH, Jr., Thomas EE, Hiller FC. The effects of gamma-hydroxybutyrate on the sleep of narcolepsy patients: a double-blind study. Sleep 1990; 13(6):479-490.

242. Scammell TE. The frustrating and mostly fruitless search for an autoimmune cause of narcolepsy. Sleep 2006; 29(5):601-602.

243. Rogers AE, Meehan J, Guilleminault C, Grumet FC, Mignot E. HLA DR15 (DR2) and DQB1*0602 typing studies in 188 narcoleptic patients with cataplexy. Neurology 1997; 48(6):1550-1556.

244. Smith AJ, Jackson MW, Neufing P, McEvoy RD, Gordon TP. A functional autoantibody in narcolepsy. Lancet 2004; 364(9451):2122-2124.

245. Laron Z, Lewy H, Wilderman I et al. Seasonality of month of birth of children and adolescents with type 1 diabetes mellitus in homogenous and heterogeneous populations. Isr Med Assoc J 2005; 7(6):381-384.

246. Mikulecky M, Cierna I. Seasonality of births and childhood inflammatory bowel disease. Wien Klin Wochenschr 2005; 117(15-16):554-557.

247. Carlander B, Tafti M, Billiard M. Season of birth in narcolepsy. Sleep Res 1993; 22:180.

248. Dahmen N, Tonn P. Season of birth effect in narcolepsy. Neurology 2003; 61(7):1016-1017.

249. Dauvilliers Y, Carlander B, Molinari N et al. Month of birth as a risk factor for narcolepsy. Sleep 2003; 26(6):663-665.

250. Picchioni D, Mignot EJ, Harsh JR. The month-of-birth pattern in narcolepsy is moderated by cataplexy severity and may be independent of HLA-DQB1*0602. Sleep 2004; 27(8):1471-1475.

251. Wing YK, Chen L, Fong SY et al. Narcolepsy in Southern Chinese patients: clinical characteristics, HLA typing and seasonality of birth. J Neurol Neurosurg Psychiatry 2008; 79(11):1262-1267.

252. Schacter DL, Guerin SA, St Jacques PL. Memory distortion: an adaptive perspective. Trends Cogn Sci 2011; 15(10):467-474.

253. Johnson MK. Source monitoring and memory distortion. Philos Trans R Soc Lond B Biol Sci 1997; 352(1362):1733-1745.

254. Mazzoni GA, Loftus EF. When dreams become reality. Conscious Cogn 1996; 5(4):442-462.

255. Fortuyn HA, Lappenschaar GA, Nienhuis FJ et al. Psychotic symptoms in narcolepsy: phenomenology and a comparison with schizophrenia. Gen Hosp Psychiatry 2009; 31(2):146-154.

256. Rawlings D. An exploratory factor analysis of hartmann's Boundary Questionnaire and an empirically-derived short version. Imagination, Cognition, and Personality 2001; 21(2):131-144.

257. Hartmann E. Boundaries of dreams, boundaries of dreamers: thin and thick boundaries as a new personality measure. Psychiatr J Univ Ott 1989; 14(4):557-560.

258. Crawford JR, Smith G, Maylor EA, Della SS, Logie RH. The Prospective and Retrospective Memory Questionnaire (PRMQ): Normative data and latent structure in a large non-clinical sample. Memory 2003; 11(3):261-275.

259. Smith G, Della SS, Logie RH, Maylor EA. Prospective and retrospective memory in normal ageing and dementia: a questionnaire study. Memory 2000; 8(5):311-321.

260. Fosse R. REM mentation in narcoleptics and normals: an empirical test of two neurocognitive theories. Conscious Cogn 2000; 9(4):488-509.

261. Mazzetti M, Bellucci C, Mattarozzi K, Plazzi G, Tuozzi G, Cipolli C. REM-dreams recall in patients with narcolepsy-cataplexy. Brain Res Bull 2010; 81(1):133-140.

262. Fulda S, Schulz H. Cognitive dysfunction in sleep disorders. Sleep Med Rev 2001; 5(6):423-445.

263. Aguirre M, Broughton R, Stuss D. Does memory impairment exist in narcolepsy-cataplexy? J Clin Exp Neuropsychol 1985; 7(1):14-24.

264. Hood B, Bruck D. Metamemory in narcolepsy. J Sleep Res 1997; 6(3):205-210.

265. Kemp S, Burt CDB, Sheen M. Remembering dreamt and actual experiences. Applied Cognitive Psychology 2003; 17(5):577-591.

266. Rassin E, Merckelbach H, Spaan V. When dreams become a royal road to confusion: realistic dreams, dissociation, and fantasy proneness. J Nerv Ment Dis 2001; 189(7):478-481.

267. Mochizuki T, Crocker A, McCormack S, Yanagisawa M, Sakurai T, Scammell TE. Behavioral state instability in orexin knock-out mice. J Neurosci 2004; 24(28):6291-6300.

268. Lecendreux M, Poli F, Oudiette D et al. Tolerance and efficacy of sodium oxybate in childhood narcolepsy with cataplexy: a retrospective study. Sleep 2012; 35(5):709-711.

269. Rose NR, Bona C. Defining criteria for autoimmune diseases (Witebsky's postulates revisited). Immunol Today 1993; 14(9):426-430.