

CURRICULUM VITAE Poul Jennum (*poul.joergen.jennum@regionh.dk*)

Professor, chief consultant in clinical neurophysiology. MD, DSc. Danish Center for Sleep Medicine, Department of Clinical Neurophysiology, Glostrup Hospital, University of Copenhagen, Denmark
Board Certified in clinical neurophysiology and neurology. ESRS accredited Sleep Medicine specialist.
Medical education in Copenhagen University hospital, University of Minnesota, USA and Institute of Neurology, Montreal, Canada.

>200 international scientific peer reviewed articles, 2 textbook and 6 chapters in textbooks. 3 Patents.

>400 international presentation and invited lectures.

<http://www.ncbi.nlm.nih.gov/pubmed/?term=Jennum+P>

Supervisor for numerous bachelor, master, phd-student. Evaluator for several PhD thesis.

Chairman of several subcommittees regarding medical and guideline programmes, e.g. information technologies Committee, Copenhagen County (2000-2006), the 2006-7 chairman of the region's information technologies committee. Professional assessor Medicines Management related EU application and Professional assessor in EMEA. Chairman and national reference program for sleep apnea, The National Health Board (2006) and 2012 (revision). Chairman of Danish Sleep medicine society (1998-2012), Nordic sleep research Society (2002-4, 2010-2), Executive committee, ESRS (2006-12), WASM board member 2013-, EFNS scientific sleep committee chairman (2006-, ENS +2013), ESRS scientific board member (2014), AASM member (1990-).

Several international research collaborators.

Main scientific focus: sleep medicine, early neurodegenerative markers in the ageing population. Societal burden of brain diseases.

Publications, latest 50 papers as registered in Pubmed
(<http://www.ncbi.nlm.nih.gov/pubmed/?term=Jennum+P>)

1: Wendt SL, Welinder P, Sorensen HB, Peppard PE, Jennum P, Perona P, Mignot E, Warby SC. Inter-expert and intra-expert reliability in sleep spindle scoring. *Clin Neurophysiol.* 2014 Nov 10. pii: S1388-2457(14)00732-9. doi: 10.1016/j.clinph.2014.10.158. [Epub ahead of print] PubMed PMID: 25434753.

2: Jennum P, Ibsen R, Kjellberg J. Health, Social and Economic Consequences of Polyneuropathy: A Controlled National Study Evaluating Societal Effects on Patients and Their Partners. *Eur Neurol.* 2014 Nov 13;73(1-2):81-88. [Epub ahead of print] PubMed PMID: 25401731.

3: Clark AJ, Dich N, Lange T, Jennum P, Hansen AM, Lund R, Rod NH. Impaired sleep and allostatic load: cross-sectional results from the Danish Copenhagen Aging and Midlife Biobank. *Sleep Med.* 2014 Sep 10. pii: S1389-9457(14)00372-4. doi: 10.1016/j.sleep.2014.07.013. [Epub ahead of print] PubMed PMID: 25316292.

4: Partinen M, Kornum BR, Plazzi G, Jennum P, Julkunen I, Vaarala O. Does autoreactivity have a role in narcolepsy? *Lancet Neurol.* 2014 Nov;13(11):1072-3. doi: 10.1016/S1474-4422(14)70168-1. PubMed PMID: 25316012.

5: Kempfner J, Sorensen HB, Nikolic M, Jennum P. Early automatic detection of Parkinson's disease based on sleep recordings. *J Clin Neurophysiol.* 2014 Oct;31(5):409-15. doi: 10.1097/WNP.000000000000065. PubMed PMID: 25271677.

6: Jensen JB, Sorensen HB, Kempfner J, Sørensen GL, Knudsen S, Jennum P. Sleep-wake transition in narcolepsy and healthy controls using a support vector machine. *J Clin Neurophysiol.* 2014 Oct;31(5):397-401. doi: 10.1097/WNP.000000000000074. PubMed PMID: 25271675.

7: Han F, Lin L, Schormair B, Pizza F, Plazzi G, Ollila HM, Nevsimalova S, Jennum P, Knudsen S, Winkelmann J, Coquillard C, Babrzadeh F, Strom TM, Wang C, Mindrinos M, Fernandez Vina M, Mignot E. HLA DQB1*06:02 negative narcolepsy with hypocretin/orexin deficiency. *Sleep.* 2014 Oct 1;37(10):1601-8. doi: 10.5665/sleep.4066. PubMed PMID: 25197808; PubMed Central PMCID: PMC4173917.

8: Frandsen R, Baandrup L, Kjellberg J, Ibsen R, Jennum P. Increased all-cause mortality with psychotropic medication in Parkinson's disease and controls: A national register-based study. *Parkinsonism Relat Disord.* 2014 Aug 1. pii: S1353-8020(14)00272-7. doi: 10.1016/j.parkreldis.2014.07.012. [Epub ahead of print] PubMed PMID: 25164488.

9: Holm A, Bang-Berthelsen CH, Knudsen S, Kornum BR, Modvig S, Jennum P,

Gammeltoft S. miRNA profiles in plasma from patients with sleep disorders reveal dysregulation of miRNAs in narcolepsy and other central hypersomnias. *Sleep*. 2014 Sep 1;37(9):1525-33. doi: 10.5665/sleep.4004. PubMed PMID: 25142559; PubMed Central PMCID: PMC4153051.

10: Jennum P, Tønnesen P. [Obstructive sleep apnoea syndrome.]. *Ugeskr Laeger*. 2014 May 26;176(11). pii: V11120679. Danish. PubMed PMID: 25096841.

11: Christensen JA, Zoetmulder M, Koch H, Frandsen R, Arvastson L, Christensen SR, Jennum P, Sorensen HB. Data-driven modeling of sleep EEG and EOG reveals characteristics indicative of pre-Parkinson's and Parkinson's disease. *J Neurosci Methods*. 2014 Sep 30;235:262-76. doi: 10.1016/j.jneumeth.2014.07.014. Epub 2014 Aug 1. PubMed PMID: 25088694.

12: Koch H, Christensen JA, Frandsen R, Zoetmulder M, Arvastson L, Christensen SR, Jennum P, Sorensen HB. Automatic sleep classification using a data-driven topic model reveals latent sleep states. *J Neurosci Methods*. 2014 Sep 30;235:130-7. doi: 10.1016/j.jneumeth.2014.07.002. Epub 2014 Jul 9. PubMed PMID: 25016288.

13: Virring A, Lambek R, Jennum PJ, Møller LR, Thomsen PH. Sleep Problems and Daily Functioning in Children With ADHD: An Investigation of the Role of Impairment, ADHD Presentations, and Psychiatric Comorbidity. *J Atten Disord*. 2014 Jul 11. pii: 1087054714542001. [Epub ahead of print] PubMed PMID: 25015581.

14: Frandsen R, Kjellberg J, Ibsen R, Jennum P. Morbidity in early Parkinson's disease and prior to diagnosis. *Brain Behav*. 2014 May;4(3):446-52. doi: 10.1002/brb3.228. Epub 2014 Apr 8. PubMed PMID: 24944873; PubMed Central PMCID: PMC4055194.

15: Beniczky S, Conradsen I, Moldovan M, Jennum P, Fabricius M, Benedek K, Andersen N, Hjalgrim H, Wolf P. Quantitative analysis of surface electromyography during epileptic and nonepileptic convulsive seizures. *Epilepsia*. 2014 Jul;55(7):1128-34. doi: 10.1111/epi.12669. Epub 2014 Jun 2. PubMed PMID: 24889069.

16: Partinen M, Kornum BR, Plazzi G, Jennum P, Julkunen I, Vaarala O. Narcolepsy as an autoimmune disease: the role of H1N1 infection and vaccination. *Lancet Neurol*. 2014 Jun;13(6):600-13. doi: 10.1016/S1474-4422(14)70075-4. Review. PubMed PMID: 24849861.

17: Clark A, Lange T, Hallqvist J, Jennum P, Rod NH. Sleep impairment and prognosis of acute myocardial infarction: a prospective cohort study. *Sleep*. 2014 May 1;37(5):851-8. doi: 10.5665/sleep.3646. PubMed PMID: 24790263; PubMed Central

18: Meaidi A, Jennum P, Ptito M, Kupers R. The sensory construction of dreams and nightmare frequency in congenitally blind and late blind individuals. *Sleep Med.* 2014 May;15(5):586-95. doi: 10.1016/j.sleep.2013.12.008. Epub 2014 Feb 18. PubMed PMID: 24709309.

19: Ferini-Strambi L, Oertel W, Dauvilliers Y, Postuma RB, Marelli S, Iranzo A, Arnulf I, Birgit H, Manni R, Miyamoto T, Fantini ML, Puligheddu M, Jennum P, Sonka K, Santamaria J, Zucconi M, Rancoita PM, Leu-Semenescu S, Frauscher B, Terzaghi M, Miyamoto M, Unger M, Stiasny-Kolster K, Desautels A, Wolfson C, Pelletier A, Montplaisir J. Autonomic symptoms in idiopathic REM behavior disorder: a multicentre case-control study. *J Neurol.* 2014 Jun;261(6):1112-8. doi: 10.1007/s00415-014-7317-8. Epub 2014 Apr 1. PubMed PMID: 24687894.

20: Pickering L, Jennum P, Gammeltoft S, Poulsen L, Feldt-Rasmussen U, Klose M. Sleep-wake and melatonin pattern in craniopharyngioma patients. *Eur J Endocrinol.* 2014 Jun;170(6):873-84. doi: 10.1530/EJE-13-1025. Epub 2014 Mar 29. PubMed PMID: 24682900.

21: Krenk L, Jennum P, Kehlet H. Postoperative sleep disturbances after zolpidem treatment in fast-track hip and knee replacement. *J Clin Sleep Med.* 2014 Mar 15;10(3):321-6. doi: 10.5664/jcsm.3540. PubMed PMID: 24634631; PubMed Central PMCID: PMC3927439.

22: Warby SC, Wendt SL, Welinder P, Munk EG, Carrillo O, Sorensen HB, Jennum P, Peppard PE, Perona P, Mignot E. Sleep-spindle detection: crowdsourcing and evaluating performance of experts, non-experts and automated methods. *Nat Methods.* 2014 Apr;11(4):385-92. doi: 10.1038/nmeth.2855. Epub 2014 Feb 23. PubMed PMID: 24562424; PubMed Central PMCID: PMC3972193.

23: Løppenthin K, Esbensen BA, Jennum P, Østergaard M, Christensen JF, Thomsen T, Bech JS, Midtgaard J. Effect of intermittent aerobic exercise on sleep quality and sleep disturbances in patients with rheumatoid arthritis - design of a randomized controlled trial. *BMC Musculoskelet Disord.* 2014 Feb 21;15:49. doi: 10.1186/1471-2474-15-49. PubMed PMID: 24559487; PubMed Central PMCID: PMC3996065.

24: Frauscher B, Jennum P, Ju YE, Postuma RB, Arnulf I, Cochen De Cock V, Dauvilliers Y, Fantini ML, Ferini-Strambi L, Gabelia D, Iranzo A, Leu-Semenescu S, Mitterling T, Miyamoto M, Miyamoto T, Montplaisir JY, Oertel W, Pelletier A, Prunetti P, Puligheddu M, Santamaria J, Sonka K, Unger M, Wolfson C, Zucconi M, Terzaghi M, Högl B, Mayer G, Manni R. Comorbidity and medication in REM sleep behavior disorder: a multicenter case-control study. *Neurology.* 2014 Mar 25;82(12):1076-9. doi: 10.1212/WNL.0000000000000247. Epub 2014 Feb 19. PubMed PMID: 24553425; PubMed Central PMCID: PMC3962997.

25: Kempfner J, Sorensen GL, Nikolic M, Frandsen R, Sorensen HB, Jennum P. Rapid eye movement sleep behavior disorder as an outlier detection problem. *J Clin Neurophysiol*. 2014 Feb;31(1):86-93. doi: 10.1097/WNP.000000000000021. PubMed PMID: 24492451.

26: Løkke A, Hilberg O, Tønnesen P, Ibsen R, Kjellberg J, Jennum P. Direct and indirect economic and health consequences of COPD in Denmark: a national register-based study: 1998-2010. *BMJ Open*. 2014 Jan 6;4(1):e004069. doi: 10.1136/bmjopen-2013-004069. PubMed PMID: 24394800; PubMed Central PMCID: PMC3902350.

27: Zoetmulder M, Biernat HB, Nikolic M, Korbo L, Friberg L, Jennum PJ. Prepulse inhibition is associated with attention, processing speed, and 123I-FP-CIT SPECT in Parkinson's disease. *J Parkinsons Dis*. 2014;4(1):77-87. doi: 10.3233/JPD-130307. PubMed PMID: 24366928.

28: Zoetmulder M, Biernat HB, Nikolic M, Korbo L, Jennum PJ. Sensorimotor gating deficits in multiple system atrophy: comparison with Parkinson's disease and idiopathic REM sleep behavior disorder. *Parkinsonism Relat Disord*. 2014 Mar;20(3):297-302. doi: 10.1016/j.parkreldis.2013.11.018. Epub 2013 Dec 7. PubMed PMID: 24355363.

29: Løkke A, Hilberg O, Kjellberg J, Ibsen R, Jennum P. Economic and health consequences of COPD patients and their spouses in Denmark--1998-2010. *COPD*. 2014 Jun;11(3):237-46. doi: 10.3109/15412555.2013.839647. Epub 2013 Dec 19. PubMed PMID: 24354969.

30: Christensen JA, Kempfner J, Zoetmulder M, Leonthin HL, Arvastson L, Christensen SR, Sorensen HB, Jennum P. Decreased sleep spindle density in patients with idiopathic REM sleep behavior disorder and patients with Parkinson's disease. *Clin Neurophysiol*. 2014 Mar;125(3):512-9. doi: 10.1016/j.clinph.2013.08.013. Epub 2013 Oct 11. PubMed PMID: 24125856.

31: Hansen IH, Marcussen M, Christensen JA, Jennum P, Sorensen HB. Detection of a sleep disorder predicting Parkinson's disease. *Conf Proc IEEE Eng Med Biol Soc*. 2013;2013:5793-6. doi: 10.1109/EMBC.2013.6610868. PubMed PMID: 24111055.

32: Kempfner J, Jennum P, Sorensen HB, Christensen JA, Nikolic M. Automatic sleep staging: from young adults to elderly patients using multi-class support vector machine. *Conf Proc IEEE Eng Med Biol Soc*. 2013;2013:5777-80. doi: 10.1109/EMBC.2013.6610864. PubMed PMID: 24111051.

- 33: Kempfner J, Jennum P, Nikolic M, Christensen JA, Sorensen HB. Sleep phenomena as an early biomarker for Parkinsonism. *Conf Proc IEEE Eng Med Biol Soc.* 2013;2013:5773-6. doi: 10.1109/EMBC.2013.6610863. PubMed PMID: 24111050.
- 34: Koch H, Christensen JA, Frandsen R, Arvastson L, Christensen SR, Sorensen HB, Jennum P. Classification of iRBD and Parkinson's patients using a general data-driven sleep staging model built on EEG. *Conf Proc IEEE Eng Med Biol Soc.* 2013;2013:4275-8. doi: 10.1109/EMBC.2013.6610490. PubMed PMID: 24110677.
- 35: Christensen JA, Koch H, Frandsen R, Kempfner J, Arvastson L, Christensen SR, Sorensen HB, Jennum P. Classification of iRBD and Parkinson's disease patients based on eye movements during sleep. *Conf Proc IEEE Eng Med Biol Soc.* 2013;2013:441-4. doi: 10.1109/EMBC.2013.6609531. PubMed PMID: 24109718.
- 36: Sorensen GL, Mehlsen J, Jennum P. Reduced sympathetic activity in idiopathic rapid-eye-movement sleep behavior disorder and Parkinson's disease. *Auton Neurosci.* 2013 Dec;179(1-2):138-41. doi: 10.1016/j.autneu.2013.08.067. Epub 2013 Aug 27. PubMed PMID: 24021939.
- 37: Loeppenthin K, Esbensen B, Ostergaard M, Jennum P, Thomsen T, Midtgaard J. Physical activity maintenance in patients with rheumatoid arthritis: a qualitative study. *Clin Rehabil.* 2014 Mar;28(3):289-99. doi: 10.1177/0269215513501526. Epub 2013 Sep 6. PubMed PMID: 24013270.
- 38: Sorensen GL, Knudsen S, Jennum P. Sleep transitions in hypocretin-deficient narcolepsy. *Sleep.* 2013 Aug 1;36(8):1173-7. doi: 10.5665/sleep.2880. PubMed PMID: 23904677; PubMed Central PMCID: PMC3700714.
- 39: Schenck CH, Montplaisir JY, Frauscher B, Hogl B, Gagnon JF, Postuma R, Sonka K, Jennum P, Partinen M, Arnulf I, Cochen de Cock V, Dauvilliers Y, Luppi PH, Heidbreder A, Mayer G, Sixel-Döring F, Trenkwalder C, Unger M, Young P, Wing YK, Ferini-Strambi L, Ferri R, Plazzi G, Zucconi M, Inoue Y, Iranzo A, Santamaria J, Bassetti C, Möller JC, Boeve BF, Lai YY, Pavlova M, Saper C, Schmidt P, Siegel JM, Singer C, St Louis E, Videnovic A, Oertel W. Rapid eye movement sleep behavior disorder: devising controlled active treatment studies for symptomatic and neuroprotective therapy--a consensus statement from the International Rapid Eye Movement Sleep Behavior Disorder Study Group. *Sleep Med.* 2013 Aug;14(8):795-806. doi: 10.1016/j.sleep.2013.02.016. Epub 2013 Jul 22. Erratum in: *Sleep Med.* 2014 Jan;15(1):157. PubMed PMID: 23886593.
- 40: Klingenberg L, Chaput JP, Holmbäck U, Visby T, Jennum P, Nikolic M, Astrup A, Sjödin A. Acute Sleep Restriction Reduces Insulin Sensitivity in Adolescent Boys. *Sleep.* 2013 Jul 1;36(7):1085-1090. PubMed PMID: 23814346; PubMed Central PMCID: PMC3669075.

41: Jennum P, Ibsen R, Avlund K, Kjellberg J. Health, social and economic consequences of hypersomnia: a controlled national study from a national registry evaluating the societal effect on patients and their partners. *Eur J Health Econ*. 2014 Apr;15(3):303-11. doi: 10.1007/s10198-013-0491-2. Epub 2013 Jun 12. PubMed PMID: 23757094.

42: Jennum P, Ibsen R, Kjellberg J. Morbidity and mortality in children with obstructive sleep apnoea: a controlled national study. *Thorax*. 2013 Oct;68(10):949-54. doi: 10.1136/thoraxjnl-2012-202561. Epub 2013 Jun 8. PubMed PMID: 23749842.

43: Jennum P, Ibsen R, Knudsen S, Kjellberg J. Comorbidity and mortality of narcolepsy: a controlled retro- and prospective national study. *Sleep*. 2013 Jun 1;36(6):835-40. doi: 10.5665/sleep.2706. PubMed PMID: 23729926; PubMed Central PMCID: PMC3649826.

44: Dauvilliers Y, Postuma RB, Ferini-Strambi L, Arnulf I, Högl B, Manni R, Miyamoto T, Oertel W, Fantini ML, Puligheddu M, Jennum P, Sonka K, Zucconi M, Leu-Semenescu S, Frauscher B, Terzaghi M, Miyamoto M, Unger M, Desautels A, Wolfson C, Pelletier A, Montplaisir J. Family history of idiopathic REM behavior disorder: a multicenter case-control study. *Neurology*. 2013 Jun 11;80(24):2233-5. doi: 10.1212/WNL.0b013e318296e967. Epub 2013 May 8. PubMed PMID: 23658378; PubMed Central PMCID: PMC3721098.

45: Kornum BR, Knudsen S, Gammeltoft S, Jennum P. [The association between narcolepsy and H1N1 influenza]. *Ugeskr Laeger*. 2013 Mar 18;175(12):815. Danish. PubMed PMID: 23582821.

46: Klein AB, Jennum P, Knudsen S, Gammeltoft S, Mikkelsen JD. Increased serum brain-derived neurotrophic factor (BDNF) levels in patients with narcolepsy. *Neurosci Lett*. 2013 Jun 7;544:31-5. doi: 10.1016/j.neulet.2013.03.031. Epub 2013 Apr 6. PubMed PMID: 23570723.

47: Jennum P, Ibsen R, Kjellberg J. Social consequences of sleep disordered breathing on patients and their partners: a controlled national study. *Eur Respir J*. 2014 Jan;43(1):134-44. doi: 10.1183/09031936.00169212. Epub 2013 Apr 5. PubMed PMID: 23563260.

48: Maurovich-Horvat E, Kemlink D, Högl B, Frauscher B, Ehrmann L, Geisler P, Ettenhuber K, Mayer G, Peraita-Adrados R, Calvo E, Lammers GJ, Van der Heide A, Ferini-Strambi L, Plazzi G, Poli F, Dauvilliers Y, Jennum P, Leonthin H, Mathis J, Wierzbicka A, Puertas FJ, Beitinge PA, Arnulf I, Riha RL, Tormášiová M, Slonková J, Nevšimalová S, Sonka K; European Narcolepsy Network. Narcolepsy and pregnancy: a retrospective European evaluation of 249 pregnancies. *J Sleep Res*.

2013 Oct;22(5):496-512. doi: 10.1111/jsr.12047. Epub 2013 Apr 8. Erratum in: J Sleep Res. 2014 Apr;23(2):239. PubMed PMID: 23560595.

49: Krenk L, Jennum P, Kehlet H. Activity, sleep and cognition after fast-track hip or knee arthroplasty. J Arthroplasty. 2013 Sep;28(8):1265-9. doi: 10.1016/j.arth.2013.02.013. Epub 2013 Mar 28. PubMed PMID: 23541866.

50: Schytz HW, Jensen BE, Jennum P, Selb J, Boas DA, Ashina M. Low-frequency oscillations and vasoreactivity of cortical vessels in obstructive sleep apnea during wakefulness: a near infrared spectroscopy study. Sleep Med. 2013 May;14(5):416-21. doi: 10.1016/j.sleep.2012.12.009. Epub 2013 Mar 19. PubMed PMID: 23517585.