

## Curriculum Vitae

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### Education, certificates

- 1971: HBS-b diploma (school leaving certificate from the Dr. F.H. DeBruyne Lyceum, Utrecht, The Netherlands).
- 1976: Bachelor degree in Psychology at the University of Amsterdam.
- 1978: Training in histology at the Laboratory for Histology and Cellbiology (Prof.Dr. J. James) at the University of Amsterdam, The Netherlands.
- 1982: Practical training at the Laboratory of Functional Exploration of the Nervous System (Prof.Dr. J. Scherrer) at the Hôpital de la Salpêtrière, Paris, France.
- 1984: Master degree in Psychophysiology at the University of Amsterdam on the thesis "Rapid eye movements patterns during paradoxical sleep in infants in the first year of life".
- 1996: Ph.D. degree on the thesis "Ultradian patterns of synchronisation and desynchronisation in the human sleep EEG. An ontogenetic perspective.", at the University of Amsterdam.
- 1999: Postgraduate certificate occupational training Health Psychologist.

### Occupations, experience

- 1982: Research assistant in the sleep research center of the Laboratory of Psychophysiology, University of Amsterdam, The Netherlands.
- 1983-1985: Researcher on invitation at Unité 3 of the "Institut National pour Santé et Recherche Médicale (INSERM) at the Hôpital de la Salpêtrière, Paris, France, with grants from the "Fondation de France" and the "Association Claude Bernard".
- 1985-1987: Researcher on invitation in the sleep laboratory at the Max-Planck-Institut für Psychiatrie, München, Germany, with a grant from the Max Planck Gesellschaft.
- 1987-1990: Researcher in the sleep section the Psychonomics Dept. of the Psychologisch Laboratorium der Universiteit van Amsterdam, The Netherlands.
- 1990-1997: Researcher at the Labor für Klinische Psychophysiology at the Free University, Berlin, Germany.
- 1992-1997: Head of the connected Diagnostic Sleep Laboratory.
- 1997-2005: Polysomnographic specialist at Medicare Automation B.V., Amsterdam, The Netherlands.
- 2006-2012: Managing Director at the European Representative of Embla Systems, Amsterdam, The Netherlands
- 2013-present: Head of Electrophysiology at the Department of Sleep Medicine & Chronobiology at St. Hedwig-Krankenhaus, Berlin, Germany

Publications Dr. Frederik W. Bes

1. Bes F, Fagioli I, Franc B, Putet G, Ricour C, Salzarulo P. Rhythms of O<sub>2</sub> consumption during the night in continuously fed children. *J Interdiscipl Cycle Res* 1986; 17:128.
2. Bes F, Schulz H, Salzarulo P. The temporal interaction of Slow-Wave Sleep and Paradoxical Sleep in infants. *Sleep Res* 1987; 16:168.
3. Bes F, Baroncini P, Dugovic C, Fagioli I, Schulz H, Franc B, Salzarulo P. Time course of night sleep EEG in the first year of life: a description based on automatic analysis. *Electroenceph Clin Neurophysiol* 1988; 69:501-507.
4. Fagioli I, Bes F, Salzarulo P. 24-hour behavioral states distribution in continuously fed infants. *Early Human Dev* 1988; 18:151-156.
5. Schulz H, Bes F, Salzarulo P. Rhythmicity of Slow-Wave Sleep: Developmental aspects. In: *Slow-Wave Sleep: Physiological, Pathophysiological and Functional Aspects*, edited by A. Wauquier, C. Dugovic and M. Radulovacki, Raven Press Ltd, New York, 1989 pp:49-60.
6. Fagioli I, Peirano P, Bes F, Salzarulo P. Sleep in early malnutrition. In: *Sleep '88, Proceedings of the Ninth European Congress on Sleep Research, Jerusalem 1988*. Edited by J.A. Horne, Gustav Fischer Verlag, Stuttgart, New York, 1989, pp:58-62.
7. Fagioli I, Bes F, Ricour C, Salzarulo P. Sleep patterns in children under continuous and cyclic parenteral nutrition. *Med Sci Res* 1990; 18:59-60.
8. Ktonas P, Bes F, Rigoard M, Wong C, Mallard, Salzarulo P. Developmental changes in the clustering of sleep rapid eye movement activity during the first year of life. *Electroenceph Clin Neurophysiol* 1990; 75:136-140.
9. Bes F, Schulz H, Navelet Y, Salzarulo P. The distribution of slow-wave sleep across the night: a comparison for infants, children and adults. *Sleep* 1991; 14:5-12.
10. Salzarulo P, Fagioli I, Peirano P, Bes F, Schulz H. Levels of EEG background activity and sleep states in the first year of life. In: *Phasic events and dynamic organization of sleep*, edited by G.M. Terzano, A.C. Declerck and P. Halasz, Raven Press Ltd, New York, 1991, pp:53-63.
11. Bes F, Schulz H, Wilde-Frenz J. Multiple EMG recordings during sleep. *Sleep Research* 1991; 20A:249.
12. Fagioli I, Bes F, Franc B, Putet G, Ricour C, Salzarulo P. Oxygen consumption during sleep in children under continuous and cyclic nutrition. *Physiol. Behav.* 1991, 49:1159-1162.
13. Bes F, Wilde-Frenz J, Schulz H. Multiple EMG recordings during sleep. In: *Sleep-Wake Research in the Netherlands, Volume 2*, edited by A.M.L. Coenen, The Dutch Society for Sleep-Wake Research, Leiden, 1991, pp. 25-26.
14. Bes F, Wilde-Frenz J, Schulz H. Application of the Tiredness Symptoms Scale during sleep deprivation. In: *Sleep-Wake Research in the Netherlands, Volume 3*, edited by A.M.L. Coenen, The Dutch Society for Sleep-Wake Research, Leiden, 1992, pp. 19-20.
15. Bes F, Tzichinsky O, Escola H, Lavie P, Schulz H. Sleep propensity measured by EEG synchronization in ultrashort (7/13) sleep-wake cycles across 24 hours. In: *Sleep-Wake Research in the Netherlands, Volume 3*, edited by A.M.L. Coenen, The Dutch Society for Sleep-Wake Research, Leiden, 1992, pp. 21-23.

16. Bes F, Hofman W, Schuur J, Van Boxtel C. Effects of Delta Sleep Inducing Peptide on sleep of chronic insomniac patients: a double blind study. *Neuropsychobiology* 1992; 26:193-198.
17. Bes F, Tzischinsky O, Escola H, Lavie P, Schulz H. Sleep propensity measured by EEG synchronization in ultrashort (7/13) sleep-wake cycles across 24 hours. *J Sleep Res* 1992; 1, supplement 1:22.
18. Wilde-Frenz J, Bes F, Schulz H. The application of the Tiredness Symptoms Scale (TSS) during sleep deprivation. *J Sleep Res* 1992; 1, supplement 1:255.
19. Litscher G, Pfuertscheller G, Bes F, Poiseau E. Respiration and heart rate variation in normal infants during quiet sleep in the first year of life. *Klin Paediatr* 1993; 205:170-175.
20. Peirano P, Fagioli I, Bes F, Salzarulo P. The role of slow-wave sleep on the duration of quiet sleep in infants. *J Sleep Res* 1993; 2:130-133.
21. Bes F, Jobert M, Müller C, Schulz H.. The circadian distribution of sleep propensity. *J Sleep Res* 1994; 3, supplement 1:22.
22. Hofman W, Bes F. A model of disrupted sleep in chronic insomnia. *J Sleep Res* 1994; 3, supplement 1:107.
23. Salzarulo P, Bes F, Fagioli I. Changes in sleep states organization during the first year of life. *J Sleep Res* 1994; 3, supplement 1:227.
24. Jobert M, Schulz H, Jähnig P, Tismer C, Bes F, Escola H. A computerised method for detecting episodes of wakefulness during sleep based on the Alpha Slow-Wave Index (ASI). *Sleep* 1994; 17:37-46.
25. Bes F, Fagioli I, Peirano P, Schulz H, Salzarulo P. Trends in Electroencephalographic synchronization across nonrapid eye movement sleep in infants. *Sleep* 1994; 17:323-328.
26. Liefing B, Bes F, Fagioli I, Salzarulo P. Electromyographic activity and sleep states in infants. *Sleep* 1994; 17:718-722.
27. Winterer G, Bes F, Ziller M, Herrmann WM. The Kleine-Levin syndrome: Clinical and quantitative electroencephalographic findings in two patients. *Integr Psychiatry* 1994; 10:202-208.
28. Fagioli I, Bes F, Peirano P, Salzarulo P. Dynamics of EEG background activity level within quiet sleep in successive cycles in infants. *Electroenceph Clin Neurophysiol* 1995; 94:6-11.
29. Bes F, Jobert M, Müller C, Schulz H. Zirkadiane Variation der Schlafbereitschaft: Experimentelle Daten im Rahmen eines Modells zur Interaktion von langsamwelligem Schlaf und REM Schlaf. In: G. Mayer (Ed.), *Schlafmedizin in Deutschland 1994*. MVV Medizin Verlag, München, 1995, pp.305-308.
30. Schulz H, Bes F, Jobert M. Modelling sleep propensity. *Sleep Res* 1995; 24A:6.
31. Kraemer S, Bes F, Baur H, Bauer M, Hellweg R. Sleep under supramaximal doses of L-Thyroxine. *Sleep Res* 1995; 24A:166.
32. Bes F. Ultradian patterns of synchronisation and desynchronisation in the human sleep EEG. An ontogenetic perspective. Thesis University of Amsterdam, ISBN 90-5470-043-2, Amsterdam, The Netherlands, 1996.
33. Bes F, Jobert M, Müller C, Schulz H. The diurnal distribution of sleep propensity: experimental data about the interaction of the propensities for slow-wave sleep and REM sleep. *J Sleep Res* 1996; 5:90-98.

34. Kunz D, Kenzel P, Ehlert I, Bes F. Pinealis-Verkalkung und subjektives Schlafempfinden. In: G. Mayer (Ed.), *Schlafmedizin in Deutschland 1995*. MVV Medizin Verlag, München, 1996, pp. 31-33.
35. Kunz D, Bes F, Ziller M, Kraemer S. Melatonin bei REM-Schlaf-verhaltensstörung. In: G. Mayer (Ed.), *Schlafmedizin in Deutschland 1995*. MVV Medizin Verlag, München, 1996, 159-161.
36. Kraemer S, Bes F, Baur H, Bauer M, Hellweg R. Sleep in healthy individuals on supraphysiological doses of L-thyroxine. *J Sleep Res* 1996; 5, supplement 1:111.
37. Kunz D, Bes F, Ziller M. Melatonin in REM sleep behavior disorder. *J Sleep Res* 1996; 5, supplement 1:114.
38. Schulz H, Bes F. Theories and models of sleep. In: M.L. Bourgeois (Ed.), *Confrontations psychiatriques. Numéro 38: Sommeil et Psychiatrie*. RPR Specia, Montrouge, 1997, pp.23-49.
39. Bes F. Tiredness Symptoms Scale (TSS). In: Deutsche Gesellschaft für Schlafforschung und Schlafmedizin, H. Schulz (Ed.), *Kompodium Schlafmedizin für Ausbildung, Klinik und Praxis*. Ecomed Verlagsgesellschaft, Landsberg, 1997, ch.III-2.3.8.
40. Bes F. Profile of Mood States (POMS). In: Deutsche Gesellschaft für Schlafforschung und Schlafmedizin, H. Schulz (Ed.), *Kompodium Schlafmedizin für Ausbildung, Klinik und Praxis*. Ecomed Verlagsgesellschaft, Landsberg, 1997, ch.III-2.3.10.
41. Bes F. Schlaf und Mondphasen. In: Deutsche Gesellschaft für Schlafforschung und Schlafmedizin, H. Schulz (Ed.), *Kompodium Schlafmedizin für Ausbildung, Klinik und Praxis*. Ecomed Verlagsgesellschaft, Landsberg, 1997, ch.IV-3.1.6.
42. Bes F. Entwicklungsbedingte Veränderungen des Schlaf-EEGs. In: Deutsche Gesellschaft für Schlafforschung und Schlafmedizin, H. Schulz (Ed.), *Kompodium Schlafmedizin für Ausbildung, Klinik und Praxis*. Ecomed Verlagsgesellschaft, Landsberg, 1997, ch.X-2.2.
43. Kunz D, Bes F. Melatonin effects in a patient with severe REM-sleep behavior disorder: Case report and theoretical considerations. *Neuropsychobiology* 1997; 36:211-214.
44. Kunz D, Schirmer T, Bes F, Huss M, Wottrich A. Polysomnographie bei Kindern mit Hyperkinetischer Störung. In: G. Mayer (Ed.), *Schlafmedizin in Deutschland 1996*. MVV Medizin Verlag, München, 1997, pp. 59-61.
45. Kunz D, Bes F. Melatonin als Therapie-Alternative bei REM-Behaviour-Disorder Patienten. In: G. Mayer (Ed.), *Schlafmedizin in Deutschland 1996*. MVV Medizin Verlag, München, 1997.
46. Kraemer S, Bes F, Thumm J, Danker-Hopfe H, Schlattmann P. Schlafstörungen durch Schnarchen: Ist die Esmarchschiene eine Therapiemöglichkeit? In: G. Mayer (Ed.), *Schlafmedizin in Deutschland 1996*. MVV Medizin Verlag, München, 1997.
47. Baumgart-Schmitt R, Herrmann WM, Eilers R, Bes F. On the use of neural network techniques to analyse sleep-EEG data. First communication: Application of evolutionary and genetic algorithms to reduce the feature space and to develop classification rules. *Neuropsychobiology* 1997; 36:194-210.
48. Schulz H, Bes F, Jobert M. Modeling sleep propensity and sleep disturbances. In: Meier-Ewert K, Okawa M, (Eds.), *Sleep-Wake Disorders*. New York: Plenum Press. 1997: pp.11-26.

49. Bes F. Slaap-waakstoornissen bij zuigelingen en peuters. In: G.A. Kerkhof (Ed.), Slaap-waakstoornissen. Ontregelingen van de biologische klok. Boerhaave Commissie voor Postacademisch Onderwijs, Rijksuniversiteit Leiden, 1998, pp. 33-47.
50. Kunz D, Bes F, Schlattmann P, Herrmann WM. On pineal calcification and its relation to subjective sleep perception: a hypothesis-driven pilot study. *Psychiatry Res (Neuroim)* 1998; 82:187-191.
51. Schulz H, Bes FW. The temporal distribution of awakenings during bed rest. *J Sleep Res* 1998;7 (Suppl. 2):244.
52. Kunz D, Bes F. Melatonin restores REM-sleep muscle atonia in 5/6 RBD patients *Sleep* 1998; 21(3 Suppl): 195
53. Bes F. Slaapstoornissen bij zuigelingen en peuters. *Modern Medicine* 1999; 17: 16-21.
54. Kunz D, Bes F. Melatonin as a therapy in REM-sleep Behavior Disorder patients: An open-labeled pilot study on the possible influence of melatonin on REM-sleep regulation. *Movement Disorders* 1999; 14:507-511. doi:10.1002/1531-8257(199905)14:3<507::AID-MDS1021>3.0.CO;2-8.
55. Kunz D, Bes F. Effects of Exogenous Melatonin on Periodic Limb Movement Disorder: An Open Pilot Study. *Sleep* 1999; 22(1 Suppl): 162.
56. Witzhausen C, Bes F, Schulz H. Evidence for a circadian distribution of eye movement density during REM sleep in humans. *Sleep Research Online* 2001; 4:59-66.
57. Kunz D, Bes F. Exogenous melatonin in periodic limb movement disorder: An open clinical trial and a hypothesis. *Sleep* 2001; 24(2):183-187.
58. Bes F. Slaapstoornissen bij kinderen. In: Van Bommel A, Beersma D, De Groen J and Hofman W (Eds.), *Handboek slaap en slaapstoornissen*. Elsevier Gezondheidszorg, Maarssen, 2001, pp:175-181.
59. Kunz D, Mahlberg R, Müller C, Tilmann A, Bes F. Melatonin in patients with reduced REM sleep duration: Two randomized controlled trials. *J Clin Endocrinol Metabol* 2004; 89(1): 128-134. doi: 10.1210/jc.2002-021057.
60. Bes F, Jobert M, Schulz H. Modeling napping, post-lunch dip, and other variations in human sleep propensity. *Sleep* 2009; 32(3):392-398.
61. Bes F, Schulz H. Modeling human sleep propensity. In: *Sleep-Wake Research in the Netherlands, Volume 21*, edited by T. de Boer et al., The Dutch Society for Sleep-Wake Research, Leiden, 2010, pp. 115.
62. Schulz H, Bes FW. Modeling sleep propensity at different developmental ages. In: Nachkebia N (Ed), 9<sup>th</sup> Gagra Talks. International Conference on Fundamental Questions of Neuroscience. Compilation of Reports. Tbilisi, 2010, pp:123-133.
63. Kraemer S, Danker-Hopfe H, Pilhatsch M, Bes F, Bauer M. Effects of supraphysiological doses of levothyroxine on sleep in healthy subjects: a prospective polysomnographic study. *J Thy Res* 2011:1-7. doi:10.4061/2011/420580.

64. Bes F, Jobert M, Schulz H. Modeling sleep propensity when sleep is severely restricted. *Sleep* 2013;36(4):209-211. doi:10.5665/sleep.2558.
65. Jobert M, Wilson FJ, Roth T, Ruigt GSF, Anderer P, Drinkenburg WHIM, Bes FW, Brunovsky M, Danker-Hopfe H, Freeman J, van Gerven JMA, Gruber G, Kemp B, Klösch G, Ma J, Penzel T, Peterson BT, Schulz H, Staner L, Saletu B, Svetnik V. Guidelines for the Recording and Evaluation of Pharmacology-Sleep Studies in Man: The International Pharmacology-EEG Society (IPEG). *Neuropsychobiology* 2013; 67:127-167. doi: 10.1159/000343449.
66. Cordi M, Ackermann S, Bes FW, Hartmann F, Konrad BN, Genzel L, Pawlowski M, Steiger A, Schulz H, Rasch B, Dresler M. Lunar cycle effects on sleep and the file drawer problem. *Current Biology* 2014; 24(12):R549-550. doi: 10.1016/j.cub.2014.05.017.
67. Münch M, Nowozin C, Regente J, Bes F, De Zeeuw J, Hädel S, Wahnschaffe A, Kunz D. Blue-enriched morning light as countermeasure to light at the wrong time: effects on subjective sleepiness, cognition, sleep and circadian phase. *Neuropsychobiology* 2016; 74:207-218. doi: 10.1159/000477093.
68. Regente J, de Zeeuw J, Bes F, Nowozin C, Appelhof S, Wahnschaffe A, Münch M, Kunz D. Can short-wavelength depleted bright light during single simulated night shifts prevent circadian phase shifts? *Applied Ergonomics* 2017; 61:22-30. doi:10.1016/j.apergo.2016.12.014.
69. Schaefer C, Kunz D, Bes F. Melatonin effects in REM Sleep Behavior Disorder associated with Obstructive Sleep Apnea Syndrome: A case series. *Current Alzheimer Res* 2017; 14:1084-1089. doi: 10.2174/1567205014666170523094938.
70. Kunz D, Bes F. Twenty Years After: Another Case Report of Melatonin Effects on REM Sleep Behavior Disorder, Using Serial Dopamine Transporter Imaging. *Neuropsychobiology* 2017; 76:100–104. doi 10.1159/000488893
71. Wittenbrink N, Ananthasubramanian B, Münch M, Koller B, Maier B, Weschke C, Bes F, de Zeeuw J, Nowozin C, Wahnschaffe A, Wisniewski S, Zaleska M, Bartok O, Ashwal-Fluss R, Lammert H, Herzel H, Hummel M, Kadener S, Kunz D, Kramer A. BodyTime: High-accuracy determination of internal circadian time from a single blood sample. *J Clinical Investigation* 2018; 128(9):3826-39.
72. De Zeeuw J, Wisniewski S, Papakonstantinou A, Bes F, Wahnschaffe A, Zaleska M, Kunz D, Münch M. The alerting effect of the wake maintenance zone during 40 hours of sleep deprivation. *Scientific Reports* 2018; 8(1):11012. doi:10.1038/s41598-018-29380-z
73. Kunz D, Bes F. Melatonin Therapy of RBD. In: Schenck C, Högl B and Videnovic A (Eds.), *Rapid-Eye-Movement Sleep Behavior Disorder*. Springer Nature, New York, 2018, pp:315-331.

74. Postuma RB, Iranzo I, Hu M, Högl B, Boeve B, Manni R, Oertel W, Arnulf I, Ferini-Strambi L, Puligheddu M, Antelmi E, Cochen-De Cock V, Arnaldi D, Mollenhauer B, Videnovic A, Sonka K, Jung KY, Kunz D, Dauvilliers Y, Provini F, Lewis SJ, Buskova J, Pavlova M, Heidebreder A, Montplaisir JY, Santamaria J, Barber TR, Stefani A, St-Louis EK, Terzaghi M, Janzen A, Leu-Semenescu S, Plazzi G, Nobili F, Sixel-Doering F, Dusek P, Bes F, Cortelli P, Martens KE, Gagnon JF, Gaig C, Zucconi M, Trenkwalder C, Gan-Or Z, Lo C, Rolinski M, Mahlknecht P, Holzkecht E, Boeve AR, Teigen LN, Toscano G, Mayer G, Morbelli S, Dawson B, Pelletier A, and the International REM sleep Behavior Disorder Study Group. Risk and Predictors of dementia and Parkinsonism in idiopathic REM sleep behaviour disorder: a multicentre study. *Brain* 2019; 142:744-759. doi:10.1093/brain/awz030.
75. De Zeeuw J, Papakonstantinou A, Nowozin C, Stotz S, Zaleska M, Hädel S, Bes F, Münch M, Kunz D. Living in Biological Darkness: Objective sleepiness and the pupillary light responses are affected by different metameric lighting conditions during daytime. *J Biol Rhythms* 2019; 34(4): 410-31. doi: 10.1177/0748730419847845.
76. Kunz D, Stotz S, Bes F. Treatment of isolated REM-sleep behavior disorder using melatonin as a chronobiotic. *J Pineal Res* 2021; 71(2):e12759. doi:10.1111/jpi.12759.
77. Cesari M, Heidebreder A, St. Louis EK, Sixel-Döring F, Bliwise DL, Baldelli L, Bes F, Fantini ML, Iranzo A, Knudsen-Heier S, Mayer G, McCarter S, Nepozitek J, Pavlova M, Provini F, Santamaria J, Sunwoo J, Videnovic A, Högl B, Jennum P, Christensen JAE, Stefani A for the International RBD Study Group. Video-polysomnography procedures for diagnosis of rapid eye movement sleep behavior disorder (RBD) and the identification of its prodromal stages: Guidelines from the International RBD Study Group. *Sleep* 2021. In press.
78. Steiner O, De Zeeuw J, Stotz S, Bes F, Kunz D. Post-illumination pupil response as a biomarker for cognition in synucleinopathy. *J Parkinson Dis* 2021. In press.