

**Contact information**

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**Scientific interests**

My overall scientific interest is to understand how the immune system affects the sleep regulating networks of the brain. I am particularly interested in the hypocretin (also known as orexin) system, its involvement in sleep-wake neurophysiology, and how it is affected by immune stimuli. In the neurologic sleep disorder narcolepsy, the hypocretin producing neurons in hypothalamus are lost, due to what is hypothesized to be an autoimmune attack on the neurons. I have studied the details of the possible neuron-immune system interaction using patient samples, primary neuronal cultures, and animal models. My current research is focused on elucidating the role of the hypocretin neurons in the sickness response, and for this I use animal models, in vivo electrophysiology, molecular biology tools, and single cell RNA sequencing.

**Occupation**

|           |   |
|-----------|---|
| 2018-     | Associate Professor (non-tenured), Department of Neuroscience, University of Copenhagen   |
| 2017-2018 | Assistant Professor, Center for Basic Metabolic Research, University of Copenhagen, Denmark   |
| 2015-2017 | External Associate Professor (teaching), Faculty of Health and Disease, University of Copenhagen, Denmark                                   |
| 2012-2107 | Senior researcher and group leader (PI), Molecular Sleep Laboratory, Department of Clinical Biochemistry, Rigshospitalet, Glostrup Denmark. |
| 2009-2012 | Post doc, Stanford Center for Sleep Sciences, Stanford University, California, USA.   |
| 2005-2009 | Ph.D.-student, Neurobiology Research Unit, Rigshospitalet, Copenhagen, Denmark.   |
| 2007-2008 | Visiting scientist, Deniz Kirik Lab, Wallenberg Neurocenter, Lund University, Sweden.   |
| 2003-2004 | Research assistant, Neurobiology Research Unit, Rigshospitalet, Copenhagen, Denmark.  |

**Maternity leave**

|         |  |
|---------|--|
| 2006    | 8 months (April 1st – December 4th)            |
| 2008-09 | 9 months (April 19th 2008 – January 31st 2009) |

**Education**

|      |   |
|------|---|
| 2009 | Ph.D., Graduate School of Neuroscience, University of Copenhagen (October 29th 2009)<br>Supervisor: Professor Gitte Moos Knudsen, MD, PhD |
| 2003 | M.Sc., Human Biology, University of Copenhagen  |
| 2000 | B.Sc., Chemistry, Technical University of Denmark   |

**Awards and honours**

|      |   |
|------|---|
| 2016 | Invited for 2 <sup>nd</sup> stage interview in ERC starting grant evaluation. Final score “A” but outside funding range (top 5% of all applicants). |
| 2015 | Elected member of The Royal Young Academy of Denmark (8 members elected/year across all disciplines – humanities, social and natural sciences)      |
| 2013 | Lundbeck Foundation Fellowship Award  |
| 2011 | Young Investigator of the Year Award, American Association of Sleep Medicine  |
| 1997 | Study fellowship, Pretzmann Aggerholms Legat  |
| 1996 | Best graduating student of the year, Kolding High School  |
| 1995 | Representative for Denmark at the International Mathematical Olympiad, Toronto  |

**Grants and fellowships**

|      |   |
|------|---|
| 2019 | Lundbeck Foundation Grant (10 mio DKK). Co-PI.                                    |
| 2018 | Pre-seed grant (3.5 mio DKK), Novo Seeds. Main PI with 2 co-PIs                   |
| 2018 | DFE-ERC grant (250 KDKK), Danish Medical Council. Solo PI.                        |
| 2018 | Project collaboration (500 KDKK), NEVSOM, Oslo. Co-PI                             |
| 2017 | Project 1 grant (2 mio DKK), Danish Medical Council. Main PI with 1 co-PI.        |
| 2017 | UCB Pharma S.A., investigator driven project (370 KDKK). Solo PI.                 |
| 2017 | Augustinus Foundation (200 KDKK). Solo PI   |
| 2016 | RegionH TechTransfer proof-of-concept grant (400 KDKK). Main PI with 1 co-PI.     |
| 2015 | UCB Pharma S.A., investigator driven project (440 KDKK). Main PI with 1 co-PI.    |
| 2015 | Augustinus Foundation (100 KDKK). Solo PI.  |
| 2014 | Toyota Fonden (100 KDKK). Solo PI   |
| 2013 | Carlsberg Foundation grant (400 KDKK). Main PI with 1 co-PI.                      |
| 2013 | Marie Curie Career Integration Grant (750 KDKK). Solo PI.                         |
| 2012 | Lundbeck foundation 5-year Fellowship (10 mio DKK). Solo PI                       |
| 2012 | 2-year research grant (2 mio DKK), Danish Medical Council. Main PI with 2 co-PIs. |
| 2009 | 3-year post doc fellowship (2 mio DKK), Danish Medical Council. Solo PI.          |
| 2005 | Ph.D.-stipend (1.8 mio DKK), University of Copenhagen                             |
| 2003 | Research grant (80 KDKK), Augustinus Foundation                                   |

**Innovation**

Founded spin-out company Ceremedy Aps. in 2018.  
2 filed patent applications.

**Invited talks and oral presentations****Keynote speaker:**

9th Congress of the International Society of NeuroImmunoModulation, Belgium 2014  
*Title: "Narcolepsy - an autoimmune disease"*

*Invited participant and speaker at small closed expert meetings:*

Narcolepsy Think Tank, Switzerland 2015  
2nd International Scientific Group of Circadian Rhythm Experts (INSPIRE), Italy 2014

*Invited speaker:*

24th Congress of the European Sleep Research Society, Bern 2018  
9th Narcolepsy Day, Montpellier 2018  
5th Nordic Narcolepsy Meeting, Helsinki 2018  
8th Narcolepsy Day, Mallorca, 2017  
4th Nordic Narcolepsy Meeting, Copenhagen 2017  
23rd Congress of the European Sleep Research Society, Bologna 2016  
7th Congress of the World Sleep Federation, Turkey 2015.  
3rd Nordic Narcolepsy Meeting, Sweden 2015  
17th Nordic Sleep Conference, Sweden 2015  
6th Narcolepsy Day, Germany 2015  
Symposium on narcolepsy, Hôpital Purpan, University of Toulouse, France, 2014  
22nd Congress of the European Sleep Research Society, Estonia 2014  
5th Narcolepsy Day, Copenhagen 2014  
Scandinavian Physiological Society Annual Meeting, Sweden 2014  
2nd Nordic Narcolepsy Meeting, Norway 2014  
15th Nordic Sleep Conference, Copenhagen 2013  
1st Nordic Narcolepsy Meeting, Finland 2013

*Oral presentation of abstract:* American Society of Human Genetics 2010, Sleep 2011, Sleep 2012, Sleep 2014

### **Public speaking and knowledge dissemination**

Author of popular science book on sleep: "Forstå din søvn. Hvad videnskaben siger om at sove godt og hvordan du opnår det." Gyldendal, 2019.

#### *Talks and Media interviews focused on own research results:*

TV2 Vejret. Gave interview at Danish weather show on our research on the hypocretin system and seasonal rhythms. 2018

Ud og Se med DSB. Profile of the month March 2018

Vin og Videnskab, Statens Naturhistoriske Museum "Når immunforsvaret angriber raske hjerneceller". 2017

24/7 Radio program "24 spørgsmål til professoren" hosted by Lone Frank 2017

DR2 Morgen, talked about own research into narcolepsy, 2015

Invited blogger for The Danish Ministry of Science, Innovation and Higher Education 2010

#### *Popular knowledge dissemination about sleep in general:*

Go'morgen Danmark TV2, Jan 3 2019

P1 radio, "Recept". 1 hour radio show about health aspects of sleep, Nov 2018

Ungdommens Naturvidenskabelige Forening "Søvnens mysterium" 2014, 2016, 2017, 2018

Tanker og Bobler, Frederiksberg Bibliotek "Søvn" 2018

475 års jubilæum Kolding Gymnasium "Hvad er søvn?" 2017

Kulturnatten, 2 lectures "Søvnens mysterie" 2016

Roskilde Festival Science Talk "Søvn" 2015

P1 radio, "Videnskabens Verden" 2013

DIR dage – Open House Glostrup Hospital, "Søvn og Drømme" 2013

Lundbeck foundation Lecture "Søvnens mysterie", Experimentarium 2012

Frequently invited to comment on research related to sleep by Danish media: DR1 TVavisen, DR2 Dagen, DR2 Morgen, P1, P4, Radio 24/7, Politiken, BT, Berlinske, videnskab.dk, Samvirke, Ud og Se med DSB.

### **Teaching:**

2019- Class room teaching (SAU) in anaesthesia at "Kursus i kliniske sygdomsenheder", medical students, University of Copenhagen.

2017- Lecturer at "Neuroimmunology", immunology master students, University of Copenhagen

2016- Lecturer "Post doc grant writing workshop", University of Copenhagen

2015-17 Class room teaching (SAU) at "Basal Immunologi", 5.semester medical students, University of Copenhagen

2015 Lecturer at "Narcolepsy Master Class", Budapest

2014 Lecturer at "Role of neuroinflammation in etiology of CNS diseases", PhD course, University of Copenhagen.

2005-07 Lecturer at "Laboratory Techniques", internal lecture series at Neurobiology Research Unit.

### **Supervision and mentoring:**

Post docs: Julie Jacobsen (2016), Adriano Zager (2016-17), Anja Holm (2014-17), Matilda Degen Vinther (2013-16), Kim Boddum (2014-15), Lars Schack Kruse (2014-15).

Awards for post docs:

2017 European Sleep Research Society Young Researcher Award for post doc Anja Holm

2016 Christian J. Gillin Young Researcher Award for post doc Kim Boddum

**PhD students:****Main supervisor:**

2018- Helene Ægidius, industry phd-student, Gubra Aps. and University of Copenhagen

2013-16 Karin Dreisig Sørensen, University of Copenhagen

2013-16 Julie Jacobsen, University of Copenhagen

**Co-supervisor:**

2018- Sara Diana Lolansen, main supervisor Asso. Prof. Nanna MacAulay, U Copenhagen

2018- Nane Griem-Krey, main supervisor Asso. Prof. Petrine Wellendorph, U Copenhagen

2016- Eva Thorstensen, main supervisor Prof. Poul Jennum, Rigshospitalet-Glostrup, Copenhagen

2016- Rannveig Viste, phd-student, main supervisor Dr. Stine Knudsen, Ullevål, Oslo, Norge

2011-14 Anja Holm, phd-student, main supervisor Prof. Poul Jennum, Rigshospitalet-Glostrup, Copenhagen

2007-10 Anders Ettrup, phd-student, main supervisor Prof. Gitte Moos Knudsen, Rigshospitalet, Copenhagen

**Undergraduate students:**

2018- Aleksandra Parka, master-student, University of Copenhagen

2016-17 Kasper T. Karstensen, master-student, Technical University of Denmark

2016-17 Maja Dommer, master-student, University of Copenhagen

2016-17 Helene Ægidius, master-student, University of Copenhagen

2016-17 Natalie Hauglund, master-student, University of Copenhagen

2016 Nikolaj Pagh Kristensen, bachelor-student, University of Copenhagen

2015-16 Maria Chiara Arrivas, master-student, University of Bologna

2015 Georgia Katsoudi, master-student, Maastricht University

2014-15 Kristine Moseholm, master-student, University of Copenhagen

2012-14 Jessica Lauren Thomas, master-student, University of Copenhagen

2012-17 Louise Sund Pedersen, bachelor and master-student, University of Copenhagen

2013-14 Maren Schrölkamp, master-student, Freie Universität, Berlin

2010-11 Patricia Chang, undergraduate summer intern

2008 Thomas Rune Nielsen, master-student

2007 Kristin S. Thygesen, medical student (lab volunteer)

2006 Cecilie L Licht, human-biology student (short term research project)

**Management experience and education**

2017-18 Vice president, The Royal Young Academy of Denmark.

2012- Head of research group.

2013-14 Research Management Course, CBS-Executive

2009-12 Project management of own post doc project

2007-08 Board member RHUF (Region Hovedstadens Unge Forskere)

2005-09 Board member FYF (Foreningen for Yngre Forskere på Rigshospitalet)

**International relations and commitments***Collaborators:*

Prof. Antoine Adamatidis, University of Bern, Switzerland

Prof. Mehdi Tafti, University of Lausanne, Switzerland

Prof Yves Dauvilliers, Montpellier, France

Prof. Giuseppe Plazzi and Asso Prof. Fabio Pizza, Bologna, Italy

Head of research Stine Knudsen, NEVSOM, Oslo, Norway.

Prof Elizabeth Mellins, Stanford University, Palo Alto, USA

Prof. Emmanuel Mignot, Stanford University, Palo Alto; USA

*Commitments:*

- 2018- Associate Editor, *Frontiers in Neuroscience*
- 2018- Board Member, European Narcolepsy Network ([EU-NN.com](http://EU-NN.com))
- 2016-17 Organiser, 4th Nordic Narcolepsy Meeting, Denmark
- 2014- Member Scientific Committee, European Narcolepsy Network
- 2015 Scientific planning committee, 3rd Nordic Narcolepsy Meeting, Sweden
- 2014 Scientific planning committee, 2nd Nordic Narcolepsy Meeting, Norway
- 2014 Organiser, 5th European Narcolepsy Network (EU-NN) Meeting and Patients Day  
Copenhagen, Denmark

Reviewer for scientific journals: *Nature*, *Brain Behaviour and Immunology*, *Sleep*, *PlosOne*, *Journal of Neuroimmunology*, *Journal of Sleep Research*, *Neuropharmacology*, *European Journal of Inflammation*, *Translational Psychiatry*, *Experimental Neurology*, *Psychiatric Genetics* etc.

**Memberships**

- 2015- The Royal Young Academy of Denmark
- 2013- Sleep Research Society
- 2012- European Sleep Research Society, International Society for Neuroimmunology
- 2009- American Society for Sleep Medicine
- 2003- Society for Neuroscience

**Bibliometric summary (as of May 2019)**

Peer reviewed journal papers: 54 (Kornum BR; Rahbek Kornum B; Rahbek B)

Books: 1

Book chapters: 4

First authorships: 15, Last authorships: 14, Solo authorships: 3.

ResearcherID (Web of science): K-9193-2015

ORCID: 0000-0002-2515-9451

Citations: 2235, H-index: 21

Calculated using Google Scholar

**Selected publications**

1. Pedersen NW, Holm A, Kristensen NP, Bjerregaard A, Bentzen AK, Tamhane T, Burgdorf KS, Ullum H, Jennum P, Knudsen S, Hadrup SR, **Kornum BR** (2019). Broad presence of autoreactive CD8 T cells against narcolepsy type 1-relevant proteins. *Nature Communications*, 10(1):837.
2. Gustafsson JR, Katsioudi G, Degn M, Ejlerskov P, Issazadeh-Navikas S, **Kornum BR** (2018). DNMT1 regulates expression of MHC class I in post-mitotic neurons. *Molecular Brain*. 11(1):36.
3. Dreisig K, Sund L, Dommer MW, Kristensen NP, Boddum K, Viste R, Fredholm S, Odum N, Jäättelä, Skov S, **Kornum BR** (2018). Human P2Y11 Expression Level Affects Human P2X7 Receptor-Mediated Cell Death. *Frontiers in Immunology*, 9:1159.
4. Degn M#, Dauvilliers Y#, Dreisig K, Lopez R, Pfister C, Pradervand S, **Kornum BR#**, Tafti M#. (2017). Rare missense mutations in P2RY11 in narcolepsy with cataplexy. *Brain*. 140:1657-1668.
5. **Kornum BR**, Knudsen S, Ollila H, Pizza F, Jennum P, Dauvilliers Y, and Overeem S (2017). Narcolepsy. *Nature Reviews Disease Primers*. 3:16100.
6. Boddum K, Hansen MH, Jennum PJ, **Kornum BR** (2016). Cerebrospinal Fluid Hypocretin-1 (Orexin-A) Level Fluctuates with Season and Correlates with Day Length. *PLoS One*. 2016, 11(3):e0151288.

7. Justinussen JL, Holm A, **Kornum BR** (2015). An optimized method for measuring hypocretin-1 peptide in the mouse brain reveals differential circadian regulation of hypocretin-1 levels rostral and caudal to the hypothalamus. *Neuroscience*. Dec;310:354-61
8. Degn M, **Kornum BR** (2015). Type 1 narcolepsy: a CD8<sup>+</sup> T cell-mediated disease? *Annals of the New York Academy of Sciences*. Sep;1351:80-8.
9. **Kornum BR**, Pizza F, Knudsen S, Plazzi G, Jennum P, Mignot E (2015) Cerebrospinal fluid cytokine levels in type 1 narcolepsy patients very close to onset. *Brain, Behavior, and Immunity*. Oct;49:54-8.
10. **Kornum BR**, Kawashima M, Faraco J, Lin L, Rico TJ, Hesselson S, Axtell RC, Kuipers H, Weiner K, Hamacher A, Kassack MU, Han F, Knudsen S, Li J, Dong X, Winkelmann J, Plazzi G, Nevsimalova S, Hong SC, Honda Y, Honda M, Högl B, Ton TG, Montplaisir J, Bourgin P, Kemlink D, Huang YS, Warby S, Einen M, Eshragh JL, Miyagawa T, Desautels A, Ruppert E, Hesla PE, Poli F, Pizza F, Frauscher B, Jeong JH, Lee SP, Strohl KP, Longstreth WT Jr, Kvale M, Dobrovolna M, Ohayon MM, Nepom GT, Wichmann HE, Rouleau GA, Gieger C, Levinson DF, Gejman PV, Meitinger T, Peppard P, Young T, Jennum P, Steinman L, Tokunaga K, Kwok PY, Risch N, Hallmayer J, Mignot E (2011). Common variants in P2RY11 are associated with narcolepsy. *Nature Genetics*, 43:66-71.