

# List of Publications

## Prof. Peter Achermann

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- \* Book chapters
- \*\* Multimedia
- \*\*\* Conference proceedings

### 1987

**Achermann P.** and Borbély A. A. (1987) Dynamics of EEG slow wave activity during physiological sleep and after administration of benzodiazepine hypnotics. *Human Neurobiol.* 6, 203-210.

### 1988

**Achermann P.** (1988) Schlafregulation des Menschen: Modelle und Computersimulationen. ETH Zürich.

\*Borbély A. A., **Achermann P.**, Trachsel L. and Tobler I. (1988) Sleep homeostasis in humans and rats. In: *Clinical Physiology of Sleep* (ed. R. Lydic and J. Biebuyck), American Physiological Society, pp. 191-198.

### 1989

Borbély A. A., **Achermann P.**, Trachsel L. and Tobler I. (1989) Sleep initiation and initial sleep intensity: interactions of homeostatic and circadian mechanisms. *J. Biol. Rhythms* 4, 149-160.

### 1990

\***Achermann P.**, Beersma D. G. M. and Borbély A. A. (1990) The two-process model: ultradian dynamics of sleep. In: *Sleep '90* (ed. J. A. Horne), Pontenagel Press, pp. 296-300.

**Achermann P.** and Borbély A. A. (1990) Simulation of human sleep: ultradian dynamics of electroencephalographic slow-wave activity. *J. Biol. Rhythms* 5, 141-157.

### 1991

Borbély A. A. and **Achermann P.** (1991) Ultradian dynamics of sleep after a single dose of benzodiazepine hypnotics. *Eur. J. Pharmacol.* 195, 11-18.

Trachsel L., Tobler I., **Achermann P.** and Borbély A. A. (1991) Sleep continuity and the REM-nonREM cycle in the rat under baseline conditions and after sleep deprivation. *Physiol. Behav.* 49, 575-580.

### 1992

**Achermann P.** and Borbély A. A. (1992) Combining different models of sleep regulation. *J. Sleep Res.* 1, 144-147.

Borbély A. A. and **Achermann P.** (1992) Concepts and models of sleep regulation: an overview. *J. Sleep Res.* 1, 63-79.

### 1993

\***Achermann P.** and Borbély A. A. (1993) Modeling sleep regulation. In: *Sleep-wakefulness* (ed. V. M. Kumar, H. N. Mallick and U. Nayar), Wiley Eastern Ltd, pp. 95-99.

**Achermann P.**, Dijk D. J., Brunner D. P. and Borbély A. A. (1993) A model of human sleep homeostasis based on EEG slow-wave activity: quantitative comparison of data and simulations. *Brain Res. Bull.* 31, 97-113.

Borbély A. A. and **Achermann P.** (1993) Simulation of sleep regulation and daytime vigilance. ESA Report.

Geering B. A., **Achermann P.**, Eggimann F. and Borbély A. A. (1993) Period-amplitude analysis and power spectral analysis: a comparison based on all-night sleep EEG recordings. *J. Sleep Res.* 2, 121-129.

### 1994

**Achermann P.** and Borbély A. A. (1994) Simulation of daytime vigilance by the additive interaction of a homeostatic and a circadian process. *Biol. Cybern.* 71, 115-121.

**Achermann P.**, Hartmann R., Gunzinger A., Guggenbühl W. and Borbély A. A. (1994a) All-night sleep EEG and artificial stochastic control signals have similar correlation dimensions. *Electroencephalogr. Clin. Neurophysiol.* 90, 384-387.

**Achermann P.**, Hartmann R., Gunzinger A., Guggenbühl W. and Borbély A. A. (1994b) Correlation dimension of the human sleep electroencephalogram: cyclic changes in the course of the night. *Eur. J. Neurosci.* 6, 497-500.

\***Achermann P.**, Hartmann R., Gunzinger A., Guggenbühl W. and Borbély A. A. (1994c) Estimation of the correlation dimension of all-night sleep EEG data with a personal super computer. In: *Fractals in biology and medicine* (ed. T. F. Nonnenmacher, G. A. Losa and E. R. Weibel), Birkhäuser, pp. 283-290.

### 1995

**Achermann P.** and Borbély A. A. (1995) Konzepte und Modelle der Schlafregulation. *Wien. Med. Wochenschr.* 145, 402-406.

**Achermann P.**, Werth E., Dijk D. J. and Borbély A. A. (1995) Time course of sleep inertia after nighttime and daytime sleep episodes. *Arch. Ital. Biol.* 134, 109-119.

Beersma D. G. M. and **Achermann P.** (1995) Changes of sleep EEG slow-wave activity in response to sleep manipulations: to what extent are they related to changes in REM sleep latency? *J. Sleep Res.* 4, 23-29.

\*Borbély A. A. and **Achermann P.** (1995) The two-process model of sleep regulation: overview and recent developments. In: *Sleep. Physiology and pathology* (ed. W. Szelenberger and A. Kukwa), Elma Books, pp. 15-26.

Dijk D. J., Roth C., Landolt H. P., Werth E., Aeppli M., **Achermann P.** and Borbély A. A. (1995) Melatonin effect on daytime sleep in men: suppression of EEG low frequency activity and enhancement of spindle frequency activity. *Neurosci. Lett.* 201, 13-16.

### 1996

\***Achermann P.** and Borbély A. A. (1996) Simulations of circadian system and vigilance during space missions. In: *Advances in Space Biology and Medicine*, Vol. 5 (ed. S. L. Bonting), JAI Press, pp. 201-212.

Landolt H. P., Dijk D. J., **Achermann P.** and Borbély A. A. (1996) Effect of age on the sleep EEG: slow-wave activity and spindle frequency activity in young and middle-aged men. *Brain Res.* 738, 205-212.

Tobler I., Gaus S. E., Deboer T., **Achermann P.**, Fischer M., Rüdlicke T., Moser M., Oesch B., McBride P. A. and Manson J. C. (1996) Altered circadian activity rhythms and sleep in mice devoid of prion protein. *Nature* 380, 639-642.

Werth E., **Achermann P.** and Borbély A. A. (1996) Brain topography of the human sleep EEG: antero-posterior shifts of spectral power. *NeuroReport* 8, 123-127.

Werth E., Dijk D. J., **Achermann P.** and Borbély A. A. (1996) Dynamics of the sleep EEG after an early evening nap: experimental data and simulations. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 271, R501-R510.

### 1997

**Achermann P.** and Borbély A. A. (1997) Low-frequency (< 1 Hz) oscillations in the human sleep EEG. *Neuroscience* 81, 213-222.

\*Borbély A. A., **Achermann P.**, Werth E. and Endo T. (1997) Sleep regulation in humans - conceptual advances and novel approaches. In: *Sleep and sleep disorders: From molecule to behavior* (ed. O. Hayaishi and S. Inoué), Academic Press Inc, pp. 147-161.

Werth E., **Achermann P.** and Borbély A. A. (1997) Fronto-occipital EEG power gradients in human sleep. *J. Sleep Res.* 6, 102-112.

Werth E., **Achermann P.**, Dijk D. J. and Borbély A. A. (1997) Spindle frequency activity in the sleep EEG: individual differences and topographical distribution. *Electroencephalogr. Clin. Neurophysiol.* 103, 535-542

### 1998

**Achermann P.** and Borbély A. A. (1998a) Coherence analysis of the human sleep electroencephalogram. *Neuroscience* 85, 1195-1208.

**Achermann P.** and Borbély A. A. (1998b) Temporal evolution of coherence and power in the human sleep electroencephalogram. *J. Sleep Res.* 7, 36-41.

\*\*Borbély A. A., **Achermann P.**, Geering B. and Tobler I. (1998) Processes underlying sleep regulation. In: *Psychopharmacology - 1998 Edition CD-ROM* (ed. S. J. Watson). Lippincott-Raven.

\*\*Borbély A. A., Tobler I., **Achermann P.** and Geering B. (1998) Bits of Sleep CD-ROM. Sleep Research Laboratory of the University of Zurich, Institute of Pharmacology.

Endo T., Roth C., Landolt H. P., Werth E., Aeschbach D., **Achermann P.** and Borbély A. A. (1998a) Selective REM sleep deprivation in humans: effects on sleep and sleep EEG. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 274, R1186-R1194.

Endo T., Roth C., Landolt H. P., Werth E., Aeschbach D., **Achermann P.** and Borbély A. A. (1998b) Effect of frequent brief awakenings from nonREM sleep on the nonREM-REM sleep cycle. *Psychiatry Clin. Neurosci.* 52, 129-130.

McKeown M. J., Humphries C., **Achermann P.**, Borbély A. A. and Sejnowski T. J. (1998) A new method for detecting state changes in the EEG: exploratory application to sleep data. *J. Sleep Res.* 7, 48-56.

Roth C., Landolt H. P., **Achermann P.**, Teuscher A. and Borbély A. A. (1998) Human versus porcine insulin in patients with insulin-dependent diabetes mellitus: differences in sleep and the sleep EEG during near-normoglycemia. *Sleep* 21, 92-100.

Tobler I., Herrmann M., Cooper H. M., Negroni J., Nevo E. and **Achermann P.** (1998) Rest-activity rhythm of the blind mole rat *Spalax ehrenbergi* under different lighting conditions. *Behav. Brain Res.* 96, 173-183.

### 1999

**Achermann P.** and Kunz H. P. (1999) Modeling circadian rhythm generation in the suprachiasmatic nucleus with locally coupled self-sustained oscillators: phase shifts and phase response curves. *J. Biol. Rhythms* 14, 460-468.

Borbély A. A. and **Achermann P.** (1999) Sleep homeostasis and models of sleep regulation. *J. Biol. Rhythms* 14, 557-568.

Borbély A. A., Huber R., Graf T., Fuchs B., Gallmann E. and **Achermann P.** (1999) Pulsed high-frequency electromagnetic field affects human sleep and sleep electroencephalogram. *Neurosci. Lett.* 275, 207-210.

Dinges D. F. and **Achermann P.** (1999) Commentary: Future considerations for models of human neurobehavioral function. *J. Biol. Rhythms* 14, 598-601.

Landolt H. P., Meier V., Burgess H. J., Finelli L. A., Cattelin F., **Achermann P.** and Borbély A. A. (1999) Serotonin-2 receptors and human sleep: effect of a selective antagonist on EEG power spectra. *Neuropsychopharmacology* 21, 455-466.

Roth C., **Achermann P.** and Borbély A. A. (1999a) Alpha activity in the human REM sleep EEG: topography and effect of REM sleep deprivation. *Clin. Neurophysiol.* 110, 632-635.

Roth C., **Achermann P.** and Borbély A. A. (1999b) Frequency and state specific hemispheric asymmetries in the human sleep EEG. *Neurosci. Lett.* 271, 139-142.

Schwierin B., **Achermann P.**, Deboer T., Oleksenko A., Borbély A. A. and Tobler I. (1999) Regional differences in the dynamics of the cortical EEG in the rat after sleep deprivation. *Clin. Neurophysiol.* 110, 869-875.

### 2000

\***Achermann P.** (2000) Topography of the sleep EEG in humans: power and coherence analysis. In: *The Regulation of Sleep*, Vol. 8 (ed. A. A. Borbély, O. Hayaishi, T. Sejnowski and J. S. Altman), HFSP - Human Frontier Science Program, pp. 75-86.

\*Borbély A. A. and **Achermann P.** (2000) Sleep homeostasis and models of sleep regulation. In: *Principles and Practice of Sleep Medicine* (ed. M. H. Kryger, T. Roth and W. C. Dement), W.B. Saunders Co, pp. 377-390.

Finelli L. A., Baumann H., Borbély A. A. and **Achermann P.** (2000) Dual electroencephalogram markers of human sleep homeostasis: correlation between theta activity in waking and slow-wave activity in sleep. *Neuroscience* 101, 523-529.

Finelli L. A., Landolt H. P., Buck A., Roth C., Berthold T., Borbély A. A. and **Achermann P.** (2000) Functional neuroanatomy of human sleep states after zolpidem and placebo: a H<sub>2</sub><sup>15</sup>O-PET study. *J. Sleep Res.* 9, 161-173.

Huber R., Graf T., Cote K. A., Wittmann L., Gallmann E., Matter D., Schuderer J., Kuster N., Borbély A. A. and **Achermann P.** (2000) Exposure to pulsed high-frequency electromagnetic field during waking affects human sleep EEG. *NeuroReport* 11, 3321-3325.

Landolt H. P., Finelli L. A., Roth C., Buck A., **Achermann P.** and Borbély A. A. (2000) Zolpidem and sleep deprivation: different effect on EEG power spectra. *J. Sleep Res.* 9, 175-183.

Roth C., Jeanmonod D., Magnin M., Morel A. and **Achermann P.** (2000) Effects of medial thalamotomy and pallido-thalamic tractotomy on sleep and waking EEG in pain and Parkinsonian patients. *Clin. Neurophysiol.* 111, 1266-1275.

**2001**

**Achermann P.**, Finelli L. A. and Borbély A. A. (2001) Unihemispheric enhancement of delta power in human frontal sleep EEG by prolonged wakefulness. *Brain Res.* 913, 220-223.

\*Borbély A. A., Dijk D. J., **Achermann P.** and Tobler I. (2001) Processes underlying the regulation of the sleep-wake cycle. In: *Circadian Clocks* (ed. J. A. Takahashi, F. W. Turek and R. Y. Moore), Kluwer Academic / Plenum Publishers, pp. 457-479.

Finelli L. A., **Achermann P.** and Borbély A. A. (2001) Individual 'fingerprints' in human sleep EEG topography. *Neuropsychopharmacology* 25, S57-S62.

Finelli L. A., Borbély A. A. and **Achermann P.** (2001b) Functional topography of the human nonREM sleep electroencephalogram. *Eur. J. Neurosci.* 13, 2282-2290.

Graf T., Engeler J., **Achermann P.**, Mosimann U. P., Noss R., Fisch H. and Schlaepfer T. E. (2001) High frequency repetitive transcranial magnetic stimulation (rTMS) of the left dorsolateral cortex: EEG topography during waking and subsequent sleep. *Psychiatry Res.-Neuroimaging* 107, 1-9.

Lehmann D., Faber P. L., **Achermann P.**, Jeanmonod D., Gianotti L. R. R. and Pizzagalli D. (2001) Brain sources of EEG gamma frequency during volitionally mediation-induced, altered states of consciousness, and experience of the self. *Psychiatry Res.-Neuroimaging* 108, 111-121.

**2002**

Gottselig J. M., Bassetti C. L. and **Achermann P.** (2002) Power and coherence of sleep spindle frequency activity following hemispheric stroke. *Brain* 125, 373-383.

Huber R., Treyer V., Borbély A., Schuderer J., Gottselig J., Landolt H. P., Werth E., Berthold T., Kuster N., Buck A. and **Achermann P.** (2002) Electromagnetic fields, such as those from mobile phones, alter regional cerebral blood flow and sleep and waking EEG. *J. Sleep Res.* 11 289-295.

Müller C., **Achermann P.**, Bischof M., Nirrko A. C., Roth C. and Bassetti C. (2002) Visual and spectral analysis of sleep EEG in acute hemispheric stroke. *Eur. Neurol.* 48, 164-171.

Vock J., **Achermann P.**, Bischof M., Milanova M., Müller C., Nirrko A., Roth C. and Bassetti C.L. (2002) Evolution of sleep and sleep EEG after hemispheric stroke. *J. Sleep Res.* 11, 331-338.

Werth E., Cote K.A., Gallmann E., Borbély A.A. and **Achermann P.** (2002) Selective REM sleep deprivation during daytime sleep. I. Time course of interventions and recovery sleep. *Am. J. Physiol. Regul. Integr. Comp. Physiol.*, 283, R521-R526.

Werth E., **Achermann P.** and Borbély A.A. (2002) Selective REM sleep deprivation during daytime. II. Muscle atonia in non-REM sleep. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 283, R527-R532.

**2003**

**Achermann P.** and Borbély A. A. (2003) Mathematical models of sleep regulation. *Front. Biosci.* 8, 683-693.

\*\*\***Achermann P.**, Huber R., Schuderer J., Kuster N. and Borbély A. A. (2003) Effects of exposure to electromagnetic fields of type GSM on sleep EEG and regional cerebral blood flow. *Proc. 15th Int. Zurich Symposium on Electromagnetic Compatibility, Zurich, Switzerland, February 18-20*, pp. 289-292.

Huber R., Schuderer J., Graf T., Jütz K., Borbély A. A., Kuster N. and **Achermann P.** (2003) Radio frequency electromagnetic field exposure in humans: estimation of SAR distribution in the brain, effects on sleep and heart rate. *Bioelectromagnetics* 24, 262-276.

Kunz H. P. and **Achermann P.** (2003) Simulation of circadian rhythm generation in the suprachiasmatic nucleus with locally coupled self-sustained oscillators. *J. Theor. Biol.* 224, 63-78.

Olbrich E., **Achermann P.** and Meier P. F. (2003) Dynamics of human sleep EEG. *Neurocomputing* 52-54, 857-862.

Shen Y., Olbrich E., **Achermann P.** and Meier P. F. (2003) Dimensional complexity and spectral properties of the human sleep EEG. *Clin. Neurophysiol.* 114, 199-209.

**2004**

**Achermann P.** (2004) The two-process model of sleep regulation revisited. *Aviat. Space Environ. Med.* 75, A37-A43.

Gottselig J. M., Brandeis D., Hofer-Tinguely G., Borbély A. A. and **Achermann P.** (2004) Human central auditory plasticity associated with tone sequence learning. *Learn. Mem.* 11, 162-171.

Gottselig J. M., Hofer-Tinguely G., Borbély A. A., Regel S. J., Landolt H. P., Rétey J. V. and **Achermann P.** (2004b) Sleep and rest facilitate auditory learning. *Neuroscience* 127, 557-561.

Jenni O. G., Borbély A. A. and **Achermann P.** (2004) Development of the nocturnal sleep electroencephalogram in human infants. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 286, R528-R538.

Landolt H. P., Rétey J. V., Tönz K., Gottselig J. M., Khatami R., Buckelmüller I. and **Achermann P.** (2004) Caffeine attenuates waking and sleep electroencephalographic markers of sleep homeostasis in humans. *Neuropsychopharmacology* 29, 1933-1939.

Olbrich E. and **Achermann P.** (2004) Oscillatory events in the human sleep EEG - detection and properties. *Neurocomputing* 58-60, 129-135.

Vyazovskiy V., **Achermann P.**, Borbély A. A. and Tobler I. (2004) Interhemispheric coherence of the sleep electroencephalogram in mice with congenital callosal dysgenesis. *Neuroscience* 124, 481-488.

Vyazovskiy V. V., **Achermann P.**, Borbély A. A. and Tobler I. (2004) The dynamics of spindles and EEG slow-wave activity in NREM sleep in mice. *Arch. Ital. Biol.* 142, 511-523.

## 2005

\*Borbély A. A. and **Achermann P.** (2005) Sleep homeostasis and models of sleep regulation. In: *Principles and Practice of Sleep Medicine*, 4<sup>th</sup> Edition (ed. M. H. Kryger, T. Roth and W. C. Dement), Elsevier Saunders, Philadelphia, pp. 405-417.

Hofer-Tinguely G., **Achermann P.**, Landolt H. P., Regel S. J., Rétey J. V., Dürr R., Borbély A. A. and Gottselig J. M. (2005) Sleep inertia: performance changes after sleep, rest and active waking. *Cogn. Brain Res.* 22, 323-331.

Huber R., Treyer V., Schuderer J., Berthold T., Buck A., Kuster N., Landolt H. P. and **Achermann P.** (2005) Exposure to pulse-modulated radio frequency electromagnetic fields affects regional cerebral blood flow. *Eur. J. Neurosci.* 21, 1000-1006.

Jenni O. G., **Achermann P.** and Carskadon M. A. (2005) Homeostatic sleep regulation in adolescents. *Sleep* 28, 1446-1454.

Olbrich E. and **Achermann P.** (2005) Analysis of oscillatory patterns in the human sleep EEG using a novel detection algorithm. *J. Sleep Res.* 14, 337-346.

## 2006

\***Achermann P.** (2006) Sleep. In: *Wiley Encyclopedia of Biomedical Engineering* (ed. Metin Akay), Hoboken: John Wiley & Sons, Inc., dx.doi.org/10.1002/9780471740360.ebs1096 (online April 14).

Buckelmüller J., Landolt H. P., Stassen H. H. and **Achermann P.** (2006) Trait-like individual differences in the human sleep electroencephalogram. *Neuroscience* 138, 351-356.

Gottselig J. M., Adam M., Rétey J. V., Khatami R., **Achermann P.** and Landolt H. P. (2006) Random number generation during sleep deprivation: effects of caffeine on response maintenance and stereotypy. *J. Sleep Res.* 14, 31-40.

Jenni O. G., Deboer T. and **Achermann P.** (2006) Development of the 24-h rest-activity pattern in human infants. *Infant Behav. & Dev.* 29, 143-152

Landolt H. P., Glatzel M., Blattler T., **Achermann P.**, Roth C., Mathis J., Weis J., Tobler I., Agguzzi A. and Bassetti C. L. (2006) Sleep-wake disturbances in sporadic Creutzfeld-Jakob disease. *Neurology* 66, 1418-1424.

Regel S. J., Negovetic S., Rössli M., Berdiñas V., Schuderer J., Huss A., Lott U., Kuster N. and **Achermann P.** (2006) UMTS base station-like exposure, well being and cognitive performance. *Environ. Health Perspec.* 114, 1270-1275.

Tinguely G., Finelli L. A., Landolt H. P., Borbély A. A. and **Achermann P.** (2006) Functional EEG topography in sleep and waking: state-dependent and state-independent features. *NeuroImage*, 32, 283-293.

Tinguely G., Huber R., Borbély A. A. and **Achermann P.** (2006) Non-rapid eye movement sleep with low muscle tone as a marker of rapid eye movement sleep regulation. *BMC Neurosci.* 7:2 (9 January 2006).

## 2007

Khatami R., Landolt H. P., **Achermann P.**, Rétey J. V., Werth E., Mathis J. and Bassetti C. L. (2007) Insufficient non-REM sleep intensity in narcolepsy-cataplexy. *Sleep* 30, 980-989.

\*Khatami R., **Achermann P.**, Landolt H.-P. and Bassetti C. (2007) Homeostatic sleep regulation in narcolepsy. In: *Narcolepsy and Hypersomnia*. (eds. C. L. Bassetti, M. Billiard, E. Mignot), *Lung Biol Health Disease*, Vol. 220, Informa Healthcare USA Inc., New York, London, pp. 187-191.

Regel S. J., Gottselig J. M., Schuderer J., Tinguely G., Rétey J. V., Kuster N., Landolt H. P. and **Achermann P.** (2007) Pulsed radio frequency radiation affects cognitive performance and the waking EEG. *NeuroReport* 18, 803-807.

Regel S. J., Tinguely G., Schuderer J., Adam M., Kuster N., Landolt H. P. and **Achermann P.** (2007) Pulsed radio-frequency electromagnetic fields: dose-dependent effects on sleep, the sleep EEG and cognitive performance. *J. Sleep Res.* 16, 253-258.

\*\*Tobler I. and Achermann P. (2007) Sleep homeostasis. *Scholarpedia* 2, 2432.

Vyazovskiy V. V., **Achermann P.** and Tobler I. (2007) Sleep homeostasis in the rat in the light and dark period. *Brain Res. Bull.* 74, 37-44.

## 2008

Boutry C. M., Kuehn S., **Achermann P.**, Romann A., Keshvari J. and Kuster N. (2008) Dosimetric evaluation and comparison of different RF exposure apparatuses used in human volunteer studies. *Bioelectromagnetics* 29, 11-19.

Hermann D. M., Wachter K., Mathis J., **Achermann P.** and Bassetti C. L. (2008) Evolution of neurological, neuropsychological and sleep-wake disturbances in paramedian thalamic stroke. *Stroke* 39, 62-68.

Khatami R., Landolt H. P., **Achermann P.**, Adam M., Rétey J. V., Werth E., Schmid D. and Bassetti C. L. (2008) Challenging sleep homeostasis in narcolepsy-cataplexy: implications for non-REM and REM sleep regulation. *Sleep* 31, 859-867.

Olbrich E. and **Achermann P.** (2008) Analysis of the temporal organization of sleep spindles in the human sleep EEG using a phenomenological modeling approach. *J. Biol. Phys.* 34, 341-349.

Sicoli M. M., Rolli-Baumeler N., **Achermann P.** and Bassetti C. L. (2008) Correlation between sleep and cognitive functions after hemispheric ischaemic stroke. *Eur. J. Neurol.* 15, 565-572.

## 2009

**Achermann P.** (2009) EEG analysis applied to sleep. *Epileptologie* 26, 28-33.

## 2010

\*\*\***Achermann P.** and Bersagliere A. (2010) Sleep homeostasis and slow oscillations in the human sleep EEG. *Proceedings of Biosignal 2010, July 14-16, 2010, Berlin, Germany*

Bersagliere A. and **Achermann P.** (2010) Slow oscillations in human nonREM sleep EEG: effects of increased sleep pressure. *J. Sleep Res.* 19, 228-237.

Geiger A., **Achermann P.**, and Jenni O.G. (2010) Association between sleep duration and intelligence scores in healthy children. *Developmental Psychology* 46, 949-954.

Geiger A., **Achermann P.**, and Jenni O.G. (2010) Sleep, intelligence and cognition from a developmental perspective: differentiation between traits and state-dependent aspects. *Prog. Brain Res.* 2010;185:167-179.

Rusterholz T., Dürr R. and **Achermann P.** (2010) Inter-individual differences in the dynamics of sleep homeostasis. *Sleep*, 33, 491-498.

Tarokh L., Carskadon M.A., and **Achermann P.** (2010) Developmental changes in brain connectivity assessed using the sleep EEG. *Neuroscience*, 171, 622-634.

## 2011

\***Achermann P.** and Borbély A.A. (2011) Sleep homeostasis and models of sleep regulation. In: Kryger M, Roth T, Dement W (Eds). *Principles and Practices of Sleep Medicine* (5th edition). Elsevier Saunders, Missouri. pp. 431-444.

Crespo-Valero P., Christopoulou M., Zefferer M., Christ A., **Achermann P.**, Nikita K.S., and Kuster N. (2011) Novel methodology to characterize electromagnetic exposure of the brain. *Phys. Med. Biol.* 56, 383-396.

Geiger A., Huber R., Kurth S., Ringli M., Jenni O.G. and **Achermann P.** (2011) The sleep EEG as a marker of intellectual ability in school age children. *Sleep*, 34, 181-189.

Olbrich E., **Achermann P.**, and Wennekers T. (2011) The sleeping brain as a complex system. *Phil. Trans. Roy. Soc. A.*, 369: 3697-3707.

Olbrich E., Claussen J.-C., and **Achermann, P.** (2011) The multiple time scales of sleep dynamics as a challenge for modelling the sleeping brain. *Phil. Trans. Roy. Soc. A.*, 369: 3884-3901.

Regel S.J. and **Achermann P.** (2011) Cognitive Performance Measures in Bioelectromagnetic Research - Critical Evaluation and Recommendations. *Environmental Health* 10:10.

Rusterholz T. and **Achermann P.** (2011) Topographical aspects in the dynamics of sleep homeostasis in young men: Individual patterns. *BMC Neuroscience* 2011, 12:84.

Tarokh L. Carskadon M.A., and **Achermann P.** (2011) Trait-Like Characteristics of the Sleep EEG Across Adolescent Development. *J. Neurosci.*, 31(17):6371-8.

## 2012

Bersagliere A.<sup>#</sup>, Raduazzo I.D.<sup>#</sup>, Nardi M., Schiff S., Gatta A., Amodio P., **Achermann P.**<sup>\*</sup>, and Montagnese S.<sup>\*</sup> (2012) Induced hyperammonaemia may compromise the ability to generate restful sleep in patients with cirrhosis. *Hepatology*, 55(3):869-78.

<sup>#</sup> Joint first authorship; <sup>\*</sup> Joint senior authorship

Geiger A., Huber R., Kurth S., Ringli M., **Achermann P.**<sup>\*</sup> and Jenni O.G.<sup>\*</sup> (2012) Sleep EEG topography and children's intellectual ability. *Neuroreport*, 23(2):93-97.

<sup>\*</sup> shared senior authorship

Lustenberger C., Maric A., Dürr R., **Achermann P.** and Huber R. (2012) Triangular relationship between sleep spindle activity, general cognitive ability and the efficiency of declarative learning. *PLoS One*, 7 (11): e49561.

Murbach M., Christopoulou M., Crespo-Valero P., **Achermann P.** and Kuster, N. (2012) Exposure system to study hypotheses of ELF & RF electromagnetic field interactions of mobile phones with the central nervous system. *Bioelectromagnetics*, 33(6):527-533.

Schmid M.R.<sup>#</sup>, Loughran S.P.<sup>#</sup>, Regel S.J., Murbach M., Bratic Grunauer A., Rusterholz T., Bersagliere A., Kuster N., and **Achermann P.** (2012) Sleep EEG alterations: Effects of different pulse-modulated radio frequency electromagnetic fields. *J. Sleep Res.*, 21, 50-58.

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Schmid M.R., Murbach M., Lustenberger C., Maire M., Kuster N., **Achermann P.**<sup>\*</sup>, and Loughran S.P.<sup>\*</sup> (2012) Sleep EEG alterations: Effects of pulsed magnetic fields vs. pulse-modulated radio frequency electromagnetic fields. *J. Sleep Res.*, 21, 620-629.

<sup>\*</sup> shared senior authorship

Tarokh L. Carskadon M.A., and **Achermann P.** (2012) Dissipation of sleep pressure is stable across adolescence. *Neuroscience*, 216: 167-177.

## 2013

Benz D.C.<sup>\*</sup>, Tarokh L.<sup>\*</sup>, **Achermann P.**<sup>†</sup>, and Loughran S.P.<sup>†</sup> Trait-like characteristics of the waking EEG in early adolescence. *BMC Neurosci.*, 14:117.

<sup>\*</sup> shared first authorship; <sup>†</sup>shared senior authorship

Bersagliere A., **Achermann P.**, Lo Russo G., Proserpio P. and Nobili L. (2013) Spindle frequency activity might provide lateralizing information in drug-resistant nocturnal mesial frontal lobe epilepsy: a pilot study on the contribution of sleep recordings. *Seizure: European Journal of Epilepsy*, 22, 719-725.

Bersagliere A., Raduazzo I.D., Nardi M., Schiff S., Gatta A., Merkel C., Amodio P., **Achermann P.**, and Montagnese S. (2013) Ammonia-related changes in cerebral electrogenesis in healthy subjects and patients with cirrhosis. *Clin. Neurophysiol.*, 124, 492-496.

Kurth S., **Achermann P.**, Rusterholz T. and LeBourgeois M.K. (2013) Development of brain EEG connectivity across early childhood – does sleep play a role? *Brain Sciences*, 3, 1445-1460.

Latshang T.D., Lo Cascio C.M., Stöwhas A.C., Grimm M., Stadelmann K., Tesler N., **Achermann P.**, Huber R., Kohler M. and Bloch K.E. (2013) Are nocturnal breathing, sleep and cognitive performance impaired at moderate altitude (1630-2590m)? *Sleep*, 36, 1969-1976.

LeBourgeois M.K., Carskadon M.A., Akacem L.D., Simpkin C.T., Wright K.P., **Achermann P.**, and Jenni O.G. (2013) Circadian phase and its relationship to nighttime sleep in toddlers. *J. Biol. Rhythms*, 28, 322-331.

Loughran S.P., Benz D.C., Schmid M.R., Murbach M., Kuster N., and **Achermann P.** (2013) No increased sensitivity in brain activity of adolescents exposed to mobile phone-like emissions. *Clin. Neurophysiol.*, 124, 1303-1308.

Lustenberger C., Murbach M., Dürr R., Schmid M.R., Kuster N., **Achermann P.**, and Huber R. (2013) Stimulation of the brain with radiofrequency electromagnetic field pulses affects sleep-dependent performance improvement. *Brain Stimul.* 6, 805-811.

Meisel C., Olbrich E., Shriki O., and **Achermann P.** (2013) Fading signatures of critical brain dynamics during sustained wakefulness in humans. *J. Neurosci.*, 33, 17363–17372.

Metz A. J., Pugin F., Huber R., **Achermann P.\*** and Wolf M.\* (2013) Brain tissue oxygen saturation increases during the night in adolescents. *Advances in Experimental Medicine and Biology*, 789, 113-119.

\* shared last authorship.

Stadelmann K., Latshang T.D., Lo Cascio C.M., Tesler N., Stöwhas A.C., Kohler M., Bloch K.E., Huber R., and **Achermann P.** (2013) Quantitative changes in the sleep EEG at moderate altitude (1630 m and 2590 m). *PLoS One*, 8(10): e76945.

Stöwhas A.C., Latshang T.D., Lo Cascio C.M., Lautwein S., Stadelmann K., Tesler N., Ayers L., Berneis K., Gerber P., Huber R., **Achermann P.**, Bloch K.E., and Kohler M. (2013) Effects of acute exposure to moderate altitude on vascular function, metabolism and systemic inflammation. *PLoS One*, 8(8): e70081.

\*Tarokh L. and **Achermann P.** (2013) Sleep homeostasis. In: C. Kushida (Ed.) *The Encyclopedia of Sleep*, Vol. 1, pp. 413-417. Waltham, MA: Academic Press.

## 2014

\***Achermann P.**, Tarokh L. and Peigneux P. (2014) Research design and quantitative methods. In: Bassetti C., Dogas Z., Peigneux P. (Eds.) *European Sleep Medicine Textbook*. European Sleep Research Society (ESRS), Regensburg. pp. 517-527.

**Achermann P.**, Tarokh L. (2014) Human sleep and its regulation. *Kosmos*, 303, 173–180.

Ayers L., Stoewhas A.C., Ferry B., Latshang T.D., Lo Cascio C.M., Sadler R., Stadelmann K., Tesler N., Huber R., **Achermann P.**, Bloch K.E., Kohler M. (2014) Circulating levels of cell-derived microparticles are reduced by mild hypobaric hypoxia: data from a randomised controlled trial. *Eur. J. Appl. Physiol.*, 114, 1067–1073.

Fattinger S., Jenni O.G., Schmitt B., **Achermann P.**, and Huber R. (2014) Overnight changes in the slope of sleep slow waves during infancy. *Sleep*, 37, 245-53.

Holst S., Bersagliere A., Bachmann V., Berger W., **Achermann P.**, and Landolt H.-P. (2014) Dopaminergic role in regulating neurophysiological markers of sleep homeostasis in humans. *J. Neurosci.*, 34, 566-573.

Metz A. J., Pugin F., Huber R., **Achermann P.\*** and Wolf M.\* (2014) Changes of cerebral tissue oxygen saturation at sleep transitions in adolescents. *Advances in Experimental Medicine and Biology*, 812, 279-285.

\* shared last authorship.

Murbach M., Neufeld E., Christopoulou M., **Achermann P.** and Kuster, N. (2014) Modeling of EEG electrode artifacts and thermal ripples in human radiofrequency exposure studies. *Bioelectromagnetics*, 35, 273-283.

Olbrich E., Landolt H.-P., and **Achermann P.** (2014) Effect of prolonged wakefulness on electroencephalographic oscillatory activity during sleep. *J. Sleep Res.* 23, 253-60.

Stadelmann K., Latshang T.D., Tarokh L., Lo Cascio C.M., Tesler N., Stoewhas A.C., Kohler M., Bloch K.E., Huber R., and **Achermann P.** (2014) Sleep respiratory disturbances and arousals at moderate altitude have overlapping EEG spectral signatures. *J. Sleep Res.*, 23, 463-468.

Stadelmann K., Latshang T.D., Nussbaumer-Ochsner Y., Tarokh L., Ulrich S., Kohler M., Bloch K.E., and **Achermann P.** (2014) Impact of acetazolamide and CPAP on cortical activity in obstructive sleep apnea patients. *PLoS One*, 9(4): e93931.

Tarokh L. Carskadon M.A.\* and **Achermann P.\*** (2014) Early adolescent cognitive gains are marked by increased sleep EEG coherence. *PLoS One*, 9(9): e106847.

\* shared senior authorship.

## 2015

\*\*\***Achermann P.**, Malafeev A., Skorucak J., and Tarokh L. (2015) Automated sleep analysis. Proceedings 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, August 25-29 2015, Milano, Italy.

Akacem L.D., Simpkin C.T., Carskadon M.A., Wright K.P. Jr., Jenni O.G., **Achermann P.**, LeBourgeois M.K. (2015) The timing of the circadian clock and sleep differ between napping and non-napping toddlers. *PLoS One*, 10(4): e0125181.



Lustenberger C., O’Gorman R., Pugin F., Tüshaus L., Wehrle F., **Achermann P.** and Huber R. (2015) Sleep spindles are related to schizotypal personality traits and thalamic glutamine/glutamate in healthy subjects. *Schizophr. Bull.*, 41, 522-531.

Lustenberger C., Murbach M., Tüshaus L., Wehrle F., Kuster N., **Achermann P.** and Huber R. (2015) Inter-individual and intra-individual variation of the effects of pulsed RF EMF exposure on the human sleep EEG. *Bioelectromagnetics*, 36, 169-77.

Lustenberger C., Wehrle F., Tüshaus L., **Achermann P.** and Huber R. (2015) The multidimensional aspects of sleep spindles and their relationship to word-pair memory consolidation. *Sleep*, 38:1093-1103.

Meisel C., Schulze-Bonhage A., Freestone D.R., Cook M.J., **Achermann P.** and Plenz D. (2015) Intrinsic excitability measures track antiepileptic drug action and uncover increasing/decreasing excitability over the wake/sleep cycle. *PNAS*, 112, 14694-14699.

Metz A.J., Wolf M. **Achermann P.** and Scholkmann F. (2015) A new approach for automatic removal of movement artifacts in near-infrared spectroscopy time series by means of acceleration data. *Algorithms*, 8, 1052-1075.

Pugin F., Metz A.J., Wolf M., **Achermann P.**, Jenni O.G. and Huber R. (2015) Local increase of sleep SWA after three weeks of working memory training in children and adolescents. *Sleep*, 38:607-614.

Stadelmann K., Latshang T.D., Lo Cascio C.M., Clark R., Huber R., Kohler M., **Achermann P.\*** and Bloch K.E.\* (2015) Impaired postural control in healthy men at moderate altitude (1630 m and 2590 m). Data from a randomized trial. *PLoS One*, 10(2): e0116695.

\* shared senior authorship.

Tarokh L., Rusterholz T., **Achermann P.\*** and Van Dongen H.P.A.\* (2015) The spectrum of the non-rapid eye movement sleep EEG following total sleep deprivation is trait-like. *J. Sleep Res.*, 24, 360-363.

\* shared senior authorship.

Tesler N., Latshang T.D., Lo Cascio C.M., Stadelmann K., Stoewhas A.C., Kohler M., Bloch K.E., **Achermann P.** and Huber R. (2015) Ascent to moderate altitude impairs overnight memory improvements. *Physiol. & Behav.*, 139, 121-126.

## 2016

**Achermann P.\***, Rusterholz T.\*, Dürr R., Koenig T. and Tarokh L. (2016) Global field synchronization reveals rapid eye movement sleep as most synchronized brain state in the human EEG. *R. Soc. open sci.*, 3, 160201.

\* equal contribution.

Crivelli F.\*, Omlin X.\*, Rauter G., von Zitzewitz J., **Achermann P.** and Riener R. (2016) Somnomat: A novel actuated bed to investigate the effect of vestibular stimulation. *Med. Biol. Eng. Comput.*, 54:877-889.

\* equal contribution.

Garrido M., Skorucak J., Raduazzo D., Turco M. Spinelli G., Angeli P., Amodio P., **Achermann P.** and Montagnese S. (2016) Vigilance and wake EEG architecture in simulated hyperammonaemia: a pilot study on the effects of L-Ornithine-L-Aspartate (LOLA) and caffeine. *Metab. Brain Dis.*, 31:965-974.

Kurth S., Dean D.C., **Achermann P.**, O’Muircheartaigh J., Huber R., Deoni S.C.L. § and LeBourgeois M.K. § (2016) Increased sleep depth in developing neural networks: new insights from sleep restriction in children. *Front. Human Neurosci.*, 10, 456.

§ shared senior authorship presented in alphabetical order

Kurth S., Lassonde J.M., Pierpoint L.A., Rusterholz T., Jenni O.G., McClain I., **Achermann P.\*** and LeBourgeois M.K.\* (2016) Development of nap neurophysiology: Preliminary insights into sleep regulation in early childhood. *J. Sleep Res.*, 25, 646-654.

\* shared last authorship

Lassonde J.M., Rusterholz T., Kurth S., Schumacher A.M., **Achermann P.\*** and LeBourgeois M.K.\* (2016) Sleep physiology in toddlers: Effects of missing a nap on subsequent night sleep. *Neurobiol. Sleep Circadian Rhythms*, 1, 19-26.

\*shared last authorship in alphabetical order

Latshang T.D., Mueller D.J., Lo Cascio C.M., Stöwhas A.C., Stadelmann K., Tesler N., **Achermann P.**, Huber R., Kohler M. and Bloch K.E. (2016) Actigraphy of wrist and ankle for measuring sleep duration in altitude travelers. *High. Alt. Med. Biol.*, 17:194-202.

McClain I.J., Lustenberger C., **Achermann P.**, Lassonde J.M., Kurth S. § and LeBourgeois M.K. § (2016) Developmental changes in sleep spindle characteristics and sigma power across early childhood. *Neural Plasticity*, 2016/3670951. <http://dx.doi.org/10.1155/2016/3670951>

§ shared senior authorship presented in alphabetical order

Omlin X., Crivelli F., Heinicke L., Zaunseder S., **Achermann P.**<sup>§</sup> and Riener R.<sup>§</sup> (2016) Effect of rocking movements on respiration. *PLoS One*, 11(3): e0150581.

<sup>§</sup> shared senior authorship presented in alphabetical order

## 2017

\***Achermann P.** and Borbély A.A. (2017) Sleep homeostasis and models of sleep regulation. In: Kryger M, Roth T, Dement W (Eds). *Principles and Practices of Sleep Medicine* (6th edition). Elsevier, Philadelphia, PA. p. 377-387.

Borbély A.A., Rusterholz T. and **Achermann P.** (2017) Three decades of continuous wrist-activity recording: Analysis of sleep duration. *J. Sleep Res.*, 26, 188-194.

Herzig D., Testorelli M., Schäfer D., Erlacher D., **Achermann P.**, Eser P. and Wilhelm M. (2017) Heart-rate variability during deep sleep in world-class alpine skiers: A time-efficient alternative to morning supine measurements. *Int. J. Sports Physiol. Perform.*, 12, 648-654.

Herzig D., Eser P., Radtke T., Wenger A., Rusterholz T., Wilhelm M., **Achermann P.**, Arhab A., Jenni O.G., Kakebeeke T.H., Leeger-Aschmann C.S., Messerli-Bürgy N., Meyer A.H., Munsch S., Puder J.J., Schmutz E.A., Stülb K., Zysset A.E., and Kriemler S. (2017) Relation of heart rate and its variability during sleep with age, physical activity, and body composition in young children. *Front. Physiol.*, 8:109.

Lopp S., Navidi W., **Achermann P.**, LeBourgeois M.K. and Diniz Behn C. (2017) Developmental changes in ultradian sleep cycles across early childhood: preliminary insights. *J. Biol. Rhythms*, 32, 64-74.

Meisel C., Bailey K., **Achermann P.** and Plenz D. (2017) Decline of long-range temporal correlations in the human brain during sustained wakefulness. *Sci. Rep.*, 19; 7: 11825.

Milz P., Pascual-Marqui R.D., **Achermann P.**, Kochi K., and Faber P.L. (2017) The EEG microstate topography is predominantly determined by intracortical sources in the alpha band. *NeuroImage*, 162, 353-361.

Olbrich E., Rusterholz T., LeBourgeois M.\* and **Achermann P.\*** (2017) Developmental changes in sleep oscillations during early childhood. *Neural Plasticity*, 2107/6160959.

\* shared last authorship.

Rusterholz T.\*, **Achermann P.\***, Dürr R., Koenig T. and Tarokh L. (2017) Global field synchronization in gamma range of the sleep EEG tracks sleep depth: artifact introduced by a rectangular analysis window. *J. Neurosci. Meth.*, 284, 21–26.

\* equal contribution.

Rusterholz T., Tarokh L., Van Dongen H.P.A.<sup>§</sup> and **Achermann P.**<sup>§</sup> (2017) Inter-individual differences in the dynamics of the homeostatic process are trait-like and distinct for sleep versus wakefulness. *J. Sleep Res.*, 26, 171-178.

<sup>§</sup> shared senior authorship

Tüshaus L., Balsters J.H., Schläpfer A., Brandeis D., O’Gorman Tuura R. and **Achermann P.** (2017) Resisting sleep pressure: Impact on resting state functional network connectivity. *Brain Topogr.*, 30, 757-773.

Tüshaus L., Omlin X., O’Gorman Tuura R., Federspiel A., Luechinger R., Staempfli P., Koenig T. and **Achermann P.** (2017) In human non-REM sleep, more slow-wave activity leads to less blood flow in the prefrontal cortex. *Sci. Rep.*, 3; 7: 14993.

Vyazovskiy V.V., Palchykova S., **Achermann P.**, Tobler I., Deboer T. (2017) Different effects of sleep deprivation and torpor on EEG slow wave characteristics in Djungarian hamsters, *Cereb. Cortex*, 27, 950-961.

## 2018

Bersagliere A., Pascual-Marqui R.D., Tarokh L. and **Achermann P.** (2018) Mapping slow waves by EEG topography and source localization: effects of sleep deprivation. *Brain Topogr.*, 31, 257-269.

Fernández Guerrero A. and **Achermann P.** (2018) Brain dynamics during the sleep onset transition: an EEG source localization study. *Neurobiol. Sleep Circ. Rhythms*, in press.

Fernández Guerrero A. and **Achermann P.** (2018) Intracortical causal information flow of oscillatory activity (effective connectivity) at the sleep onset transition. *Front. Neurosci.*, 12: 912.

Guillaumin M.C.C., McKillop L.E., Cui N., Fisher S.P., Foster R.G., de Vos M., Peirson S.N., **Achermann P.**<sup>§</sup>, and Vyazovskiy V.V. <sup>§</sup> (2018) Cortical region-specific sleep homeostasis in mice: effects of time of day and waking experience. *Sleep*, 41(7).

<sup>§</sup> shared senior authorship

- Herzig D., Eser P., Omlin X., Riener R., Wilhelm M. and **Achermann P.** (2018) Reproducibility of heart rate variability is parameter and sleep stage dependent. *Front. Physiol.*, 8:1100.
- Malafeev A., Omlin X., Wierzbicka A., Wichniak A., Jernajczyk W., Riener R. and **Achermann, P.** (2018) Automatic artifact detection in single channel sleep EEG recordings. *J. Sleep Res.*, in press.
- Malafeev A., Laptev D., Bauer S., Omlin X., Wierzbicka A., Wichniak A., Jernajczyk W., Riener R., Buhmann J. M. and **Achermann P.** (2018) Automatic human sleep stage scoring using Deep Neural Networks. *Front. Neurosci.*, 12: 718.
- Markovic A., Rusterholz T., **Achermann P.**, and Tarokh L. (2018) Heritability of sleep EEG topography in adolescence: Results from a longitudinal twin study. *Sci. Rep.*, 8(1):7334.
- Omlin X., Crivelli F., Näf M., Heinicke L., Skorucak J., Malafeev A., Fernandez Guerrero A., Riener R. § and **Achermann P.** § (2018) The effect of a slowly rocking bed on sleep. *Sci. Rep.*, 8: 2156.
- § shared senior authorship
- Skorucak J., Arbon E., Dijk D.J. §, and **Achermann P.** § (2018) Response to chronic sleep restriction, extension, and total sleep deprivation in humans: adaptation or preserved sleep homeostasis? *Sleep*, 41(7).
- § shared senior authorship
- Rusterholz T., Hamann C., Markovic A., Schmidt S., **Achermann P.**, and Tarokh L. (2018) Nature and Nurture: Brain region specific inheritance of sleep neurophysiology in adolescence. *J. Neurosci.*, 38(43):9275-9285.

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Google Scholar Profile:

<http://scholar.google.ch/citations?user=W17vmQkAAAAJ&hl=de>