

CURRICULUM VITAE FOR
Hartmut Schneider, MD, Ph.D.
The Johns Hopkins University School of Medicine



2/16/2017

Hartmut Schneider, M.D., Ph.D.

DEMOGRAPHIC INFORMATION

Current Appointment

University

Associate Professor of Medicine, Johns Hopkins School of Medicine, Division of Pulmonary and Critical Care Medicine

(Joint Appointment): Privatdozent for Internal Medicine, Philipps University Marburg, Germany
Medical Director, American Sleep Clinic, Frankfurt, Germany

Personal Data

Division of Pulmonary & Critical Care Medicine
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Education and Training

1980 - 1987 Undergraduate and M.D., Philipps University, Marburg, Germany
1991 - 2000 Internist , Philipps University, Marburg, Germany, Internal Medicine, (Facharzt Innere Medizin)
Recertification 2014
1994 - 1999 Ph.D. Program (Habilitation) of the Philipps University, Marburg, Germany: „Pathogenese der systemarteriellen und pulmonalarteriellen Druckerhöhungen bei obstruktiver Schlafapnoe“
1996 – 1999 Pulmonary Fellowship, Johns Hopkins School of Medicine, Baltimore, MD, Division of Pulmonary and Critical Care Medicine

Professional Experience

1987 - 1991 Sleep Research Fellow, Sleep Disorders Center, Philipps University, Marburg, Germany
1999 - 2000 Associate Professor, Division of Pulmonary Medicine, Prof. Von Wichert, Internal Medicine
Philipps University, Marburg, Germany
2001 - 2003 Research Associate, Johns Hopkins School of Medicine, Division of Pulmonary and Critical Care Medicine, Baltimore, MD
2003 - 2005 Instructor of Medicine, Johns Hopkins School of Medicine, Division of Pulmonary and Critical Care Medicine, Baltimore, MD
2006 - 2016 Assistant Professor, Johns Hopkins School of Medicine, Division of Pulmonary and Critical Care Medicine, Baltimore, MD
2016- present Associate Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, MD

FPH EX. 2002 ResMed v. Fisher & Paykel IPR2016-01719
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RESEARCH ACTIVITIES

Publications: Peer-reviewed Original Science Research (ResearchGate: 2420 Citations, h-index 24)

1. Penzel T, Peter JH, **Schneider H**, Stott FD. The use of a mobile sleep laboratory in diagnosing sleep-related breathing disorders. *J Med Eng Technol*; 13: 100-103, 1989.
2. Mayer J, Weichler U, Herres-Mayer B, **Schneider H**, Marx U, Peter JH. Influence of metoprolol and cilazapril on blood pressure and on sleep apnea activity. *J Cardiovasc Pharmacol*; 16: 952-961, 1990.
3. Ehlenz K, Firle K, **Schneider H**, Weber K, Peter JH, Kaffarnik H, von Wichert P. Reduction of nocturnal diuresis and natriuresis during treatment of obstructive sleep apnea (OSA) with nasal continuous positive air pressure (nCPAP) correlates to cGMP excretion. *Med Klin (Munich)*. 1991 Jun 15; 86(6): 294-6, 332.
4. Bearpark H, Elliott L, Grunstein R, Hedner J, Cullen S, **Schneider H**, Althaus W, Sullivan C. Occurrence and Correlates of Sleep Disordered Breathing in the Australian Town of Busselton: A Preliminary Analysis. *Sleep* 16, 134-136, 1993.
5. Conradt R, Penzel T, **Schneider H**, Peter JH. Einfluß der kardiorespiratorischen Polysomnographie auf Schlafstruktur und Schlafqualität bei jungen gesunden Probanden. *Z EEG EMG*; 25:244-248, 1994.
6. **Schneider H**, Becker H, Fus E, Stammnitz E, Peter JH, von Wichert P. Nasale positive Druckbeatmung bei Patienten mit ausgeprägter COPD, *Med. Klin.* 89, 71-73, 1994.
7. Bearpark H, Elliott L, Grunstein R, Cullen S, **Schneider H**, Althaus W, Sullivan C. Snoring and sleep apnea: A population study in Australian men. *Am J Respir Crit Care Med*; 151: 1459-1465, 1995.
8. **Schneider H**, Grote L, Peter JH, Guilleminault C von Wichert P. Flunitrazepam --Two Benzodiazepines with Different Half-Life on Breathing During Sleep. *Chest* 109:909-915, 1996.
9. **Schneider H**, Janicki J, Stammnitz A, Peter JH. Die kardiorespiratorische Polygraphie zur Differentialdiagnostik der respiratorischen Insuffizienz nach koronarer Bypass Operation. *Med. Klin.* 92: 104-107, 1997.
10. **Schneider H**, Schaub C.D, Andreoni K.A, Schwartz A.R, Smith P.L, Robotham J.L, Donnell C.P. Systemic and pulmonary hemodynamic responses to normal and obstructed breathing during sleep. *J. Appl. Physiol.* 83(5), 1670-1680, 1997.
11. Kim SH, Eisele DW, Smith PL, **Schneider H**, Schwartz, AR. Evaluation of Sleep Apnea patients with tracheostomy. *Arch Otolaryng Head Neck Surg* 124(9): 996-1000, 1998.
12. Boudewyns A, Punjabi N, Van de Heyning P, De Backer W, O'Donnell CP, **Schneider H**, Smith PL, Schwartz AR. An abbreviated method for assessing upper airway function in obstructive sleep apnea. *Chest* 118(4):1031-1041, 2000.
13. **Schneider H**, O'Hearn DJ, LeBlanc K, Smith PL, O'Donnell CP, Eisele DW, Peter JH, and Schwartz AR. High-flow transtracheal insufflation treats obstructive sleep apnea: A pilot study. *Am J Resp Crit Care Med* 161:1869-1876, 2000.
14. **Schneider H**, Schaub CD, Chen CA, Andreoni KA, Schwartz AR, Smith PL, Robotham JL, and O'Donnell CP. Neural and local effects of hypoxia on cardiovascular responses to obstructive apnea. *J Appl Physiol* 88: 1093-1102, 2000.
15. **Schneider H**, Schaub CD, Chen CA, Andreoni KA, Schwartz AR, Smith PL, Robotham JL, and O'Donnell CP. The effects of arousal and sleep state on systemic and pulmonary hemodynamics in obstructive apnea. *J Appl Physiol* 88: 1084-1092, 2000.
16. Pankow W, Becker H, Kohler U, **Schneider H**, Penzel T, Peter JH. Patient-ventilator interaction during noninvasive pressure supported spontaneous respiration in patients with hypercapnic COPD] *Pneumologie* Jan;55(1):7-12, 2001.
17. Tagaito Y, **Schneider H**, O'Donnell CP, Smith PL, Schwartz AR. Ventilatory support with tracheal gas insufflation (TGI) and periodic tracheal occlusion (PTO). *Chest*. Nov; 122(5): 1742-50, 2002.
18. **Schneider H**, Boudewyns A, Smith PL, O'Donnell CP, Allan L, Schwartz AR. Modulation of upper airway collapsibility during sleep: Influence of respiratory phase and airflow regimen. *J Appl Physiol* 93(4):1365-76. 2002.
19. **Schneider H**, SP Patil, S Canisius, E A Gladmon, AR Schwartz, CP O'Donnell, PL. Smith, and CG. Tankersley. Hypercapnic duty cycle is an intermediate physiological phenotype linked to mouse chromosome 5. *J Appl Physiol*; 285: 11-19, 2003.
20. Schwartz AR, **Schneider H**, Smith PL Upper airway surface tension: is it a significant cause of airflow obstruction during sleep? *J Appl Physiol*. 2003 Nov; 95(5): 1759-60.

21. Oliven A, O'Hearn DJ, Boudewyns A, Odeh M, De Backer W, van de Heyning P, Smith PL, Eisele DW, Allan L, **Schneider H**, Testerman R, Schwartz AR. Upper airway response to electrical stimulation of the genioglossus in obstructive sleep apnea. *J Appl Physiol.* Nov; 95(5):2023-2029, 2003.
22. Patil SP, Naresh M Punjabi, NM, **Schneider H**, O'Donnell CP, Smith PL, Schwartz A.R. A Simplified Method for Measuring Critical Pressures during Sleep in the Clinical Setting. 2004 Jul 1; 170(1):86-93. 2004.
23. Ayuse T, Inazawa T, Kurata S, Okayasu I, Sakamoto E, Oi K, **Schneider H**, Schwartz AR: Mouth-opening increases upper-airway collapsibility without changing resistance during midazolam sedation. *J Dent Res.* Sep; 83(9):718-22, 2004.
24. Inazawa T, Ayuse T, Kurata S, Okayasu I, Sakamoto E, Oi K, **Schneider H**, Schwartz AR. Effect of mandibular position on upper airway collapsibility and resistance. *J Dent Res.* Jun;84(6):554-8, 2005.
25. Kirkness JP, Schwartz AR, Patil SP, Pichard LE, Marx JJ, Smith PL, **Schneider H**. Dynamic Modulation of Upper Airway Function during Sleep - A Novel Single Breath Method. *J Appl Physiol.* 2006 Nov; 101(5):1489-94, 2006.
26. Patil SP, **Schneider H**, Marx JJ, Gladmon E, Schwartz AR, Smith PL. Neuromechanical Control of Upper Airway Patency During Sleep. *J Appl Physiol.* Sep 28; 2006.
27. Ayuse T, Y. Hoshino, Inazawa T, Oi K, **Schneider H**, Schwartz AR A pilot study of quantitative assessment of mandible advancement using pressure-flow relationship during midazolam sedation. *Journal of Oral Rehabilitation* Volume 33 Page 813-819, 2006.
28. McGinley B, Patil SP, DeRosa PA, Kirkness JP, Smith C, Smith PL, Schwartz AR, **Schneider H**. A novel therapeutic approach for obstructed sleep disordered breathing – treatment with nasal insufflation (TNI). *Am J Respir Crit Care Med.* 2007 Vol 176, pp 194-200, 2007.
29. McGinley BM, Schwartz AR, **Schneider H**, Kirkness JP, Smith PL, Patil SP Upper Airway Neuromuscular Compensation during Sleep is Defective in Obstructive Sleep Apnea. *J Appl Physiol.* 2008 Apr 10, 2008.
30. Liu A, Pichard L, **Schneider H**, Patil SP, Smith PL, Polotsky V, Schwartz AR. Neuromechanical control of the isolated upper airway of mice. *J Appl Physiol.* 2008 Oct;105(4):1237-45, 2008.
31. Kirkness JP, Schwartz AR, **Schneider H**, Punjabi NM, Maly JJ, Laffan AM, McGinley BM, Magnuson T, Schweitzer M, Smith PL, Patil SP Contribution of male sex, age, and obesity to mechanical instability of the upper airway during sleep. *J Appl Physiol.* 2008 Jun; 104(6):1618-24, 2008.
32. **Schneider H**, Krishnan V, Pichard LE, Patil SP, Smith PL, Schwartz AR. Inspiratory duty cycle responses to flow limitation predict nocturnal hypoventilation. *Eur Respir J.* 2009 May; 33(5):1068-76, 2009.
33. Hoshino Y, Ayuse T, Kurata S, Ayuse T, **Schneider H**, Kirkness JP, Patil SP, Schwartz AR, Oi K. The compensatory responses to upper airway obstruction in normal subjects under propofol anesthesia. *Respir Physiol Neurobiol.* 2009 Mar 31; 166(1):24-31, 2009.
34. McGinley B, Halbauer, A, Patil SP, Smith C, Smith PL, Schwartz AR, **Schneider H**. An Open Nasal Cannula Treats Obstructive Sleep Apnea in Children-. *Pediatrics.* 2009 Jul; 124(1):179-88, 2009.
35. Ayuse T, Hoshino Y, Kurata S, Ayuse T, **Schneider H**, Kirkness JP, Patil SP, Schwartz AR, Oi K. The effect of gender on compensatory neuromuscular response to upper airway obstruction in normal subjects under midazolam general anesthesia. *Anesth Analg.* 2009 Oct; 109(4):1209-18, 2009.
36. Nilius G, Wessendorf T, Maurer J, Stoohs RA, Patil SP, Schubert N, **Schneider H**. Predictors for Treating Obstructive Sleep Apnea with an Open Nasal Cannula System (TNI), *Chest.* 2010 Mar; 137(3):521-8, 2010.
37. Squier SB, Patil SP, **Schneider H**, Kirkness JP, Smith PL, Schwartz AR. Effect of end-expiratory lung volume on upper airway collapsibility in sleeping men and women. *J Appl Physiol.* 2010 Oct; 109(4):977-85, 2010.
38. Kirkness JP, Verma M, McGinley BM, Erlacher M, Schwartz AR, Smith PL, Wheatley JR, Patil SP, Amis TC, **Schneider H**. Pitot-tube flowmeter for quantification of airflow during sleep. *Physiol Meas.* Feb; 32(2):223-37, 2011.
39. Kirkness JP, Peterson LA, Squier SB, McGinley BM, **Schneider H**, Meyer A, Schwartz AR, Smith PL, Patil SP. Performance characteristics of upper airway critical collapsing pressure measurements during sleep. *Sleep.* Apr 1; 34(4):459-67, 2011.
40. Polotsky M, Elsayed-Ahmed AS, Pichard L, Richardson RA, Smith PL, **Schneider H**, Kirkness JP, Polotsky V, Schwartz AR. Effect of age and weight on upper airway function in a mouse model. *J Appl Physiol.* 2011 Sep; 111(3):696-703, 2011.
41. Kobayashi M, Ayuse T, Hoshino Y, Kurata S, Moromugi S, **Schneider H**, Kirkness JP, Schwartz AR, Oi K. Effect of head elevation on passive upper airway collapsibility in normal subjects during propofol anesthesia. *Anesthesiology.* 2011 Aug; 115(2):273-81, 2011.

42. Hoshino Y, Ayuse T, Kobayashi M, Kurata S, Kawai M, **Schneider H**, Patil SP, Schwartz AR, Kirkness JP, Oi K. The effects of hormonal status on upper airway patency in normal female subjects during propofol anesthesia. *J Clin Anesth*. 2011 Nov; 23(7):527-33, 2011.
43. Chin CH, Kirkness JP, Patil SP, McGinley BM, Smith PL, Schwartz AR, **Schneider H**. Compensatory Responses to Upper Airway Obstruction in Obese Apneic Men and Women. *J Appl Physiol*. 2011 Nov 17, 2011.
44. Kirkness JP, McGinley BM, Sgambati FP, Patil SP, Smith PL, Schwartz AR, **Schneider H**. Developing quantitative physiological phenotypes of sleep apnea for epidemiological studies. *Conf Proc IEEE Eng Med Biol Soc*. 2011;2011:8319-22, 2011.
45. Hernandez AB, Kirkness JP, Smith PL, **Schneider H**, Polotsky M, Richardson RA, Hernandez WC, Schwartz AR. Novel whole body plethysmography system for the continuous characterization of sleep and breathing in a mouse. *J Appl Physiol*. 2012 Feb;112(4):671-80, 2012.
46. Polotsky M, Elsayed-Ahmed AS, Pichard L, Harris CC, Smith PL, **Schneider H**, Kirkness JP, Polotsky V, Schwartz AR. Effects of leptin and obesity on the upper airway function. *J Appl Physiol*. 2012 May;112(10):1637-43, 2012.
47. Nilius G, Karl-Josef Franke KJ, Ulrike Domanski U, Karl-Heinz Rühle KH, Jason P. Kirkness JP, **Schneider H**. Effects of nasal insufflation on arterial gas exchange and breathing pattern in patients with chronic obstructive pulmonary disease and hypercapnic respiratory failure. *Adv Exp Med Biol*. 2013;755:27-34, 2012.
48. Mündel T, Sheng F, Tatkov S, **Schneider H**. Mechanisms of nasal high flow on ventilation during wakefulness and sleep. *J Appl Physiol*. 2013 Apr;114(8):1058-65.
49. Wei T, Erlacher MA, Grossman P, Leitner EB, McGinley BM, Patil SP, Smith PL, **Schneider H**, Schwartz AR, Kirkness JP. Approach for streamlining measurement of complex physiological phenotypes of upper airway collapsibility. *Comput Biol Med*. 2013 Jun 1;43(5):600-6.
50. Shapiro SD, Chin CH, Kirkness JP, McGinley BM, Patil SP, Polotsky VY, Biselli PJ, Smith PL, **Schneider H**, Schwartz AR. Leptin and the Control of Pharyngeal Patency during Sleep in Severe Obesity. *J Appl Physiol*. 2014 May 15;116(10):1334-1340.
51. Biselli PJ, Grossman PR, Kirkness JP, Patil SP, Smith PL, Schwartz AR, **Schneider H**. The Effect of Increased Lung Volume in Chronic Obstructive Pulmonary Disease on Upper Airway Obstruction during Sleep. *J Appl Physiol*. 2015 Aug 1;119(3):266-71
52. Paranjape SM, McGinley BM, Braun AT, **Schneider H**. Polysomnographic Markers in Children with Cystic Fibrosis Lung Disease. *Pediatrics* 2015 Nov; 136(5):920-6.
53. McGinley BM, Kirkness JP, **Schneider H**, Lenka A, Smith PL, Schwartz AR. Utilizing inspiratory airflows during standard polysomnography to assess pharyngeal function in children during sleep. *Pediatr Pulmonol*. 2015 Oct 16, PMID:26474407
54. Pho H, Hernandez AB, Arias RS, Leitner EB, Van Kooten S, Kirkness JP, **Schneider H**, Smith PL, Polotsky VY, Schwartz AR. The effect of leptin replacement on sleep disordered breathing in the leptin-deficient ob/ob mouse. *J Appl Physiol* (1985). 2015 Oct 15;jap.00494.2015. PMID:26472867
55. Fricke K, Tatkov S, Domanski U, Franke KJ, Nilius G, and Schneider H. Nasal high flow reduces hypercapnia by clearance of anatomical dead space in a COPD patient. *Respir Med Case Rep*. 2016; 19: 115–117. doi: 10.1016/j.rmcr.2016.08.010
56. Biselli PJ, Kirkness JP, Grote L, Fricke K, Schwartz AR, Smith PL, **Schneider H**. Nasal High Flow therapy reduces work of breathing compared to oxygen during sleep in COPD and smoking controls - prospective observational study. *J Appl Physiol* (1985). 2016 Nov 4;jap.00279.2016.
57. Jun JC, Unnikrishnan D, **Schneider H**, Kirkness J, Schwartz AR, Smith PL, Polotsky VY Effect of Acute Intermittent CPAP Depressurization during Sleep in Obese Patients. *PLoS One*. 2016 Jan 5;11(1):e0146606. doi: 10.1371/journal.pone.0146606. eCollection 2016

Pending Patent Applications (2)

- 2011 Kirkness JP, **Schneider H**: Method and Apparatus for Quantifying Inspiratory and Expiratory Airflow Limitation and Dynamic Hyperinflation: Provisional Patent JHU ID # C11458. AU002012225239A1

International (2) and US Patents (6) (awarded)

- 2001 Jakobs, R, Madaus S, **Schneider H**, Voegelé H. Vorrichtung zur Erfassung der Atmungstaetigkeit einer Person: AT000000365570E
- 2002 Baecke M, Genger H, **Schneider H**. Anti-snoring device, method for reducing snoring and air glasses protected WO002002062413A1, WO002002062413A3, DE00001010538C2 EP0000013599671A2, United States Patent 7,080,645
- 2002 Brandmeier R, Heidmann D, Madaus S, **Schneider H**, Schätzl S, Vögele H. Auto CPAP Device: Vorrichtung zur Zufuhr eines Atemgases: DE000010031079A1, The technology is also protected PCT 02/00283, DE000010103810.0 PCT02/060518
- 2002 Schwartz, AR, Smith PL, **Schneider H**. Device for Transtracheal Insufflation in Treating Obstructive Sleep Apnea (also called "Method and Apparatus for Providing Ventilatory Support to a Patient" United States Patent 6,457,472.
- 2006 Madaus S, **Schneider H**, Jakobs, R, Vögele H, Device for detecting the respiratory activity of a person. United States Patent 7,089,936
- 2006 Genger, H, Baecke M, **Schneider H**. Anti-snoring device, method for reducing snoring, and a nasal air cannula United States Patent 7,080,645
- 2013 Madaus S, **Schneider H**, Jacobs R, Meier J, Heidmann D, Method and apparatus for detecting the respiratory activity of a person: United States Patent 8,408,205
- 2013 **Schneider H**, Meier J, Heidmann D, Vögele H., Madaus S, Jakobs R, Schatzl S, Brandmeier R Apparatus and method for supplying a respiratory gas: United States Patent 8,522,781
- 2014 Madaus S, Meier J, Heidmann D, **Schneider H**. Method and device for carrying out a signal-processing viewing of a measurement signal that is correlated to the respiratory activity of an individual United States Patent 8,728,000
- 2016 Lane BR, Regan JA, **Schneider H**, Schwartz AR, Smith PL: Disposable Sleep and Breathing Monitor: Provisional Patent JHU ID # 4521, ROI ID 4316 Priority Numbers: US/27.08.04/ USP 605252 and US/14.02.05 / USP 652588, AU002005280161A1

Extramural Funding

Current Grants

- 12/01/16 - 11/31/17 Clinical Testing of a Home Sleep Apnea Testing (HSAT) WatchPat in the Sleep Laboratory Setting
ID number:
Sponsor: Itamar Medical, Israel
Direct Cost: US\$ 457.570
Principal Investigator: Hartmut Schneider, M.D., Ph.D.
Role: Principal Investigator, 40% effort
The overall goal of this industry sponsored research is to define the role of Watchpat as an HSAT in different patient populations.

Previous Grants

- 3/1996 - 3/1998 Pathomechanismen der akuten pulmonalen und arteriellen Blutdruckanstiege bei obstruktiver Schlafapnoe
ID number: (DFG) 532.1-1
Sponsor: Research Award of the Deutsche Forschungsgemeinschaft
Direct Cost: DM 116000/2 yrs
Principal Investigator: Hartmut Schneider, M.D., Ph.D.

	Role: Principal Investigator, 90% effort. The purpose of this project was to determine the hemodynamic consequences of sleep apnea in a canine model of sleep apnea.
3/1997 - 3/1999	Clinical Testing of a CPAP Titration-Algorithm Device for Treating Obstructive Sleep Apnea in the Sleep Laboratory Setting ID number: Sponsor: MAP Medizin Technologie, Germany Direct Cost: US\$ 40000 Principal Investigator: Hartmut Schneider, M.D., Ph.D. Role: Principal Investigator, 5% effort The purpose of this study was to develop a PCRIT machine and an auto CPAP device
4/2001 - 04/2004	Upper Airway Control of Transtracheal Insufflation ID number: NHLBI - R01 HL50381 Sponsor: National Institute of Health Direct Cost: US\$ 250000/yr Principal Investigator: Alan R. Schwartz, M.D. Role: Co-Investigator, 5% effort Sleep Apnea Treatment Device: The purpose of this project was the development and testing of novel invasive treatment device for sleep apnea.
7/2003 - 4/2004	Clinical Testing of a CPAP Titration-Algorithm for Treating Obstructive Sleep Apnea in the Sleep Laboratory Setting ID number: Sponsor: MAP Medizin Technologie, Germany Direct Cost: US\$ 40000 Principal Investigator: Hartmut Schneider, M.D., Ph.D. Role: Principal Investigator, 5% effort The purpose of this study was to validate a CPAP titration algorithm
7/2004 – 2009	Research Agreement with Industry Sponsor ID number: Sponsor: Seleon Incorporated, Germany Direct Cost: US\$ 80000/5 yrs Principal Investigator: Hartmut Schneider, M.D., Ph.D. Role: Principal Investigator, 5% effort. The purpose of this study was to determine the efficiency of nasal Insufflation for treating patients with OSA and snoring
7/2004 – 2009	Respiratory Phenotyping of Obstructive Sleep Apnea ID number: NHLBI – K23 HL 72126 Sponsor: National Institute of Health. Direct Cost: 720.000?5 yrs Principal Investigator: Hartmut Schneider, M.D., Ph.D. Role: Principal Investigator, 80% effort. The goal was to define and validate intermediate physiologic phenotypes of sleep apnea.
09/14/07 - 08/31/12	NIH SCCOR: Mechanisms and Treatment of COPD Progression ID number: P50HL074945 Sponsor: National Institute of Health Direct Cost: \$1,897,429 Principal Investigator: Robert Wise, M.D. Role: Co-Investigator; 6% effort

The overall goal of this SCCOR program is to understand the complex interplay of mechanisms that promote the progression of COPD and to translate that understanding into treatments that can benefit persons who suffer from COPD.

- 07/01/08 - 12/31/11 NIH- subcontract from Key Technologies
ID number: R44 HL091687
Sponsor: Key Technologies Corporation
Direct Cost: US\$ 296164/yr
Principal Investigator: Lane
Role: Co-Investigator; 30% effort
Measurement Device: The major purpose of the proposal is to develop a disposable breathing monitor for detecting sleep apnea and ventilatory disturbances during sleep.
- 07/01/09 - 06/30/14 Mechanisms of Sleep Apnea in Severe Obesity
ID number: R01 HL050381
Sponsor: National Institute of Health Direct Cost: 255,039/yr
Principal Investigator: Alan R. Schwartz, M.D.
Role: Co-Investigator; 15% effort
It is the goal of this study to elucidate the mechanisms and causal pathways linking obesity with upper airway dysfunction during sleep, and will provide novel approaches for the detection and treatment of sleep apnea in the clinical setting.
- 01/05/09 - 12/31/14 Research Agreement with Industry Sponsor
ID number:
Sponsor: ResMed Corporation
Direct Cost: US\$ 262400/yr
Principal Investigator: Alan R. Schwartz, M.D.
Role: Co-Investigator; 15 % effort
Sleep Apnea Treatment Device: The purpose of this project is the development and testing of novel treatment devices (High flow nasal insufflation) for COPD.
- 01/05/13 - 12/31/13 Maryland Innovation Initiative:
Sponsor: Maryland Innovation Initiative (TEDCO)
Direct Cost: US\$ 100000/yr
Principal Investigator: Jason Kirkness, M.D.
Role: Co-Investigator; 10% effort
Universal Respiratory Compliance Monitor: The purpose of this project is the development and testing of novel wireless CPAP Compliance Monitor.
- 01/05/13 - 12/31/14 Research Agreement with Industry Sponsor
ID number:
Sponsor: F&P Healthcare
Direct Cost: US\$ 20000/yr plus investigational Material
Principal Investigator: Brian McGinley, M.D.
Role: Co-Investigator; 10 % effort
The purpose of this project is to determine if nasal insufflation can alter weight loss in patients with CF
- 07/01/11 - 05/31/16 NIH RO1 Grant: Pathogenesis and Outcomes of Sleep Disordered breathing in COPD
HL105546-01
National Institute of Health
Direct Cost: US \$250.000//yr
Principal Investigator: Hartmut Schneider, M.D., Ph.D.
Role: Principal Investigator; 40% effort

The overall goal of this RO1 is to understand how COPD effects breathing during sleep and to determine treatment responses to oxygen and nasal insufflations on lung function and morning fatigue.

2012 – 2015

Heritability of Upper Airway Collapse & Ventilatory Responses

ID number: 12SDG-8100000

Sponsor: AHA (NCRP)

Direct Cost: \$385,000 (total direct cost); Current annual direct cost: \$77,000

Principal Investigator: Kirkness JP Ph.D.

Role: Co-Investigator; 15 % effort

The purpose of this project is the development of quantitative traits for sleep apnea in families

07/05/13 - 06/31/16

Sleep-Related Ventilatory Mechanics & Energy Expenditure in Children & Adults with Cystic Fibrosis

ID number: NA_00046790

Sponsor: CF foundation

Direct Cost: US\$ 100000/yr

Principal Investigator: S Paranjape, M.D.

Role: Co-Investigator; 20% effort

The purpose of this project is to demonstrate that sleep can be utilized to prevent pulmonary cachexia.

(10/01/15 - 09/30/16), Research Agreement with National Sleep Foundation

ID number:

Sponsor: National Sleep Foundation

Direct Cost: US\$ 75000/yr for Andrew Braun

Principal Investigator: Andrew Braun, M.D.

Role: Co-Investigator; 0 % effort

The purpose of this project is to determine if nasal insufflation can alter energy expenditure in patients with CF

Research Program Building / Leadership – None

EDUCATIONAL ACTIVITIES

Peer Reviewed Publications – None

Invited Review Articles

1. Peter JH, Penzel T, Podszus T, Raschke F, **Schneider H**, Stoohs R, von Wichert P. [Pathogenesis of sleep-induced respiratory diseases]. *Verh Dtsch Ges Inn Med*. 1988; 94: 331-41. Review. PMID:3061204
2. Peter JH, Amend G, Faust M, Fett I, Fuchs E, Riess M, **Schneider H**. [Sleep apnea--diagnosis, clinical aspects and therapy]. *Fortschr Med*. 1988 Sep 20; 106(27):544-8. Review. German. No abstract available. PMID:3053375
3. Peter JH, Amend G, Faust M, Meinzer K, Penzel T, **Schneider H**, Schultze B, von Wichert P. [Snoring and sleep apnea syndrome]. *Wien Med Wochenschr*. 1989 Jun 15; 139(11):264-73. Review. German. PMID:2669355
4. Penzel T, Amend G, Faust M, Peter JH, Meinzer K, **Schneider H**, Weber K. [Diagnosis of sleep apnea: required equipment for staged diagnosis]. *Pneumologie*. 1989 Nov; 43 Suppl 1:621-4. German. PMID:2669355
5. Peter JH, Faust M, Fett I, Podszus T, **Schneider H**, Weber K, von Wichert P. [Sleep apnea]. *Dtsch Med Wochenschr*. 1990 Feb 2; 115(5):182-6. Review. German. No abstract available. PMID:2404735
6. Becker H, Stammnitz A, **Schneider H**, Peter JH, von Wichert P. [Nasal continuous positive airway pressure (nCPAP) therapy in obstructive sleep breathing disorders]. *Dtsch Med Wochenschr*. 1995 Jun 2; 120(22):783-9. German. PMID:7781509

Editorials

1. Schwartz AR, Patil SP, Squier S, **Schneider H**, Kirkness JP, Smith PL. Obesity and upper airway control during sleep. *J Appl Physiol*. 2010 Feb; 108(2):430-5.
2. Schwartz AR, Smith PL, **Schneider H**, Patil SP, Kirkness JP. Invited editorial on "Lung volume and upper airway collapsibility: what does it tell us about pathogenic mechanisms?" *J Appl Physiol* (1985). 2012 Sep 1; 113(5):689-90.

Case Reports

1. Guilleminault C, Stoohs R, **Schneider H**, Podszus T, Peter JH, von Wichert P. Central alveolar hypoventilation and sleep. Treatment by intermittent positive-pressure ventilation through nasal mask in an adult. *CHEST* 1989 96: 1210-1212.

Letters, correspondence – None

Book Chapters, Monographs

1. Penzel T, Hoch B, Meinzer K, Peter JH, **Schneider H**, von Wichert P. Ambulatory Monitoring of Sleep Related Breathing Disorders Using MESAM and Biox. In: Nikoforidis G, Pallikarakis N, Proimos B, eds. *Medicon 89, Proc. V Mediterranean Conference on Medical and Biological Engineering*. 1989:162-163.
2. Ehlenz K, Peter JH, **Schneider H**, Elle T, Scheele B, von Wichert P, Kaffarnik H. Renin secretion is substantially influenced by obstructive sleep apnea syndrome. In: Horne JA, ed. *Sleep '90 - Proceedings of the Tenth European Congress on Sleep Research*. Strasbourg, May 90. Pontenagel Press, 1990.
3. Becker H, Peter JH, Pitzer W, **Schneider H**, von Wichert P. Nasal intermittent positive pressure ventilation (NIPPV) in the treatment of sleep apnea. In: Horne JA, ed. *Sleep '90 - Proceedings of the Tenth European Congress on Sleep Research*. Strasbourg, May 90. Pontenagel Press Bochum, 1990:212-213.
4. Becker H, Peter JH, Pitzer W, **Schneider H**, von Wichert P. Nasal intermittent positive pressure ventilation (NIPPV) in the treatment of sleep apnea. In: Horne JA, ed. *Sleep '90 - Proceedings of the Tenth European Congress on Sleep Research*. Strasbourg, May 90. Pontenagel Press Bochum, 1990:212-213.
5. Penzel T, Ducke E, Peter JH, Podszus T, **Schneider H**, Stahler J, von Wichert P. Non-Invasive Monitoring of Blood Pressure in a Sleep Laboratory. In: Rüddel H, Curio I, eds. *Non-Invasive Continuous Blood Pressure Measurement*. Frankfurt: Lang, 1991:95-105.

6. Ehlenz K, Peter JH, Dugi K, Firlé K, Goubeaud R, Weber K, **Schneider H**, Kaffarnik H, von Wichert P. Changes in volume- and pressure-regulating hormone systems in patients with obstructive sleep apnea syndrome. In: Peter JH, Penzel T, Podszus T, von Wichert P, eds. *Sleep and Health Risk*. Berlin: Springer, 1991:518-531.
7. Mayer J, Weichler U, Herres-Mayer B, Moser R, **Schneider H**, Peter JH. Sleep-related breathing disorders and arterial hypertension. In: Peter JH, Penzel T, Podszus T, von Wichert P, eds. *Sleep and Health Risk*. Berlin: Springer, 1991:310-318.
8. **Schneider H**, Stammnitz A, Cassel W, Peter JH. Zirkadiane Aspekte bei schlafbezogenen Atmungsstörungen. In: Lund R, Engfer A, eds. *Fortschritte der Schlafmedizin: Chronologische und therapeutische Aspekte*. München: MMV Medizin Verlag, 1992:93-108.
9. **Schneider H**, Penzel T, Peter JH. Cardiorespiratory Diagnosis of Sleep Related Breathing Disorders with the Mobile 10 Chanel Unit SIDAS. In: Smirne S, ed. *Immunology and Sleep*. Milano: Masson, 1993:365-372.
10. **Schneider H**. Bestimmung der Atemantwort im Schlaf. In: Peter JH, von Wichert P, eds. *Schlaf - Atmung - Kreislauf*. Berlin: Springer, 1993:121-133.
11. **Schneider H**, Grote L, Becker H, Stammnitz A, Peter JH, von Wichert P. Nasale positive Druckbeatmung bei Patienten mit neuromuskulären und skelettalen Erkrankungen. In: Huffmann G, Braune HJ, eds. *Neuromuskuläre Erkrankungen*. Einhorn Presse Verlag, 1995:440-444.
12. Schaub C.D., **Schneider H**. O'Donnell: Mechanisms of Acute and Chronic Blood Pressure Elevations in Animal Models of Obstructive Sleep Apnea. In Bradley and Floeras (eds.): *Sleep Apnea: Implication in Cardiovascular and Cerebrovascular Disease*. New York, Marcel Dekker Inc. 1999 (7) 159-179.
13. Canisius, S, Becker H. **Schneider H**. Akute Respiratorische Insuffizienz durch Störungen der Atemmechanik. In Vogelmeier und Buhl (eds.). *Pneumologische Notfälle*, Stuttgart, Wissenschaftliche Verlagsgesellschaft, 2002 .
14. Jason P. Kirkness, Vidya Krishnan, Susheel P. Patil, **Hartmut Schneider**. Upper Airway Obstruction in Snoring and Upper Airway Resistance Syndrome In: Randerath WJ, Sanner BM, Somers VK (eds.): *Sleep Apnea.Prog Respir Res*. Basel, Karger, 2006, vol 35, pp 79–89.
15. Nilius G., McGinley B, **Schneider H**: Transnasal Insufflation. A new Approach in the Treatment of OSAs In: AM Esquinas (ed.). *Noninvasive Mechanical Ventilation. Theory, Equipment, and Clinical Applications*: Springer 2010, p 135-142.
16. McGinley BM, Kirkness JP, **Schneider H**. Effect of a High-flow Open Nasal Cannula System on Obstructive Sleep Apnea in Children, *Best of Sleep Medicine 2010*, Lee-Chiong T (ed.), National Jewish Health, Colorado, 2010, vol. 1, pp 74-75.
17. Smith PL, Kirkness JP, Patil SP, Schneider H, Schwartz AR. Biomechanics of the Upper Airway, in *Sleep Apnea: Pathogenesis Diagnosis, and Treatment*, Pack A (ed.) Marcel & Dekker. 2012 pp 27-52.
18. Kirkness, JP, Schneider H: NASAL HIGH FLOW: Novel Approach for Ventilatory Assist During Sleep. In: AM Esquinas (ed.). *Noninvasive Mechanical Ventilation. Theory, Equipment, and Clinical Applications*: Springer 2015, Oct 2015, Chapter 81,
19. Schneider H Invitation to edit Chapter: COPD and Sleep Disordered Breathing: In: UpToDate:2015

Books, Textbooks (Editor)

1. **Schneider H**, Hoch B, Penzel T, Peter JH. (eds.) *Die kardiorespiratorische Polygraphie am Patientenbett*. Stuerz Verlag, Würzburg, 1992.
2. Grote L, **Schneider H**, (eds.) *Schlafapnoe und kardiovaskuläre Erkrankungen*. Thieme Verlag Stuttgart/New York, 1996.
3. Schulz H, Becker H, Becker-Carus C, Borbély A, Geisler P, Grote L, Hajak G, Hochban W, Kraemer S, Lauer C, Meier-Ewert K, Paterok B, Pollmächer T, Rodenbeck A, Schäfer T, **Schneider H**, Spieweg I, Steinberg R, Zeitlhofer J, Volk S, eds. *Deutsche Gesellschaft für Schlafforschung und Schlafmedizin: Kompendium Schlafmedizin für Ausbildung, Klinik und Praxis*. Landsberg: Ecomed verlagsgesellschaft AG & Co. KG, 1997.

Other Media - None

Teaching

Classroom instruction

- 1999 - 2004 Lecturer, Basics in Internal Medicine, Privat-Dozent (Associate Professor), Philipps University Marburg, Germany
- 2001 - present Lecturer, Tutorial in Sleep Disorders - Conduct weekly tutorial for pulmonary fellows and medical residents covering clinical and research topics on sleep and breathing, Johns Hopkins School of Medicine
- 2011 Lecturer, Snoring and Sleep apnea: Translating Lessons from small Physiologic studies to large scale Epidemiologic studies, Welch Center for Prevention, Epidemiology & Clinical Research
- 2011 - present Introduction in Sleep: Classroom lecture JHU undergraduate class: neuroscience: 1.5 Hour/year

Clinical Instruction

- 1992 - 1996 Tutorial in Sleep Disorders - Conduct weekly tutorial for pulmonary fellows and medical residents covering clinical and research topics on sleep and breathing, Attending Physician, Philipps University Marburg, Germany
- 1999 - 2000 Tutorial in Sleep Disorders - Conduct weekly tutorial for pulmonary fellows and medical residents covering clinical and research topics on sleep and breathing, Attending Physician, Philipps University Marburg, Germany

CME Instruction - None**Workshops /seminars**

- 1991 - present German Pulmonary Society: CME Course, "Management of Sleep Apnea," for acquiring licensure for performing ambulatory sleep medicine: Course Director at following sites: Marburg/Hessen, Nuernberg/ Bavaria, Dortmund/NRW, Germany

Mentoring

Mentor for dissertation in Internal Medicine

- 1994 - 1996 Helmut Krah M.D. Philipps University, Marburg
Bernhard Hoch.M.D. Philipps University, Marburg
- 1999 - 2000 Martin Grundner.M.D. Philipps University, Marburg
Julia Gaedt, M.D. Philipps University, Marburg
- 1999 - 2001 Lennarth Knaack, M.D., Philipps University, Marburg
- 2000 - 2004 Adrian Meyer M.D., Philipps University, Marburg
Sonja Ehlen M.D., Philipps University, Marburg
- 2001 - 2004 Susheel Patil, M.D., Pulmonary Fellow, Johns Hopkins University, Baltimore, MD
- 2001 - 2005 Sebastian Canisius M.D., Philipps University, Marburg

Mentor for post-doctoral Research Fellows in Pulmonary Medicine

- 2001 - 2002 Taigato Yugo, Pulmonary Fellow, Shiba University, Tokio, Japan
- 2002 - 2000 Audrey Liu M.D., Pulmonary Fellow, Johns Hopkins University, Baltimore, MD
- 2003 - 2007 Brian McGinley. M.D., Pediatric Fellow, Johns Hopkins University, Baltimore, MD

Current position:

Faculty at JH Pediatric Department, K23 recipient

- 2003 - 2008 Kim Goring M.D., Pulmonary Fellow, NRSA Applicant, Johns Hopkins University, Baltimore, MD
- 2003 - 2008 Laura Herpel M.D., Pulmonary Fellow, NRSA Applicant, Johns Hopkins University, Baltimore, MD
- 2003 - 2008 Vidya Krishnan M.D., Pulmonary Fellow, NRSA Applicant, Johns Hopkins University, Baltimore, MD

2004 - 2009 Jason Kirkness M.D., Pulmonary Fellow, NRSA Applicant, Johns Hopkins University, Baltimore, MD

Current position:

Faculty at JH Pulmonary Department, AHA recipient

2009 - 2011 Chien Hung M.D., Pulmonary Fellow, Taiwan, Johns Hopkins University, Baltimore, MD

2008 - 2011 Christian Reinke M.D., Pulmonary Fellow, Germany, Johns Hopkins University, Baltimore, MD

2012 - present Paolo Biselli M.D., Pulmonary Fellow, Brasil, Johns Hopkins University, Baltimore, MD

2012 - present Shruti Paranjape, Faculty at JH Pediatric Department, Johns Hopkins University, Baltimore, MD

2013 - present Andrew Braun, M.D., Pulmonary Fellow, Johns Hopkins University, Baltimore, MD

2012 - present Luu Pham, M.D., Pulmonary Fellow, Johns Hopkins University, Baltimore, MD

2014 - present Kathrin Fricke, M.D., Pulmonary Fellow, Germany, Johns Hopkins University, Baltimore, MD

Educational Program Building / Leadership - None

Educational Extramural Funding- None

Certification

Clinical (Service) Responsibilities

ORGANIZATIONAL ACTIVITIES

Committees

1989 - 1994	Program Committee, German Sleep Society
1994 - 1996	Program Committee, Standards for Home Ventilation, German Pulmonary Society
2004	American Academy of Sleep Medicine: International Affairs Committee
2010-present	WASM, Program Committee, Organizing of Symposia

Consultantships

1996 - 2005	MAP, Germany, Assessment and Control of Upper Airway Collapsibility
2005 - 2010	TNI Medical H, Treatment of Sleep Related Breathing Disorders and Hypoventilation Syndromes,
2009 - present	American Sleep Clinic, Germany: Quality Assurance and research standards
2010 - present	Fisher & Paykel: New Zealand: High Flow Treatment for COPD and Cystic fibrosis
2011 - 2012	Apneics: USA: Hypoglossus pacemaker for treating sleep apnea.
2011 - present	inSLEEP: USA: low pressure CPAP device for treating snoring.
2011 - 2015	Linde Healthcare Middle East: Providing advice for establishing sleep Centers in the Middle East
2010 - present	American Sleep Clinic, Frankfurt, Germany: Co-Director: Quality Assurance

RECOGNITION

Awards and Honors

1998	Washington Area Critical Care Society: <u>First Prize</u> , Young Investigator Award of Original Research (Chairman M. Tobin)
2010	Best of Sleep 2010: McGinley B, Halbauer, A, Patil SP, Smith C, Smith PL, Schwartz AR, Schneider H. An Open Nasal Cannula Treats Obstructive Sleep Apnea in Children
2015	Highlighted Article from J. Applied Physiol.: <u>Editor's Choice</u> : Panel discussion

Invited Panels/Study Section

2013	NIH/NHLBI Invited Reviewer NHLBI SBIR Phase II Review: Sleep Apnea Treatment Compliance
2013	NIH/NHLBI Invited Reviewer K99/K22 Review (47 applications) Pathway to Independence
2013	NIH/NHLBI Invited Reviewer R01: Review (24 applications) Special Emphasis Panel: Clinical Trials (HL-14-004)
2014	NIH/NHLBI Invited Reviewer K99/K22 Review (95 applications) Pathway to Independence
2014	NIH/NHLBI Invited Reviewer NHLBI SBIR Phase II Review: Point of Care
2015	NIH/NHLBI Invited Reviewer K99/K22 Review Pathway to Independence
2015	NIH/NHLBI Invited Reviewer R01: Review (24 applications) Special Emphasis Panel: Clinical Trials (HL-14-004)
2015	NIH/NHLBI Invited Reviewer NHLBI SBIR Phase II Review: Point of Care

Invited Lectures,

2002	Hamodynamische Konsequenzen der obstruktiven Schlafapnoe: Annual Meeting of the German Pulmonary Society (Deutsche Gesellschaft fuer Pneumologie (DGP)
2003	Pathophysiology of Upper Airway obstruction during Sleep: Swedish Sleep Society, Sahlgrenska University, Goteborg, Sweden.
2005	Pathogenesis of Obstructive Sleep Apnea: Pulmonary Society of Romania:
2005	Phenotyping Patients with Upper Airway obstruction: World Association of Sleep Medicine (WASM), 15-18 October 2005, Berlin, Germany.

2007	Pcrit: Pathophysiologie und Relevanz fuer Diagnose der Obstruktiven Schlafapnoe. Annual Meeting of the German Pulmonary Society (Deutsche Gesellschaft fuer Pneumologie (DGP)
2008	What can we learn from PCRIT? Annual Meeting of the Associated Professional Sleep Society (APSS)
2009	Nasal insufflation for treating mild upper airway obstruction Swedish Sleep Society, Sahlgrenska University, Goteborg, Sweden.
2009	Nasal Insufflation; Ein neues Konzept fuer die Therapie der Obstruktiven Schlafapnoe. Annual Meeting of the German Pulmonary Society (Deutsche Gesellschaft fuer Pneumologie (DGP)
2010	Inspiratorische Flusslimitation: Diagnose und klinische Relevanz. Annual Meeting German Sleep Research Society (Deutsche Gesellschaft fuer Schlafmedizin: DGSM).
2010	The Nose as the Interface for Ventilation Therapy. Annual Meeting of European Respiratory Society (ERS)
2011	Basic methodology for the assessment of respiration during sleep World Association of Sleep Medicine (WASM), 13th September, Quebec, Canada 2011
2011	Sleep in Chronic lung disease: Challenges of Sleeping and breathing. Annual Conference of American Thoracic Society (ATS)
2013	Pcrit and Upper Airway obstruction during Sleep: Swedish Sleep Society, Sahlgrenska University, Goteborg, Sweden.
2013	Automatic vs manual scoring of EEG: Philips Satellite symposium, Annual Meeting of the Associated Professional Sleep Society (APSS)
2014	Pcrit: Pathophysiologie und Wegweiser fuer Therapie? Annual Meeting German Sleep Research Society (Deutsche Gesellschaft fuer Schlafmedizin: DGSM)
2015	Sleep as an opportunity to prevent respiratory failure: 25 years sleep Disorders Center, Charite, Berlin.
2016	NIV for Treating Hypercapnic Respiratory Failure:Panel Discussion Contra.German Pulmonary Society (Deutsche Gesellschaft fuer Pneumologie (DGP)

OTHER PROFESSIONAL ACCOMPLISHMENTS - None