

CURRICULUM VITAE

I. PERSONAL DATA

Name: William Joseph Herring, M.D., Ph.D.

II. EDUCATION

<u>School</u>	<u>Date</u>	<u>Focus</u>	<u>Degree</u>
Emory University School of Medicine Atlanta, GA	1992	Medicine	M.D.
Emory University School of Medicine Atlanta, GA	1991	Human Genetics	Ph.D.
University of Georgia Athens, GA	1987	Genetics	B.S.

III. EMPLOYMENT HISTORY

<u>Title</u>	<u>From - To</u>
Associate Vice President & Section Head Neurology, present Merck Research Laboratories, Merck & Co. North Wales, Pennsylvania	1/2018- Clinical Neuroscience
Executive Director & Section Head Neurology, 12/2017 Merck Research Laboratories, Merck & Co. North Wales, Pennsylvania	8/2012- Clinical Neuroscience
Senior Director & Section Head Neurology, Clinical Neuroscience Merck Research Laboratories, Merck & Co. North Wales, Pennsylvania	12/2011- 7/2012
Senior Director, Clinical Neuroscience 12/2011 North Wales, Pennsylvania	9/2010- Merck Research Laboratories, Merck & Co.
Director, Clinical Neuroscience 8/2010 North Wales, Pennsylvania	9/2006- Merck Research Laboratories, Merck & Co.
Associate Director, Clinical Neuroscience 9/2006 West Point, Pennsylvania	10/2004- Merck Research Laboratories, Merck & Co.

Vice President of Research & Medical Director Cognate Therapeutics, Inc. & Theradigm, Inc.
Baltimore, Maryland 3/2004 – 9/2004

Vice President of Research
Oncocidex, Inc. & Theradigm, Inc. Baltimore, Maryland 8/2003 – 9/2004

Advisor, Cell-based Therapeutics & Biologics
Toucan Capital Venture Fund Bethesda, Maryland 8/2003 – 9/2004

Senior Dir. of Cell Engineering & Dir. of Gene Therapy
Neuronyx, Inc. Malvern, Pennsylvania 2000-2003

IV. ACADEMIC EXPERIENCE

Adjunct Faculty,
Johns Hopkins Sch. of Med, Dept. of Neurology Baltimore, Maryland 2010-present

Faculty, Part-time
Johns Hopkins Sch. of Med, Dept. of Neurology Baltimore, Maryland 2000-2010

Co-director, Viral Vector Core, Stroke and Parkinson's Disease Research Program Projects
Johns Hopkins Sch. of Med, Dept. of Neurology Baltimore, Maryland 1999-2000

Assist. Professor, Full-time
Johns Hopkins Sch. of Med, Dept. of Neurology Baltimore, Maryland 1999-2000

Instructor
Johns Hopkins School of Medicine, Department of Neurology Baltimore, Maryland 1997-1999

V. TRAINING

<u>Source</u>	<u>Date</u>	<u>Type</u>
John Hopkins School of Medicine Department of Neurology Baltimore, Maryland	1996-1997	Molecular Neuroscience Fellowship
John Hopkins Hospital Baltimore, Maryland	1993-1996	Neurology Residency
Emory University Affiliated Hospitals Atlanta, GA.	1992-1993	Medicine Internship

VI. **SOCIETY MEMBERSHIPS** (within last 15 years)

American Academy of Neurology
 American Association for the Advancement of Science
 American Academy of Sleep Medicine
 American Society for Neural Transplantation and Repair American
 Society of Gene Therapy
 Cell Transplant Society
 Movement Disorders Society Sleep
 Research Society
 Society for Neuroscience

VII. **ACADEMIC AND PROFESSIONAL HONORS**

Prix Galien Award Nominee for Bridion™ (sugammadex)	2016
BioNJ Innovator Award for Bridion™ (sugammadex)	2016
Prix Galien Award Nominee for Belsomra™ (suvorexant)	2015
NIH Clinical Investigator Development Award (K08)	1997 - 2000
Young Investigator's Award Vth International Congress of Inborn Errors of Metabolism.	1990
Research Award, Society for Inborn Metabolic Disorders	1989
NIH Medical Scientist Training Program Fellowship	1988 - 1992
March of Dimes Predoctoral Fellowship	1988 - 1991
Emory University Summer Research Fellowship	1986
Helen B. Dobbs Scholar	1985 - 1986
Charles M. Hicks Scholar	1984 - 1985
Georgia Alumni Scholar	1981 - 1985
Omicron Delta Kappa	1985
Phi Beta Kappa	1985
Phi Kappa Phi	1985
Alpha Epsilon Delta	1984
Biftad	1983
Phi Eta Sigma	1982

Certification

Medical License, Pennsylvania

2003

Medical License, Maryland

1996 - 2000

VIII. PUBLICATIONS AND PATENTSPeer-Review Journal Articles

Danner, D.J., Litwer, S., **Herring**, W.J., and Pruckler, J. "Construction and nucleotide sequence of a cDNA encoding the full-length preprotein for human branched chain acyltransferase." *Journal Biol. Chem.* 1989; 264:7742-7746.

Litwer, S., **Herring**, W.J., and Danner, D.J. "Reversion of the maple syrup urine disease phenotype of impaired branched chain alpha-ketoacid dehydrogenase activity in fibroblasts from an affected child." *J. Biol. Chem.* 1989; 264:14597-14600.

Herring, W.J., Litwer, S., Weber, J.L., and Danner, D.J. "Molecular genetic basis of maple syrup urine disease in a family with two defective alleles for branched chain acyltransferase and localization of the gene to human chromosome 1." *Am. J. Hum. Genet.* 1991; 48:342-350.

Herring, W.J., McKean, M., Dracopoli, N., and Danner, D.J. "Branched-chain acyltransferase absence due to an Alu-based genomic deletion allele and an exonskipping allele in a compound heterozygote proband expressing maple syrup urine disease." *Biochimica et BiophysicaActa*, 1992; 1138:236-242.

Lau, K.S., **Herring**, W.J., Chuang, J.L., McKean, M., Danner, D.J., Cox, R.P., and Chuang, D.T. "Structure of the gene encoding the dihydrolipooyl transferase (E2) component of human branched-chain alpha-ketoacid dehydrogenase complex and characterization of an E2 pseudogene." *J. Biol. Chem.* 1992; 267:24090-24096.

Lau, K.S., Chuang, J.L., **Herring**, W.J., Danner, D.J., Cox, R.P., and Chuang, D.T. "The complete cDNA sequence for dihydrolipooyl transacylase (E2) of human branched-chain alpha-ketoacid dehydrogenase complex." *Biochimica et Biophysica Acta* 1992; 1132:319-321.

Ellerine, N.P., **Herring**, W.J., Elsas, L.J., McKean, M.C., Klein, P.D., and Danner, D.J. "Thiamine-responsive maple syrup urine disease in a patient antigenically missing dihydrolipoamide acyltransferase." *Biochem. Med. Metab. Biol.* 1993; 49:363-374.

England, B.K., Greiber, S., Mitch, W.E., Bowers, R.A., **Herring**, W.J., McKean, M., Ebb, R.G., Price, S.R., and Danner, D.J. "Rat muscle branched-chain ketoacid dehydrogenase activity and mRNAs increase with extracellular acidemia." *Am. J. Physiol.* 1995; 268:C1395-1400.

Cooper, J.K, Schilling, G., Peters, M.F., **Herring**, W.J., Sharp, A.H., Kaminski, Z., Masone, J., Khan, F.A., Delanoy, M., Dawson, V.L., Dawson, T.M., and Ross, C.A.

"Truncated N-terminal fragments of huntingtin with expanded glutamine repeats form nuclear aggregates in cell culture." *Hum. Mol. Genet.* 1998; 7:783-790.

Peters, M.F., Nucifora, F.C., Jr., Kushi, J., Seaman, H.C., Cooper, J.K., **Herring**, W.J., Dawson, V.L., Dawson, T.M., Ross, C.A. "Nuclear targeting of mutant huntingtin increases toxicity". *Mol. Cell. Neurosci.* 1999; 14:121-128.

Sasaki, M., Gonzalez-Zulueta, M., Huang, H., **Herring**, W.J., Ahn, S., Ginty, D.D., Dawson, V.L., Dawson, T.M., "Dynamic regulation of neuronal NO synthase transcription by calcium influx through a CREB family transcription factor-dependent mechanism". *PNAS* 2000; 7:8617-8622.

Mandir, A.S., Poitras, M.F., Berliner, A.R., **Herring**, W.J., Guastella, D.B., Feldman, A., Poirier, G.G., Wang, Z.Q., Dawson, T.M., Dawson, V.L., "NMDA but not non-NMDA excitotoxicity is mediated by poly(ADP-ribose) polymerase ." *J. Neurosci.* 2000; 20:800511.

Nucifora, F.C., Jr., Ellerby, L.M., Wellington, C.L., Wood, J.D., **Herring**, W.J., Sawa, A., Hayden, M.R., Dawson, V.L., Dawson, T.M., Ross, C.A. "Nuclear localization of a noncaspase truncation product of atrophin-1, with an expanded polyglutamine repeat, increases cellular toxicity." *J. Biol. Chem.* 2003; 278(15):13047-55.

Maragakis, N.J., Rao, M.S., Llado, J., Wong, V., Xue, H., Pardo, A., **Herring**, J., Kerr, D., Coccia, C., and Rothstein, J.D. "Glial Restricted Precursors Protect Against Chronic Glutamate Neurotoxicity of Motor Neurons in Vitro." *Glia* 2005; 50: 145-159.

Addy, C., Assaid, C., Hreniuk, D., Stroh, M., Xu, Y., **Herring**, W.J., Ellenbogen, A., Jinnah, H.A., Kirby, L., Leibowitz, M.T., Stewart, R.M., Tarsy, D., Tetrad, J., Stoch, A., Gottesdiener, K., Wagner, J. "Single-Dose Administration of MK-0657, an NR2Bselective NMDA Antagonist, Does Not Result in Clinically Meaningful Improvement in Motor Function in Patients with Moderate Parkinson's Disease." *J.Clin.Pharm.* 2009; 49:856-864.

Ibrahim, L.I, DiazGranados, N., Jolkovsky, L., Brutsche, N., Luckenbaugh, D.A., **Herring**, W.J., Potter, W.Z., Zarate, C.A. "A Randomized, Placebo-Controlled, Crossover Pilot Trial of the Oral Selective NR2B Antagonist MK-0657 in Patients With Treatment-Resistant Major Depressive Disorder." *J.Clin.Psychopharmacol.* 2012; 32:551-557.

Herring, W.J., Wilens, T.E., Adler, L.A., Baranak, C., Liu, K., Snively, D.B., Lines, C.R., Michelson, D. "Randomized Controlled Study of the Histamine Inverse Agonist MK-0249 in Adult Attention-Deficit/Hyperactivity Disorder". *J. Clin. Psychiatry.* 2012; 73:e891-8.

Herring, W.J., Snyder, E., Budd, K.S., Hutzleemann, J., Snively, D., Liu, K., Lines, C., Roth, T.; Michelson, D. "Orexin Receptor Antagonism for Treatment of Insomnia: a Randomized Clinical Trial of Suvorexant". *Neurology.* 2012; 79:2265-74.

Herring, W.J., Liu, K., Hutzleemann, J., Snively, D., Snyder, E., Ceesay, P., Lines, C., Michelson, D., Roth, T. "Alertness and Psychomotor Performance Effects of the

Histamine-3 Inverse Agonist MK-0249 in Obstructive Sleep Apnea Patients on Continuous Positive Airway Pressure Therapy with Excessive Daytime Sleepiness: a Randomized Adaptive Crossover Study." *Sleep Med.* 2013; 14:955-63.

Sun, H., MacLeod, C., Mostoller, K., Mahon, C., Han, L., Renger, J.J., Ma, J., Brown, K.R., Schulz, V., Kay, G.G., **Herring**, W.J., Lines, C., Rosen, L.B., Murphy, M.G., Wagner, J.A. "Early-stage Comparative Effectiveness: Randomized Controlled Trial with Histamine Inverse Agonist MK-7288 in Excessive Daytime Sleepiness Patients." *J. Clin. Pharmacol.* 2013; 53:1294-302.

Michelson, D., Snyder, E., Chengan-Liu, M., Snively, D.B., Hutzelmann, J., Walsh, J.K., Krystal, A.D., Benca, R.M., Cohn, M., Lines, C., Roth, T., **Herring**, W.J. "Safety and efficacy of suvorexant during 1-year treatment of insomnia with subsequent abrupt treatment discontinuation: a phase 3 randomised, double-blind, placebo-controlled trial." *Lancet Neurology*, 2014; 13:461-71. Epub 2014 Mar 27.

Chabi, A., Zhang, Y., Jackson, S., Cady, R., Connor, K.M., Lines, C., **Herring**, W.J., Michelson, D. "Randomized controlled trial of the orexin receptor antagonist filorexant for migraine prophylaxis." *Cephalalgia* 2015; 35:379-88; Epub 2014 Aug 8.

Ma, J., Svetnik, V., Snyder, E., Lines, C., Roth, T., **Herring**, W.J. "Electroencephalographic power spectral density profile of the orexin receptor antagonist suvorexant in patients with primary insomnia and healthy subjects." *Sleep*, 2014; 37:1609-19.

Snyder, E., Ma, J., Svetnik, V., Connor, K.M., Lines, C., Michelson, D., **Herring**, W.J. "Effects of suvorexant on sleep architecture and power spectral profile in patients with insomnia: analysis of pooled phase-3 data." *Sleep Medicine*, Epub 2015 Nov 10.

Herring, W.J., Connor, K.M., Ivgy-May, N., Snyder, E., Liu, K., Snively, D.B., Krystal, A.D., Walsh, J.K., Benca, R.M., Rosenberg, R., Sangal, R.B., Budd, K., Hutzelmann, J., Leibensperger, H., Froman, S., Lines, C., Roth T., Michelson, D. "Efficacy and safety of the orexin receptor antagonist suvorexant in patients with insomnia: results from two 3month randomized, double-blind, placebo-controlled, clinical trials." *Biol. Psych.* 2016; 79:136-48. Epub 2014 Oct 23.

Connor, K.M., Mahoney, E., Jackson, S., Hutzelmann, J., Zhao, X., Jia, N., Snyder, E., Liu, K., Snively, D.B., Michelson, D, Roth T., **Herring**, W.J. "A Phase II Dose-Ranging Study Evaluating the Efficacy and Safety of the Orexin Receptor Antagonist Filorexant (MK-6096) in Patients with Primary Insomnia." *Int. J. Neuropsychopharmacol.* 2016; 19(8) Epub 2016 March 15.

Snyder, E., Ma, J., Svetnik, V., Connor, K.M., Lines, C., Michelson, D., **Herring**, W.J. "Effects of suvorexant on sleep architecture and power spectral profile in patients with insomnia: analysis of pooled phase 3 data." *Sleep Med.* 2016; 19:93-100.

Gotter, A.L., Forman, M.S., Harrell, C.M., Stevens, J, Svetnik, V., Yee, K.L., Li, X., Roecker, A.J., Fox, S.V., Tannenbaum, P.L., Garson, G.L., De Lepelriere, I., Calder, N., Rosen, L., Struyk, A., Coleman, P.J., **Herring**, W.J., Renger, J.J., Winrow, C.J. "Orexin 2

receptor antagonism is sufficient to promote NREM and REM sleep from mouse to man." *Sci. Rep.* 2016; 6:27147.

Chabi, A., Baranak, C., Lupinacci, R., **Herring**, W.J. "Preservative-free Tafluprost in the Treatment of Open-angle Glaucoma or Ocular Hypertension in India: A Phase III Clinical Trial." *Int J Clin Pract.* 2016; 70(7): 577-586.

Herring, W.J., Connor, K.M., Snyder, E., Snavely, D.B., Zhang, Y. Hutzelmann, J., Matzura-Wolfe, D., Benca, R.M., Krystal, A.D., Walsh, J.K., Lines, C., Roth T., Michelson, D. "Suvorexant in patients with insomnia: pooled analyses of three-month data from phase-3 randomized controlled clinical trials." *J. Clin. Sleep Med.* 2016; 12(9):1215-25.

Svetnik, V., Snyder, E., Ma, J., Tao P., Lines, C., **Herring**, W.J. "EEG spectral analysis of NREM in a large sample of patients with in patients with insomnia and good sleepers: effects of age, sex, and part of the night." *J. Sleep Res.* 2017; 26(1):92-104.

Coleman, P.J., Gotter, A.L., **Herring**, W.J., Winrow, C.J., Renger, J.J. "The discovery of suvorexant, the first in class orexin receptor drug for insomnia." *Annu. Rev. Pharmacol. Toxicol.* 2017; 57:509-533.

Rosenberg, J., **Herring**, W.J., Blobner, M., Mulier, J.P., Rahe-Meyer, N., Woo, T., Li, M.K., Grobara, P., Assaid, C., Fennema, H., Szegedi, A. "Deep neuromuscular blockade improves laparoscopic surgical conditions: a randomized controlled study." *Adv. Ther.* 2017; 34:925-936.

Herring, W.J., Connor, K.M., Snyder, E., Snavely, D.B., Zhang, Y. Hutzelmann, J., Matzura-Wolfe, D., Benca, R.M., Krystal, A.D., Walsh, J.K., Lines, C., Roth T., Michelson, D. "Clinical profile of suvorexant for the treatment of insomnia over 3 months in women and men: subgroup analysis of pooled phase-3 data." *Psychopharmacology* 2017; 234:1703-1711.

Herring, W.J., Connor, K.M., Snyder, E., Snavely, D.B., Zhang, Y. Hutzelmann, J., Matzura-Wolfe, D., Benca, R.M., Krystal, A.D., Walsh, J.K., Lines, C., Roth T., Michelson, D. "Suvorexant in elderly patients with insomnia: pooled analysis of data from phase-3 randomized controlled clinical trials." *Am. J. Geriatr. Psychiatry* 2017; 25:791-802.

Connor, K.M., Ceesay. P., Hutzelmann, J., Snavely, D.B., Krystal, A.D., Trivedi, M., **Herring**, W.J., Michelson, D. "Phase II proof-of-concept trial of the orexin receptor antagonist filorexant (MK-6096) in patients with major depressive disorder." *Int. J. Neuropsychopharmacol.* 2017; 20:613-618.

Herring, W.J., Woo, T., Assaid, C., Lupinacci, R.J., Lemmens, H.J., Blobner, M., Khuenl-Brady, K.S. "Sugammadex efficacy for reversal of rocuronium- and vecuronium-induced neuromuscular blockade: a pooled analysis of 26 studies." *J. Clin. Anesth.* 2017; 41:84-91.

Herring, W.J., Assaid, C., Budd, K., Vargo, R., Mazonko, R.S., Lines, C., Ellenbogen, A., Metman, L.V. "A phase Ib, randomized, controlled study to evaluate the effectiveness of a single-dose of the NR2B selective NMDA antagonist MK-0657 on levodopa-induced dyskinesias and motor symptoms in patients with Parkinson's disease." *Clinical Neuropharmacology* 2017; 40:255-260.

Svetnik, V., Snyder, E., Tao, P., Scammell, T.E., Roth, T., Lines, C., **Herring**, W.J. "Insight into reduction of wakefulness by suvorexant in patients with insomnia: analysis of wake bouts." *Sleep* 2017; 41: Epub ahead of print.

Herring, W.J., Ge, J., Jackson, S., Assaid, C., Connor, K.M., Michelson, D. "Orexin receptor antagonism in painful diabetic neuropathy: a phase II trial with filorexant." *Clin. J. Pain* 2018; 34:37-43.

Min, K.C., Woo, T., Assaid, C., McCrea, J., Gurner, D.M., Sisk, C.M., Adkinson, F., **Herring**, W.J. "Incidence of hypersensitivity and anaphylaxis with sugammadex". *J. Clin. Anesth.* 2018; 47:67-73.

Herring, W.J., Roth, T., Krystal, A.D., Michelson, D. "Orexin receptor antagonists for the treatment of insomnia and potential treatment of other neuropsychiatric indications." *J. Sleep Research* 2018; Epub ahead of print.

Herring, W.J., Connor, K.M., Snyder, E., Snavely, D.B., Morin, C.M., Michelson, D. "Effects of suvorexant on the Insomnia Severity Index in patients with insomnia: analysis of pooled phase 3 data." *Sleep Med.* 2018; Epub ahead of print.

Book Chapters

Danner, D.J., Litwer, S., **Herring**, W.J., and Elsas, L.J. "Molecular genetic basis for inherited disorders of branched-chain alpha-ketoacid dehydrogenase complexes." In Alpha-ketoacid Dehydrogenase Complexes: Organization, Regulation, and Biomedical Ramifications. Ann. N.Y. Acad. Sci. 573: 369-377 (1989).

Patents

Ho, T., Kopen, G.C, Righter, W.F., Rutkowski, J.L., Wagner, J., **Herring**, W.J., Ragaglia, V., "Cell Populations Which Co-Express CD49c and CD90" – Published U.S. Patent Application Number [20040058412](#) (2004).

Representative Abstracts / Conference Presentations

Andrews, E.M., Tsai, S-Y., Bollnow, M.L., **Herring**, W.J., Kartje, G.L. "Human adult bone marrow-derived stem cell therapy results in functional recovery following stroke." Society for Neuroscience (2003).

Maragakis, N.J., Pardo, A., Wong, V., **Herring**, W.J., Rao, M.S., and Rothstein, J.D. "Glutamate transporter expression and function in GLT1 overexpressing glial restricted precursors." Society for Neuroscience (2003).

Shen, L., Chen, J., Li, Y., Lu, M., Vanguri, P., Borneman, J., Raginski, K., Smith, A., **Herring**, W.J., Chopp, M. "Effects of bone marrow stromal cells injected via different routes (IA vs IV) after stroke in rats." Stroke conference (2005).

Li, Y., Chen, J., Zhang, C., McIntosh, K., Raginski, K., Borneman, J., Mitchell, J., **Herring**, W.J., Smith, A., Vanguri, P., Gao, Q., Cui, Y., Katakowski, M., Zhang, J., Lu, M., Chopp, M. "Allogeneic rat bone marrow stromal cells promote brain remodeling without immunologic sensitization in stroked rats." Stroke conference (2005).

Gao, Q., Katakowski, M., Yi, L., Vanguri, P., Borneman, J., Raginski, K., Smith, A., **Herring**, W.J., Chopp, M. "Bone marrow stromal cells confer post-ischemic protection via increased Akt and Erk and growth factor production within neighboring astrocytes." Stroke conference (2005).

Zhang, J., Li, Y., Cui, Y., Chen, J., Hammil, L., Noffsinger, L., Vanguri, P., **Herring**, W.J., Smith, A., Chopp, M. "Treatment of stroke in rats with human marrow stromal cells decreases axonal loss and demyelination." Stroke conference (2005).

Vernon, M.K., O'Quinn, S., McQuarrie, K., Norquist, J., **Herring**, W.J., Brodovicz, K.G. "Experiences with Excessive Daytime Sleepiness from Patients' Perspectives". APSS SLEEP Meeting (2008).

Vernon, M.K. O'Quinn, S., McQuarrie, K., Norquist, J., Dinges, D., Roth T., **Herring**, W.J., Brodovicz, K.G. "Qualitative Validation of the Daytime Sleepiness Diary". APSS SLEEP Meeting (2008).

Norquist, J. Vernon, M.K., O'Quinn, S., McQuarrie, K., Dinges, D., Roth, T., **Herring**, W.J., Brodovicz, K.G. "Development of an Excessive Sleepiness Diary". ISOQOL (2010).

Norquist, J., Liao, J., Dinges, D., Roth, T., **Herring**, W.J., Brodovicz, K.G. "Validation of an Excessive Sleepiness Diary". ISOQOL (2010).

Herring, W.J., Adler, L.A., Baranak, C.C., Liu, K., Snavely, D., Michelson, D. "Effects of the Histamine Inverse Agonist MK-0249 in Adult Attention Deficit Disorder: A Randomized, Controlled, Crossover Study". Society of Biological Psychiatry (2010).

Herring, W.J., Hutzleemann, J., Liu, K., Ceesay, P., Snavely, D., Snyder, E., Michelson, D., Dinges, D., Roth, T. "Alerting and Performance Effects of the Histamine Inverse Agonist MK-0249 in Obstructive Sleep Apnea Patients on CPAP with Excessive Daytime Sleepiness: A Randomized, Controlled, Adaptive Crossover Study". SLEEP 2010; 33: A272.

Herring, W.J., Budd, K.S., Hutzleemann, J., Snyder, E., Snavely, D., Liu, K., Lines, C., Michelson, D., Roth, T. "Efficacy and Tolerability of the Dual Orexin Receptor Antagonist MK-4305 in Patients with Primary Insomnia: Randomized, Controlled, Adaptive Crossover Polysomnography Study". SLEEP 2010; 33: A199.

Herring, W.J., Budd, K.S., Hutzlemann, J., Snyder, E., Snively, D., Liu, K., Lines, C., Michelson, D., Roth, T. "Efficacy and Tolerability of the Dual Orexin Receptor Antagonist MK-4305 in Patients with Primary Insomnia: a Randomized, Controlled, Adaptive Crossover Polysomnography Study". 20th Congress of the European Sleep Research Society, Lisbon, Portugal (2010).

Egan, M.F., **Herring**, W.J., Ho, A.P., Michelson, D. Update on recent neuropsychiatric therapeutics research. For presentation at: New Clinical Drug Evaluation Unit Annual Meeting (NCDEU), Boca Raton, Florida, 6/13/11 - 6/16/11.

Herring, W.J., Ma, J., Snyder, E., Svetnik, V., Hutzlemann, J., Liu, K., Lines, C., Roth, T., Schoepp, D., Michelson, D. "Power Spectral Analysis of the Dual Orexin Receptor Antagonist Suvorexant (MK-4305) in Patients with Primary Insomnia and in Healthy Subjects". *Neuropsychopharmacology* (2011); 36(Suppl S1):S233.

Herring, W.J., Ma, J., Snyder, E., Svetnik, V., Hutzlemann, J., Liu, K., Lines, C., Roth, T., Michelson, D. "Power Spectral Analysis of the Dual Orexin Receptor Antagonist Suvorexant (MK-4305) in Patients with Primary Insomnia and in Healthy Subjects". *Biological Psychiatry* (2012); 71(8 Suppl.):2975-2985.

Herring, W.J., Connor, K., Ivgy-May, N., Snyder, E., Liu, K., Roth, T., Michelson, D. "Efficacy and Safety of Suvorexant in Patients with Primary Insomnia: Results from Two Pivotal Phase 3 Trials". SLEEP 2012 Meeting (Associated Professional Sleep Societies - 26th Annual Meeting) (2012).

Liu, Z., **Herring**, W.J., Silber, C., Bortnichak, E.A., Xu, W., Pearson, J.D. "Using Automated Healthcare Databases to Study Insomnia in Real World". 29th International Conference on Pharmacoepidemiology and Therapeutic Risk (2013). Chabi, E., Lupinacci, R., Baranak, C., **Herring**, W.J. "Randomized Clinical Trial of the Efficacy and Safety of Preservative-free Tafluprost and Preservative-free Timolol in Patients With Open-Angle Glaucoma or Ocular Hypertension in India." *ARVO* (2014).

Svetnik, V., Snyder, E.S., Ivgy-May, N., Ma, J., Tao, P., **Herring**, W.J. "Comparison of PSG Sleep Parameters, Micro-structure and Spectral Profiles, between Patients with Primary Insomnia and Good Sleeper Controls Using a Large Compilation of PSG Recordings from Three Clinical Trials." APSS SLEEP Meeting (2014).

Herring, W.J., Connor, K.M., Ivgy-May, N., Snively, D., Snyder, E., Michelson, D. "Clinical Profile of Suvorexant over 3 Months in Elderly Patients With Insomnia: Subgroup Analysis of Phase-3 Data." APSS SLEEP Meeting (2014).

Herring, W.J., Connor, K.M., Ivgy-May, N., Snively, D., Snyder, E., Michelson, D. "Clinical Profile of Suvorexant 20/15mg in Phase-3 Trials of Patients With Insomnia." APSS SLEEP Meeting (2014).

Herring, W.J., Connor, K.M., Ivgy-May, N., Snively, D., Snyder, E., Michelson, D. "Efficacy and Safety of Suvorexant, an Orexin Receptor Antagonist, in Patients with Insomnia: Integrated Phase 3 Results." 38th Annual Meeting of the Japanese Society of Sleep Research (2014).

Herring, W.J., Connor, K.M., Ivgy-May, N., Snavelly, D., Snyder, E., Michelson, D. "Effects of Suvorexant, an Orexin Receptor Antagonist, on Respiration During Sleep in Patients with Compromised Respiratory Function." 38th Annual Meeting of the Japanese Society of Sleep Research (2014).

Gotter, A.L., Coleman, P.J., Kuduk, S.D., Tannenbaum, P.L., Struyk, A., Wrishko, R.E., Connor, K.M., **Herring**, W.J., Renger, J.J., and Winrow. C.J. "Orexin Receptor Antagonists and Insomnia Treatment: State of the Art." European College of Neuropsychopharmacology – 27th Congress (2014).

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Woo, T., Assaid, C., Monk, T., Groudine, S., **Herring**, W.J. "Pooled analyses of sugammadex efficacy and safety: no clinically relevant effect of subject characteristics." American Society of Anesthesiologists (2015).

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