

Christopher Michael Depner, PhD

Assistant Professor
Department of Health and Kinesiology • Sleep and Circadian Physiology Research Pillar
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EDUCATION, TRAINING, AND POSITIONS

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| 2002 – 2006 | Bachelor of Science, Cellular Biology, Chemistry Minor
Western Washington University |
| 2006 – 2008 | Master of Science, Nutrition and Exercise Sciences
Montana State University, Mentor: Dr. Mary Miles |
| 2008 – 2013 | Ph.D., Human Nutrition (Molecular Option),
Oregon State University, Mentor: Dr. Donald Jump |
| 2013 – 2018 | Postdoctoral Fellow, Sleep and Chronobiology Laboratory
University of Colorado Boulder, Mentor: Dr. Kenneth P. Wright |
| 2019 – 2020 | Assistant Professor, Research Track, Department of Integrative Physiology,
University of Colorado Boulder |
| 2020 – | Assistant Professor, Tenure Track, Department of Health and Kinesiology
University of Utah |

RESEARCH EXPERIENCE

PEER REVIEWED JOURNAL ARTICLES

Miles, M., Andring, J., Pearson, S., Gordon, L., Kasper, C., **Depner, C.**, and Kidd, J. Diurnal variation, response to eccentric exercise, and association of inflammatory mediators with muscle damage variables. *J Applied Physiology*. 2008; 104, 451-458.

Miles, M., **Depner, C.**, Kirwan, R., and Frederickson, S. Influence of macronutrient intake and anthropometric characteristics on plasma insulin after eccentric exercise. *Metabolism: Clinical and Experimental*. 2010; 59(10), 1456-1464.

Depner, C., Kirwan, R., Frederickson, S., and Miles, M. Enhanced inflammation with high carbohydrate intake during recovery from eccentric exercise. *Eur J Applied Physiology*. 2010; 109(6), 1067-1076.

Depner, C., Torres-Gonzalez, M., Tripathy, S., Milne, G., and Jump, D. Menhaden oil decreases high-fat diet induced markers of hepatic damage, steatosis, inflammation, and fibrosis in obese LDLR^{-/-} mice. *J Nutrition*. 2012; 142(8), 1495-1503.

Depner, C., Philbrick, K., and Jump, D. Docosahexaenoic acid attenuates hepatic inflammation, oxidative stress, and fibrosis without decreasing hepatosteatosis in a LDL^{-/-} mouse model of western diet-induced hepatosteatosis. *J Nutrition*. 2013; 143(3), 315-323.

Depner, C., Traber, M., Bobe, G., Kensicki, E., Bohren, K., Milne, G., and Jump, D. A metabolomic analysis of omega-3 fatty acid-mediated attenuation of western diet-induced non-alcoholic steatohepatitis in LDLR^{-/-} mice. *PLOS ONE*. 2013; 8(12):e83756.

Cooke, R., Cappellozza, B., Guarnieri, F., **Depner, C.**, Lytle, K., Jump, D., Bohnert, D., Cerri, R., and Vasconcelos, J. Effects of calcium salts of soybean oil on factors that influence pregnancy establishment in *Bos indicus* beef cows. *J Animal Science*. 2014; 92(5), 2239-2250.

Lytle, K., **Depner, C.**, Wong, C. and Jump, D. Docosahexaenoic acid attenuates western diet induced hepatic fibrosis in *Ldlr^{-/-}* mice by targeting the TGF β -Smad3 pathway. *J Lipid Research*. 2015; 56, 1936-1946.

Depner, C.**, *Eckel, R., Perreault, L., Markwald, R., Smith, M., McHill, A., Higgins, J., Melanson, E., and Wright, K. Morning circadian misalignment during short sleep duration impacts insulin sensitivity. *Curr Biol*. 2015; 25, 1-7. (co-first author**)

Arble, D., Bass, J., Behn, C., Butler, M., Challet, E., Czeisler, C., **Depner, C.**, Elmquist, J., Franken, P., Grandner, M., Hanlon, E., Keene, A., Joyner, M., Karatsoreos, I., Kern, P., Klein, S., Morris, C., Pack, A., Panda, S., Ptacek, L., Punjabi, N., Sassone-Corsi, P., Scheer, F., Saxena, R., Seaquist, E., Thimman, M., Van Cauter, E., and Wright, K. Impact of sleep and circadian disruption on energy balance and diabetes: A summary of workshop discussions. *SLEEP*. 2015; 38(12), 1849-1860.

Stothard, E., McHill, A., **Depner, C.**, Birks, B., Moehlman, T., Ritchie, H., Guzzetti, J., Chinoy, E., LeBourgeois, M., Axelsson, J., and Wright, K. Circadian entrainment to the natural light-dark cycle across seasons and the weekend. *Curr Biol*. 2017; 27, 1-6.

Depner, C., Melanson, E., McHill, A., and Wright, K. Mistimed food intake and sleep alters 24-hour time-of-day patterns of the human plasma proteome. *Proc Natl Acad Sci U S A*. 2018; 115(23), E5390-5399.

Depner, C., Melanson, E., Eckel, R., Snell-Burgeon, J., Perreault, L., Bergman, B., Higgins, J., Guerin, M., Stothard, E., and Wright, K. Ad libitum weekend recovery sleep fails to prevent metabolic dysregulation during a repeating pattern of insufficient sleep and weekend recovery sleep. *Curr Biol*. 2019; 29(6), 957-967.

Sprecher, K., Ritchie, H., Burke, T., **Depner, C.**, Smits, A., Dorrestein, P., Fleshner, M., Knight, R., Lowery, C., Turek, F., Vitaterna, M., and Wright, K. Trait-like Vulnerability of High Order Cognition and Ability to Maintain Wakefulness during Combined Sleep Restriction and Circadian Misalignment. *SLEEP*. 2019; 42(8).

Depner, C., Devine, J., Khosla, S., de Zambotti, M., Robillard, R., Vakulin, A., and Drummond, S. Wearable Technologies for Developing Sleep and circadian biomarkers: A summary of workshop discussions. *SLEEP*. 2020; 43(2).

Depner, C., Cogswell, D., Bisesi, P., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Melanson, E., Reisdorph, N., and Wright, K. Developing preliminary blood metabolomics-based biomarkers of insufficient sleep in humans. *SLEEP*. 2020; Jul 13;43(7):zs321.

Haspel JA, Anafi R, Brown MK, **Depner, C.**, et al. Perfect timing: circadian rhythms, sleep, and immunity - an NIH workshop summary. *JCI Insight*. 2020; 5(1):131487.

Wright, K., Linton, S., Withrow, D., Casiraghi, L., Lanza, S., de la Iglesia, H., Vetter, C., and **Depner, C.** Sleep in university students prior to and during COVID-19 Stay-at-Home orders. *Curr Biol*. 2020; Jul 20;30(14):R797-R798.

Goldstein, C., and **Depner, C.** Miles to go before we sleep...a step toward transparent evaluation of consumer sleep tracking devices. *SLEEP*. 2021; Feb 12;44(2):zsab020.

REVIEW ARTICLES (PEER REVIEWED)

Jump, D., **Depner, C.**, and Tripathy, S. Omega-3 fatty acid supplementation and cardiovascular disease. *J Lipid Res*. 2012; 53(12), 2525-2545.

Jump, D., Tripathy, S., and **Depner, C.** Fatty acid-regulated transcription factors in the liver. *Ann Rev of Nutr*. 2013; 33, 249-269.

Depner, C., Stothard, E., and Wright, K. Metabolic consequences of sleep and circadian disorders. *Curr Diab Rep*. 2014; 14(7), 507-515.

Jump, D., **Depner, C.**, Tripathy, S., and Lytle, K. Potential for dietary ω -3 fatty acids to prevent nonalcoholic fatty liver disease and reduce the risk of primary liver cancer. *Adv Nutr*. 2015; 6(6), 694-702.

Jump, D., **Depner, C.**, Tripathy, S., and Lytle, K. Impact of dietary fat on the development of non-alcoholic fatty liver disease in *Ldlr*^{-/-} mice. *Pro Nutr Soc*. 2016; 75(1), 1-9.

Jump, D., **Depner, C.**, Lytle, K., Tripathy, S. Omega-3 polyunsaturated fatty acids as a treatment strategy for nonalcoholic fatty liver disease. *Pharmacol Ther*. 2018;181, 108-125.

Withrow, D., Bowers, S., **Depner, C.**, Gonzalez, A., Reynolds, A., and Wright, K. Sleep and circadian disruption and the gut microbiome-possible links to dysregulated metabolism. *Curr Opin Endocr Metab Res*. 2021; 17, 26-37.

BOOK CHAPTERS

Depner, C., Lytle, K., Tripathy, S., and Jump, D. 2013. Chapter 13: Omega-3 Fatty Acids and Non-alcoholic Fatty Liver Disease. CRC Press; Taylor and Francis Publishers, 2013.

Broussard J., Reynolds A., **Depner C.**, Ferguson S., Dawson D., Wright KP. Jr. Circadian Rhythms versus Daily Patterns in Human Physiology and Behavior. In V. Kumar Ed. *Biological Timekeeping: Clocks, Rhythms and Behaviour*, 2017.

ORGANIZED RESEARCH SYMPOSIUM FOR PROFESSIONAL MEETING

Metabolic Dysregulation During Sleep and Circadian Disruption: Methods, Mechanisms, and Countermeasures. SLEEP/APSS Annual Conference, 2017.

INVITED LECTURES

Insufficient sleep induced morning circadian misalignment and sex differences in its association with insulin sensitivity. Colorado Clinical and Translational Sciences Institute Annual Summit. August 2014

Sleep-wake and circadian modulation of the human plasma proteome. Denver, CO. SLEEP/APSS Annual Conference, 2016

Circadian vs Behavioral Modulation of Plasma Proteins: Implications for Metabolic Dysregulation. Department of Integrative Physiology Colloquium, 2016
Insufficient Sleep and Circadian Disruption: Role in Nutrition and Metabolic Disease. Colorado Nutrition Academy Annual Meeting, April 2017

Mechanisms of Insufficient Sleep and Circadian Disruption Contributing to Metabolic Disease Risk. Endocrine Research Conference, University of Colorado School of Medicine, Department of Endocrinology, Metabolism, and Diabetes, April 2017

Developing a Metabolite Fingerprint of Insufficient Sleep using Metabolomics: Strengths and Limitations. International Workshop on Sleep and Circadian Biomarkers and NIH WebEx with Federal Interagency Fatigue Group, June 2017

Waking-up the Microbiome: The Effect of Insufficient Sleep on Cognition and the Microbiome. Colorado Clinical and Translational Sciences Institute Annual Summit, August 2017

Insufficient Sleep and Circadian Disruption: Role in Nutrition and Metabolic Disease. University of Northern Colorado Department of Biology Seminar, February 2018.

Insufficient Sleep and Circadian Disruption: Role in Nutrition and Metabolic Disease. Regis University Neuroscience Seminar, March 2018.

Waking Up the Microbiome: Effect of Sleep Loss on Cognition and the Microbiome. Colorado State University Microbiome Network, May 2018.

Does Sleep and Circadian Health have a Role in Developing Personalized and Precision Medicine? Colorado State University, Department of Health and Exercise Science, Sleep and Circadian Seminar, November 2018.

Insufficient Sleep and Circadian Disruption: Role in Nutrition and Metabolic Disease. Northern Colorado Dietetic Association, January 2019.

Developing Metabolomics-Based Biomarkers of Insufficient Sleep in Humans. Keynote lecture for the Annual Colorado Sleep Symposium, May 2019.

Inflammatory Responses During Insufficient Sleep and Circadian Misalignment: From Molecules to Microbes. National Institutes of Health Workshop: Sleep Insufficiency, Circadian Misalignment, and the Immune Response. May 2019.

Developing Biomarkers of Insufficient Sleep in Humans Using Untargeted Plasma Metabolomics. Beaumont Metabolomics Symposium. September 2019.

Sleep and Circadian Disruption: Role in Nutrition, Energy Metabolism, & Metabolic Health. University of Utah, Department of Health, Kinesiology, and Recreation, October 2019.

Sleep and Circadian Disruption: Role in Nutrition, Energy Metabolism, & Metabolic Health. Washington University, Division of Geriatrics and Nutritional Science, November 2019.

Sleep and Circadian Disruption: Contributions to Adverse Metabolic Risk. University of Iowa, Department of Health and Human Physiology, January 2020.

Sleep and Circadian Physiology in Health and Disease. University of Colorado Anschutz Medical Campus, Department of Neurology, May 2020.

Consumer Wearables to Advance Sleep Disorder Science and Management. American Thoracic Society International Conference. August 2020; Teleconference due to COVID-19 pandemic.

Big Data Workshop, Metabolomics in Sleep and Circadian Science. University of Colorado Boulder Sleep and Circadian Summer School, August 2020.

The Impact of Weekend Recovery Sleep on Insulin Sensitivity and Energy Balance. University of Utah Diabetes and Metabolism Research Center Research Recharge, November 2020.

Metabolic and Cognitive Health Consequences of Insufficient Sleep. University of Utah, Department of Psychology, Behavioral Medicine Research Seminar, November 2020.

Developing Biomarkers of Sleep and Circadian Disruption and Related Metabolic Impairments. Keystone Conference “Sleep and Circadian Rhythms: Pillars of Health”, February 2021.

PROFESSIONAL RESEARCH PRESENTATIONS AND PUBLISHED ABSTRACTS

Miles, M., Andring, J., Gordon, L., **Depner, C.**, and Kidd, J. Acute inflammation response varies according to differences in basal C-reactive protein concentrations. International Society of Exercise and Immunology International Meeting. 2007; Sendai, Japan.

Depner, C., Miles, M., Andring, J., Gordon, L., and Kidd, J., IL-6 bio-availability varies with basal CRP concentration, and is unaffected by eccentric exercise. American College of Sports Medicine Annual Meeting. 2008; Indianapolis, IN.

Miles, M., **Depner, C.**, Gordon, L., and Kidd, J. IL-6-174 G/C gene polymorphism *in vivo* effects on inflammation: Basal levels, diurnal variation, and changes induced by eccentric exercise. American College of Sports Medicine Annual Meeting. 2008; Indianapolis, IN.

- Miles, M., **Depner, C.**, Kirwan, R., and Frederickson, S. Insulin resistance post-eccentric exercise is influenced by macronutrient intake and waist to hip ratio. International Society of Exercise and Immunology International Meeting. 2009; Tubingen, Germany.
- Depner, C.**, Frederickson, S., Rhodes, K., Bond, K., Barry, R., Kirwan, R., and Miles, M. Post-exercise carbohydrates increase the magnitude of the inflammatory response. American College of Sports Medicine Annual Meeting. 2009; Seattle, WA.
- Depner, C.**, Kraft, E., Enkhbaatar, P., Yamamoto, Y., Leonard, S., Traber, L., Traber D., and Traber, M. Aerosolized gamma-tocopherol treatment post-burn and smoke injury conserves plasma alpha-tocopherol in sheep. Diet and Optimum Health Conference. 2009; Portland, OR.
- Depner, C.**, Torres-Gonzalez, M., Tripathy, S., and Jump, D. Effect of ω -3 PUFA on high fat diet induced fatty liver and inflammation in C57BL/6J mice. Diet and Optimum Health Conference. 2011; Corvallis, OR.
- Depner, C.**, and Jump, D. Effect of ω -3 PUFA on diet induced non-alcoholic fatty liver disease (NAFLD) development and progression in C57BL/6J mice. Experimental Biology. 2012; San Diego, CA.
- Depner, C.**, Bohren, K., Morin-Kensicki, E., and Jump, D. Dietary C20-22 ω 3 PUFA regulate hepatic oxidized PUFA levels and attenuate markers of diet induced non-alcoholic steatohepatitis (NASH) in LDLR^{-/-} mice. Experimental Biology. 2013; Boston, MA.
- Depner, C.**, Bohren, K., Morin-Kensicki, E., and Jump, D. Dietary C20-22 ω -3 PUFA influence hepatic phospholipid remodeling while attenuating markers of diet-induced non-alcoholic steatohepatitis (NASH) in *Ldlr*^{-/-} mice. Kern Lipid Conference. 2013; Vail, CO.
- Depner, C.**, Eckel, R., Perreault, L., Markwald, R., Smith, M., McHill, A., Higgins, J., Melanson, E., and Wright, K. Sex differences in insulin sensitivity during insufficient sleep and associated circadian misalignment. SLEEP. 2014; Minneapolis, MN.
- Depner, C.**, and Wright, K. Cognitive impairments during insufficient sleep followed by weekend recovery sleep. Colorado Sleep Symposia. 2014; Boulder, CO.
- Depner, C.**, Eckel, R., Perreault, L., Higgins, J., Melanson, E., Snell-Bergeon, J., and Wright, K. Does weekend recovery sleep prevent insufficient sleep induced weight gain? Colorado Clinical and Translational Sciences Institute Summit. 2014; Longmont, CO.
- Depner, C.**, Eckel, R., Perreault, L., Markwald, R., Smith, M., McHill, A., Higgins, J., Melanson, E., and Wright, K. Insufficient sleep induced morning circadian misalignment and sex differences in its association with insulin sensitivity. Lake Arrowhead Sleep Workshop. 2014; Lake Arrowhead, CA.
- Depner, C.**, Eckel, R., Perreault, L., Markwald, R., Smith, M., McHill, A., Higgins, J., Melanson, E., and Wright, K. Insufficient sleep induced morning circadian misalignment and sex differences in its association with insulin sensitivity. Colorado Biological Mass spectrometry Society Fall Meeting. 2014; Denver, CO.

Depner, C., Eckel, R., Perreault, L., Markwald, R., Smith, M., McHill, A., Higgins, J., Melanson, E., and Wright, K. Insufficient sleep induced morning circadian misalignment and sex differences in its association with reduced oral insulin sensitivity. INSPIRE “Circadian Rhythms and Glucose Metabolism”. 2015; Viareggio, Italy.

Depner, C., Melanson, E., Eckel, R., Higgins, J., Snell-Bergeon, J., and Wright, K. Insufficient sleep induced positive energy balance occurs rapidly and is sustained with chronic insufficient sleep. SLEEP. 2015; Seattle, WA.

Depner, C., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Effects of a simulated work week of insufficient sleep on the human plasma metabolome. Metabolomics. 2015; San Francisco, CA.

Depner, C., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Sex differences in the human plasma metabolome and effects of insufficient sleep. NIH Common Fund Metabolomics Annual Meeting. 2015; Lexington, KY.

Depner, C., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Sex differences and effect of sleep loss on the human plasma metabolome. Gordon: Sleep Regulation and Function. 2016; Galveston, TX.

Depner, C., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Morning circadian misalignment during insufficient sleep is associated with changes in plasma metabolites linked to metabolic dysregulation. Society for Research on Biological Rhythms Meeting. 2016; Palm Harbor, FL.

Depner, C., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Sex differences and effects of insufficient sleep on the human plasma metabolome. SLEEP. 2016; Denver, CO.

Depner, C., Melanson, E., Perreault, L., Eckel, R., Higgins, J., and Wright, K. Altered food intake patterns during insufficient sleep and impact from weekend recovery sleep. SLEEP. 2016; Denver, CO.

Stothard, E., Moehlman, T., Guzzetti, J., **Depner, C.**, Ritchie, H., Birks, B., Axelsson, J., LeBourgeois, M., and Wright, K. Impact of weekend exposure to the modern versus natural light-dark cycle on circadian timing in humans. SLEEP. 2016; Denver, CO.

Ritchie, H., **Depner, C.**, and Wright, K. Impact of sustained sleep loss and weekend recovery sleep on vigilance performance and subjective sleepiness. SLEEP. 2016; Denver, CO.

Morton, S., **Depner, C.**, Melanson, E., Guzzetti, J., and Wright, K. Weekend recovery sleep after a work week of short sleep. SLEEP. 2016; Denver, CO.

Morton, S., **Depner, C.**, Melanson, E., Guzzetti, J., and Wright, K. Spectral analysis of EEG activity during weekend recovery sleep. Neuroscience Annual Meeting. 2016; San Diego, CA.

Vargas, F., **Depner, C.**, Gonzalez Pena, A., Knight, R., Wright, K., and Dorrestein, P. The effect of sleep and circadian disruption on the human metabolome. American Society for Mass Spectrometry Annual Meeting. 2017; Indianapolis, IN.

Vargas, F., **Depner, C.**, Gonzalez Pena, A., Knight, R., Wright, K., and Dorrestein, P. The link between dietary inputs, stressors and the gut microbiome – military perspective. American Chemical Society Annual Meeting. 2017; San Francisco, CA.

Depner, C., Melanson, E., McHill, A., DeSouza, C., and Wright, K. Simulated night-shift work alters the balance and 24h pattern of the coagulation-fibrinolysis axis. SLEEP. 2017; Boston, MA.

Barandiaran, A., Ryan, B., Stothard, E., **Depner, C.**, Byrnes, W., and Wright, K. Changes in distal-to-proximal skin temperature gradient after 4 days of simulated micro-gravity. SLEEP. 2017; Boston, MA.

Morton, S., **Depner, C.**, Melanson, E., Guzzetti, J., and Wright, K. Power spectral analyses in broad band EEG frequencies after sleep restriction and weekend recovery sleep. SLEEP. 2017; Boston, MA.

Depner, C., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Insufficient sleep alters plasma metabolites linked to insulin resistance and diabetes risk. Metabolomics. 2017; Brisbane, Australia.

Depner, C., Bisesi, P., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Plasma metabolite fingerprint of insufficient sleep. Gordon: Sleep Regulation and Function. 2018; Galveston, TX.

Depner, C., Melanson, E., McHill, A., and Wright, K. Circadian regulated protein interaction networks linked to DNA repair and cell cycle regulation. Society for Research on Biological Rhythms Meeting. 2018; Amelia Island, FL.

Depner, C., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Melanson, E., Reisdorph, N., and Wright, K. A putative biomarker fingerprint of insufficient sleep derived from the human plasma metabolome. SLEEP. 2018; Baltimore, MD.

Depner, C., Bisesi, P., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Plasma metabolite biomarker score segregates individuals between adequate versus insufficient sleep. Metabolomics. 2018, Seattle, WA.

Depner, C., Melanson, E., McHill, A., and Wright, K. Circadian regulated protein interaction networks linked to DNA repair and cell cycle regulation. Advances in Sleep and Circadian Science. 2019; Clearwater, FL.

Sprecher, K., Ritchie, H., Burke, T., **Depner, C.**, Dorrestein, P., Fleshner, M., Knight, R., Lowry, C., Turek, F., Vitaterna, M., and Wright, K. Trait-like vulnerability of ability to maintain wakefulness and vigilance during sleep loss and circadian misalignment. Advances in Sleep and Circadian Science. 2019; Clearwater, FL.

Depner, C. Sleep and circadian biomarkers. Symposium Title: Wearable Technology: Toward Regulation and Implementation in Sleep and Circadian Science. SLEEP. 2019, San Antonio TX.

Cogswell, D., Markwald, R., Cruickshank-Quinn, C., Quinn, K., Melanson, E., Reisdorph, N., Wright, K., and **Depner, C.** Preliminary identification and validation of a plasma metabolome-based biomarker for circadian phase in humans. SLEEP. 2019, San Antonio TX.

Depner, C., Melanson, E., Eckel, R., Snell-Bergeion, J., Perreault, L., Bergman, B., Higgins, J., Cruickshank-Quinn, C., Quinn, K., Reisdorph, N., and Wright, K. Altered energy intake and plasma metabolites during insufficient sleep are associated with reduced insulin sensitivity in humans. SLEEP. 2019, San Antonio TX.

Sprecher, K., Vargas, F., Pena-Gonzalez, A., Burke, T., **Depner, C.**, Dorrestein, P., Fleshner, M., Knight, R., Lowry, C., Turek, F., Vitaterna, M., and Wright, K. Greater change in fecal metabolome associated with lower ability to maintain wakefulness during sleep restriction and circadian misalignment. SLEEP. 2019, San Antonio TX.

Depner, C., Reisdorph, N., and Wright, K. Identification of a stable human metabolomics-based biomarker of insufficient sleep and its association with cognitive performance. SLEEP. 2020, virtual meeting due to COVID-19 pandemic.

Withrow, D., **Depner, C.**, Boland, E., Briks, B., Melanson, E., Higgins, J., Eckel, R., Perreault, L., Bergman, B., and Wright, K. Sex differences in evening relative macronutrient utilization and associated weight gain during insufficient sleep. SLEEP. 2020, virtual meeting due to COVID-19 pandemic.

Cogswell, D., Bissese, P., Cruickshank-Quinn, C., Quinn, K., McHill, A., Melanson, E., Reisdorph, N., Wright, K., and **Depner, C.** Identification of a plasma metabolome-based biomarker for dim light melatonin offset and onset in humans. SLEEP. 2020, virtual meeting due to COVID-19 pandemic.

Withrow, D., **Depner, C.**, Markwald, R., Smith, M., McHill, A., Melanson E., Higgins, J., Eckel, R., Perreault, L., and Wright, K. Sex differences in nocturnal substrate oxidation during insufficient sleep. Society for Research on Biological Rhythms Meeting. 2020, virtual meeting due to COVID-19 pandemic.

Fritz, J., Huang, T., Zeleznik, O., Rexrode, K., **Depner, C.**, Feliciano, E., Stone, K., Manson, J., Sofer, T., Schernhammer, E., Redline, S., and Vetter, C. Sleep duration and plasma metabolites: A metabolome-wide association study in US women. SLEEP. 2020, virtual meeting due to COVID-19 pandemic.

Withrow, D., Gonzalez, A., Sprecher, K., **Depner, C.**, Burke, T., Fleshner, M., Lowry, C., Turek, F., Vitaterna, M., Dorrestein, P., Knight, R., and Wright, K. Stability of gut microbiome alpha diversity during combined sleep restriction and circadian misalignment. SLEEP. 2021, virtual meeting due to COVID-19 pandemic.

Linton, S., Sprecher, S., **Depner, C.**, Burke, T., Dorrestein, P., Fleshner, M., Knight, R., Lowry, C., Turek, F., Vitaterna, M., and Wright, K. Individual differences in skin temperature responses to cold pressor stress during combined sleep restriction and circadian misalignment. SLEEP. 2021, virtual meeting due to COVID-19 pandemic.

ACADEMIC AND PROFESSIONAL HONORS

Annie McDonald Lindsay Fellowship, Oregon State University, 2008 – 2009, 2012 – 2013
Helen Charley Fellowship in Foods and Nutrition, Oregon State University 2009 – 2013
Margy Woodburn Fellowship, Oregon State University, 2010 – 2011
Woods/Foster Fellowship, Oregon State University, 2010 – 2011
Jewell Fields Rohlfing Fellowship, Oregon State University, 2011 – 2012
Thayer Raymond Fellowship, Oregon State University, 2012 – 2013
Early Career Investigator Travel Award, Kern Lipid Conference, 2013
Young Investigator Travel Award, Lake Arrowhead Sleep Workshop, 2014
Young Investigator Award, Colorado Biological Mass Spectrometry Society, 2014
Young Investigator Travel Award for NIDDK Meeting: “Impacts of Sleep and Circadian Disruption on Energy Balance and Diabetes”, Sleep Research Society, 2015
Young Investigator Research Forum, American Academy of Sleep Medicine, 2015
Merit Award for SLEEP Meeting, Sleep Research Society, 2015
Sleep Deprivation Section Investigator Award, American Academy of Sleep Medicine, 2015
Highest Ranked Abstract, Gordon Conference: Sleep Regulation and Function, 2016
Merit Award, Society for Research on Biological Rhythms Meeting, 2016
Merit Award for SLEEP Meeting, Sleep Research Society, 2016
Sleep Research Society Foundation Early Career Development Fellowship, 2016 – 2017
National Institutes of Health Loan Repayment Program Award, 2016 – 2018
National Institutes of Health NRSA Postdoctoral Fellowship, 2017 – 2019
Poster Presentation Runner-Up, Colorado Biological Mass Spectrometry Society, 2017
Sleep and Circadian “Omics” Research Training Award, Sleep Research Society, 2017
Merit Award for SLEEP Meeting, Sleep Research Society, 2017
Young Investigator Award, American Academy of Sleep Medicine, 2017
Early Career Travel Award, Metabolomics Society, 2017
Young Investigator Travel Award, Gordon Conference: Sleep Regulation and Function, 2018
Co-Chair International Biomarkers Workshop on Wearables in Sleep and Circadian Science, Sleep Research Society, 2018
National Institutes of Health Loan Repayment Program Award Renewal, NIDDK 2018, – 2020
Young Investigator Travel Award, Advances in Sleep and Circadian Science, 2019
National Institutes of Health Loan Repayment Program Award Renewal, NHLBI, 2020 – 2021

PROFESSIONAL SERVICE

Sleep Research Society, Trainee and Education Advisory Committee, Organizing Committee for Trainee Day at SLEEP conference, 2015 – 2016
University of Colorado Boulder Clinical Translational Research Center Study Monitoring Committee, 2015 – 2020
Steering Committee Gordon Research Seminar: Sleep Regulation and Function, 2016
Sleep Research Society, Scientific Offerings Committee, 2016 – 2019
Graduate Student Mentor for the Society for Research on Biological Rhythms Mentoring Program, 2018
Sleep Research Society Foundation, Annual Appeals Committee Member, 2019 – 2021
University of Colorado Boulder Institutional Review Board Member, 2019 – 2020
Grant Review Panel Member, Colorado Clinical and Translational Science Institute PILOT Project Program, 2019 – 2020
Committee Member Representative for Sleep Research Society, Associated Professional Sleep Societies, 2020 – 2022

Section Editor, Encyclopedia of Sleep, 2020 – 2023

Abstract/Poster Reviewer, University of Utah Undergraduate Research Symposium, 2020

JOURNAL PEER-REVIEWER

2016

American Society of Nutrition for Experimental Biology (abstract reviewer)

Endocrine

Journal of Nutrition

Sleep Health: Journal of the National Sleep Foundation

2017

American Journal of Physiology

Behavioral Sleep Medicine

Journal of Clinical Sleep Medicine

Neurobiology of Sleep and Circadian Rhythms

Nutrients

SLEEP Professional Meeting (abstract reviewer)

2018

Annals of Medicine

Clinical Proteomics

International Journal of Cardiology

Journal of Clinical Sleep Medicine

SLEEP

SLEEP Professional Meeting (abstract reviewer)

2019

Diabetologia

Journal of Clinical Sleep Medicine

Nutrients

Physiology

PLOS One

Scientific Reports

SLEEP

Sleep Health

Sleep Medicine

SLEEP Professional Meeting (abstract and session reviewer)

2020

Journal of Clinical Endocrinology and Metabolism

Journal of Clinical Sleep Medicine

Journal of Sleep Research

Neurobiology of Sleep and Circadian Rhythms

PLOS One

Proceedings of the National Academy of Sciences (PNAS)

Psychoneuroendocrinology

Research Quarterly for Exercise and Sport

SLEEP (13 manuscript reviews)

SLEEP Professional Meeting (session reviewer)

Sleep Medicine

2021

European Journal of Clinical Nutrition

PLOS One

SLEEP

Sleep Health

TEACHING AND MENTORING

TEACHING EXPERIENCE OREGON STATE UNIVERSITY

NUTR 312, Issues in Nutrition and Health, 2010, Role: Graduate Teaching Assistant

NUTR 312, Issues in Nutrition and Health, 2011, Role: Graduate Teaching Assistant

NUTR 312, Issues in Nutrition and Health, 2012, Role: 1 lecture

TEACHING EXPERIENCE UNIVERSITY OF COLORADO BOULDER

IPHY 4010/6010, Sleep Medicine Seminar, 2015, Role: 1 lecture

IPHY 4580, Sleep Physiology, 2015, Role: 1 lecture

IPHY 4010/6010, Sleep Medicine Seminar, 2016, Role: 2 lectures

IPHY 4580, Sleep Physiology, 2016, Role: 1 lecture

IPHY 4010/6010, Sleep Medicine Seminar, 2017, Role: 2 lectures

IPHY 4010/6010, Sleep Medicine Seminar, 2018, Role: Co-Instructor

IPHY 4580, Sleep Physiology, 2018, Role: 1 lecture

IPHY 3580, Sleep, Circadian Rhythms and Health, 2018, Role: 1 lecture

Reisdorph Lab Hands-On Metabolomics Training Workshop, 2019, Role: 2 lectures

IPHY 4010/6010, Sleep Medicine Seminar, 2019, Role: Lead Instructor

TEACHING EXPERIENCE UNIVERSITY OF UTAH

KINES 7830, Journal Readings, Spring 2021, Role: Lead Instructor

UNDERGRADUATE SLEEP AND CIRCADIAN RESEARCH TRAINING PROGRAM

I maintain an active undergraduate student research training program in human clinical translational sleep and circadian physiology. This program is paired with my ongoing sleep and circadian research and provides students with the opportunity to gain hands-on research experience as part of their undergraduate education. Students must commit one year of work to the lab, and on average work between 5-10 hours per week on our ongoing research projects. The first semester of this program largely focuses on training in sleep and circadian research procedures and ethical issues related to human participant research. The second and subsequent semesters provide weekly opportunities for students to staff study visits and help conduct our ongoing research. Throughout their time in the lab all students participate in weekly lab meetings and monthly to bi-monthly sleep and circadian journal clubs. These activities provide enhanced educational opportunities in research methodologies and professional development.

University of Utah Fall Semester 2020: 5 undergraduate students

University of Utah Spring Semester 2021: 5 undergraduate students

MENTORED STUDENTS

- Guerin, Molly: Howard Hughes Medical Institute and Biological Sciences Initiative Award, University of Colorado Boulder. “The Impact of Sleep Deprivation and Weekend Recovery Sleep on Circadian Timing”, 2015 – 2016.
- Knauer, Oliver: Undergraduate Research Opportunities Award, University of Colorado Boulder. “Insufficient Sleep Results in a Dysregulated Leptin Response to Overeating”, 2015 – 2016.
- Cogswell, Dasha: Undergraduate Research Opportunities Award, University of Colorado Boulder, “Impact of Insufficient Sleep and Subsequent Weekend Recovery Sleep on Lipid Inflammatory Mediators in Human Plasma”, 2017.
- Bisesi, Paul: Undergraduate Research Opportunities Award, University of Colorado Boulder, “Insufficient Sleep and Metabolic Dysregulation”, 2017 summer.
- Bisesi, Paul: Undergraduate Research Opportunities Award, University of Colorado Boulder, “In Search of a Biomarker of Insufficient Sleep”, 2017 – 2018 academic year.
- Bisesi, Paul: Undergraduate honor’s thesis, University of Colorado Boulder, “To Mark the Time: Towards a Biomarker of Insufficient Sleep.”, 2017 – 2018 academic year.
- Rotenbakh, Leah: Undergraduate Research Opportunities Award, University of Colorado Boulder, “Biomarkers of Insufficient Sleep and Sleepiness”, 2017 - 2018.
- Walters, Lauren: Undergraduate Research Opportunities Award, University of Colorado Boulder, “Biomarkers of Insufficient Sleep and Sleepiness”, 2017 - 2018.
- Cogswell, Dasha: MS, Department of Integrative Physiology, University of Colorado Boulder, “Human Metabolomics Derived Biomarkers of Circadian Phase”, 2018 – 2019.
- Sinha, Shaiza: Undergraduate Research Opportunities Award, University of Colorado Boulder, “Impact of *Ad Libitum* Weekend Recovery Sleep on Energy Expenditure and Energy Balance”, Fall 2019.
- Kote, Shrihari: Undergraduate Research Opportunities Award, University of Colorado Boulder, “Individual Trait-Like Vulnerability to Repeated Bouts of Insufficient Sleep”, Fall 2019.
- Kubicki, Michelle: Undergraduate Research Opportunities Award, University of Colorado Boulder, “Developing a Sleep Extension Intervention to Mitigate Risk of Type 2 Diabetes”, Fall 2019/Spring 2020.
- Chang, Joshua: Undergraduate Research Opportunities Program Award, University of Utah, “Correlation Between Cognitive Performance and Objective and Subjective Sleepiness during Insufficient Sleep”, Spring 2021.
- Sapiega, Justas: Undergraduate Research Opportunities Program Award, University of Utah, “Developing Biomarkers of Sleep Loss in Humans”, Spring 2021.

Elggren, Jaxson: Undergraduate Research Opportunities Program Award, University of Utah, “Effects of Consistent Sleep Extension on Timing of Energy Intake”, Spring 2021.

Needham, Landon: Undergraduate Research Opportunities Program Award, University of Utah, “Does Increased Sleep Duration Improve Cognitive Performance?”, Spring 2021.

FUNDING

CURRENT

The Effects of Insufficient Sleep on Bone Metabolism

Principal Investigator: Christine Swanson MD, MCR

Colorado Clinical and Translational Sciences Institute PILOT Award Program

Role: Consultant

Dates: 5/1/2019 – 4/30/2021

Overall Goal: Investigate the impact of sustained insufficient sleep and weekend recovery sleep on markers of bone metabolism in healthy adults.

Biomarkers and Altered Metabolic Pathways during Sleep Loss and Circadian Disruption

Principal Investigator: Christopher Depner Ph.D.

NIH/NHLBI, K01HL145099

Role: Principal Investigator

Dates: 9/15/2019 – 7/31/2024

Overall Goal: Identify biomarkers of sleep loss and circadian misalignment, and assess the impact of increased nightly sleep duration on such biomarkers and insulin sensitivity.

Linking sleep health with risk of metabolic disorders: A machine learning approach.

Principal Investigator: Christopher Depner Ph.D.

Colorado Clinical and Translational Science Institute

Date: 5/1/2020 – 4/30/2022

Overall Goal: Determine how increased sleep duration impacts free-living energy intake and energy expenditure, and if increased after-dinner snack energy intake mediates more of the negative cardiometabolic risk associated with insufficient sleep compared to increased energy expenditure.

Development of a Metabolic Kitchen for Clinical and Translational Research

Role: Co-Investigator; Principal Investigator: Tanya Halliday Ph.D.

University of Utah Vice President for Research, Research Instrumentation Fund

Date: 11/19/2020 – 11/18/2021

Overall Goal: Purchase an industrial Blast Freezer to support the development of a fully functional metabolic kitchen at the University of Utah that will be available to all investigators within the Center for Clinical and Translational Science.

Role of Circadian Disruption in Metabolic and Cognitive Impairments during Insufficient Sleep.

Principal Investigator: Christopher Depner Ph.D.

University of Utah College of Health Seed Grant Program

Date: 3/1/2021 – 3/1/2022

Overall Goal: Determine the influence of the circadian clock on diabetes risk and cognitive performance in adults who maintain habitual insufficient sleep schedules. We will also test the

impact of a sleep extension intervention on these same outcomes, creating essential pilot data for NIH grants.

COMPLETED

Metabolic and Cognitive Consequences of Sleep Loss

Principal Investigator: Kenneth P. Wright Ph.D.

NIH/NHLBI, R01HL109076

Role: CO-I, Project Leader

Dates: 2013 – 2016

Overall Goal: Identify underlying mechanisms of the cognitive and metabolic consequences of sleep loss and the ability of weekend recovery sleep to mitigate these consequences in Humans.

Supplement to Metabolic and Cognitive Consequences of Sleep Loss

Principal Investigator: Kenneth P. Wright Ph.D.

NIH/NHLBI, R01HL109076-04S1

Role: CO-I, Primary Writer, Project Leader

Dates: 2014 – 2016

Overall Goal: Addition of metabolomics to our parent grant will enhance our understanding of metabolic pathways and mechanisms contributing to reduced insulin sensitivity and altered energy metabolism during insufficient sleep and importantly we will be able to test for the first time novel metabolites and pathways associated with the hypothesized benefits of weekend recovery sleep. Furthermore, we will analyze for sex differences in these biomarkers in response to insufficient sleep and weekend recovery sleep.

Mechanisms of Insufficient Sleep Contributing to Metabolic Disease Risk and Impact from “Weekend Recovery” Sleep

Principal Investigator: Christopher Depner Ph.D.

Sleep Research Society Foundation Early Career Development Fellowship, 011-JP-16

Role: Principal Investigator

Dates: 4/12/2016 – 2/3/2017

Overall Goal: Identify the influence of insufficient sleep on mechanisms underlying metabolic dysregulation and determine the impact of “weekend recovery” sleep on these mechanisms. Targeted metabolomics analyses focused on identifying changes in lipid inflammatory mediators during insufficient sleep and weekend recovery sleep.

Mechanisms of Insufficient Sleep Contributing to Metabolic Disease Risk and Impact from “Weekend Recovery” Sleep

Principal Investigator: Christopher Depner Ph.D.

NIH/NIDDK, F32DK111161

Role: Principal Investigator

Dates: 02/04/2017 – 02/03/2019

Overall Goal: Identify the impact of insufficient sleep and weekend recovery sleep on tissue specific insulin sensitivity, and identify potential mechanisms underlying changes in insulin sensitivity using untargeted metabolomics.

Biomarkers of Insufficient Sleep and Sleepiness

Principal Investigators: Kenneth P. Wright Ph.D. and Nichole Reisdorph Ph.D.

NIH/NHLBI, R01HL132150-01

Role: CO-I, Primary Writer, Project Leader

Dates: 09-20-2016 – 07/31/2019

Overall Goal: Identify blood biomarkers with consistent responses to insufficient sleep and that show associations with changes in performance during sleep loss. We anticipate these findings will be the first step in establishing validated biomarkers of sleep loss for use as clinical assessment of overall sleep health.

Identification of Metabolomic Alterations in Response to Insufficient Sleep

Principal Investigator: Josiane Broussard Ph.D.

Mayo Clinic Metabolomics Resource Core Pilot and Feasibility Award

Role: CO-I

Dates: 8/1/2018 – 7/31/2019

Overall Goal: Use a combination of targeted and untargeted metabolomics to assess metabolite changes during an oral glucose tolerance at baseline and during insufficient sleep.

GRANT PROPOSAL APPLICATIONS NOT SELECTED FOR FUNDING

Regulation of Hypothalamic PUFA Metabolism in the Control of Hepatic Glucose Production

Principal Investigator: Christopher Depner Ph.D.

NIH/NIDDK, F32DK101155

Role: Principal Investigator

Submitted Date: 4/4/2013

Overall Goal: Determine the mechanism of altered brain fatty acid metabolism implicated in the improvement of glucose tolerance using an *LDLR*^{-/-} mouse model.

Can Weekend Recovery Sleep Reduce Cardiometabolic Risk Following a Work Week of Insufficient Sleep?

Principal Investigator: Christopher Depner Ph.D.

American Heart Association Postdoctoral Fellowship, 15POST24650003

Role: Principal Investigator

Submitted Date: 1/15/2015

Overall Goal: Identify the ability of weekend recovery sleep to mitigate the negative cardiometabolic consequences of a standard 5-day workweek of insufficient sleep.

Biomarkers of Impaired Sleep

Principal Investigators: Kenneth P. Wright Ph.D. and Nichole Reisdorph Ph.D.

NIH/NINR, NR016819

Role: CO-I, Primary Writer

Submitted Date: 2/19/2016

Overall Goal: To use targeted and discovery metabolomics to identify plasma metabolites as candidate biomarkers of impaired sleep.

Tissue-Specific Insulin Resistance in Type 1 Diabetes: Sex Differences and Changes Across the Lifespan.

Principal Investigator: Laura Pyle Ph.D.

NIH/NIDDK, R21

Role: Consultant

Submitted Date: 2/16/2018

Overall Goal: Examine sex differences and changes across the lifespan in tissue-specific insulin sensitivity in individuals with type 1 diabetes versus individuals without diabetes.

The Influence of Insufficient Sleep on Risk of Type 2 Diabetes in Pre-Diabetic Adults.

Principal Investigator: Christopher Depner Ph.D.

Colorado Clinical and Translational Sciences Institute PILOT Award Program

Role: Principal Investigator

Submitted Date: 10/1/2018

Overall Goal: Determine the impact of insufficient sleep on oral glucose tolerance test derived insulin sensitivity and branched-chain amino acid metabolism in prediabetic adults. We will use a combination of targeted and untargeted metabolomics to assess branched-chain amino acid metabolism.

Biomarkers of Insufficient Sleep and Cardiometabolic Health During a Sleep Extension Intervention

Principal Investigator: Christopher Depner Ph.D.

NIH/NHLBI, R01HL149967

Role: Principal Investigator

Submitted Date: 02/05/2019; council review: October 2019

Overall Goal: Determine how restoring adequate sleep in adults with habitual insufficient sleep schedules impacts energy intake, insulin sensitivity, and blood metabolomics-based biomarkers of insufficient sleep.

Free-Living Sleep Extension to Improve Timing of Food Intake and Mitigate Diabetes Risk

Principal Investigator: Christopher Depner Ph.D.

DMRC Driving out Diabetes Initiative

Role: Principal Investigator

Submitted Date: 12/10/2020

Overall Goal: Determine the effect of increased sleep duration on mechanisms underlying the link between insufficient sleep and metabolic dysregulation in adults who maintain habitual insufficient sleep.

PROFESSIONAL MEMBERSHIPS

Sleep Research Society

American Academy of Sleep Medicine

Colorado Clinical and Translational Sciences Institute

Metabolomics Society

PROFESSIONAL REFERENCES

- 1) Dr. Kenneth Wright Jr., Postdoctoral Mentor, 303-735-6409, Kenneth.wright@colorado.edu
- 2) Dr. Donald Jump, PhD Major Advisor, 541-737-4007, Donald.jump@oregonstate.edu
- 3) Dr. Edward Melanson, Collaborator, 303-724-0935, Ed.melanson@ucdenver.edu
- 4) Dr. Janine Higgins, Collaborator, 720-777-2955, Janine.higgins@childrenscolorado.org