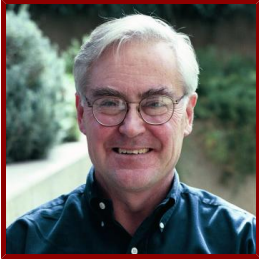


# Stanford

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## H. Craig Heller

Lorry I. Lokey/Business Wire Professor  
Biology

### CONTACT INFORMATION

- **Alternate Contact**

May Chin - Administrative Assistant

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**Tel** 650 725 1827

### Bio

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### ACADEMIC APPOINTMENTS

- Professor, Biology
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Neurosciences Institute

### ADMINISTRATIVE APPOINTMENTS

- Associate Dean, Dean of Research, (1994-1997)
- Chair, Biological Sciences, (1997-2001)
- Chair, Wallenberg Global Learning Network Steering Committee, (2001- present)
- Chair, Curriculum Committee, Human Biology, (2006- present)
- Executive Committee, Human Biology, (2006- present)

### HONORS AND AWARDS

- Walter J. Gores Award for Excellence in Teaching, University (1977)
- Bing Professor of Human Biology, Human Biology (1987-1993)
- Lorry I. Lokey Business Wire Professor, Biology/Human Biology (1993-present)
- William and Lynde Steere University Fellow, University (2004-present)
- Kenneth M. Cuthertson Award for Exceptional Contributions to Stanford University, University (2010)

### PROFESSIONAL EDUCATION

- PhD, Yale University , Biology (1970)

### LINKS

- Website: <https://dsresearch.stanford.edu>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Neurobiology of sleep, circadian rhythms, regulation of body temperature, mammalian hibernation, and human exercise physiology. We study neural mechanisms controlling arousal states and arousal state transitions, the function of sleep, and the neural mechanisms of circadian rhythms. Research on human exercise physiology focuses on the effects of body temperature on physical conditioning and performance. The focus on Down syndrome is exploring the mechanism whereby reduction of GABA activity restores learning and memory in DS mice and also in mouse models of Alzheimer's disease.

## Teaching

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### COURSES

#### 2020-21

- The Human Organism: HUMBIO 4A (Spr)

#### 2019-20

- Physiology: BIO 84 (Win)
- The Human Organism: HUMBIO 4A (Spr)
- The Neurobiology of Sleep: BIO 149, BIO 249, HUMBIO 161 (Spr)

#### 2018-19

- Human Physiology Laboratory: BIO 107, HUMBIO 136 (Spr)
- The Human Organism: HUMBIO 4A (Spr)
- Topics in Biology: BIO 390 (Win)

#### 2017-18

- Human Physiology Laboratory: BIO 107, HUMBIO 136 (Spr)
- Physiology: BIO 84 (Win)
- The Human Organism: HUMBIO 4A (Spr)
- Topics in Biology: BIO 390 (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Corey McCall, Nathan Volman

#### Postdoctoral Faculty Sponsor

Elsa Pittaras

#### Undergraduate Major Advisor

Kate LeBlanc

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biology (School of Humanities and Sciences) (Phd Program)
- Neurosciences (Phd Program)

## Publications

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### PUBLICATIONS

- **Engaging With Biology by Asking Questions: Investigating Students' Interaction and Learning With an Artificial Intelligence-Enriched Textbook** *JOURNAL OF EDUCATIONAL COMPUTING RESEARCH*  
Koc-Januchta, M. M., Schoenborn, K. J., Tibell, L. E., Chaudhri, V. K., Heller, H.  
2020
- **Suprachiasmatic lesions restore object recognition in down syndrome model mice.** *Neurobiology of sleep and circadian rhythms*  
Chuluun, B., Pittaras, E., Hong, H., Fisher, N., Colas, D., Ruby, N. F., Heller, H. C.  
2020; 8: 100049
- **The Function(s) of Sleep.** *Handbook of experimental pharmacology*  
Frank, M. G., Heller, H. C.  
2019
- **Functional Interactions Between Sleep and Circadian Rhythms in Learning and Learning Disabilities.** *Handbook of experimental pharmacology*  
Heller, H. C., Ruby, N. F.  
2018
- **A method to reduce heat strain while clad in encapsulating outerwear.** *Journal of occupational and environmental hygiene*  
Grahn, D., Makam, M., Heller, H. C.  
2018: 1–20
- **A Novel Cooling Method and Comparison of Active Rewarming of Mildly Hypothermic Subjects.** *Wilderness & environmental medicine*  
Christensen, M. L., Lipman, G. S., Grahn, D. A., Shea, K. M., Einhorn, J., Heller, H. C.  
2017
- **Development of Circadian Sleep Regulation in the Rat: A Longitudinal Study Under Constant Conditions** *SLEEP*  
Frank, M. G., Ruby, N. F., Heller, H. C., Franken, P.  
2017; 40 (3)
- **Short-term treatment with flumazenil restores long-term object memory in a mouse model of Down syndrome.** *Neurobiology of learning and memory*  
Colas, D., Chuluun, B., Garner, C. C., Heller, H. C.  
2017; 140: 11-16
- **Scheduled feeding restores memory and modulates c-Fos expression in the suprachiasmatic nucleus and septohippocampal complex.** *Scientific reports*  
Ruby, N. F., Fisher, N., Patton, D. F., Paul, M. J., Fernandez, F., Heller, H. C.  
2017; 7 (1): 6755
- **Cyclooxygenase inhibition targets neurons to prevent early behavioural decline in Alzheimer's disease model mice** *BRAIN*  
Woodling, N. S., Colas, D., Wang, Q., Minhas, P., Panchal, M., Liang, X., Mhatre, S. D., Brown, H., Ko, N., Zagol-Ikapitte, I., Van der Hart, M., Khroyan, T. V., Chuluun, et al  
2016; 139: 2063-2081
- **Reentrainment Impairs Spatial Working Memory until Both Activity Onset and Offset Reentrain.** *Journal of biological rhythms*  
Ruby, N. F., Patton, D. F., Bane, S., Looi, D., Heller, H. C.  
2015; 30 (5): 408-416
- **Sleep disruption impairs haematopoietic stem cell transplantation in mice** *NATURE COMMUNICATIONS*  
Rolls, A., Pang, W. W., Ibarra, I., Colas, D., Bonnavion, P., Korin, B., Heller, H. C., Weissman, I. L., de Lecea, L.  
2015; 6
- **A Chemical Heat Pack-Based Method For Consistent Heating of Intravenous Fluids** *WILDERNESS & ENVIRONMENTAL MEDICINE*  
Declerck, M. P., Lipman, G. S., Grahn, D. A., Cao, V., Wieland, M., Troxel, T., Heller, H. C.  
2015; 26 (3): 412-416
- **A Chemical Heat Pack-Based Method For Consistent Heating of Intravenous Fluids.** *Wilderness & environmental medicine*  
DeClerck, M. P., Lipman, G. S., Grahn, D. A., Cao, V., Wieland, M., Troxel, T., Heller, H. C.

2015; 26 (3): 412-416

- **Loss of Melanopsin Photoreception and Antagonism of the Histamine H3 Receptor by Ciproxifan Inhibit Light-Induced Sleep in Mice** *PLOS ONE*  
Muindi, F., Colas, D., Ikeme, J., Ruby, N. F., Heller, H. C.  
2015; 10 (6)
- **Novel Application of Chemical Cold Packs for Treatment of Exercise-Induced Hyperthermia: A Randomized Controlled Trial** *WILDERNESS & ENVIRONMENTAL MEDICINE*  
Lissoway, J. B., Lipman, G. S., Grahn, D. A., Cao, V. H., Shaheen, M., Phan, S., Weiss, E. A., Heller, H. C.  
2015; 26 (2): 173-179
- **Waking up to the alarm: sleep, clocks, and making memory (s)tick.** *Frontiers in systems neuroscience*  
Gerstner, J. R., Aton, S. J., Heller, H. C.  
2015; 9: 65
- **Nest building is impaired in the Ts65Dn mouse model of Down syndrome and rescued by blocking 5HT2a receptors** *NEUROBIOLOGY OF LEARNING AND MEMORY*  
Heller, H. C., Salehi, A., Chuluun, B., Das, D., Lin, B., Moghadam, S., Garner, C. C., Colas, D.  
2014; 116: 162-171
- **Dysrhythmia in the suprachiasmatic nucleus inhibits memory processing** *SCIENCE*  
Fernandez, F., Lu, D., Ha, P., Costacurta, P., Chavez, R., Heller, H. C., Ruby, N. F.  
2014; 346 (6211): 854-857
- **Circadian rhythm. Dysrhythmia in the suprachiasmatic nucleus inhibits memory processing.** *Science*  
Fernandez, F., Lu, D., Ha, P., Costacurta, P., Chavez, R., Heller, H. C., Ruby, N. F.  
2014; 346 (6211): 854-857
- **Millisecond Flashes of Light Phase Delay the Human Circadian Clock during Sleep** *JOURNAL OF BIOLOGICAL RHYTHMS*  
Zeitzer, J. M., Fiscaro, R. A., Ruby, N. F., Heller, H. C.  
2014; 29 (5): 370-376
- **Millisecond flashes of light phase delay the human circadian clock during sleep.** *Journal of biological rhythms*  
Zeitzer, J. M., Fiscaro, R. A., Ruby, N. F., Heller, H. C.  
2014; 29 (5): 370-376
- **Adaptive and Pathological Inhibition of Neuroplasticity Associated With Circadian Rhythms and Sleep** *BEHAVIORAL NEUROSCIENCE*  
Heller, H. C., Ruby, N. F., Rolls, A., Makam, M., Colas, D.  
2014; 128 (3): 273-282
- **Retino-hypothalamic regulation of light-induced murine sleep.** *Frontiers in systems neuroscience*  
Muindi, F., Zeitzer, J. M., Heller, H. C.  
2014; 8: 135-?
- **Sleep to forget: interference of fear memories during sleep.** *Molecular psychiatry*  
Rolls, A., Makam, M., Kroeger, D., Colas, D., De Lecea, L., Heller, H. C.  
2013; 18 (11): 1166-1170
- **Spatial Memory and Long-Term Object Recognition Are Impaired by Circadian Arrhythmia and Restored by the GABA(A)Antagonist Pentylentetrazole** *PLOS ONE*  
Ruby, N. F., Fernandez, F., Garrett, A., Klima, J., Zhang, P., Sapolsky, R., Heller, H. C.  
2013; 8 (8)
- **Short-term treatment with the GABAA receptor antagonist pentylentetrazole produces a sustained pro-cognitive benefit in a mouse model of Down's syndrome.** *British journal of pharmacology*  
Colas, D., Chuluun, B., Warrier, D., Blank, M., Wetmore, D. Z., Buckmaster, P., Garner, C. C., Heller, H. C.  
2013; 169 (5): 963-973
- **Permanent Genetic Access to Transiently Active Neurons via TRAP: Targeted Recombination in Active Populations.** *Neuron*  
Guenther, C. J., Miyamichi, K., Yang, H. H., Heller, H. C., Luo, L.  
2013; 78 (5): 773-784

- **The acute effects of light on murine sleep during the dark phase: importance of melanopsin for maintenance of light-induced sleep.** *European journal of neuroscience*  
Muindi, F., Zeitzer, J. M., Colas, D., Heller, H. C.  
2013; 37 (11): 1727-1736
- **WORK VOLUME AND STRENGTH TRAINING RESPONSES TO RESISTIVE EXERCISE IMPROVE WITH PERIODIC HEAT EXTRACTION FROM THE PALM** *JOURNAL OF STRENGTH AND CONDITIONING RESEARCH*  
Grahn, D. A., Cao, V. H., Nguyen, C. M., Liu, M. T., Heller, H. C.  
2012; 26 (9): 2558-2569
- **Enhancing Thermal Exchange in Humans and Practical Applications** *Disruptive Science and Technology*  
H. Craig Heller, Dennis A. Grahn  
2012; 1 (1): 11 - 19
- **Pumilio-2 Function in the Mouse Nervous System** *PLOS ONE*  
Siemen, H., Colas, D., Heller, H. C., Bruestle, O., Pera, R. A.  
2011; 6 (10)
- **Optogenetic disruption of sleep continuity impairs memory consolidation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Rolls, A., Colas, D., Adamantidis, A., Carter, M., Lanre-Amos, T., Heller, H. C., de Lecea, L.  
2011; 108 (32): 13305-13310
- **Response of the Human Circadian System to Millisecond Flashes of Light** *PLOS ONE*  
Zeitzer, J. M., Ruby, N. F., Fiscaro, R. A., Heller, H. C.  
2011; 6 (7)
- **Repeatability Is Not the Same as Accuracy** *SLEEP*  
Heller, H. C.  
2011; 34 (7): 839-840
- **Palm cooling between sets of resistive training improves work capacity and strength training responses** *Experimental Biology Meeting 2011*  
Grahn, D. A., Cao, V. H., Nguyen, C. M., Liu, M. T., Heller, H. C.  
FEDERATION AMER SOC EXP BIOL.2011
- **Hibernation in Black Bears: Independence of Metabolic Suppression from Body Temperature** *SCIENCE*  
Toien, O., Blake, J., Edgar, D. M., Grahn, D. A., Heller, H. C., Barnes, B. M.  
2011; 331 (6019): 906-909
- **Acute Light Exposure Suppresses Circadian Rhythms in Clock Gene Expression** *JOURNAL OF BIOLOGICAL RHYTHMS*  
Grone, B. P., Chang, D., Bourgin, P., Cao, V., Fernald, R. D., Heller, H. C., Ruby, N. F.  
2011; 26 (1): 78-81
- **Separating the Contribution of Glucocorticoids and Wakefulness to the Molecular and Electrophysiological Correlates of Sleep Homeostasis** *SLEEP*  
Mongrain, V., Hernandez, S. A., Pradervand, S., Dorsaz, S., Curie, T., Hagiwara, G., Gip, P., Heller, H. C., Franken, P.  
2010; 33 (9): 1147-1157
- **Circadian Locomotor Rhythms Are Normal in Ts65Dn "Down Syndrome" Mice and Unaffected by Pentylene-tetrazole** *JOURNAL OF BIOLOGICAL RHYTHMS*  
Ruby, N. F., Fernandez, F., Zhang, P., Klima, J., Heller, H. C., Garner, C. C.  
2010; 25 (1): 63-66
- **Heat Loss Through the Glabrous Skin Surfaces of Heavily Insulated, Heat-Stressed Individuals** *ASME Summer Bioengineering Conference*  
Grahn, D. A., Dillon, J. L., Heller, H. C.  
ASME-AMER SOC MECHANICAL ENG.2009
- **New neurons in the adult brain: The role of sleep and consequences of sleep loss** *SLEEP MEDICINE REVIEWS*  
Meerlo, P., Mistiberger, R. E., Jacobs, B. L., Heller, H. C., McGinty, D.  
2009; 13 (3): 187-194

- **Melanopsin as a Sleep Modulator: Circadian Gating of the Direct Effects of Light on Sleep and Altered Sleep Homeostasis in *Opn4(-/-)* Mice** *PLOS BIOLOGY*  
Tsai, J. W., Hannibal, J., Hagiwara, G., Colas, D., Ruppert, E., Ruby, N. F., Heller, H. C., Franken, P., Bourgin, P.  
2009; 7 (6)
- **Long term repair of learning disability through short-term reduction of CNS inhibition.** *Augmented Cognition, HCII 2009. D.D. Schmorow et al. (Eds.)*  
Heller, H.C., Colas, D., Ruby, N.F., Fernandez, F., Chuluun, B., Blank, M., Garner, C.C.  
2009: 818-825
- **No Rescue of the Impaired Homeostatic Sleep Rebound in DBA/2J Mice with Attenuation of the Stress Response**  
Mongrain, V., Curie, T., Gip, P., Heller, H. C., Franken, P.  
KARGER.2009: 247-47
- **Long Term Repair of Learning Disability through Short-Term Reduction of CNS Inhibition** *5th International Conference on Foundation of Augmented Cognition*  
Heller, H. C., Colas, D., Ruby, N. F., Fernandez, F., Chuluun, B., Blank, M., Garner, C. C.  
SPRINGER-VERLAG BERLIN.2009: 818-825
- **VACUUM ENHANCED HEAT TRANSFER THROUGH MAMMALIAN RADIATOR STRUCTURES** *ASME Summer Bioengineering Conference*  
Grahn, D. A., Hall, C. L., Heller, H. C.  
AMER SOC MECHANICAL ENGINEERS.2009: 745-746
- **Hippocampal-dependent learning requires a functional circadian system** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Ruby, N. F., Hwang, C. E., Wessells, C., Fernandez, F., Zhang, P., Sapolsky, R., Heller, H. C.  
2008; 105 (40): 15593-15598
- **Cooling via one hand improves physical performance in heat-sensitive individuals with Multiple Sclerosis: A preliminary study** *BMC NEUROLOGY*  
Grahn, D. A., Murray, J. v., Heller, H. C.  
2008; 8
- **A non-circadian role for clock-genes in sleep homeostasis: a strain comparison** *BMC NEUROSCIENCE*  
Franken, P., Thomason, R., Heller, H. C., O'Hara, B. F.  
2007; 8
- **Pattern recognition of sleep in rodents using piezoelectric signals generated by gross body movements** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*  
Flores, A. E., Flores, J. E., Deshpande, H., Picazo, J. A., Xie, X. (., Franken, P., Heller, H. C., Grahn, D. A., O'Hara, B. F.  
2007; 54 (2): 225-233
- **Synaptic protein dynamics in hibernation** *JOURNAL OF NEUROSCIENCE*  
von der Ohe, C. G., Garner, C. C., Darian-Smith, C., Heller, H. C.  
2007; 27 (1): 84-92
- **H. Craig Heller. Interviewed by Laura L. Mays Hoopes.** *CBE life sciences education*  
Heller, H. C.  
2007; 6 (4): 275-276
- **A global rather than local role for adenosine in sleep homeostasis** *SLEEP*  
Heller, H. C.  
2006; 29 (11): 1382-1383
- **Ubiquitous and temperature-dependent neural plasticity in hibernators** *JOURNAL OF NEUROSCIENCE*  
von der Ohe, C. G., Darian-Smith, C., Garner, C. C., Heller, H. C.  
2006; 26 (41): 10590-10598
- **Glycogen content in the cerebral cortex increases with sleep loss in C57BL/6J mice** *NEUROSCIENCE LETTERS*  
Franken, P., Gip, P., Hagiwara, G., Ruby, N. F., Heller, H. C.  
2006; 402 (1-2): 176-179

- **Sleep restriction suppresses neurogenesis induced by hippocampus-dependent learning** *JOURNAL OF NEUROPHYSIOLOGY*  
Hairston, I. S., Little, M. T., Scanlon, M. D., Barakat, M. T., Palmer, T. D., Sapolsky, R. M., Heller, H. C.  
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- **Neural plasticity in hibernation** *Annual Meeting of the Society-for-Integrative-and-Comparative-Biology*  
Von Der Ohe, C. G., Darian-Smith, C., Heller, H. C.  
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- **Light induces c-fos and per1 expression in the suprachiasmatic nucleus of arrhythmic hamsters** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Barakat, M. T., O'Hara, B. F., Cao, V. H., Heller, H. C., Ruby, N. F.  
2005; 289 (5): R1381-R1386
- **Heat extraction through the palm of one hand improves aerobic exercise endurance in a hot environment** *JOURNAL OF APPLIED PHYSIOLOGY*  
Grahn, D. A., Cao, V. H., Heller, H. C.  
2005; 99 (3): 972-978
- **Lack of the alanine-serine-cysteine transporter 1 causes tremors, seizures, and early postnatal death in mice** *BRAIN RESEARCH*  
Xie, X. M., Dumas, T., Tang, L., Brennan, T., Reeder, T., Thomas, W., Klein, R. D., Flores, J., O'Hara, B. F., Heller, H. C., Franken, P.  
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- **Unresolved issues in sleep ontogeny: a response to Blumberg et al.** *JOURNAL OF SLEEP RESEARCH*  
Frank, M. G., Heller, H. C.  
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- **Phenotypic differences in reentrainment behavior and sensitivity to nighttime light pulses in Siberian hamsters** *JOURNAL OF BIOLOGICAL RHYTHMS*  
Ruby, N. F., Barakat, M. T., Heller, H. C.  
2004; 19 (6): 530-541
- **Light pulses do not induce c-fos or per1 in the SCN of hamsters that fail to reentrain to the photocycle** *JOURNAL OF BIOLOGICAL RHYTHMS*  
Barakat, M. I., O'Hara, B. E., Cao, V. H., Larkin, J. E., Heller, H. C., Ruby, N. F.  
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- **Homeostatic regulation of sleep in arrhythmic Siberian hamsters** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Larkin, J. E., Yokogawa, T., Heller, H. C., Franken, P., Ruby, N. F.  
2004; 287 (1): R104-R111
- **Glucocorticoids influence brain glycogen levels during sleep deprivation** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Gip, P., Hagiwara, G., Sapolsky, R. M., Cao, V. H., Heller, H. C., Ruby, N. F.  
2004; 286 (6): R1057-R1062
- **Sleep deprivation effects on growth factor expression in neonatal rats: A potential role for BDNF in the mediation of delta power** *JOURNAL OF NEUROPHYSIOLOGY*  
Hairston, I. S., Peyron, C., Denning, D. P., Ruby, N. F., Flores, J., Sapolsky, R. M., Heller, H. C., O'Hara, B. F.  
2004; 91 (4): 1586-1595
- **Sleep and circadian rhythms in mammalian torpor** *ANNUAL REVIEW OF PHYSIOLOGY*  
Heller, H. C., Ruby, N. F.  
2004; 66: 275-289
- **Stress response to sleep deprivation varies with genotype: Implications for sleep regulation** *18th Annual Meeting of the Associated-Professional-Sleep-Societies*  
Franken, P., Gip, P. T., Hagiwara, G., Heller, H.  
AMER ACAD SLEEP MEDICINE.2004: 168-168
- **Changes in brain glycogen after sleep deprivation vary with genotype** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Franken, P., Gip, P., Hagiwara, G., Ruby, N. F., Heller, H. C.

2003; 285 (2): R413-R419

- **Glucocorticoids mediate the effects of sleep deprivation on brain glycogen and glucose levels** *17th Annual Meeting of the Associated-Professional-Sleep-Societies*  
Ruby, N. F., Gip, P., Hagiwara, G., Sapolsky, R., Cao, V., Franken, P., Heller, H. C.  
AMER ACAD SLEEP MEDICINE.2003: A14-A15
- **Clock-related gene expression in non-SCN brain regions following sleep deprivation in wildtype and cryptochrome knockout mice: Relevance to sleep homeostasis** *17th Annual Meeting of the Associated-Professional-Sleep-Societies*  
O'Hara, B. F., Terao, A., Cao, V., Gip, P., Wisor, J. P., Heller, H. C., Franken, P., Kilduff, T. S.  
AMER ACAD SLEEP MEDICINE.2003: A419-A419
- **The ontogeny of mammalian sleep: a reappraisal of alternative hypotheses** *JOURNAL OF SLEEP RESEARCH*  
Frank, M. G., Heller, H. C.  
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- **Region-specific expression in recovery sleep changes in immediate early gene response to sleep deprivation and in the mouse brain** *NEUROSCIENCE*  
Terao, A., Greco, M. A., Davis, R. W., Heller, H. C., Kilduff, T. S.  
2003; 120 (4): 1115-1124
- **Differential increase in the expression of heat shock protein family members during sleep deprivation and during sleep** *NEUROSCIENCE*  
Terao, A., Steininger, T. L., Hyder, K., Apte-Deshpande, A., Ding, J., Rishipathak, D., Davis, R. W., Heller, H. C., Kilduff, T. S.  
2003; 116 (1): 187-200
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Ruby, N. F., Joshi, N., Heller, H. C.  
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- **Sleep deprivation decreases glycogen in the cerebellum but not in the cortex of young rats** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Gip, P., Hagiwara, G., Ruby, N. F., Heller, H. C.  
2002; 283 (1): R54-R59
- **Loss of circadian organization of sleep and wakefulness during hibernation** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Larkin, J. E., Franken, P., Heller, H. C.  
2002; 282 (4): R1086-R1095
- **The suprachiasmatic nucleus is essential for circadian body temperature rhythms in hibernating ground squirrels** *JOURNAL OF NEUROSCIENCE*  
Ruby, N. F., Dark, J., Burns, D. E., Heller, H. C., Zucker, I.  
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- **Sleep deprivation elevates plasma corticosterone levels in neonatal rats** *NEUROSCIENCE LETTERS*  
Hairston, I. S., Ruby, N. F., Brooke, S., Peyron, C., Denning, D. P., Heller, H. C., Sapolsky, R. M.  
2001; 315 (1-2): 29-32
- **Gene expression profiling of the response to sleep deprivation in mouse and rat cortex using affymetrix DNA chips**  
Terao, A., Peyron, C., Apte-Deshpande, A., Brown, B., Wurts, S. W., Edgar, D. M., Davis, R. W., Heller, H. C., Kilduff, T. S.  
AMER ACAD SLEEP MEDICINE.2001: A138-A138
- **Prenatal nicotine alters vigilance states and AchR gene expression in the neonatal rat: implications for SIDS** *AMERICAN JOURNAL OF PHYSIOLOGY-REGULATORY INTEGRATIVE AND COMPARATIVE PHYSIOLOGY*  
Frank, M. G., Srere, H., Ledezma, C., O'Hara, B., Heller, H. C.  
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- **How sleep develops in babies** *RECHERCHE*  
Heller, H. C., Peyron, C., Frank, M.  
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