



CURRICULUM VITAE
Monika Fleshner, PhD

I. PERSONAL INFORMATION

Address: ¹**Department of Integrative Physiology**
²**The Center for Neuroscience**
University of Colorado-Boulder, Campus Box 354
Boulder, CO 80309

Phone: (303) 492-1483

Email: fleshner@colorado.edu

Monika Fleshner, PhD is a professor in the Department of Integrative Physiology, a member of the Center for Neuroscience, the director of the Stress Physiology laboratory, and the winner of the international 2019 Norman Cousins Award from the Psychoneuroimmunology Research Society and the



national 2016 Guyton Distinguished Lectureship Award from the Association of Chairs of Departments of Physiology. She teaches undergraduate and graduate immunology and has trained ~50 MS/PhD/Postdoctoral students. Her integrative research program focuses on understanding 1) the impact of acute and chronic stressor exposure (mental and physical) on behavior, neural, hormonal and immunological function; 2) how such systems interact to affect the whole organism; and 3) the mechanisms of increased stress robustness (resistance/resilience) produced by exercise, prebiotics and cannabis constituents. She has published ~190 peer-reviewed articles and has a GoogleScholar h-index of 73. Dr. Fleshner serves on the editorial boards of the *Neurobiology of Stress, Brain, Behavior and Immunity* (DAMPs, Special Issue) and *Frontiers in Neuroscience*. The National Science Foundation, the National

Institutes of Health, the Department of Defense, and Mead Johnson Nutrition have previously funded her research program. Current funding is provided by the Office of Naval Research and NASA. Dr. Fleshner has served as a member of the College of Arts and Sciences Dean’s Budget Committee (2017-present), the Chair of the Boulder Faculty Assembly (BFA) Budget and Planning Committee (2014-2016), a member of the BFA Executive Committee (2014-2016), faculty associate for the Vice Chancellor for Research at the University of Colorado in Boulder (2009-2013), as President of the International Society for Exercise Immunology (ISEI, 2011-2013), and President (2011-2012) and Secretary/Treasurer (2004-2006) of the Psychoneuroimmunology Research Society (PNIRS).

II. EDUCATION

1991-1993	Postdoctoral Fellow, Neuroscience University of Colorado, Boulder, CO
1990-1991	Postdoctoral Fellow, Microbiology/Immunology University of Colorado Health Science Center, Denver CO
1988-1990	PhD, Behavioral Neuroscience University of Colorado, Boulder, CO
1986-1988	MA, Behavioral Neuroscience University of Colorado, Boulder, CO
1982-1984	BS, Psychology Iowa State University, Ames, IA



III. PROFESSIONAL ACADEMIC POSITIONS

2009-present	Professor with Tenure Department of Integrative Physiology University of Colorado at Boulder CO
2003-2008	Associate Professor with Tenure Department of Integrative Physiology University of Colorado at Boulder CO
2002-present	Faculty Center for Neuroscience University of Colorado, Boulder CO
1997-2003	Assistant Professor Department of Integrative Physiology University of Colorado, Boulder CO
1996-1997	Assistant Research Professor Behavioral Neuroscience University of Colorado, Boulder CO
1993-1996	Research Associate and Instructor Behavioral Neuroscience University of Colorado, Boulder CO
1993-1995	Instructor Department of Psychology University of Colorado, Denver CO

IV. LEADERSHIP/ADMINISTRATIVE POSITIONS (description of duties in IX. Service)

2018-present	Radiation Safety Committee, Vice Chair , University of Colorado at Boulder.
2017-present	Executive Committee , Department of Integrative Physiology, University of Colorado at Boulder.
2014-2016	Boulder Faculty Assembly Executive Committee , University of Colorado at Boulder.
2014-2016	Boulder Faculty Assembly Budget and Planning Committee, Chair (elected position), University of Colorado at Boulder.
2009-2013	Faculty Associate Office of the Vice Chancellor for Research University of Colorado at Boulder CO
2011-2012	Psychoneuroimmunology Research Society (https://www.pnirs.org/) President (elected position)
2011-2013	International Society for Exercise Immunology (http://www.isei.dk/) President (elected position)
2004-2006	Psychoneuroimmunology Research Society Secretary/Treasurer (elected position)

V. HONORS and AWARDS

2019	Norman Cousins Award, Psychoneuroimmunology Research Society (International) https://www.pnirs.org/society/society_awards.cfm
2016	Arthur C. Guyton Distinguished Lectureship Award, Association of Chairs of Departments of Physiology (National)



- 2014 Boulder Faculty Assembly Service Recognition Award, University of Colorado, Boulder
- 2014 Student Award (Kristina Hulen) Everson Trust Undergraduate Scholarship for Women in Science
- 2012-2013 Excellence in Leadership Program, University of Colorado System
- 2013 Student Award (Parsa Ghasem) Best Poster Presentation @ Rocky Mountain Regional Neuroscience Group
- 2010-2013 College of CSR Reviewers, National Institutes of Health
- 2010 Public Broadcast System (PBS)-*The Science of Healing*
- 2009 Boulder Faculty Assembly Award-Excellence in Research
- 2002 National Public Radio-*The Infinite Mind*, Featured Scientist
- 2005 Independent Investigator Award, National Alliance for Research on Schizophrenia and Depression
- 2001 Motor Board Honor Society, Faculty Appreciation
- 1998 Young Investigator Award, Psychoneuroimmunology Research Society
- 1998 Junior Faculty Development Award, University of Colorado, Boulder CO
- 1997 Society for Neuroscience CNN (national and international), Featured Scientist
- 1992-1994 National Institutes of Health
Behavioral Neuroscience Postdoctoral Fellowship
- 1991 National Institutes of Health
Developmental Psychobiology Postdoctoral Fellowship
- 1988 Research featured on PBS, "The Mind"
- 1986-1990 National Institutes of Health Training Grant Fellowship
- 1984 Phi Kappa Phi
- 1984 Graduated with Honors, BS, Iowa State University, Ames, IA
- 1981 Rivercade Queen Undergraduate Scholarship
Morningside College, Sioux City, IA

VI. GRANTS: ACTIVE, PENDING and COMPLETED

i. Active

“The microbiome and responsiveness to stress: Countermeasure Strategies for improving resilience to sleep and circadian disruption”

Office of Naval Research (ONR) MURI N00014-15-1-2809

Multiple Principle Investigators (MPI), Ken Wright (Team Leader), Monika Fleshner, Chris Lowry, Fred Turek, Rob Knight, Pieter Dorrestein

Period: 2015-2020

Total Award: \$7,100,000. Fleshner Project (\$1,400,000)

“A systems-biology approach to assessing the impact of a centrifugation model of spaceflight on cross-system communication”

NASA-NSPIRES, 16-ROSBFP_PI-0079

Research Opportunities in Space Biology (ROSBio) - Solicitation of Proposals for Flight and Ground Space Biology Research

Multiple Principle Investigators, Monika Fleshner (CU), Michael Pecaout (Loma Linda University), Christopher Wilson (Loma Linda University).

Period: 2018-2020

Total Award: \$750,000, Fleshner Subcontract (\$275,000)



ii. Pending

“Cell-Derived Microparticles in Hypertension: Biomarkers, Vascular Mediators, and Therapeutic Targets”

NIH-HL-16-024, **Multiple Principle Investigators, DeSouza, Fleshner, Link, Stauffer, McQueen**

Period: 2018-2021

Total Award: \$1,200,000

“Prediabetes, Exercise and Microparticles”

NIH, **Multiple Principle Investigators, DeSouza, Fleshner, Stauffer**

Period: 2018-2022

Total Award: \$1,150,000.

iii. Completed

“Nutritional Modulation of Brain Development, Cognitive Function, Sleep, and Stress Reactivity: The Role of the Gut Microbiota”

Mead Johnson Nutrition, **Principle Investigator, Monika Fleshner**

Period: 2013-2017

Total Award: \$1,055,749

“Neurobiology of the Stress Resistant Brain”

R01-MH068283-06, NIH, **Principal Investigator, Monika Fleshner**

Period: 2010-2015

Total Award: \$1,200,000

“Extracellular Hsp72 is a DAMP Released by Stress”

IOS 1022451 NSF, **Principal Investigator, Monika Fleshner**

Period: 2010-2013

Total Award: \$539,045

“Enabling Stress Resistance with Controllable Exercise”

DARPA, W911NF-10-1-0050. Defense Science Office, **Principal Investigator**

Period: 2010-2012

Total Award: \$2,800,000

“Preventing Transition of Acute-to-Chronic Neuropathic Pain: Models, Mechanisms, and Treatment”

RO1-DE021966, NIH, **Multiple Principle Investigators (MPI) PD/PI, Linda Watkins, Monika Fleshner, Dan Barth**

Period: 2011-2016

Total Award: \$1,800,000

“Exercise Mitigates Stress-Induced Memory Disturbances”

RO3-NIMH, NIH, **Co-PI, Monika Fleshner**

Period: 2009-2012

Total Award: \$143,000

“Physiological Functions of the Gut Microbiome”

Innovative Seed Grant Program-U of CO, **Principal Investigator, Monika Fleshner**



Period: 2010-2012

Total Award: \$43,750

"Stress, Heat-Shock Proteins and Innate Immunity"

R01-AI057797-01, NIH, **Principal Investigator, Monika Fleshner**

Period: 2004-2010

Total Award: \$1,738,025

"Chemotherapy and Cognition in Older Breast Cancer Patients"

(SUBCONTRACT) NIH, **Principal Investigator, Monika Fleshner**

Period: 2004-2009

Total Award: \$154,000

"The Neurobiology of the Stress Resistant Brain"

R01-MH068283-01, NIH, **Principal Investigator, Monika Fleshner**

Period: 2004-2009

Total Award: \$1,804,225

"Prevention of the Negative Behavioral Effects of Acute Fluoxetine: Role of BDNF"

NARSAD, **Principal Investigator, Monika Fleshner**

Period: 2005-2009

Total Award: \$100,000

"Regulation of Brain IL-1 and Sickness Responses Following *E.coli* Challenge"

R21-MH NIH, **Co-Investigator, Monika Fleshner**

Period: 2007-2009

Total Award: \$403,820

Leap Associate Professor Award

University of Colorado, **Principal investigator, Monika Fleshner**

Period: 2004-2005

Total Award: \$5,000

"Stress, Exercise, and Innate Immunity"

RO3-MH60301-01, NIH, **Principal Investigator, Monika Fleshner**

Period: 1999-2001

Total Award: \$35,875

"Exercise Prevents the Immunosuppressive Effect of Stress"

RO3-AI45576-01, NIH, **Principal Investigator, Monika Fleshner**

Period: 1999-2001

Total Award: \$143,131

"Exercise, Stress and Immunity: Physiological Mechanisms"

RO1-AI48555-01, NIH, **Principal Investigator, Monika Fleshner**

Period: 2000-2004

Total Award: \$1,223,472



"Exercise and Stress Resistance: A Systems Biology Approach"
CRCW, University of Colorado, **Principal Investigator, Monika Fleshner**
Period: 2006-2007
Total Award: \$7,000

"Obesity/Insulin Resistance and Endothelial t-PA Release"
RO3-DK62061, NIH, **Co-Investigator, Monika Fleshner**
Period: 2002-2004
Total Award: \$143,131

"Arousal and Motor Performance in Older Adults"
RO3-AG20339, NIH, **Co-Investigator, Monika Fleshner**
Period: 2002-2004
Total Award: \$143,000

"Effect of Sleep Deprivation on Inflammatory Markers"
NIH, **Co-Investigator, Monika Fleshner**
Period: 2002-2004
Total Award: \$290,369

"Potential Benefits of a Physically Active Lifestyle on Immune Response to Immunization"
protocol B5009, General Clinical Research Center-Boulder Satellite, NIH, **Principal Investigator, Monika Fleshner**
Period: 2000-2002
Total Award: \$15,000

"Neural Mechanisms of the Stress-Resistant Brain"
University of Colorado, Council on Creative Work, **Principal Investigator, Monika Fleshner**
Period: 2002
Total Award: \$2,500

"The Behavioral Analysis of the Protective Effect of Exercise" Council on Research and Creative Work"
University of Colorado, **Principal Investigator, Monika Fleshner**
Period: 1999-2000
Total Award: \$6,730

Junior Faculty Development Award, University of Colorado
Principal Investigator, Monika Fleshner
Period: 1998
Total Award: \$5,000

"Stress and Immunity: Behavioral and Physiological Mechanisms"
RO1-MH-4505, NIH, **Co-Investigator, Monika Fleshner**
Period: 1996-2001
Total Award: \$1,725,994

"Effects of space flight on *in vivo* immune function and bone resorption"
BioServe-NASA (SUBCONTRACT), **Principal Investigator, Monika Fleshner**



Period: 1996

Total Award: \$3,500

University of Colorado Health Sciences Center Young Investigator Award

Principal Investigator, Monika Fleshner

Period: 1991-1992

Total Award: \$3,000

VII. PUBLICATIONS

GoogleScholar

Total Citations (09.13.18): 17,900

h-index: 73

10-index: 173

i. Manuscripts / Chapters Submitted (Peer-reviewed)

**indicates 1st author is/was a student or postdoctoral fellow supervised by Dr. Fleshner*

Arnold, MR; Greenwood, BN; McArthur, JA; Clark, PJ; **Fleshner, M**; Lowry, CA. Effect of repeated voluntary or forced exercise on brainstem serotonergic systems in rats. Behavioural Brain Research (2019) in review.

Sprecher, K; Ritchie, H; Burke, T; Depner, C; Smits, A; Dorrestein, P; **Fleshner, M**; Knight, R; Lowry, C; Turek, F; Vitaterna, M; Wright, K. *Trait-like vulnerability of higher-order cognition and ability to maintain wakefulness during combined sleep restriction and circadian misalignment.* Sleep (2019) in revision.

Crane, CR*; Beninson, L; **Fleshner, M.** *Modulation of exosomal miRNA, danger signals, and inflammatory proteins after acute stressor exposure.* PlosONE (2018) in revision.

Thompson, RS*; Vargas, F; Dorrestein, PC; Chichlowski, M; Berg, BM; **Fleshner, M.** *The fecal metabolome is altered by stress and dietary prebiotics: Relationships between metabolomic features, sleep architecture, and microbiome alpha diversity.* Frontiers in Behavioral Neuroscience (2019) in submission.

Bowers, SJ; Vargas, F; González, A; Hea, S; Dorrestein, PC; Knight, R; Wright Jr, KP; Lowry, CA; **Fleshner, M**; Vitaterna, MH; Turek, FW. *Repeated sleep disruption in mice leads to shifts in the fecal microbiome and metabolome that persist multiple days into recovery sleep.* Microbiome (2019) in submission.

Bowers, SJ*; Thompson, RS; Mika, A, Greenwood, BN; **Fleshner, M.** *Disruption of the gut microbiome with oral antibiotic reduces core body temperature and disrupts diurnal rhythms of locomotor activity, but not sleep, in adult rats, in prep.*



ii. Manuscript/Chapters Published or In Press (Peer-Reviewed)

*indicates 1st author is/was a student or postdoctoral fellow supervised by Dr. Fleshner

Greenwood, BN; **Fleshner, M.** Voluntary wheel running: A useful rodent model for Investigating the mechanisms of stress robustness and neural circuits of exercise motivation. *Current Opinion in Behavioral Sciences* (2019) in press.

Mika, A*; Gaffney, M; Roller, R; Hills, A; Bouchet, CA; Hulen, KA; Thompson, RS; Chichlowski, M; Berg, BM; Fleshner, M. *Feeding the Developing Brain: Juvenile Rats Fed Diet Rich in Prebiotics and Bioactive Milk Fractions Exhibit Reduced Anxiety-Related Behavior and Modified Gene Expression in Emotion Circuits.* *Neurosci Lett*, (2018) 677: p. 103-109.10.1016/j.neulet.2018.01.052.

Fleshner, M. and Crane, CR*. *Exosomes, DAMPs and miRNA: Features of stress physiology and immune homeostasis.* *Trends in Immunology*, (2017) 38 p. 63 doi: 10.1016/j.it.2017.08.002.

Thompson, RS; Roller, R; Greenwood, BN; Knight, R; Chichlowski, M; Berg, BM; **Fleshner, M.** *Dietary prebiotics and bioactive milk fractions support early-life NREM sleep quality, REM rebound sleep recovery following acute stress and ameliorate stress-induced decrease in alpha diversity in the rat.* *Frontiers in Behavioral Neuroscience*, (2017) 10, 10:240. doi: 10.3389/fnbeh.2016.00240.

Lloyd, BA; Hake, HS; Ishiwata, T; Farmer, CE; Loetz, EC; **Fleshner, M.**; Bland, ST; Greenwood, BN. *Exercise Increases Mtor Signaling in Brain Regions Involved in Cognition and Emotional Behavior.* *Behav Brain Res*, (2017) 323: p. 56-67.10.1016/j.bbr.2017.01.033.

Fleshner, M.; Frank, M; Maier, SF. *Danger Signals and Inflammasomes: Stress-Evoked Sterile Inflammation in Mood Disorders.* *Neuropsychopharmacology*, (2017) 42(1): p. 36-45.10.1038/npp.2016.125.

Mika, A; Day, HE; Martinez, A; Rumian, NL; Greenwood, BN; Chichlowski, M; Berg, BM; **Fleshner, M.** *Early Life Diets with Prebiotics and Bioactive Milk Fractions Attenuate the Impact of Stress on Learned Helplessness Behaviours and Alter Gene Expression within Neural Circuits Important for Stress Resistance.* *Eur J Neurosci*, (2017) 45(3): p. 342-357.10.1111/ejn.13444.

Mika, A; Rumian, N; Loughridge, AB; **Fleshner, M.** *Exercise and Prebiotics Produce Stress Resistance: Converging Impacts on Stress-Protective and Butyrate-Producing Gut Bacteria.* *Int Rev Neurobiol*, (2016) 131: p. 165-191.10.1016/bs.irn.2016.08.004.

Speaker, KJ*; Paton, MM; Cox, SS; **Fleshner, M.** *A Single Bout of Fasting (24 H) Reduces Basal Cytokine Expression and Minimally Impacts the Sterile Inflammatory Response in the White Adipose Tissue of Normal Weight F344 Rats.* *Mediators Inflamm*, (2016) 2016: p. 1698071.10.1155/2016/1698071.

Reber, SO; Siebler, PH; Donner, NC; Morton, JT; Smith, DG; Kopelman, JM; Lowe, KR; Campbell, K; Fox, JH; Hassell, JE; Greenwood, BN; Jansch, C; Lechner, A; Uschold-Schmidt, N; Füchsl, AM; Langgartner, D; Walker, FR; Hale, MW; Perez, GL; Van Treuren, W; González, A; Halweg-Edwards, AL; **Fleshner, M.** Raison, CL; Rook, GAW; Peddada, SD; Knight, R; Lowry, CA. *Immunization with a heat-killed preparation of the environmental bacterium *Mycobacterium vaccae* promotes stress resilience in mice.* *Proc Natl Acad Sci U S A*, (2016). 113(22): p. E3130-9PMC4896712.



Grace, PM; Fabisiak, TJ; Green-Fulgham, SM; Anderson, ND; Strand, KA; Kwilasz, AJ; Galer, EL; Walker, FR; Greenwood, BN; Maier, SF; **Fleshner, M**; Watkins, LR. *Prior Voluntary Wheel Running Attenuates Neuropathic Pain*. *Pain*, (2016) 157(9): p. 2012-23.10.1097/j.pain.000000000000607.

Thompson, RS*; Roller, R; Greenwood, BN; **Fleshner, M**. *Voluntary exercise increases core body temperature, improves sleep and reduces the stress-induced flattening of the diurnal rhythms in temperature and sleep*. *Stress* (2016) 1-13, doi: 10.1080/10253890.2016.1174852.

Mika, A.* and **Fleshner, M.**, *Early-life exercise may promote lasting brain and metabolic health through gut bacterial metabolites*. *Immunol Cell Biol*, (2016). 94(2): p. 151-7 doi:10.1038/icb.2015.113.

Seetharaman, S; **Fleshner, M**; Park, CR; Diamond, DM. *Influence of Daily Social Stimulation on Behavioral and Physiological Outcomes in an Animal Model of Ptsd*. *Brain Behav*, (2016) 6(5): p. e00458PMC4834360.

Thompson, RS; Roller, R; Greenwood, BN; **Fleshner, M**. *Wheel Running Improves REM Sleep and Attenuates Stress-Induced Flattening of Diurnal Rhythms in F344 Rats*. *Stress*, (2016) 19(3): p. 312-24.10.1080/10253890.2016.1174852.

Herrera, JJ*; Fedynska, S; Ghasem, PR; Wieman, T; Clark, PJ; Gray, N; Loetz, E; Campeau, S; **Fleshner, M**; Greenwood, BN. *Neurochemical and Behavioural Indices of Exercise Reward Are Independent of Exercise Controllability*. *Eur J Neurosci*, (2016) 43(9): p. 1190-202.10.1111/ejn.13193.

Mika, A*; Bouchet, CA; Bunker, P; Hellwinkel, JE; Spence, KG; Day, HE; Campeau, S; **Fleshner, M**; Greenwood, BN. *Voluntary Exercise During Extinction of Auditory Fear Conditioning Reduces the Relapse of Fear Associated with Potentiated Activity of Striatal Direct Pathway Neurons*. *Neurobiol Learn Mem*, (2015) 125: p. 224-35.10.1016/j.nlm.2015.10.001.

Mika, A*; Van Treuren, W; Gonzalez, A; Herrera, JJ; Knight, R; **Fleshner, M**. *Exercise Is More Effective at Altering Gut Microbial Composition and Producing Stable Changes in Lean Mass in Juvenile Versus Adult Male F344 Rats*. *PLoS One*, (2015) 10(5): p. e0125889.10.1371/journal.pone.0125889.

Clark, PJ*; Amat, J; McConnell, SO; Ghasem, PR; Greenwood, BN; Maier, SF; **Fleshner, M**. *Running Reduces Uncontrollable Stress-Evoked Serotonin and Potentiates Stress-Evoked Dopamine Concentrations in the Rat Dorsal Striatum*. *PLoS One*, (2015) 10(11): p. e0141898.10.1371/journal.pone.0141898.

Wright, KP, Jr.; Drake, AL; Frey, DJ; **Fleshner, M**; Desouza, CA; Gronfier, C; Czeisler, CA. *Influence of Sleep Deprivation and Circadian Misalignment on Cortisol, Inflammatory Markers, and Cytokine Balance*. *Brain Behav Immun*, (2015) 47: p. 24-34.10.1016/j.bbi.2015.01.004.

Zoldaz, PR; Park, CR; **Fleshner, M**; Diamond, DM. *Psychosocial predator-based animal of PTSD produces physiological and behavioral sequelae and traumatic memory four months following stress onset*. *Physiology and Behavior*, 147 (2015) 183-192. 10.1016/j.physbeh.2015.04.032.

Beninson, L.A.* and **Fleshner, M.**, *Exosomes in Fetal Bovine Serum Dampen Primary Macrophage IL-1beta Response to Lipopolysaccharide (LPS) Challenge*. *Immunol Lett*, (2015) 163(2): p. 187-92.10.1016/j.imlet.2014.10.019.



Greenwood, BN*; Thompson, RS; Opp, MR; **Fleshner, M.** *Repeated Exposure to Conditioned Fear Stress Increases Anxiety and Delays Sleep Recovery Following Exposure to an Acute Traumatic Stressor.* *Front Psychiatry*, (2014) 5: p. 146.10.3389/fpsy.2014.00146.

van Praag, H; **Fleshner, M**; Schwartz, MW; Mattson, MP. *Exercise, Energy Intake, Glucose Homeostasis, and the Brain.* *J Neurosci*, (2014) 34(46): p. 15139-49.10.1523/JNEUROSCI.2814-14.2014.

Thompson, RS*; Strong, PV; Clark, PJ; Maslanik, TM; Wright, KP, Jr.; Greenwood, BN; **Fleshner, M.** *Repeated Fear-Induced Diurnal Rhythm Disruptions Predict PTSD-Like Sensitized Physiological Acute Stress Responses in F344 Rats.* *Acta Physiol (Oxf)*, (2014) 211(2): p. 447-65.10.1111/apha.12239.

Clark, PJ*; Ghasem, PR; Mika, A; Day, HE; Herrera, JJ; Greenwood, BN; **Fleshner, M.** *Wheel Running Alters Patterns of Uncontrollable Stress-Induced Cfos mRNA Expression in Rat Dorsal Striatum Direct and Indirect Pathways: A Possible Role for Plasticity in Adenosine Receptors.* *Behav Brain Res*, (2014) 272: p. 252-63.10.1016/j.bbr.2014.07.006.

Fleshner, M; Greenwood, BN; Yirmiya, R. *Neuronal-glia mechanisms of exercise-evoked stress robustness.* In *Springer Current Topics in Behavioral Neuroscience, Behavioral Neurobiology of Stress-related Disorders*, ed., M.D. Lapiz Bluhm and C. Pariante. (2014) 10.1007/7854_2014_277.

Beninson, L.A.* and **Fleshner, M.**, *Exosomes: An Emerging Factor in Stress-Induced Immunomodulation.* *Semin Immunol*, (2014) 26(5): p. 394-401.10.1016/j.smim.2013.12.001.

Beninson, LA*; Brown, PN; Loughridge, AB; Saludes, JP; Maslanik, T; Hills, AK; Woodworth, T; Craig, W; Yin, H; **Fleshner, M.** *Acute Stressor Exposure Modifies Plasma Exosome-Associated Heat Shock Protein 72 (Hsp72) and MicroRNA (Mir-142-5p and Mir-203).* *PLoS One*, (2014) 9(9): p. e108748.10.1371/journal.pone.0108748.

Cox, SS*; Speaker, KJ; Beninson, LA; Craig, WC; Paton, MM; **Fleshner, M.** *Adrenergic and Glucocorticoid Modulation of the Sterile Inflammatory Response.* *Brain Behav Immun*, (2014) 36: p. 183-92.10.1016/j.bbi.2013.11.018.

Speaker, KJ*; Cox, SS; Paton, MM; Serebrakian, A; Maslanik, T; Greenwood, BN; **Fleshner, M.** *Six Weeks of Voluntary Wheel Running Modulates Inflammatory Protein (MCP-1, IL-6, and IL-10) and Damp (Hsp72) Responses to Acute Stress in White Adipose Tissue of Lean Rats.* *Brain Behav Immun*, (2014) 39: p. 87-98.10.1016/j.bbi.2013.10.028.

Saludes, JP; Morton, LA; Coulup, SK; Fiorini, Z; Cook, BM; Beninson, L; Chapman, ER; **Fleshner, M**; Yin, H. *Multivalency Amplifies the Selection and Affinity of Bradykinin-Derived Peptides for Lipid Nanovesicles.* *Mol Biosyst*, (2013) 9(8): p. 2005-9.10.1039/c3mb70109c.

Loughridge, AB*; Greenwood, BN; Day, HE; McQueen, MB; **Fleshner, M.** *Microarray Analyses Reveal Novel Targets of Exercise-Induced Stress Resistance in the Dorsal Raphe Nucleus.* *Front Behav Neurosci*, (2013) 7: p. 37.10.3389/fnbeh.2013.00037.



- Thompson, RS*; Christianson, JP; Maslanik, TM; Maier, SF; Greenwood, BN; **Fleshner, M.** *Effects of Stressor Controllability on Diurnal Physiological Rhythms.* *Physiol Behav*, (2013) 112-113: p. 32-9.10.1016/j.physbeh.2013.02.009.
- Zoladz, PR; **Fleshner, M;** Diamond, DM. *Differential Effectiveness of Tianeptine, Clonidine and Amitriptyline in Blocking Traumatic Memory Expression, Anxiety and Hypertension in an Animal Model of PTSD.* *Prog Neuropsychopharmacol Biol Psychiatry*, (2013) 44: p. 1-16.10.1016/j.pnpbp.2013.01.001.
- Greenwood, BM*; **Fleshner, M.** *Mechanisms underlying the relationship between physical activity and anxiety: Animal data.* In *Routledge Handbook of Physical Activity and Mental Health* (2013) pp 130-142.
- Fleshner, M.** Thompson, RS; Greenwood, BN. *Impact of physical activity on diurnal rhythms: A potential mechanism for exercise-induced stress resistance and stress resilience.* In *Routledge Handbook of Physical Activity and Mental Health* (2013) pp 316-328.
- Morton, LA; Yang, H; Saludes, JP; Fiorini, Z; Beninson, L; Chapman, ER; **Fleshner, M;** Xue, D; Yin, H. *Marcks-Ed Peptide as a Curvature and Lipid Sensor.* *ACS Chem Biol*, (2013) 8(1): p. 218-25.10.1021/cb300429e.
- Fleshner, M.** *Stress-Evoked Sterile Inflammation, Danger Associated Molecular Patterns (Damps), Microbial Associated Molecular Patterns (MAMPs) and the Inflammasome.* *Brain Behav Immun*, (2013) 27(1): p. 1-7.10.1016/j.bbi.2012.08.012.
- Maslanik, T*; Mahaffey, L; Tannura, K; Beninson, L; Greenwood, BN; **Fleshner, M.** *The Inflammasome and Danger Associated Molecular Patterns (DAMPs) Are Implicated in Cytokine and Chemokine Responses Following Stressor Exposure.* *Brain Behav Immun*, (2013) 28: p. 54-62.10.1016/j.bbi.2012.10.014.
- Greenwood, BN*; Spence, KG; Crevling, DM; Clark, PJ; Craig, WC; **Fleshner, M.** *Exercise-Induced Stress Resistance Is Independent of Exercise Controllability and the Medial Prefrontal Cortex.* *Eur J Neurosci*, (2013) 37(3): p. 469-78.10.1111/ejn.12044.
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VIII. PROFESSIONAL SEMINARS

i. International

* indicates the first author is/was a student or postdoctoral fellow supervised by Dr. Fleshner

Fleshner, M. Dietary prebiotic supplements prevent stress-evoked sleep disruptions, anxiety and gut microbial dysbiosis, **Invited Speaker**, *6th Beneficial Microbes Conference*, Amsterdam, The Netherlands (2017).

Fleshner, M. Early Life Exercise Promotes Changes in Gut Microbial Ecology, Persistent Stress Robustness & Metabolic Health, **Invited Speaker**, *The International Society of Exercise Immunology*, Coimbra, Portugal (2017).

Fleshner, M. Acute Stressor Exposure Modulates Plasma Exosomal miRNA cargo and Hsp72 expression. **Invited Speaker**, *The First International Congress: DAMPs*, Guanajuato, Mexico (2016).

Fleshner, M. The Neurobiology and Physiology of Exercise-Induced Stress Robustness. **The 2016 Arthur C. Guyton Distinguished Lectureship Award**. *The Association of Chairs and Directors of Departments of Physiology*, Cabo San Lucas, Mexico (2016).

Fleshner, M. Gut Microbiome Promotes Stress Robustness, **Invited Speaker**, *International Society for Exercise Immunology*, Vienna, Austria (2015).

Fleshner, M. Exercise and stress robustness: Benefits for physical and mental health. **Invited Speaker**, *University of Adelaide*, Adelaide, Australia (2013).

Fleshner, M. A healthy mind in a healthy body: Impacts of exercise on stress robustness. **Presidential Symposium**, *International Society for Exercise Immunology*, Newcastle, Australia (2013).

Fleshner, M. Stress and Immunity. **Invited speaker**, *Corsi Residenziali Di Neuroimmunologia. Centro Congressi Giovanni XXIII*, Bergamo-Italy (2013).

Fleshner, M. Stress-evoked sterile inflammation is modulated by physical fitness. **Keynote speaker**, *1st Brazilian Symposium of Immunology and Sport*, Sao Paulo, Brazil (2013).

Fleshner, M. Exercise produces stress resistance: Benefits for mental and physical health. **Keynote speaker**, *International Society for Exercise Immunology*, Oxford, England (2011).

Fleshner, M; Maslanik, T; Tannura, K; Mahaffey, L; Bennison, L. The role of the gut microbiota in the acute stressor evoked sterile inflammatory response. **Invited speaker**, *International Society for Exercise Immunology*, Oxford, England (2011).

Fleshner, M. Exosome-associated extracellular heat shock protein 72 is released by stress and functions as a DAMP. *Psychoneuroimmunology Research Society*, Dublin, Ireland (2010).

Fleshner, M. Exercise and central autonomic regulation: Mechanisms for the protective effect of exercise on stress-induced immunosuppression. *International Society of Exercise Immunology*,



Tubingen, Germany (2009).

Fleshner, M. Extracellular Hsp 72: A double edged sword for health. *Psychoneuroimmunology Research Society*, Arcachon, France (2007).

Fleshner, M. Extracellular Hsp 72: A double-edged sword for health. *International Cell Stress and Chaperone Society*, Budapest, Hungary (2007).

Fleshner, M. Elevated level of circulating cytokines and endotoxin are not necessary for the activation of the sickness or corticosterone responses produced by peripheral *E. coli* challenge. *Physiology and Pharmacology of Temperature Regulation*, Rhodes, Greece (2004).

Fleshner, M. Extracellular Hsp72 released by stress facilitates innate immunity: *In vivo and in vitro* support. *Psychoneuroimmunology Research Society*, Titisee, Germany (2004).

Fleshner, M. Hsps and the general stress response. *First International Congress on Stress Responses in Biology and Medicine*. Quebec City, Canada (2003).

Fleshner, M. Stress, heat shock proteins and innate immunity: "The danger signal hypothesis". *International Society for Exercise Immunology*, Copenhagen, Denmark (2003).

Elphick, GF*; **Fleshner, M.** B-1 cell depletion attenuates the enhanced *E.coli* clearance in physically active rats. *International Society for Exercise Immunology*, Copenhagen, Denmark (2003).

Fleshner, M. Leem, T; Campisi, J; Greenwood BN; The potential role of heat shock proteins in stress-induced modulation of innate and acquired immunity. *Psychoneuroimmunology Research Society*, Utrecht, Netherlands (2001).

Fleshner, M. Neuroendocrine regulation of the antibody response. *The International Society of Exercise and Immunology IV*, Rome, Italy (1999).

Fleshner, M. Leem, T; Kintzel, J; Moraska, A; Deak, T; Smith, TP; Physical activity facilitates bacterial inflammation resolution produced by stress. *The International Society of Exercise and Immunology IV*, Rome, Italy (1999).

ii. Domestic

* indicates the first author is/was a student or postdoctoral fellow supervised by Dr. Fleshner

Fleshner, M. Dietary Prebiotics Impact Gut Microbiome and Metabolome: A Successful Countermeasure for Improving Resilience to Sleep & Circadian Disruption, *Integrative Physiology, University of Colorado-Boulder, Departmental Colloquium (2018) Invited Speaker.*

Fleshner, M. Dietary prebiotics & stress resistance: Impacts on the brain, sleep, inflammation and the gut microbiome/metabolome, *Probiota Americas, Miami, Florida (2018) Invited Speaker.*

Fleshner, M. Inflammatory Homeostasis: A role for MAMPs, DAMPs and microRNA, *Experimental Biology, San Diego, CA (2018) Invited Speaker.*

Thompson RS* ; Bowers SJ; Gonzalez A; Vargas F; Wright KP Jr; Lowry CA; Vitaterna MH; Turek FW, Knight R; Dorrestein PC; **Fleshner M.** Gut Microbial Modulatory Diet Reduces the Impact of Chronic



Circadian Disruption on Sleep and Facilitates Rhythm Realignment, *Society for Research on Biological Rhythms, Amelia Island, Florida (2018)* **Selected Speaker.**

Fleshner, M. Stress evoked sterile inflammation: A role for MAMPs, DAMPs and microRNA, *Colorado State University, Health and Exercise Science Spring Seminar Series, Fort Collins, CO (2018)* **Invited Speaker.**

Fleshner, M. Early life exercise promotes favorable changes in gut microbial ecology, persistent stress robustness, and metabolic health, *Duke University School of Medicine Interdisciplinary Symposium, Raleigh-Durham, North Carolina (2017)* **Invited Speaker.**

Fleshner, M. Inflammatory Homeostasis: A role for MAMPs, DAMPs and microRNA, *Integrative Physiology, University of Colorado-Boulder, Departmental Colloquium (2017)* **Invited Speaker.**

Fleshner, M. Early life exercise promotes favorable changes in gut microbial ecology, persistent stress robustness and metabolic health, *Department of Integrative Biology, University of Colorado-Denver, Fall Seminar Series (2017)*, **Invited Speaker.**

Fleshner, M. The neurobiology and physiology of exercise-induced stress robustness. *ACSM: World Congress on the Basic Science of Exercise and the Brain, Denver CO (2017)*, **Invited Speaker.**

Fleshner, M. Prebiotic diet modulates the impact of stress on REM sleep. *The Colorado Sleep and Circadian Research Symposium, The University of Colorado, Boulder, CO (2016)*, **Invited Speaker.**

Fleshner, M. Danger signals, microRNA and the inflammasome: Stress-evoked sterile inflammation and its relevance in mood disorders. *American College of Neuropsychopharmacology, Hollywood, FL (2016)*, **Invited Speaker.**

Fleshner, M. Exercise induces stress robustness across the lifespan: The role of the gut microbiota. *The Integrative Biology of Exercise, American Physiological Society, Phoenix, AZ (2016)*, **Invited Speaker.**

Fleshner, M. Exercise induces stress robustness across the lifespan: The role of the gut microbiota. *Cousins Center Lectures in Psychoneuroimmunology (PNI) at UCLA School of Medicine. Los Angeles, CA (2016)*, **Invited Speaker.**

Fleshner, M. Early life prebiotic diet promotes sleep and stress robustness. *Gordon Conference on Sleep, Galveston, TX (2016)*, **Invited Speaker.**

Fleshner, M. Early life exercise and the gut microbiota: Long lasting impacts on brain, stress resistance, and metabolism. *Neurobiology of Learning and Memory, 40th Anniversary. Park City, UT (2016)*.

Fleshner, M. Promoting Stress Robustness. Georgia State University, *Neuroscience Institute Distinguished Lecture Series, Atlanta, GE (2015)*, **Invited Speaker.**

Fleshner, M. Stress, Exercise and Sleep. University of Colorado School of Medicine Anschutz, *Department of Neurology, Resident Sleep Seminar, Denver, CO (2015)*.



- Fleshner, M.** Exercise promotes stress robustness: Modulation of brain serotonin neurocircuitry. University of Colorado Anschutz Medical Campus, *Integrated Physiology Graduate Program Seminar*, Denver, CO (2015).
- Fleshner, M.** Protecting our troops from damaging stress. *University of Northern Colorado School of Biological Sciences Symposium*, Greeley, CO (2015).
- Fleshner, M.** Acute stressor exposure modulates plasma exosomal miRNA and Hsp72 cargo. *Academic Health Research Seminars University of Minnesota School of Medicine*, Duluth, MN (2014).
- Fleshner, M.** Rhythm disruptions and stress sensitization. *The Colorado Sleep and Circadian Research Symposium*, The University of Colorado, Boulder, CO (2014).
- Fleshner, M.** Exercise promotes stress robustness. *The Society for Neuroscience* (Exercise, energy intake, and the brain, selected symposium). Washington, DC (2014).
- Fleshner, M.** Exercise and prebiotic modulation of the gut microbiome promotes stress robustness. *The Psychoneuroimmunology Research Society*, (Integrating the microbiome into PNI paradigm and Mind/Body science, selected symposium). Philadelphia, PA (2014).
- Fleshner, M.** Acute stressor exposure modulates plasma exosomal miRNA and Hsp72 cargo. *The Seventh International Symposium on Heat Shock Proteins in Biology and Medicine*. Washington, DC (2014).
- Fleshner, M.** Disruptions in body temperature rhythms predict stress sensitization. *The International Behavioral Neuroscience Society*, Las Vegas, NV (2014).
- Fleshner, M.** Mindful movement and movement of the minds. *The Diversity Summit*, University of Colorado at Boulder.
- Fleshner, M.** Exercise promotes stress robustness. *The American College of Neuropsychopharmacology*, Phoenix, AZ (2014) selected symposium.
- Fleshner, M.** Putting the ice on stress, aging and CNS trauma. *Winter Conference on Brain Research*, Steamboat, CO (2014).
- Fleshner, M.** Extracellular Hsp72 is a DAMP released by stress. *Experimental Biology*, Boston, MA (2013). https://www.webges.com/cslide/e02816c/public/play_video/19 (ACVP Symposium: Inside-Out- Extracellular Roles for Heat Shock Proteins)
- Fleshner, M.** Protecting our troops from damaging stress. *Center for Neuroscience seminar*, University of Colorado, Boulder, CO (2013).
- Fleshner, M.** Novel gene targets of exercise-induced stress resistance in the dorsal raphe nucleus. *Winter Conference on Brain Research*, Breckenridge, CO (2013).
- Fleshner, M.** Impact of physical activity on stress robustness, *Department of Physiology & Neurobiology*, Dartmouth, Lebanon NH (2013).



- Fleshner, M.** Exercise and stress “robustness”: Benefits for physical and mental health. *Department of Psychology and Neuroscience, Duke University, Durham, NC (2012).*
- Fleshner, M.** Protecting our troops from damaging stress. *IPHY seminar, University of Colorado, Boulder, CO (2012).*
- Fleshner, M.** Exercise and stress resistance and resilience: Benefits for mental and physical health. University of Vermont **Macmillan Symposium, Keynote Lecture** (*includes webcast to local colleges and high schools*). Burlington, VT (2012).
- Fleshner, M.** Stress, inflammasomes and sterile inflammation. **Presidential Symposium Lecture**, *Psychoneuroimmunology Research Society, San Diego, CA (2012).*
- Fleshner, M.** DAMPs, MAMPs, & the Inflammasome in Stress-Evoked Sterile Inflammatory Protein Responses. **Presidential Symposium Lecture**, *Society for Behavioral Neuroendocrinology, Madison, WI (2012).*
- Fleshner, M.** Exercise and stress resistance and resilience: Benefits for mental and physical health. *Biology Department Colloquium, Kent State University, Kent, OH (2011).*
- Fleshner, M.** Exercise and stress resistance and resilience. *School of Life Sciences Lecture Series, Arizona State University, Tempe, AZ (2011).*
- Fleshner, M.** Stress, DAMPs and Immunomodulation. *Society for Leukocyte Biology Meeting PNIRS Symposium, Kansas City, MO (2011).*
- Fleshner, M.** Extracellular Hsp72 is an endogenous DAMP released by stress. *Biological and Immunological Sciences Seminar, Ohio State University, Columbus, OH (2011).*
- Fleshner, M.** Stress & Immunity in Experimental Animal Models. *PNIRS Educational Short Course, Chicago, IL (2011).*
- Fleshner, M.** Endogenous Hsp72: Releasing signals, cellular sources & releasing pathways. *Graduate PNI Seminar, University of Denver, Denver, CO (2010).*
- Fleshner, M.** Enabling stress resistance with exercise. *Neuroscience Seminar, University of Illinois, Champaign, IL (2010).*
- Fleshner, M.** Exercise and stress resistance: From brain to behavior. *Winter Brain Conference, Breckenridge, CO (2010).*
- Fleshner, M.** Enabling stress resistance with controllable exercise: Affective consequences and 5HT mechanisms. *Neuroscience Colloquium, Smith College, Northampton, MA (2010).*
- Fleshner, M.** The stress buffering effects of exercise: Immune consequences & SNS mechanisms. *Biology Colloquium, Smith College, Northampton, MA (2010).*
- Fleshner, M.** The stress buffering effects of exercise. *The Neurobiology of Stress Workshop, Session Chair, Boulder, CO (2010).*



- Fleshner, M.** The stress buffering effects of exercise. *The Winter Brain Conference on the Neurobiology of Learning and Memory*, Park City, Utah (2009).
- Fleshner, M.** Endogenous alarm signals: Immune consequences, releasing signals, and cellular sources. *Integrated Biomedical Science Seminar Series*, Loma Linda, CA (2008).
- Fleshner, M.** Extracellular Hsp72: Releasing signals and cellular source. *Integrative Physiology seminar*, University of Colorado, Boulder, CO (2008).
- Fleshner, M.** Extracellular Hsp72: A double-edged sword for health. *Center for Neuroscience seminar*, University of Colorado, Boulder, CO (2008).
- Fleshner, M.** Exercise and stress resistance: Neural mechanisms and health consequences. *The Repole Lecture*, University of Vermont, Birmingham VT (2007).
- Fleshner, M.** Exercise and stress resistance: Neural mechanisms and health consequences. University of California-Irvine, Irvine, CA (2007).
- Fleshner, M.** Exercise and stress resistance: Neural mechanisms and health consequences. *Integrative Physiology seminar*, University of Colorado, Boulder, CO (2007).
- Fleshner, M.** Exercise and stress resistance: Neural mechanisms and immunological consequences. *Anatomy and Physiology seminar*, Kansas State University, Manhattan, KA (2006).
- Fleshner, M.** Extracellular Hsp 72: A double-edged sword for health. *Integrative Physiology seminar*, University of Colorado, Boulder, CO (2006).
- Fleshner, M.** The protective effect of physical activity on stress-induced immunosuppression: neuroendocrine mechanisms. *Department of Physiology and Neuroscience*, University of Colorado Health and Science Center, Denver, CO (2006).
- Fleshner, M.** Extracellular Hsp 72: A double edged sword for host defense. *Pediatrics seminar*, University of California-Irvine, Irvine, CA (2006).
- Fleshner, M.** Physical activity suppresses the negative effect of stress: A systems biology approach. *Health and Exercise Science seminar*, Colorado State University, Fort Collins, CO. (2006).
- Fleshner, M.** Physical activity and tyrosine supplementation-Two effective interventions that prevent stress-induced immunosuppression: Implications for aging. **Keynote Speaker**, *Seminar workshop of Center for Aging and the Life Course*, Purdue University, West Lafayette, IN (2005).
- Fleshner, M.** Sympathetic nervous system activation stimulates the release of heat shock protein 72 into the circulation: Potential immunological consequences. *NIH Biodefense workshop, Integrative Neural Immune Program*. Washington, DC (2005).
- Fleshner, M.** Adaptations in 5HT systems produced by exercise prevents stress-induced affective dysregulation. *Winter Conference on Brain Research*, Winter Park, CO (2005).
- Fleshner, M.** Endogenous Hsp72 is released by catecholamines and may function as a “danger signal” for immunity. *American Association of Immunologists* (2005).
- Fleshner, M.** Physical activity reduces the negative effects of stress on behavior, neural, endocrine and immune responses. **Keynote Address**, *American College of Sports Medicine* (2005).



- Fleshner, M.** Exercise and Stress Resistance: A Systems Biology Approach. *Pennington Research Conference Series*, Baton Rouge, Louisiana. (2004).
- Fleshner, M.** The protective effect of physical activity on stress-induced immunosuppression: Neuroendocrine mechanisms. *Integrative Neuroscience Colloquium Series*, Marquette University, Milwaukee, WI (2004).
- Fleshner, M.** Exercise prevents learned helplessness: The role of serotonin. *Susan Samuelli Center for Complementary and Alternative Medicine*, College of Medicine, University of California-Irvine, Irvine, CA (2004).
- Fleshner, M.** Heat shock proteins and the stress response: Implications for immunity. *School of Medicine Basic Science Seminar Series*, Loma Linda University, Loma Linda, CA (2004).
- Fleshner, M.** Heat shock proteins and the stress response: Danger signals for immunity. *Immunology Seminar Program*, Department of Medicine, Ohio State University, Columbus, OH (2004).
- Fleshner, M.** The neurobiology of the stress resistant brain. *Integrative Physiology Colloquium series*. University of Colorado, Boulder CO (2004).
- Fleshner, M.** A sedentary lifestyle reduces stress resistance. *Department of Kinesiology*, University of Illinois, Urbana, IL (2003).
- Fleshner, M.** Possible mechanisms of activation on the innate immune system by non-immune stressors: "The danger signal" hypothesis. *Presidential symposium, Psychoneuroimmunology Research Society*, Amelia Island, Florida (2003).
- Fleshner, M.** Stress, inflammation and heat shock proteins. *American College of Sports Medicine, Featured session*, San Francisco, CA (2003).
- Fleshner, M.** Stress-induced extracellular HSP72 is a functionally significant "danger signal to the immune system". *American Association of Immunologists and International Society for NeuroImmunoModulation (ISNIM), Guest symposium*. Denver, CO (2003).
- Fleshner, M.** Exercise prevents learned helplessness: The role of 5HT. *Neuroscience Seminar Series*, University of Colorado, Boulder CO (2003).
- Fleshner, M.** A sedentary lifestyle reduces stress-resistance. *Institute of Behavioral Science, Population and Health Seminar*, University of Colorado, Boulder CO (2003).
- Fleshner, M.** Physical Activity and Depression: Neural mechanisms. *Introduction to Neuroscience II*, University of Colorado, Boulder CO (2003).
- Fleshner, M.** The immune system and its relationship to pain. *Internal Medicine Review: Pueblo Association for Interest in Neuroscience and TMD Study*, Pueblo, CO (2002).
- Fleshner, M.** The physiology of the stress response in sedentary and physically active organisms". *Rocky Mountain chapter of the American College of Sports Medicine*, Fort Collins, CO (2002)
- Fleshner, M.** The stress-susceptibility of a sedentary lifestyle. *University of Colorado Health Sciences Center, Center for Nutrition seminar*, Denver, CO (2002).
- Fleshner, M.** The stress susceptibility of a sedentary lifestyle: Brain neurocircuitry. *Department of*



Neuroscience Seminar Series, University of Virginia (2001).

Fleshner, M. The immune system: A tutorial. *The Summer Institute for Psychoneuroimmunology Research II*, University of Washington (2000).

Fleshner, M. Stress-induced extracellular HPS72 is a functionally significant “danger signal” to the immune system. *Basic Science Conference, The Division of Medical Oncology*, University of Colorado Health Sciences Center, Denver, CO (2002).

Fleshner, M. Heat shock proteins and inflammation: The body’s “danger signal”, *American Association of Immunologists and PNIRS Guest symposium*, New Orleans, Louisiana (2002).

Fleshner, M. Campisi, J; Miller, JK; Kennedy, SL; Smith, TP; Physical activity reduced circulating and tissue cytokine and sympathetic responses to stress. *Psychoneuroimmunology Research Society*, Madison, Wisconsin (2002).

Fleshner, M. Leem, T; Campisi, J; Greenwood BN; The potential role of heat shock proteins in stress-induced modulation of innate and acquired immunity. *The International Society of Exercise Immunology*, Baltimore, MD (2001).

Maier, SF; Nguyen, KT; Watkins, LR; **Fleshner, M.** Acute stress suppresses the KLH-specific but not mitogenic (ConA) proliferative response. *Research Perspectives in Psychoneuroimmunology, VIII*, (1998).

Fleshner, M. Moraska, A; The protective effect of exercise on stress-induced suppression of the specific antibody response. *Research Perspectives in Psychoneuroimmunology, VIII*, (1998).

Fleshner, M. The interface between brain, behavior and immunity: Is stress always bad? *The 19th annual conference of the New York Neuropsychology Group and New York Academy of Science*, New York, NY (1998).

Fleshner, M. Stress, Exercise and Immunity. *The Summer Institute for Psychoneuroimmunology Research*, University of Washington, Seattle, WA (1998).

Moraska, A*; Nguyen, KT; Mazzeo, RM; Roth, DA; **Fleshner, M.** Voluntary exercise potentiates whereas forced exercise suppresses anti-KLH responses. *Research Perspectives in Psychoneuroimmunology, VII*. (1997).

Fleshner, M. Nguyen, KT; Effects of unweighting on innate and specific immunity. *Aerospace Gravitational and Space Biology XII*, Charlotte, NC (1996).

Fleshner, M. Watkins, LR; Laudenslager, ML; Maier, SF; A CD4+ T cell shift from Th1 to Th2: A mechanism of stress-induced reduction of the KLH-specific antibody response. *Research Perspectives in Psychoneuroimmunology, V*, (1994).

Fleshner, M. Stress-induced reduction in MLR is dependent on macrophages but not on changes in phenotypes. *Research Perspectives in Psychoneuroimmunology, IV*, (1993).

Fleshner, M. Watkins, LR; Lockwood, LL; Bellgrau, D; Laudenslager, ML; Maier, SF; Stress-Induced Changes in CD4+ and CD8+ Lymphocytes. *NIMH Research Training Directors Meeting*, Bethesda, MD (1991).



iii. Administrative

Fleshner M. Ways to get your scholarly work off to a great start. *Faculty Fair, Office of the Vice Chancellor for Research, Boulder, CO* (2013).

Fleshner M. Seed grants, competitions, applications and awards. *Faculty Fair, Office of the Vice Chancellor for Research, Boulder, CO* (2012).

Fleshner M. Level 1 Research. *Postdoc Career Development Retreat, Denver, CO* (2013).

IX. SERVICE

i. Departmental

1998, 2001	Faculty Search Committee, member
2002, 2008, 2010	Faculty Search Committee, member
2005-2006	Faculty Search Committee, Chair
2003-2008	Graduate Admissions Committee
2003-2013	Future Hiring/Steering Committee
2005-2013	Strategic Planning Committee
2005	Grievance Committee (special appointment)
2005	Tenure and Promotion Committee (Pei-San Sei)
2006-2008	Identity Task Force Committee, Chair
2008	Tenure and Promotion Committee PEUC (Wright)
2009-2010	Tenure and Promotion Committee PEUC (Allen)
2010-2011	IPHY Student Board Lecture
2011	Tenure and Promotion Committee PEUC (Tsai, Chair)
2011	Program Review: Space and Infrastructure, Chair
2011	Awards Committee, Chair
2010-2013	Welfare Committee, Chair
2005-2013	Space Committee, Chair
2014	Tenure and Promotion Committee PUEC (Wright, Chair)
2015-2016	Search Committee, Joint IPHY/PSYCH, Chair
2015-present	Wilderness Place Space Committee
2017-present	IPHY Executive Committee

ii. University

1997	Dean’s Master Plan Task Force
1997-2007	Institutional Animal Care & Use Committee (IACUC) Co-Chair
1998	Undergraduate Honor’s Council
1999-2002	Neuroscience Ph.D. Steering/Curriculum Committee
2002-present	Neuroscience Ph.D. Admissions Committee
2004-2009	Integrative Physiology Graduate Admissions Committee
2005	McNair Program Summer Minority Research Opportunity Program
2006-2011	Biological Science Initiative Faculty Board
2007-2011	Executive Advisory Committee
2009-2011	East Campus Advisory Committee
2010	VC for Research Office IT Search Committee, Chair
2011	LEAP/Faculty Affairs Workshop “Management”
2011-2012	College of Arts and Sciences Dean’s Search Committee (40+ hrs)



2012	CV Workshop (Postdoctoral Association)
2012-2013	Vice Chancellor for Research: Research Review Board (2 hrs per month)
2012-2013	Office of Animal Research OLAW Assurance Task Force (3 hrs per wk)
2009-2013	Faculty Associate to the Vice Chancellor for Research
2010-2014	College of Arts and Sciences Personnel and Tenure Committee (20 hrs per mo)
2012-2014	Boulder Faculty Assembly Budget and Finance Committee (1 hr per wk)
2013-2016	Academic Affairs Budget Advisory Committee
2014-2016	Boulder Faculty Assembly Budget and Finance Committee (Chair, 1 hr per wk)
2014-2016	Boulder Faculty Assembly Executive Committee (1 hr per wk)
2014	Boulder Faculty Assembly Discrimination/Harassment Policy and Procedure
2015	Carlson Renovation and Re-purposing Committee
2016	Academic Review and Planning Advisory Committee (ARPC)
2016	Leeds External Personnel Actions Committee
2016	Base Budget Steering Committee
2016	BFA Research Awards Committee (chair)
2015-2017	Associate Vice Chancellor Advisory Committee (AVC)
2015-present	Radiation Safety Committee (2 hr per mo)
2016-present	College of Arts & Sciences Dean's Budget Committee (2 hr per mo)

iii. Professional

Journal Reviewer (selected list):

American Journal of Reproductive Immunology
American Journal of Physiology
Behavioral Brain Research
Biological Psychiatry
Brain, Behavior and Immunity
Brain Research
Behavioral Neuroscience
Cell Biochemistry and Function
Developmental Psychobiology
European Journal of Physiology
Exercise Science and Sport Reviews
Expert Reviews in Vaccines
Frontiers
International Journal of Behavioral Medicine
Journal of Applied Physiology
Journal of Immunology
Journal of Neuroscience
Journal of Neuroimmunology
Journal of Gerontology: Medical Sciences
Neuroscience
Neurosignals
Neurobiology of Aging
Physiology and Behavior
Pharmacology, Biochemistry, and Behavior
PlosONE
Psychopharmacology
Psychosomatic Medicine



Stress: The International Journal on the Biology of Stress
Synapse

Journal Editor:

2002-2005	Assistant Editor: Exercise Science and Sport Reviews
2002-2007	Editorial Board: Journal of Applied Physiology
2011-2013	Section Editor: BioMedCentral: Physiology
2008-2014	Editorial Board: Frontiers in Neuroscience
2011-2016	Editorial Board: Brain, Behavior and Immunity
2017-2018	Special Issue Editor: Brain, Behavior and Immunity
2014-present	Editorial Board: The Neurobiology of Stress

Grant Reviewer:

1999-2015	National Science Foundation (NSF)
1999-2015	Undergraduate Research Opportunities Program (UROP)
2000-2001	National Aeronautics and Space Administration (NASA)
2000	National Institutes of Health (NIH) ad hoc reviewer
2001	National Institutes of Health CSR (IFCN-2) ad hoc reviewer
2000-2001	National Aeronautics and Space Administration (NASA)
2003	National Institutes of Health: Special Emphasis Panel
2003	National Science Foundation Postdoctoral Fellowship review panel: Microbiology, Physiology, and Neuroscience section.
2004-2008	National Institutes of Health: Neurobiology of Motivated Behavior, regular member
2008	National Institutes of Health: Special Emphasis Panel
2008	Swiss National Science Foundation
2008	National Aeronautics and Space Administration
2010	Deutsche Forschungsgemeinschaft (DFG) in Regensburg, Germany
2010-2012	National Institutes of Health: College of CSR Reviewers
2010	Army Research Office
2010	Medical Research Council, United Kingdom
2011	National Science Foundation Postdoctoral Fellowship Review Panel: Microbiology and Cell Biology Section
2011	National Institutes of Health Study Section, NNRS, Baltimore, MD
2011	National Institutes of Health Study Section, APDA, San Francisco, CA (2011)
2012	National Institutes of Health Study Section, BBBP, Washington DC
2013	National Aeronautics and Space Administration (Immunology), Review, Washington DC (2013).
2013	National Science Foundation, Neural Systems Cluster Integrative Organismal Systems / BIO
2013	Inserm Institut National, Institut des sciences biologiques
2013	Netherlands Organization for Scientific Research
2015	National Institutes of Health: Neurobiology of Motivated Behavior, <i>ad hoc</i> .
2016	Knut and Alice Wallenberg Foundation, Stockholm, Sweden.
2016	National Institutes of Health Study Section Biobehavioral Regulation, Learning, and Ethology (BRLE), <i>ad hoc</i> , Washington DC
2017	Knut and Alice Wallenberg Foundation, Stockholm, Sweden.
2017	Crohn's and Colitis Foundation, New York, NY.



2017 NIH-National Center for Complementary and Integrative Health (NCCIH / NIH)
 2018 NIH-Fellowship, Career Development, and Research Grant Programs *Ad hoc* reviewer.
 2018 NIH-Biobehavioral Regulation, Learning and Ethology Panel (BRLE/NIH) *Ad hoc* reviewer.
 2018-present Crohn's and Colitis Foundation, *Grant reviewer*

Professional Society:

1990-present Society for Neuroscience, Member
 2000-present International Society for Exercise Immunology, Member
 1995-present Psychoneuroimmunology Research Society, Member
 2001-2010 American Association of Immunologist, Member
 2003-2010 Cell Stress Society International, Member
 1998-2001 Psychoneuroimmunology Research Society, Nomination Committee
 2000 Psychoneuroimmunology Research Society, Session Chair
 1999-2001 Psychoneuroimmunology Research Society, Advisory Committee
 2001 International Society for Exercise Immunology-Session Chair
 2001-2004 Psychoneuroimmunology Research Society, Scientific Council (elected position)
 2001-present International Society for Exercise Immunology, Scientific Program committee
 2003 International Society for Exercise Immunology, Session Chair
 2002-2004 Psychoneuroimmunology Research Society, Scientific Program Committee
 2003 Psychoneuroimmunology Research Society, Session Chair
 2005 Psychoneuroimmunology Research Society, Co-Host, Annual Meeting Denver, CO
 2004-2006 Psychoneuroimmunology Research Society-Officer Secretary/Treasurer (elected position)
 2004 Psychoneuroimmunology Research Society, Scientific Program Committee
 2003-2004 American Physiological Society: Human use of animals exercise design workshop
 2005-2006 American Physiological Society: Animal Care and Experimentation Committee (ad hoc member)
 2007-2011 American Physiological Society: Animal Care and Experimentation Committee (Regular member)
 2008-2013 Psychoneuroimmunology Research Society-Scientific Program Committee
 2009 Psychoneuroimmunology Research Society-Co-Host of Annual Meeting Breckenridge, CO
 2011-2012 Psychoneuroimmunology Research Society-President (elected position)
 2011-2013 International Society for Exercise Immunology (ISEI), President (elected position)
 2012-2013 Psychoneuroimmunology Research Society, Election & Awards Committee, Chair
 2016-2018 Industrial Hemp Research Foundation: Founding member of the board
 2018-present CU-Research Education, and Application in Cannabinoids and Health: Founding member of the board.
 2018-present Psychoneuroimmunology Research Society Finance Committee

Community:

1998-2000 Community Outreach High School Research Advisor
 2002 Internal Medicine Review: Pueblo Association for Interest in Neuroscience and TMD Study
 2005-2015 High School Outreach Program. Annual group lab visits and presentations to



2011	students from inner city Denver High Schools
2011	Boulder Country Day Science Fair Judge (8 hrs)
2011-2015	Medical Advance Community Lecture (Thornton, CO, 4 hrs)
	Promoting Athletic Performance Recovery and Stress Resistance (PAPRR)
	Development Board (+4 hrs)
2013	CU at the Library Outreach, "Exercise & stress robustness: Benefits for mental physical health" (+5 hrs)
2015	CAPS (Counseling & Psychological Services) at CU, "Exercise Promotes Stress Robustness"
2015	CAPS (Counseling & Psychological Services) at CU, "Exercise and Prebiotic Diet Promotes Stress Robustness"
2012-present	CU Wizards, "Immunity in Health & Disease: The Army Within" (+12 hrs per show/per year)

X. SELECTED MEDIA RELATIONS: *Featured scientist*

Fleshner, M. MSNBC, November 29, 2006, "Can stress actually be good for you?"

Fleshner, M. Psychology Today, August 10, 2006, "A case for double edged optimism."

Fleshner M; "O" The Oprah magazine, January 2007, "Why it's so hard to change yourself".

Fleshner, M. Body and Soul, November 2008, "Stay healthy this season."

Fleshner, M. US World & News Report, June 2008, "Relax! Stress can be good for you."

Fleshner, M. PBS TV Special, November 2009, "The Science of Healing".

Fleshner, M. Fitness, September 2010, "Stop stress for good."

Fleshner, M. *Doctor Radio*, Sirius Radio, September 5, 2014, "Nutrition, Health and Fitness with Samantha Heller".

Fleshner, M. *Early life exercise and the gut microbiota*. January 1st 2016, Channel 7 News, 5pm, 6pm, and 10pm. <https://shar.es/16gvDZ>.

Fleshner, M. *Could your workout impact your gut health? Yes and here's why*. Vogue, March 25, 2016. <http://www.vogue.com/13420406/gut-health-microbiome-good-bacteria-exercise-new-studies-research/>

Fleshner, M. Prebiotics in early life may boost sleep and daytime rhythms, 2016. http://www.nutraingredients-usa.com/Research/Prebiotics-in-early-life-may-boost-sleep-and-daytime-rhythms-Study?utm_source=copyright&utm_medium=OnSite&utm_campaign=copyright

Calmer Waters, *The Caregiver's Journey through Alzheimer's and Dementia*, by Barbara Cohn. Blue River Press, Indianapolis, IN. (2016). Contributing Author, "Exercise and Stress Robustness: Benefits for Mental and Physical Health" pp 173-177.

Fleshner, M. live healthy: Sleep-Stress Connection. Shape, Sept 2017, pg. 114. <https://shape.com>.



XI. TEACHING

i. Graduate Seminars/Courses

Courses are each a semester in duration (3 hrs lecture/ contact per week) at the University of Colorado at Boulder, unless otherwise indicated.

2007-present	IPHY 5600 Graduate Immunology	25 students/class
2006-2013	IPHY 6830 Professional Skills, 2 lectures per year	20 students/class
2002, 2003, 2006		
2013, 2016	IPHY 5100 Colloquium	25 students/class
2003-2011	ARSC 5110 Neuroscience II, 1 lecture per year	25 students/class
1998-1999	IPHY 6010 Exercise Immunology	20 students/class
1996	Behavioral Neuroscience	25 students/class
1994	Stress and Immunity	15 students/class

ii. Undergraduate Seminars/Courses

Courses are one semester in duration (3 hrs lecture/ contact per week) at the University of Colorado at Boulder, unless otherwise indicated.

2007-present	IPHY 4600 Immunology	100-200 students/class
2006	IPHY Student Board Lecture	15 students/class
2005-2006	IPHY 3600 Immunology	125 students/class
2003-2004	IPHY 4770 Mind-Body Health	75 students/class
1998-2001, 2004	IPHY 4660 Critical Thinking: Exercise Immunology	30 students/class
2002	IPHY 4750 Psychological Kinesiology	75 students/class
2001	IPHY 4100 Colloquium	30 students/class
1993, 1996	Behavioral Neuroscience, Dept of Psychology	35 students/class
1993, 1996	Introductory Psychology, U of Colorado-Denver	200 students/class
1995	BioPsychology, Dept of Psychology	45 students/class
1994	Behavioral Neuroscience, Un of Colorado-Denver	30 students/class
1993, 1994	Drugs and Behavior, U of CO-Denver	40 students/class
1992	Intro Psychology, Front Range Community College	40 students/class
1991	Physiological Psychology, University of Denver	20 students/class

iii. Training Grant Faculty Advisor

2018-present PI: Lindheimer, Jacob

NIH Career Development Award: GRANT12478366

Research Health Scientist | William S. Middleton Veterans Memorial Hospital

Honorary Fellow | UW-Madison Department of Kinesiology

Title: "Acute exercise tolerance among Veterans with Gulf War Illness"

iv. Supervised Trainees (Primary Mentor)

Date / Student name / Research topic

Graduate Students: Past Master's Students

1997-1998 Jen Kintzel, "Exercise, stress and inflammation", MS advisor

1997-1998 Taro Smith, "Exercise, stress, and hormones", MS thesis advisor



1998-1999 Ted Leem, "Stress and inflammation", MS advisor
1997-1998 Bristol Sorensen, "CFS and exercise", MS thesis advisor
1998-1999 Gwen Elphick, "Exercise, stress and antibody", MS advisor
1999-2000 Jay Campisi, "Stress and inflammation", MS advisor
1999-2000 Jill Miller, "Exercise, stress and cytokines", MS advisor
1999-2000 Kim Hansen, "Exercise and aging", MS thesis advisor
1999-2001 Danielle Stinchfield, "Exercise and Parkinson's", MS advisor
1999-2001 Ben Greenwood, "Exercise, stress and c-Fos", MS advisor
2002-2003 Julianne West, "Microbiology of inflammation", MS advisor
2001-2003 Karianne Higgins, "Age and intracellular HSPs", MS advisor
2001-2003 Molly Nickerson, "Physical activity and brain cytokines", MS advisor
2004-2006 Kyle Kirby, "Stress and the DRN", MS thesis advisor
2003-2006 Craig Sharkey, "Stress and Inflammation" MS thesis advisor
2010-2011 Arman Serebrakian, BA/MS, "ADR signaling of adipose cytokines", MS thesis advisor

2010-2012 Brianne Loughridge, MS, "Gene array analyses of DRN", MS advisor
2011-2012 Justin Hellwinkel, MS, "Behavioral Consequences of Stress and Exercise on Fear Conditioning". MS advisor

2011-2013 Stuart Cox, "Beta3 ADR signaling of IL1beta in adipose." BA/MS advisor
2011-2013 Katie Spence, "Exercise and brain plasticity", BA/MS advisor
2012-2014 Madeline Paton, "Stress, Nutrition and Sterile Inflammation" BA/MA advisor
2012-2014 Jon Herrera, "The role of dopamine circuitry in the reward of exercise", MS advisor

2015-2017 Camille Crane, MS advisor
2015-2017 Donald Borchert, MS advisor
2016-2017 Rebecca Hall, "The Second Brain: The Impact of Intestinal Microbiota on Stress-Induced Behavioral Depression", MS advisor

2016-2018 Rachel Roller, "Oral Phytochemical and Sterile Inflammation", MS advisor.
2016-2018 Michelle Gaffney, "Prebiotic diet and Cognitive Performance", MS advisor.

Graduate Students: Past PhD Students

1997-1999 Michael Pecaut, "Spaceflight and immunity", PhD advisor
Current Position: Associate Professor, Dept of Radiation Medicine/Division of Radiobiology, Loma Linda University

1998-2001 Albert Moraska, "Exercise, stress and antibody", PhD advisor
Current Position: Professional Research Associate, UCHSC

1999-2003 Gwen Elphick, "nIgM and exercise", PhD advisor
Current Position: Research Fellow, Brown Medical School

2000-2003 Jay Campisi, "Stress, Hsp and Inflammation", MS and PhD advisor
Current Position: Associate Professor and Chair, Dept of Biology, Regis University

1998-2004 Taro Smith, "Aging and physical activity: Implications for human immune function and health", PhD advisor
Current Position: Product Development



1999-2005
Current Position: Sarah Kennedy, "Exercise, stress and catecholamines", PhD advisor
Medical Science Liaison, Immunology, UCB Pharmaceuticals

2001-2005
Current Position: Ben Greenwood, "Neurocircuitry of stress", PhD advisor
Assistant Professor, Dept of Psychology, University of Colorado at Denver

2001-2006
Current Position: Molly Nickerson, "A role for estrogen in the expression of heat shock protein
72", PhD advisor
Translational Medical Scientist at Mitsubishi Tanabe Pharma

2002-2009
Current Position: Teresa Foley, "The neurobiology of exercise", MS advisor, PhD advisor.
Science Education Fellow, University of Colorado

2007-2012
Current Position: Paul Strong, "Neurobiology, stress and exercise", MS advisor, PhD advisor
Scientific Communications Manager, Medical Affairs, Spectranetics Inc.

2007-2012
Current Position: Tom Maslanik, "Defining stress-induced sterile inflammatory responses:
Network, signal, and pathways", MS advisor, PhD advisor
Product Manager, Novus Biologicals

2008-2012
Current Position: Kristin Speaker, "The effects of habitual exercise and fasting on stress-evoked
cytokine expression in non-obese white adipose tissue", PhD advisor
Postdoctoral Fellow & Transformational Weight Loss Coach, Anschutz Health
and Wellness Center, Denver, CO

2006-2013
Current Position: Robert Thompson, "Biotelemetric analyses of stress physiology: The impact of
stressor chronicity, stressor controllability and exercise" MS/PhD advisor
Postdoctoral Fellow, Department of Integrative Physiology

2007-2013
Current Position: Lida Beninson, "The emerging role of exosomes in stress physiology" MS/PhD
advisor
National Academy of Sciences, Program Officer, Washington, DC.

2012-2016
Current Position: Aggie Mika, "The long-term impact of exercise across the lifespan", PhD advisor
Medical Associate, Health Care Consultancy Group, NY, NY.

Postdoctoral Fellows: Past Fellows

2002-2007
Current Position: John D. Johnson, PhD, Postdoctoral Fellow Mentor,
Associate Professor, Neuroscience Dept, Kent State University

2006-2007
Current Position: Josh Friedman, PhD, Postdoctoral Fellow Mentor.
Medical Liaison, Immunology, Roche Pharmaceuticals

2007-2008
Current Position: Isaac Bernstein-Hanley, PhD, Postdoctoral Fellow Mentor,
Harvard School of Medicine, Research Liaison

2005-2008
Sarah Kennedy, PhD advisor/Postdoctoral Fellow Mentor.



Current Position: Medical Science Liaison, Immunology, UCB Pharmaceuticals

2005-2014 Ben Greenwood, Postdoctoral Fellow Mentor

Current Position: Assistant Professor, Department of Psychology, University of Colorado at Denver

2011-2013 Peter Clark, PhD, Postdoctoral Mentor

Current Position: Assistant Professor, Iowa State University

2013-2014 Lida Beninson, Postdoctoral Mentor

Current Position: National Academy of Sciences, Program Officer, Washington, DC.

2016-2018 Aggie Mika, Postdoctoral Mentor

Current Position: Medical Associate, Health Care Consultancy Group, NY, NY.

Postdoctoral Level Trainees: Current

2018-present Heidi Grabenstatter, Postdoc/Research Associate Advisor

2013-present Robert Thompson, Postdoctoral advisor

Junior Faculty Supervised: Past and Present

2010-present Monique LeBourgeois, PhD-Assistant Professor, IPHY

2004-present Marissa Ehringer, PhD-Associate Professor, IPHY & The Institute of Behavioral Genetics

2003-present Kenneth Wright, PhD-Associate Professor, IPHY & The Center for Neuroscience

Undergraduate Student Researchers Supervised: Past and Present

1998 Karianne Higgins, "Tissue catecholamines", Hughes Undergraduate Research Assistant Program (URAP)

1998 Ted Leem, "Bacterial inflammation", Honor's student

1999 Mary Nickerson, "Brain *c-fos* activity", Undergraduate Research Opportunity Program (UROP)

1999 Jason McCarl, "Total immunoglobulin", UROP

2000 Kate Robinson, "Stress and catecholamines", Independent study

2000 Kristine Thompson, "Celiac ganglion *cfos*", UROP

2000 Deric McIntosh, "Autonomic brain nuclei and *cfos*", UROP

2001 Heather Crump, "Stress and inflammation", UROP

2001 Silvie Kilworth, "Stress and innate immunity", Independent study

2001 Danielle Frey, "Cytokines and aging", Independent study

2001 Julianna West, "Cell Localization of Intracellular HSP", UROP

2001 Alexander Tran, "Splenic Sympathetic Content", URAP

2001 Stephanie Cho, "Extracellular HSP and inflammation", URAP

2001 Lisa Umphrey, "Exercise and brain *cfos*", URAP

2001 Teresa Foley, "nIgM and Exercise", URAP

2001 Deric McIntosh, "Neural basis of frustration", Independent study

2002-2003 Daniel Burhans, "Exercise and BNST", UROP, Work study

2002-2003 Melissa Hippley, "nIgM and Exercise", Independent study/URAP



2002-2003 Leah Brooks, "Neurochemistry of exercise", Independent study
2002 Karen Tal Oren, "Exercise and aging", Independent study
2002 Probin Shrestha, Volunteer medical aid - Kanti Children's Hospital Nepal, Independent study
2002 Lindsay Levkoff, "Exercise and nlgM", URAP
2002 Peter Bekker, "Aging and the antibody response", Volunteer
2002 Heather Crump, "Brain responses to bacteria and prior stress", UROP
2003 Brittany Shock, "Stress and splenic NE", URAP
2003 Katherine Hooley, "E. coli and brain IL1", URAP
2003 Craig Sharkey, "Stress and bacterial inflammation", URAP
2003 Carla Amat, "5HT1A and exercise", Independent study
2003 Lisa Malloy, "SERT and stress", Independent study
2004 James Lish, "BK vascular leaking and Hsp72", Independent study
2004 Jeff Kimes, "Hsp72 in brain and spleen", Independent study
2004 Ashley Eyre, "Stress and brain Hsp72", Independent study
2005 Garth Huberty, "EAE and neuroinflammatory pain", Independent study
2005 Robert Thompson, "Neural mechanism of the protective effects of exercise on stress-induced affective dysregulation", Independent study
2005-2006 Paul Strong, UROP, Independent study
2005-2007 Kristen Hetzler, "Heat shock proteins and stress", Independent study
2005-2007 Hugo (Trey) Hanson, "IL1 and the brain", Work study
2006 Valerie Cortez, SMART student, "NE and brain IL1"
2006-2007 Sarah Naguse, UROP
2006 Delsa Phillips, Independent study sponsor for Global Service Corp
2006-2008 Janelle Posey, "Brain Hsps", NIMH minority undergraduate trainee
2008 Lydia Urrutia, "Brain and 5HT", UROP
2006-2009 Sam Bowers, "Bacteria, brain and stress", High School Student Worker
2008-2009 Bradley Frazier, "Stress, 5HT and behavior", UROP
2008-2009 Brianne Loughridge, "Stress, 5HT and behavior", UROP
2008-2009 Tony Le, "Exercise and Motivation", Independent study
2008-2009 Katharine Strelitz, "Stress, 5HT and behavior", Independent study
2008-2009 Julia Rennick, "Stress and vascular cytokines", Independent study
2009-2011 Arman Serebrakian, "Stress & Adipose", Independent study
2009-2011 Danielle Crevling, HHMI, Independent study, "Stress, 5HT and behavior"
2009-2011 Justin Hellwinkel, "Stress, 5HT and behavior", Independent study
2010 Sierra Wohlman, "Stress and immunity", Independent study
2010-2011 Wendy Craig, "Stress and cardiovascular adaptations", Independent study
2010-2012 Katie Spence, "Stress, 5HT and behavior", Independent study
2010-2012 Lucas Macaffey, "Stress and Immunity", Independent study, UROP
2010-2012 Kate Tannura, "Stress and immunity" Independent study, UROP
2010-2012 Noaura Sadaoui, Work study, NIH HHMI, "Gene array analyses of DRN"
2010-2012 Stewart Cox, Independent study
2011 Phillip Adams, "Gene array analyses of DRN", Work study
2011 Charlie Bowers, High School Student Worker
2011 Leslie Blacksheer, "Stress, fat and cytokines", Volunteer
2011-present Jonathan Herra, "Stress, fat and cytokines", Independent study
2011-2012 Jodie Rigali, "Stress, 5HT and behavior", Independent study
2011-2012 Michael Murphy, "Hsp72 and releasing signals", Independent



study, BURST applicant
2011-2012 Abigail Hills, Independent study
2011 Brittany Sak, Internship
2011 Taylor Schmidt, Internship
2012-2014 Parsa Ghasem Independent study, Honor's Thesis (HHMI awardee)
2012-2014 Samantha Engel Independent study (Honor's student)
2013-2014 Courtney Bouchet, Independent study, HHMI applicant, Honor's Thesis
2013-2014 Roxie Christ, Independent study (UROP awardee)
2013-2014 Michelle Keag, Independent study (HHMI fellow)
2013-2014 Tyler Wieman, Independent study (BURST awardee)
2013-2014 Erika Sisneros (HHMI fellow)
2013-2014 Haley Manchester (BURST awardee)
2013-2014 Preston Bunker (HHMI awardee)
2013-2014 Sara McConnell (UROP awardee)
2013-2014 Tyler Woodworth (UROP, Independent Study)
2014 James Needle (RA)
2014 Nicco Baumann (Independent Study)
2013-2016 Kristina Hulen (HHMI awardee RA)
2013-2015 Donald Borchert (HHMI fellow, Independent Study)
2013-2016 Nicole Rumian (Independent Study, HHMI Awardee)
2014-2015 Mira Guha (Monarch High School, Science Research Seminar Program)
2014-2017 Alex Martinez (RA)
2014-2016 Michelle Gaffney (BURST Awardee & HHMI Awardee)
2014-2016 Rachel Roller (BURST Awardee & HHMI Awardee, Honors Awardee)
2015-2017 Kevin O'Connor (BUST Awardee)
2016-2017 Monica Patten (BUST Awardee)
2016-2017 Shelby Hopkins (BURST Awardee, BSI Awardee, RA)
2016-present Brooke Bower (BSI Awardee, Honors Awardee)
2016-present Leah Ramey (BSI Awardee)
2016-present Tel Kelley (Work Study, BSI Awardee)
2017-present Trey Jouard (Independent Study, Honors)