Heidi Elizabeth Walpole Day

Professional Address

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Education

1991-1994 *Ph.D., University of Cambridge, U.K. (Neuroscience/Pharmacology)*
Parke Davis Neuroscience Research Centre. Thesis Advisor: John Hughes, Ph.D., F.R.S.
Thesis title: "Effect of Modulating Cholecystokinin Levels on Gene Expression in the Rodent Brain".
Examiners: Dr. Graham J. Dockray, Univ. of Liverpool, U.K.; Dr. Joe Herbert, Univ. of Cambridge.

1990-1991 *M. Phil., University of Cambridge, U.K. (Neuroscience/Pharmacology)*
Parke Davis Neuroscience Research Centre. Advisor: John Hughes, Ph.D., F.R.S.

1986-1990 *B.Sc. (Hons), Pharmacology, University of Bath, U.K.*

Employment

2022 - *Teaching Professor, Psychology & Neuroscience Dept. University of Colorado Boulder*

2014 – 2021 *Senior Instructor, Psychology & Neuroscience Dept. University of Colorado Boulder*

2012 – 2014 *Lecturer, Psychology & Neuroscience Dept. University of Colorado Boulder*

2013 –2014 *Senior Research Associate; Dr. Susan Patterson's lab; Psych & Neurosci Dept. CU Boulder*
Role of BDNF in a model of aging and infection

2010 –2014 *Research Associate in Dr. Monika Fleshner's laboratory, Integrative Physiology Dept. CU Boulder*
Neurobiology of the stress resistant brain – effect of diet and exercise on the brain's stress responses

2005 – 2013 *Assistant Research Professor, Psychology & Neuroscience Dept.; CU Boulder*
1) Role of the central extended amygdala in stress
2) Effect of voluntary exercise on stress responses
3) Sensitization and habituation to stress
4) Sex differences in stress responses

1999 – 2005 *Research Associate in Dr. Serge Campeau's laboratory, Psychology Dept. and Center for Neuroscience, University of Colorado at Boulder*
Defining neural circuitry relevant to psychological stress.

1994 –1999 *Post-doctoral Research Fellow, Mental Health Research Institute, University of Michigan, Ann Arbor.*
Advisor: Professor Huda Akil:
Stress-related neural circuitry, with emphasis on immune challenge, central extended amygdala and adrenergic receptors.

1988–1989 *Parke-Davis Neuroscience Research Centre, Cambridge, U.K*
Industrial placement year as part of undergraduate course.
Projects: Screening of novel compounds in behavioral tests of analgesia, anxiety and feeding

Teaching

All teaching has been through the University of Colorado Boulder

Classroom Teaching

NRSC 1020: Exploring the Neuroscience Major fall 2024, 2025 80, 175 students

This new, 1-credit course aims to familiarize students to the neuroscience major at CU Boulder, and help students develop key skills needed for academic success.

NRSC 2200: Lab Techniques in Neuroscience 2014 – present up to 20 students/section

I developed this course spring 2014 and first taught it fall 2014. Until spring 2025 I taught 2 sections per semester both spring and fall, and typically supervise TAs teaching 2 additional sections per semester. Sections are capped at 18-20 students/section.

This stand-alone laboratory course is a required class for neuroscience majors, and consists of two, ~2-hour labs per week. Students watch a lecture and overview of the practical work before class. A typical lab consists of a review lecture and then a practical portion. The first half of the course covers the principles of experimental design, the design of a class experiment to determine potential gene expression changes in cockroach ventral nerve cord by quantitative polymerase chain reaction (qPCR), and the written report of the class experiment in the style of a Journal of Neuroscience manuscript. The second half of the course focuses on neuroanatomy on a gross level (dissection of sheep brains and visualization of human brain models) and microscopic level (cresyl violet staining and immunohistochemistry in rat brains).

NRSC 4062: The Neurobiology of Stress 2013 - present 40-50 students/section

I developed this course spring 2013. Since 2018 I have taught this class fall and summer semesters.

This is an upper division core class for neuroscience majors. The course covers the fundamentals of stress responses; interactions with other systems and responses of the body (pain, immune, gut, learning and memory) and vulnerability versus resistance to the effects of stressor exposure (development; habituation, control, exercise).

NRSC 4132: Neuropharmacology 2018 - present 45-65 students/section

This is an upper division core class for neuroscience majors. I started to teach this class spring 2018. The class covers fundamental aspects of pharmacology (eg pharmacokinetics, pharmacodynamics), the neurochemistry and functional relevance of endogenous neurotransmitter systems and their interaction with exogenous drugs, and the neuropharmacology of neural systems and disorders, including pain and addiction.

While I referred to previous iterations of the course for a guide for content usually covered, I developed most of the class material independently.

PSYC 2012: Introduction to Biopsychology 2012 - 2013 ~120 students/section

This was a mandatory course for psychology majors, that introduced students to the brain, and the biological bases of learning, motivation, emotion, sensory processes and perception, movement, and complex behaviors.

PSYC 4092: Hormones and Behavior spring 2001 ~40 students

This course provided students with an introduction to neuroendocrinology with a focus on the interaction between hormones and brain function.

Mentoring and Thesis Committees

Undergraduate Mentoring

Tyler Scholl	UROP program August 2011 – May 2012
Monro Obenauer	Broomfield High School Science Fair Project Sep 2011 – Feb 2012
Adriana Santos	SMART program June – August 2011
Tiffany Gray	SMART program June – August 2010
Marissa Fountain	SMART program: June – August 2008
Sarah Moreland	UROP research assistant program September 2007 – 2009 Honors thesis advisor: "The relationship between dopamine and corticotropin releasing factor in the central extended amygdala" (magna cum laude)
Tamara Hall	SMART program: June – August 2007
Conrad Martin	June – August 2006
Lauren Neher	BURST program: June – August 2006
Laura Eurich	Science Research Seminar, Boulder Valley School District: Sept - Dec 2005
Lauren Herlihy	BURST program: Sept. 2005 to May 2006
Kenghana Munroe	SMART program: June – August 2005
Scott Nebel	URAP/UROP programs: 2002 – 2003

Honors Thesis Committees

Danya Al Nazal	Spring 2025 (NRSC; additional member)
Kevin Ember	Spring 2025 (MCDB; outside member)
Jennifer Lawrence	Spring 2025 (NRSC; additional member)
Ben Witter	Spring 2025 (PSYC; additional member)
Hannah Van Meveren	Spring 2024 (CHEM; outside member)
G Kumar	Spring 2023 (NRSC; additional member)
Leshia Snively	Spring 2023 (NRSC; additional member)
Ethan Rowe	Spring 2022 (NRSC; Honors Council representative)
Anushka Thummalapenta	Spring 2022 (NRSC; Honors Council representative)
Anna McTigue	Spring 2022 (NRSC; Honors Council representative)
Lauren Immink	Spring 2022 (NRSC; Honors Council representative)
Sharee Dandridge	Spring 2022 (NRSC; Honors Council representative)
Cristina Lau	Spring 2022 (NRSC; additional member)
Amalia Luthens	Spring 2022 (NRSC; additional member)
Will Stritzel	Spring 2021 (NRSC; additional member)
Sean Pierce	Spring 2021 (IPHY; outside member)
Andrew (Kyo) Lee	Spring 2021 (NRSC; additional member
Moriah Major	Fall 2020 (NRSC; Honors Council representative)
Julia Schmidt	Fall 2020 (NRSC; Honors Council representative)
Erin Phares	Fall 2020 (PSYC; Honors Council representative)
Chloe Tucker	Spring 2020 (PSYC; Honors Council representative)
Sandra Appiah	Spring 2020 (NRSC; Honors Council representative)
Arianna Ardehali	Spring 2020 (PSYC; Honors Council representative)
Katelynn Fegan	Spring 2020 (NRSC; Honors Council representative)
Terrie Mankovich	Spring 2020 (PSYC; Honors Council representative)
Zach Mayer	Spring 2020 (NRSC; Honors Council representative)
Brandon Smith	Spring 2020 (NRSC; Honors Council representative)
Fatima Tensun	Spring 2020 (PSYC; Honors Council representative)
Logan Collins	Fall 2019 (NRSC; Honors Council representative)
Benji Morris	Fall 2019 (NRSC; Honors Council representative)

Nick Giradi	Fall 2019 (NRSC; Honors Council representative)
Madison Clements	Fall 2019 (NRSC; Honors Council representative)
Kylia Ahuna	Spring 2019 (NRSC; Honors Council representative)
Taylor Crist	Spring 2019 (NRSC; Honors Council representative)
Renee Dreher	Spring 2019 (NRSC; Honors Council representative)
Eric Mitten	Spring 2019 (NRSC; Honors Council representative)
Max Povejsil	Spring 2019 (NRSC; Honors Council representative)
Nicholas Brennan	Spring 2019 (NRSC; Honors Council representative)
Sam Walisundara	Spring 2019 (PSYC; Honors Council representative)
Ashleigh Van Dussen	Spring 2019 (MCDB; outside member)
Natalie Dagan	Spring 2019 (English; outside member)
Alice (Neely) Droeger	Fall 2018 (NRSC; Honors Council representative)
Evann Mitchell	Fall 2018 (NRSC; Honors Council representative)
Brooke Bower	Spring 2018 (IPHY; outside member)
Erin Krahn	Spring 2018 (PSYC; Honors Council representative)
Gustavo Ugueto-Rey	Spring 2018 (PSYC; Honors Council representative)
Laurel Todd	Spring 2018 (NRSC; Honors Council representative)
Luke Millisor	Spring 2018 (NRSC; Honors Council representative)
Maria Navarro	Spring 2018 (NRSC; Honors Council representative)
Rebecca Helmuth	Spring 2018 (NRSC; Honors Council representative)
Renata Daniels	Spring 2018 (NRSC; Honors Council representative)
Alexandra Teague	Spring 2018 (NRSC; Honors Council representative)
Chiara Neilson	Spring 2018 (PSYC; Honors Council representative)
Elizabeth Zambrano Garza	Spring 2018 (PSYC; Honors Council representative)
Emma Moon	Spring 2018 (PSYC; Honors Council representative)
Emily Bateman	Fall 2017 (NRSC; Honors Council representative)
Omar Hildago	Fall 2017 (PSYC; Honors Council representative)
Isabella Fallon	Spring 2017 (NRSC; Honors Council representative)
Emily Lane	Spring 2017 (NRSC; Honors Council representative)
Jeanelle France	Spring 2017 (NRSC; Honors Council representative)
Joel Ayers	Spring 2017 (NRSC; Honors Council representative)
Jonah Moss	Spring 2017 (NRSC; Honors Council representative)
Russell (James) Ravenel	Spring 2017 (NRSC; Honors Council representative)
Shaelyn Silverman	Spring 2017 (MCDB; outside member)
Kathryn Rhoades	Fall 2016 (NRSC; Honors Council representative)
Deyanira Enriquez	Fall 2016 (PSYC; Honors Council representative)
Emily Coyle	Fall 2016 (PSYC; Honors Council representative)
Maryam Amini	Spring 2016 (MCDB; outside member)
Solana Archuleta	Spring 2016 (NRSC; Honors Council representative)
Logan (John) Brock	Spring 2016 (NRSC; Honors Council representative)
Daniel Kusko	Spring 2016 (PSYC; Honors Council representative)
Jessica Smith	Spring 2016 (NRSC; Honors Council representative)
Blair Swearingen	Spring 2016 (NRSC; Honors Council representative)
Aran Kagen	Spring 2015 (PSYC; Honors Council representative)
Ila Goldanloo	Spring 2015 (PSYC; Honors Council representative)
Noreen Mian	Spring 2015 (PSYC; Honors Council representative)
Samantha Engel	Spring 2014 (IPHY; outside member)
Sarah Moreland	Fall 2009 (MCDB; mentor)
Tara Nyhuis	Spring 2007 (PSYC; additional member)

Graduate Thesis Committees

Jessica Babb	(PSYC)	(Co-mentor) 2nd year paper March 2009; Comprehensive Exam: Dec. 2011; PhD Defense: April 2013
Tara Nyhuis	(PSYC)	2nd year paper: April 2010, Comprehensive Exam Dec. 2011; PhD Defense: April 2013
Brianne Loughridge	(IPHY)	Masters Defense: April 2012
Krista Rogers	(PSYC)	2nd year paper: Feb. 2009; Comprehensive Exam Dec. 2011; Ph.D Defense Aug. 2012
Ryan Newsom	(PSYC)	2nd year paper: October 2010
Sarah Sasse	(PSYC)	Comprehensive Exam: May 2008; Ph.D Defense: July 2009
Teresa Foley	(IPHY)	Comprehensive Exam: April 2007; Ph.D. Defense: April 2009
Marc Weinberg	(PSYC)	Comprehensive Exam: Dec. 2007; Ph.D. Defense: Nov. 2008

Graduate Independent Study

Helen Strnad	(NRSC)	Developing Student Concept Guide/Textbook for NRSC 2200: Spring 2020

Professional Development

Supporting Student Resiliency	Aug 2024
Just & Equitable Teaching (JET) Micro-credential Program Link to Badge	2021-2022
Center for Inclusion and Social Change – UndocuAlly Training	Nov 2021
ASSETT – Summer Course Design Workshop	June 2020
FTEP – Flipping the Class for the Skeptic (David Brown)	Dec 2019
TRESTLE Scholars - Assessment Group	Jan-Apr 2019
FTEP – Showcasing student learning and engagement: ePortfolios as a metacognitive high impact…	Oct 2018
FTEP – Preparing a Teaching Portfolio for Review and Tenure	Feb 2018
ASSETT – Critical Thinking Special Interest Group	Feb 2017
ASSETT – Faculty Showcase – Using Classroom Data	Nov 2016
FTEP – Summer Assessment Institute Achieving Course Goals and Gathering Evidence about Student Learning	May 2016
ASSETT – 4th Annual Teaching with Technology Symposium	Apr 2016
ASSETT – Clicker Alternatives for Generating in Class Discussions	Jan 2016
OIT – Basics of Universal Design and Accessibility in Practice	Jan 2016
OIT – iClicker Focus Group	Apr 2015
FTEP – Leading Class Discussions	Feb 2015
Learning Assistant Program – 6th International Colorado Learning Assistant Workshop	Nov 2014
Critical Thinking Assessment Test (CAT) Workshop	Nov 2014
FTEP – Teaching in a Nutshell	Sep 2014
FTEP – Effective Use of Clickers for Student Engagement and Learning	Aug 2014
FTEP – What do you want them to learn today? Writing Learning Goals to Drive Instruction…	Nov 2013
FTEP – No Deer in the Headlights or Prosy Bores: Teach an Effective and Fun First Day of Class	Aug 2013

Teaching Awards

Boulder Faculty Assembly Excellence Award in Teaching and Pedagogy	2020
Teaching Professor of Distinction	2019
Psychology & Neuroscience Department Faculty Teaching Award	2016

Scholarly Work in Teaching

FTEP – Making Teaching and Learning Visible: Fall 2016 to Spring 2017

The portfolios aim to help other faculty learn about pedagogical practices used by other faculty, so they can adapt them for their own courses. My portfolio described strategies I have used to help students think critically about data presented in journal articles.

Service

Psychology & Neuroscience Department, CU Boulder

Current

Director of the Neuroscience Major	spring 2023 - present
- Eg Neuroscience BS degree approval; Supporting students in the major, implementing NRSC major Program Learning Outcomes assessment	
Committee for Undergraduate Education	fall 2018 – present
- Eg reviewing curriculum and pedagogical best practices	
Neuroscience Club: Faculty co-mentor	fall 2016 – present
- Student club promoting neuroscience on campus	
Nu Rho Psi: Faculty co-mentor for local chapter	fall 2021 – present
- National Honor Society in Neuroscience with focus on service	
Learning Assistant (LA) Program: Departmental co-coordinator	fall 2016 – present
- LAs are undergraduate students who support student learning through research-validated teaching and learning pedagogical techniques.	
Letters of Recommendation	ongoing
- I currently write letters for 40-50 people each year	

Completed

PUEC Chair – Reappointment of Teaching Professor (Stratford)	fall 2025
Peer Evaluation – Lisa Hiura NRSC 4092	spring 2025
Guest talk to Psychology Club/Tea Club combined meeting	spring 2025
PUEC Chair – Promotion to Teaching Professor (Stratford)	fall 2024
Search Committee Chair – Neuroscience Teaching Asst Prof (Stubblefield hire)	fall 2023
Committee for Undergraduate Neuroscience Education	fall 2014 – 2021
- Eg Updated neuroscience curriculum to include 2-semester Introduction to Neuroscience course sequence	
Psychology and Neuroscience Honors Council Representative	fall 2014 – spring 2022
- See Honors Thesis Committees (except sp/fa 2021)	
Muenzinger Undergraduate Learning Hub Development (with Dr. Natalie Smutzler)	2018 – 2021
- Proposed & designed student learning center (opened fall 2021)	
Muenzinger CURE lab renovation planning committee	summer 2019 – spring 2020
Faculty Mentoring (Dr. Jenn Stratford)	fall 2019 – spring 2020
Faculty mentoring (Dr. Lauren Chun)	fall 2021 – spring 2023
Peer review of teaching - David Allen; PSYC 2012	spring 2020
PUEC Teaching Professor (King)	fall 2019
PUEC Instructor reappointment (Stratford)	fall 2018
Peer review of teaching - David Allen; PSYC 2012	spring 2017
Peer review of teaching – Joe Berta; PSYC 2012	fall 2017
Muenzinger Lobby renovation: proposal, planning, contributed to oversight	2015 – 2017
Muenzinger E048 classroom laboratory renovation planning, contributed to oversight	2014 – 2016

CU Boulder

OFA Workshop - Teaching & Clinical Faculty Development
- Panel member – Capitalizing on your FRPA and merit review — Dec 2024

ACUMent (Across CU Mentoring Center): mentor teaching faculty
- mentor to Dr. JulieMarie Shepherd Macklin (Presidents Leadership Class), Dr. Azadeh Bolhari (EVEN) — AY 25-26
- mentor to Dr. Meghan McCarroll (MENV) — AY 24-25
- mentor to Dr. Warren Sconiers (EBIO), Emily Greenwood (ENVD) — AY 23-24
- mentor to Kate Bashore (THTR), Dr. David Quigley (CSCI) — AY 22-23

Natural Sciences Divisional Council member — Sp22 - Sp24
Natural Sciences Dean of Division Search Committee member — AY 22-23
OFA Workshop - Teaching & Clinical Faculty Development (Navigating the Reappointment Process) — Apr 2023
CTL Focus Group for microcredential course (Student Well-Being in the Classroom) — Sp 2023
Teaching Professor of Distinction A&S level review committee member or chair — Sp 21,22
Faculty Panel for Veteran Bridge Program — Jan 2020
FTEP – Making Teaching and Learning Visible Guest Speaker — Nov 2019
Southern Ute EXPLORE CO@CU – Neuroscience Lab Experience — Jun 2019
FTEP – Interpreting Graphical Data workshop — Feb 2019
FTEP – Making Teaching and Learning Visible (alumna presentation) — Dec 2018
FTEP – Summer Institute (presentation, as part of Dr. Daniel Bernstein's workshop) — Jun 2018
Admitted Students day – Sample lectures — Apr 2018/19
FTEP – Interpreting Graphical Data workshop — Apr 2018
FTEP – Collecting and Reporting Evidence of Student Learning workshop (with Dr. Samantha Strife) — Sep 2017

Outside CU Boulder

External reviewer for promotion to Full Professor of Teaching, at an AAU Institution — Oct 2024

Ad hoc reviewer for the following journals (1994 – 2013):
Behavioral Brain Research, Behavioral Neuroscience, Biological Psychiatry, Brain Research, Journal of Comparative Neurology, Journal of Neuroendocrinology, Neuropsychopharmacology, Neuroscience, Neuroscience Letters, Progress in Neuro-Psychopharmacology & Biological Psychiatry, Psychoneuroendocrinology.

VA merit review committee (Fall 2005, Spring 2006)
Ad hoc reviewer for the National Science Foundation (2004)

Community Services and Outreach

American Heart Association STEM Goes Red for women – Sep 2022 – Speed mentor session for high school students
"Brain Bumble" – March 2019 – High school student outreach activity with CU Boulder Neuroscience Club
Brain Awareness Week Activities – March 2018 (with CU Boulder Neuroscience Club)
Seminar for BVSD science teachers – June 2016 (CINC; with Dr. Nicole Speer)
BVSD High School Science Fair Judge (Yearly, March 2006 - 2009)
BVSD Elementary School Science Fair Judge (Yearly, April 2006 - 2012)

Service Awards

Psychology & Neuroscience Department Faculty Service Award — 2019

Research

Peer-Reviewed Published Papers

1. Newsom, R, Garcia, R, Stafford, J, Osterlund, C, O'Neill, C, **Day, HE**, Campeau, S (2020) Remote CB1 receptor antagonist administration reveals multiple sites of tonic and phasic endocannabinoid neuroendocrine regulation Psychoneuroendocrinology 113:104549
2. Lieb, MW, Weidner, M, Arnold, MR, Loupy, KM, Nguyen, KT, Hassell, JE Jr, Schnabel, KS, Kern, R, **Day, HEW**, Lesch, KP, Waider, J, Lowry, CA (2019) Effects of maternal separation on serotonergic systems in the dorsal and median raphe of adult male Tph2-deficient mice Behav Brain Res 373:112086
3. Loupy, KM, Arnold, MR, Hassell Jr, JE, Lieb MW, Milton, LN, Cler, KE, Fox, JH, Siebler, PH, Schmidt, D, Noronha SISR, **Day, HEW**, Lowry, CA (2019) Evidence that preimmunization with a heat-killed preparation of *Mycobacterium vaccae* reduces corticotropin-releasing hormone mRNA expression in the extended amygdala in a fear-potentiated startle paradigm Brain Behav Immun 77:127-140
4. Fox, JH, Hassell, JE, Siebler, PH, Arnold, MR, Lamb, AK, Smith, DG, **Day, HE,** Smith, TM, Simmerman, EM, Outzen, AA, Holmes, KS, Brazell, CJ, Lowry, CA (2017) Preimmunization with a heat-killed preparation of Mycobacterium vaccae enhances fear extinction in the fear-potentiated startle paradigm Brain Behav Immun 66:70-84
5. Mika, A, **Day, HE,** Martinez, A, Rumian, NL, Greenwood, BN, Chichlowski, M, Berg, BM, Fleshner, M (2017) Early life diets with prebiotics and bioactive milk fractions attenuate the impact of stress on learned helplessness behaviors and alter gene expression within neural circuits important for stress resistance Eur J Neurosci 45: 342-357
6. Nyhuis, TJ, Masini, CV, Taufer, KL, **Day, HE**, Campeau, S (2016) Reversible inactivation of rostral nucleus raphe pallidus attenuates acute autonomic responses but not their habituation to repeated audiogenic stress in rats Stress 19:248-259
7. Nyhuis, TJ, Masini, CV, **Day, HE,** Campeau, S (2016) Evidence for the integration of stress-related signals by the rostral posterior hypothalamic nucleus in the regulation of acute and repeated stress-evoked hypothalamo-pituitary-adrenal response in rat J Neurosci 36:795-805
8. Mika, A, Bouchet, C, Bunker, P, Hellwinkel, JE, Spence, KG, **Day, HE,** Campeau, S, Fleshner, F and Greenwood, BN (2015) 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 125:224-235
9. Clark PJ, Ghasem PR, Mika A, **Day HE**, Herrera JJ, Greenwood BN and Fleshner M (2014) 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 272: 252-263
10. Babb, JA, Masini, CV, **Day, HE** and Campeau S (2014) Habituation of hypothalamic-pituitary-adrenocortical axis hormones to repeated homotypic stress and subsequent heterotypic stressor exposure in male and female rats Stress 17: 224-234
11. Sasse SK, Nyhuis TJ, Masini CV, **Day HE** and Campeau S (2013) Central gene expression changes associated with enhanced neuroendocrine and autonomic response habituation to repeated noise stress after voluntary wheel running in rats Front Physiol 4: 341
12. Babb, JA, Masini, CV, **Day, HE** and Campeau, S (2013) Stressor specific effects of sex on HPA axis hormones and activation of stress-related neurocircuitry Stress 16: 664-677
13. Loughridge, AB, Greenwood, BN, **Day, HE,** McQueen, MB and Fleshner, M (2013) Microarray analyses reveal novel targets of exercise-induced stress resistance in the dorsal raphe nucleus Frontiers in Behavioral Neuroscience 7:37 doi: 103389/fnbeh201300037
14. Babb, JA, Masini, CV, **Day, HEW** and Campeau, S (2013) Sex differences in activated CRF neurons within stress-related neurocircuitry and HPA axis hormones following restraint in rats Neuroscience 234:40-52

15. Loram, LC, Taylor, FR, Sholar, P, Wieseler, J, Babb, JA, Strand, KA, Berkelhammer, D, **Day, HEW**, Maier, SF and Watkins, LR (2012) Sex and estradiol influence glial pro-inflammatory responses to lipopolysaccharide in rats Psychoneuroendocrinology 37: 1688-1699
16. Greenwood BN, Strong PV, Loughridge AB, **Day HEW**, Clark PJ, et al (2012) 5-HT2C Receptors in the Basolateral Amygdala and Dorsal Striatum Are a Novel Target for the Anxiolytic and Antidepressant Effects of Exercise PLoS ONE 7(9): e46118 doi:101371/journalpone0046118
17. Masini, CV, Babb, JA, Nyhuis, TJ, **Day, HE** and Campeau, S (2012) Auditory cortex lesions do not disrupt habituation of HPA axis responses to repeated noise stress Brain Res 1443:18-26
18. Newsom, RJ, Osterlund, C, Masini, CV, **Day, HE**, Spencer, RL and Campeau, S (2012) Cannabinoid receptor type 1 antagonism significantly modulates basal and loud noise induced neural and HPA axis responses in male Sprague Dawley rats Neuroscience 204:64-73
19. Masini, CV, **Day, HE,** Gray, T, Crema, LM, Nyhuis, TJ, Babb, JA and Campeau, S (2012) Evidence for a lack of phasic inhibitory properties of habituated stressors on HPA axis responses in rats Physiol & Behavior 105:568-75
20. Barrientos, RM, Frank, MG, Crysdale, NY, Chapman, TR, Arhendsen, J, **Day, HEW,** Campeau, S, Watkins, LR, Patterson, SL and Maier, SF (2011) Little exercise, big effects: Reversing aging and infection-induced memory deficits, and underlying processes J Neurosci 31, 11578-11586
21. Masini, CV, Nyhuis, TJ, Sasse, SK, **Day HEW** and Campeau, S (2011) Effects of voluntary wheel running on heart rate, body temperature, and locomotor activity in response to acute and repeated stressor exposures in rats Stress 14, 324-334
22. Greenwood, BN, Foley, TE, Le, TV, Strong, PV, Loughridge, AB, **Day, HE** and Fleshner, M (2011) Long term voluntary wheel running is rewarding and produces plasticity in the mesolimbic reward pathway Behav Brain Res 217, 354-362
23. Nyhuis, TJ, Masini, CV, Sasse, SK, **Day, HEW** and Campeau, S (2010) Physical activity, but not environmental complexity, facilitates HPA axis response habituation to repeated audiogenic stress despite neurotrophin mRNA regulation in both conditions Brain Res 1362, 68-77
24. Nyhuis, TJ, Sasse, SK, Masini, CV, **Day, HEW** and Campeau, S (2010) Lack of contextual modulation of habituated neuroendocrine responses to repeated audiogenic stress Behav Neurosci 124, 810-820
25. Campeau, S, Nyhuis, TJ, Sasse, SK, Kryskow, EM, Herlihy, L, Masini, CV, Babb, JA, Greenwood, BN, Fleshner, M and **Day, HE** (2010) Hypothalamic pituitary adrenal axis responses to low intensity stressors are reduced following voluntary wheel running in rats *J Neuroendocrinol* 22, 872-888
26. Campeau, S, Nyhuis, TJ, Kryskow, EM, Masini, CV, Babb, JA, Sasse, SK, Greenwood, BN, Fleshner, M and **Day, HEW** (2010) Stress Rapidly Increases Alpha-1d Adrenergic Receptor mRNA in the Rat Dentate Gyrus *Brain Res* 1323, 109-118
27. Masini, CV, Garcia, RJ, Sasse, SK, Nyhuis, TJ, **Day, HE** and Campeau, S (2010) Accessory and main olfactory systems influences on predator odor-induced behavioral and endocrine stress responses in rats *Behav Brain Res* 207, 70-77
28. Masini, CV, Sasse, SK, Garcia, RJ, Nyhuis, TJ, **Day, HE** and Campeau, S (2009) Disruption of neuroendocrine stress responses to acute ferret odor by medial, but not central amygdala lesions in rats *Brain Res* 1288, 79-87
29. **Day, HE,** Masini, CV and Campeau, S (2009) Reversible inactivation of the auditory thalamus disrupts HPA axis habituation to repeated loud noise stress exposures *Brain Res*, 1276, 123-130
30. Weinberg MS, Bhatt, AP, Girotti, M, Masini, CV, **Day, HE**, Campeau, S, Spencer, RL (2009) Repeated ferret odor exposure induces different temporal patterns of same-stressor habituation and novel-stressor sensitization in both HPA-axis activity and forebrain c-fos expression in the rat *Endocrinology* 150, 749-761
31. **Day, HE**, Kryskow, EM, Nyhuis, TJ, Herlihy, L and Campeau, S (2008) Conditioned fear inhibits c-fos mRNA expression in the central extended amygdala *Brain Res* 1229, 137-146
32. Campeau, S, Nyhuis, TJ, Sasse, SK, **Day, HE** and Masini, CV (2008) Acute and chronic effects of ferret odor exposure in Sprague-Dawley rats *Neurosci Biobehav Rev* 32, 1277-1286
33. Sasse, SK, Greenwood, BN, Masini, CV, Nyhuis, TJ, Fleshner, M, **Day, HEW** and Campeau S (2008) Chronic voluntary wheel running facilitates corticosterone response habituation to repeated audiogenic stress exposures in male rats *Stress* 11, 425-437

34. **Day, HE,** Kryskow, EM, Watson, SJ, Akil, H and Campeau, S (2008) Regulation of hippocampal alpha-1d adrenergic receptor mRNA by corticosterone in adrenalectomized rats *Brain Res* 1218, 132-140
35. Masini, CV, **Day, HE** and Campeau, S (2008) Long-term habituation to repeated loud noise is impaired by relatively short inter-stressor intervals in rats *Behav Neurosci* 122, 210-223
36. Bland, ST, Tamblyn, JP, Barrientos, RM, Greenwood, BN, Watkins, LR, Campeau, S, **Day, HE** and Maier SF (2007) Expression of fibroblast growth factor-2 and brain derived neurotrophic factor mRNA in the medial prefrontal cortex and hippocampus after uncontrollable or controllable stress *Neuroscience* 144, 1219-1228
37. Foley, TE, Greenwood, BN, **Day, HEW**, Koch, LG, Britton, SL, Fleshner, M (2006) Elevated central monoamine receptor mRNA in rats bred for high endurance capacity: Implications for central fatigue *Behav Brain Res* 174, 132-142
38. Masini, CV, White, J, **Day, HEW** and Campeau, S (2006) Non-associative defensive responses of rats to ferret odor *Physiol Behav* 87, 72-81
39. Patz, M, **Day, HEW**, Burow, A and Campeau, S (2006) Modulation of the hypothalamo-pituitary-adrenocortical axis by caffeine *Psychoneuroendocrinology* 31, 493 - 500
40. Burow, AJ, **Day, HEW** and Campeau, S (2005) A detailed characterization of loud noise stress: Intensity analysis of hypothalamo-pituitary-adrenocortical axis and brain activation *Brain Res* 1062, 63-73
41. **Day, HEW**, Nebel, S, Sasse, SK and Campeau, S (2005) Inhibition of the central extended amygdala by loud noise and restraint stress *Eur J Neurosci* 21, 441-454
42. Greenwood, BN, Foley, TE, **Day, HEW**, Burhans, D, Brooks, L, Campeau, S and Fleshner, M (2005) Wheel running alters serotonin (5-HT) transporter, $5HT_{1A}$, $5HT_{1B}$ and α1b-adrenergic receptor mRNA in the rat raphe nuclei *Biol Psychiatry* 57, 559-568
43. **Day, HEW,** Masini, CV and Campeau S (2004) Pattern of brain c-fos mRNA induced by a component of fox odor, 2,5-dihydro-2,4,5-trimethylthiazoline (TMT), in rats, suggests both systemic and processive stress characteristics *Brain Res* 1025, 139-151
44. **Day, HEW**, Greenwood, BN, Hammack, SE, Watkins, LR, Fleshner, M, Maier, SF and Campeau, S (2004) Differential expression of 5HT-1A, α1b adrenergic, CRH-R1 and CRH-R2 receptor mRNA in serotonergic, gamma-aminobutyric acidergic and catecholaminergic cells of the rat dorsal raphe nucleus *J Comp Neurol* 474**,** 364-378
45. Ginsberg, AB, Campeau, S, **Day, HEW**, Spencer, RL (2003) Acute glucocorticoid pretreatment suppresses stress-induced hypothalamic-pituitary-adrenal axis hormone secretion and expression of corticotropin-releasing hormone hnRNA but does not affect c-fos mRNA or fos protein expression in the paraventricular nucleus of the hypothalamus *J Neuroendocrinol* **15**, 1075-83
46. Ostrander, MM, Badiani, A, **Day, HEW,** Norton, CS, Watson, SJ, Akil, H and Robinson, TE (2003) Environmental context and drug history modulate amphetamine-induced c-fos mRNA expression in the basal ganglia, central extended amygdala and associated limbic forebrain *Neuroscience* 120, 551 - 571
47. Greenwood, BN, Foley, TE, **Day, HEW,** Campisi, J, Hammock, SH, Campeau, S, Maier, SF, Fleshner, M (2003) Freewheel running prevents learned helplessness/behavioral depression: Role of dorsal raphe serotonergic neurons *J Neurosci* **23**, 2889-2898
48. Greenwood, BN, Kennedy, S, Smith, TP, Campeau, S, **Day, HEW** and Fleshner M (2003) Voluntary freewheel running selectively modulates catecholamine content in peripheral tissue and c-fos expression in the central sympathetic circuit following exposure to uncontrollable stress in rats *Neuroscience*, 120, 269 – 281
49. **Day, HEW,** Vittoz, NM, Oates, MM, Badiani, A, Watson, SJ, Robinson, TE and Akil, H (2002) A 6-hydroxydopamine lesion of the mesostriatal dopamine system decreases the expression of corticotropin releasing hormone and neurotensin mRNAs in the amygdala and bed nucleus of the stria terminalis *Brain Res* 945, 151-159
50. **Day, HEW**, Badiani, A, Uslaner, JM, Oates, MM, Vittoz, NM, Robinson, TE, Watson, SJ and Akil, H (2001) Environmental novelty differentially affects c-fos mRNA expression induced by amphetamine or cocaine in subregions of the bed nucleus of the stria terminalis and amygdala *J Neurosci*, 21, 732 – 740
51. Uslaner, J, Badiani, A, **Day, HEW**, Watson, SJ, Akil, H and Robinson, TE (2001) Environmental context modulates the ability of cocaine and amphetamine to induce c-fos mRNA expression in the neocortex, caudate nucleus and nucleus accumbens *Brain Res*, 920, 106-116

52. Uslaner, J, Badiani, A, Norton, CS, **Day, HEW**, Watson, SJ, Akil, H and Robinson, TE (2001) Amphetamine and cocaine induce different patterns of c-fos mRNA expression in the striatum and subthalamic nucleus depending on environmental context *Eur J Neurosci*, **13**, 1977-1983
53. Lopez-Figueroa, MO, **Day, HEW**, Lee, S, Rivier,C, Akil,H and Watson, SJ (2000) Temporal and anatomical distribution of nitric oxide synthase mRNA expression and nitric oxide production during central nervous system inflammation *Brain Res* 852, 239-46
54. **Day, HEW**, Campeau, S, Watson SJ and Akil, H Expression of α_{1b} adrenoceptor mRNA in CRH containing cells of the rat hypothalamus, and its regulation by corticosterone (1999) *J Neurosci* 19, 10098-10106
55. Badiani, A, Oates, MM, **Day, HEW,** Watson, SJ, Akil, H and Robinson, TE (1999) Environmental modulation of amphetamine-induced c-*fos* expression in D1 versus D2 striatal neurons *Behav Brain Res*103, 203-209
56. **Day, HEW**, Curran, EJ, Watson SJ and Akil, H (1999) Distinct neurochemical populations in the rat central nucleus of the amygdala and bed nucleus of the stria terminalis: evidence for their selective activation by interleukin-1ß *J Comp Neurol* 413, 113-128
57. Bagnol, D, Lu, X-Y, Kaelin, CB, **Day, HEW**, Ollmann, M, Gantz, I, Akil, H, Barsh, GS and Watson, SJ (1999) Anatomy of an endogenous antagonist: relationship between agouti-related protein and proopiomelanocortin in brain *J Neurosci26RC*
58. **Day, HEW**, and Akil, H (1999) Evidence that cholecystokinin receptors are not involved in the hypothalamic-pituitary-adrenal response to intraperitoneal administration of interleukin-1ß *J Neuroendocrinol*, 11, 561-568
59. Badiani, A, Oates, MM, **Day, HEW,** Watson, SJ, Akil, H and Robinson, TE (1998) Amphetamine-induced behavior, dopamine release and c-fos mRNA expression: modulation by environmental novelty *J Neurosci*, 18, 10579-10593
60. Lopez-Figueroa, MO, **Day, HEW**, Akil, H, and Watson, SJ (1998) Nitric oxide in the stress axis *Histol Histopathol,* 13, 1243-1252
61. **Day, HEW**, Campeau, S, Watson SJ and Akil, H (1997) Distribution of alpha-1a, alpha-1b and alpha-1d adrenergic receptor mRNAs in the rat brain and spinal cord *J Chem Neuroanat* 13, 115-139
62. **Day, HEW** and Akil, H (1996) Differential pattern of c-*fos* mRNA in rat brain following central and systemic administration of interleukin-1-beta: Implications for mechanism of action *Neuroendocrinology* 63, 207-218
63. **Day, HEW**, McKnight, AT, Poat, JA & Hughes, J (1994) Evidence that cholecystokinin induces immediate early gene expression in the brainstem, hypothalamus and amygdala of the rat by a CCK_A receptor mechanism *Neuropharmacology*, 33, 719-727

Published Book Chapters

1. Fleshner, M**,** Kennedy, SL, Johnson, JD, **Day, HEW** and Greenwood, BN Exercise and Stress Resistance: Neural-Immune Mechanisms In *The Neuroimmunological Basis of Behavior and Mental Disorders,* Springer Publishing, New York, NY (2009) pp 87-107
2. Kollack-Walker, S, **Day HEW** and Akil, H (2000) Central stress neurocircuits In: Encyclopedia of Stress Ed G Fink, Academic Press, San Diego, *pp* 414 – 423 *(2nd Edition: 2007; pp 424 - 431)*
3. Campeau, S, **Day, HEW**, Helmreich, DL, Kollack-Walker, S, & Watson, SJ (1998) Principles of psychoneuroendocrinology In C Nemeroff (Ed), The Psychiatric Clinics of North America: Psychoneuroendocrinology, 212, pp 259-276 WB Saunders Co, Philadelphia

Completed Grant Awards

Principal Investigator: National Institute of Mental Health (NIMH): R03 MH082230
Phenotypic and Functional Determination of Central Extended Amygdala Cell Groups
The goal of this project was to develop a selective lesion of cells in the central amygdala that express corticotropin releasing factor, and to determine its effect on fear and anxiety-like behavior in rats
06-11-09 to 02-28-12; Direct Costs - $100,000

Principal Investigator: NARSAD – The Mental Health Research Association: Young Investigator Award
Exercise and Stress Reduction: Strategies to Determine Neural Mechanisms
The goal of this project was to investigate the effect of long-term voluntary exercise on responses to mild stress exposure
07/01/07 – 12/30/10; Direct costs - $60,000

Principal Investigator: National Institute of Mental Health (NIMH): R01 MH067988
The Role of the Central Amygdala and BST in Stress
The major goals of this project were to determine the mechanism whereby psychological stress inhibits cells of the central extended amygdala
01/01/05 – 12/31/09; Direct costs - $810,000

Co-Investigator (PI Serge Campeau): National Institute of Mental Health (NIMH): R01 MH077152
Habituation to Repeated Stress
The goal of this project was to determine the main circuit mediating habituation to repeated loud noise exposures using a variety of behavioral, neuroanatomical and functional techniques
12/01/07 – 11/30/13; Direct Costs: $1,125,000

Co-Investigator (PI Monika Fleshner): National Institute of Mental Health (NIMH): R01 MH68283-01A1
The Neurobiology of the Stress-Resistant Brain
This proposal aimed to test the hypothesis that the protective effect of physical activity on the development of learned helplessness behavior is due to modulation of the dorsal raphe nucleus serotonin response
03/01/04 – 02/28/09; Direct costs - $1,100,000

Co-Investigator (PI: Serge Campeau): National Institute of Mental Health (NIMH); R01 MH65327-01
Neural Basis of Processive Stress
06/01/02 – 05/31/07; Direct costs - $950,000

Principal Investigator: Gastrointestinal Peptide Research Center, University of Michigan: Pilot Feasibility Project: The Involvement of Cholecystokinin in the Stress Response to Interleukin-1-Beta: 1997-1998