

Curriculum Vitae

Ronald L. Cowan, M.D., Ph.D.

Department of Psychiatry and Behavioral Sciences
Vanderbilt University Medical Center
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Education

Undergraduate and Graduate Education

- **Christian Brothers College** [now Christian Brothers University] (Memphis, TN) **Bachelor of Science**, 8/1980-6/1984 (Biology)
- **University of Tennessee Health Science Center** (Memphis, TN) **Doctor of Philosophy**, 8/1984-12/1990 (Anatomy and Neurobiology), Neuroscience Graduate Program Thesis: “Synaptic Organization of Corticostriatal Neurons”
- **Cornell University Medical College** [now Weil Cornell University Medical College] (New York, NY) **Doctor of Medicine**, 8/1990-6/1994

Postgraduate Training

- **Research Associate** (Part Time), Cornell University Medical College. Department of Neurology and Neuroscience; New York, NY. (Mentor: Dr. Virginia M. Pickel) 7/1990-6/1994
- **Intern in Internal Medicine**, Massachusetts General Hospital/Harvard Medical School. Boston, MA. 7/1994-6/1995
- **Resident in General Adult Psychiatry**, McLean Hospital/Harvard Medical School. Belmont, MA. 7/1995-6/1998

Licensure and Certification

- **Limited License Registration in Medicine**, Commonwealth of Massachusetts (1994-1996)
- **Full License Registration in Medicine**, Commonwealth of Massachusetts (1996-2005)
- **Licensed Medical Doctor**, State of Tennessee (2001-present)
- **Board Certified in Psychiatry** (Diplomate), American Board of Psychiatry and Neurology (2000-present)

Academic Appointments

- **Graduate Teaching Assistant.** University of Tennessee, Memphis. Memphis, TN. 8/1985-12/1990
- **Clinical Fellow in Medicine.** Harvard Medical School. Boston, MA. 7/1994-6/1995
- **Clinical Fellow in Psychiatry.** Harvard Medical School. Boston, MA. 7/1995-6/1998
- **Instructor in Psychiatry.** Harvard Medical School. Boston, MA. 7/1998-11/2002
- **Research Associate, Psychiatry,** Harvard Medical School, Boston MA. 11/2002-10/2003
- **Assistant Professor, Department of Psychiatry,** (Primary), Vanderbilt University School of Medicine, Nashville, TN. 11/2002-12/2010
- **Assistant Professor, Department of Radiology & Radiological Sciences** (Secondary), Vanderbilt University School of Medicine, Nashville, TN. 11/2002-10/2014
- **Assistant Professor, Department of Psychology** (Secondary), College of Arts and Sciences, Vanderbilt University, Nashville TN. 12/2009-10/2011
- **Associate Professor, Department of Psychiatry,** (Primary), Vanderbilt University Medical School of Medicine, Nashville, TN. 01/2011-07/2014
- **Associate Professor, Department of Psychology** (Secondary), Vanderbilt University, Nashville, TN. 10/2011-9/2014
- **Professor, Department of Psychiatry and Behavioral Sciences** (formerly Department of Psychiatry) (Primary), Vanderbilt University Medical School of Medicine, Nashville, TN. 07/2014-present.
- **Professor, Department of Radiology & Radiological Sciences** (Secondary), Vanderbilt University Medical Center, Nashville, TN. 10/2014-present
- **Professor, Department of Psychology** (Secondary), Vanderbilt University, Nashville, TN. 9/2014-present

Academic Leadership Positions

- **Director, Psychiatric Neuroimaging Program,** Department of Psychiatry and Behavioral Sciences (formerly Department of Psychiatry), Vanderbilt University School of Medicine, Nashville TN. 05/2006-6/2017
- **Director, Third Year Clinical Clerkship in Psychiatry,** Vanderbilt University School of Medicine, Nashville, TN. 07/2011-6/2012
- **Co-Director—Brain, Behavior, and Movement Course,** First year medical student neuroscience course. Vanderbilt University School of Medicine, Nashville, TN. 07/2012-7/2014

- **Vice Chair for Education**, Department of Psychiatry and Behavioral Sciences (formerly Department of Psychiatry), Vanderbilt University School of Medicine, Nashville TN. 7/2014-6/2017
- **Director, Residency Training**. Department of Psychiatry and Behavioral Sciences (formerly Department of Psychiatry), Vanderbilt University School of Medicine, Nashville TN. 7/2014-present

Academic Affiliations

- **Faculty**, Vanderbilt University Institute for Imaging Sciences (VUIIS), Vanderbilt University. Nashville, TN. 01/2003-present
- **Investigator**, Center for Integrative and Cognitive Neuroscience (CICN), Vanderbilt University. Nashville, TN. 02/2003-present
- **Member**, Vanderbilt Kennedy Center for Research on Human Development, Vanderbilt University, Nashville, TN. 05/04-present
- **Faculty**, Vanderbilt Institute for Obesity and Metabolism (VIOM), Vanderbilt University Medical Center. 07/09-present
- **Member**, Vanderbilt Center for Addiction Research (VCAR), Vanderbilt University Medical Center. 7/2016-present

Hospital Appointments

- **Polysomnographic Technician and Research Assistant**. Sleep Disorders Center and Regional SIDS and Apnea Center, Baptist Memorial Hospital. Memphis, TN. 6/1982-5/1983
- **Registered Polysomnographic Technologist and Research Assistant**. Sleep Disorders Center and Regional SIDS and Apnea Center, Baptist Memorial Hospital. Memphis, TN. 6/1983-8/1984
- **Psychiatrist**. (Overnight/Weekends), Bayridge Hospital, Lynn, MA. 7/1996-7/2001
- **Medical Director, After Hours Program**. Bayridge Hospital, Lynn, MA. 10/1999-1/2000
- **Assistant Psychiatrist**. McLean Hospital, Belmont, MA. 7/1998-11/2002
- **Assistant Physiologist**. Brain Imaging Center and Behavioral Psychopharmacology Research Laboratory. McLean Hospital. Belmont, MA. 7/1998-11/2002
- **Director, Laboratory of Human Neurophysiology**. Brain Imaging Center, McLean Hospital, Belmont, MA. 10/2001-11/2002
- **Research Associate**, Brain Imaging Center, McLean Hospital, Belmont, MA. 11/2002-10/2003
- **Attending Psychiatrist, Consultation Liaison Service**, Vanderbilt University Hospital, Vanderbilt University Medical Center, Nashville, TN. 11/2002-07/2007, 07/2015-present

- **Attending Psychiatrist**, Vanderbilt Psychiatric Hospital, Vanderbilt University Medical Center, Nashville, TN. 11/2002-present

Professional Organizations

- Society for Neuroscience, Member. 1985-present
- Gay and Lesbian Medical Association, Member. 1992-2004
- American Psychiatric Association, Member 1993-2004; 2018-present
- Society for Biological Psychiatry, Member. 2000-present
- College on Problems of Drug Dependence (CPDD), Associate Member. 2004-2009
- College on Problems of Drug Dependence (CPDD), Member. 2009-present
- Obesity Society, Member. 2008-2009
- Society for the Study of Addiction. 2010-2013
- Association of Directors of Medical Student Education in Psychiatry (ADMSEP). 2012-2015
- Association of Academic Psychiatry (AAP). 2012-present
- American Association of Directors of Psychiatry Residency Training (AADPRT). 2014-present
- Tennessee Psychiatric Association. 2018-present

Professional Activities

Intramural Committees

- **Graduate Student Executive Council, Representative.** University of Tennessee, Center for Health Sciences, Memphis. 1985-1987
- **Health Services Advisory Committee**, University of Tennessee, Center for Health Sciences, Memphis. 1986-1989
- **Institutional Ethics Committee**, Resident Representative, McLean Hospital, Belmont, MA. 1995-1998
- **Clinical Care Subcommittee**, McLean Hospital, Belmont, MA. 1996
- **McLean Staff Associates Executive Committee**, McLean Hospital, Belmont, MA. 1997-1998
- **Scientific Advisor/Coordinator, Neuroscience Seminar Program**, McLean Hospital, Belmont, MA. 1999-2001
- **Chair, Brain Imaging Center Safety and Training Subcommittee**, McLean Hospital, Belmont, MA. 2001-2002
- **Institutional Review Board, Committee Member.** Vanderbilt University Medical Center, Nashville, TN. 2003-2007
- **Promotions Committee**, Vanderbilt University School of Medicine, Nashville, TN. 2005-2009
- **Substance Abuse Algorithm Work Group**, Department of Psychiatry Vanderbilt University School of Medicine, Nashville, TN. 2005

- **Interview Committee**, Office of Medical School Admissions, Vanderbilt University School of Medicine, Nashville, TN. 2005-2006
- **Organization and Research Committee**, Templeton Research Lectures on the Constructive Engagement of Science and Religion Grant, Scales and Hierarchies: Implications for Science and Religion, Vanderbilt University, Nashville, TN. 2005-2007
- **Steering Committee, 3 Tesla MRI**, Vanderbilt University Institute for Imaging Science, Vanderbilt University School of Medicine, Nashville, TN. 2006-2011
- **Program Director**, Vanderbilt Brain Awareness Month, Vanderbilt University, Nashville, TN. 2005-2007
- **Research Compliance Expert**, Department of Psychiatry and Behavioral Sciences [formerly Department of Psychiatry], Vanderbilt University School of Medicine, Nashville, TN. 2006-present
- **Admissions Committee**, Office of Medical School Admissions, Vanderbilt University School of Medicine, Nashville, TN. 2006-2008
- **Chair, Tenure Track Faculty Search Committee**, Department of Psychiatry and Vanderbilt Kennedy Center for Human Development, Vanderbilt University, Nashville, TN. 2006-2007
- **Research Advisory Committee**, Vanderbilt Center for Integrative Health, Vanderbilt University, Nashville, TN. 2008-2010
- **Selection Committee**, Neuroscience Graduate Program, Vanderbilt University, Nashville, TN. 2009-2012
- **Foundations of Clinical Care Committee**, Curriculum 2.0, Vanderbilt University School of Medicine, Nashville, TN. 2011-2014
- **Foundations of Medical Knowledge Committee**, Vanderbilt University School of Medicine, Nashville, TN. 2012-2014
- **Graduate Medical Education Committee**, Vanderbilt University School of Medicine, Nashville, TN. 2014-present
- **Undergraduate Medical Education Committee** (Departmental Representative), Vanderbilt University School of Medicine, Nashville, TN. 2014-2017
- **Departmental Leadership Council**. Department of Psychiatry and Behavioral Sciences, Vanderbilt University School of Medicine, Nashville, TN. 2014-2017
- **Departmental Diversity and Inclusion Committee. Co-chair**. Department of Psychiatry and Behavioral Sciences, Vanderbilt University School of Medicine, Nashville, TN. 2018-present

Extramural Committees

- **Council for Research**, American Psychiatric Association. 1996-1998
- **Committee on Gay, Lesbian and Bisexual Issues**, American Psychiatric Association. 1998-2000
- **Medical Director, Depression Section**, Veritas Medicine (veritasmedicine.com) Cambridge, MA. 2000-2005
- **Scientific Consultant, Reconstructors Project**. Center for Technology in Teaching and Learning. Rice University. NIDA R25, DA 15063. 2002-2005
- **Medical Director, Mental Health Viewpoint**, Veritas Medicine (veritasmedicine.com) Cambridge, MA. 2005-2007
- **Publications Committee**, College on Problems of Drug Dependence (CPDD). 2006-2009
- **Credentials Committee (for Membership)**, College on Problems of Drug Dependence. 2009-2011
- **Chair, Credentials Committee (for Membership)**, College on Problems of Drug Dependence. 2011-2013

Scientific Review Groups

- **Department of Veterans Affairs**, Office of External Reviews. 1999
- **NIDA Special Emphasis Panel**. 2003
- **NIDA Special Emphasis Panel**. 2004
- **Neurological Foundation of New Zealand**. 2005
- **NIDA Special Emphasis Panel**. 2005
- **NIH Special Emphasis Panel**. 2006
- **NIH Study Section**, Social Neuroscience. 2006
- **NIH Special Emphasis Panel/Scientific Review Group** 2007/05 ZDA1 MXS-M. 2007
- **NIH Study Section**, Exploratory Applications in Child Psychopathology. 2007
- **Pennsylvania Department of Health Study Section**, Violence Prevention. 2008
- **NIH Study Section**, Exploratory Applications in Child Psychopathology. 2008
- **NIH Study Section**, Extinction and Pharmacotherapies for Drug Addiction (ZDA1 RXL-E). 2008

- **NIH Study Section**, National Institute for Diabetes, Digestive, and Kidney Diseases Special Emphasis Panel/Scientific Review Group 2009/01 DDK-C 1. 2009
- **NIH Study Section**, National Institute for Diabetes, Digestive, and Kidney Diseases (NIDDK) Study Section DDK-C for Digestive Diseases and Nutrition. 2009
- **NIH Study Section**, National Institute on Drug Abuse (NIDA) Special Emphasis Panel/Scientific Review Group. Brain Imaging Studies of Negative Reinforcement in Humans, ZDA1 KXH-C (07). May 2009
- **NIH Study Section**, National Institute for Diabetes, Digestive, and Kidney Diseases Special Emphasis Panel/Scientific Review Group, 2009/10 DDK-C 1: Digestive Diseases and Nutrition C Subcommittee. June 2009
- **NIH Study Section**, National Institute on Drug Abuse (NIDA) Special Emphasis Panel/Scientific Review Group 2009/10. ZDA1 GXM-A (3G) 1 NIDA ARRA Go Applications on Genetics, Harmonizing Phenotypes and Envirotypes, Epigenetics and Pharmacogenomics. 2009
- **NIH Study Section**, Special Emphasis Panel/Scientific Review Group 2009/10 ZRG1 HDM-A (58) R. July 2009
- **American Association for the Advancement of Science, Research Competitiveness Program.** Grant Review. January 2010
- **NIH Study Section. Cutting Edge Basic Research Applications.** Internet-Assisted Review of the NIH/NIDA CEBRA. March, 2010
- **NIH Study Section**, National Institute for Diabetes, Digestive, and Kidney Diseases Special Emphasis Panel/Scientific Review Group DDK-C, Digestive Diseases and Nutrition C Subcommittee. March 2010
- **NIH Study Section**, National Institute of General Medical Sciences, Special Emphasis Panel/Scientific Review Group 2010/05 ZGM1 GDB-7 (EU). 2010
- **NIH Study Section**, NIDA, Special Emphasis Panel/Scientific Review Group 2010/10 ZDA1 GXM-A (04). June/2010
- **NIH Study Section**, National Institute for Diabetes, Digestive, and Kidney Diseases Special Emphasis Panel/Scientific Review Group DDK-C Digestive Diseases and Nutrition: C Subcommittee. June 2010
- **NIH Study Section**, NIDA, 2011/10 ZDA1 GXM-A (02) NIDA I/START Small Grant Review. 2011
- **Medical Research Council (MRC) UK**, Council's Triage: Neurosciences and Mental Health Board (t-NMHB). Grant Review. 2011
- **NIH Study Section**, NIDA, 2011/10 ZDA1 GXM-A (10) NIDA I/START Small Grant Review. 2011
- **NIH Study Section, NIDDK-K**, National Institute for Diabetes, Digestive, and Kidney Diseases. June 2011

- **University of Alabama, Nutrition and Obesity Research Center**, Pilot and feasibility grant review. July 2011
- **NIH Study Section**, Special Emphasis Panel/Scientific Review **Group** 2012/01 ZRG1 BBBP-J (91) S. September 2011
- **Vanderbilt Kennedy Center**, Hobbs Discovery Grant, Review. October 2011
- **NIH Study Section**, NIDA, 2012/03 ZDA1 GXM-A (7). 2012
- **NIH Study Section**, NIDA 2012/10 ZRG1 BBBP-T (91) A. 2012
- **Swiss National Science Foundation**. 2012
- **NIH Study Section**, NIDA 2013/05 ZDA1 GXM-A (06) 1. 2013
- **NIH Study Section**, NIDA 2013/05 ZRG1 DTCS-A (81) S. 2013
- **NIH Study Section**, National Institute for Diabetes, Digestive, and Kidney Diseases Special Emphasis Panel/Scientific Review Group DDK-C Digestive Diseases and Nutrition C Subcommittee. March 2013
- **NIH Study Section**, 2014/01 ZRG1 DTCS-A (81) S. October 2013
- **NIH Study Section**, National Institute for Diabetes, Digestive, and Kidney Diseases Special Emphasis Panel/Scientific Review Group DDK-C. Digestive Diseases and Nutrition C Subcommittee. October 2013
- **NIH Study Section. National Cancer Institute**. April 2014/05 ZCA1 SRLB-2 (M1) B: Omnibus-Cancer Management and Behavior. 2014
- **NIH Study Section**. NIDDK. 05 ZDK1 GRB-C (M1) 1. Cognitive Fitness Ancillary Study. March 2014.
- **NIH Study Section. National Institute on Drug Abuse**. Special Emphasis Panel/Scientific Review Group 2014/08 ZDA1 JXR-G (01) R EUREKA Review: Exceptional Unconventional Research Enabling Knowledge Acceleration. May 2014
- **The Wellcome Trust. Sir Henry Dale Fellowship**. External reviewer. July 2014
- **NIH Study Section. NIDDK**. 2015/01 ZDK1 GRB-C (J1) 1. Cognitive Fitness Ancillary Study. November 2014
- **Swiss National Science Foundation**, External Grant Reviewer. 2016

Editorial Appointments and Ad Hoc Reviews

- *Synapse, Editorial Board.* 2004-present
- *Journal of Addiction, Editorial Board.* 2012-2017
- *Addiction*
- *Addiction Biology*
- *AJNR (American Journal of Neuroradiology)*
- *Alcohol and Alcoholism*
- *American Journal of Psychiatry*
- *Appetite*
- *Archives of General Psychiatry*
- *Behavioural Brain Research*
- *Biological Psychiatry*
- *Body Image*
- *Diabetes*
- *Drug and Alcohol Dependence*
- *Human Brain Mapping*
- *International Journal of Food Sciences and Nutrition*
- *International Journal of Obesity*
- *JAMA Psychiatry*
- *Journal of Anxiety Disorders*
- *Journal of Behavioral Medicine*
- *Journal of Clinical Psychiatry*
- *Journal of Law, Medicine, and Ethics*
- *Journal of Neural Transmission*
- *Journal of Psychopharmacology*
- *Journal of the American Medical Informatics Association*
- *Magnetic Resonance Imaging*
- *Neuroimage*
- *Neuropsychopharmacology*
- *Neurotoxicology*
- *Obesity*
- *Pharmacology Biochemistry and Behavior*
- *PLoS ONE*
- *Psychiatry Research*
- *Psychophysiology*
- *Science and Practice Perspectives*
- *Scientific Reports*
- *Synapse*

Awards and Professional Recognition

- Anatomy Predoctoral Fellowship. 1984-1986
- Neuroscience Center of Excellence Predoctoral Fellowship. 1986-1988
- Dorothy Snider Scholarship Award. 1989-1990
- NIMH Predoctoral Fellowship. 1988-1990
- Bigelow Scholarship. 1992-1994
- Astor Scholarship. 1991-1994

- NIH Summer Research Fellowship. 1993
- Rock Sleyster Memorial Scholarship. 1993-1994
- Oskar Diethelm Prize for Excellence in Psychiatry. 1994
- APA/Glaxo Wellcome Fellowship. 1996-1998
- Dupont-Warren Fellowship. 1998-1999
- Livingston Award. 1998-1999
- Drug Abuse Research Scholars Program in Psychiatry (NIDA/APA Mentored Research Career Award). 1999-2003
- Partners in Excellence Award. 2001
- Future Leaders in Psychiatry. 2004
- Future Leaders in Psychiatry. 2007
- Nominated by nominating committee to stand for election for Board of Directors, College on Problems of Drug Dependence. 2008
- Academy for Excellence in Teaching, Vanderbilt University, Member. 2011
- Nominated by nominating committee to stand for election for Board of Directors, College on Problems of Drug Dependence. 2012

Teaching Activities

Medical School and Hospital Courses

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| 1985-1990 | Taught small groups and individuals during a laboratory section in Medical Microscopic Anatomy and Medical Neuroanatomy.
University of Tennessee, Memphis. Memphis, TN. |
| 1997- 2001 | Small group Problem Based Learning tutor in Human Nervous System and Behavior Course. Harvard Medical School, Boston, MA. |
| 1999 | Organizer, Magnetic Resonance Imaging Journal Club. McLean Hospital, Belmont, MA. |
| 1999 | Course Organizer, “Fundamentals of Magnetic Resonance.” McLean Hospital, Brain Imaging Center. Fall 1999. |
| 2000 | Lecture “Neuroimaging and Psychiatry”. Harvard Medical School/Cambridge Hospital Residency Training Program, Cambridge MA. |
| 2003-2005 | Lecturer, 3rd year medical student course “Psychiatry Clerkship Seminar Series”. Vanderbilt University Medical Center, Nashville TN. |
| 2003-2005 | Small group leader, 2nd year medical student course “Introduction to Clinical Psychiatry”. Vanderbilt University Medical Center, Nashville TN. |
| 2003-2005 | Lecturer, 3rd and 4th year psychiatry resident seminar “GLBT Issues”
Vanderbilt University Medical Center, Nashville TN. |
| 2004 | Lecturer, Adult Psychiatry Residency Training Program “Neuroimaging”
Vanderbilt University Medical Center, Nashville TN. |

- 2007 **Small group leader, (Neuroimaging) Bioregulation/IGP Neuroscience (NURO345)**, Vanderbilt University, Nashville, TN.
- 2008 **Lecturer, VMS II Brain and Behavior Course, Addictions**
Vanderbilt University School of Medicine, Nashville TN.
- 2008 **Small group leader, VMS II Brain and Behavior Course**
Vanderbilt University School of Medicine, Nashville TN.
- 2009 **Small group leader, VMS II Brain and Behavior Course**
Vanderbilt University School of Medicine, Nashville TN.
- 2009 **Lecturer, VMS II Course, Eating Disorders**
Vanderbilt University School of Medicine, Nashville TN.
- 2009 **Lecturer, 4th year psychiatry resident seminar: series of 4 lectures on neuroimaging.** Vanderbilt University Medical Center, Nashville TN.
- 2007-2012 **Course Director, Summer Didactic Program, Psychiatric Neuroimaging Program.** Includes course for functional MRI and Statistical Parametric Mapping. Vanderbilt University Medical Center, Nashville TN.
- 2011 **Introduction to Research**—led course for summer student trainees in research. Vanderbilt University Medical Center, Nashville TN.
- 2011-2012 **VMS 3 Clerkship, Clinical Psychiatry Case Vignette Series.** Developed and led discussion. Vanderbilt University School of Medicine, Nashville TN.
- 2011 **Small group leader, VMS II Brain and Behavior Course**
Vanderbilt University School of Medicine, Nashville TN.
- 2012 **Small group leader, VMS II Brain and Behavior Course**
Vanderbilt University School of Medicine, Nashville TN.
- 2012-2013 **Co-Director—Brain and Behavior Course.** First year medical student neuroscience course. Vanderbilt University School of Medicine, Nashville, TN.
- 2013-2014 **Co-Director, Brain, Behavior, and Movement Course.** First year medical student neuroscience course. Vanderbilt University School of Medicine, Nashville, TN.
- 2014-2016 **Lecturer and lab instructor. Brain, Behavior, and Movement Course.** First year medical student neuroscience course. Vanderbilt University School of Medicine, Nashville, TN.
- 2015-2019 **Lecturer, Evolution and Psychiatry.** Vanderbilt Adult Psychiatry Didactic Series. Vanderbilt University Medical Center, Nashville TN.
- 2015-2019 **Lecturer, Sleep Disorders.** Vanderbilt Adult Psychiatry Didactic Series. Vanderbilt University Medical Center, Nashville TN.
- 2016-2019 **Lecturer, Structural Neuroanatomy.** Vanderbilt Adult Psychiatry Didactic Series.

Vanderbilt University Medical Center, Nashville TN.

- 2014-2018 **Small group leader**, Physical Diagnosis, Psychiatric MSE
Vanderbilt University School of Medicine, Nashville, TN.
- 2016-2018 **Faculty preceptor**, VC3 medical student case.
Vanderbilt University School of Medicine, Nashville, TN.

University Courses

- 2014 **Discussant**, Psychopathology. Honors 185: Construction of Reality. Randolph Blake, course director. February 13, 2014. Vanderbilt University, Nashville, TN.
- 2014 **Discussant**. Undergraduate seminar. William Petrie Course Director. February 19, 2014. MDMA and Ecstasy. Vanderbilt University, Nashville, TN.
- 2014 **Lecturer**: NSC 235. Leslie Smith, course director. MDMA and Ecstasy. February 20, 2014. Vanderbilt University School of Medicine, Nashville, TN.
- 2016-2018 **Lecturer**, Addiction and Motivation, Vanderbilt Neuroscience Graduate Program.
Vanderbilt University School of Medicine, Nashville, TN.

Advisory and Supervisory Responsibilities

- 1990-1994 **Trained postdoctoral fellow in the technique of intracellular neurophysiology.** Department of Neurology and Neuroscience.
Cornell University Medical College, New York, NY.
- 1994-1995 **Supervised medical students during their clinical clerkships and subinternships in Internal Medicine.** Massachusetts General Hospital, Harvard Medical School, Boston, MA
- 1995-1996 **Supervised medical students during their clinical clerkships in Psychiatry.** McLean Hospital, Belmont, MA; Harvard Medical School, Boston, MA.
- 1997 **Non-Resident Tutor in Medicine.** North House, Harvard College, Cambridge, MA.
- 2003-2007 **Supervise medical students and resident physicians during Consult Liaison Psychiatry Rotation.** Vanderbilt University Medical College. Nashville, TN.
- 2003-2005 **Mentor, Medical Scholars Program**, Medical Student Han Liang.
- 2004 **Mentor Summer Intern**, Monisha Chakravathy, Oak Hall School Program
- 2005-2006 **Mentor, Vanderbilt University Medical School, Emphasis Program**, Medical Student Deanne Roberts
- 2006 **Mentor, Vanderbilt Undergraduate Shadowing Program**
Students Spring 2006: Amy Madeline Schellhaas, Kristen Marie Turner, Mary Elizabeth Hughes, Swati Bansal.

- 2006-2007 **Mentor, Medical Scholars Program**, Medical Student Evonne Charboneau
- 2007-2009 **Mentor, Vanderbilt University Medical School, Emphasis Program**, Medical Students James Wantuck and Brian Cabaniss
- 2007-2009 **Mentor, NIDA T32 Fellow**, Evonne Charboneau, M.D.
- 2007-2008 **Mentor, Medical Scholars Program**, Medical Student Emily Hon
- 2007 **Small group leader, Second year psychiatry course.** Patient interviewing: mental status examination.
- 2007-2009 **Mentor, Vanderbilt University Medical School, Emphasis Program**, Medical Student John Karageorgiou
- 2007-2009 **Mentor, Vidya Raj, M.D.** (4th year resident in psychiatry through neuroimaging fellowship)
- 2008-2009 **Mentor, Research Assistant Professor**, Neil D. Woodward, Ph.D.
- 2008-2009 **Masters committee member**—Christopher J. Cannistraci, Masters Candidate (Graduated 5/2009)
- 2008 **Ph.D. committee member**—Eunice Yang, Doctoral Candidate
- 2008 **Ph.D. committee member**—Mariam Eapen, Doctoral Candidate
- 2008 **Ph.D. committee member**—Joshua Buckholtz, Doctoral Candidate
- 2009-2010 **Mentor, Research Assistant Professor**, Evonne J. Charboneau, M.D.
- 2009-2010 **Mentor, Vanderbilt University Medical School, Emphasis Program**, Medical Student Erin Toaz
- 2010-2011 **Mentor, Vanderbilt University Medical School, Emphasis Program**, Medical Students: Arter Biggs, Simeon King, Brent Lee Evans
- Mentor, NIDA/ACAP K-award recipient**, Meg Benningfield, M.D., Vanderbilt Department of Psychiatry
- 2011 **Ph.D. committee chair**—Jennifer Pryweller, Doctoral Candidate
- 2011 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
 Peter Mortensen
 Kathryn Sommese
 Sophia Kim
 Ana Milisavljevic
 Evan Dalton
 Patrick McGovern

- Mentor, Meharry Medical School Summer Research Students**
Eric Iheme
Jasmine Cottle
Brooke Robinson
- 2012 **Ph.D. committee chair**—Kristen Eckstrand, Doctoral Candidate
- 2011-2012 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Peter Mortensen
Kathryn Sommese
Ana Milisavljevic
Evan Dalton
Patrick McGovern
Lowell Safren
Nicola Yurkoski
- 2012-2013 **Mentor, Vanderbilt University Medical School, Emphasis Program**
Medical student: Andrew Dornan
- 2012-2013 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Peter Mortensen
Kathryn Sommese
Evan Dalton
Patrick McGovern
Emily Hebert
Julian Arrieta
Lowell Safren
Nicola Yurkoski
- 2012 **Ph.D. Committee Chair**—Jacqueline Clauss, Doctoral Candidate
- 2013-2014 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Lowell Safren
Nicola Yurkoski
Emily Hebert
Julian Arrieta
- 2012—2016 **Ph.D. Committee Chair. Co-thesis advisor**, Tristan Watkins, Neuroscience Graduate Student, Vanderbilt University.
- 2013—2016 **Ph.D. Co-thesis advisor**, BettyAnn Chodkowski, CPB Graduate Student, Vanderbilt University; Defended February 2016.
- 2014-2015 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Yuyao Ding
Jacob Teichner
Renzo Antonio Costa

- 2015-2016 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Yuyao Ding
Jacob Teichner
Renzo Antonio Costa
Hunter Watson
Margot Debrabandere
- 2016 summer **Mentor, UCRIPP Student**
Cynthia Ziwawo
- 2016-2017 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Yuyao Ding. Research project on neuroimaging in sex addiction.
Hunter Watson. Research project: Cortical excitability in ecstasy users.
Margot Debrabandere. Research project: Cortical excitability in ecstasy users.
Geoff Vogt. Research project: Cortical excitability in ecstasy users.
Tariq Issa. Research project: Cortical excitability in ecstasy users.
- 2016-2018 **Mentor, TSU-Nerve Program**
Idris Kosoko. Research project on neuroimaging in sex addiction.
- Mentor, Vanderbilt Adult Psychiatry Resident**
Shakevia Johnson. Research project on neuroimaging in sex addiction.
- Mentor, Vanderbilt Master's Program**
Megan Ward. Research project on neuroimaging in sex addiction.
- 2017-2018 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Geoff Vogt. Research project: Cortical excitability in ecstasy users.
Tariq Issa. Research project: Cortical excitability in ecstasy users.
Justice Simonetti. Research project: Cortical excitability in ecstasy users.
Andrea Zhang. Research project: Cortical excitability in ecstasy users.
Sweeya Raj. Research project: Cortical excitability in ecstasy users.
- 2018- **Member, Ph.D. Committee.** Predoctoral candidate Alison Anderson, PhD Program
in Nursing Science
- 2018-2019 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
Geoff Vogt. Research project: Cortical excitability in ecstasy users.
Andrea Zhang. Research project: Cortical excitability in ecstasy users.
Sweeya Raj. Research project: Cortical excitability in ecstasy users.
Paul Wapner. Research project: Cortical excitability in ecstasy users.
Anna Racanelli. Research project: Cortical excitability in ecstasy users.
Steve Antwi-Boasiako. Research project: Brain response in sex addiction.
Jack Vahradian. Research project: Brain response in sex addiction.
Alyson Win. Research project: Pain processing in vascular dementia.
Henry Lu. Research project: Pain processing in vascular dementia.
- 2018-2019 **Mentor, Vanderbilt General Psychiatry Resident**
Jacqueline Vanderburgh, D.O. Research project on neuroimaging in sex addiction.

- 2019 Summer **Mentor**, Myka Taylor
Mentor, Angelica Flores
- 2019-2020 **Mentor, Vanderbilt Undergraduate Neuroscience Training**
 Anna Racanelli. Research project: Cortical excitability in ecstasy users.
 Steve Antwi-Boasiako. Brain response in sex addiction.
 Jack Vahradian. Research project: Brain response in sex addiction.
 Alyson Win. Research project: Pain processing in vascular dementia.
 Henry Lu. Research project: Pain processing in vascular dementia.
- 2019-2020 **Mentor, Vanderbilt General Psychiatry Resident**
 Brittany Allison, M.D. Research project on neuroimaging in sex addiction.

Major Research Interests

- Neuroimaging/Neurobiology of obesity and feeding
- Serotonergic mechanisms
- Neuroimaging/Neurobiology of addiction
- MDMA/Ecstasy Neurotoxicity
- Pain processing in aging and dementia

Research Funding Information

Active research funding

Pain sensitivity and unpleasantness in people with Alzheimer's Disease and cancer
08/15/2019-6/30/2024

MPI: Cowan, RL; Monroe, TB
 NIA 1R01AG061325-01A1

This grant examines altered pain processing in people with AD and stage 4 breast or prostate CA with painful metastases.

Differences in Pain between Alzheimer's Disease and Vascular Dementia in Older Females
09/30/16 – 04/30/2020

MPI: Cowan, RL; Monroe Todd B.
 NIA R21 AG049332-01A1

This grant compares pain processing in people with AD to those with vascular dementia.

Sex Differences in Pain Reports and Brain Activation in Older Adults with Alzheimer's Disease

09/15/2018 – 05/31/2023

Co-Investigator (PI: Monroe, TB)
 NIA- 1R01AG059861-01

This proposal examines sex differences in pain threshold, affective response, and brain activation to pain in people with AD.

Phase 3, Randomized, Double-Blind, Placebo-Controlled, 8-week Clinical Study to Assess the Efficacy, Safety, and Tolerability, of Intranasal Carbetocin (LV-101) in Prader-Willi Syndrome (PWS) with Long Term Follow-Up: CARE-PWS

11/01/2018-

Site PI: Cowan, RL

Sponsor: Levo Therapeutics, Inc.

This Phase 3 clinical trial seeks to assess the efficacy, safety, and tolerability of intranasal carbetocin in treating symptoms of hyperphagia and obsessionality in Prader Willi Syndrome.

Completed Research Funding

Dopamine Influences on Self-Regulation and Impulsivity

Co-Investigator (PI: Zald, DH)

NIMH-R21

This application examines the role of dopamine in human impulsivity.

Dopaminergic Modulation of Subjective Valuation across Adulthood

Co-Investigator (PI: Zald, DH)

NIMH-R01

This proposal examines the role of dopamine in motivational valuation across decision making domains.

Age-Related Differences in Psychophysical and Neurobiological Response to Pain

07/01/2014-06/30/2017

MPI: Cowan, RL; Monroe TB

NIA R21AG045735

This application examines perceptual and neurophysiological differences in response to thermal pain with aging.

Increased Cortical Excitability in MDMA/Ecstasy Users

01/15/2013-12/31/2016

PI: Cowan, RL

NIDA R21DA033341

This application proposes to examine the neural basis of altered cortical excitability in human ecstasy users via a multimodal approach. Methods include MRS spectroscopy, Transcranial Magnetic Stimulation, and functional MRI.

PET mGluR5 Imaging in Methamphetamine Abuse

05/01/2012-04/30/2014

MPI: Cowan, RL; Kessler, R (contact PI)

NIDA 1 R21 DA031441-01A1

This application characterizes a PET ligand for mGluR5 imaging and applies this ligand to studying glutamate receptor function in methamphetamine users.

Making an “obese” brain (and body) lean: Insulin detemir, monoamines, and reward

07/2010-06/2014

Co-Investigator (PI: Niswender, K)

This project examines the neural basis of insulin effects on weight, appetite, reward, and dopamine function.

Neurobiology of Child Obesity: An MRI Study

08/20/2008-07/31/2011

PI: Cowan, RL

NICHD: 1R21DK079402-01A1

This exploratory R21 application seeks to examine differences in regional brain activation in obese and normal weight children and adolescents in response to food cues differing in caloric content.

Spectral features of raphe fMRI time series data in depression
07/2010-06/2012

Co-Investigator (PI: Salomon, R)
NIMH-R21

This grant uses fMRI and wavelet analysis to examine the effects of depression on functional connectivity between higher cortical and brainstem regions.

Psychostimulant Treatment of TBI-Related Attention Deficits: fMRI Analysis of Neural Mechanisms of Response
07/2009-06/2011

Co-Investigator (PI: Tramontana, M)
Sponsor: Shire Pharmaceuticals

This investigator-initiated grant examines the efficacy of Vyvanse in treating traumatic brain injury-related attention deficit disorder.

Genetic factors in human MDMA toxicity: a PET study
05/05/2007-04/30/2011

PI: Cowan, RL
NIDA: 1R21DA020149-01

This project seeks to examine the influence of common polymorphisms of the serotonin transporter on MDMA-induced neurotoxicity as assayed by 5-HT_{2A} receptor binding assayed using setoperone PET.

Neuroimaging of food cue responsiveness in Prader Willi Syndrome
10/2007-12/31/2010

PI: Cowan, RL
Vanderbilt Hobbs Discovery Grant

This project uses fMRI to examine regional brain activation in response to complex food cues in individuals with Prader Willi Syndrome.

MR Analysis of Persistent CNS Damage in Human MDMA Users
8/01/04-1/31/09

PI: Cowan, RL
NIDA R01 DA15137

This project is designed to conduct a comprehensive neuroimaging study of regional brain changes in human MDMA users. The study employs structural (voxel-based morphometry), chemical (magnetic resonance spectroscopy, MRS), and functional (functional magnetic resonance imaging, fMRI) methods to assay CNS neurotoxicity resulting from loss of serotonergic innervation.

SERT polymorphisms and human cortical 5-HT_{2A} receptors
01/01/06- 12/31/08

PI: Cowan, RL
NIMH-R21MH073800

This project seeks to examine the influence of common polymorphisms of the serotonin transporter on 5-HT_{2A} receptor binding in healthy control subjects assayed using setoperone PET.

High-Field Functional MRI of Human Euphoria

09/03-08/04

PI: Cowan RL

NIDA-R03 DA016617

This study is a 1-year application under the I/START program to obtain funds to conduct pilot studies examining the neurobiology of euphoria in human subjects using fMRI, following amphetamine administration.

Neural Bases of ADHD in Fetal Drug or Alcohol Exposure

09/30/2005 - 08/31/2008

Co-Investigator (PI: Avison, M)

NIDA-R21 DA021034

This project examines neurocognitive consequences of in utero drug or alcohol exposure using functional neuroimaging and pharmacological MRI during psychostimulant administration.

Neurocognitive consequences of cannabis use

7/01/2005-4/30/2007

Co-Investigator (PI: Park S)

NIDA 1R21DA019672-01

The present proposal seeks support to examine neurocognitive and psychiatric consequences of cannabis use in young adults. Attention, inhibitory control, and social cognition will be investigated in current and past cannabis users and nonusers at the beginning of the first year of college. They will be monitored regularly during the first year to track changes in behavior in relation to cannabis. In addition, schizotypal personality will be examined in young cannabis users.

Biophysical Basis of Functional Brain MRI

7/1/2000 – 6/30/2005

Co-Investigator (PI: Gore, JC)

NINDS-R01-NS33332

To develop an improved understanding of mechanisms involved in functional MRI of the brain and optimize imaging and data analysis strategies for the detection of neuronal activity.

Magnetic Resonance, EEG and Behavior After Cocaine

11/1994-05/2004

Co-Investigator (PI: Renshaw, PF)

NIDA-RO1 DA09448

The goal of this research is to use MRS, fMRI, EEG, behavioral measures and pharmacokinetic data to assess the effects of acute and chronic cocaine administration in men and women.

Magnetic Resonance, EEG, Amphetamine, and Visual Processing

7/1999-6/2003

Awardee: Cowan, RL

NIDA & American Psychiatric Association Drug Abuse Research Scholars Program (Mentored Research Career Award) DA-00366-01)

This project provides research development and salary support for investigating the effects of dopaminergically active agents on functional magnetic resonance fMRI blood-oxygen-level-dependent (BOLD) signal during visual stimulation, and attempts to correlate fMRI BOLD signal changes with EEG changes during visual stimulation following amphetamine administration.

Shervert Frazier Institute**7/1999-11/2002**

Awardee: Cowan, RL

This award supported effort for ongoing research activity in psychiatric neuroimaging.

Brain Injury in Torture Survivors: A Mental Health Impact**6/2000-5/2004**

Co-Investigator (PI: Mollica, R)

NIMH_MH 050550

This project is a collaborative research study in conjunction with the Harvard Program in Refugee trauma. This study proposes to correlate psychiatric diagnosis and neuropsychological measures of performance with functional and structural neuroimaging measures of neural structures implicated in PTSD and depression in torture.

High Field MR Research in Drug Abuse: A Bioengineering Partnership**07/2001-06/2006**

Consultant (PI: Renshaw, PF)

The goal of this BRP application is to develop a consortium of investigators with an interest in the development of those engineering methods that are most important for clinical and preclinical substance abuse neuroimaging research.

Polydrug Abuse: Imaging and Behavior**09/2001 – 8/2006**

Co-Investigator (PI: Lukas SE)

2 RO1 DA03994-15A1 NIDA

This project is designed to examine alterations in EEG activity, event-related potential, physiological responses, subjective reports of drug effect and cognitive function during acute intoxication with cocaine, marijuana and ethanol combinations.

Synaptic organization of corticostriatal neurons.

Awardee: Cowan

F31MH09722

This NIMH Predoctoral Fellowship examines the physiological properties and connectivity of corticostriatal neurons in rat neocortex.

Publications and Presentations

Articles in refereed journals

1. Reimao, R., Akiskal HS, **Cowan RL**, Lemmi H and Belluomini J. Polissonografia da disfuncao sexual masculina dados normativos da impotencia nao-organica. *Review of Brazilian Neurology* 1985;21(3):105-107.
2. **Cowan RL**, Reimao R, Lemmi H, and Vander Zwagg R. Narcolepsia e inicio subito de periodos REM apos despertares nocturnos. *Arquivos De Neuro-Psiquiatria* 1985;43(3):229-233.
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4. **Cowan RL**, Wilson CJ, Emson PC and Heizmann CW. Parvalbumin-containing GABAergic interneurons in the rat neostriatum. *Journal of Comparative Neurology* 1990;302:197-205.
5. **Cowan RL** and Wilson CJ. Spontaneous firing patterns and axonal projections of single corticostriatal neurons in the rat medial agranular cortex. *Journal of Neurophysiology* 1994;71:17-32.
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14. **Cowan RL**, Roberts DM, Joers JM. Neuroimaging in human MDMA (Ecstasy) users: A cortical model. Proceedings of the International Drug Abuse Research Society. *Ann N Y Acad Sci.* 2008 Oct;1139:291-8.
15. **Cowan RL**, Joers JM, Dietrich MS. N-acetylaspartate (NAA) correlates inversely with cannabis use in a frontal language processing region of neocortex in MDMA (Ecstasy) Polydrug Users: a 3 Tesla Magnetic Resonance Spectroscopy Study. *Pharmacol Biochem Behav.* 2009 Mar;92(1):105-10.
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Unmodulated by Dopamine Agonism in Healthy Adults. *eNeuro*. 2017 Sep 18;4(5). pii: *ENEURO.0211-17.2017*. doi: 10.1523/ENEURO.0211-17.2017. eCollection 2017 Sep-Oct.

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78. Seaman KL, Smith CT, Juarez EJ, Dang LC, Castellon JJ, Burgess LL, San Juan MD, Kundzicz PM, **Cowan RL**, Zald DH, Samanez-Larkin GR. Differential regional decline in dopamine receptor availability across adulthood: Linear and nonlinear effects of age. *Hum Brain Mapp*. 2019 Jul;40(10):3125-3138. doi: 10.1002/hbm.24585. Epub 2019 Apr 1. PMID: 30932295
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81. Dang LC, Samanez-Larkin GR, Smith CT, Castellon JJ, Perkins SF, Cowan RL, Claassen DO, Zald DH. FTO affects food cravings and interacts with age to influence age-related decline in food cravings. *Physiol Behav*. 2018 Aug 1;192:188-193. doi: 10.1016/j.physbeh.2017.12.013. Epub 2017 Dec 9. PMID: 29233619

Proceedings of Meetings

Akiskal HS., **Cowan RL**, Simmons R, Reimao R and Lemmi H. Sleep EEG differentiation of anxiety and depressive disorders. In C. Shagas (Ed.), *Proceedings of IVth World Congress of Biological Psychiatry*. New York: Elsevier Publishing Co., 1986.

Books, book chapters, invited review articles

- Murphy MJ, **Cowan RL**, Sederer LI. *Blueprints in Psychiatry*. First edition. Malden, MA: Blackwell Science, 1998:80.
- Murphy MJ, **Cowan RL**, Sederer LI. Second Edition. *Blueprints in Psychiatry*. Malden, MA: Blackwell Science, 2000:123.
- Murphy MJ, **Cowan RL**, Sederer LI. Third Edition. *Blueprints in Psychiatry*. Malden, MA: Blackwell Science, 2004:114.
- Murphy MJ, **Cowan RL**, Sederer LI. Fourth Edition. *Blueprints in Psychiatry*. New York, NY: Lippincott, Williams and Wilkins. 2006.
- Murphy MJ, **Cowan RL**, Sederer LI. Fifth Edition. *Blueprints in Psychiatry*. New York, NY: Lippincott, Williams and Wilkins. 2009.
- Murphy MJ, **Cowan RL**, Sederer LI. Sixth Edition. *Blueprints in Psychiatry*. New York, NY: Lippincott, Williams and Wilkins. 2018.
- Faculty Reviewer, “*Underground Clinical Vignettes*” in *Psychiatry and Neurology*. Student to Student Publishing. Ed. V., Bushan. 1999.
- Cowan RL**. Patient’s Page: Ecstasy (2000) *Journal of the Gay and Lesbian Medical Association*, 5(1):25-26.
- Cowan RL**, Dore S. Toxicity and neuroprotective effects of carbon monoxide: Consequences to suicide and survival. *Encycl Psychol Behav Sci* (In Press), 2003.
- Kalechstein AD, Fantegrossi WE, **Cowan RL**, Mahoney JJ: MDMA. In: Kalechstein, A. D., & van Gorp, W. G. (2007). “*Neuropsychological Consequences of Substance Use: State-of-the-art and Future Directions.*” Boston, MA: Taylor and Francis Publishers
- Cowan RL** and Kessler R. SPECT. *Encyclopedia of Psychopharmacology*, Ed. Ian Stolerman, Springer. In Production.
- A.P.F. Key, **Cowan RL**, Charboneau EJ. Book chapter: Visual processing of food images in adults., in *International Handbook of Behavior, Diet and Nutrition*, eds. Victor R Preedy, Colin Martin and Ronald Ross Watson. Springer.
- Cowan RL**, Benningfield M, Charboneau EJ, Monroe TB. Book Chapter: “Ecstasy (MDMA) and other designer drugs Neuroimaging”, in *Encyclopedia of Addictive Behaviors*, ed. Peter Miller. Elsevier, in progress, anticipated 2012.

Interviews/Commentaries

- Cowan RL**, quoted in Forbes.Com. Stock Focus: Fighting Depression, by Fei Mei Chan, 09/24/01.
- Cowan RL**. *Neurology Today*. Interviewed for article on de Win et al. 11/19/08.

Cowan RL. Critical issues in cross sectional research studies of human ecstasy (MDMA) users: a response to Krebs and Johansen. *Neuropsychopharmacology*, accepted August 2011.

Dissertation

Cowan RL. Synaptic Organization of Corticostriatal Neurons. Memphis, TN: University of Tennessee, 1990.

Patents

U.S. Patent 6,630,127 “**Method for assessing cortical response to blue light**” October 7, 2003. Inventors: Renshaw, PF, **Cowan, RL**, Frederick, BdeB.

Invited Presentations

Cowan RL. Invited Discussant, Association of Gay and Lesbian Psychiatrists Annual Symposium. Sexing the Body: Gender Politics and the Construction of Sexuality. May, 2000 Chicago, IL.

Cowan RL, Frederick B deb, Haga E, Rohan ML, Levin JM, Renshaw PF, Lukas SE. Invited Presenter, NIDA Scientific Conference: MDMA/Ecstasy Research: Advances, Challenges, Future Directions, July 19-20, 2001. Bethesda, MD. Abstract Title: Visual Cortex Activation Using The fMRI Blood Oxygen Level Dependent (BOLD) Method In Human MDMA (Ecstasy) Users.

Cowan RL. Invited Speaker, Drug Enforcement Administration: Rocky Mountain Club Drug Conference, Fort Collins, CO. September, 2002. "Neuroimaging in MDMA (Ecstasy) Users"

Cowan RL. Invited Speaker, National Institute of Drug Abuse, American Psychiatric Association Annual Meeting. “Careers in Drug Abuse Psychiatry Research.” New York, New York, May 2004.

Cowan, RL. Vanderbilt University, Neuroscience Brown Bag Seminar Series, March 2005. “Neuroimaging in Ecstasy Users.”

Cowan, RL. Vanderbilt University Institute for Imaging Sciences. “Neuroimaging Techniques in MDMA Research: Challenges in Assessing Chronic Effects of MDMA in Human Users.” October 15, 2004.

Cowan, RL. Vanderbilt University Medical School Department of Psychiatry, Division of Addictions, Addiction Grand Rounds, “Challenges to Neuroimaging in MDMA (Ecstasy) Users.” September 8, 2005.

Cowan, RL. Invited Speaker, Middle Tennessee Society of Magnetic Resonance Technologists, “Ecstasy.” October 29, 2005. Nashville, TN.

Cowan, RL. Invited Speaker, Vanderbilt General Clinical Research Center, Autonomic/Neurocardiology Rounds. “Neuroimaging in Human MDMA Users.” January 26, 2007.

- Cowan, RL.** Invited Speaker, Latin American Congress of Addiction Disorders. Sponsor: NIDA. “Neuroimaging of Ecstasy Abuse.” Buenos Aires, Argentina. April 13, 2007.
- Cowan, RL.** Invited Speaker, “The BOLD Signal”, Vanderbilt Kennedy Center Workshop, Introduction to fMRI: Basics, Research Design and Analysis. August 1, 2007. Nashville, TN.
- Cowan, RL.** Invited Speaker, “Research Compliance Expert,” Leadership Development Program, VMC School of Medicine. February 20, 2008. Nashville, TN.
- Cowan, RL.** Invited Speaker, “Neuroimaging in MDMA Polydrug Users,” International Drug Abuse Research Society (IDARS), 2007 Annual Meeting, Merida, Mexico.
- Cowan, RL.** Invited Speaker, “Translational Research: The Role of Anatomical and Functional Imaging,” American College of Toxicology, 2008 Annual Meeting, Tucson, AZ.
- Cowan, RL.** Invited Speaker, “Translational Research of MDMA Users” Grand Rounds, Department of Psychiatry, Vanderbilt University School of Medicine. 15 January, 2009.
- Cowan, RL.** Invited Speaker, “When the Serotonin Party Ends: The Effects of Ecstasy on the Human Brain.” Vanderbilt CONTE Center Symposium. November 11, 2009.
- Cowan, RL,** Mary S. Dietrich, Aize Cao, Evonne J. Charboneau, Sohee Park, John Karageorgiou, Vidya Raj. “MDMA (Ecstasy) use is associated with widespread changes in brain neurophysiology: functional magnetic resonance imaging (fMRI) blood oxygen level dependent (BOLD) studies of visual, motor, and language function in human MDMA users”. Panel: Are neuronal consequences of recreational MDMA (3,4-methylenedioxy-methamphetamine; Ecstasy) use still a problem? Recent neuroimaging findings”, ACNP 2009 Annual Meeting, Hollywood, FL.
- Cowan, RL,** EJ Charboneau, MS Dietrich, S Park, PR Martin, MS Buchowski. Exercise Reduces Cannabis Craving And Cue Activation: An fMRI Study. Society for Biological Psychiatry Symposium: Craving, compulsion and consumption: evolved neurobiology in disorders of desire. May, 2010
- Cowan, RL.** Invited Participant, “Recovery from Addiction: A Science in Action Symposium.” Norlien Foundation, Alberta Family Wellness Initiative. October 18-22, 2010. Banff, Alberta.
- Cowan, RL.** Invited Speaker, Kevin T. Finnegan MD, PhD Memorial Grand Rounds. Department of Psychiatry, University of Utah, Salt Lake City, UT. March 11, 2011
- Cowan, RL.** Invited Speaker, “MRI and MRS of Ecstasy Users”, in course “MRI of Drug Abuse”. International Society for Magnetic Resonance in Medicine, ISMRM. May 11, 2011, Montreal, Quebec, Canada.
- Cowan, RL.** Invited Speaker, Inaugural John E. Fryer Memorial Award, invited speaker, “John E. Fryer: Contributions and Consequences”, Vanderbilt University School of Medicine, September 26, 2011.

Cowan, RL. Invited Speaker. McLean Hospital Neuroscience Seminar Series. Neuroimaging in Ecstasy Users. McLean Hospital/Harvard Medical School. March 06, 2012.

Cowan, RL. Invited Speaker. Vanderbilt Department of Psychiatry Grand Rounds. Chronic Serotonin Neurotoxicity in Human Recreational Ecstasy (MDMA) Users. Vanderbilt University School of Medicine, May 10, 2012.

Cowan, RL. Invited Speaker. Washington University Medical Center. Metabolism, Obesity and Diabetes Seminar Series. Structural brain correlates of childhood obesity. March 7, 2013.

Cowan, RL. Invited Speaker. Vanderbilt Kennedy Center Developmental Disabilities Grand Rounds. January 2014.

Cowan, RL. VUIIS/PNP Seminar 2014. Neuroimaging in MDMA/Ecstasy users

Cowan, RL. Undergraduate Neuroscience Society distinguished scholar lecture, University of Alabama, Birmingham. Brain effects of MDMA (Ecstasy or Molly) in human recreational users. April 2015.

Sheryl Fleisch, **Ron Cowan**, Daniel Elswick, Maja Skikic. AADPRT Workshop 2015. Managing Up, Down, and Across: Ten Steps to Effective Leadership.

Self-submitted presentations

Cowan RL, Reimao R, Lemmi H and Vander Zwagg R. Sleep onset REM periods during the night as a marker for narcolepsy. Southern EEG Society 1984.

Lemmi H, **Cowan RL**, Reimao R, Appavoo S and Vander Zwagg R. Sleep onset REM periods during the sleep cycle: Are they diagnostic of narcolepsy? Southern Sleep Society 1985.

Reimao R, Akiskal HS, **Cowan RL**, Lemmi H, Belluomini J and Vander Zwagg R. Normative data for nocturnal penile tumescence (NPT) in non-organic impotence. Southern Sleep Society 1985.

Cowan RL and Park MR. Hypothalamic projection to the dorsal raphe nucleus in the rat: an anterograde study using the PHAL method. Neuroscience Abstracts 1986;12(1):38.9.

Cowan RL, Akiskal HS and Lemmi H. Polysomnographic analysis of sleep disturbances in anxiety and depression. Tennessee Academy of Science, Collegiate Division 1984.

Cowan RL and Park MR. Hypothalamic-raphe projection: a retrograde study. Southeastern Regional Neuroscience Meeting 1985.

Lemmi H, **Cowan RL**, Reimao R and Vander Zwagg R. Nocturnal sleep of narcoleptics. World Congress of Neurology 1985.

Lemmi H, Reimao R, **Cowan RL**, Appavoo S and Vander Zwagg R. Sleep onset REM periods after spontaneous awakenings and the diagnosis of narcolepsy. Sleep Research Abstracts 1985:14:186.

- Cowan RL** and Mize RR. Anti-serotonin reactive cells in the dorsal raphe nucleus of the cat have varying morphologies: a quantitative immunocytochemical study. Federation Abstracts 1986;45:434.
- Cowan RL**, Wilson CJ and Emson PC. Parvalbumin is present in GABA containing interneurons of the rat neostriatum. Neuroscience Abstracts 1987;13(3):1573.
- Cowan RL** and Wilson CJ. Intracellular biocytin staining reveals the complete telencephalic arborizations of rat pyramidal tract neurons in rats. Neuroscience Abstracts 1989;15(1):660.
- Cowan RL** and Wilson CJ. Synaptic connections between pyramidal tract cells and corticostriatal neurons in rats. Neuroscience Abstracts 1990;16(1):417.
- Cowan RL**, Sesack SR, Chan J, Van Bockstaele EJ and Pickel VM. Ultrastructure of physiologically characterized cortical neurons and their relation to GABAergic and catecholaminergic terminals in rat brain. Neuroscience Abstracts 1992;18:475.11.
- Branchereau P, Van Bockstaele EJ, **Cowan RL**, Chan J and Pickel VM. Evidence for GABA-mediated synaptic responses of cortical pyramidal neurons following stimulation of the locus coeruleus. Neuroscience Abstracts 1994, 20(2):301.12.
- Rubin HC, **Cowan RL**, Bialer PA, Townsend MH, Ashley KB. Symposium Participant, Is Homophobia a Mental Disorder? APA Committee on Gay, Lesbian and Bisexual Issues. May 2000 Meeting of the American Psychiatric Association, Chicago IL.
- Cowan RL**, Frederick B deB, Rainey M, Levin J, Maas LC, Bang J, Renshaw PF, Lukas SE. Photic activation in cocaine withdrawn subjects: an fMRI BOLD study. Abstract presented at the Annual Meeting of the College on Problems of Drug Dependence, San Juan, PR. June, 2000.
- Frederick, B. de.B., **Cowan, RL**, Rainey, M., and Renshaw, P., 2000. Effects of stimulus wavelengths and luminance on BOLD fMRI photic response. 6th Annual Meeting of the Organization for Human Brain Mapping. San Antonio, TX.
- Cowan RL**, Frederick B. deB, Rohan ML, Bang J, Levin JM, Lukas SE, Renshaw PF. Effect of *d*-amphetamine on Response to Red and Blue Light in Primary Visual Cortex of Humans: A BOLD fMRI Study. November 2000 Meeting of the Society for Neuroscience, New Orleans.
- Cowan RL**, Frederick B de B, Levin J M, Rohan M L, Vilafuerte R A, Nassar L E, Lukas S E, Renshaw P F. A Novel BOLD fMRI assay of Human Central Nervous System Dopamine Function: The Effects of D-Amphetamine on Photic Activation to Blue Light. Joint Annual Meeting ISMRM/ESMRMB. Glasgow, Scotland, UK. April 21-27, 2001.
- Cowan RL**, Frederick B de B, Haga E, Nassar L., Rohan M., Levin J, Lukas SE, Renshaw PF. An fMRI BOLD Analysis of Visual Activation in Ecstasy Users. Annual Meeting of College on Problems of Drug Dependence, Scottsdale, AZ. June 16-21, 2001.

- Cowan RL**, Haga E, Frederick B, Rohan ML, Levin JM, Lukas SE, Renshaw PF. fMRI Analysis of Photic Activation in Visual Cortex of Female MDMA Users. Annual Meeting Society for Neuroscience, San Diego, CA. November 10-15, 2001.
- Frederick B de B, **Cowan RL**, Renshaw PF. BOLD fMRI with Multicolor Photic Stimulation: A Potential Assay for CNS Dopamine Function. Presented, Annual Meeting of the Society for Biological Psychiatry, Philadelphia, PA, May 2002.
- Cowan RL**, IK Lyoo, SW Kong, SM Sung, E Haga, SE Lukas, PF Renshaw. Reduced Focal Cortical Gray Matter Density in Human MDMA (Ecstasy) Users: A Voxel-Based Morphometry Study. Breaking News Presentation, Annual Meeting of College on Problems of Drug Dependence, Quebec City, Canada. June 2002.
- Anderson CM, Silveri MM, **Cowan RL**, Diaz CJ, MacNeil J, Maas LC, Madras BK, Lukas SE, Renshaw PF, Kaufman MJ. Activation of lobule VIII of the human cerebellar vermis by oral methylphenidate and cue-induced cocaine craving. Annual Meeting of College on Problems of Drug Dependence, Quebec City, Canada. June 2002.
- Frederick B de B, **Cowan RL**, Renshaw PF. Assessment of brain dopaminergic function using two-color BOLD fMRI. Annual Meeting of College on Problems of Drug Dependence, Quebec City, Canada. June 2002.
- Lukas SE, Stull M, **Cowan RL**. Polydrug abuse patterns with MDMA (Ecstasy) among young adults. Annual Meeting of College on Problems of Drug Dependence, Quebec City, Canada. June 2002.
- Ahmad AS, **Cowan RL**, Dore S. Heme oxygenase 1 (HO1) is neuroprotective against NMDA-induced excitotoxicity. Society for Neuroscience Annual Meeting, San Diego, CA, 2004.
- Cowan RL**. Neuroimaging techniques in MDMA research: challenges in assessing chronic effects of MDMA in human users. Society for Neuroscience Annual Meeting, Mini-Symposium Presentation, San Diego Ca, 2004.
- De La Garza R (Chair), **Cowan RL** (Co-Chair), Baumann MH, Bubar MJ, Fantegrossi B, Kalechstein AD. Mini-symposium "Neurobiological Consequences of MDMA Exposure: A Critical Evaluation of Published Findings, Methods, and Conclusions." Society for Neuroscience Annual Meeting, San Diego Ca, 2004.
- Cowan RL**, H. Liang, S. Park, C. Cannistraci, J.C. Gatenby, S. E. Lukas, P.F. Renshaw, J.C. Gore and R. Shelton "A 3.0 T BOLD fMRI study of word encoding in human MDMA users" Presented at 2005 meeting of the College on Problems of Drug Dependence, Orlando FL.
- Cowan RL**, Bauernfeind AL, Shafa E. Ecstasy exposure is associated with increased spatial activation in visual cortical subregions in human Ecstasy users: a 3 T fMRI BOLD study. Accepted for presentation, 2006 meeting of the College on Problems of Drug Dependence, Scottsdale, AZ.
- M S Ansari, MS, T de Paulis, PhD, J A Clanton, PharmD, **Cowan R L**, MD, R M Kessler, MD and R M Baldwin, PhD. Rapid Synthesis of [18F]Setoperone by Microwave Heating and

Simple Purification. Submitted, 17th International Symposium on Radiopharmaceutical Sciences. Aachen, Germany 2007.

- V. Raj, E. Genca, A. Bauernfeind, E. Charboneau, A. Henicke, C. Cannistraci, M. Dietrich, **RL Cowan**. Semantic memory processing in MDMA users: an fMRI study. 2007 Annual Meeting of the College on Problems of Drug Dependence, Quebec City, Quebec, CA.
- Vidya Raj, Amy L. Bauernfeind, Mary S. Dietrich, Sohee Park, **Ronald L. Cowan**. Word Encoding and Recall in Human MDMA (Ecstasy) Polydrug Users: An fMRI BOLD study. Accepted, 2008 meeting Society for Biological Psychiatry.
- Evonne Charboneau, Amy Bauernfeind, Emily Castellanos, Mary S. Dietrich, Gregory Plemmons, Sohee Park, Peter R. Martin, **Ronald L. Cowan**. Neuroimaging of Brain Activation In Response To Food Cues In Obese Children. Accepted, 2008 meeting Society for Biological Psychiatry.
- B. Cabaniss, N. D. Woodward, A. L. Bauernfeind, M. S. Dietrich, **R. Cowan**. Cerebral morphological changes in human MDMA (Ecstasy) polydrug users: a voxel-based morphometry study. Accepted, 2008 meeting Society for Biological Psychiatry.
- R. K. Minas, **R. Cowan**, S. Park. Increased schizotypal traits and altered affect in young cannabis users. 2008 meeting College on Problems of Drug Dependence, San Juan, PR.
- V. Raj, A. L. Bauernfeind, M. Dietrich, **R. L. Cowan**. MDMA (Ecstasy) use is associated with altered brain activation to word encoding and recall: an fMRI study. 2008 meeting College on Problems of Drug Dependence, San Juan, PR.
- B. Cabaniss, N. D. Woodward, A. L. Bauernfeind, M. S. Dietrich, **RL Cowan**. Cerebral morphological changes in human MDMA (Ecstasy) polydrug users: a voxel-based morphometry study. 2008 meeting College on Problems of Drug Dependence, San Juan, PR.
- M.J. Avison, E.E. Garcia, N.C. Dodge, M.J. Burden, **RL Cowan**, R. Klorman, S.W. Jacobson, J.L. Jacobson. Neural substrates of number processing are impaired in young adults prenatally exposed to alcohol. Presented, Society for Neuroscience, 2008.
- RL Cowan**, J Karageorgiou, MS Dietrich. MDMA (Ecstasy) is associated with increased regional brain activation during motor task performance in humans: a functional magnetic resonance imaging (fMRI) study. Accepted, 2008 meeting of the American College of Neuropsychopharmacology.
- J Karageorgiou, MS Dietrich, EJ Charboneau, ND Woodward, JU Blackford, RM Salomon, **RL Cowan**. Prior MDMA (Ecstasy) use is associated with increased basal ganglia-thalamocortical circuit activation during motor task performance in humans: an fMRI study. 2009 Annual meeting College on Problems of Drug Dependence, Reno/Sparks, NV.
- Evonne Charboneau, Amy Bauernfeind, Emily Castellanos, Mary S. Dietrich, Gregory Plemmons, Sohee Park, Peter R. Martin, **RL Cowan**. Neuroimaging of brain activation in response to food cues in obese children. 2009 Annual meeting College on Problems of Drug Dependence, Reno/Sparks, NV.

- A Cao, MS Dietrich, **RL Cowan**. Reduced fractional anisotropy (FA) in human MDMA (Ecstasy) users is consistent with cortical axon loss: a 3 Tesla diffusion tensor (DTI) MRI study. 2009 Annual meeting College on Problems of Drug Dependence, Reno/Sparks, NV.
- MJ Avison, EE Garcia, J Pryweller, NC Dodge, MJ Burden, **RL Cowan**, R Klorman, SW Jacobson, JL Jacobson. Neural Correlates of Impaired Number Processing in Young Adults with Prenatal Alcohol Exposure. 2009 Annual meeting College on Problems of Drug Dependence, Reno/Sparks, NV.
- J Karageorgiou, MS Dietrich, **RL Cowan**. Human recreational MDMA (Ecstasy) use is associated with chronic alterations in cerebellar activation during motor task performance: a functional magnetic resonance imaging (fMRI) study. 2009. Annual meeting of the Society for Neuroscience, Chicago, IL.
- JW Buckholtz, MT Treadway, **RL Cowan**, RM Baldwin, MS Ansari, R Li, ES Shelby, AN Schwartzman, CE Smith, RM Kessler and DH Zald. Mesocorticolimbic Dopamine Receptor Availability and Release Predicts Human Impulsivity. 2009 Annual meeting of the Society for Neuroscience, Chicago, IL.
- David Zald, Joshua W. Buckholtz, Michael T. Treadway, **RL Cowan**, Stephen D. Benning, Rui Li, M. Sib Ansari, Ronald M. Baldwin, Ashley N. Schwartzman, Evan S. Shelby, Clarence E. Smith, David Cole, Robert M. Kessler. Multimodal Imaging Studies of the Relationship Between Dopamine and Personality. Panel, ACNP 2009 Annual Meeting, Hollywood, FL.
- RM Salomon, **RL Cowan**, B Rodgers, M Dietrich. Pontine Raphé and the Habenula Functional Connectivities: Effect of Tryptophan Depletion. Abstract, Submitted for 2010 meeting of the Society of Biological Psychiatry, New Orleans, LA.
- EE Toaz, EJ Charboneau, MS Dietrich, A Cao, **RL Cowan**. MDMA (Ecstasy) Use Is Associated With Increased Signal Intensity In Anterior Cingulate Gyrus During Flanker Task Performance: An fMRI Study. Abstract, Submitted for 2010 meeting of the Society of Biological Psychiatry, New Orleans, LA.
- J Urbano Blackford, SN Avery, **RL Cowan**, DH Zald. Increased amygdala activation to familiarized, not novel, faces characterizes inhibited temperament. Abstract, 2010 meeting of the Society of Biological Psychiatry, New Orleans, LA.
- J Karageorgiou, MS Dietrich, **RL Cowan**. Human MDMA (Ecstasy) use is associated with chronic alterations in cerebellar activation during a motor task: an fMRI study. 2010 meeting of the College on Problems of Drug Dependence, Scottsdale, AZ.
- RL Cowan**, E Toaz, EJ Charboneau, MS Dietrich, A Cao. Human MDMA use is associated with increased activation in anterior cingulate gyrus during flanker task performance: an fMRI study. 2010 meeting of the College on Problems of Drug Dependence, Scottsdale, AZ.

- Blackford, JU, Allen A, Avery, SN, and **Cowan RL** (2011). Failure of rapid amygdala habituation in individuals with an inhibited temperament. To be presented at the Cognitive Neuroscience Society, San Francisco, CA.
- Cowan RL**, P Mortensen, M Benningfield, JU Blackford, TJ Watkins, CR Di Iorio, Human recreational MDMA/Ecstasy use is associated with altered amygdala and hippocampus activation during novelty detection. Presented at the annual meeting of the American College of Neuropsychopharmacology (ACNP) 2010.
- MDMA (Ecstasy) use is associated with lasting increases in cortical 5-HT_{2A} receptors. **RL Cowan**, CR Di Iorio, TJ Watkins, MS Dietrich, A Cao, JU Blackford, B Rogers, MS Ansari, RM Baldwin, R Li, RM Kessler, RM Salomon, M Benningfield, RL Cowan.
- P Mortensen, M Benningfield, JU Blackford, TJ Watkins, CR Di Iorio, **RL Cowan**. MDMA (Ecstasy) use is associated with increased amygdalar and hippocampal activation during novelty detection. College on Problems of Drug Dependence, 2011, Hollywood, FL.
- RL Cowan**, CR Di Iorio, TJ Watkins, MS Dietrich, A Cao, JU Blackford, B Rogers, MS Ansari, RM Baldwin, R Li, RM Kessler, RM Salomon, M Benningfield. Evidence for chronically reduced cortical serotonin in human female recreational Ecstasy (MDMA) users. Accepted, 2011 Meeting, Society for Neuroscience, Washington DC.
- TJ Watkins, V Raj, CR Di Iorio, MS Dietrich, S Park, JU Blackford, **RL Cowan**. Human MDMA (Ecstasy) users have altered brain activation during semantic encoding. Presented, College on Problems of Drug Dependence, 2011, Hollywood, FL.
- EJ Charboneau, C Black, N Richman, C Di Iorio, TJ Watkins, S Park, M Dietrich, Aize Cao, J Blackford, G Plemmons, **RL Cowan**. Visual Food Cues Produce Widespread Limbic Activation in Fasting Pre-pubertal Normal Weight Children. Presented, Annual meeting for the Society for the Study of Obesity, 2011, Orlando FL.
- Cowan RL**, Benningfield MM, Watkins TJ, Blackford J. MDMA (ecstasy) users have increased regional brain activation during stroop task performance: an fMRI study. Presented at 67th annual meeting of the Society of Biological Psychiatry, Philadelphia, PA May 2012.
- Margaret M. Benningfield, Melissa E. Ellsworth, Jennifer U. Blackford, Peter R. Martin, **Ronald L. Cowan**. Discounting of Future Rewards and Brain Activation in Healthy 10-14 Year-Olds. Presented at 67th annual meeting of the Society of Biological Psychiatry, Philadelphia, PA May 2012.
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