

## CURRICULUM VITAE

**Alan Seth Lewis, M.D., Ph.D.**  
**Assistant Professor of Psychiatry and Behavioral Sciences**  
**Vanderbilt University Medical Center**

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**DATE AND PLACE OF BIRTH:** December 23, 1982, Albany, NY

**MARITAL STATUS:** Married to Trisha C. Lewis, L.C.S.W.

**CHILDREN:** Luke Theodore Lewis, 11/25/2015

### EDUCATION

<b>College</b>	University of Pennsylvania College of Arts and Sciences Philadelphia, PA B.A., Chemistry (Summa Cum Laude)	2005
<b>Graduate</b>	Northwestern University The Graduate School Chicago, IL Ph.D., Neuroscience Dissertation title: The role of TRIP8b in neuronal HCN channel trafficking and function Advisor: Dane M. Chetkovich, M.D., Ph.D.	2010
<b>Professional</b>	Northwestern University Feinberg School of Medicine Chicago, IL M.D.	2012
<b>Clinical training</b>	Internship in Psychiatry Residency in Psychiatry Yale-New Haven Hospital New Haven, CT	2012-2013 2013-2016
<b>Research fellowship</b>	Neuroscience Research Training Program Department of Psychiatry Yale University School of Medicine Mentor: Marina R. Picciotto, Ph.D.	2016-2018

## LICENSURE

Connecticut Medical License 53231	2014
Tennessee Medical License 57846	2018
Federal DEA License FL4854851	2014
Federal DEA "X" License XL4854851	2014

## BOARD CERTIFICATION

Diplomate, American Board of Psychiatry and Neurology	2016
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## ACADEMIC APPOINTMENTS

### **Yale School of Medicine**

Department of Psychiatry Lecturer in Psychiatry	2017-2018
Instructor in Psychiatry	2018

### **Vanderbilt University School of Medicine | Vanderbilt University Medical Center**

Department of Psychiatry and Behavioral Sciences Assistant Professor (physician-scientist (tenure) track)	2018-present
Department of Neurology (secondary) Assistant Professor	2018-present
Vanderbilt Kennedy Center Member	2018-present
Center for Cognitive Medicine Department of Psychiatry and Behavioral Sciences Member	2018-present
Vanderbilt Brain Institute Training Faculty	2018-present

## HOSPITAL APPOINTMENTS

<b>Yale-New Haven Psychiatric Hospital, New Haven, CT</b> Attending Psychiatrist	2017-2018
<b>Vanderbilt Psychiatric Hospital, Nashville, TN</b> Attending Psychiatrist	2018-present

## EMPLOYMENT

<b>Silver Hill Hospital, New Canaan, CT</b> Per Diem Psychiatrist	2014-2016
<b>Griffin Hospital, Derby, CT</b> Per Diem Psychiatrist	2016-2018

## **PROFESSIONAL ORGANIZATIONS**

Society for Neuroscience	2008-present
Society of Biological Psychiatry	2018-present
American Psychiatric Association	2011-present
Tennessee Psychiatric Association	2018-present
Connecticut State Medical Society	2012-2018
Connecticut Psychiatric Society	2012-2018
International Society for Research on Aggression	2020-present

## **PROFESSIONAL ACTIVITIES**

### **Intramural service**

#### **Yale School of Medicine | Yale-New Haven Hospital**

Graduate Medical Education Committee	2013-2014
Psychiatry Residency/ Neuroscience Research Training Program Recruitment	2015-2017

#### **Vanderbilt University School of Medicine | Vanderbilt University Medical Center**

Admissions interviewer for psychiatry residency, Interdisciplinary Graduate Program, and Medical Scientist Training Program	2018-present
VUSM buddies faculty mentor	2018-2019
VUMC Annual Research Forum judge	2019
Vanderbilt Postdoctoral Symposium poster judge	2019
Kennedy Center Science Day poster judge	2019
Psychiatry Grand Rounds Committee	2019-present
Academic Psychiatry Day Committee	2020-present

### **Extramural service**

#### **Journal editorial boards**

Journal of Autism and Developmental Disorders	2019-present
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#### **Journal reviewer**

Schizophrenia Research
Neuroscience Letters
Journal of Neurophysiology
Journal of Autism and Developmental Disorders
The Primary Care Companion for CNS Disorders
Journal of Child and Adolescent Psychopharmacology
Psychopharmacology
Frontiers in Molecular Neuroscience
Cognitive and Behavioral Neurology
SAGE Open Medical Case Reports
Behavioral Brain Research
Journal of the Canadian Academy of Child and Adolescent Psychiatry

### **Special awards or recognition for professional activities**

<b>Phi Beta Kappa</b> University of Pennsylvania	2005
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<b>Morton Heller Award for Exemplary Research</b> Medical Scientist Training Program Northwestern University	2009
<b>Ruth L. Kirschstein National Research Service Award for Individual Predoctoral MD/PhD Fellows</b> National Institute of Neurological Disorders and Stroke	2009
<b>McNeil Research Award</b> Department of Psychiatry Yale School of Medicine	2013
<b>Research Colloquium for Junior Investigators</b> American Psychiatric Association	2014
<b>Seymour L. Lustman Resident Research Award</b> Department of Psychiatry Yale School of Medicine	2015
<b>Meixner Postdoctoral Fellowship in Translational Research</b> Autism Speaks	2015
<b>Travel Fellowship Award</b> Society of Biological Psychiatry	2015
<b>Laughlin Foundation Merit Award</b> Department of Psychiatry Yale School of Medicine	2016
<b>Career Development Institute for Psychiatry</b> University of Pittsburgh and Stanford University	2017
<b>Travel Award</b> American College of Neuropsychopharmacology	2017
<b>Annual Meeting Senior Researcher Award</b> American Academy of Child and Adolescent Psychiatry	2018
<b>Young Physician Scientist Award</b> American Society for Clinical Investigation	2020

## **TEACHING ACTIVITIES**

### **Didactic**

<b>Northwestern University Feinberg School of Medicine</b> Teaching assistant Neuroanatomy for medical students	2008
Small group tutor Structure-function course for medical students	2008

**Yale School of Medicine**

Small group facilitator	2017-2018
PREP didactic for PGY1 residents	

<i>Psychogenic non-epileptic seizures in children and adolescents</i>	
Lecture to pediatrics residents	2016

**Vanderbilt University School of Medicine | Vanderbilt University Medical Center**

NRSA proposal writing mentor, NURO8326	2019
Psychiatry resident weekly supervision	2019-present
Psychiatry residency OSCE and OSTE preceptor	2019-present

**Research supervision****Undergraduate**

Katherine Garvey; Yale undergraduate student	2015
Elizabeth Chamiec-Case; Avielle Foundation summer intern and UConn undergraduate student	2017
Dawson Stout; Avielle Foundation summer intern and Tufts undergraduate student	2016, 2018
Lena Walton; Tufts undergraduate student	2016
Justin Chan; Yale undergraduate student	2018
Ashleigh Grindon; Univ. of Southern California Undergrad	2019

**Graduate**

Chantel Wilson (Integrated Graduate Program)	2019-2020
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**Technician**

Sarah Lowrey	2019-2020
James Bauer	2020-present

**RESEARCH PROGRAM****Active grants**

K23MH116339-01 (Lewis)	04/13/2018-03/31/2023	9.00 calendar months
NIH/NIMH	Total cost: \$900,054	

**A translational approach to understand hippocampal neural circuitry regulating impulsive aggression**

The major goals of this project are to provide career development training in systems and translational neuroscience. Research toward this goal will determine how neurons in the mouse dentate gyrus regulate aggression, and will use a pharmacological challenge in humans with schizophrenia to determine how alpha-7 nicotinic agonists influence impulsive responding to emotional cues.

**Completed grants**

Grant #9699 (Lewis)	12/01/2015 – 4/30/2018
Autism Speaks	Total cost: \$185,000

**Nicotinic cholinergic modulation as a novel treatment strategy for aggression associated with autism**

This Meixner Postdoctoral Fellowship in Translational Autism Research supports training and research experiences in clinical and basic research related to aggression in autism.

F30NS064757 (Lewis)	01/05/09-05/31/12
NIH/NINDS	Total cost: \$125,191

**The Role of TRIP8b in Neuronal HCN Channel Trafficking**

This fellowship award supported my predoctoral work with Dr. Dane Chetkovich at Northwestern to determine how TRIP8b, an auxiliary subunit of the hyperpolarization-activated cyclic nucleotide-gated (HCN) channels, regulates HCN channel trafficking and function in the hippocampus.

## **PUBLICATIONS AND PRESENTATIONS**

### **Articles in refereed journals**

1. Hansen DB, **Lewis AS**, Gavalas SJ, Joullié MM (2006) A stereoselective synthetic approach to (2S, 3R)-N-(1',1'-dimethyl-2',3'-epoxypropyl)-3-hydroxytryptophan, a component of cyclomarin A. **Tetrahedron Asymmetry** 17:15-21.
2. Chung WK, Shin M, Jaramillo TC, Leibel RL, LeDuc CA, Fischer SG, Tzilianos E, Gheith AA, **Lewis AS**, Chetkovich DM (2009) Absence epilepsy in apathetic, a spontaneous mutant mouse lacking the h channel subunit, HCN2. **Neurobiology of Disease** 33:499-508.
3. **Lewis AS**, Schwartz E, Chan CS, Noam Y, Shin M, Wadman WJ, Surmeier DJ, Baram TZ, Macdonald RL, Chetkovich DM (2009) Alternatively spliced isoforms of TRIP8b differentially control h channel trafficking and function. **Journal of Neuroscience** 29:6250-6265.
4. **Lewis AS**, Estep CM, Chetkovich DM (2010) The fast and slow ups and downs of HCN channel regulation. **Channels (Austin)** 4:215-231.
5. **Lewis AS**, Chetkovich DM (2011) HCN channels in behavior and neurological disease: too hyper, or not active enough? **Molecular and Cellular Neuroscience** 46:357-67.
6. Chan CS, Glajch KE, Gertler TS, Guzman JN, Mercer JN, **Lewis AS**, Goldberg AB, Tkatch T, Shigemoto R, Fleming SM, Chetkovich DM, Osten P, Kita H, Surmeier DJ (2011) HCN channelopathy in external globus pallidus neurons in models of Parkinson's disease. **Nature Neuroscience** 14:85-92.
7. **Lewis AS**, Vaidya SP, Blais CA, Liu Z, Stoub TR, Brager DH, Chen X, Bender RA, Estep CM, Popov AB, Kang CE, van Veldhoven PP, Bayliss DA, Nicholson DA, Powell CM, Johnston D, Chetkovich DM (2011) Deletion of the HCN channel auxiliary subunit TRIP8b impairs hippocampal I<sub>h</sub> localization and function and promotes antidepressant behavior in mice. **Journal of Neuroscience** 31:7424-7440.
8. Han Y, Noam Y, **Lewis AS**, Gallagher JJ, Wadman WJ, Baram TZ, Chetkovich DM (2011) Trafficking and gating of hyperpolarization-activated cyclic nucleotide-gated channels are regulated by interaction with tetratricopeptide repeat-containing Rab8b-interacting protein (TRIP8b) and cyclic AMP at distinct sites. **Journal of Biological Chemistry** 286:20823-20834.
9. Khurana S, Liu Z, **Lewis AS**, Rosa K, Chetkovich D, Golding NL (2012) An essential role for modulation of hyperpolarization-activated current in the development of binaural temporal precision. **Journal of Neuroscience** 32:2814-2823.
10. Wilkars W, Liu Z, **Lewis AS**, Stoub TR, Ramos EM, Brandt N, Nicholson DA, Chetkovich DM, Bender RA (2012) Regulation of Axonal HCN1 Trafficking in Perforant Path Involves Expression of Specific TRIP8b Isoforms. **PLoS One** 7:e32181.
11. Marcelin B, Liu Z, Chen Y, **Lewis AS**, Becker A, McClelland S, Chetkovich DM, Migliore M, Baram TZ, Escalapez M, Bernard C (2012) Dorsoventral Differences in Intrinsic Properties in Developing CA1 Pyramidal Cells. **Journal of Neuroscience** 32:3736-3747.

12. Bankston JR, Camp SS, DiMaio F, **Lewis AS**, Chetkovich DM, Zagotta WN (2012) Structure and stoichiometry of TRIP8b interaction with HCN channels. *Proceedings of the National Academy of Sciences of the United States of America* 109:7899-7904.
13. Marcelin B, Lugo JN, Brewster AL, Liu Z, **Lewis AS**, McClelland S, Chetkovich DM, Baram TZ, Anderson AE, Becker A, Esclapez M, Bernard B (2012) Differential dorso-ventral distributions of Kv4.2 and hyperpolarization-activated cyclic adenosine monophosphate gated channel (HCN) proteins confer distinct integrative properties to hippocampal CA1 pyramidal cell distal dendrites. *Journal of Biological Chemistry* 287:17656-17661.
14. Huang Z, Lujan R, Martinez-Hernandez J, **Lewis AS**, Chetkovich DM, Shah MM (2012) TRIP8b-Independent Trafficking and Plasticity of Adult Cortical Presynaptic HCN1 Channels. *Journal of Neuroscience* 32: 14835-48.
15. Brager DH, **Lewis AS**, Chetkovich DM, Johnston D (2013) Short- and long-term potentiation in CA1 neurons from mice lacking the h-channel auxiliary subunit TRIP8b. *Journal of Neurophysiology* 110:2350-2357.
16. **Lewis AS**, Mineur YS, Smith PH, Cahuzac ELM, Picciotto MR (2015) Modulation of aggressive behavior in mice by nicotinic receptor subtypes. *Biochemical Pharmacology* 97:488-497.
17. Heuermann R, Jaramillo TC, Ying S-W, Suter BA, Han Y, Lyman K, **Lewis AS**, Hampton TG, Goldstein PA, Shepherd GMG, Chetkovich DM (2015) Reduction of thalamic and cortical Ih by deletion of TRIP8b produces a mouse model of human absence epilepsy. *Neurobiology of Disease* 85:81-92.
18. **Lewis AS**, Oberleitner L, Morgan PT, Picciotto MR, McKee SA (2015) Association of cigarette smoking with interpersonal and self-directed violence in a large community-based sample. *Nicotine and Tobacco Research* 18:1456-62.
19. **Lewis AS**, Oldham M (2015) Delusional infestation with black mold presenting to the general hospital setting. *Primary Care Companion for CNS Disorders* 17:eCollection.
20. van Schalkwyk GI\*, **Lewis AS\***, Qayyum Z, Koslosky K, Picciotto MR, Volkmar FR (2015) Reduction of aggressive episodes after repeated transdermal nicotine administration in a hospitalized adolescent with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders* 45: 3061-3066. (\*denotes equal contribution)
21. **Lewis AS**, van Schalkwyk GI, Bloch MH (2017) Alpha-7 nicotinic agonists for cognitive deficits in neuropsychiatric disorders: a translational meta-analysis of rodent and human studies. *Progress in Neuropsychopharmacology and Biological Psychiatry* 75:45-53.
22. van Schalkwyk GI, **Lewis AS**, Beyer C, Johnson J, van Rensburg S, Bloch MH (2017) Efficacy of antipsychotics for irritability and aggression in children: a meta-analysis. *Expert Review of Neurotherapeutics* 17:1045-1053.
23. **Lewis AS**, Pittenger ST, Mineur YS, Stout D, Smith PH, Picciotto MR (2018) Bidirectional regulation of aggression in mice by hippocampal alpha-7 nicotinic acetylcholine receptors. *Neuropsychopharmacology* 43:1267-1275.
24. **Lewis AS**, van Schalkwyk GI, Ortiz Lopez M, Volkmar FR, Picciotto MR, Sukhodolsky DG (2018) An Exploratory Trial of Transdermal Nicotine for Aggression and Irritability in Adults with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders* 48:2748-2757.

25. Michaelsen KC, Lewis AS, Morgan PT, McKee SA, Wasser TD (2018) Forensic Rotations for Residents: Navigating the Challenges. *The Journal of the American Academy of Psychiatry and the Law* 46(3):322-328.
26. Lewis AS, van Schalkwyk GI (2019) Systematic Review: Distribution of Age and Intervention Modalities in Therapeutic Clinical Trials for Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders* In press.
27. Chan J, Stout D, Pittenger ST, Picciotto MR, Lewis AS (2019) Induction of reversible bidirectional social approach bias by olfactory conditioning in male mice. *Social Neuroscience* In press.

#### **Books, book chapters, invited reviews**

1. Lewis AS, Picciotto MR (2013) High-affinity nicotinic acetylcholine receptor expression and trafficking abnormalities in psychiatric illness. *Psychopharmacology* 229:477-85.
2. Picciotto MR, Lewis AS, van Schalkwyk GI, Mineur YS (2015) Mood and anxiety regulation by nicotinic acetylcholine receptors: a potential pathway to modulate aggression and related behavioral states. *Neuropharmacology* 96:235-243.
3. Lewis AS, Picciotto MR (2020) Regulation of aggressive behaviors by nicotinic acetylcholine receptors: animal models, human genetics, and clinical studies. *Neuropharmacology*. In press.

#### **Letters to editor, book reviews, editorials**

1. Lewis AS (2016) Testing a new approach for easing self-harm and dangerous outbursts. *Autism Speaks Blog*.
2. Furman K, Lewis AS (2016) Neuroscience in the Media: Heroin Vaccine. *National Neuroscience Curriculum Initiative*.
3. Lewis AS, Olincy A, Buchanan RW, Kem WS, Picciotto MR, Freedman R (2017) Effects of a nicotinic agonist on the Brief Psychiatric Rating Scale five-factor subscale model in schizophrenia. *Schizophrenia Research* 195:568-569.

#### **Abstracts and poster presentations**

1. Alternative splicing of the putative h channel trafficking protein TRIP8b controls subcellular localization in the hippocampus. 2008. *Gordon Research Conference on Epilepsy and Mechanisms of Neuronal Synchronization, Waterville, ME.*
2. Alternatively spliced isoforms of TRIP8b localize to distinct subcellular regions and control HCN1 surface trafficking. 2008. *Annual Meeting, Society for Neuroscience, Washington, D.C.*
3. The TRIP8b knockout mouse is a model for loss of I<sub>h</sub> without genetic disruption of HCN subunit proteins. 2009. *Annual Meeting, Society for Neuroscience, Chicago, IL.*
4. Deletion of the HCN channel auxiliary subunit TRIP8b in mouse impairs neuronal I<sub>h</sub> and is a model for studying the role of I<sub>h</sub> in neurological disease. 2010. *ASCI/AAP Joint Meeting, Chicago, IL.*



5. Deletion of TRIP8b eliminates  $I_h$  expression in CA1 pyramidal neurons by impairing HCN channel dendritic trafficking and protein levels. 2010. *Gordon Research Conference on Cellular and Molecular Neurobiology, Hong Kong, China.*
6. Visualizing nicotinic acetylcholine receptor calcium signal transduction in rodent brain regions relevant to neuropsychiatric disorders. 2014. *APA Research Colloquium for Junior Investigators, New York, NY.*
7. Reduction of aggressive behavior in mice by nicotinic acetylcholine receptor modulation. 2015. *Annual Meeting, Society of Biological Psychiatry, Toronto, Canada.*
8. Reduction of aggressive behavior in mouse models by the selective  $\alpha 7$  nicotinic partial agonist GTS-21. 2015. *Nicotinic Acetylcholine Receptors as Therapeutic Targets Symposium, Chicago, IL.*
9. Comparison of alpha-7 nicotinic receptor-selective compounds in human clinical trials for cognitive dysfunction and laboratory models of rodent cognition: meta-analysis and systematic review. 2016. *Annual Meeting, Society of Biological Psychiatry, Atlanta, GA.*
10. Regulation of aggressive behavior in mice by hippocampal alpha7 nicotinic receptors. 2017. *Annual Meeting, Society for Neuroscience, Washington, DC.*
11. Alpha-7 nicotinic receptors in the hippocampus bidirectionally regulate aggressive behavior in mice. 2017. *Annual Meeting, American College of Neuropsychopharmacology, Palm Springs, CA.*
12. Optical recording of dentate gyrus activity during social interaction. 2018. *Gordon Research Conference on Optogenetic Approaches to Understanding Neural Circuits and Behavior, Newry, ME.*
13. Activity of neuronal subpopulations in the mouse dentate gyrus correlates with specific social and exploratory behaviors. 2018. *Annual Meeting, American College of Neuropsychopharmacology, Hollywood, FL.*
14. Exploring the role of ventral hilar mossy cells in social and aggressive behaviors. 2019. *Annual Meeting, Society for Neuroscience, Chicago, IL.*
15. Genetic variation between individuals with autism and high or low levels of aggressive behaviors matched on clinical and demographic variables. 2019. *Annual Meeting, American College of Neuropsychopharmacology, Orlando, FL.*
16. Regulation of Aggressive Behavior by Mossy Cells in the Caudal Dentate Gyrus. 2020. *Annual Meeting, Society of Biological Psychiatry.* Accepted abstract, presentation canceled due to COVID19.
17. Postmortem Studies of Hippocampal Subfields in Schizophrenia: Systematic Review and Meta-Analysis. 2020. *Annual Meeting, Society of Biological Psychiatry.* Accepted abstract, presentation canceled due to COVID19.
18. Activation of mossy cells in the ventral dentate gyrus suppresses social isolation-induced aggressive behavior in male mice. *ASCI/AAP Joint Meeting.* Accepted abstract, presentation canceled due to COVID19.

### **Scientific presentations**

1. Regulation of aggression by nicotinic acetylcholine receptors in animal models and potential translation to human disorders. June 2015. *Department of Psychiatry Grand Rounds, Yale University.* Invited presentation.

2. Neuronal nicotinic receptors as potential pharmacological targets to treat pathological aggression. Sept 2015. *Child Study Center Grant Rounds, Yale University*. Invited presentation.
3. Your brain in a dish. Aug 2015. National Neuroscience Curriculum Initiative Symposium, Yale University. Invited presentation.
4. Regulation of aggression by targeting neuronal nicotinic receptors: translation from mouse models to clinical trials. Nov 2016. *Department of Psychiatry Biological Sciences Training Program, Yale University*. Invited presentation.
5. A translational approach to identify novel treatment targets for refractory aggressive behavior in neuropsychiatric disorders. Feb 2018. *Department of Psychiatry Grand Rounds, University of Iowa*. Invited presentation.
6. A translational approach to identify novel treatment targets for refractory aggressive behavior in neuropsychiatric disorders. Feb 2018. *Department of Psychiatry Seminar, Vanderbilt University Medical Center*. Invited presentation.
7. Nicotinic receptors as a potential therapeutic target for challenging behaviors in neurodevelopmental disorders. Oct 2018. *ATPIA3 in Disease Symposium, Chicago, IL*. Invited presentation.
8. A pharmacological and systems neuroscience approach to identify potential regulators of aggressive behavior in neuropsychiatric disorders. Oct 2018. *American Academy of Child and Adolescent Psychiatry Annual Meeting, Seattle, WA*. Peer-reviewed presentation.
9. Identifying cognitive and emotional circuits to regulate aggressive behavior. Sept 2019. *Vanderbilt Brain Institute Annual Retreat, Nashville, TN*. Invited presentation.
10. Genetic and neural circuit approaches for understanding aggression in neuropsychiatric disorders. Oct 2019. *Vanderbilt Medical Research Building III Faculty Luncheon Seminar Series*. Invited presentation.
11. Investigations of aggression in neuropsychiatric disease across multiple units of analysis. Oct 2019. *Department of Psychiatry Grand Rounds, Vanderbilt University Medical Center*. Invited presentation.
12. Hippocampal mechanisms of aggression and social behavior. April 2020. *University of Cincinnati*. Invited presentation. Presentation canceled due to COVID19.