

# Thomas Jhou

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Lab site:

[www.jhoulab.org](http://www.jhoulab.org)

## Education:

*Baccalaureate* Massachusetts Institute of Technology 1995 Computer Science  
*Graduate* Harvard University 2003 Neurobiology (advisor, Clifford Saper)

## Post-doctoral training:

2004-2005 UC San Francisco, Ernest Gallo Clinic and Research Center, Howard Fields  
2005-2008 Johns Hopkins University, Dept of Psychological and Brain Sciences, Peter Holland  
2008-2010 National Institute on Drug Abuse, Behavioral Neuroscience Branch, Satoshi Ikemoto

## Appointments:

2010-present Assistant professor, Dept. of Neurosciences, Medical University of South Carolina

## Awards and Honors:

2010 Travel fellowship for Winter Conference on Brain Research (WCBR).  
2012 Young Investigator Award (formerly Herrick Award) from American Association of Anatomists. Previous recipients include Larry Swanson, Ann Graybiel, Cornelia Bargmann, Mark Tessier-Lavigne, etc.

## Current Extramural Funding:

2014-2019 \$225,000 annual direct costs. NIDA R01 DA037327-01 Cocaine-Conditioned Avoidance Behavior. Role: Principal Investigator  
2015-2018 \$120,000 annual direct costs, project on NIDA P50DA015369, Neurobiology of Addiction Research Center.  
2012-2017 \$46,876 annual direct costs, subcontract from NIMH R01MH094489, PI Dr. Paul Shepard, University of Maryland, "Habenulesencephalic role in depression and anhedonia"

2015-2016 \$31,316 direct costs, subcontract from 1R21DA037744, PI Rachel Smith, Texas A&M University, "Opposing roles of distinct output projections from prefrontal cortex"

### Completed Extramural Funding:

2012-2014 \$150,000 annual direct costs, NIDA, 1R21DA89501, "Neural mechanisms by which punishment modulates drug-seeking", Role: Principal Investigator

2012-2014 \$50,000 annual direct costs, NIDA, 1R03DA034431, "Gene expression and drug targets in the rostromedial tegmentum", Role: Principal Investigator

1999-2002 NIMH, F31MH012370 "Role of the tuberomammillary nucleus in sleep-wake regulation", role: Principal Investigator.

2013-2013 \$25,000. Pilot project for Alcohol Research Center at the Medical University of South Carolina. Role: Principal Investigator

### Peer-reviewed publications

(As of November 2014: 5142 citations, h-index=20)

Items 1-13 (prior to 2005) are published under alternate (now defunct) spelling of my last name, "Chou".

1. Cusack, B., Jansen, K. McCormick DJ, **Chou, T**, Pang Y, Richelson E. "A single amino acid of the human and rat neurotensin receptors (subtype 1) determining the pharmacological profile of a species-selective neurotensin agent." *Biochem. Pharmacol.* Sept 15; 60(6):793-801, 2000.
2. Cusack B, **Chou T**, Jansen K, McCormick, DJ, Richelson E, "Analysis of binding sites and efficacy of a species-specific peptide at rat and human neurotensin receptors." *J. Peptide Research* Jan; 55(1):72-80, 2000.
3. Estabrooke IV, McCarthy MT, Ko E, **Chou TC**, Chemelli RM, Yanagisawa M, Saper CB, Scammell TE, Fos expression in orexin neurons varies with behavioral state. *J Neurosci.* 2001 Mar 1;21(5):1656-62.
4. Lu J, Zhang YH, **Chou TC**, Gaus SE, Elmquist JK, Shiromani P, Saper CB, "Contrasting effects of ibotenate lesions of the paraventricular nucleus and subparaventricular zone on sleep-wake cycle and temperature regulation.", *J. Neurosci.*, 21(13):4864-74, 2001.
5. **Chou TC**, Lee CE, Lu J, Elmquist JK, Hara J, Willie JT, Beuckmann CT, Chemelli RM, Sakurai T, Yanagisawa M, Saper CB, Scammell TE, "Orexin neurons contain dynorphin", *J. Neurosci.*, 21(19): RC168, 2001.
6. Saper, CB, **Chou, TC**, Scammell, TE, "The sleep switch: hypothalamic control of sleep and wakefulness," *Trends in Neurosci.*, 12:726-31, 2001.
7. Gooley JJ, Lu J, **Chou TC**, Scammell TE, Saper CB. "Melanopsin in cells of origin of the retinohypothalamic tract", *Nat Neurosci.* 2001 Dec;4(12):1165.
8. **Chou, TC**, Bjorkum, A, Gaus, SE, Lu, J, Scammell, TE, Saper, CB, "Afferents to the ventrolateral preoptic nucleus," *J. Neurosci.*, 22(3):977-90, 2002.
9. Saper, CB, **Chou, TC**, Elmquist, JK, "The Need to Feed: Homeostatic and hedonic control of feeding", *Neuron*, 36(2):199, Oct. 2002.

10. Chamberlin NL, Arrigoni E, **Chou TC**, Saper CB, "Effects of adenosine on GABAergic synaptic inputs to identified ventrolateral preoptic neurons", *Neuroscience*, 119(4), 913-918.
11. **Chou, TC**, Scammell, TE, Gooley, JJ, Gaus, SE, Saper, CB, Lu, J, "Critical role of the dorsomedial hypothalamic nucleus in a wide range of behavioral circadian rhythms", *J. Neuroscience*, 23(33):106910-702, 2003.
12. **Chou TC**, Rotman SR, Saper CB., Lateral hypothalamic acetylcholinesterase-immunoreactive neurons co-express either orexin or melanin concentrating hormone., *Neurosci Lett*. 2004 Nov 11;370(2-3):123-6.
13. Gerashchenko D, **Chou TC**, Blanco-Centurion CA, Saper CB, Shiromani PJ., Effects of lesions of the histaminergic tuberomammillary nucleus on spontaneous sleep in rats., *Sleep*. 2004 Nov 1;27(7):1275-81.
14. Saper CB, Lu J, **Chou TC**, Gooley J., The hypothalamic integrator for circadian rhythms., *Trends Neurosci*. 2005 Mar;28(3):152-7.
15. **Jhou, T**, "Neural mechanisms of freezing and passive aversive behaviors", *J. Comp. Neurol*. Dec. 2005, 493(1):111-4.
16. Lu, J, **Jhou, TC**, Saper, CB, "Identification of Wake-Active Dopaminergic Neurons in the Ventral Periaqueductal Gray Matter", *J. Neurosci.*, January 4, 2006; 26(1): 193 - 202.
17. Phillips, PEM, Walton, ME, **Jhou, TC**, "Calculating Utility: Preclinical evidence for cost-benefit analysis by mesolimbic dopamine", *Psychopharmacology*, 2007; 191(3):483-95.
18. Greco MA, Fuller P, **Jhou TC**, Martin-Schild S, Zadina JE, Hu Z, Shiromani P, Lu J. Opioidergic projections to sleep-active neurons in the ventrolateral preoptic nucleus. *Brain Res*. 2008.
19. **Jhou TC**, Geisler S, Marinelli M, DeGarmo BA, Zahm DS, "The rostromedial tegmental nucleus: a mesopontine structure targeted by the lateral habenula that projects to the ventral tegmental area and substantia nigra compacta". *J. Comp. Neurology*, 513(6):566-96, 2009.
20. **Jhou, TC**, Fields, HL, Baxter, MG, Saper, CB, Holland PC, "The rostromedial tegmental nucleus (RMTg), a major GABAergic afferent to midbrain dopamine neurons, encodes aversive stimuli and promotes behavioral inhibition". *Neuron*, 61(5):786-800, 2009.
21. Hong S, **Jhou TC**, Smith M, Saleem KS, Hikosaka, O, "Negative reward signals from the lateral habenula to dopamine neurons are mediated by rostromedial tegmental nucleus in primates", *J. Neurosci*. 31(32):11457-71, 2011.
22. **Jhou TC**, Xu SP, Lee MR, Gallen CL, Ikemoto S., Mapping of reinforcing and analgesic effects of the mu opioid agonist Endomorphin-1 in the ventral midbrain of the rat. *Psychopharmacology*, 2012
23. Webb SM, Vollrath-Smith FR, Shin R, **Jhou TC**, Xu S, Ikemoto S, "Rewarding and incentive motivational effects of excitatory amino acid receptor antagonists into the median raphe and adjacent regions of the rat", *Psychopharmacology* 224(3):401-12, 2012.
24. Barrot M, Sesack SR, Georges F, Pistis M, Hong S, **Jhou TC**, "Braking dopamine systems: a new GABA master structure for mesolimbic and nigrostriatal functions". *J. Neurosci*. 32(41):14,094-101, 2012.
25. **Jhou, TC**, Good CH, Rowley CS, Xu SP, Wang H, Burnham N, Hoffman AF, Lupica CR, Ikemoto S, "Cocaine drives aversive conditioning via delayed activation of dopamine-responsive habenular and midbrain pathways", *J. Neurosci*. vol. 33(17):7501-12, 2013.
26. Bentzley BS, **Jhou TC**, Aston-Jones G, "Economic demand predicts addiction-like behavior and therapeutic efficacy of oxytocin in the rat." *Proc. Natl. Acad. Sci, USA*, 2014, PMC4136574
27. Quina LA, Tempest L, Ng L, Harris JA, Ferguson S, **Jhou TC**, Turner EE., "Efferent pathways of the Mouse Lateral Habenula", *J. Comp. Neurol*. 2014.

28. Vujovic N, Gooley JJ, **Jhou TC**, Saper CB. Projections from the subparaventricular zone define four channels of output from the circadian timing system. *J Comp Neurol.* **2015** Dec 15;523(18):2714-37.
29. Brown RM, Kupchik YM, Spencer S, Garcia-Keller C, Spanswick DC, Lawrence AJ, Simonds SE, Schwartz DJ, Jordan KA, **Jhou TC**, Kalivas PW. Addiction-like synaptic impairments in diet-induced obesity. *Biol Psychiatry.* Epub 2015 Dec 2.
30. Vento PJ, Rowley CS, Burnham NW, **Jhou TC**. Learning from one's mistakes: A dual role for the rostromedial tegmental nucleus in the encoding and expression of punished reward seeking. *Biological Psychiatry*, 2016.

### **Conference abstracts (including only those that have not yet resulted in publication)**

1. Burnett EJ, Chandler LJ, **Jhou TC**, The role of the rostromedial tegmental nucleus (RMTg) in ethanol withdrawal. Gordon Conference: Alcohol and the Nervous System, Molecular, Cellular and Behavioral Actions of Ethanol, 2014.

### **Invited Talks:**

- May 21, 2005 *Anatomy of the Soul* conference, "Neural Mechanisms of Freezing and Passive Aversive Behaviors"., Hosted by Drs. Clifford Saper and Gert Holstege, Ameland, Netherlands
- Jan 22, 2008 St. Louis University. "The Good and the Bad: aversive processing by a GABAergic afferent to midbrain dopamine neurons". Hosted by Dr. Daniel S. Zahm
- April 25, 2009 Maryland Psychiatric Research Center, Hosted by Dr. Paul Shepard, "A convergence of aversion, pathways linking aversive and appetitive brain systems".
- Jan 23, 2010 Speaker and travel award recipient, Winter Conference on Brain Research, Breckenridge, CO. Session chaired by Dr. Susan Sesack: "A Newly Discovered Collection of GABA Neurons in the Brainstem Tegmentum that Projects Strongly to Midbrain Dopamine Cells and Influences Aversive Behavior".
- Feb 28, 2010 "Role of the habenula", at Banbury Center, Cold Spring Harbor, New York. Hosted by Dr. Fritz Henn.
- April 2010 Co-chair, workshop panel at 5<sup>th</sup> Motivational Neural Networks Meeting, Wrightsville Beach, North Carolina. Panel organized by Daniel S. Zahm.
- May 2010 University of Texas, San Antonio. Hosted by Drs. Hitoshi Morikawa and Michael Beckstead.
- May 2010 Center for Neuroeconomics, New York University. Hosted by Dr. Nathaniel Daw.
- Sept 2-4, 2010 Symposium speaker, 33<sup>rd</sup> Annual Japan Neuroscience Meeting, Kobe Japan. Hosted by Drs. Masayuki Matsumoto and Hitoshi Okamoto.
- Oct 5-6, 2010 Symposium speaker, "Brain Circuits and Behavioral Control", NIH Research Day, National Institute on Mental Health, Bethesda MD. Hosted by Dr. Heather Cameron.
- April 2011 Duke University. Hosted by Drs. Ben Hayden and Michael Platt.
- Feb 24, 2012 University of Washington, Seattle Children's Research Institute, Center for Integrative Brain Research. Hosted by Dr. Eric Turner.
- March 5, 2013 International Basal Ganglia Society (IBAGS) meeting, Eilat, Israel. Hosted by Dr. Peter Redgrave.
- April 21, 2013 Young Investigator Award Symposium, Boston, MA.
- April 17, 2014 UT Austin, hosted by Dr. Michela Marinelli

April 30, 2014 The Scripps Research Institute, hosted by Dr. Bert Weiss  
July 14, 2014 INRC (International Narcotics Research Conference)  
June 30, 2015 University of Chicago, *Rat Genetics and Genomics for Psychiatric Disorders and Addiction*, organized by NIDA and Center for GWAS in Outbred Rats.  
Sept, 2015 University of Helsinki, hosted by Mikko Airavaara  
Sept, 2016 Texas A&M, hosted by Rachel Smith

**Study section/Grant review activity:**

March 2013 NIH: Cutting Edge Brain Research Awards (CEBRA)  
June 2013 NIH: F02A-J(20) Fellowships: Behavioral Neuroscience  
May 2013 ANR (Agence nationale de la recherche), France, SAMENTA 2013.  
June 2014 NIH: ETTN-C(10) Small Business: Clinical Neurophysiology, Devices, Neuroprosthetics, and Biosensors  
July 2014 MRC (Medical Research Council), United Kingdom.  
October 2014 NSF: CAREER awards  
June 2015 NIH: study section, Neurobiology of Motivated Behavior (NMB)  
Nov 2016 NIH: ETTN-C(10) Small Business: Clinical Neurophysiology, Devices, Neuroprosthetics, and Biosensors

**Journal/Editorial activity:**

**Reviewer for:**

Brain Research  
European Journal of Neuroscience  
Journal of Comparative Neurology  
Journal of Neurophysiology  
Journal of Neuroscience  
Nature Neuroscience  
Neuropsychopharmacology  
PLoS One  
Synapse  
Trends in Neurosciences

**Member of Editorial Board:**

PLoS One

**Teaching and mentoring:**

**Member of thesis committees:**

P. Leon Brown, PhD 2014, Dept. of Psychiatry, University of Maryland, advisor Dr. Paul Shepard.  
(I am external committee member)  
Michael Stefanik, PhD 2014, Dept. of Neurosciences, MUSC, advisor Dr. Peter Kalivas.  
Zachary Cope, PhD 2014, Dept. of Neurosciences, MUSC, advisor Dr. Gary Aston-Jones.  
Brandon Bentzley (MD-PhD candidate) Dept of Neurosciences, MUSC, advisor Dr. Gary Aston-Jones.

Ellen McGlinchey, PhD candidate, Dept of Neurosciences, MUSC, advisor Dr. Gary Aston-Jones.  
Douglas Wolfe, MD-PhD candidate, Dept of Neurosciences, MUSC, advisor Dr. Peter Kalivas

**Graduate students:**

Hao Li, PhD candidate, Fall 2014-present  
Maya Eid, MD-PhD candidate, Fall 2015-present  
Ying Chao, MD-PhD candidate, 2016-present

**Post-doctoral fellows:**

Peter Vento, March 2013 - present  
Rachel Smith, June 2013 - Feb 2015  
Jennifer L. Thompson, Oct 2014 – June 2016

**Lectures/Classes taught:**

Fundamentals of Neuroscience lectures, Spring 2012-2016  
Systems Neuroscience lectures, Fall 2013-2016  
Cognitive Neuroscience, lecture on prediction error, Spring 2013  
Neuroscience journal club, Fall 2013  
Mathematical Methods in Neuroscience, Fall 2015

**Publications in the humanities:**

Jhou TC, "Rene Descartes and modern science – a legacy in retrospect". Preface to the Chinese translation of *Descartes and the Meditations*, by Gary Hatfield, translated by Clayton Chou. Routledge, New York, 2009.