

# Thomas Jhou

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## Education:

1996 *Massachusetts Institute of Technology*

B.S. Computer Science, with humanities concentration in economics.

2003 *Harvard University*

Ph.D., Neurobiology, Advisor: Dr. Clifford Saper. Thesis on hypothalamic regulation of sleep and computational modeling of sleep stability.

## Awards:

1995 Membership in honor societies Phi Beta Kappa (humanities) and Sigma Xi (science).

1998-2003 National Research Service Award (NRSA) for Ph.D. study.

## Post-doctoral work:

2004-2005 *Howard Fields lab, UC San Francisco*

Cyclic voltammetric measurement of dopamine during aversive behaviors, in collaboration with Dr. Paul Phillips at University of Washington.

2005-2008 *Peter Holland lab, Johns Hopkins University*

Identified and characterized novel GABAergic nucleus critically involved in aversive behavior. Region is denoted the *rostromedial tegmental nucleus* (RMTg), and sends massive inhibitory projections to midbrain dopaminergic neurons. Anatomic work was done collaboratively with Dr. Daniel S. Zahm of St. Louis University.

2008- *Research Fellow, National Institute on Drug Abuse*

Further studies on the RMTg, its roles in opponent processing, and its modulation by opioids.

## References available from:

Dr. Clifford B. Saper, Harvard University, [csaper@caregroup.harvard.edu](mailto:csaper@caregroup.harvard.edu)

Dr. Howard L. Fields, University of California at San Francisco, [hlf@gallo.ucsf.edu](mailto:hlf@gallo.ucsf.edu)

Dr. Peter C. Holland, Johns Hopkins University, [pch@jhu.edu](mailto:pch@jhu.edu)

## Invited Talks:

Jan 2009 (date to be determined). Hosted by Dr. Robert Schwarcz, University of Maryland School of Medicine.

Jan 22, 2008, St. Louis University. Hosted by Dr. Daniel S. Zahm, “*The Good and the Bad: aversive processing by a GABAergic afferent to midbrain dopamine neurons*”.

May 21, 2005, Ameland, Netherlands, Hosted by Drs. Clifford Saper and Gert Holstege, *Anatomy of the Soul* conference, “*Neural Mechanisms of Freezing and Passive Aversive Behaviors*”.

### **Manuscripts under preparation:**

*In preparation:* Jhou TC, Saper CB, “An opioidergic pathway for primary taste reward”.

*In preparation:* Jhou TC, Holland PC, “Anterior cingulate cortex role in outcome representation”

### **Publications, most recent first:**

**Note: last name spelling was legally changed from “Chou” to “Jhou” in 2005 to match pronunciation (which is like “Joe”). Earlier publications have the old spelling.**

**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”. In press, *Neuron*.

**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”. In press, *J. Comp. Neurology*, 2009.

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.

Phillips, PEM, Walton, ME, **Jhou, TC**, “Calculating Utility: Preclinical evidence for cost-benefit analysis by mesolimbic dopamine”, *Psychopharmacology*, 2007; 191(3):483-95.

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.

**Jhou, T**, “Neural mechanisms of freezing and passive aversive behaviors”, *J. Comp. Neurol.* Dec. 2005, 493(1):111-4.

Saper CB, Lu J, **Chou TC**, Gooley J., The hypothalamic integrator for circadian rhythms., *Trends Neurosci.* 2005 Mar;28(3):152-7.

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.

**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.

**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.

Saper, CB, **Chou, TC**, Elmquist, JK, "The Need to Feed: Homeostatic and hedonic control of feeding", *Neuron*, 36(2):199, Oct. 2002.

**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.

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.

Saper, CB, **Chou, TC**, Scammell, TE, "The sleep switch: hypothalamic control of sleep and wakefulness," *Trends in Neurosci.*, 12:726-31, 2001.

**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.

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.

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.

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.

Cusack, B., Jansen, K. McCormick DJ, **Chou, T**, Pang Y, Richelson E. "A single amino acid of the human and rat neurotension receptors (subtype 1) determining the pharmacological profile of a species-selective neurotensin agent." *Biochem. Pharmacol.* Sept 15; 60(6):793-801, 2000.

### **Selected Abstracts:**

Zahm, DS, **Jhou TC**, Geisler S, Marinelli M, "The rostromedial tegmental nucleus: a potent contributor to the circuitry of the mesopontine tegmentum and likely modulator of multiple ascending neuromodulatory pathways, that is targeted by robust outputs from the lateral habenula". SFN 2008.

**Jhou, TC**, Gallagher, M, "GABAergic paramedian reticular neurons projecting to midbrain dopamine neurons are activated by aversive stimuli and cues", SFN 2007.

**Jhou, TC**, Fields HL, Phillips PEM, "Dopamine release induced by a cue predicting reward but not escape", SFN 2007.

**Jhou, TC**, Gallagher, M. "Anterior cingulate lesions impair aversive latencies on a go/no-go task", Annual Meeting for the Society for Neuroscience, 2006.

**Jhou, TC**, "Working more for less: a review of seemingly paradoxical work schedules in neuroscience and economics", Society for Neuroeconomics Annual Meeting, Park City Utah, 2006.

**Jhou, TC**, Saper, CB, "A novel GABAergic afferent to dopamine neurons is required for fear-induced freezing", Annual Meeting for the Society for Neuroscience, Vol. 30, 2004.

Lu J, **Chou TC**, Saper CB, "Identification of Wake-Active Dopaminergic Neurons in the Ventral Periaqueductal Gray (PAG)", Society for Neuroscience Abstracts, Vol. 28, 2002.

**Chou, TC**, Gerashchenko, D., Saper, CB, Shiromani, PJ, "Loss of histaminergic neurons does not produce hypersomnolence", Society for Neuroscience Abstracts, Vol. 27, 2001.

**Chou, TC**, Lee CE, Saper CB, Scammell TE, "Orexin Neurons Contain Dynorphin", Associated Professional Sleep Societies (APSS) meeting abstract 1486.A, 2001.

**Chou, T.C.**, Scammell, T.E., Lu, J.L., Shiromani, P.J., Saper, C.B., "Excitotoxic lesions of the dorsomedial hypothalamic nucleus markedly attenuate circadian rhythms of sleep and body temperature." Society for Neuroscience Abstracts, Vol. 26, 2000.

**Chou, T.C.**, Lu, J., Zhang, Y.H., Gaus, S., Elmquist, J.K., Shiromani, P., Saper, C.B., "Distinct lesions of the subparaventricular zone (SPZ) affect circadian rhythm of sleep vs. temperature", Society for Neuroscience Abstracts, Vol. 25, 1999.

**Chou, T.C.**, Scammell, T.E., Saper, C.B., "Afferents to the ventrolateral preoptic nucleus," Society for Neuroscience Abstracts, Vol. 24, 1998.