

**BIOGRAPHICAL SKETCH**

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NAME David J. Earnest		POSITION TITLE Professor	
eRA COMMONS USER NAME			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Michigan, Ann Arbor, MI	B.S.	1976	Zoology
Northwestern University, Evanston, IL	M.S.	1979	Neurobiology
Northwestern University, Evanston, IL	Ph.D.	1984	Neurobiology
University of Rochester School of Medicine, Rochester, NY	Post Doc	1984-87	Neurobiology

**A. Positions and Honors.****Positions and Employment**

- 1978-84 Graduate Research Assistant, Department of Neurobiology and Physiology,  
Northwestern University
- 1984-87 NIMH Postdoctoral Fellow (MH 09129), Department of Neurobiology and Anatomy,  
University of Rochester School of Medicine
- 1987-91 Faculty Scientist, Department of Neurobiology and Anatomy,  
University of Rochester School of Medicine
- 1991-94 Assistant Professor, Department of Neurobiology and Anatomy,  
University of Rochester School of Medicine
- 1994-2001 Assistant Professor, Department of Human Anatomy and Medical Neurobiology  
Texas A&M University Health Science Center, College of Medicine
- 2001-2005 Associate Professor, Department of Human Anatomy and Medical Neurobiology  
Texas A&M University Health Science Center, College of Medicine
- 2005-present Professor, Department of Human Anatomy and Medical Neurobiology  
Texas A&M University Health Science Center, College of Medicine

**B. Selected peer-reviewed publications (in chronological order).**

(Publications selected from 42 peer-reviewed publications)

1. Earnest DJ, Turek FW. (1983) Role for acetylcholine in mediating effects of light on reproduction. Science 219:77-79.
2. Earnest DJ, Turek FW. (1985) Neurochemical basis for the photic control of circadian rhythms and seasonal reproductive cycles: role for acetylcholine. Proc. Natl. Acad. Sci. USA 82:4277-4281.
3. Keefe DL, Earnest DJ, Nelson D, Takahashi JS, Turek FW. (1987) A cholinergic antagonist, mecamlamine, blocks the phase-shifting effects of light on the circadian rhythm of locomotor activity in the golden hamster. Brain Res. 403:308-312.
4. Earnest DJ, Sladek CD. (1987) Circadian rhythms of vasopressin release from perfused rat suprachiasmatic explants in vitro: effects of acute stimulation. Brain Res. 422:398-402.
5. Earnest DJ, Sladek CD, Gash DM, Wiegand SJ. (1989) Specificity of circadian function in transplants of the fetal suprachiasmatic nucleus. J. Neurosci. 9:2671-2677.
6. Earnest DJ, Iadarola M, Yeh HH, Olschowka JA. (1990) Photic regulation of c-fos expression in neural components governing the entrainment of circadian rhythms. Exp. Neurol. 109:353-361.
7. Earnest DJ, DiGiorgio SM, Sladek CD. (1991) Effects of tetrodotoxin on the circadian pacemaker mechanism in suprachiasmatic explants *in vitro*. Brain Res. Bull. 26:677-682.
8. Earnest DJ, Ouyang S, Olschowka JA. (1992) Rhythmic expression of Fos-related proteins in the rat suprachiasmatic nucleus during constant retinal illumination. Neurosci. Lett. 140:19-24.

9. Earnest DJ, Olschowka JA. (1993) Circadian regulation of *c-fos* gene expression in the SCN pacemaker by light. J. Biol. Rhythms 8:S65-71.
10. Earnest DJ, DiGiorgio SM, Olschowka JA. (1993) Light induces expression of Fos-related proteins within gastrin-releasing peptide neurons in the rat suprachiasmatic nucleus. Brain Res. 627:205-209.
11. Liang F-Q, Walline R, Earnest D. (1998) Circadian rhythm of brain-derived neurotrophic factor expression in the rat suprachiasmatic nucleus. Neurosci. Lett. 242:89-92.
12. Liang F-Q, Sohrabji F, Miranda R, Earnest B, Earnest D. (1998) Expression of brain-derived neurotrophic factor and its cognate receptor, TrkB, in the rat suprachiasmatic nucleus. Exp. Neurol. 151:184-193.
13. Earnest DJ, Liang F-Q, Ratcliff M, Cassone VM. (1999) Immortal time: Circadian clock properties of cell lines derived from the rat suprachiasmatic nucleus. Science 283:693-695.
14. Earnest DJ, Liang F-Q, DiGiorgio SM, Gallagher MJ, Harvey B, Earnest BJ, Seigel GM. (1999) Establishment and characterization of adenoviral E1A immortalized cell lines derived from the rat suprachiasmatic nucleus. J. Neurobiol. 39:1-13.
15. Wade S, Oommen P, Conner WC, Earnest DJ, Miranda RJ. (1999) Overlapping and divergent actions of estrogen and the neurotrophins on cell fate and p53-dependent signal transduction in conditionally immortalized cerebral cortical neuroblasts. J. Neurosci. 19:6994-7006.
16. Liang F-Q, Allen G, Earnest DJ. (2000) Role of brain-derived neurotrophic factor in the circadian regulation of the suprachiasmatic pacemaker by light. J. Neurosci. 20:2978-2987.
17. Allen G, Rappe J, Earnest DJ, Cassone VM. (2001) Oscillating on borrowed time: diffusible signals from immortalized SCN cells are necessary for circadian rhythmicity in cultured fibroblasts? J. Neurosci. 21:7937-7943.
18. Earnest DJ, Chen W-JA, West, J.R. (2001) Developmental alcohol and circadian clock function. Alcohol Research & Health 25: 136-140
19. Hurst WJ, Earnest DJ, Gillette MU. (2002) Immortalized suprachiasmatic nucleus cells express components of multiple circadian regulatory pathways. Biochem. Biophys. Res. Com. 25:20-30.
20. Allen GC, Earnest DJ. (2002) Real-time analysis of rhythmic gene expression in immortalized SCN cells. Neuroreport 13:2027-2030.
21. Rivera-Bermúdez MA, Gerdin MJ, Earnest DJ, Dubocovich ML. (2003) Melatonin regulation of basal rhythm in protein kinase C activity generated in immortalized rat suprachiasmatic nucleus cells. Neurosci. Lett. 346:37-40.
22. Rivera-Bermúdez MA, Masana MI, Brown GM, Earnest DJ, Dubocovich ML. (2004) Immortalized cells from the rat suprachiasmatic nucleus express functional melatonin receptors. Brain Res. 1002:21-27.
23. Allen GC, West JR, Chen W-J, Earnest DJ. (2004) Developmental alcohol exposure disrupts circadian regulation of BDNF in the rat suprachiasmatic nucleus. Neurotoxicol. Teratol. 26:353-358.
24. Farnell YZ, West JR, Chen W-J, Allen GC, Earnest DJ. (2004) Developmental alcohol exposure alters light-induced phase shifts of the circadian activity rhythm in rats. Alcohol. Clin. Exp. Res. 28:1020-1027.
25. Allen GC, Farnell Y, Bell-Pedersen D, Cassone VM, Earnest DJ. (2004) Effects of altered *Clock* gene expression on the pacemaker properties of SCN2.2 cells and oscillatory properties of NIH/3T3 cells. Neuroscience 127:989-999.
26. Gerdin MJ, Rivera-Bermúdez MA, Masana MI, Earnest DJ, Gillette MU, Dubocovich ML. (2004) Melatonin desensitizes endogenous MT<sub>2</sub> melatonin receptors in the rat suprachiasmatic nucleus: relevance for defining the periods of sensitivity of the mammalian circadian clock to melatonin. FASEB J. 18:1646-56.
27. Allen GC, Earnest DJ. (2005) Localization of TrkB immunoreactivity in the retinohypothalamic tract and suprachiasmatic nucleus of the rat. Neurosci. Lett. 376:200-204.
28. Allen GC, Earnest DJ. (2005) TrkB-deficient mice show diminished phase shifts of the circadian activity rhythm in response to light. Neurosci. Lett. 378:150-155.
29. Menger GJ, Lu K, Thomas T, Cassone VM, Earnest DJ. (2005) Circadian profiling of the transcriptome in immortalized rat SCN cells. Physiol. Genomics 21:370-381.
30. Earnest DJ, Cassone VM. (2005) Cell culture models for oscillator and pacemaker function: Recipes for dishes with circadian clocks? Meth. Enzymol. 393:556-576.
31. Bell-Pedersen D, Cassone VM, Earnest DJ, Golden SS, Hardin PE, Thomas TL, Zoran MJ. (2005) Circadian rhythms from multiple oscillators: Lessons from diverse organisms. Nature Rev. Genetics 6:544-556.
32. Nahm S-S, Farnell YZ, Griffith WH, Earnest DJ. (2005) Circadian regulation and function of voltage-dependent calcium-channels in the suprachiasmatic nucleus. J. Neurosci. 25: 9304-9308.

Principal Investigator/Program Director (Last, First, Middle):

33. Metz RP, Qu X, Laffin B, Earnest D, Porter WW. (2006) Circadian clock and cell cycle gene expression in mouse mammary epithelial cells and in the developing mouse mammary gland. Devel. Dynamics 235: 263-271.
34. Allen, G.C., Farnell, Y.Z., Maeng, J.-U., West, J.R., Chen, W.-J. and Earnest, D.J. (2006) Long-term effects of neonatal alcohol exposure on photic re-entrainment and phase-shifting responses of the activity rhythm in adult rats. Alcohol 37: 79-88.
35. Menger, G. J., Allen, G.C., Neuendorff, N., Nahm, S.-S., Thomas, T., Cassone, V.M. and Earnest, D.J. (2007) Circadian profiling of the transcriptome in NIH/3T3 fibroblasts: comparison with rhythmic gene expression in SCN2.2 cells and the rat SCN. Physiological Genomics 29: 280-289.
36. Qu, X., Metz, R.P., Porter, W.W., Cassone, V.M. and Earnest, D.J. (2007) Disruption of clock gene expression alters responses of the AhR signaling pathway in the mouse mammary gland. Mol. Pharm., in press

## C. Research Support

### Ongoing Research Support

Grant: "Coordination of Circadian Physiology of Diverse Species"

Key Personnel: Vincent Cassone, PI  
Susan Golden, Project 1 Leader  
David Earnest, Project 2 Leader  
Deborah Bell-Pederson, Project 3 Leader  
Vincent Cassone, Project 4 Leader  
Terry Thomas, Core A Leader  
Mark Zoran, Core B Leader

Grant Number: 1P01 NS39546-06

Source of Support: NINDS

Project Period: 07/06 - 06/11

Project 2: "Intercellular Integration of SCN Output Signals"

Role: Project Leader

The major aims of this project are to identify the diffusible outputs from SCN cells (SCN2.2) that communicate rhythmicity to co-cultures containing fibroblasts or other cell types and to mutant or SCN-lesioned arrhythmic rodents in vivo.

### Pending Research Support

Grant: "Developmental Alcohol and Circadian Clock Function"

Key Personnel: David Earnest, PI  
Wei-Jung Chen  
Douglas Dohrman

Grant Number: 1R01 AA13242-06

Source of Support: NIAAA

Project Period: 04/07 - 3/12

Role: Principal Investigator

The major aims of this project are to determine whether the long-term effects of three different alcohol doses on the photic entrainment and phase-shifting properties of the rat activity rhythm are associated with alcohol-induced changes in: 1) the anatomical organization and histochemical properties of retinal ganglion cells and RHT fibers that communicate light information to the SCN; 2) the circadian- and light-mediated regulation of SCN neurotransmitters involved in modulating the phase of circadian rhythms (i.e., glutamate, PACAP, GABA and serotonin); and 3) some or all components of defined signaling pathways by which light regulates the phase of the SCN clock and circadian rhythms.

**Completed Research Support**

Grant: "Role of BDNF in the Photic Control of Circadian Rhythms"

Key Personnel: David Earnest, PI  
Farida Sohrabji  
Vincent Cassone

Grant Number: 1R01 MH60147-02

Source of Support: NIMH

Project Period: 02/01 - 01/04

Role: Principal Investigator

The major aims of this project were to determine whether: 1) retinohypothalamic tract (RHT) fibers innervating the SCN express TrkB receptors, the cognate receptor for BDNF, using immunohistochemical and tract tracing methods and 2) alterations in BDNF expression or action in the rodent SCN produce predictable changes in the phase-shifting effect of light on the circadian rhythm of wheel-running behavior.