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Current Position	Associate Professor (July 2013 till date)	School of Life Sciences Jawaharlal Nehru University New Delhi
	Chairman	Special Center for Systems Medicine, Jawaharlal Nehru University, New Delhi
	Member Secretory	Institutional Ethics Review Board, Jawaharla Nehru University, New Delhi
Past positions	Assistant Professor (January 2007 – June 2013)	School of Life Sciences Jawaharlal Nehru University New Delhi
	Research Associate (February 2005 – January 2007)	University of Pennsylvania Philadelphia USA
	Post-Doctoral Fellow (July 2001 – January 2005)	University of Pennsylvania Philadelphia USA

Awards:

Prof. Baldev Singh Oration Award (Association of Physiologists and Pharmacologists of India, 2015)

Scopus Young Scientist Award (Elsevier, India, 2007)

Young Investigator Award (Sleep Research Society, USA, 2006)

Faculty Career Development Award (American Sleep Medicine Foundation, USA, 2005)

Trainee Merit-Based Travel Award (Sleep Research Society, USA, 2004)

B.K. Anand Research Award (Association of Physiologists and Pharmacologists of India, 2001)

Honors:

- A question of Science, "What happens when we Sleep? Doordarshan National (DD-1) May 21st, 2014
  https://www.youtube.com/watch?v=Z61JrF7augA&feature=youtu.be

- Trauma: Can you sleep it off? Times of India, August 19, 2012.
  http://articles.timesofindia.indiatimes.com/2012-08-20/science/33286542_1_sleep-trauma-jnu

- In defense of the office nap. DNA (Daily News and Analysis), July 8, 2012
  http://www.dnaindia.com/lifestyle/report_in-defence-of-the-office-nap_1712073

- All-night revision for exam? Sleep on it. 'Sleep necessary for subject recall.' Times of India, April 29, 2012
  http://articles.timesofindia.indiatimes.com/2012-04-29/india/31475844_1_memory-consolidation-sleep-deprived-rats-cues

- A TV program on NDTV "Secret Lives" (telecasted on October 23rd and 24th, 2009). Is a 24x7 lifestyle to be blamed for extreme sleeplessness among youngsters? My views with Deepa Kamath.
  http://www.ndtv.com/news/videos/video_player.php?id=1169452

- Journal "Science" Editor's Choice: Sleep consolidates Visual Experience tested by **Jha et al.,** Science, 310; 407, 2005.
  http://www.sciencemag.org/content/vol310/issue5747/twil.dtl

- This week in the Journal: Sleep-Dependent Synaptic Plasticity, The Journal of Neuroscience, October 5, 2005, • 25(40):i • **i.**
  http://www.jneurosci.org/cgi/content/full/25/40/0-i

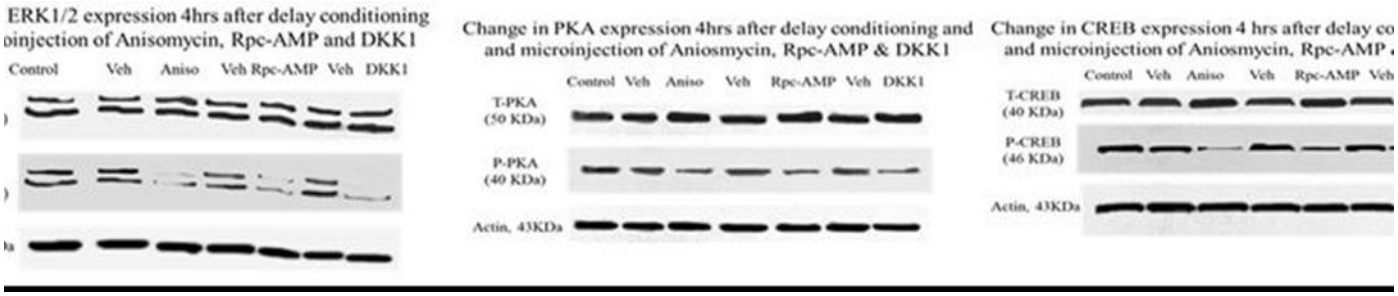
Research Area:

We are currently investigating the role of sleep in memory consolidation and its underlying cellular and molecular mechanisms.

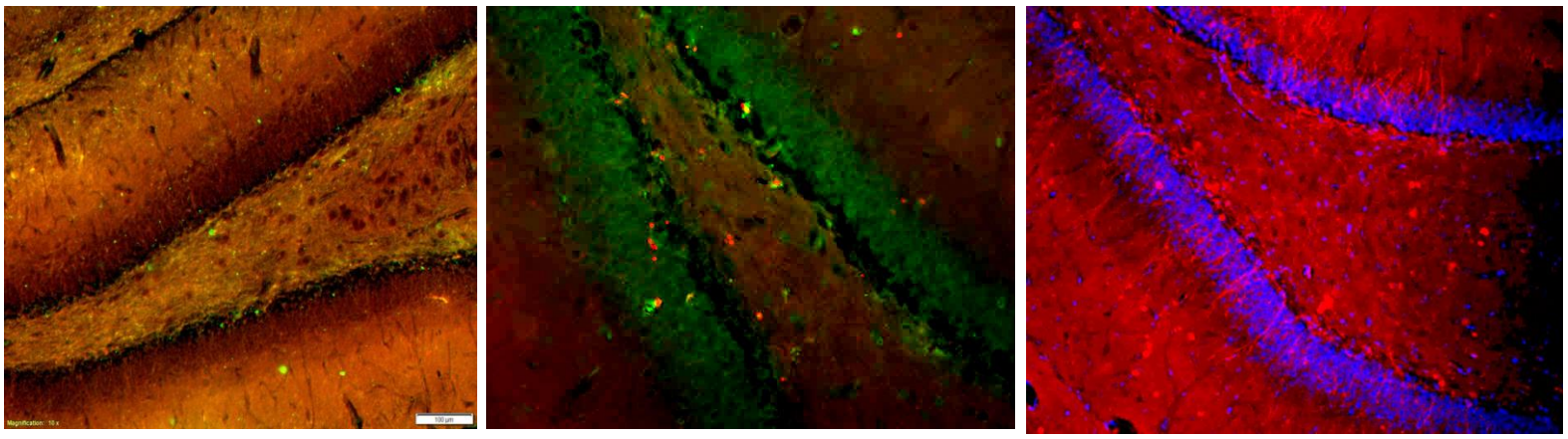
The key questions that we are currently addressing in the lab are

- Does sleep play an instructive or a permissive role in memory consolidation?
- Does sleep facilitate memory consolidation by directly activating the cellular and molecular signaling pathways in the brain?
- Does sleep enhance memory by activating neurogenesis in the hippocampus?
- Does REM sleep function to maintain bodily normocapnia to avoid frequent arousals from sleep.

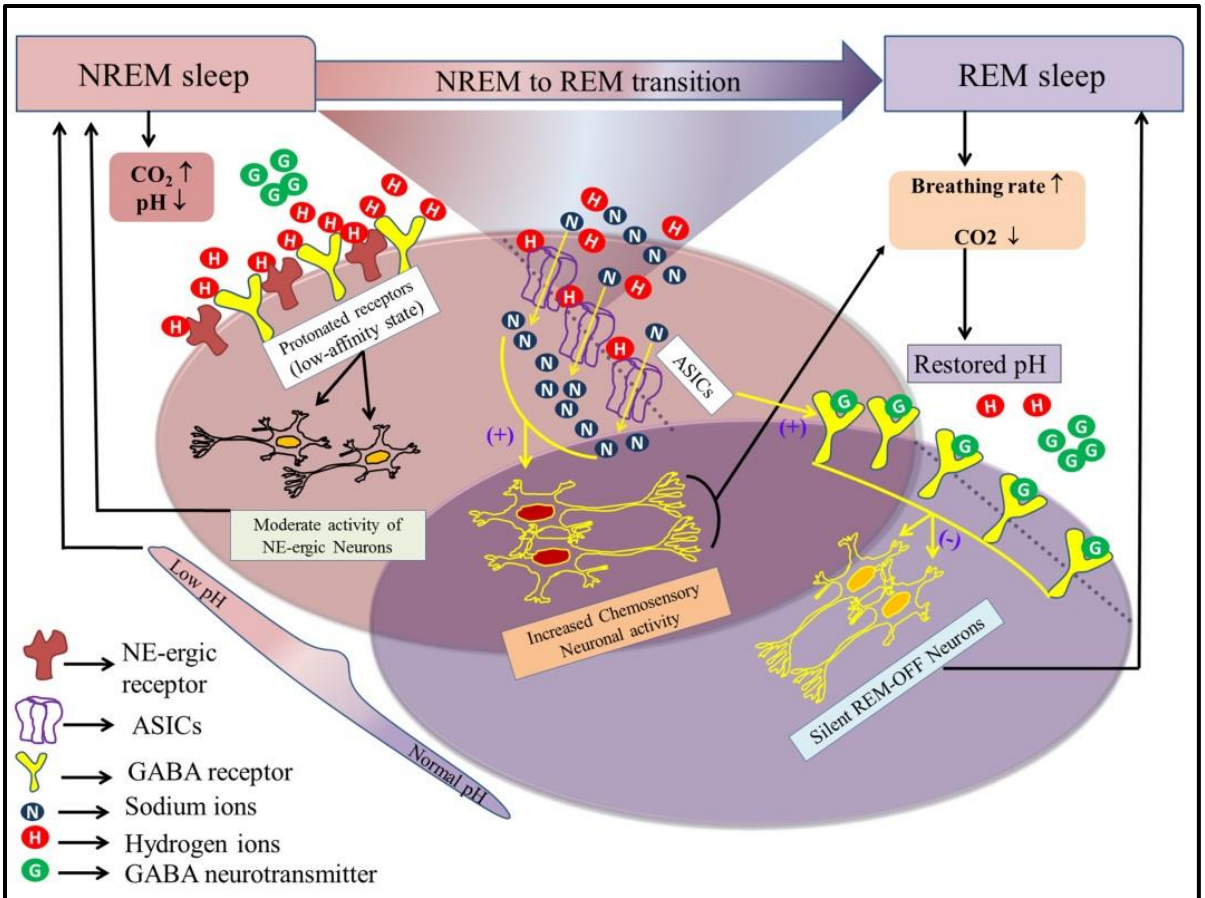
Learning induced changes in protein kinase and CREB levels in the brain



Adult Neurogenesis and learning and memory



The pH-dependent signaling cascade in the LC neurons modulates NREM to REM sleep transition



The model illustrates the possible mechanism of state transition from NREM to REM sleep. Mild hypercapnia causes receptor protonation (a low-affinity state), which may contribute in maintaining a moderate firing rate of NE-ergic neurons, thus may induce NREM sleep. On the other hand, mild hypercapnia may alter the functions of GABA receptors, but ASICs may play a role in maintaining the GABA-ergic synaptic strength through receptor-deprotonation. The GABAergic neurons in the LC are mainly involved in REM sleep generation. Therefore, ASICs through the modulation of GABAergic neurons in the LC may be involved in transitions from NREM to REM sleep.

Research Grants:

- The induction of compensatory neural circuitries and the role of NMDA receptor and sleep in the consolidation of Conxt-FC memory in the absence of the dorsal hippocampus in the rat.

  Funded by DBT, 2017-2021.

- The Brainstem Chemosensory machinery: A novel target for sleep regulation and cognitive functions.

  Funded by DST, 2017-2021.

- Synthesis of core-shell magnetic nanoparticles, their possible use in brain tumor detection, treatment and recovery in cognitive functions.

  Funded by UPOE-II, 2014-2019.

- The role of amygdalar neurons and glia in sleep depended consolidation of cued fear-conditioned memory in the rat. Funded by DST, 2011-2016.

- The role of sleep in the consolidation of fear-conditioned memory in the rat. Funded by CSIR, 2008-2012.

- Role of sleep in the consolidation of conditioned-reward memory in the rat. Funded by DBT, 2008-2012.

Publications:

1. Möglich, A, Kateriya, S and Jha SK. New Horizons in Cellular Optogenetics, Editorial, Front. Cell. Neurosci. doi: 10.3389/fncel.2022.875602, 2022.

2. Tripathi S, Jha SK. REM Sleep Deprivation Alters Learning-Induced Cell Proliferation and Generation of Newborn Young Neurons in the Dentate Gyrus of the Dorsal Hippocampus, ACS Chem. Neurosci., 13, 2, 194–206, 2022.

3. Mir FA, Jha SK. Proton Pump Inhibitor "Lansoprazole" Inhibits Locus Coeruleus's Neuronal Activity and Increases Rapid Eye Movement Sleep, ACS Chem. Neurosci., 12, 22, 4265–4274, 2021

4. Mir FA, Jha SK. Locus Coeruleus Acid-Sensing Ion Channels Modulate Sleep–Wakefulness and State Transition from NREM to REM Sleep in the Rat. Neuroscience Bulletin 37 (5), 684-700, 2021.

5. Chauhan A, Midha S, Kumar R, Meena R, Singh P, Jha SK, Kuanr BK. Rapid tumor inhibition via magnetic hyperthermia regulated by caspase 3 with time-dependent clearance of iron oxide nanoparticles. Biomaterials science 9 (8), 2972-2990, 2021.

6. Tripathi S, Verma A, Jha SK. Training on an Appetitive Trace-Conditioning task increases Adult Hippocampal Neurogenesis and the expression of Arc, Erk and

CREB proteins in the Dorsal Hippocampus. Frontiers in Cellular Neuroscience 14, 89, 2, 2020.

7. Singh KV, Gautam R, Meena R, Nirala JP, Jha SK, Rajamani P. Effect of mobile phone radiation on oxidative stress, inflammatory response, and contextual fear memory in Wistar rat. Environmental Science and Pollution Research, 1-12, 1, 2020.

8. Chauhan A, Kumar R, Singh P, Jha SK, Kuanr BK. RF hyperthermia by encapsulated Fe3O4 nanoparticles induces cancer cell death via time-dependent caspase-3 activation, Nanomedicine 15 (04), 355-379, 2020.

9. Jha VM, Jha SK. Sleep: Basic and Historical Aspects. Sleep: Evolution and Functions: Springer, Singapore; 1-15; 2020.

10. Jha VM, Jha SK. Sleep: Findings in Invertebrates and Lower Vertebrates. Sleep: Evolution and Functions: Springer, Singapore; 17-36; 2020.

11. Jha VM, Jha SK. Sleep: Evolutionary and Adaptive Changes in Birds and Mammals. Sleep: Evolution and Functions: Springer, Singapore; 37-59; 2020.

12. Jha VM, Jha SK. Sleep Loss: What Does It Do to Our Brain and Body? Sleep: Evolution and Functions: Springer, Singapore; 61-78; 2020.

13. Jha VM, Jha SK. Sleep: Disorders and Clinical Implications. Sleep: Evolution and Functions: Springer, Singapore; 101-118; 2020.

14. Kant D, and Jha, SK. The formation of compensatory contextual fear memory in the absence of dorsal hippocampus does not change sleep architecture. Behavioral Brain Research 370, 2019.111944. doi.org/10.1016/j.bbr.2019.111944.

15. Kant D, and Jha, SK. The dorsal hippocampus neuronal lesion does not affect theta activity in the cortical network. Sleep Vigilance. 2019. DOI 10.1007/s41782-019-00058-4.

16. Kumar R, Chauhan A, Jha SK and Kuanr BK. Encapsulated lanthanum strontium manganese oxide in mesoporous silica shell: Potential for cancer treatment by hyperthermia therapy. Journal of Alloys and Compounds 790, 433-446. 2019

17. FA Mir, SK Jha, VM Jha The Role of Sleep in Homeostatic Regulation of Ionic Balances and Its Implication in Cognitive Functions. Sleep, Memory and Synaptic Plasticity, Jha, SK., Jha, VM. (Eds.), Springer Nature, Singapore, 77-106, 2019.

18. S Tripathi, S Tripathi, Anjali, SK Jha, Sleep and Appetitive Conditioned Memory. Sleep, Memory and Synaptic Plasticity, Jha, SK., Jha, VM. (Eds.), Springer Nature, Singapore, 227-254, 2019.

19. MF Qureshi, D Kant, SK Jha, The Distinctive Role of NREM and REM Sleep in the Consolidation of Fear Memory. Sleep, Memory and Synaptic Plasticity, Jha, SK., Jha, VM. (Eds.), Springer Nature, Singapore, 199-226, 2019.

20. Tripathi S, Taneja P. and Jha SK. Training on an Appetitive (Delay)-Conditioning Task Enhances Oscillatory Waves During Sleep in the Cortical and Amygdalar Network. Front. Behav. Neurosci., 12:260. 2018. doi: 10.3389/fnbeh.2018.00260

21. Kumar R, Chauhan A, Jha SK, and Kuanr BK. Localized cancer treatment by radio-frequency hyperthermia using magnetic nanoparticles immobilized on graphene oxide: from novel synthesis to in vitro studies. Journal of Materials Chemistry B; 6; 5385-5399; 2018

22. Qurshi M and Jha SK. Short-term total sleep-deprivation impairs contextual fear memory, and contextual fear-conditioning reduces REM sleep in moderately anxious swiss mice. Front. Behav. Neurosci. 11:239, 2017. doi: 10.3389/fnbeh.2017.00239

23. Kumar T and Jha SK. Influence of cued-fear conditioning and its impairment on NREM sleep. Neurobiology of learning and memory, 144, 155-165, 2017.

24. Tripathi S and Jha SK. Short-Term Total Sleep Depr ivation Alters Delay-Conditioned Memory in the Rat. Behav. Neurosci. 130 (3), 325-35, 2016.

25. Gonfalone AA and Jha SK. The influence of gravity on REM sleep. Animal Physiol.7, 65–72, 2015.

26. Qureshi MF and Jha SK. Proton pump inhibition increases Rapid Eye Movement (REM) sleep in the rat. BioMed. Res. Intl.,1-8, 2014.

27. Kant D, Tripathi SI, Qureshi MF, Tripathi SII, Pandey S, Singh G, Kumar T, Mir FA, Jha SK. The effect of glial glutamine synthetase inhibition on recognition and temporal memories in the rat. Neurosci. Lett., 560: 98– 102, 2014.

28. Madan V and Jha SK. Sleep benefits in health and cognition. In Recent Trends in Life Sciences, eds Fulekar MH and Kale RK, I.K International Publishing House. New Delhi, pg 412, 2014 (ISBN: 978-938-233-2251).

29. Kumar T and Jha SK. Sleep deprivation impairs consolidation of cued fear memory in rats. PLoS one, 10.1371/journal.pone.0047042. 2012.

30. Madan V and Jha SK. A moderate increase of physiological CO2 in a critical range during stable NREM sleep episode: a potential gateway to REM sleep. Frontiers Neurology, 3(19): 1-6, 2012.

31. Madan V and Jha SK. Sleep alterations in mammals: Did aquatic conditions inhibit rapid eye movement sleep? Neurosci. Bull. 28(6): 746-758; 2012.

32. Chowdhury A, Chandra R and Jha SK. Total sleep deprivation impairs the encoding of trace-conditioned memory in the rat. Neurobiology of learning and memory, 95(3): 355-369, 2011.

33. Jha SK and Mallick BN. Modulation of REM seep by non-REM sleep and waking areas in the brain. In Rapid Eye Movement Sleep: Regulation and Function, eds

Mallick BN, Pandi-Perumal SR, McCarley RW, and Morrison, AR, Cambridge University Press, New York,173-182, 2011.

34. Aton SJ, Seibt J, Dumoulin M, Jha SK, Steinmetz N, Coleman T, Naidoo N and Frank MG. Mechanisms of Sleep-Dependent Consolidation of Cortical Plasticity. Neuron, 61(3): 454-66, 2009.

35. Jha SK and Mallick BN. Presence of □-1 NE-ergic and GABA-A receptors on mPOAH thermosensitive neurons and their role in integrating brainstem ARAS inputs in thermoregulation in rats. Neuroscience, 158(2): 833-44, 2009.

36. Hsu N, Jha SK, Coleman T and Frank MG. Paradoxical effects of the hypnotic Zolpidem in the neonatal ferret. Behav Brain Res, 201(1): 233-236, 2009.

37. Uebele VE, Nuss CE, Santarelli VP, Garson SL, James C Barrow JC, Stauffer SR, Selnick HG, Koblan KS, Renger JJ, Aton S, Seibt J, Dumoulin M, Jha SK, Coleman T and Frank MG. T-type calcium channels regulate cortical plasticity in vivo. NeuroReport, 20(3): 257-62, 2009.

38. Madan V and Jha SK. What is sleep and why is it needed? Int J Life Sci & Tech, 1(1): 9-23, 2008.

39. Seibt J, Aton SJ, Jha SK, Coleman T, Dumoulin MC and Frank MG. The non-benzodiazepine hypnotic zolpidem impairs sleep-dependent cortical plasticity. Sleep, 31: 1381-91, 2008.

40. Thurber A, Jha SK, Coleman T and Frank MG. A preliminary study of sleep ontogenesis in the ferret (Mustela putorius furo). Behav Brain Res, 189: 41-51, 2008.

41. Mallick BN, Madan V and Jha SK. Rapid Eye Movement Sleep Regulation by modulation of Noradrenergic System. In Neurochemistry of Sleep and Wakefulness, eds Monti JM, Pandi-Perumal SR and Sinton CM eds, Cambridge University Press, New York, 59-84, 2008.

42. Frank MG, Jha SK and Coleman T. Blockade of postsynaptic activity in sleep inhibits developmental plasticity in visual cortex. NeuroReport, 17: 1459-63, 2006.

43. Jha SK, Coleman T and Frank MG. Sleep and sleep regulation in the ferret (Mustela Putorius Furo). Behav Brain Res, 172: 106-113, 2006.

44. Jha SK, Jones BE, Coleman T, Steinmetz N, Law CT, Griffin G, Hawk J, Dabbish N, Kalatsky VA and Frank MG. Sleep-dependent plasticity requires cortical activity. J Neurosci, 25(40): 9266-74, 2005.

45. Jha SK, Ross RJ and Morrison AR. Sleep-related neurons in the central nucleus of the amygdala of rats and their modulation by the dorsal raphe nucleus. Physiol Behav, 86(4): 415-26, 2005.

46. Pawlyk AC, Jha SK, Brennan FX, Morrison AR and Ross RJ. A rodent model of sleep disturbances in posttraumatic stress disorder: the role of context following fear conditioning. Biol Psychiatry, 57(3): 268–277, 2005.

47. Jha SK, Brennan FX, Pawlyk AC, Ross RJ and Morrison AR. REM Sleep: A sensitive index of fear conditioning in rats. Eur J Neuroscience, 21 (4): 1077–80, 2005.

48. Mallick BN, Jha SK and Madan V. Role of norepinephrine in thermoregulation during Rapid Eye Movement Sleep and its deprivation. In Molecular and Cellular Neurobiology, eds Thakur MK and Prasad S eds. Narosa Publishing House, New Delhi, 39-54, 2005.

49. Mallick BN, Jha SK and Islam F. Wakefulness-inducing area in the brainstem excites warm-sensitive and inhibits cold-sensitive neurons in the medial preoptic area in anesthetized rats. Synapse, 51(1): 59-70, 2004.

50. Mallick BN, Jha SK and Islam F. Presence of □-1 adrenoreceptors on thermosensitive neurons in the medial preoptico-anterior hypothalamic area in rats. Neuropharmacology, 42: 697-705, 2002.

51. Jha SK, Islam F and Mallick BN. GABA exerts opposite influence on warm and cold sensitive neurons in the medial preoptic area in rats. J Neurobiology, 48: 291-300, 2001.

52. Jha SK, Yadav V and Mallick BN. GABA-A receptors in the mPOAH simultaneously regulates sleep and body temperature in freely moving rats. Pharmacol Biochem Behav, 70: 115-121, 2001.

53. Mallick BN, Thankachan S, Kaur S and Jha SK. Application of biophysical correlates to study neural regulation of some physiological phenomena. In Biophysical processes in living organisms, eds Pardha Saradhi P, Oxford and IBH publishing Company Pvt Ltd, India, 327-341, 2001.

54. Ali M, Jha SK, Kaur S and Mallick BN. Role of GABA-A receptor in the preoptic area in the regulation of sleep-wakefulness and rapid eye movement sleep. Neuroscience Res, 33: 245-250, 1999.

55. Mallick BN, Kaur S, Jha SK and Siegel JM. Possible role of GABA in the regulation of REM sleep with special reference to REM-OFF neurons. In Rapid Eye Movement Sleep, eds Mallick BN and Inoue S, Marcel Dekker, New York, 153-166, 1999.

Books:

1. Sleep: Evolution and Functions, Springer Nature, Singapore, ISBN 978-981-15-7175-6. 2020

2. Sleep, Memory and Synaptic Plasticity, Springer Nature, Singapore, ISBN 978-981-15-7175-6. 2019.

Member of the Editorial Board of Scientific Journals:

- Academic Editor, Biomed. Research International.
- Associate Editor, Sleep and Vigilance.
- Review Editor, Frontiers in Behavioral Neuroscience.
- Review Editor, Frontiers in Cellular Neuroscience
- Review Editor, Sleep and Circadian Rhythms in Cellular Neurophysiology
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