

Prof. Hakan S. Orer, MD, PhD

Current Status: Professor, Koç University School of Medicine (2013)

EDUCATION

- 1986** M.D. (With honors), Hacettepe University, Faculty of Medicine, Ankara, Turkey
- 1988-1991** Research Associate, (French Government Boursar) INSERM U288 Pitié-Salpêtrière Faculty of Medicine, Paris, France (Director: M. Hamon, Supervisor: R. Laguzzi).
- 1992** Ph.D., Pharmacology, Hacettepe University, Institute of Health Sciences, Ankara, Turkey (Supervisor: M. İlhan).
- 1993-1995** Post-Doctoral Research Fellow, Department of Pharmacology & Toxicology, Michigan State University, East Lansing, Michigan (Mentors: G.L. Gebber, S.M. Barman)

PROFESSIONAL EXPERIENCE

- 1995-1997** Assistant Professor, Department of Pharmacology, Faculty of Medicine, Hacettepe University, Ankara, Turkey.
- 1997-2002** Associate Professor, Department of Pharmacology, Faculty of Medicine, Hacettepe University, Ankara, Turkey.
- 2002-2003** Visiting Associate Professor, Department of Pharmacology & Toxicology, Michigan State University, East Lansing, Michigan.
- 2003-** Professor, Department of Pharmacology, Faculty of Medicine, Hacettepe University, Ankara, Turkey.
- June-Oct. 2005** Visiting Professor, Department of Pharmacology & Toxicology, Michigan State University, East Lansing, Michigan.
- June-Oct. 2007** Visiting Scholar, Department of Pharmacology & Toxicology, Michigan State University, East Lansing, Michigan.
- June-Oct. 2009** Visiting Scholar, Department of Pharmacology & Toxicology, Michigan State University, East Lansing, Michigan.

Research Synopsis

Blood pressure, like other vital variables is under phasic and tonic control of the central structures located in the brain stem. Despite the wealth of information accumulated for over more than a century, wiring and functioning of the brain stem structures involved in this control are not yet fully understood. Communication and information coding in the brain stem, as well as the generation of sympathetic tone to maintain an adequate blood supply to different organs and under different circumstances, constitute the main scope of my research which benefits

from a long term collaboration with Professors S. M. Barman and G. L. Gebber of Michigan State University (East Lansing, MI).

At Hacettepe University, the development of research infrastructure and administration of graduate programs in health sciences (graduate school) were my major occupation during the last decade. The two-step infrastructure project that aimed to renovate the animal facility and to build a transgenic core were completed from 2001 to 2012. The first transgenic mice were successfully born in 2012. This achievement is a first in a Turkish university.

Selected Achievements

- 2012- 2013 Deputy Director, Institute of Population Studies, Hacettepe University
- 2012- 2013 Chairman, Ethics Committee on Clinical Trials, Hacettepe University
- 2012- 2013 Member, Ethics Committee on Non-Interventional Clinical Research, Hacettepe University
- 2011- Member, UNESCO National Bioethics Commission
- 2007- 2013 Chairman, Hacettepe University Local Ethics Committee for Animal Experiments (IACUC)
- 2007- Member, National Ethics Committee for Laboratory Animals
- 2001-2013 Head, Surgical Research and Laboratory Animals Breeding Unit, Faculty of Medicine, Hacettepe University, Ankara, Turkey.
- 2003-2012 Member, University Senate and Executive Board, Hacettepe University, Ankara, Turkey
- 2003-2012 Director (Graduate School Dean), Graduate Studies Institute for Allied Health Sciences (Institute of Health Sciences), Hacettepe University, Ankara, Turkey.
- 2004-2009 Treasurer & Council Member (elected), Turkish Pharmacological Society.
- 2005-2008 Member, All University Strategic Planning Council, Hacettepe University, Ankara, Turkey
- 2005-2007 Member, Commission on Human Resources Development in Health Sciences, Sub-committee for graduate studies, Turkish Inter-University Council, Ankara, Turkey
- 2004-2005 Delegate for Hacettepe University, European Universities Association (EUA), Doctoral Programme Project, Network 3: Quality of Doctoral Programmes.
- 2001-2004 Member, Central Ethics Committee for Drug Investigations. Ministry of Health, Ankara, Turkey.

AWARDS

- 1998 Turkish Scientific and Technique Research Council (TUBITAK), Junior Scientist Award
- 1987 Sandoz (Novartis) Medicine Award

PROJECTS CONDUCTED AS PI

- 1996-98 Frequency components of the rat sympathetic nerve discharge (Supported by Turkish Scientific and Technique Research Council-TUBITAK)
- 2001-03 Standard laboratory animal colonies (Infra-structural development Project supported by State Planning Agency-DPT)
- 2009-12 Transgenic animal laboratory (Infra-structural development Project supported by State Planning Agency-DPT)

MEMBERSHIPS

- 2012- [The Academy of Transdisciplinary Learning and Advanced Studies](#) (Fellow)
- 1997- [American Physiological Society](#) (Member)
- 1997- [International Brain research Organization](#) (Member)
- 1994- [Society for Neuroscience](#) (Member)
- 1988- [Turkish Pharmacological Association](#) (Member)

PUBLICATIONS

1. **Babaoglu MO, Aydos TR, Orer HS, and Ilhan M.** Antinicotinic activity of some 2-aminotetralin derivatives - A structure-activity relationship study. *Arzneimittel-Forschung-Drug Research* 49: 566-571, 1999.
2. **Barman SM, Gebber GL, and Orer HS.** Medullary lateral tegmental field: an important source of basal sympathetic nerve discharge in the cat. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 278: R995-R1004, 2000.
3. **Barman SM, Gebber GL, and Orer HS.** Sympathetic vasomotor tone - time to move beyond the Network Oscillator Hypothesis? Reply. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 283: R1286-R1287, 2002.
4. **Barman, SM, and Orer, HS.** Rostral ventrolateral medullary but not medullary lateral tegmental field neurons mediate sympatho-sympathetic reflexes in cats, *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 299, R1269-1278, 2010.
5. **Barman SM, Orer HS, and Gebber GL.** A 10-Hz Rhythm Reflects the Organization of a Brain-Stem Network That Specifically Governs Sympathetic-Nerve Discharge. *Brain Research* 671: 345-350, 1995.
6. **Barman SM, Orer HS, and Gebber GL.** A 10-Hz rhythm reflects the organization of a brainstem network that specifically governs sympathetic nerve discharge (SND). *Faseb Journal* 10: 3434-3434, 1996.
7. **Barman SM, Orer HS, and Gebber GL.** Axonal projections of caudal ventrolateral medullary and medullary raphe neurons with activity correlated to the 10-Hz rhythm in sympathetic nerve discharge. *Journal of Neurophysiology* 74: 2295-2308, 1995.

8. **Barman SM, Orer HS, and Gebber GL.** Caudal Ventrolateral Medullary Neurons Are Elements of the Network Responsible for the 10-Hz Rhythm in Sympathetic-Nerve Discharge. *Journal of Neurophysiology* 72: 106-120, 1994.
9. **Barman SM, Orer HS, and Gebber GL.** Differential effects of an NMDA and a non-NMDA receptor antagonist on medullary lateral tegmental field neurons. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 282: R100-R113, 2002.
10. **Barman SM, Orer HS, and Gebber GL.** Effects on sympathetic nerve discharge produced by microinjection of 8-OH-DPAT and clonidine into the medullary lateral tegmental field of cats. *Faseb Journal* 15: A805-A805, 2001.
11. **Barman SM, Orer HS, and Gebber GL.** Role of medullary excitatory amino acid receptors in mediating the 10-Hz rhythm in sympathetic nerve discharge of cats. *Brain Research* 1049: 249-253, 2005.
12. **Barman, SM, Orer, HS, and Gebber, GL.** The role of the medullary lateral tegmental field in the control of sympathetic nerve discharge. In S. G. Pandalai (Ed.), *Recent Research Developments in Physiology* (Vol. 2, pp. 187-207). Kerala, India: Research Signpost, 2004.
13. **Barman SM, Orer HS, and Gebber GL.** The role of the medullary lateral tegmental field in the generation and baroreceptor reflex control of sympathetic nerve discharge in the cat. *Neuro-Cardiovascular Regulation: From Molecules to Man* 940: 270-285, 2001.
14. **Ciftci AO, Sara Y, Tanyel FC, Bozdog O, Orer HS, and Onur R.** The role of nitroergic system on the contractility of colonic circular smooth muscle in Hirschsprung's disease. *Journal of Pediatric Surgery* 34: 1477-1481, 1999.
15. **Durakoglugil, MS, and Orer, HS.** Cannabinoid receptor activation in the nucleus tractus solitaries produces baroreflex-like responses in the rat, *International Journal of Biomedical Science* 4, 229-237, 2008.
16. **Fadel PJ, Orer HS, Barman SM, Vongpatanasin W, Victor RG, and Gebber GL.** Fractal properties of human muscle sympathetic nerve activity. *American Journal of Physiology-Heart and Circulatory Physiology* 286: H1076-H1087, 2004.
17. **Firat MM, Gelebek V, Orer HS, Belen D, Firat AK, and Balkanci F.** Selective intraarterial nimodipine treatment in an experimental subarachnoid hemorrhage model. *American Journal of Neuroradiology* 26: 1357-1362, 2005.
18. **Gebber GL, Orer HS, and Barman SM.** Fractal noises and motions in time series of presympathetic and sympathetic neural activities. *Journal of Neurophysiology* 95: 1176-1184, 2006.
19. **Gebber GL, Orer HS, and Barman SM.** Fractal noises and motions in time series of presympathetic and sympathetic neural activities. *Faseb Journal* 20: A367-A367, 2006.
20. **Gebber GL, Zhong S, Barman SM, and Orer HS.** Coordination of the Cardiac-Related Discharges of Sympathetic-Nerves with Different Targets. *American Journal of Physiology* 267: R400-R407, 1994.
21. **Gebber GL, Zhong S, Barman SM, Paitel Y, and Orer HS.** Differential Relationships among the 10-Hz Rhythmic Discharges of Sympathetic-Nerves with Different Targets. *American Journal of Physiology* 267: R387-R399, 1994.

22. **Merahi N, Orer H, and Laguzzi R.** Cardiovascular Effects of the Microinjection of Serotonin into the Nucleus-Tractus-Solitarius Involve 5-Ht2 and 5-Ht3 Receptors, in the Rat. *European Journal of Pharmacology* 183: 1951-1951, 1990.
23. **Merahi N, Orer HS, and Laguzzi R.** 5-Ht2 Receptors in the Nucleus-Tractus-Solitarius - Characterization and Role in Cardiovascular Regulation in the Rat. *Brain Research* 575: 74-78, 1992.
24. **Merahi N, Orer HS, Laporte AM, Gozlan H, Hamon M, and Laguzzi R.** Baroreceptor Reflex Inhibition Induced by the Stimulation of Serotonin-3 Receptors in the Nucleus Tractus Solitarius of the Rat. *Neuroscience* 46: 91-100, 1992.
25. **Nosjean A, Compoin C, Buisseretdelmas C, Orer HS, Merahi N, Puizillout JJ, and Laguzzi R.** Serotonergic Projections from the Nodose Ganglia to the Nucleus Tractus Solitarius - an Immunohistochemical and Double Labeling Study in the Rat. *Neuroscience Letters* 114: 22-26, 1990.
26. **Orer, H. S.** An Overview of the Doctoral Education in Health Sciences in Turkey. *Turkish Journal of Biochemistry* 36, S35-S41, 2011
27. **Orer HS, Barman SM, and Gebber GL.** Effects on sympathetic activity of 8-OHDPAT and clonidine in cat medullary lateral tegmental field. *American Journal of Physiology-Heart and Circulatory Physiology* 281: H613-H622, 2001.
28. **Orer HS, Barman SM, Gebber GL, and Sykes SM.** Medullary lateral tegmental field: an important synaptic relay in the baroreceptor reflex pathway of the cat. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 277: R1462-R1475, 1999.
29. **Orer HS, Barman SM, Zhong S, and Gebber GL.** A Modulatory Role of Central Cholinergic Transmission in Control of the 10-Hz Rhythm in Sympathetic-Nerve Discharge. *Brain Research* 661: 283-288, 1994.
30. **Orer HS, Clement ME, Barman SM, Zhong S, Gebber GL, and McCall RB.** Role of serotonergic neurons in the maintenance of the 10-Hz rhythm in sympathetic nerve discharge. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 39: R174-R181, 1996.
31. **Orer HS, Das M, Barman SM, and Gebber GL.** Fractal activity generated independently by medullary sympathetic premotor and preganglionic sympathetic neurons. *Journal of Neurophysiology* 90: 47-54, 2003.
32. **Orer HS, Das M, Gebber GL, and Barman SM.** Neuraxis levels generating the fractal spike trains of sympathetic neurons. *Faseb Journal* 17: A398-A398, 2003.
33. **Orer HS, Firat MM, and Belen D.** Clinical experience of selective intra-arterial nimodipine treatment for cerebral vasospasm following subarachnoid hemorrhage - Reply. *American Journal of Neuroradiology* 27: 474-474, 2006.
34. **Orer HS, Gebber GL, and Barman SM.** Role of serotonergic input to the ventrolateral medulla in expression of the 10-Hz sympathetic nerve rhythm. *Am J Physiol Regul Integr Comp Physiol* 294: R1435-1444, 2008.
35. **Orer HS, Gebber GL, and Barman SM.** Medullary lateral tegmental field neurons influence the timing and pattern of phrenic nerve activity in cats. *Journal of Applied Physiology* 101: 521-530, 2006.

36. **Orer HS, Gebber GL, Phillips SW, and Barman SM.** Role of the medullary lateral tegmental field in reflex-mediated sympathoexcitation in cats. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 286: R451-R464, 2004.
37. **Orer HS, Guc MO, Rezaki YE, Ilhan M, and Kayaalp SO.** Antagonism of Acetylcholine Action in Guinea-Pig Tracheal Smooth-Muscle and Epithelium by Pirenzepine, 4-Damp and Atropine. *Archives Internationales De Pharmacodynamie Et De Therapie* 305: 45-54, 1990.
38. **Orer HS, Merahi N, Nosjean A, Fattaccini CM, and Laguzzi R.** Cardiovascular Effects of the Local Injection of 5,7-Dihydroxytryptamine into the Nodose Ganglia and Nucleus-Tractus-Solitarius in Awake Freely Moving Rats. *Brain Research* 553: 123-128, 1991.
39. **Orer HS, Merahi N, Nosjean A, Gozlan H, and Laguzzi R.** Sleep Changes Induced by the Local Application of 5,7-Dihydroxytryptamine into the Nodose Ganglia and Aortic Denervation in the Rat. *Pflugers Archiv-European Journal of Physiology* 419: 21-24, 1991.
40. **Orer HS, Zhong S, Barman SM, and Gebber GL.** Central catecholaminergic neurons are involved in expression of the 10-Hz rhythm in SND. *American Journal of Physiology-Regulatory Integrative and Comparative Physiology* 39: R333-R341, 1996.
41. **Otcu S, Durakogugil M, Orer HS, and Tanyel FC.** Contralateral genitofemoral sympathetic nerve discharge increases following ipsilateral testicular torsion. *Urological Research* 30: 324-328, 2002.
42. **Phillips SW, Orer HS, Fadel PJ, Barman SM, and Gebber GL.** Fractal heart rate variability (HRV) and muscle sympathetic nerve discharge (SND) in awake humans and Dial-urethane anesthetized cats. *Faseb Journal* 18: A1080-A1080, 2004.
43. **Tombakoglu M, Durakoglulugil M, Kale G, Orer HS, Bulun A, and Anlar B.** Transient intrauterine hypotension causes apoptosis in fetal rat brain and affects learning. *Pediatric Research* 53: 977-982, 2003.

Researcher ID

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