Goa-origin Scientist-4

Santosh Anand Helekar, MD, PhD

Neuroscientist-Inventor

Son of Dr. Anand Helekar of Chimbel, Ribandar, Goa.

Graduated in Bachelor of Medicine and Surgery from Goa Medical College of University of Bombay in 1982.
Obtained Ph.D. in Neuroscience from Baylor College of Medicine in 1991.
Minoru Suzuki Award for Excellence in Neuroscience of Baylor College of Medicine, (1990.)
Recipient of the Louis and Emma Benzak named Postdoctoral Research Fellowship Award of the Muscular Dystrophy Association.
(1993.)

Dr. Helekar has held faculty appointments in the Departments of Neurology and Neuroscience at Baylor College of Medicine, Department of Neurology, at the Methodist Hospital Research Institute and Weill Medical College (WMC) of Cornell University before rejoining as a scientist and associate member of Houston Methodist Research Institute in 2010, as an Associate Professor of Neurosurgery in the Academic Institute of Houston Methodist Hospital.

His studies have demonstrated that bird song study gives clues to human stuttering.

Dr. Helekar is a co-inventor of the Transcranial Rotating Permanent Magnet Stimulator (TRPMS), a device used in clinical trials. Also a consultant and collaborator supporting all TRPMS related studies. Transcranial Magnetic Stimulation (TMS) therapy is used in diagnosis or to map out brain function in neuroscience research.

Book: Animal models of speech and language disorders, Springer, 2013.

The Transcranial Magnetic Stimulation (TMS) apparatus includes a head mount for disposition on the head of a patient; and a plurality of magnet assemblies

for releasable mounting on the head mount, wherein each of the magnet assemblies includes a magnet for selectively providing a rapidly changing magnetic field capable of inducing weak electric currents in the brain of a patient so as to modify the natural electrical activity of the brain of the patient; wherein the number of magnet assemblies mounted on the head mount, their individual positioning on the head mount, and their selective provision of a rapidly changing magnetic field is selected so as to allow the spatial, strength and temporal characteristics of the magnetic field to be custom tailored for each patient, whereby to provide patient-specific TMS therapy, to assist in diagnosis or to map out brain function in neuroscience research. https://www.youtube.com/watch?v=VDP90m83Etk

He has also appeared on TV – PBS NOVA program. (Ref. 7)

Patents:

US Patent: 11291853 (2022) Method and apparatus for providing transcranial magnetic stimulation (TMS) to an individual.

US Patent: 11730970 (2023) Method and apparatus for providing transcranial magnetic stimulation (TMS) to an individual.

US Patent: 11491341 (2019) Method and apparatus for providing transcranial magnetic stimulation (TMS) to an individual.

US Patent: 10398907 (2019) Method and apparatus for providing transcranial magnetic stimulation (TMS) to a patient

US Patent: 9456784 (2016) Method and apparatus for providing transcranial magnetic stimulation (TMS) to a patient

A Sampling of his Numerous Publications and Presentations:

1. Spinning magnetic field patterns that cause oncolysis by oxidative stress in glioma cells, Dec 2023, In: Scientific Reports. 13, 1, 19264.
2. Method for noninvasive whole-body stimulation with spinning oscillating magnetic fields and its safety in mice, 2022, In: Electromagnetic Biology and Medicine. 41, 4, p. 419- 428.

3. Modulation of spontaneous motor unit potentials by a new motor cortical magnetic stimulation method in amyotrophic lateral sclerosis, Oct 2022, In: Journal of Neurology. 269, 10, p. 5487-5496 10 p.

4. On Coscillators: Induction of the Mitochondrial Permeability Transition in Cancer Cells. Neuro-oncology, 09 Nov 2020.

5. Potent Anticancer Effects of a new Wearable Non-invasive Oncomagnetic Device: Cellular Mechanism of Action. Neuro-oncology, Published on 09 Nov 2020.

6. Cell Death Induced by an Oscillating Magnetic Field in Patient Derived Glioblastoma Cells is Mediated by Reactive Oxygen Species. Neuro-oncology Published on 09 Nov 2020.

7. Novel Treatment of End Stage Recurrent Glioblastoma Treated with a Noninvasive Oncomagnetic Device Using Oscillating Magnetic Fields – A New and Powerful Noninvasive Therapy, Neuro-Oncology Published on 09 Nov 2020.

8. Alternating Electric Fields Induced by Fast Spinning Strong magnetic Modulate Mitochondrial Energy Metabolism in GMB Cells. Neuro-Oncology Published on 05 Nov 2018.

9. The strength and spread of the electric field induced by transcranial rotating permanent magnet stimulation in comparison with conventional transcranial magnetic stimulation. Journal of Neuroscience Methods , Published on 01 Nov 2018.

10. Sexual dimorphism in striatal dopaminergic responses promotes monogamy in social songbirds, eLife, Published on 11 Aug 2017.

11. Repeated Bilateral Multifocal Cortical Magnetic Stimulation with a New Wearable Transcranial Stimulator in Chronic Ischemic Stroke. Stroke, Published on 01 Feb 2017.

12. Transcranial Brain Stimulation with Rapidly Spinning High-Field Permanent Magnets. IEEE-Access. Published on 19 May 2016.

13. Altered auditory BOLD response to conspecific birdsong in zebra finches with stuttered syllables. PLOS ONE, Published on 23 Dec 2010.

14. Functional Brain Network Changes Associated with Maintenance of Cognitive Function in Multiple Sclerosis. Frontiers in Human. Neuroscience. Published on 22 Nov 2010.

15. The development of stimulus-specific auditory responses requires song exposure in male but not female zebra finches. Developmental Neurobiology. Published on 23 Nov 2009.

16. Proteomics of the nucleus ovoidalis and field L brain regions of zebra finch. Journal of Proteome Research. Published on 01 May 2008.

17. Functional MRI of the zebra finch brain during song stimulation suggests a lateralized response topography. Proceedings of the National Academy of Sciences of the United States of America, Published on 19 Jun 2007.

18. Peptidyl prolyl cis-trans isomerase activity of cyclophilin A in functional homo-oligomeric receptor expression. Proceedings of the National Academy of Sciences, 1997.

19. On the possibility of universal neural coding of subjective experience, Consciousness and Cognition, 1999 – Elsevier.

References:

1. https://www.frontiersin.org/journals/oncology/articles/10.3389/fonc.2021.768758/full
2. https://scholar.google.com/scholar?start=50&q=santosh+a+helekar&hl=en&as_sdt=0,34
3. https://patents.justia.com/inventor/santosh-a-helekar
4. https://www.researchgate.net/profile/Santosh-Helekar
5. https://www.sciencedaily.com/releases/2007/06/070611161903.htm
6. https://www.audubon.org/news/singing-happy-tune
7. https://www.pbs.org/wgbh/nova/transcripts/0304_sciencen.html

Themistocles D'Silva 2023.