



Expertise Data FMHS (CV)

1. **Name:** Dr. Krishna Dilip Murthy
2. **Academic Qualification:** M.Sc. (Medical Physiology), PhD (Neuroscience), Postdoctoral Fellowship (Canada)
3. **E-mail:** dilipmurthy2005@gmail.com
4. **Title:** Professor
5. **Area of Expertise:** Physiology and Neuroscience
6. **Research and Publication:**

Research interests include *Neurogenesis and Neuronal Plasticity*

- i. Neurobiology of stress, free radicals and role of Pyramid environment and music
- ii. Cellular and molecular mechanisms of learning and memory
- iii. Role of medicinal plants on learning and memory
- iv. Mechanisms of synaptic plasticity
- v. Cellular and molecular mechanisms of wound healing

Publications:

1. **K. Dilip Murthy**, Mitchel C G, Perumal R and Zainal A M (2013). "Housing under the pyramid reduces susceptibility of hippocampal CA3 pyramidal neurons to prenatal stress in the developing rat offspring". *Indian J Exptl. Biol.* 51(12): 1070-1078
2. Surekha Bhat, Guruprasad Rao, **K. Dilip Murthy** and P. Gopalakrishna Bhat (2010). "Alterations in stress parameters in rats housed in a pyramid

model - seasonal variations". *International Journal of Pharma and Biosciences*; 1 (2) ijpbs.net/issue2/168.pdf.

3. **K Dilip Murthy**. (2009). "Hall of Fame Meet the Nobel Laureates: 3". *Borneo J Med. Sci.*3, 53-58
4. Surekha Bhat, Guruprasad Rao, **K. Dilip Murthy**, P Gopalakrishna Bhat. (2009). "Effect of varying durations of pyramid exposure – an indication towards a possibility of overexposure". *Indian J Clin. Biochem.*; 24 (4): 430-2
5. Surekha Bhat, Guruprasad Rao, **K. Dilip Murthy**, P Gopalakrishna Bhat. (2008). "Seasonal variations in markers of stress and oxidative stress in rats". *Indian J Clin. Biochem.*; 23 (2): 191-4.
6. **K Dilip Murthy**. (2008). "Hall of Fame Meet the Nobel Laureates: 2". *Borneo J Med. Sci.*2 (1): 57-60.
7. **K Dilip Murthy**. (2008). "Environment and neural plasticity" (Review article). *Borneo J Med. Sci.*, 2: 3-7.
8. **K Dilip Murthy**. (2007). "Hall of Fame Meet the Nobel Laureates: 1". *Borneo J Med. Sci.*1 (1), 59-62.
9. Surekha Bhat, Guruprasad Rao, **K Dilip Murthy** & P Gopalakrishna Bhat (2007) "Influence of Alignment of the Pyramid on its beneficial effects". *Indian J Exptl. Biol.* 45: 455-458.
10. Surekha Bhat, Guruprasad Rao, **K. Dilip Murthy**, and Gopalakrishna Bhat. (2007). "Housing in pyramid counteracts neuroendocrine and oxidative stress caused by chronic restraint stress in rats". *Evid. Based Complement. Altern. Med.*4 (1) 35-42.
11. Surekha Kamath, S. Gurumadhva Rao, **K. Dilip Murthy**, K.L. Bairy and Surekha Bhat. (2006). "Enhanced wound contraction and epithelization period in steroid treated rats: Role of pyramid environment". *Indian J Exptl. Biol.* 44: 902-904.
12. Kiranmai S. Rai, **K. Dilip Murthy**, Muddanna S. Rao and K.S. Karanth. (2005). "Altered dendritic arborization of amygdala neurons in young adult rats orally intubated with *Clitoria Ternatea* aqueous root extract". *Phytotherapy Research*, 19 (7):592-598.
13. **K. Dilip Murthy** and Kavitha Murthy.(2004). "Brain Plasticity:Nature vs.Nurture". in *Brain and Behavior: Proceedings of Department of*

Science and Technology, Government of India, sponsored workshop: 14-16.

14. Surekha Nayak, S. Gurumadhva Rao, **K. Dilip Murthy**, S.N. Somayaji and K.L. Bairy.(2003). "Pyramid environment reduces the wound healing suppressant properties of dexamethasone in albino rats". *Indian J Exptl. Biol.* 41: 645-648.
15. Surekha Bhat, Guruprasad Rao, **K. Dilip Murthy**, and Gopalakrishna Bhat. (2003). "Effect of housing rats within a pyramid on stress parameters". *Indian J Exptl. Biol.*41: 1289-1293.
16. K.S. Rai, **K.D. Murthy**, K.S. Karanth, K. Nalini, M.S. Rao and K.K. Srinivasan. (2002). "Clitoria ternatea root extract enhances acetylcholine content in rat hippocampus". *Fitoterapia*, 73: 685-689.
17. Kiranmai S. Rai, **K. Dilip Murthy**, K.S. Karanth and Muddanna S. Rao. (2001). "Clitoria Ternatea (Linn) root extract treatment during growth spurt period enhances learning and memory in rats". *Indian J Physiol Pharmacol.* 45 (3):305-313.
18. Sumangala P. Rao, **K. Dilip Murthy**, B. Shivanand Nayak, and S.S. Sathiamoorthy. (1998). "Prostaglandin mediated gastric acid secretion inhibitory effect as a possible mechanism for the antiulcer effect of angiotensin converting enzyme inhibitor (captopril) in pylorus ligated rats". *Indian J Pharmacol.* 30: 385-389.
19. J. J. Chen, **D. Murthy** and G. Firnau. (1995). "N - [18F] Fluoroalkyl - CFT: Synthesis and Cerebral Distribution". *J Labell Compds Radiopharm.* 37, 681-683.
20. G. Firnau, J. J. Chen, B. Schulze, **D. Murthy**, L. P. Niles and R. Defrance.(1995). "Melatonin Binding Sites: ¹¹C - and ¹⁸F - Labelled Melatonin Agonists". *J Labell Compds and Radiopharm.* 37, 135-136.
21. J. J. Chen, **K.D. Murthy**, G. Firnau. (1995). "Synthesis and Cerebral Distribution of N - radio- fluoro -alkylated Tropane derivatives: Potential PET tracer for Dopamine transporter site".*J. Nuc. Med. Biol.*
22. **Dilip Murthy, K.** and Desiraju, T. (1991). "Synapses in developing cingulate and hippocampal cortices in undernourished rats ". *Neuro Report*, 2, 433-436.
23. **Dilip Murthy, K.**, Gundappa, G., Sulekha, S. and Desiraju,T.(1990). "Alterations of synapse numbers in undernourished developing brain ".

Proceedings of INDO-US symposium on "Molecular mechanisms underlying neuronal response to damage".185-186.

24. **Dilip Murthy, K.** and Desiraju, T. (1988). "Alteration in synaptic density in the molecular layer of cingulate cortex caused due to chronic calorie undernutrition and recovery with rehabilitation".*Indian J. of Physiol. and Pharmacol.* 32(5), 406-407.
25. RAVIKISHORE, K., NAGARAJA, T.N., **DILIP MURTHY**, GAYATHRI, SUKUMARAN, RAMACHANDRA, M., and Desiraju, T. (1987). "Effect of late postnatal undernutrition on EEG development in bonnet monkey (*Maccaca Radiata*)". *Indian J. of Physiol. and Pharmacol.* 31(5), 24.
26. **Dilip Murthy, K.**, Kavitha Murthy, S. and Desiraju, T. (1987). "Extension of catecholaminergic innervation from host neocortex to hippocampal transplant graft". *Indian J. of Physiol. and Pharmacol.* 31(5), 21.
27. **Dilip Murthy, K.** and Desiraju, T. (1987). "Numerical density changes of synapses of molecular layer of cingulate cortex due to chronic calorie undernutrition in rat brain". *Indian J. of Physiol. and Pharmacol.* 31(5), 22.
28. **Dilip Murthy, K.** and Desiraju, T. (1986). "Alterations in the numerical densities of varicosities of catecholaminergic axons in frontal cortex due to undernutrition". *Indian J. of Physiol. and Pharmacol.* 30(5), 51.
29. **Murthy Dilip, K.** and Desiraju, T. (1985). "Effect of chronic undernutrition on the individual postganglionic sympathetic nerve axons and varicosities of Iris". *Indian J. of Physiol. and Pharmacol.* 29(5), 51.
30. Thangam Joseph., John A. Thomas., **Dilip K. Murthy** and Kavitha S. Reddy. (1980). "Alterations in the Spermatogenic pattern after L-dopa". *Indian J. Med. Res.* 71, 46-52.

Monographs

1. Gunter Firnau, Raman Chirakal, Lindi Wahl, Jia Juen Chen, **Dilip Murthy**, Claude Nahmias, and E. Stephen Garnett. (1995). "New PET tracers for cerebral Dopamine: Should 6-[¹⁸F] Fluoro-dopa be replaced ". In: *American Chemical Society monograph "Chemist's views of Imaging Centers "*, Ed. A.M. Emran, Plenum Press. N.Y.

Books Published

1. Urban D'Souza and **Dilip Murthy**. Medical Quiz: Physiology (Book), *Published by Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia* (2008). (ISBN 978-967-5224-03-4).
2. **Krishna Dilip Murthy**, Problem-Based Learning: The Use of Real Case Scenarios for Facilitators. Editor, *Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia*, (2013):165 pages: (ISBN978-967-0521-20-6).

Grants in UMS

(Principal investigator)

1. Awarded the **Fundamental Research Grant** for RM 65,000/- FRGS Grant: FRG-S-127-2007 "Effect of prenatal stress on rat hippocampal neurogenesis and the influence of pyramid environment: A morphological & biochemical study". (Completed)

(Co-Investigator)

"Alcohol-Stress Interaction: Possible stress alleviating properties of ethanol" UMS PPI Grant SB0049-SKK-2012. RM 10,000/- (On-going)

7. Professional Affiliation

1. Life member, Indian Academy of Neuroscience, **(IAN)**, INDIA
2. Life member, Association of Physiologists and Pharmacologists of India,**(APPI)**
3. Member, American Physiological Society, **(APS)**, Bethesda, Maryland (USA)
(Member Number: 00149393)
4. Member, International Brain Research Organization **(IBRO)**, USA
5. Member of the NeuroMalaysia Society, **(BRIMS)**, Malaysia
6. Regular member of the Society for Neurosciences **(SfN)**, USA
(Member Number: 100047511)
7. Regular member of the Association of Medical Education Europe **(AMEE)**, UK

8. Postgraduate Supervision

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1. "Alcohol-Stress Interaction: Possible stress alleviating properties of ethanol" UMS PPI Grant SB0049-SKK-2012. (RM 10,000/-)
2. "Effect of prenatal stress on rat hippocampal neurogenesis and the influence of pyramid environment: A morphological and biochemical study": under Fundamental Research Grant (RM 65,000), 2008-2010 **(Masters Supervisor)**
3. Effect of energy within a pyramid model on learning, memory and stress:- A behavioural and morphological study in mice, 1997-2003 **(PhD Supervisor)**
4. Effects of "Clitoria Ternatea" extract on rat central nervous system- a behavioural, morphological and neurochemical study. 1997-2003 **(PhD Supervisor)**
5. Effect of pyramid on the anti-wound healing properties of corticosteroids, non-steroidal anti-inflammatory drugs and anti-cancer agents in albino rats. 2000-2005, **(PhD Co-Supervisor)**
6. Alterations in the status of oxidative stress and anti-oxidant profile in experimental rats housed in pyramid model. 2000-2005, **(PhD Co-Supervisor)**
7. Biological aspects of the imaging technology Positron Emission Tomography: analysis of metabolites, toxicological studies, enzyme kinetics, organ distribution of labeled compounds & synaptosome preparations for electron microscopy. Post-doctoral research fellowship at Dept. of Nuclear Medicine, McMaster University, Hamilton, Canada, April 1992 - June 1994
8. Study of morphological changes in undernourished developing brain and the study of extents of recovery with rehabilitation. Senior research Fellow (Indian Council of Medical Research), Dept. of Neurophysiology NIMHANS, Bangalore, May 1984 - February 1986
9. Effect of L-dopa on Spermatogenesis, Junior research Fellow (Indian Council of Medical Research), Dept. of Pharmacology, St. John's Medical College, Bangalore, India, June 1977-July 1979

9. Award & Recognition

1. Recipient of **Dr. TMA Pai gold medal** for best research paper, for academic year 2000-2001, Manipal University, Manipal (Kiranmai S. Rai, **Dilip Murthy** K, Karanth KS and Muddanna S.Rao. Clitoria ternatea (Linn) root extract treatment during growth spurt period enhances learning and memory in rats, Indian J Physiol Pharmacol 2001; 45(3):305-313).
2. Recipient of **Best research poster award** in XLVII Annual National Conference of Association of Physiologists and Pharmacologists of India (APPICON-2001) held at AFMC Pune in December 2001. (Rai KS, **Murthy KD**, Karanth KS, Nalini K, Rao MS, and Srinivasan KK. (2001), Clitoria ternatea root extract increases acetylcholine content in rat hippocampus).
3. Recipient of Distinguished **Alumni Award** in appreciation of the high distinction achieved in the profession and service to the community presented on 16th December 2001 by the Dean, Kasturba Medical College, Manipal, India.
4. Recipient of **Travel Grant by Directorate of Science and Technology, New Delhi, India and Manipal University Manipal**, India for attending and presenting paper at International Satellite Conference on Neurons and Memory, held at, Hotel Doubletree, Mission Valley, San Diego, California, USA on 21st and 22nd October 2004, (Kiranmai S.Rai, **K.Dilip Murthy**, K.S.Karanth and Muddanna S.Rao.(2004). Altered dendritic arborization of, amygdala neurons in young adult rats treated with, Clitoria ternatea aqueous root extract).
5. Recipient of **Academic Professional Excellence** for the year 2007 by the Vice Chancellor of Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia on 7th August 2008.
6. Recipient of Silver **Medal** at the "PEREKA" Research and Innovation competition held during 19-24 August 2008, at UMS, Kota Kinabalu, Sabah, Malaysia.
7. Recipient of **Excellent Staff Award** (Recipient of UMS APC 2007), presented by School of Medicine at the Student and Staff Excellence Award ceremony 20th December 2008 held at the Grand Ballroom, Le Meridien, Kota Kinabalu, Sabah, Malaysia.
8. Recipient of Research **and Innovation Award**, presented by School of Medicine at the Student and Staff Excellence Award ceremony 20th

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December 2008 held at the Grand Ballroom, Le Meridien, Kota Kinabalu, Sabah, Malaysia.

9. Recipient of **Academic Professional Excellence** for the year 2008 by the Vice Chancellor of Universiti Malaysia Sabah, Kota Kinabalu, Sabah, Malaysia on 30th July 2009.
10. Recipient of **Excellent Staff Award** (Recipient of UMS APC 2008), presented by School of Medicine at the Student and Staff Excellence Award ceremony 17th January 2010 held at Beverly Hotel, Kota Kinabalu, Sabah, Malaysia.
11. Recipient of Caring **Staff Award**, presented by School of Medicine at the Student and Staff Excellence Award ceremony 17th January 2010 held at Beverly Hotel, Kota Kinabalu, Sabah, Malaysia.
12. Recipient of **Silver medal** for the poster on "Medistencils-Aid for Student to Draw Medical Illustrations" at PEREKA2010 Research and Innovation in the category of Educational aids at the competition held during 5th and 6th April 2010 at Dewan Chancellor, UMS, Kota Kinabalu, Sabah
13. Recipient of **Bronze medal** for the poster on "Rapid- Golgi Staining: A Method To View Neurons And Their Arborization " at PEREKA2010 Research and Innovation in the category of Innovation at the competition held during 5th and 6th April 2010 at Dewan Chancellor, UMS, Kota Kinabalu, Sabah
14. Recipient of "**Commendable Service Award for excellent performance**" appraisal for year 2009, presented by the Vice Chancellor of Universiti Malaysia Sabah on 30th June 2010 at a function in Grand Ballroom, 1 Borneo, Kota Kinabalu, Sabah, Malaysia
15. Recipient of "**Excellence in Academic & Professional Service**" for the year 2010 by the Dean, School of Medicine, UMS, Kota Kinabalu, Sabah, Malaysia
16. Recipient of **Bronze medal** for the research poster on "Housing in Pyramid reduces prenatal stress effects in the rat offspring" at PEREKA2011 Research and Innovation in the category of Research at

the competition held during 6th and 7th June 2011 at Dewan Chancellory, UMS, Kota Kinabalu, Sabah

17. Recipient of **third place** for **Best Poster** for the poster entitled "Pyramid environment reduces prenatal stress effects on the dendritic arborization of hippocampal CA3 neurons" presented at the 3rd International Conference of Rural Medicine (ICORM) organized by School of Medicine, UMS, on 22nd – 24th November 2011 at Le' Meridien Hotel, Kota Kinabalu, Sabah
18. Recipient of second **place** for **Best Poster** for the poster entitled "Vulnerability of fetal hippocampal neurons to prenatal stress" presented at the International Neuroscience Symposium 2012, organized by the School of Medicine, UMS and co-organized by Brain Research Institute Monash Sunway and Neuro Malaysia Society on 23-25 July 2012 at UMS, Sabah.
19. Recipient of "**Anugerah Khas Perkhidmatan Cemerlang**" appraisal for year 2012, presented by the Vice Chancellor of Universiti Malaysia Sabah on 16th May 2013 at a function in Dewan Kuliah Pusat Ke-2, Bahagian Perkhidmatan Akademik, UMS, Kota Kinabalu, Sabah, Malaysia
20. Recipient of "Anugerah Penyelidik UMS Tahun 2013" for Penghargaan Jurnal Terindeks (tanpa impak factor) on 24th April 2014 at Dewan Bankuasi, Dewan Canselor, UMS.
21. Recipient of "**Anugerah Khas Perkhidmatan Cemerlang**" appraisal for year 2013, presented by the Vice Chancellor of Universiti Malaysia Sabah on 15th May 2014 at a function in Dewan Kuliah Pusat Ke-2, Bahagian Perkhidmatan Akademik, UMS, Kota Kinabalu, Sabah, Malaysia
22. Recipient of Publication Award 2013 at the Appreciation Ceremony by the Dean Faculty of Medicine & Health Sciences, UMS
23. Recipient of Special Award for Excellent Service 2012 at the Appreciation Ceremony 2013 held by Faculty of Medicine & Health Sciences, UMS on 14th June 2014