

Curriculum Vitae
Prof. A. K. Mukhopadhyay, MD.
(Updated on 3rd March, 2025)

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Curriculum Vitae in Brief
Dr. A. K. Mukhopadhyay, MD.
(Updated in Feb, 2023)



<https://www.akmukhopadhyayconsciousness.com/>

ONE-PAGE BIODATA OF PROFESSOR A. K. MUKHOPADHYAY, MD.

Dr. A. K. Mukhopadhyay, born on 18-05-1953, MBBS from University of Calcutta (1977), and MD (Pathology) from India's Apex Medical Institute, All India Institute of Medical Sciences (AIIMS) New Delhi (1981), joined as Faculty at AIIMS, New Delhi in February 1985. Since April 2006, he had been heading the Dept. of Laboratory Medicine, at AIIMS, New Delhi and superannuated from the service of AIIMS on 31st May, 2018. At present has been working as Professor of Pathology and Academic Head, North DMC Medical College & Hindu Rao Hospital, Delhi.

Contributions:

Prof. A. K. Mukhopadhyay's **twin contributions** for the Nation and the World are as under:

1. Exemplifying AIIMS's leadership in Medical Education, A K Mukhopadhyay is the first to establish the discipline of Laboratory Medicine (1988) in the country's premier medical institute and a three-year residency program leading to postgraduate specialty MD in Laboratory Medicine (since 1997). A. K. Mukhopadhyay had been a Task Force Member of MoHFW, Govt. of India for establishment of Model Curriculum of Medical Laboratory Science (2015-2016).
2. Exemplifying AIIMS's knowledge leadership in the world, Dr. A.K. Mukhopadhyay worked for extending the vertical depth and horizon of Science, and contributed to include "consciousness" within the realm of systems science and systems biology. This work brings a radical shift in the Worldview leading to Paradigm shift in many disciplines of Science. In Medicine, this research has enormous translational potential in Life-style and Disease, Complementary and Alternative Medicine, and Psychosomatic Medicine.

Recognition so far:

1. Bangladesh has emulated AIIMS Model of the Laboratory Medicine Discipline and MD degree since 2014. School of Tropical school of Medicine Kolkata has opened up the discipline. SGPGI Lucknow, Trauma Center has formally opened up the Discipline and included in their R/R for Faculty. Ministry of Health, Govt. of India and Medical council of India brought MD in Laboratory Medicine under MCI, PG Regulation in September 2020.
2. Awarded Life-Time Achievement Award in Systems Science by Systems Society of India (SSI) in 2018.
3. On the Advisory Board of Galileo Commission for Extended Science, UK.
4. Invited in 1999 by Vatican's Pontifical Academy of Science in their Academic Committee meeting as observer from India.
5. Many Eminent scientists and several Nobel Laureates are in communication with him on this work.
6. Deepak Chopra, an International Celebrity, and an AIIMSonian wrote in its two consecutive issues of *SanFrancisco Chronicle* praising high of his work on science for consciousness.

The Vision:

- At Institutional level: Merger of these "ahead of Time" twin contributions in the disciplines of Psychology, Cell Biology, AI, AL, Synthetic Biology, Molecular Medicine, Community Medicine, Social Science, Personalized Medicine, Precision Medicine.
- At National level:
1. Academic Reform for the discipline of Laboratory Science in Medical Institutions of India with Structured three-tier organization of the discipline of Medical Laboratories in all hospitals of India.
 2. To generate expert human resource of Laboratory Physicians to make Prime Minister's "National Health Mission – Free Diagnostic service" a success.
- At World level: To uphold the Emerging Worldview inclusive of Science, Humanity and Spirit
To strengthen the Science for Consciousness and Systematize the theme in Systems Science, Systems Biology and Medicine

AIIMS-Mukhopadhyay Leadership in developing the Postgraduate Discipline of Laboratory Medicine

Time-line of contributions

in developing the discipline of Laboratory Medicine at AIIMS, first in the Nation

Since 01-04-2006, Prof. A.K. Mukhopadhyay had been the Head of the Dept. of Laboratory Medicine, AIIMS, Delhi. He used to supervise one million investigations from patients of AIIMS Hospital, ran a three-year Residency program leading to MD degree in Laboratory Medicine, PhD Program, taught postgraduates and undergraduates of AIIMS and had been involved in within-Paradigm and on Emerging Paradigm research

1. In Feb 1985 he joined as faculty in Clinical Pathology at AIIMS to look after the Hospital Laboratory Service of AIIMS Hospital.
2. Consolidated the service areas of Clinical Pathology, Hematology, Clinical Biochemistry and Microbiology along with 24x7 Emergency Laboratory for AIIMS Hospital and various Centers of AIIMS.
3. Remained instrumental to convert the service area into an Academic Department (1988).
4. Creation of three more faculty positions. All three Faculty joined the department in 1991.
5. Developing a 3 yr. residency program leading to MD degree in Laboratory Medicine started from 1997. First batch of MD in Laboratory Medicine came out in 2000.
https://akmukhopadhyayconsciousness.com/pdf/lab_med_discipline.pdf
<https://akmukhopadhyayconsciousness.com/pdf/Skill-as-expected-from-a-PG-in-Lab-Med.pdf>
6. The Department started Ph.D. program simultaneously in 1997 and the first Ph.D. in Laboratory Medicine came out in 2003.
7. Took over as Head of the Department from 1st of April 2006.
8. Developed the area of
Molecular diagnosis of Neurodegenerative disorders like Alzheimer's disease, Parkinson's disease and Epilepsy, Molecular aspect of Depression, Stress etc.

IMPORTANT PUBLISHED PAPERS TO THIS EFFECT ARE AS UNDER

Mukhopadhyay AK. Neurodegenerative disorder: Five groups of Questions to address. Routes to Therapy. Editorial in Neurodegener Dis Current Res. (2019);1(1): 2

Arora P, **Mukhopadhyay AK**, Pallavi P, Sharma S, Sagar R, Mehta M. Serum S100B levels in patients with depression. Indian J Psychiatry, 60 (1), 70-76, (2019).

Qadri R, Namdeo M, Behari M, Goyal V, Sharma S, Mukhopadhyay AK. Alterations in mitochondrial membrane potential in peripheral blood mononuclear cells in Parkinson's Disease: Potential for a novel biomarker. *Restor Neurol Neurosci.* **2018**; 36(6):719-727. doi: 10.3233/RNN-180852.

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Alam, R., Tripathi, M., Mansoori, N., Parveen, S., Luthra, K., Lakshmy, R., Sharma, S., Arulselvi, S., **Mukhopadhyay, A.K.** (2014). Synergistic Epistasis of Paraoxonase I (rs662 and rs85460) and Apolipoprotein E4 Genes in Pathogenesis of Alzheimer's Disease and Vascular Dementia. *American Journal of Alzheimer's Disease and Other Dementias*, 29,(8), pp.779-776, (2014).

Pallavi, P., Sagar, R., Mehta, M., Sharma, S., Subramaniam, AS., Shamshi, S., Sengupta, U., Qadri, R., Pandey, R. M., **Mukhopadhyay, A. K.** Serum neurotrophic factors in adolescent depression: Gender difference and correlation with clinical severity. *Journal of Affective Disorders*, 150 (2), pp.415-423, (2013).

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Mansoori, N., Tripathi, M., Alam, R., Lakshmy, R., Sharma, S., Arulselvi, S., Parveen, S., **Mukhopadhyay, A.K.** MTHFR (677 & 1298) and IL-6-174 G/C genes in pathogenesis of Alzheimer's and Vascular Dementia and their epistatic interaction. *Neurobiology of Ageing* 33, (2012)

Mansoori, N., Tripathi, M., Alam, R., Luthra, K., Lakshmy, R., Praveen, S., **Mukhopadhyay, A.K.** IL-6-174 G/C and ApoE Gene Polymorphisms in Alzheimer's and Vascular Dementia Patients Attending the Cognitive Disorder Clinic of the All India Institute of Medical Sciences. *Dementia and Geriatric Cognitive Disorder*, 30, pp.461-468, (2010).

(a) Coagulation disorders in Traumatic Brain injury, Liver failure and in Pancreatic failure through guidance of MD/PhD Students.

Important Published papers to this effect are as under

Venencia Albert, Arulselvi Subramaniam, Deepak Agrawal, Hara Prasad Pati, Siddhartha Datta Gupta, **Ashok Kumar Mukhopadhyay.** Acute traumatic endotheliopathy in isolated severe brain injury and its impact on clinical outcome. *Medical Sciences*, **6, 5, 1-14, (2018).**

Albert V., Subramanian, A., Agrawal, D., Bhoi, S. K., Pallavi, P., **Mukhopadhyay, A.K.** RANTES levels in peripheral blood, CSF and contused brain tissue as a marker for outcome in traumatic brain injury (TBI) patients. *BMC Research Notes* (2017), 10:139.

Gochhait, S., Chhabra, G., Sharma, S., Shukla, N.K., Deo, S.V.S., Subramaniam, A., **Mukhopadhyay, A. K.** D-dimer a predictor for lymph node metastasis in breast cancer: (Abs); *Indian J Hematology & Blood Transfusion* (2015), p. S 18.

Chhabra, G., Sharma, S., Subramanian, A., Agrawal, D., Sinha, S., **Mukhopadhyay, A. K.** Coagulopathy as prognostic marker in acute traumatic brain injury. *Journal of Emergencies, Trauma, and Shock* (2013). 6 (3), pp.180-185.

Badal, S.S., Sharma, S., Saraya, A., **Mukhopadhyay, A.K.** Prognostic significance of D-Dimer, natural anticoagulants and routine coagulation parameters in Acute Pancreatitis. *Tropical Gastroenterology*, Vol. 33 (3), pp.193-199 (2012)

9. In 2008, mooted the idea of developing a State of Art Diagnostic Center at AIIMS. The Idea was included in 12th 5-year Plan of Institute. In 2018, it was waiting for sanction of funds from the Govt. of India. In 2020, the Smart Lab had been established and since 2021, the Dry Chemistry Laboratory of the Dept. is mae operative.
10. Computerization of the laboratory started in 2013, and LIS was initiated with the initiative of the Director, AIIMS.
11. Task Force Member of MoHFW, Govt. of India (2015-2016), for establishment of Model Curriculum of Medical Laboratory Science for Diploma (MLT), B.Sc. (MLT), M.Sc. (MLT) courses in National and Regional Institutes of Paramedical Sciences.
12. Working with Medical Council of India to get started MD in Laboratory Medicine course throughout the country. Participated in developing syllabus, TEQ (Teacher's Educational Qualification) and Minimum Infrastructure requirement approved by Academic Committee Of MCI. Working with Supreme Court Mandated Oversight Committee on MCI to get the Course in their PG Regulation of MCI. MCI finally brought this post graduate degree course in their PG Regulation following Gazette notification in 2020.
13. Working with National Board of Examination to start DNB course in Laboratory Medicine
14. Bangladesh emulates the AIIMS Model of Laboratory Medicine of India
Bangabandhu Sheikh Mujib Medical University (BSMMU) of Bangladesh, seeing this example at AIIMS in India, established the discipline of Laboratory Medicine and postgraduate course in Laboratory Medicine in 2014. Since 2017, Bangladesh Govt. has started replacing their 2 yr. M. Phil course in Clinical Pathology with three year degree course in Laboratory Medicine.

(b) In association with Anatomic Pathology, expanding the horizon to Psychoneuroimmunology

Mukhopadhyay AK (2022). Humanities and Spirit in Cell Science. A cell could be considered a Universe for Learning Behavior. CPQ Neurology and Psychology 5,3:1-23.

Mukhopadhyay AK (2022). Underlying Humanities in a Molecular Cell. Journal of Pathology Research. Reviews & Reports. 4 (4):1-2.

Mukhopadhyay T, Mukhopadhyay A, **Mukhopadhyay A K**. A Common Research Hypothesis for Crohn Disease, Ulcerative Colitis, Psoriasis and Acquired Vitiligo. Psychol Behav Sci Int J. 12(1): 555826 (2019).

(c) Important Papers on Laboratory Medicine

Haque S, Sengupta S, Khan A, **Mukhopadhyay A K**, Bhan M K, Kumar R, Jaiikhani B. Immune response of S. Typhi-derived Vi polysaccharide and outer membrane protein a conjugate in mice. Pediatrics and Neonatology. (2023)

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Mukhopadhyay T, Shekhar S, Arora P, Patil P, Jayakumar R, Sehgal T, Meena S, Ningombam A, Shah VKR, Kumar P, Datta SK, Mathur P, Subramanian A, Sinha S, **Mukhopadhyay AK**. Medical postgraduate (MD) program in Laboratory Medicine in India: The Past, Present and Future. Journal of Family Medicine and Primary Care. 2022;11:1633-1641.

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Mukhopadhyay A K. Post-COVID experience of Space empty of Matter: Germination of a new Science across Zero-Point-Energy. American Journal of Psychiatric Research and Reviews, (2021); 5:27.

Chopra P, Sagar R, **Mukhopadhyay A K**. Oxidative Stress Markers (8-Isoprostane and 8-Hydroxy-2-Deoxyguanosine) in Major Depression: A Case-Control Study. Journal of Clinical and Diagnostic Research. (2021);15(6): VC01-VC06.

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Mukhopadhyay T, Shekhar S, Dagar V K, **Mukhopadhyay A. K**. Characterization of Pre-Analytical Errors Using Six Sigma Metrics and Process Capability Index in a Clinical Biochemistry

Laboratory. *International Journal of Health Sciences and Research* (2021); 11 (2):171-176.

Mukhopadhyay, A. K. Medical Laboratory Disciplines: Time for Academic Reform and Structural Organization. Editorial in **Journal of Applied Clinical Pathology** 1(1):2, pp. 1-2 (2017).

Rupali Awale, Ratnaprabha Maji, Parag Patil, Raghavendra Lingiah, **Ashok Kumar Mukhopadhyay**, Subhadra Sharma. Toluidine blue: rapid and simple malaria parasite screening and species identification. *The Pan African Medical Journal* **2017;28:27**.

Albert V., Subramanian, A., Agrawal, D., Bhoi, S. K., Pallavi, P., **Mukhopadhyay, A.K.** RANTES levels in peripheral blood, CSF and contused brain tissue as a marker for outcome in traumatic brain injury (TBI) patients. **BMC Research Notes** (2017) 10:139.

Awale, R., Maji, R, Chandra, R., Sharma, S., Saxena, R., **Mukhopadhyay, A. K.** Marked Leucocytosis Masquerading Chronic Leukemia: case series. **IOSR Journal of Dental and Medical Sciences**, 15 (11), pp. 65-69, (2016).

Sharma, S., Sharma, J. B., Yadav, M., Usha, B.R., Kumar, S., **Mukhopadhyay, A.K.** Cross Sectional study of nutritional markers in pregnancy. **Indian Journal of Endocrinology and Metabolism** (2016). IP:14.139.245.2, pp. 825-830.

Awale, R., Maji, R., Chhabra, G., Pati, H.P., **Mukhopadhyay, A.K.** Hairy Cell Leukemia with Atypical Presentation. **JBR Journal of Translational Clinical Case Reports and Family Physician**, (2016), 2 (1), pp. 6-8.

Sharma, J. B., Sharma, S., Usha, B. R., Gupta, A., Kumar, S., **Mukhopadhyay, A.K.** A cross-sectional Study of tumor markers during normal and high-risk pregnancies. **International Journal of Gynecology and Obstetrics**, (2015), 129 (3), pp. 203-206.

Gochhait, S., Chhabra, G., Sharma, S., Shukla, N.K., Deo, S.V.S., Subramanium, A., **Mukhopadhyay, A.K.** D-dimer a predictor for lymph node metastasis in breast cancer: (Abs); **Indian J Hematology & Blood Transfusion** (2015), p. S 18.

Sharma, J. B., Sharma, S., Usha, B. R., Yadav, M., Kumar, S., **Mukhopadhyay, A.K.** Cross sectional study of serum parathyroid hormone level in high-risk pregnancies as compared to nonpregnant control. **Indian Journal of Endocrinology and Metabolism** (2016), 20 (1): pp. 92-96.

Mukhopadhyay, A. K. Medical Laboratory Disciplines: Time for Academic Reform and Structural Organization. Editorial in **Journal of Applied Clinical Pathology** 1(1):2, pp. 1-2 (2017).

Mukhopadhyay A K (2021). Perspective : [Clinical Pathology \(CP\) or Laboratory Medicine \(LM\): What is there in the Name?](#) *Clin Pathol* 2021, 5(1): 000133.

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Making History from India in the USA. Journal Changes its Name



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Publishing Group

EDITORIAL

Journal of Laboratory Medicine

Medical Laboratory Disciplines: Time for Academic Reform and Structural Organization

A.K. Mukhopadhyay, MD*

Department of Laboratory Medicine, All India Institute of Medical Sciences, New Delhi, India.

"Nothing is more powerful than an idea whose time has come"
Victor Hugo

Laboratory medicine is understood differently in different countries. Pathology is oftentimes used as the generic name for all laboratory-related medical disciplines. However, it should be understood that laboratory medicine is synonymous with clinical pathology also referred to as fluids medicine, which also includes chemical pathology, laboratory hematology, toxicology, transfusion medicine, microbial pathol-

has embraced metabolomics, proteomics, genomics and epigenomics, while postgraduate training for medical microbiology ranges from bacteria to parasites, fungus to virus and bacteriophage, and their diagnosis in human conditions at cultural, biochemical, serological and molecular levels. Pathology, microbiology and biochemistry all teach immunology and molecular biology in the context of their respective subject matter. Strikingly, outside United States and across the globe, there are few postgraduate courses, which exclusively deals with holistic approaches to diagnostic patient care with appropriate training in automation, microscopy, accreditation, equipment and reagent procurement, and total quality management including safety, ethics and legal practice. There is an apparent need for the bolstering of laboratory medicine as a basic training requirement in postgraduate medical disciplines, worldwide.

Journal of Applied Clinical Pathology

EDITORIAL

Medical Laboratory Disciplines: Time for Academic Reform and Structural Organization

A.K. Mukhopadhyay, MD*

Department of Laboratory Medicine, All India Institute of Medical Sciences, New Delhi, India.



"Nothing is more powerful than an idea whose time has come"
Victor Hugo

Laboratory medicine is understood differently in different countries. Pathology is oftentimes used as the generic name for all laboratory-related medical disciplines. However, it should be understood that laboratory medicine is synonymous with clinical pathology also referred to as fluids medicine, which also includes chemical pathology, laboratory hematology, toxicology, transfusion medicine, microbial pathology, and biochemical metabolism among others. Laboratory medicine is also an example of a 'horror tale' paradigm that encompasses robotic automation, quality assurance and microscopy, and other related outputs. These are oriented more towards providing top patient-centric service and dealing with investigations of immediate relevance with the shortest possible turn-around time (TAT). This collective spectrum serves as a type of 'medical detective' and 'laboratory consultant' of the clinical consultants.

With the shift of generic nomenclature from pathology to laboratory medicine, the latter becomes inclusive of all laboratory-related medical disciplines outlined above. This shift of focus also provides an opportunity for academic and organizational reforms of otherwise laboratory-related medical disciplines.

and started postgraduate course with a three-year residency program since 1987. Bangladesh took a similar approach, and following this example in India, Bangladesh Sheikh Mujib Medical University (SMMU) established this independent discipline in 2014. Bangladesh in 2017 has started replacing their two-year diploma courses, Master in Philosophy degree in clinical pathology with three-year degree course in laboratory medicine. This came out as a result of country's service needs. Laboratory medicine for countries such as India, Bangladesh and even Canada (where it is called 'general pathology') is a diagnostic service facility managed by laboratory physicians, who are postgraduates in laboratory medicine. The arrangement is useful to deliver integrated diagnostic services in the area of clinical pathology, laboratory hematology, microbiology, clinical biochemistry and legal molecular tests, ensuring quality results with minimum turnaround time in their respective vertical and send-out services. The palpable gain is in accumulating the riches of space, time, manpower, knowledge and budget cost centers. The arrangement affords a new option for students as well as for teachers, at a higher level. This also expanded the opportunity for the basic departments of pathology, microbiology and biochemistry to develop their respective postdoctoral fellowship courses such as neuro, renal, dermatology and general internal pathology, hematology, oncology, perinatology, immunology, genetics as well as neonatal and molecular medicine etc. Hence, it also enhanced the need of each academic institution in India.

What Eyes see is not always True!
The same article by the same author, published in the inaugural issue of two Journals on the same date.
This is certainly not a case of Plagiarism!

15. Initiative to have collaborative training program with
 - (i) Westgard QC Inclusive – on the training of quality assurance of laboratory
 - (ii) University of Saskatchewan, Royal University Hospital, Saskatoon, Saskatchewan, Canada

Year 2020

On 7th of September 2020, MCI/NMC did Notify the Postgraduate MD Laboratory Medicine in their PG Regulation in The Gazette of India

भारतीय राजपत्र - EXTRAORDINARY
पार्ट III - Section 4
आवधिकी प्रविष्टि
 No. 3571
 NEW DELHI, MONDAY, SEPTEMBER 7, 2020/BHADRA 16, 1943

भारत का राजपत्र
The Gazette of India

CG-DE-I-67092020-221590
 भारतीय आयुर्विज्ञान परिषद् के अधिसूचना नं. 18(1) 2020-मदे ./118224.

भा.रा.प.-18(1)/2020-मदे ./118224.—भारतीय आयुर्विज्ञान परिषद् अधिसूचना, 1956 (1956 का 102) की धारा 33 द्वारा प्रदत्त शक्तियों का इस्तेमाल करते हुए, भारतीय आयुर्विज्ञान परिषद् के अधिसूचना नं. 18(1) 2020-मदे ./118224 द्वारा अधिसूचना जारी की है।

1. (i) इन अधिसूचनाओं को "आयुर्विज्ञान परिषद् अधिसूचना, 2020" कहा जाएगा।
- (ii) ये अधिसूचनाएँ तब लागू होंगी जब वे उनके प्रकाशन की तारीख से प्रबल होंगी।
2. "आयुर्विज्ञान परिषद् अधिसूचना, 2000" में अधिसूचना नं. 18(1) 2020-मदे ./118224 द्वारा निम्नलिखित संशोधन/संशोधन/संशोधन/संशोधन प्रस्तावित किए जा रहे हैं।
3. **आयुर्विज्ञान परिषद् अधिसूचना, 2000 की अनुसूची में "एम.डी. (लैबोरेटरी मेडिसिन)" शीर्षक के अंतर्गत खंड "क" में, एम.डी. (लैबोरेटरी मेडिसिन) के पश्चात् "एम.डी. (प्रयोगिक मेडिसिन)" शीर्षक जोड़ा जाएगा।**

डॉ. राकेश कुमार वाट्स, महासूचना
 [अधिसूचना-III/4/अमा./214/2020-21]

4125 GI/2020
 2 THE GAZETTE OF INDIA : EXTRAORDINARY [PART III—SEC. 4]

प्राप्त तिथियाँ: प्रधान अधिसूचना, नाम: "आयुर्विज्ञान परिषद् अधिसूचना, 2000" तारीख: 7 अक्टूबर, 2000 की अधिसूचनाओं के संशोधन, खंड 4 में प्रकाशित की गई थी और इस भारतीय आयुर्विज्ञान परिषद् की अधिसूचनाएं: 03/03/2001; 06/10/2001; 16/03/2005; 23/03/2006; 20/10/2008; 25/03/2009; 21/07/2009; 17/11/2009; 09/12/2009; 16/04/2010; 08/12/2010; 27/12/2010; 09/02/2012; 27/02/2012; 28/03/2012; 17/04/2013; 01/02/2016; 17/06/2016; 08/08/2016; 31/01/2017; 11/03/2017; 06/05/2017; 27/06/2017; 31/07/2017; 20/02/2018; 05/04/2018; 28/01/2019; 08/03/2019; 15/03/2019 और 05/04/2019 की अधिसूचना के अंतर्गत अधिसूचना की गई थी।

**BOARD OF GOVERNORS IN SUPER-SESSION OF
 MEDICAL COUNCIL OF INDIA
 NOTIFICATION
 New Delhi, the 2nd September, 2020**

No. MCI - 18(1)/2020-Med./118224.—In exercise of powers conferred by Section 33 of the Indian Medical Council Act, 1956 (102 of 1956), the Board of Governors in Super-session of Medical Council of India with previous sanction of the Central Government hereby makes the following regulations to further amend the "Postgraduate Medical Education Regulations, 2000" namely:—

1. (i) These Regulation may be called the "Postgraduate Medical Education (Amendment) Regulation, 2020."
 - (ii) They shall come into force from the date of their publication in the Official Gazette.
 2. In the "Postgraduate Medical Education Regulations, 2000", the following additions/modifications/deletions/substitutions, shall be as indicated therein:-
 3. **In Schedule of the Postgraduate Medical Education Regulations, 2000, Clause "A" under the heading "M.D.(Doctor of Medicine)", the following shall be added after, M.D.(Marine Medicine):-**
- "M.D.(Laboratory Medicine)"**

Dr, RAKESH KUMAR VATS, Secy. General
 [ADVT.-III/4/Ext./214/2020-21]

Footnote: The Principal Regulations namely, "Postgraduate Medical Education Regulations, 2000" were published in Part III, Section 4 of the Gazette of India on 7th Oct., 2000 and amended vide Medical Council of India Notification dated 03/03/2001; 06/10/2001; 16/03/2005; 23/03/2006; 20/10/2008; 25/03/2009; 21/07/2009; 17/11/2009; 09/12/2009; 16/04/2010; 08/12/2010; 27/12/2010; 09/02/2012; 27/02/2012; 28/03/2012; 17/04/2013; 01/02/2016; 17/06/2016; 08/08/2016; 31/01/2017; 11/03/2017; 06/05/2017; 27/06/2017; 31/07/2017; 20/02/2018; 05/04/2018; 28/01/2019; 08/03/2019; 15/03/2019 & 05/04/2019

In Google Search, Prof. A. K. Mukhopadhyay could be found as the Father of Laboratory Medicine discipline in India

Mukhopadhyay-AIIMS Leadership in expanding the VERTICAL DEPTH and THE HORIZON of SCIENCE

Time-line of Contribution of Prof. A.K. Mukhopadhyay in expanding the horizon and vertical depth of Science

This is a pioneering contribution, changing the Worldview, and Paradigm Shift for a number of disciplines of Science

1984-1987:

With an aim to bring consciousness within the purview of science

1. **Coined the term and concept of Supracortical Consciousness**
2. Developed this 'idea' of "Inverted Neuraxis" where the brain downloads information from supracortical domain, through publishing one booklet and one book
 - (i) *Frontiers of Research for Human Biologists* (1985)
 - (ii) *The Dynamic Web of Supracortical Consciousness* (1987)

1987-1995:

1. Review of contemporary theories of consciousness in the context of Physics, Biology and Philosophy
2. Publication of book
Conquering the Brain (1995). See Reviews in

1995-2000:

1. Developed the Idea of **nested hierarchy in the mechanics of nature-consciousness & Pentaune Model of nature-consciousness (classical nature, quantum nature, sub-quantum nature, sub-sub-quantum nature and consciousness)**
2. **Invited as observer from India by Pontifical Academy of Science, Vatican** (1999) in their Academic Committee Meeting
3. Publication of the book
The Millennium Bridge (2000). See review in

2002:

On Nonlocal nature of consciousness

Indian Council of Philosophical Research published his Monograph on *Nonlocality in nature of consciousness. Implication in Neuroscience and Evolution* Consciousness Series -5. Indian Council of Philosophical Research (2002)

This was displayed in Scientific & Medical Network's website as "leading article" for worthy five years

Collaboration with ICPR:

2004, 2006, 2009, 2010:

Contributed 4 lengthy chapters, one in each of four Philosophical Volumes, as part of Project History of Indian Science, Philosophy and Culture (PHISPC), published by Centre for Studies in Civilization, New Delhi, and 2010 Volume published by Pearson, New Delhi.

- (i) The Self and its Memes and Genes: Genes Memes Self (Brain), Information Consciousness (2010)
- (ii) Brain Mind and Consciousness (2009)
- (iii) Supracortical Consciousness. An Opening to multiple new doors of Science (2006)
- (iv) Developing Science for Consciousness. Philosophical underpinnings (2004)

Collaboration with Center of Frontier Science, Philadelphia, USA

2006, 2009:

Developed the concept and framework of Science of information

- (i) Review of the book, *Quo Vadis Quantum Mechanics* in *Frontier Perspectives* (2006)
- (ii) A Radical view of Consciousness. On its nature and science – in *Frontier Perspectives* (2009)

2010:

On the Landscape of Human Possibilities – Tendencies of *Homo Sapiens* to become *Homo Spiritualis* in Bridging Science and Spirituality Pub. Bhakti Vedanta Institute, Kolkata

2012:

From God Particle to Consciousness, in *The Science and Spiritual Quest*, Pub. Bhakti Vedanta Institute, Kolkata

Mukhopadhyay, A. K. Information Holograph. The Structure, the Source and its Operation International Journal of BioEngineering, NeuroSciences and Technology, 2(2), pp. 12-32, (2012).

2013

Mukhopadhyay, A. K. Non-observable Influential(s) in the domain of Consciousness. *Psychology Research* 3, (11) pp. 637-652 (2013). Setting the Agenda for Science of Information (2013).

Mukhopadhyay AK. Setting the Agenda for a Science of Information presented in TSC-2013 Ppt.

2014:

Mukhopadhyay, A.K. From Quantum to Consciousness. A long way to Go! (2014)

Mukhopadhyay, A.K. Life within the Akhanda Worldview (2014). Dialogue and Universalism 24 (2);25-49.

Mukhopadhyay, A.K. On Some Essential Requirements for a Fruitful Consciousness Research. *Psychology Research*, 4 (2), pp. 75-93 (2014).

Interview in National DD on the Science of Consciousness in December 2014

2015:

Deepak Chopra's Comment on this Interview in Two consecutive Issues of San Francisco Chronicle

<https://www.sfgate.com/opinion/chopra/article/Who-Controls-Your-Mind-Hint-It-s-Not-Your-6791280.php>

<https://www.sfgate.com/opinion/chopra/article/What-s-the-Point-of-Being-Human-The-Best-6812996.php>

Mukhopadhyay, A.K. Neural Fabrics of the Mind: Systems Neuroscience, Systems Psychology and Consciousness. *Ann Psychiatry Ment Health* 3(7):1049 (2015).

Mukhopadhyay, A.K. Systems Cell: a Testable Model for Systems Holism. *International Archives of Medicine* (2015), 8, (104), pp. 1-10 (2015).

2016:

Mukhopadhyay, A. K. Systems Psyche: Its Structure, Operation and possible Molecular links. *Psychol Behav Sci Int J* 1(3): PBSIJ.MS.ID.555565 (2016).

Mukhopadhyay, A. K. Systems-bound and Systems-independent Consciousness. Complex Inter-phase in between: From Narrative to Science. *Psychol Behav Sci Int J* 1(3): PBSIJ.MS.ID.555562 (2016)

Mukhopadhyay, A.K. Emerging Pattern in the Complexity; Their Organization in Systems Science. *Int. Journal of Applied Sciences and Engineering Research*, 5 (3), pp. 208-234, (2016).

Mukhopadhyay, A.K. Wisdom of both East and West has a common source, Consciousness. (2016).

2017:

Mukhopadhyay, A.K. Cracking the Hard Problem of Consciousness (2017)

Mukhopadhyay, A.K. Artificial Intelligence, Human Intelligence and Intelligence of Nature: Difficult Questions in their Ambitious Fusion. *Current Opinions in Neurological Science*. 1 (5), pp. 216-231, (2017).

Mukhopadhyay, A. K. The Science of Spiritual Psychology. *Psychology and Behavioral Science International Journal*, 4 (5), (2017).

Mukhopadhyay, A. K. The Ladder of Cognition: Abstract Operation, Molecular Biology, Systems Science. *Ann Psychiatry Ment Health*, 5(4): 1107 (2017).

2018:

Mukhopadhyay, A. K. Cognitive Canvas: Molecular Embroidery, Fabric and the Base. *EC Psychology and Psychiatry* 7 (7), 428-439, (2018).

Mukhopadhyay, A. K. Consciousness in Systems Science: Transforming Psychology, Medicine, Education and Community. *Archives of Psychiatry and Behavioral Sciences*. 1(1): 40-47 (2018).

Mukhopadhyay, A. K. Intelligence in perspectives of the Systems Psyche: Natural, Human and Artificial. *Psychology and Behavioral Science International Journal*, 9 (1): 555754, (2018).

Mukhopadhyay, A.K. Mechanism of Intuition. *Current Opinions in Neurological Science*. 2 (1), pp. 356-361, (2018).

2019:

Mukhopadhyay AK. Zero-Point Energy State of the Brain. *Arch Neurol & Neurosci*. 2(5): 2019. ANN.MS.ID.000547.

Mukhopadhyay A. K. Emergence of *Homo spiritualis*: Of Essential requirements; Faith, Devotion and Love: Deep Science of their Psychoneurobiology *Clinical Psychiatry* (2019);5 (2):61.

Mukhopadhyay A. K., Mukhopadhyay A S. Visualizing Information as a Dynamic Entity Roadmap of Deep Science, AI and Humanity. Psychol Behav Sci Int J. 2019; 13(4): 555867. <https://juniperpublishers.com/pbsij/pdf/PBSIJ.MS.ID.555867.pdf>

Mukhopadhyay A K. Communication of the “Objective Reality” as Signal to the Senses in Orchestrated Non-Reductive way. Arch Neurol & Neurosci. 4(3): 2019. <http://dx.doi.org/10.33552/ANN.2019.04.000586>

2020:

Mukhopadhyay A K. Science is Ruminating: Crack Its Envelope and Make a New Beginning. Ann Psychiatr Clin Neurosci. 2020; 3(3): 1037

Mukhopadhyay A K. DeepNeuroscience: The Way the Brain needs to be Looked into. J Neuro Brain Res 1(2020): 001-006 Doi: 10.47755/ J Neuro Brain Res.2020.1.001

Mukhopadhyay A K. The Science of Divinity: Part III Immersive Neuroscience, Multiversal Neuroscience and Neuroeconomics. J Neuro Brain Res 1(2020): 001-005 Doi: 10.47755/ J Neuro Brain Res.2020.1.005

Mukhopadhyay A K. The Science of Divinity Part II: Triple Transcendence. Sketching out the Pathway for a Science of Consciousness. J Neuro Brain Res 1(2020): 001-004 Doi: 10.47755/ J Neuro Brain Res.2020.1.003

Mukhopadhyay A K. The Science of Divinity. Archives in Neurology and Neuroscience, 9(3): 2020. ANN.MS.ID.000712. DOI: 10.33552/ANN.2020.09.000712.

Mukhopadhyay A K. Deep Science of CosmoNeurology The Multiverse and The Supracortical Consciousness. J Neurosurg Imaging Techniques, (2020), 6(3): 347-366.

Mukhopadhyay A K, Relan J. The DeepScience of NeuroCardiology. Ann Psychiatr Clin Neurosci. 2020; 3(2): 1030

Mukhopadhyay A K. Consciousness, Cognition and Behavior. J Neurosurg Imaging Techniques, (2020); 6(1): 302-323.

Mukhopadhyay A. K. Life-Form A Matters-Syncytium: DeepScience for Matter Correlates of Conscious States. EC Psychology and Psychiatry SI.02 (2020): 01-16.

2021:

Mukhopadhyay AK. Axiology of Nature-Consciousness Reality: Relevance in Consciousness Study, Psychology and Psychiatry. World J Psychiatry Ment Health Res. 2021; 5(1): 1028

Mukhopadhyay A K. Science of Information. Global Journal of Science Frontier Research: A Physics and Space Science (2021); 21(1), version 1.0, 15-30.

2022:

Mukhopadhyay AK. Einstein’s Abandoned Otherworld: How Conscious “Will” Manifests in a 4-D World?. EC Psychology and Psychiatry 11.5 (2022): 01-08.

Mukhopadhyay AK. Science of Divinity: Part IV. Arch Neurol & Neurosci. 12(2): 2022. ANN.MS.ID.000784. DOI: 10.33552/ANN.2022.11.000784

Mukhopadhyay A K. Twelve Ideas that Might Expand the Scope of Science. Global Journal of Science Frontier Research: A Physics and Space Science 2022; 22(1) Version 1.0:59-71.

2023:

Mukhopadhyay A K. Romance to Exemplary Wedding. Conscious Humanity loves Humanized AI. Psychol Behav Sci Int J. 2023;21(2):556059.

Mukhopadhyay A K. The Mystery of Memory. No Life, No Memory. World J Psychiatry Ment Health Res. 2023; 6(1): 1035.

Mukhopadhyay AK, Kumar V, Singh A, Ranjan M, Mukhopadhyay T, Kumar A, Sarin M. Future of AI: The Cell shows the Way. Austin J Clin Pathol. 2023; 10(1): 1079.

Mukhopadhyay A K, Ranjan M, Kumar A, Singh A, and Mukhopadhyay A. Physics Life Psychiatry: Cellular Model and the ZPE. Arch Neurol & Neurosci. 15(2): 2023. ANN.MS.ID.000860. DOI: [10.33552/ANN.2023.15.000860](https://doi.org/10.33552/ANN.2023.15.000860)

Mukhopadhyay AK. The Source and the Genesis: In the Language of Science. EC Psychology and Psychiatry 12.1 (2023): 29-43.

2024:

Mukhopadhyay AK. Non-Polluting Soundless Energy Ecosystem of a Cell. Journal of Pathology Research Reviews & Reports, 2024; SRC/JPR-194.

Mukhopadhyay AK. What governs the Brain? Is Neuroscience Immersive for Consciousness? Am J Biomed Sci & Res. 2024; 25(2): AJBSR.MS.ID.003298.

Mukhopadhyay AK. Consciousness: On its Source, and Operations. Arch Neurol & Neurosci. 2024;17(2):ANN.MS.ID.000908.

Mukhopadhyay AK. Humanizing the Humanoid: Have Biology in AI-Technology to handle its Frightful Phenomenology. JOJ scin. 2024; 3(4): 555619.

Mukhopadhyay AK. Scientists Determine Science. Can Science Lead to Its Source?. Ann Psychiatr Clin Neurosci. 2024; 7(1):1049

Mukhopadhyay A K (2024). Thoughts and idea-leadership in ai science, technology and business (ppt). <https://www.akmukhopadhyayconsciousness.com/pdf/Thoughts-and-Idea-Leadership-in-AI-Science-Technology-Business-ppt.pdf>

**SUMMARY OF CONTRIBUTION OF
PROFESSOR A. K. MUKHOPADHYAY IN CONSCIOUSNESS STUDY**

1. The notion of Neuro-centric Consciousness has been replaced by coining of the term and concept of supracortical consciousness. The brain is neither the source of consciousness nor can it use consciousness. It is consciousness which uses the brain for its manifestation. The consequence is for making a consciousness-centric neuroscience. Inverted Neuraxis!

2. Consciousness, the most subjective substance has been brought conceptually into an objective domain. The non-observable Influential in the domain of consciousness have been identified as the Operators with their specific Operations.

3. A System has been built up with such operators and their operations, along with their hierarchical interaction, and has been named the Systems Psyche.

4. Bringing the science of zero-point energy into the focus, four major systems science have been conceptually combined; the systems psyche with the systems physics and the systems cosmology with the systems biology.

A. Ramification in Systems Physics:

- (i) Opening the door for Subquantum Physics
- (ii) Science of Information
- (iii) Transformation of Signal into Information and Information into Signal through ZPE.
- (iv) Information-primed creation of the World during Genesis (Information Split Phenomenon)
- (v) Signal-based Programmed Device as a Model of Intelligence, Information-based Human Intelligence, and Intelligence in Nature

B. Ramification in Systems Psychology:

- (i) Cognitive Canvas
- (ii) Ladder of Cognition
- (iii) Pathway from the “Will” to a Signal and from the Signal to “Will”
- (iv) The decision making labyrinth of the Systems Psyche, Its structure, operations and the Molecular links
- (v) Elementary phenomenology, Private facets of Self, and Motivation
- (vi) A new classification for Psychiatric disorders

C. Ramification in Systems Cosmology:

- (i) Multiple Universe(s) and the Essence of the Multiversity
- (ii) Dark Energy and Dark Matter; Their relationship with visible energy and atomic matter
- (iii) Subtle aspects of “life”
- (iv) The Pentaune Model of the Nature-Consciousness Spectrum

D. Ramification in Systems Biology:

- (i) Life within the Emerging Paradigm
- (ii) Dark Energy, Protein structure, and corresponding information state
- (iii) Cell Science
 - Systems Cell – A testable model of System Holism
 - Humanities and Spirit in Cell Science

5. A new Worldview accommodating Science, Humanity and Spirit.

- (i) Evolution of Homo sapiens to Homo spiritualis.
- (ii) Systems with a Human Face, and the Systems within the largest intellectually comprehensible systems of the Multiverse
- (iii) The Science of Divinity
- (iv) The Source and the Genesis, in the language of Science

6. On the Progress of Artificial Intelligence

Biodata in details

Dr. A. K. Mukhopadhyay, MD

Personal Information

| | |
|--|---|
| Name | Dr. Ashok Kumar Mukhopadhyay |
| Father's Name | Late S. K. Mukhopadhyay |
| Date of Birth | 18-05-1953 |
| Nationality | Indian |
| Marital Status | Married, having three children |
| Last Position held | Professor & Head of the Dept. Laboratory Medicine, AIIMS, New Delhi till 31st May 2018 (Superannuated on that day) |
| Present Position held | Professor of Pathology, & Academic Head, North DMC Medical College & Hindu Rao Hospital, Delhi 110007 (Superannuated on 17-05-2023) |
| Address for Communication | 49B Vijay Mandal Enclave Kalu Sarai Road New Delhi 110016. Cell Phone No: 09999400332 (R) : 91-11-79600585 E-mail: mukhoak1953@gmail.com |
| Languages known | English, Hindi, Bengali |
| Post-MD Total Teaching Experience | 41.5 years (till May 2023) |

Educational Qualification

| Academic Qualification | |
|---|---------------|
| Degree (Examinations) | Month & Year |
| MBBS (University of Calcutta) (Marks obtained 70.4%) | December 1977 |
| MD (AIIMS) | December 1981 |
| Degree (Honorary) MNAMS | 1988 |
| D.Sc. (Honoris Causa) (The Open International University for Complementary Medicine, Colombo) | 1996 |

Teaching and Service Experience, Number of Publications and Research Guidance

Teaching undergraduates and Postgraduates: (41 years + experience)

Postgraduates: (MD students in Depts. of Lab Medicine, Pathology and Biochemistry of AIIMS)

(PhD Students of AIIMS and other universities).

Undergraduates: (MBBS), BSc.(Nursing), Technical Staff teaching Program

Patient Care Service:

Professional and Administrative Management of Dept. of Lab. Medicine.

Supervision of more than one million investigations of patients of AIIMS per year.

Research:

Within Paradigm Research:

Guiding PhD, MD, MS, MCh and MHA Students.

Research on Neurodegenerative disorders like Alzheimer's Disease, Parkinson's disease, Molecular Psychiatry, Neurogenomics, Psychogenomics, Depression, Coagulation Profiles in Acute Pancreatitis, Acute Hepatitis etc.

Work on emerging New Paradigm:

Significant contributions for extending the vertical depth and horizon of present science and developing the Science for Consciousness contributing towards Emerging new Worldview encompassing Science, Humanity and Spirit.

Publication Summary

| I. Publications | Published | 1 st Author/ Communicating author |
|--|-----------|---|
| Research Papers (a) Peer-Reviewed Journal | 123 | 101 |
| Books (a) Text Books | 1 | |
| (b) Books on Emerging Worldview & Translational Research | 4 | 4 |
| (c) Vernacular Translation | 1 | |
| Chapters in Books | 27 | 27 |
| Abstracts (a) Indexed Journals | 16 | |
| (b) Non-indexed Journals (Conference Proceedings) | 34 | 34 |
| II. Lectures delivered | 100+ | |

**Number of Academic scholars
who have been awarded PhD, M.Ch., M.D./M.S, MSc, MHA degrees
under supervision both as guide & co-guide at AIIMS, New Delhi**

| | |
|------------------|---|
| Ph.D Students | Five (as Chief Supervisor) of Dept. of Lab. Med. AIIMS, Delhi Twelve (as Co-supervisor) of Dept. of Lab. Med. AIIMS, Delhi Fourteen (Doctor Committee Member of) of Dept. of Lab. Med. and other Depts. AIIMS, Delhi |
| M.Ch Students | Two (as co-supervisor) from Dept. of Ped. Surg. of AIIMS, Delhi |
| M.D/M.S Students | Eight (as supervisor) in the Dept. of Laboratory Medicine Nine (as co-supervisor) in the Dept. of Laboratory Medicine Seven (as co-supervisor) from other Depts. Of AIIMS, Delhi |
| MSc Students | Two (as co-supervisor) from other Dept. of AIIMS, Delhi |
| MHA Students | Two (as co-supervisor) from Dept. of Hospital Administration, AIIMS, Delhi |

Teaching and Professional Positions held

| EXPERIENCE in PATIENT CARE, TEACHING UGs & PGs, and RESEARCH | | | |
|---|---|-------------|---|
| Institution | Post Held | From | To |
| North DMC Medical College & Hindu Rao Hospital, Delhi | Professor & Academic Head, Dept. of Pathology | 11.07.2018 | 17.05.2023 (Superannuated) |
| AIIMS, Delhi | Professor & Head, Laboratory Medicine | 01.04.2006 | Superannuated from AIIMS on 31-05-2018 |
| AIIMS, Delhi | Professor, Laboratory Medicine | 01.07.2002 | 31-05-2018 |
| AIIMS, Delhi | Additional Prof. Laboratory Medicine | 01.07.94 | 31-03-2006 |
| AIIMS, Delhi | Additional Prof. & HOD, Laboratory Medicine | 01.07.94 | 30.06.2002 |
| AIIMS, Delhi | Assoc. Professor & HOD, Laboratory Medicine | 01.06.94 | 26.03.96 |
| AIIMS, Delhi | Assoc. Professor in Laboratory Medicine | 01.07.90 | 30.06.94 |
| AIIMS, Delhi | Asst. Professor in Laboratory Medicine | 01.12.88 | 31.05.94 |
| AIIMS, Delhi | Asst. Prof. in Pathology for Clinical Pathology | 01.01.86 | 30.06.90 |
| AIIMS, Delhi | Lecturer in Pathology for Clinical Pathology | 06.09.85 | 30.11.88 |
| AIIMS, Delhi | Lecturer in Clinical Pathology/Biochemistry | 09.02.85 | 31.12.85 |
| AIIMS, Delhi | Senior Resident in Pathology | 11.02.82 | 05.09.85 |
| AIIMS, Delhi | Junior Resident in Pathology | 01.01.79 | 09.02.85 |
| | | | 31.12.81 |

Fellowships, Membership of Professional Bodies

Fellowship/Membership of National and International Professional Bodies

1. Life Member, Indian Association of Pathologists and Microbiologists
2. Life Member, Indian Science Congress Association
3. Life Member, Indian Association of Clinical Biochemists
4. Life Member, Indian Medical Association
5. Life Member, Indian Association of Laboratory Physicians
6. Honorary Life-Member, Society of Clinical Pathologists of Bangladesh
7. Member, National Academy of Medical Sciences, India
8. Member, New York Academy of Science, USA.
9. Fellow, International Society for Philosophical Enquiry, USA.
10. Member, Society for Scientific Exploration, USA.
11. Member, Scientific and Medical Network, U.K.
12. Member, Unarius Academy of Sciences, USA.
13. Member, Upanishad Society, India
14. Member, Indian Academy of Yoga

Academic Recognition, Honour and Awards

At undergraduate level:

Stood **First** in the University of Calcutta in Anatomy, Physiology and Chemistry and

Second in the University of Calcutta in Pathology

As Faculty:

International Recognition/Awards:

1. India recognizes Prof. A.K.Mukhopadhyay as the Father of Laboratory Medicine Discipline in India
2. Member of the Advisory Board, Galileo Commission of Scientific & Medical Network, UK
3. Invited by **Vatican's Pontifical Academy of Science** as an observer from India in their Meeting on *Science for Man and Man for Science* in 1999. www.scribd.com/doc/393646/sv20991of5 A rare Honor, to a Physician from India
4. The Book "*Conquering the Brain*" was nominated for Book Prize in Scientific & Medical Network, 1996, U.K.
5. Awarded *Doctor in Science* (Honoris Causa) by The Open International University for Complementary Medicine, Colombo, Sri Lanka in 1995, convocation was held in Jan. 1996.
6. Awarded a Plaque of International Academy of Pathology following Presentation of a paper on Holistic Theory on Psychosomatic Disease in a Special Complementary Scientific session during closing ceremony of XIXth International Congress of International Academy of Pathology, at Madrid, Spain in 1992.
7. Dr. Deepak Chopra writes columns in two consecutive issues of San Francisco Chronicle, on Prof. Mukhopadhyay's contribution in Consciousness study.

National Recognition/Awards:

Recognised as the Father of Laboratory Medicine Discipline in India

1. **Awarded Lifetime Achievement Award in Systems Science by Systems Society of India (SSI) in 2018.**
2. Awarded a Gold Medal and a Certificate in delivering Prof. S. N. Sengupta Memorial Oration at Bankura Sammilani Medical College, West Bengal, on the Teacher's Day, 5th September, 2011.
3. Sri K. R. Narayanan, Hon'ble President of India, called on Dr. A.K. Mukhopadhyay at Rastrapati Bhavan New Delhi and received the book *Conquering the Brain* and the original manuscript of *The Millennium Bridge* from the author in July, 2000.
4. Conferred Seva Charka Award – 1997 by Indian Council of Accupressure and Yoga (1997).
5. Conferred Shiromoni Award by the Indian Board of Alternative Medicines (1996).
6. Awarded Membership of National Academy of Medical Sciences, India, (1988).

Local / Regional Awards:

1. Awarded a Scroll of Honor on 6th January 2010 in the 5th International Conference of World Council for Psychotherapy (Asian Chapter) and 4th International Conference of Yoga & Psychotherapy Association of India, Chandigarh.
2. Awarded a Scroll and a Certificate of Honor by the Vice-Chancellor of Dr. Hari Singh Gour University, Sagar (M.P.) at National Conference on Yoga and Science for outstanding performance and contribution to Yoga and Science, on February 17, 2007.
3. An 'Award of Appreciation' from Zoroastrain College of Bombay, 1996. AIIMS Director's certificate of Appreciation (Aug. 1995)
4. A Certificate of 'Outstandingness in Neuroscience' by Prof. Baldev Singh and Prof. Subimal Roy of AIIMS, in 1987.

Member of Advisory Board

1. Galileo Commission for Extended Science, UK
2. Institute of Global Harmony, Rajasthan India

In the Nominating Council for National and International Awards

1. Member of Nominating Council for consecutive years **2010, 2011, 2012, 2013, 2014, 2015 BBVA Foundation Frontiers of Knowledge Awards, Spain.**
2. Member of Nominating Council for **Infosys Science Foundation Award for consecutive years 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016.**
3. Project evaluator for 'Budding innovator's award and 'Innovation award of the year' of National Research Development Corporation, An Enterprise of DSIR, Ministry of Science & Technology, Govt. of India

Academic Committee Member:

1. Academic & Administrative Audit Committee Member of Dayalbagh Educational Institute, Agra.
2. Member of the Advisory Board of the Academic Committee of Shri Lal Bahadur Shastri Rashtriya Sanskrit Vidyapeeth, New Delhi

Expert, Medical Council of India, Ministry of Health, Govt. of India

1. For Laboratory Medicine

Selection Committee Member for Faculty Positions

*School of Health Sciences, Indira Gandhi National Open University
Indraprastha University, Delhi*

Selection Committee External Expert for Faculty Positions

SGPGI, Lucknow, UP, India

Technical Expert

Indira Gandhi Institute of Medical Sciences, Patna

Expert, Ministry of Health, Govt. of India

1. Chair, Subcommittee of Pathology and Laboratory Medicine for development of Minimum Standard
2. Member of the Standing Committee on CDEC, DGHS, Ministry of Health & Family Welfare, Govt. of India.
3. A Task Force Member of MoHFW, Govt. of India for establishment of Model Curriculum of Medical Laboratory Science (2015-2016).
4. Specification Committee member of six AIIMS-like Institutes, Ministry of Health, Govt. of India.
5. Member of the Committee (set up by NACO, Ministry of Health and Family welfare, Govt. of India) to evaluate the technical specification / recommendation for the Procurement of equipment.
6. Member of a Committee (set up by Govt. of India, Ministry of Health) to identify the training need, for nonmedical personnel.

Membership of Editorial board of indexed international journals/Review Committees of National bodies and Institutions:

International and National Journal

1. Honorary Member of Editorial Board of *International Journal of BioSciences and Technology*
2. Member of Editorial Board of *International Archives of Medicine*
3. Restorative Neurology
4. American Journal of Applied Clinical Pathology
5. Associate Editor of **Frontiers in Cell and Developmental Biology**

Reviewer of Manuscript

1. BioMed Research International
2. *American Journal of Alzheimer disease*
3. Science
4. Current Science
5. Indian Journal of Clinical Biochemistry (Reviewer of Manuscript)
6. International Journal of Medicine and Medical Sciences (Reviewer of Manuscript)
7. Journal of Scientific Research (Reviewer of Manuscript)
8. Proceedings of the Indian National Science Academy (Reviewer of Manuscript)
9. Indian Journal of Medical Research, ICMR, India.
10. European Journal of Neurology
11. Psychiatry Research

DR. A. K. MUKHOPADHYAY, FORMER HOD, DEPARTMENT OF LABORATORY
MEDICINE, AIIMS, NEW DELHI

Expert for Evaluation of Project submitted to

1. Indian Council of Medical Research (ICMR)
2. Department of Biotechnology (DBT)

In the Panel of Advisor/Expert:

1. Chairman, National Expert Committee on Laboratory Medicine, Medical Council of India
2. Member, Committee of Experts for upgradation of facilities in the IIT Hospital, New Delhi.
3. Partner in the critical activity of collating knowledge, Public Health Foundation of India, New Delhi.
4. Recently included in 'assessor' panel of Medical Council of India
5. Technical Expert, Institute of Human Behavior & Allied Sciences, New Delhi
6. Technical Expert, Delhi State Cancer Institute, Dilshad Garden, New Delhi
7. Chairman, Experimental Animal Welfare Committee at AIIMS (2009-10)
8. Member of the Disaster Management Committee at AIIMS
9. Member of the Technical Specification Committee for developing the specifications and selection of equipment including negotiation with vendors for Emergency and Trauma Center at Bir Hospital, Kathmandu, Nepal.
10. Member of Central Selection Board in NTPC, Govt. of India.
11. Expert / Consultant in JDW National Reference Hospital, Thimpu, Bhutan
12. National Board of Examination, Govt. of India
13. UPSC (Union Public Service Commission), Govt. of India
14. Indian Council of Philosophical Research (Editorial Reviewer of Manuscript)
15. Centre for Studies in Indian Civilization (Editorial Reviewer of Manuscript)
16. Member of the Advisory Board of the Journal, *Sanvijanam* – Scientific Exploration for a Spiritual Paradigm, published by Bhaktivedanta Institute, Kolkata
17. HSCC (India) Ltd. Ministry of Health and Family Welfare, Govt. of India

Other Participation as Expert:

1. Expert, School of Health Sciences, IGNOU
2. Expert in the Selection Committee of Delhi State Cancer Hospital
3. Expert in the Selection Committee of National Thermal Power Corporation of India Ltd.
4. Committee member for Monitoring Laboratory Performance at the AIIMS since 9.5.2006
5. Member of Death Review Committee, AIIMS, since 2004-2006
6. Member of the Technical Specification Committee for purchase of equipment for Jai Prakash Narayan Apex Trauma Center, AIIMS (2004-2005).
7. Member of Liver Transplantation Forum, AIIMS (1995-96).
8. Member of Dean's Committee, AIIMS, for Human Biology course curriculum (1995- 96).
9. Member, Hospital Management Board, AIIMS, since 1995.
10. Nominated as expert in 1990 for revision of curriculum of diploma in Medical Laboratory Technology Course in Women's Polytechnic College, Maharaniabagh, under Delhi Administration.
11. Expert for selection of laboratory technician in Indian Institute of Technology (IIT), New Delhi, in 1987, 2013.

Examiner:

All India Institute of Medical Sciences, New Delhi
National Board of Examinations, New Delhi
University of Delhi
Guru Gobind Singh Indraprastha University, Delhi
University of Mumbai
West Bengal University of Health Sciences, Kolkata
University of Jammu

University of Kashmir, Sri Nagar
University of Rajasthan
Dayalbag Educational Institute, Agra, India
Hari Singh Gour University, Sagar, M.P. India

Biographical Inclusion:

1. Asia/Pacific Who's Who Vol. VIII. (2008).
2. Thirty-Fourth Edition of the Dictionary of International Biography published in September 2007 (IBC).
3. 2000 Outstanding Intellectuals of the Twenty first century, Pub. International Biographical Centre, Cambridge, England, Ed. 2008
4. Marquis Who's Who in the World (Ed. 2006, 2007, 2008 & 2009).
5. Marquis Who's Who in Asia (2006-2007).
6. Asia – Men and Women of Achievement, Reguerdon Sdn. Bhd. Kuala Lumpur, Malaysia, 2003
7. Indo-American Who's is Who. Vol III, Rifacimento International, F I Publications, New Delhi, 2002, p 500.
8. Biography International. Biographical Histories of Men & Women of Achievement, 2002
9. Marquis Who's Who in Medicine and Healthcare, Millennium Edition USA. P 762, (2000-2001).
10. International Biographical Research Academy (IBRA), Bhubaneswar, India selected Dr. A. K. Mukhopadhyay for inclusion in *Eminent Personalities of 20th century*, P 180-181, 2000. Also one of the inductees of the IBRA's *Hall of Fame* , p 41, 2000.
11. American Biographical Institute (ABI) Inc. recognised Dr. A. K. Mukhopadhyay's work and selected his name for inclusion in their publication with,
 - (a) Distinguished leadership award Certificate. The name is included in the International Directory of Distinguished Leadership, Ninth Edition.
 - (b) Membership of the Research Board of Advisor of American Biographical Institute, Inc.
 - (c) The 2000 Millennium medal of ABI
 - (d) Honour of Man of the year 1999.
 - (e) Outstanding Man of the 20th Century.
12. Eminent Personality of World, W.B.R.F.

Countries Visited

| Country visited | Year of Visit | Duration of visit | Purpose of visit |
|--------------------------|---------------|-------------------|--|
| Singapore | 2019 | 4 days | Singapore Neuroscience Summit Keynote speaker. Took Workshop for an hour |
| Bangladesh | 2018 | 15 days | Mass Morality Campaign |
| Nepal | 2017 | 2 days | Participated in Fifth International Conference, "Science and Scientist -2017" |
| Bangladesh | 2016 | 5 days | Participated in 3 rd Annual of Society of Clinical Pathologists |
| United States of America | 2014 | 10days | As one of the Chairs of East & West Forum in Twentieth Anniversary of Towards Science of Consciousness-2014 , in Tucson, Arizona. |
| Nepal | 2012 | 3 days | As a member of the Delegate of Govt. of India from AIIMS at the occasion of Status evaluation of Trauma Care Centre at Bir Hospital, Kathmandu |
| Bhutan | 2007 | 4 days | As an expert for guiding Laboratory Development in upcoming JDW National Referral Hospital |
| Argentina | 2005 | 7 days | For presenting paper in World Congress of Psychotherapy IV |
| England | 2001 | 5 days | For presenting paper in Conference in Yorkshire |
| Denmark | 1999 | 3 days | For Scientific Interaction |
| Italy (Vatican) | 1999 | 6 days | Invited as an <i>observer</i> in the Meetings of <i>Pontifical Academy of Science</i> |
| England | 1999 | 5 days | For presenting paper in Conference in Cambridge |
| Spain | 1992 | 5 days | Invited for a <u>special presentation</u> in World Congress of Pathology |

DETAILS OF ACADEMIC AND PROFESSIONAL CAREER As Undergraduate (I), Postgraduate (II), Tutor (III), and Faculty (IV)

I. Academic Career as Undergraduate (during MBBS)

MBBS Course in B.S. Medical College, Bankura, West Bengal, University of Calcutta:

1. Stood first in the University of Calcutta in
(A) Anatomy (B) Physiology (C) Organic Chemistry
2. Stood Second in the University of Calcutta, in Pathology
3. Selected in B.S. Medical College, Bankura (West Bengal)
First Class Assistant, in Medicine, Pathology and Surgery.
4. Passed Final MBBS examination of the year 1975, under University of Calcutta held in the year 1977 (Results declared in December 1977)
5. Completed one year compulsory rotatory housemanship from 1st January, 1978 to 31stDecember, 1978 in Medicine, Surgery, Gynecology & Obstetrics and Preventive & Social Medicine (3 months each).
6. Certificate of registration : West Bengal Medical Council, Dated 11-5-1979.
7. Marks obtained:

MBBS Examination Marks, University of Calcutta

| Subject | Theory | | Practical | | Viva voce | | Total | |
|--|--------|-----|-----------|-----|-----------|----|-------|-----|
| | FM | MO | FM | MO | FM | MO | FM | MO |
| Organic Chemistry | 100 | 80 | 50 | 49 | 50 | 39 | 200 | 168 |
| Anatomy | 200 | 142 | 100 | 92 | 100 | 93 | 400 | 327 |
| Physiology | 200 | 152 | 100 | 88 | 100 | 75 | 400 | 315 |
| Pharmacology | 100 | 60 | 50 | 42 | 50 | 30 | 200 | 132 |
| Pathology, Microbiology, Parasitology | 100 | 69 | 50 | 36 | 50 | 36 | 200 | 141 |
| Preventive & Social Medicine | 100 | 53 | -- | -- | 50 | 38 | 150 | 91 |
| Forensic & State Medicine | 100 | 52 | -- | -- | 50 | 45 | 150 | 97 |
| Medicine | 200 | 161 | 200 | 135 | 100 | 57 | 500 | 353 |
| Surgery | 200 | 133 | 200 | 130 | 100 | 52 | 500 | 315 |
| Gynaecology & Obstetrics | 200 | 134 | 200 | 125 | 100 | 65 | 500 | 324 |
| Ophthalmology & ENT | 100 | 71 | 50 | 37 | 50 | 37 | 200 | 145 |

Grand Total = 3400,
FM = Full Marks,

Marks Obtained = 2408,
MO = Marks Obtained.

Percentage = 70.8%.

Extracurricular activities during MBBS course

Active participation in Annual Scientific Exhibition of B.S. Medical College every year; was awarded with a medal in the year 1974 for commendable service by the Ministry of Health, Government of West Bengal.

II. DETAILS OF ACADEMIC AND PROFESSIONAL CAREER

Details of Specialist Training acquired by Dr. A. K. Mukhopadhyay during Post-graduation (MD) in Pathology at All India Institute of Medical Sciences, New Delhi (January 1979 - December 1981)

Dr. A. K. Mukhopadhyay was engaged in 3 year Junior residency program in pathology (Jan. 1979 - Dec. 1981) in the Department of Pathology, All India Institute of Medical Sciences and participated in active training program as follows.

| Posting | Duration (in months) |
|--|--|
| 1. Orientation | 1 |
| 2. Surgical Pathology including Frozen section, Grossing, routing H/E and special staining and histochemistry. (Yearly turnover of cases in Surgical Pathology during the Period 1979-1981 was around 15,000- 20,000 cases) | 12 |
| 3. Autopsy work-up The residents are supposed to work up the case completely to send the Final Anatomical Diagnosis (FAD) within 1 month. The work up includes Gross and Microscopic description of the lesions and followed by a discussion with latest References on relevant pathology. A defined protocol exists for this. (Yearly turnover of cases for Pathological Autopsy during the Period 1979-1981 was around 80-100) | 6 |
| 4. Cytology (Yearly turnover of cases in Cytology during the Period 1979-1981 was around 8,000 -10,000 cases) | 4 |
| 5. Clinical pathology and Clinical Chemistry (Laboratory Medicine) | 2 |
| 6. Haematology and Transfusion Medicine | 6+1 = 7 |
| 7. Basic immunological techniques | |
| 8. Cell culture and autoradiography | 1 |
| 9. Electron Microscopy | |
| 10. Thesis work Submitted thesis in December 1980, to the Faculty of AIIMS in partial fulfillment of The requirements for the MD degree in Pathology entitled, “ Light Microscopic and Electron Microscopic changes in the Cerebral Cortex of Experimentally Induced Hydrocephalus of Rabbit ” under supervision and guidance of Dr. S. Roy, Professor of Pathology, AIIMS, Dr. G. Gopinath, Professor of Anatomy, AIIMS, and Dr. R. Bhatia, Professor of Neurosurgery, AIIMS. | 3 (Special posting for Thesis work) |

Passed M.D. (Pathology) examination in First Attempt, in December, 1981

III. DETAILS OF ACADEMIC AND PROFESSIONAL CAREER

Specialty Training Experience Following Post-graduation, as Tutor (pathology) in the Department of Pathology, All India Institute of Medical Sciences, New Delhi. (Feb. 1982 - Feb. 1985)

| Posting | Duration (in months) |
|--|----------------------|
| I. SERVICES | |
| A. Inter-departmental : Senior resident, in charge of | |
| a. Surgical pathology services | 12 |
| b. Autopsy services | 12 |
| c. Hematology services | 11 |
| d. Cytology services | 01 |
| B. Intra-departmental : Senior resident in charge of | |
| a. Pathology Museum | 12 |
| b. Gross photography | 12 |
| I. POSTGRADUATE SEMINARS AND CONFERENCES: | |
| A. Inter-departmental : Senior resident, in-charge of | 12 |
| a. Renal Pathology conference (held fortnightly) | 12 |
| b. Dermatopathology conference (held fortnightly) | |
| B. Intra-departmental : Senior resident in-charge of | |
| a. Surgical Pathology & Cytopathology Conference (once in a week) | 12 |
| b. 'Discard' Conference (once in a week) | 12 |
| c. Haematology conference (once in a week) | 12 |
| III. PRINCIPAL DISCUSSOR, ON BEHALF OF THE PATHOLOGY DEPARTMENT | |
| A. Clinical combined round of AIIMS: (once in a week) | 12 |
| B. Clinical grand round of AIIMS: (once in a week) | 12 |
| IV. UNDERGRADUATE TEACHING PROGRAMME | |
| A. Group discussion / Tutorial | 36 |
| B. Practical demonstration | 36 |
| C. Participation in undergraduate (MBBS) examination | 36 |

IV. PROFESSIONAL EXPERIENCE AS FACULTY

| Institution | Post Held | From | To |
|--------------------------|---|------------|--|
| North DMC Med. Colle. | Prof. & Academic Head of Dept. of Pathology | 11.07.2018 | 17.05.2023 (Superannuated) |
| AIIMS | Prof. & Head, Laboratory Medicine | 01.04.2006 | Superannuated from AIIMS 31 st of May, 2018 |
| AIIMS | Professor Laboratory Medicine | 01.07.2002 | 31.03.2006 |
| AIIMS | Additional Prof. Laboratory Medicine | 01.07.94 | 30.06.2002 |
| AIIMS | Additional Prof. & HOD Laboratory Medicine | 01.07.94 | 26.03.96 |
| AIIMS | Assoc. Professor & HOD Laboratory Medicine | 01.06.94 | 30.06.94 |
| AIIMS | Assoc. Professor in Laboratory Medicine | 01.07.90 | 31.05.94 |
| AIIMS | Asst. Professor in Laboratory Medicine | 01.12.88 | 30.06.90 |
| AIIMS | Asst. Prof. in Pathology for Clinical Pathology | 01.01.86 | 30.11.88 |
| AIIMS | Lecturer in Pathology for Clinical Pathology | 06.09.85 | 31.12.85 |
| AIIMS | Lecturer in Clinical Pathology/Biochemistry | 09.02.85 | 05.09.85 |
| AIIMS | Senior Resident in Pathology | 11.02.82 | 09.02.85 |
| AIIMS | Junior Resident in Pathology | 01.01.79 | 31.12.81 |

Since 1985 when Dr. A.K.M joined as Lecturer in clinical Pathology in this service area, he remained 'instrumental' to bring its recognition as a "Department" in 1988. The Dept. has been conducting a three year residency program leading to MD degree in Laboratory Medicine since 1997.

Service to Patients(Patient care)

Laboratory Medicine is a composite department consisting of Clinical Pathology, Clinical Chemistry, Clinical Microbiology and routine Hematology. It is the central patient care laboratory of All India Institute of Medical Sciences and does approximately 120,00000 investigations per year. The service of Dr. A.K.M basically encompasses supervision as Head and specialty services in Clinical Pathology, Hematology and Emergency service.

Service to Students (Education)

Organisation and supervision of teaching undergraduate (MBBS) and postgraduates (MD) in Pathology as well as in Laboratory Medicine, conducting Ph.D. Courses in Laboratory medicine, and conducting several related courses like, BSc Nursing, Human Biology (B.Sc. Hon's) etc. There are weekly Tutorials, Intradepartmental seminars and journal clubs.

Some special training program participation as Faculty

1. National training program in Electron Microscopy at AIIMS from 25.11.1986 to 13.12.1986.
2. Indian National External Quality Assessment Scheme-Hematology at KEM Hosp. Bombay from 22.2.90 to 25.2.90.
3. Workshop on Teaching Learning, Media and Assessment in Medical Education, at AIIMS from 2.4.98 to 4.4.98.
4. Introductory Research Methodology Workshop by AIIMS - Clinical Epidemiology Unit at AIIMS from 19.4.98 to 25.4.98.

Professional achievements with special reference to development of New areas: New Courses/Education: Community work/Participation in Health Education.

- a. **New Discipline:** In 1988 December, the centralized Hospital Laboratory services of AIIMS has been made into a Dept., Dept. of Laboratory Medicine, with many new faculty position. I remained as Nodal faculty during this development.
- b. **New Teaching Program:** We have designed a 3-year residency programme in Laboratory Medicine leading to M.D. Degree. This has been approved by Governing Body of AIIMS in 1995 and the course has started from July, 1996.
We have **pioneered a course, MD in Laboratory Medicine**, at AIIMS, when AIIMS offers separate MD courses in Pathology, Microbiology and Biochemistry.
- c. **Course co-ordinator** of 'Experimental Pathology' (1985-2004) and 'Clinical Chemistry' (1995 and 1996) for B.Sc. **Human Biology**.
- d. **Development of a Science for Consciousness.**

Special contribution to administrative/community work/National program.

a. **Administration :** From 1.6.94 to 26.3.96 Dr. A.K.M served as Head of the Dept. of Laboratory Medicine, AIIMS. Since 01-04-2006 he took over as permanent Head of the Department till his superannuation on 31-05-2018.

b. **Community & Health Education:** Participated as a faculty in Central Govt. sponsored training program for middle level Hospital Managers on four occasions in 1995 and on three occasions in 1996, held at A.I.I.M.S. The theme of speech was, on every occasion, Laboratory Management, Changing Trends & Scenario.

Special contribution to Education e.g. organizing CME programme/workshop/symposia:

1. **Member** of the Organizing Committee of 34th ACBICON – 2007 held at Dept. of Clinical Biochemistry, Escorts Heart Institute & Research Center, Okhla from 15.12.2007 – 20.12.2007.
2. **Nodal Person:** **DBT**-sponsored 3-month training course in Techniques in Microbiology, Molecular Biology and **DNA** Technology for the Technicians, at AIIMS from March to May, 1996.
3. **Organizing Secretary:** International CME of Laboratory approach to Pediatric Problems, held at AIIMS, New Delhi, from October 11-13, 1995.
4. **Member of the Organizing Committee:** National Symposium on Toxoplasmosis held at A.I.I.M.S from September 27-28. 1995.
5. **Faculty** of WHO/DANIDA inter-country training course for tutor technologists held in the Dept. of Lab. Medicine, AIIMS from 27.2.89-17.3.89.
6. **Departmental coordinator** of WHO/DANIDA inter-regional course/workshop on Management, Control and Preventive Maintenance and Repair of basic laboratory equipment held at AIIMS from 23.2.87-13.3.87

Service to Science: Research

RESEARCH EXPERIENCE

I. Within the Paradigm Research:

A. Thesis submitted to the Dean, AIIMS (Dec. 1980).

as required for partial fulfillment of MD degree in Pathology. It is entitled, “Light Microscopic and Electron Microscopic changes in the Cerebral Cortex of Experimentally induced Hydrocephalous of rabbit”.

B. Thesis Guidance to MD/ MS/ DM/ MHA students

Thesis Guidance to MD students of Laboratory Medicine

| From | To | Duration (months) | Research Topic |
|-----------|----------------------|-------------------|--|
| June 2014 | Dec. 2016 | 30 months | Study of polymorphism in TNF-alpha (308G/A), IL-1beta (511 C/T), and IL -6 (174G/C) genes in patients of Depression: Their association with clinical severity (Dr. Shadab Alam) |
| July 2012 | Dec.2014 | 30 months | Study of peripheral stress biomarkers (S100B, 8 Isoprostane and 8-hydroxy-2-deoxyguanosine) in Major Depression: correlation with clinical severity and treatment response (Dr. Parul Arora) |
| Jan. 2010 | July 2012 | 30 months | Role of VHA (Viscoelastic Hemostatic Assay); Pont of Care Device in severely injured Trauma Patients (Dr. Bhoumik) |
| July 2008 | June,2010 | 23 months | Evaluation of coagulation profile in traumatic brain injury (Dr. Gaurav) |
| Jan. 2008 | Dec. 2008 | 23 months | Hepatitis B in health care workers; prevalence, vaccination, and relation to their occupation. (Dr. Varsha) |
| July 2007 | June 2009 | 24 months | Role of Interleukin-1, 6 & 10 and TNF- α along with NFK- β and isoprostane in Acute Pancreatitis (Dr. Dhurvajyoti Bora) |
| Jan. 2007 | The student resigned | 23 months | Hepatitis B Viral load monitoring in patients undergoing Anti-HBV therapy using quantitative real-time PCR (Dr. Ashish Hota). |
| Jan. 2004 | Nov. 2005 | 23 months | Coagulation profile in Acute Pancreatitis (Dr. Sukhbir) |

| | | | |
|-----------|-----------|-----------|---|
| July 2003 | May 2003 | 23 months | Prognostic Significance of Coagulation Factors V, VIII, VIII:V ratio and A.B.G parameters in patients with Acute Hepatic Failure (Dr. Naveen .L. Gupta) |
| July 2001 | May 2003 | 23 months | Viral Hepatitis & Apoproteins |
| July 2000 | Nov. 2002 | 23 months | Serum Adenosine deaminase isoenzymes in myasthenia gravis |
| Jan. 2000 | Nov. 2001 | 23 months | Cerebrospinal fluid enzymes in Gliomas of the Brain (Dr. Swati Gupta) |
| Jan. 1999 | Nov. 2000 | 23 months | Laboratory evaluation of Renal functions in severe anemia (Dr. Abhijit Ghosh) |
| June 1999 | May 2001 | 23 months | Antioxidant levels in blood in liver diseases |
| Jan. 1999 | Nov. 2000 | 24 months | Antibodies to Nicotinic Acetylcholine receptor and Nonreceptor muscle autoantigen in Myasthenia gravis. |
| June 1999 | July 2001 | 24 months | Standardization and evaluation of PCR techniques for early diagnosis of congenital infection. |
| July 1997 | June 1999 | 24 months | Hepatitis E in Pregnancy and its outcome. |

C. Thesis Guidance to Postgraduate students of other Departments of AIIMS

| From | To | Duration (months) | Research Topic |
|-----------|-----------|-------------------|---|
| July 2016 | Dec. 2017 | 30 months | A cross Sectional pathfinder study to assess the serum Vitamin A level in patients undergoing non-surgical endodontic therapy and observe its potential association with Periapical healing |
| July 2011 | Dec. 2013 | 30 months | Evaluation of Micronutrients Deficiency and Bone Health in Morbidly Obese Patients Undergoing Laparoscopic Sleeve Gastrectomy |
| July 2003 | May, 2004 | 11 months | Costing of Hematology Laboratory Services at AIIMS, New Delhi (MHA student) |

| | | | |
|-----------|-----------|-----------|--|
| June 1998 | Nov. 1989 | 17 months | Evaluation of Safety and Toxicity of Dexamethasone therapy in Pemphigus patients |
| July 1993 | Aug. 1994 | 12 months | Emergency Laboratory Services at AIIMS |
| Jan. 1991 | June 1992 | 18 months | Dumping syndrome following esophagectomy and gastric pull up surgery. |
| Jan. 1991 | Dec. 1992 | 18 months | Effect of Nutrition on Cellular Immunity in Patients of Esophageal Carcinoma |

D. Thesis Guidance to DM/Mch Students

| From | To | Duration (months) | Research Topic |
|------|------------|-------------------|--|
| 2008 | Jan., 2010 | | Open label study for evaluation of etiology of hepatic dysfunction in patients of acute leukemia (Dr. Manoranjan) |
| 2014 | Jan, 2016 | | Bladder exstrophy – Epispadias complex: A study on the Histomorphology of detrusor with respect to bladder growth as related to upper and lower urinary tract outcomes. (Alisha Gupta) |

E. Thesis Guidance to M.Sc. Students

| From | To | Duration (months) | Research Topic |
|--------------|--------------|-------------------|--|
| January 2011 | April 2011 | 4 | Lipid profile and its related gene in Alzheimer's disease (Naaz Parveen) |
| July 2010 | January 2011 | 7 | Body composition analysis and its correlation with <i>prakruti</i> type in healthy population (Ankur Poddar) |

F. Chief Supervisor for Ph.D. Programs in Laboratory Medicine

1. "Study of Mutational and Functional Status of Mitochondria in Parkinson's Disease" (Ms. Rizwana Qadri)
2. "The role of genetic polymorphisms, neurotrophins, apoptotic and immune markers in clinical manifestation of depression in adolescents" (Ms. Pooja Pallavi)
3. "Study of genetic predisposition and biochemical risk factors for Alzheimer Disease and Vascular Dementia" (Mr. Mohd. Nasim Mansoori)
4. "Preparation and characterization of Vi-Polysaccharide-Protein conjugate for immunization against *Salmonellae*" (Mr. Shabirul Haq). Thesis submitted. PhD awarded
5. "Recovery and stability of various analytes, enzymes and DNA from whole blood/serum spotted on filter paper" (Mrs. Rizwana). Thesis submitted. PhD awarded

G. Co-Supervisor for Ph.D. Programs in Laboratory Medicine

1. Molecular expression and interaction between Growth Differentiation Factor (GDF-15), Iron-transporting protein, Micronutrient Anti-oxidant in Diabetes and Metabolic Syndrome (Mr. Manish Saroj, registered in Jan, 2016)
2. Molecular expression of tight junctions and disruption of mucosal-epithelial cell polarity in progression of Gastric cancer. (Ms. Priyatma, registered in January, 2015 session)

3. Early markers of acute trauma induced coagulopathy (ATIC) isolated severe traumatic brain injury (ISTBI). (Ms Venencia Albert)
4. To study the Role of Human Herpes Viruses in the Sexual Transmission and Pathogenesis of HIV (Ms. Arshi Munawwar)
5. Identification, molecular cloning and characterization of protein(s) involved in multi-drug resistance of Mycobacterium tuberculosis (Mr. Amit Singh)
6. Isolation and purification of herbal compounds having anti - leishmanial activity. (Dr. Umakant)
7. Genotypic characterization of Mycobacterium tuberculosis isolates of pulmonary and extra pulmonary tuberculosis by using molecular genotyping methods; Spoligotyping and IS 6110 RFLP typing. (Dr. Sandeep)
8. Cytokine Gene Polymorphisms and their possible association with immune restoration disease in HOV-TB co-infected patients. (Dr. Mani Sankar)
9. Elucidating the expression profile of the genes involved in apoptosis of *L. donovani* and their possible role in miltefosine resistance (Dr. Jyotsna Mishra)

H. Co-Supervisor for Ph.D. Programs in other Departments at AIIMS

1. "Study of Genetic Predisposition in women with Gestational Diabetes Mellitus W/W Depression" (Ms. Parul Aggarwal)
2. Role of TNF- α in pathogenesis of acute pancreatitis and the effect of anti-TNF- α therapy in altering the severity of the disease and in the subsequent regeneration of the pancreas. (Dr. Tony George Jacob, Dept. of Anatomy)

I. Co-Supervisor for Ph.D. Programs in other Institute other than AIIMS

1. Study of genetic predisposition and oxidative stress risk factors for Alzheimer's disease and vascular dementia (Mr. Rizwan Alam, Jamia Hamdard University)

J. Doctoral Committee Member for Ph.D. Programs in Laboratory Medicine

1. Development and use of a Multiplex Real Time PCR (Qpcr) assay for simultaneous detection of Hepatitis Viruses (A-G) in serum.(Ms. Priyanka Gupta)
2. Deciphering novel mutation(s) in XDR TB isolates(Ms. Syed Beenish Rufai)
3. Isolation and characterization of Leishmania and leishmania-like parasites from seropositive goats. (Mr. Prem Shankar)
4. To see the prevalence of Microsporidia in stool samples of HIV sero-positive and HIV sero-negative adult and pediatric patients with diarrhea (Mr. Dinesh Kumar)
5. Raising Polyclonal Antibodies against Novel Mycobacterium Tuberculosis Antigens and their Utility in TB Diagnosis (Mr. Anil Kumar Gupta)
6. Studies on N-22 region of Torque Teno Virus: Cloning, expression and use of peptides in immunological and proteomic analysis. (Mr. Dhananjay Singh)
7. Development of a Loop Mediated Isothermal Amplification (LAMP) Assay for rapid detection of Mycobacterium tuberculosis & Non-tubercular Mycobacteria (NTM) from clinical samples (Mr. Parveen Kumar)
8. Assessment of post-trauma cytokine producing potential of monocytes for early diagnosis of organ dysfunction and sepsis. (Ms. Nidhi Bharrdwaj)
9. Standardization of Real Time PCR for Sero detection of HCV genotypes using various sub-regions of HCV-genome. (Ms. Akanksha Singh)
10. To develop assays for HCV Genotyping and establish a relation between Genotypes and HCV core expression. (Mr. M. Ahmad Ansari)
11. Prevalence of Beijing and Non-Beijing genotypes of Mycobacterium tuberculosis isolate from different human sites. (Mr. Manoj Kumar)

12. Assessment of Post-Trauma Cytokine producing potential of monocytes for early diagnosis of organ dysfunction and sepsis (Nidhi Bharadwaj)
13. To study the role of T helper-9, T helper-17, T helper-22 and T-Regulatory lymphocytes in Post-Trauma Immunopathogenesis and outcome. (Surbhi Khurana)
14. Identification of biomarkers for cognitive impairment in mild and moderate traumatic brain injury patients. (Mr Anand Kumar)

K. Funded Projects as Chief Investigator (completed)

| Name of the Project | Funding Agency | Duration | Total cost |
|---|----------------|-----------------------------|-----------------|
| Assessment of risk factor associated with Alzheimer's disease and Vascular dementia | ICMR I 540 | 3.12.2007 to 27.11.2011 | Rs. 24.83 lakhs |
| Study of oxidative stress risk factors in Alzheimer's disease and vascular dementia in Geriatric patients | ICMR I 574 | 15.11.2008 to 14.05.2012 | Rs.18.51 lakhs |
| Effect of Yoga on Serum Interleukin Levels in Adolescents with Depression. | CCRYN | 28.08.2008 to 27.02.2012 | Rs.21.24 lakhs |
| The role of neurotrophins, cytokines and genetic polymorphisms in clinical manifestation of depression in adolescents | DBT N-1174 | 12-01-2010 to 11-07-2013 | Rs.35.99 lakhs |
| The study of mitochondrial mutations, mitochondrial function and oxidative stress in Parkinson's Disease | DBT | 21.09.2011 to 20.09.2014 | Rs.35.67 lakhs |

L. Departmental Research Projects as Chief investigator

| Project | Source of funding | Year |
|--|-------------------|-----------------|
| 1. Renal function in severe anemia | Dept. funding | 1999-2000 |
| 2. CSF enzymes in the Gliomas of the Brain | Dept. funding | 2000-2001 |
| 3. Coagulation profile in acute liver failure | Dept. funding | 2001-2003 |
| 4. Coagulation disorder in acute pancreatitis | Dept. funding | 2003-2005 |
| 5. Role of Interleukin 1,V,VI, X and TNF- α in Acute Pancreatitis | Dept. funding | 2005-2007 |
| 6.Mitochondrial Function in Parkinson's disease | Dept. funding | |
| 7. Study of polymorphism in TNF-alpha (308G/A), IL-1beta (511 C/T), and IL -6 (174G/C) genes in patients of Depression: Their association with clinical severity (Dr. Shabad Alam) | Dept. funding | |
| 8.Science for Consciousness | Self-funding | 1985-continuing |
| 9.Science of Information | Self funding | 2005-continuing |

II. Creative contributions and Publications towards extending the Vertical depth & Horizon of Science. Development of New Worldview

In addition to within-Paradigm research, the principal scientific Contribution is on the Paradigm Shift and towards development of a New Paradigm.

Publications of four books in series, *Frontiers of Research for Human Biologist (1985)*, *The Dynamic Web of Supracortical Consciousness (1987)*, *Conquering the Brain (1995)* and *The Millennium Bridge (2000)* are testimonials for **Advanced Enquiry, Original research and Creative contribution.**

Specific Conceptual Contributions for the New Paradigm:

As a theoretical scientist and working with Ideas, following research frontiers are opened up.

1. Multidisciplinary System approach in Developing a Science for Consciousness
2. Supracortical Consciousness; The evolutionary first step by brain-bound consciousness to make sense of brain-independent consciousness.
Mechanism of Supracortico-cortical and Cortico-supracortical communication
(Ten possible mechanisms have been suggested).
3. Integral divisions of the Indivisible Whole: Will, Purpose, Phenomenology and Events; Time, Space, Energy, Matter & Information, Mind, Self, Life, Consciousness
4. 'Life' as an integral of Life-principle working within a specific form (space, time) of living state of matter
5. Mechanics of Consciousness and its connection with the mechanics of matter and energy (quantum and classical mechanics) through the mechanics of information in Elemental plane and the operation of 'Life'
6. Nested hierarchy in organization of Nature on the basis of perceived hierarchy of uncertainty to depict the observer-dependent reality (Pentaune Model of Nature-consciousness)
7. Five components of a composite model of psyche; Consciousness, self, Private facet of self, Mind and Information. Psychic Skeleton and the Pathogenetic mechanism of psychosomatic disease. The composite Model of Human Psyche was presented in World Congress of Psychotherapy IV, 2005, Buenos Aires). Psychic Skeleton. And the Theory on psychosomatic disease was presented in World Congress of Pathology, at Madrid, Spain in 1992. Ladder of Cognition (2017) and Cognitive Canvas (2018). Psyche as interface between brain-bound and brain-independent consciousness in Singapore Neurosummit (2019).
8. The phase transition through 'Death'; Near-death experience, transcendental death experience, transformational death experience and the experience of getting re-born in the same body. Correlation of experiential with neuro-phenomenology
9. Interrelationship between
Brain and consciousness, Gene and Information, Information and Consciousness, memes and information, self and information.
10. Transition of *homo sapiens* to *homo spiritualis*. Its scientific basis. The *Brain* of a brain. The *sine qua non* of the new Human species emerging on this earth.
Human Eugenics: How to produce better child than one think one can!

11. The Science of Information

- (i) Information as link between players in local domain (space, time, matter and energy) and nonlocal domain (mind, self, life and consciousness) of science
- (ii) Information-States along the Ladder of Cognition
- (iii) Information Geometry along the Ladder of Cognition from the level of Signal to the level of Wisdom
- (iv) Information Mechanics
- (v) Ontological category of Information

12. Developing the Science of Love (Neural, Genetic and Gonadal basis of Love). Neuropsychobiology of Faith Devotion and Love
13. DeepScience of CosmoNeurology, NeuroCardiology Matter-correlates of Consciousness
14. Psychology and Psychiatry: Systems Psyche, Cognitive Canvas, Ladder of Cognition
15. Cell Biology: Cellular Psyche, Humanities and Spirit in Cell Science
16. Science beyond Zero point Energy, Dark Energy, Subtle part of Life.
17. The Source and the Genesis: In the language of Science.

Important Models for developing New Science for Consciousness

- Developing the Framework of Consciousness Research
- The Model of Elementary strings of Consciousness
- Models for Cracking the Hard Problem of Consciousness
- Communication of the OR as Signal to senses in Orchestrated and non-reductive way. The Ladder of Descent
- Cognitive canvas: Molecular Embroidery, Fabrics and the Base
- Ladder of Cognition
- The Pentaune Model of Nature-consciousness: Sub Planckian and Sub-sub-Planckian Nature
- Surface, Depth and Elementary Phenomenology: Private facets of 'self'
- Emerging Pattern in the Complexity
- Systems Psyche: Its Structure, Operation and Molecular Links
- Systems Psyche: The Inter-phase between Consciousness and Matter
- Systems Psyche: The Bridge between Brain-bound and Brain-Independent Consciousness
- Systems Cell, A Testable Model of Systems Holism
- Information Holograph: The communication Network between all living entities
- Layers between Neuro-signaling and Consciousness
- Zero-Point Energy State of the Brain
- Dark Energy and the Brain: Relation to protein folding
- Interconnectedness of Artificial Intelligence, Human Intelligence and Natural Intelligence

- The Model of understanding 'Life'
- Interrelatedness of Rules/Laws, Values, Ethics, Aesthetics, Conscience, Attitude. Judiciary and the discipline of Law in Systems Science

In essence, the developments in the form of Concept building, Formulation of Research Questions and Research Hypothesis and designing Model are helpful in *bridging* the present scientific paradigm with the new holistic Worldview in making by integrating Science, Spirit and Humanity together and thereby defining the inviolable constants, grammar, framework, structure, ontology and epistemology of Systems Science for Consciousness.

Community Health Care

1. Creative writing – Essays and poetry

2. Translation of an almost hundred-year-old Bengali text (On the *Path of Karma*) in 2010

3. Community Health Care

- (i). Laboratory management of Plague outbreak in Delhi, 1994
- (ii). Laboratory management of Dengue Outbreak in Delhi, 1996, 2006, 2008
- (iii). Appointed by Director, AIIMS as Member of (i) Steering Committee (ii) Clinical Care Committee and (iii) Media Briefing Committee during Dengue outbreak, October 2006

4. TV appearance for community Service

Appeared as Consultant in a Live T.V. program on 'Total Health' on the topic, 'Routine investigations' telecast by National Doordarshan on 27.02.2011 from 8.30 to 9.30 A.M.

Appeared as Expert in NDTV (12-10-06), SAHARA (NCR) (09.10.2006), Zee (Bengali 24 hours News Channel) (09.10.2006)

5. Newspaper quoted as Expert during Dengue outbreak

- (i) *Times of India* (6th, 7th and 13th October, 2006).
- (ii) *The Telegraph* (7th Nov. 2011) published commentary on the Paper published by the author on Alzheimer's Disease in Neurobiology of Aging

6. Other Social Activities:

Acted as judge in the inter-college debate on Health issue

7. India Habitat Center's Newsletter. Vol. 5, No. 1. published short profile and the excerpt of the paper on Pentaune Model of Nature consciousness and Information Pedigree.

8. Science and Spirituality Lecture Series organized by Bhakti Vedanta Institute, Kolkata

9. Sage and Scientists: Publication in Dr. Deepak Chopra edited e-Book Brain Mind and Cosmos

10. Interview in National DD in Aaj Sabera on December 2014

PUBLICATIONS

THIRTEEN (13) PUBLICATIONS IN HIGH IMPACT FACTOR JOURNALS

JOURNAL WITH IMPACT FACOR >11

Pallavi, P., Sagar, R., Mehta, M., Sharma, S., Subramanium, A., Shamshi, F., Sengupta, U., Pandey, R.M., **Mukhopadhyay, A.K.** Serum cytokines and anxiety in adolescent depression patients: Gender Effect. **Psychiatry Research**, 2015; 229 (1-2):374-380.

JOURNALS WITH IMPACT FACOR >7.5

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Bhaumik Shah A, Subramanium A, Pati HP, Sharma S, Agrawal D, Ahuja R, **Mukhopadhyay AK.** Immature Platelet Fraction As a Measure of Thrombocytopenia in Trauma Patients and Its Cut off Value with Severity of Thrombocytopenia. **Blood** (ASH Annual Meeting Abstract); 2011,118 (21):4681.

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JOURNALS WITH IMPACT FACOR >4

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Qurashi, R., Lakshmy, R., Prabhakaran, D., **Mukhopadhyay, A. K.,** Jailkhani, B. Use of filter paper stored dried blood for measurement of triglycerides. **Lipids in Health and Disease**, 2006; 5: 20

JOURNALS WITH IMPACT FACOR >3

Mukhopadhyay T, Shekhar S, Arora P, Patil P, Jayakumar R, Sehgal T, Meena S, Ningombam A, Shah VKR, Kumar P, Datta SK, Mathur P, Subramanian A, Sinha S, **Mukhopadhyay AK** . Medical postgraduate (MD) program in Laboratory Medicine in India: The Past, Present and Future. **Journal of Family Medicine and Primary Care**. 2022;11:1633-41.

Quraishi, R., Lakshmy, R., **Mukhopadhyay, A.K.,** Jailkhani, B.L. Analysis of the Stability of Urea in Dried Blood Spots Collected and Stored on Filter Paper. **Ann Lab Med.**, 2013; (33):1-3.

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Mukhopadhyay AK (2024). What governs the Brain? Is Neuroscience Immersive for

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Haque S, Sengupta S, Khan A, **Mukhopadhyay A K**, Bhan M K, Kumar R, Jaiikhani B. Immune response of S. Typhi-derived Vi polysaccharide and outer membrane protein a conjugate in mice. Pediatrics and Neonatology. (2023)

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Mukhopadhyay AK (2022).. Science of Divinity: Part IV. Arch Neurol & Neurosci. 12(2): 2022. ANN.MS.ID.000784. DOI: 10.33552/ANN.2022.11.000784

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Narang, S., Sharma, S., Sinha, A., Dhar, L., **Mukhopadhyay, A.K.**

In the abstract book of International Conference on Opportunistic Pathogens in AIDS (ICOPA-INDIA 2008) at AIIMS, New Delhi, January 27-29, **2008**, p. 155.

The Story of Information: Science or Spirituality?

In the Symposium, titled, “Information as Science and Spirituality” held at India Habitat Center, New Delhi, March 18-19, **2007**.

Elements of Human Psyche – Relevance in Raja-yoga

In the abstract book of National Conference on Yoga and Science held at the Dept. of Yogic Science, Dr. Harisingh Gour University, Sagar (M.P.), February 17-18, 2007.

Machine is connected with Consciousness through the terrain of Self, Mind and Information

Seminar on Science and Spiritual Quest at Puri, Orissa, December 9-10, 2006.

The Layers in the Matrix of Spirit and Matter

Seminar on Science and Spirituality in Modern India at Jawaharlal Nehru University, Delhi, February 6-7, 2006.

Elements of Human Psyche: Crystallizing new Rationality and Objectivity in Psychotherapy

IVth World Congress of Psychotherapy at Buenos Aires, Argentina, August 27-30, 2005

A Composite Model of the Psyche. Its practical relevance in Psychotherapy

2nd International Conference on Psychotherapy, Yoga and Spirituality, Haridwar, November 26-27, 2005.

Consciousness: An opening to multiple new door of Science.

National Workshop on Mind, Consciousness and the World held at Jawaharlal Nehru University, New Delhi, September 27-28, 2004.

Mukhopadhyay AK. *Consciousness: Brain Bound or Brain Independent!* In the Proceedings of **International Conference On yoga and Its Applications (ICYA 2004), Role of Yoga in Complimentary Medicine, Melbourne, Australia, 27-29 August, 2004**

Mukhopadhyay AK. *Nine planes of Consciousness. A Scientist's journey.* In the Proceedings of **International Symposium on Sudarshan Kriya, Pranaym and Consciousness, AIIMS, New Delhi, March, 2002**

Mukhopadhyay AK. *The roadmap towards a comprehensive model of the Brain, in the context of spiritual experience.* In the Proceedings of **Beyond the Brain IV, Ripon College, Yorkshire, England, 2001**

Mukhopadhyay AK. *The First tangible milestone beyond the brain is supracortical consciousness.* In the Proceedings of **Beyond the Brain III, St. John's College, Cambridge, England, 1999**

Mukhopadhyay AK. *Changing Trends in Laboratory Managements.* In the Proceedings of **National Symposium on Hospital Equipment's, appliances and Technology, New Delhi, 1997.**

Mukhopadhyay AK. *The way I look at the Brain.* In the Proceedings of **First International Conference on Yoga in daily life, New Delhi, 1996.**

Mukhopadhyay AK. *Consciousness, New Paradigm, New Medicine.* In the Proceedings of **The Third Dead Sea Conference, Israel, 1996**

Mukhopadhyay AK. *A look at the Fountainhead of a Unifying Paradigm.* In the Proceedings of **Tucson Conference II; Towards a Science of Consciousness, USA, 1996.**

Mukhopadhyay AK. *The Quality Assurance in Clinical Laboratory. The Principles and Practice.* In the Proceedings of **International CME on Laboratory approach to Pediatric Problems. Ed. A.K. Mukhopadhyay, pp 5-8, 1994.**

Mukhopadhyay AK, Karmarkar MG. *Microtechniques in Laboratory Procedures.* In the Proceedings of **International CME on Laboratory approach to Pediatric Problems. Ed. A.K. Mukhopadhyay pp 1-4, 1994.**

Mukhopadhyay AK. *Pathogenesis of Psychosomatic disease. A New Holistic thinking. Interaction of multiple multidimensional pentagons at multiple levels.* In the Proceedings of **XIX International Congress of International Academy of Pathology and Xth World Congress of Academic and Environmental pathology, Madrid, Spain, 1992.**

Mukhopadhyay AK. *Consciousness from Neurophysiological point.* The Proceedings of **National Seminar on Mind Brain Consciousness, NCERT New Delhi 1987.**

Translation: Translated in English a hundred year old spiritual book in Bengali titled 'Karmar Pathe' as '*On the Path of Karma*' in 2010, published by *Ayachak Ashrama, Varanasi, India.*

List of Papers Presented/ Lectures Delivered

Consciousness in Science

15th World Confluence of Humanity, Power & Spirituality, 26th-27th December, 2024

Consciousness: On its Source, and Operation

Science of Consciousness on 10-11th August, 2024, Organized at Jadavpur University, Kolkata, India, On occasion of Celebration of 50 years of Bhakti Vedanta Institute, Kolkata

On Information & its Source: From Confusion to Construction

Summer School on 7th of June, 2024, Organized at Gurukula Kangri (Deemed to be University) at Haridwar, Uttarakhand, India, by Bhakti Vedanta Institute, Kolkata on celebration of its 50 years

Evolution of Consciousness and Importance of Value System

AIIMS - Heartfulness International Conference

Medicine and Meditation: Elevating Healthcare through Humane Values and Spirituality
23-25 August, 2023

Mysteries of memory: Taxonomy, Distribution, and the Purpose, Memory in AI

Summer School 2023, on 7th of July,

Organized at Nabadwip, West Bengal, by Bhakti Vedanta Institute, Kolkata

Neuroscience of Human Cognition: Two Challenging Frontiers.

Quantum Physics, Brain Function in Modern Science & Buddhist Philosophy. Indian Institute of World Culture, Bangaluru, 18-19th Jan, 2020

Consciousness, Neuroscience and Vedanta: 24th International Congress of Vedanta. J N University, Delhi, Jan 10-12, 2020.

Systems Psyche: The Interphase between Consciousness & Matter Part I, II, III.

Singapore Neuroscience Summit, Holiday Inn Atrium, 25th-26th July, 2019

Communication of The Objective Reality (OR) to Senses as Signal in an Orchestrated non-Reductive way

At TSC@DEI 2019 & DEI@40 at Dayalbag Educational Institute, Agra on 18th May, 2019

Neuroscience of Human Cognition. Two challenging Frontiers

In Conference on Quantum Physics, Brain Function in Modern Science & Buddhist Philosophy
Tibet House - India Habitat Center, New Delhi, 1st – 2nd December, 2018

Artificial Intelligence, Human Intelligence and Intelligence in Nature

TSC@DEI-2018, 21st March, 2018, Dayalbagh Educational Institute, Agra

Perception in the Ladder of Cognition

In 12th Nalanda Dialogue on Perception, Nalanda, 22nd – 24th Feb. 2018

Psychology, Artificial Intelligence and Robotics**Some difficult questions in their ambitious fusion**

Indian Science Congress Association, Delhi Chapter, 25th October, 2017 at Zakir Husain College, Delhi

Joining the Dots:**The Ladder of Cognition**

Vth International Conference, Science and Scientist, 18-19th August, 2017 at Kathmandu, Nepal

Cracking the hard Problem of Consciousness**Is Brain Necessary?**

The Problem of Consciousness and the Brain/Brahman Dichotomy, 27th to 28th February, 2017 at Dept. of Philosophy, Sri Mata Vaishno Devi University, Jammu

Cracking the hard Problem of Consciousness

Quantum Physics and Consciousness, 4th to 5th February 2017 at Kolkata

Recognition in the Cognition Corundum

Nalanda Dialogue-2017, 27th to 29th January 2017 at Nava Nalanda Mahavira, A Deemed University under Central Govt., Bihar

Transformation of the Laboratory Science**Emergence of the Discipline of Laboratory Medicine**

3rd Annual Conference of Clinical Pathologists, 17th December 2016 at Dhaka, Bangladesh

Epistasis in Dementia and Depression

43rd National Conference of Association of Clinical Biochemists of India, 12th to 15th December 2016 at Mangaluru

Consciousness: Contents, States, Levels Regarding.....**Synthesis from Neuroscience and Vedanta**

Fourth International Conference on Science and Scientist-2016 at Prof. K.V. Gowda Memorial Auditorium, 26th to 28th August 2016 at Bangalore University

Key to Mental Health: How Consciousness supports and looks after your 'self' 'life' and consciousness.

National Seminar on Yoga and Mental Health at Doctor Harisingh Gour University, 20th to 21st June 2016 at Sagar, M.P.

Meditation: Inward Olympics with the Puzzle of Consciousness

Integrating Scientific and Contemplative Approaches to Explore the Mind, 6th December 2015 at NIMHANS, Bangalore.

One-window Laboratory Investigations, Transformation of the Discipline of Laboratory Science

42nd National Conference of Association of Clinical Biochemists of India, 25th to 28th November 2015 at PGIMER, Chandigarh

The Inward Olympics with the Puzzle of Consciousness
4TH September, 2015 at Department of Philosophy, University of Delhi.

Laboratory Medicine
Old Wine enriched in a New bottle?
2015 APPI Conference, 13th to 14th June, 2015 at Mumbai

Study of Consciousness within Science:
From Signal to 'Will' and from 'Will' to Signal
9th All India Student's Conference on Science and Spiritual Quest, 30th October to 1st November
2015 at IIT, Kharagpur

Inward Olympics with the Puzzle of Consciousness
In the Dept. of Philosophy, Delhi University on 4th September 2015

Yoga: Inward Olympics with the Puzzle of Consciousness
In the Sanskrit Week Celebrations held in Special Centre for Sanskrit Studies at Jawaharlal
Nehru University, New Delhi on August 29, 2015

Emergence of Laboratory Medicine; Old Wine Enriched In a New bottle!
In the 41st *National Conference of Association of Clinical Biochemist of India*, Jodhpur
AIIMS, Jodhpur, December 10-13, 2014

Five steps from Laboratory Medicine to Science of Mind
2nd International Conference, Science and the Scientist. Siddharta Auditorium, Vijaywada,
Vijaywada, November 28-29, 2014

Five steps in developing a Science for the Monk
Conference *Cosmology and Consciousness*, Buddhist Institution, Dharamsala, November 2-5,
2014.

Consciousness from the Perspective of East
Towards Science of Consciousness, Marriot Hotel, Tucson, Arizona, USA, April 21-26, 2014
In April 2014, AKM was one of the Chairs of East & West Forum in TSC-2014 at Arizona
Tucson, USA

Tricky Conceptual Issues in Consciousness Research
Dayalbag Educational Institute, Agra. 5th April, 2014

A Model of understanding Consciousness
in Biological Science
Dept. of Sanskrit, Jawaharlal Nehru University, Delhi
(22nd November, 2012)

Acted as one of the three judges in an inter-college debate on '**Life after life**' held in Delhi on
5th February, 2012

Mind: Just one in a five-piece puzzle!
In the National Seminar on Holistic Vision for Ideal living in Surat on 22nd January 2012

Evidence based Laboratory service in Trauma Care Centre

On occasion of status evaluation of Trauma Care Centre at Bir Hospital, Nepal, as a team member selected by Govt. of India from AIIMS on 25th February 2012

Participated as a resource person in an International Workshop in developing a syllabus on “**Biologically Inspired Systems Science**” at Jodhpur, IIT from 29th February to 4th March 2012 and delivered a lecture titled, “**Consciousness is the central one in a Five-piece puzzle**” on 1st March 2012

Consciousness, Self and Mind

In the seminar, Convergence of Science & Spirituality, held at the Institute of Science and Spirituality, New Delhi on March 27, 2011.

Presented paper as the Chief Guest.

Chaired a scientific session and was a Panelist in Science and Spiritual Quest VI held at Delhi Technical University, Delhi on March 13, 2011.

Evolution of the Akhanda Philosophy

In a congregation of 50,000 pilgrimage at Kankurgachi, Kolkata, December 31, 2010.

Openness, Pluralism and Inter-connectedness. The brain, the universe and the Information Entanglement.

In the Seminar on Consciousness and Knowledge: Scientific and Spiritual Perspectives held at PHD Chamber of Commerce and Industry, New Delhi, December 11-12, 2010.

The Material, The Psyche and The Spirituality

In the International Seminar on Spiritual Consciousness Studies, SPIRCON 2010, Dayalbagh Educational Institute, Agra, on November 13, 2010.

Also chaired scientific session on 13-11-10

Introducing Psychosomatic Medicine in Indian Perspective

In the OTP Program in Yoga for Medical Doctors at Doctor Hari Singh Gour University, Saugar on 13.03.2010

Three Questions, Three Consciousness, Three Sciences

In the OTP Program in Yoga for Medical Doctors at Doctor Hari Singh Gour University, Saugar on 12.03.2010

Future of Human Species

In the Bhundelkhand Medical College, Doctor Hari Singh Gour University, Saugar on 12.03.2010

The Psyche and the Health

In the Conference, Towards the Wellness of Body, Mind and Self at ITM, Navi Mumbai on 19.02.2010

On the landscape of human possibilities: Tendencies of Homo sapiens to become Homo spiritualis In the Conference, Science & Spirituality Quest at MNIT, Allahabad on 15.01.2010

Dissection of Human Psyche, Relevance in Yoga & Psychotherapy

In the Conference, Psychotherapy Science and Yoga Traditions at Chandigarh on 06.01.2010

In the panel of Expert in the Workshop on Hematology at Goa, 31st July-1st August 2009

Integral Model of Science

At Academic Staff College, JNU in Special Winter School on Frontier of Humanities on 09.01.2009

Local and Nonlocal Science

At Academic Staff College, JNU, in Special Winter School on Frontier of Humanities on 12.01.2009

Individuation

At Academic Staff College, JNU in Special Winter School on Frontier of Humanities on 13.01.2009

Consciousness, Psyche and Nature

At Morarji Desai National Institute of Yoga (MDNIY) on 29.09.2008

In the Expert panel of The First Coulter Series of Workshop in Haematology 2008 in CMC, Vellore, February 14-15, 2008.

Three Consciousness(es), Mind and Information

In the International Conference on All India Student's Conference on Science and Spiritual Quest in Tirupati, December 22-23, 2007.

Also chaired two scientific sessions on 23.12.2007

Consciousness Research: Challenges in Philosophy and Science.

In the National Seminar on Holistic Approach in Healing in LNIPE, Gwalior on 25.10.2007.

Also chaired scientific session on 26.10.2007

Future of Laboratory Medicine.

In the Meeting of Association of Practicing Pathologists (APP), New Delhi, on 07.10.2007.

The Story of Information: Science or Spirituality?

In the Symposium, titled, "Information as Science and Spirituality" held at India Habitat Center, New Delhi, March 18-19, 2007.

States, Levels, Planes and Developmental lines of consciousness

Pre-conference lecture at National Conference on Yoga and Science at the Dept. of Yogic Science, Dr. Harisingh Gour University, Sagar (M.P.), February 16, 2007.

Three 'Yogas' correspond to three Developmental lines of brain function.

Keynote lecture at National Conference on Yoga and Science at the Dept. of Yogic Science, Dr. Harisingh Gour University, Sagar (M.P.), February 17, 2007.

Human Psyche, Consciousness and Psychotherapy

Department of Psychiatry & National Drug Dependence Treatment Center, AIIMS, New Delhi, March 29, 2006.

Layers in the Matrix between the Matter and Spirit

Seminar on Science and Spirituality in Modern India at Jawaharlal Nehru University, Delhi, February 6-7, 2006.

Elements of Human Psyche: Crystallizing new Rationality and Objectivity in Psychotherapy

IVth World Congress of Psychotherapy at Buenos Aires, Argentina, August 27-30, 2005

Elements of Human Psyche: Crystallizing new Rationality and Objectivity in Psychotherapy

University of Belgrano, Capital Federal Argentina, Buenos Aires, August 31, 2005

The Composite Model of Psyche: Its Rationality in Psychotherapy

2nd International Conference on Psychotherapy, Yoga and Spirituality, Haridwar, November 26-27, 2005.

Consciousness: An opening to multiple new doors of Science and Philosophy.

National Workshop on Mind, Consciousness and the World held at Jawaharlal Nehru University, New Delhi, September 27-28, 2004.

Creativity: Consciousness, Culture and Material condition of Life.

National Seminar on Creativity and the State in Contemporary India held at India International Center, New Delhi, April 25-26, 2004

Evolution and Consciousness: Supracortical Evolution of the Being.

National Seminar on "Supramental Consciousness: Sri Aurobindo And Other Evolutionists" at Indian Council for Social Science Research, New Delhi, March 27-29, 2004.

Supracortical Consciousness An opening to Multiple New Doors of Science.

National Conference titled "The Enworlded Subjectivity: Its Three Worlds and Beyond" at India International Center, New Delhi, March 8-10, 2004.

Discussion and contribution throughout the seminar on Neuronal informatics.

International Conference on Theoretical Neurobiology. Organized by National Brain Research Center (Deemed University) at New Delhi, February 24-26, 2003.

Looking into the details of Nature as required for Naturopathy (Valedictory address).

National Symposium on Research Trends in Yoga and Naturopathy. Organized by Central Council for Research in Yoga and Naturopathy, New Delhi, February 15-16, 2003.

Psychic Skeleton.

National Symposium on Research Trends in Yoga and Naturopathy. Organized by Central Council for Research in Yoga and Naturopathy, New Delhi, February 15-16, 2003.

Experience of Death Phenomenon may be made amenable to Science.

In the Seminar on Death Dying and Beyond, SAIHR, Pondicherry, December, 2002.

How Modern Science may help in establishing a Science of Yoga.

National Seminar on Consciousness, Values and Yoga, Organized by Indian Council of Philosophical Research, New Delhi, March. 2002

Nine planes of Consciousness. A Scientist's journey

In International Symposium on Sudarshan Kriya, Pranayam and Consciousness, AIIMS, New Delhi, March, 2002

The Philosophical underpinnings as required for developing a Science for Consciousness

In seminar on Philosophical Consciousness and Scientific knowledge: Conceptual linkages and civilizational background, March 1-3, 2002, New Delhi

Limitations of Science and Problems in Philosophy in addressing Consciousness. The Pentaune and the Nanoune Models of the Consciousness-Nature Mechanics are suggested

In International Seminar on Philosophy & Science: An Exploratory approach to Consciousness, February 8,9, 2002, Calcutta,

Consciousness from the Perspective of Science.

Presented in Indian Council of Philosophical Research, Darshan Bhavan, New Delhi, 15th December, 2001

Science for Consciousness. How is it expected to be?

In Valedictory Address of National workshop on Innovative Courses on Applied/ Practical Philosophy, School of Language, Literature & Culture Studies, Jawaharlal Nehru University, New Delhi, 12th December, 2001

The Limits of Science

In National seminar on Human Mind and Machine, University of Pune, 29th - 31st October, 2001

Importance of Inter-disciplinary Studies

Valedictory function lecture in the course on Environmental Studies in Education, Center of Advanced Study in Sanskrit, University of Pune, 27th October, 2001

The Roadmap towards a comprehensive model of the Brain, in the context of spiritual experience, 2001

In Beyond the Brain IV, Conference, at Ripon, Yorkshire, England

Agriculture revolution completes its circle in Consciousness Revolution, 2001

International Conference on *Nature Farming* and *Ecological Balance* at Chowdhury Charan Singh Haryana Agriculture University, Hisar, India)

The Keynote Address in The Yoga in the New Millennium

Gurukul Kangri University Hardwar, Feb, 13. 2000

The Science of Consciousness. What kind of boundary do we need? Existence of *supracortical consciousness* and Evolution of a *supracortical brain*, 2000

Round table discussion on Consciousness at Allahabad, Organized by National Brain Research Center, India

Science for Man and Man for Science (Paper submitted) 1999

Pontifical Academy of Sciences, Vatican

The First Tangible milestone Beyond the Brain is Supracortical Consciousness, 1999.

St. John's College, Cambridge, England

Changing Trends in Laboratory Management's (1997).

National Symposium on Hospital Equipment's, appliances and Technology, New Delhi, 1997.

The way I look at the Brain (1996).

First International Conference on Yoga in daily life, New Delhi, 1996.

Laboratory Management (1995-1996):

Management of Laboratory Services in Hospital,
Laboratory Management at A.I.I.M.S.,
Changing Concepts in Laboratory Management,
Laboratory Management, Changing Scenario,

Presented at the Training Programme for Middle Level Hospital Managers held at A.I.I.M.S from 24-29th April 1995, 31st July-12th August 1995, 9-21 Oct., 1995, 16th-22nd Nov., 1995 respectively. The Programme was sponsored by Ministry of Personnel, Training Division, Govt. of India.

Pathogenesis of Psychosomatic disease. A New Holistic thinking. Interaction of multiple multidimensional pentagons at multiple levels (1992).

Presented in the XIX International Congress of International Academy of Pathology and Xth World Congress of Academic and Environmental pathology, on Oct. 23, 1992, in Madrid, Spain, in special complimentary session during closing ceremony.

Consciousness – from Neurophysiological point: (1987).

National Seminar on Mind Brain and Consciousness, held in NCERT, New Delhi.

Consciousness – The Holistic View: (1986)

International Seminar on Living State III, held in NEHU, Shillong, India.

Impact, Praises, Reviews on the Publications on Consciousness Worldview

Interview on Science of Consciousness in National DD in December 2014

Having watched this Interview, see what Dr. Deepak Chopra writes in two consecutive issues of **SanFrancisco Chronicle**

<https://www.sfgate.com/opinion/chopra/article/Who-Controls-Your-Mind-Hint-It-s-Not-Your-6791280.php>

<https://www.sfgate.com/opinion/chopra/article/What-s-the-Point-of-Being-Human-The-Best-6812996.php>

General

1. Invited as **Observer** from India by Pontifical Academy of Science, Vatican in their Academic Meeting in 1999.
2. The Paper on Nonlocality is being displayed in the homepage of Scientific & Medical Network, UK as a Leading article.
3. Response from Nobel Laureates like, **Brian D. Josephson**, **Francis Crick** and **Anthony Leggett** by e-mail, **Gerald Edelman** by letter and Fax, **Werner Arber**, **Paul Crutzen**, **Nicholas Tinbergen** by hand-written letter and **Gerard 't Hooft** by surface mail, reciprocal exchange of paper with **Roger W. Sperry**.

Impact of Publications of

1. *Frontiers of Research for Human Biologists. Next Hundred years*, 1985.
ISBN 81-900033-0-5
2. *The Dynamic Web of Supracortical Consciousness*, 1987.
ISBN 81-900033-1-3

I. Quoted in text Book of Psychology and Psychiatry:

Quoted in **Text Book of Psychoanalytically oriented Psychotherapy: Practices without Fees**. Author, Dr. S. Dube, A.I.I.M.S, Publ. Willey Eastern Ltd.

II. Quoted in Books:

1. **Holistic Science and Vedanta**. Author, Swami Jitatmananda, Published by Bharatiya Vidya Bhavan, Bomaby, pp 78-79, 1991.
2. **The Global Revolution. An Introduction (in Polish)**. Author, Dr. Jan Maria Szymanski, 1994.
3. **Health, Medicine & Religion**. Swami Brahmeshananda. Sri Ramakrishna Math, Mylapore, Chennai, pp. 243-244.
4. Also cited in **“Physiology of the Man of God”** by Dr. C. S. Shah in **Vedanta Keshari**, August, 1999, pp.....

III. Passed to the Royal Society Library by the President, Royal Society, London.

“Your book, on Frontiers of Research which Sir, Geoffrey Slaney has passed on to me. It certainly takes an unconventional view of consciousness and research. It would be

impossible to review it but with your permission, I shall ask the college librarian if he will accept it.” -Dr. R.M. Kirk, Editor, Annals of the Royal College of Surgeons of England.

IV. Commented in Journal:

1. Frontier Perspectives, 4 (1); 44, p 94, from The Center for Frontier Sciences, Temple University, USA.

‘The Author is revealing his original hypotheses on consciousness, meditation and imagination.’

2. The Vedanta Keshari (2013), June, 100 (6), p. 221.

V. Reviewed in Journals:

The first book has been reviewed in

1. Journal of Ancient Science of Life, 5 (2) pp 133-134, (1985).

“This beautiful booklet is a call for scientists to explore further the interrelationship between biology and evolution on one hand and Philosophy and Science on the other, and probe deeper into the concepts of consciousness and love. This thought provoking source of instruction has opened vast and expansive fields of research on many challenging subjects.”
- Reviewed in Ancient Science of Life - The Journal of International Institute of Ayurveda, Oct. 1985.

2. Network (The prestigious Newsletter of Medical and Scientific Network, UK) No, 53, p 30, 1993.

VI. Enlisted in Journals:

The first book has been enlisted in ‘Books Received’ column of following journals.

1. **Mayo Clinic Proceedings** 60, p 646, (1985).

2. **Medical Education** 19, p 256, (1985)

The second one has been enlisted in ‘Book Received’ column of

1. **New England Journal of Medicine** 317 (18), p 1167, (1987) under heading of Neurology and Psychiatry.

VII. Acknowledged by Journal Offices of:

1. **Nature**. “This is to acknowledge receipt of your hypothesis entitled, “Frontiers of Research for human biologists, - Nexe hundred years”. – Peter Newmark, Deputy Editor, Nature.

2. **Contemporary Psychology**, a journal of Reviews, American Psychological Association.

3. **The Journal of TransPersonal Psychology**.

VIII. Coveted Communications with:

A. Nobel Laureates:

Prof. R. Sperry, CIT, USA. He reciprocated by sending his signed paper to the author.

Prof. N. Tinbergen, Oxford.

Prof. Ilya Prigogine, Bruxells.

Prof. F.H.C. Crick, USA.

Prof. David H. Hubel, USA.

Prof. G.M. Edelman, USA.

Prof. Joshua Lederberg, Honorary Life Governor of New York Academic of Sciences.

Sir John C. Eccles

B. Eminent Scientists and Philosophers of Science:

1. The Scientist group of The Centre For The Study of Complementary Medicine, UK.

They write:

DR. A. K. MUKHOPADHYAY, FORMER HOD, DEPARTMENT OF LABORATORY
MEDICINE, AIIMS, NEW DELHI

‘author’s thesis, entirely fits in with scalar field hypothesis’.

2. **Dr. Larry Dossey, Co-chairman of the office of the Alternative Medicine, NIH, USA.**
‘They are remarkable documents. Of course you are correct: Medical science must find ways of bringing mind and spirit back to the life sciences, for without them medicine is incomplete. Your work is an important step in that direction. The vast spectrum of material you synthesize is very thrilling, not many persons could do it. The way you have woven ancient and modern concepts together in a disciplined way deserves the greatest recognition.’
3. **Prof. Dr. Med. C. Scharfetter, Zurich.**
‘The unifying power of your consciousness, more exactly; of the cosmic consciousness incarnated in your psychophysical existence and communicating there with brain-stem, limbic-, cortical consciousness, creates a grandiose holistic view and combines traditional Indian religio-philosophical knowledge with modern neuroscience and genetics.’
4. **Prof. Charles L. Spiegel, Unarius Academy of Science, USA.**
‘Pioneering landmark book on the Higher Consciousness, a spiritual bridge to the Cosmic Universe!’
5. **Prof. V.S. Vaidyanathan, University at Buffalo, State University of New York,**
‘It is a monumental piece of work’.
6. **Prof. Dr. hab, Janusz Slawinski, Institute of Physics, Poland.**
‘the work presents a new revolutionary approach to the problem of consciousness and its relation to Physics and Biology.’
7. **Others**
 - a) Prof. Dwight H. Bulkeley, Seattle Institute for Life Sciences, USA.
 - b) Prof. Shiuji Inomata, Psychotronic Institute, Japan.
 - c) Prof. M. Samii, Eminent Neurosurgeon, Hanover.
 - d) Prof. Willis Harman, President, Institute of Noetic Sciences, USA.
 - e) Prof. Edmund D. Pellegrino, Director, Centre for the Advanced Study of Ethics USA.
 - f) Sir George Porter, President. Royal Society, London. He has passed this work to Royal Society Library.
 - g) Prof. Rupert Sheldrake, UK
 - h) Nicholas Hagger, UK.
 - i) Dr. Jan Maria Szymanski, President, H.S.R., Poland, and many others.

Parallel between Supracortical Consciousness and Roger Penrose’s position

J. Andrew Ross, a writer and the philosopher and the author of *Lifeball* has written another book, *Mindworlds. A decade of Consciousness Studies (2009)*, Published by Imprint Academic, VA, USA.

In one of the chapters available in net where Ross discusses on the topic of Consciousness bringing Hegel, Penrose and Wolfram, quotes Penrose.

Andrew Ross quotes Penrose,

DR. A. K. MUKHOPADHYAY, FORMER HOD, DEPARTMENT OF LABORATORY
MEDICINE, AIIMS, NEW DELHI

“ There is [an] important role played by consciousness in many interpretations of the R [reduction] part of quantum mechanics....As far as I can make out, the only interpretations that do not necessarily depend upon some notion of ‘conscious observer’ are..... most of those..... that require some fundamental change in the rules of quantum mechanics, according to which U[unitary evolution] and R are both taken to be approximations of some kind of objectively real physical evolution.... I am adherent of this last view, where it is with gravitational phenomena that an objective R (i.e. OR). Takes over from U.....I envisage that the phenomenon of consciousness – which I take to be a *real* process, arising ‘out there’ in the physical world – fundamentally makes use of the actual OR process.”³⁵

Following this, Andrew Ross expresses his wonders,

“How cortical processes can relate to OR is obscure, but OR is a quagmire issue that nobody expects to solve in the near future”.

Continues Ross,

“It seems to me that the Emperor’s new mind, regarded as the subjective entity that reflects or complements *reality as a whole*, at least as we currently understand it, deserves to instantiate its own named variant of consciousness. I would like to suggest that we call this variant *supracortical* consciousness, to exact a term I first met in the works of A. K. Mukhopadhyay, an Indian professor of Medicine who is also an accomplished mystic philosopher.”³⁶

Andrew Ross defines supracortical consciousness in his own term,

“Supracortical consciousness may be described to a first approximation as a unified state of phenomenal reality that quangles with the omnium from moment to moment and thus enables us to regard ourselves as living in a superficially classical physical world.”.....

J. Andrew Ross is the first one to draw a parallel between supracortical consciousness of A.K. Mukhopadhyay and Penrose’s position.

Impact of Publication of *Conquering the Brain*

Review Comments and Some praises

I. Reviewed in

(a) *Hindustan Times*, Sunday Magazine, India, 5th May, 1996.

“Dr. Mukhopadhyay’s book comes at a time when Science is looking inwards. In very simple words Prof. Mukhopadhyay tries to establish a relationship between the cortex, the mind and the divinity. It brings visions of harmony between the space within and space outside.”

(b) *Ancient Science of Life*, Journal of International Institute of Ayurveda, Coimbatore, India 15 (3), pp 242-243, 1996.

“The work sweeps through the mountaintops of Philosophy, Physics, Neuroscience, Humanity and even the Spirit which holds the universe. It touches various frontier areas and opens up numerous multidimensional research horizons for scientists, humanists and spiritualists alike. Though Dr. Mukhopadhyay does not have immediate objective and

reproducible evidence in support of this conceptual build up it is expected that the work will eclipse many polar stars in the field”.

(c) ***Frontier Perspectives*, Center for Frontier Sciences, Temple University USA, reviewed in 6 (2), pp. 59-60, 1997.**

“When readers see terms from quantum physics, philosophy and psychology in the same figure, they know they are in for a wild ride. This brave and promising attempt to link pretty much all major issues in human thought continue throughout the book”.

“.....Reading this book is what it would probably be like if one were to come across a Text book from the future. It is very idea-dense - unlike some books which go on for pages without any propositional content, every sentence here expresses some claimed factI challenge the readers to read it and attempt one page summary of its main points.”

“It is not recommended if one is looking for a linear logical exposition of a limited scope theory. On the other hand, if one is up to the challenge of an almost psychedelic assault on stale categories of mental organization, one can hardly do better than reading this book (several times).”

- reviewed by Michael Levin, Harvard.

(d). ***Journal of the International Society for Philosophical Enquiry*, USA 12(18) pp. 16-17, 1998.**

“Excellent and original work”..... “has a wealth of thoughtful philosophical, psychological and scientific concepts and information, organized into 38 chapters, with many diagrams, charts, index and other features. Every diagram and chart is beautifully and precisely drawn.”... “an exquisite work that harmonizes and unites all the different aspects of human experience and knowledge..”

“There is something here that speaks to almost every one in this book, whatever one’s field of research and study, be it physics, biology, psychology, philosophy, cosmology”.

“It is surely a seminal work”.

- reviewed by James Vanderhoof, Editor, Telicom, USA.

(e) ***The Statesman*, India, 03-08-98, p6**

“This book holds the view that the purpose of the brain’s evolution is to establish the identity of consciousness within and without, after which the brain acts as ‘transmissive’ for a purposeful scheme of the consciousness. The transmissive view of the brain had been nurtured in the East long before the West started keeping a chronological record. In this era of pluralism, the work talks about the existence of multiple universe. The most appropriate plural for universe has been chosen here as Multiverse. Multiple universe, the Multiverse, at the highest plane forms a system called the Multiversity. The Essence of this Multiversity is Consciousness-Mother Nature. After a decade of metamorphosis, it is felt that one moves to form an identity with the Essence, - by conquering the brain”

(f) ***The Network*, Scientific & Medical Network Review, No 73, Aug., 2000, p 58, UK.**

“Since the days of Descartes, there has been a logical gap in Western philosophy between mind and matter. In the opinion of this reviewer, this book appears to bridge that gap.”
“....Mukhopadhyay explains how a super-conscious power of energy descends down into the

brain to produce human psychology and physiology. He then fits this together with quantum physics and cosmology to produce a holistic spiritual existence."

.. "Mukhopadhyay is systematically clear about what he is doing. ...It has a clear index and a detailed contents plan; diligent cross-references can make initial obscurities clear and coherent". "This book proposes an alternative paradigm of mind and brain, which could stimulate a lot of empirical research by reinterpreting in a new way a lot of what we already know.".... "The merit of this book is to show that the paradigm can be made at least as logically coherent and just as consistent with the insights of modern physiology and physics. ...The system it proposes is an open system, which could grow from empirical verification or refutation".

"The book is not an easy read. Each part is written in clear English, some of it indeed beautiful English, but the sum total of the argument is highly complex... At Rs. 550/, (corrected) it is a book for the University Library rather than the coffee table at home, but it deserves to be read. ...What is important is that this book represents a new holistic way of looking at the area of science and the spirituality. ...If one is optimistic, this could be the way forward for 21st century world culture".

"Mukhopadhyay's cosmology is very much like that to be found in *The Life Divine* of Sri Aurobindo and the works of Ken Wilber.He is the follower of a neo-Vedantin Guru and he adheres to the 'Akhandas' Paradigm".

- Reviewed by Max Payne, Chair, Network Board of Trustees.

(g) ***The Noumenon Journal*, Volume 6, summer 2000/2001, pp. 60-63, printed by The University of Durban - Westville, South Africa.**

"A RADICAL VIEW OF THE BRAIN"

"One cannot simply write even a superficial overview of this book without giving some kind of background, however inadequate, of some of its basic terms and concepts. Conquering the Brain is based on a theory of 'multiple universe' for which author chooses the term 'Multiverse', and whose essence he sees as 'Consciousness/Mother Nature'".

"Where the scientific view of the universe is 'a cortical construct', the author sees the concept of 'Multiversity' as transcortical, transuniversal, supracortical and supracosmic. In 1985, he coined the term 'Supracortical Consciousness'. When one has established the identity of human consciousness 'with the essence of the Multiversity', he says, one is within a new paradigm, the Akhandas Paradigm".

..... "With particularly clearly devised sub-headings, the book offers immense amount of material. Many references to pioneering western thinkers will be familiar to readers of books on the new physics and some of the major thinkers of the 20th century, but whatever the moments of *déjà vu*, the concepts involved in the Akhandas Paradigm contain much that will be new to readers. The text itself, despite some un-English language structures, is perfectly readable for the western reader and the concepts are clearly explained, although a real grasp of the principles requires consistent focus".

..... "For those interested in speculating about the evolution of the brain and the true nature of consciousness in a purposeful universe, there is much to ponder on here. The

writer has a considerable knowledge of both western and eastern thinking and moves freely between them".

"A new race, he says, is literally emerging from the present cortical beings out of conscious physical contact with the essence of the Multiversity. He sees six identifiable hierarchical levels emerging: the brainstem being, the limbic being, the cortical being, the supracortical being, the supracortical godhead and, the supracortical autonomy, and regards this hierarchy as an evolving version of the Great Chain of Being 'unfolding from a neurologist's perspective'".

"The entire work is an exercise in the 'process of Becoming' and leads towards the Akhanda Paradigm, which holds the new humanity 'inseparable from the spirit and [from] science'. "Regarding the emergence of a new kind of human being, I am reminded of a theory of ichthyologist. Professor JLB Smith, that relatively few human beings actually qualify for classification as true *homo sapiens*, and that this species is, in fact, the next step in the evolution of our genus. Conquering the Brain attempts a detailed explanation, a trail-blazing document, of what constitutes this 'new beginning' for mankind: the evolution of a new kind of human being."

"It needs to be said that I do not consider this to be a review in any real sense. It is more like putting a toe into the water to test the temperature... and then finding that an assessment requires total immersion!"

- Reviewed by Shirley Bell, Director, Embambiswaneni Community Project, Durban

- (h) *NAMAHA, New Approaches to Medicine & Health. A Journal of Sri Aurobindo International Institute of Integral Health and Research, Volume 10 (1) 2002, pp. 39*

“Not all silence is swallowing up of noise,
Not all stillness is engulfment of time,
Not all emptiness is the subatomic void,
Not all nothingness is absence of rhyme.
There is silence which broods Cause,
There is stillness, generating time with pause
There is void from which the universe is born,
Ananda shines when nothingness is torn.”

“The book apparently appears to be straightforward, but as one goes through, it requires a great mental effort to absorb all the biological, mental, spiritual, analytical and synthetic expertise.”

“The work is based on the purpose of the evolution of the brain. The author feels that this is to establish an identity of without with within following which the brain acts as a ‘transmissive’ for a purposeful manifestational scheme of Consciousness.”

“Divided into seven parts, thirty-eight chapters and a glossary, with 60 self-explanatory tables and 46 innovative diagrams, it is an intellectual ascent from the level of the edge of the universe to the cerebral cortex. In a logical way it transcends and integrates the concept of Multidiversity. There is an inversion, reassignment and creative emergence of the existing philosophy, physics and neuroscience. It is an excellent effort in amalgamating the insight of

Science, philosophy and metaphysics. Perhaps for an ordinary reader, a more simple book would be desirable.”

“A good approach for a hypothesis.”

- Reviewed by Dr. D. B. Bisht, Ex-Director, JIPMER, Pondicherry, Ex Director General Health Services, Govt. of India.

(i) ***Prabuddha Bharata, or Awakened India, A Monthly Journal of The Ramakrishna Order started by Swami Vivekananda in 1896. Vol. 108, May 2003, p.287.***

“Dr. Mukhopadhyay, a professional doctor on the faculty of AIIMS, has made a mark by his previous works entitled *A Dynamic Web of Supracortical Consciousness* (1987) and *Frontiers of Research for Human Biologists* (1985). According to information available in the present volume, both of these received appreciative comments from well-known writers like Larry Dossey. In fact, Prof. Gopinath of AIIMS says that ‘the author’s work is phenomenal.’

With this background, we have the present study with a thoroughly researched but sometimes despairingly technical study of the nature of consciousness in the context of modern science and cognitive theories. The book consists of seven parts covering areas such as ‘Death Experience’, ‘New Paradigms’, ‘The Responsivity of the Brain’ and ‘Revisiting Nature’. The final part entitled ‘Towards a New Formation’ seems to be the culmination of many of the arguments advanced in the course of the book. One helpful feature is the glossary for technical words provided by the author. Curiously, the glossary, at least a part of it, is in the form of questions we get quite often in a study of this nature.

The author says that he derived his paradigms from his guru Swami Swarupananda Paramahansa Dev, who declared that he came ‘to create a new history on this planet. To follow the beaten track is not my way.’ This sets the tone for the models and metaphors the author advances with obviously some interior awareness. He says that ‘the multiverse is born out of Interuniversal Essence of the Transcendental Essence/Transformative Essence/Essence of the Multiveristy. This Essence is Consciousness-Mother Nature, who imparts an absolute transparency in the system, makes it an ever-open process, and generates infinite pluralism.’ To put it in perhaps non-technical language, as the author himself does, this is ‘the ground of everything. It is everywhere, everytime and in everything - the Immanent.’ This is marked by capacity for infinite creations and variations. Perhaps this is indivisible awareness that goes beyond the purely physical, neurological models of the brain.

As far as I could follow, the tenor of the arguments of the Akhanda Paradigm has at their core what the mystics emphasize - Love. Dr. Mukhopadhyay coins a term, supracortical awareness, ‘which is exemplified in sacrifice and love one observes day by day is, in fact, the result of the successful expedition of SCC through numerous obscurities of the infrastructure of the nervous system.’

In short, this is an important contribution to an area where few venture. Highly technical, it is yet an honest attempt to work out an alternate model of the universe and consciousness, as a corrective to the Western paradigms.”

- Reviewed by Dr. M Sivaramkrishna, Former Professor & Head, Department of English, Osmania University, Hyderabad.

II. Sri K. R. Narayana, *Hon'ble President of India*, called on the author and graced him by receiving the copy of *Conquering the Brain* and the original manuscript of *The Millennium Bridge* at Rastrapati Bhavan, New Delhi.

III. Acknowledged by Editorial office of the following Journals

(a) *Science* (b) *Nature* (c) *Scientific American* (d) *Journal of Alternative and Complementary Medicine* (e) *Journal of Consciousness Studies*

IV. Listed in the “book received” column, *Current Science*, Feb. 1998

V. Quoted extensively in Books

- (a) *The Masterplan Paradigm for Human Survival and Excellence* (1998).
- Dr. Sampooran Singh, Ph.D., D.Sc. Faith Publishers, Chandigarh, India.
- (b) *Aakash Brahama* (1998)
-Ayachak, WBCS. Yogendu Prakashan. Calcutta, India.

VI. Quoted in Paper

Applied Spirituality, Social Justice and Encounter with Religions.

Late Archbishop Angelo Fernandes, President Emeritus, World Conference on religion and Peace, 1998, p. 5

VII. Words of Praises which were sent through Personal communication:

1. “I congratulate you; the modern world very much needs this kind of dialogue to correct its course away from disaster.”

“I especially appreciated your thoughts near the end about the implications if our medical profession and academic world were to adopt a new paradigm such as this. Also, your humility is refreshing (and so appropriate)”.

“I hope this work is well accepted in your country. I doubt that many in this country are ready for it. It's partly a matter of experience, of course; one can't *reason* one's way into the new paradigm. We have been attempting to move things this direction by smaller steps; specifically, by challenging the epistemology of Western science, which has so entranced India as well as the U.S. and Europe. I hope you may find useful the enclosed report on the recommended ‘next step’ which might begin to move science toward the kind of ontology and the Sadguru /Akhanda state of being you recommend.”

Late Prof. Willis Harman, President. Institute of Noetic Science, U.S.A.

2. “As a scientist, you are true explorer of the scientific frontier and can stand proud knowing that your work plays a vital role in the progress of science.”

-Nancy Kolenda, Director for the Center for Frontier Sciences, Temple University, USA

3. “Your strong point, of course, is that you are in the “know”...

“Wonderful beautiful book”.

“Your scholarly approach to the nature of Consciousness is highly commendable as it attempts to resolve the dichotomy of the mind/brain/body system, advancing the reality of Homo sapiens as more than the five senses, atomic body, which is used as a vehicle only, to learn of the spiritual principles of the Infinite Creative Intelligence”.

“Conquering the Brain will remain as an important statement of man’s essential purpose, and that is to become one with the Infinite”.

-Prof. Charles L. Spiegel, Unarius Academy of Sciences, U.S.A.

4. “Very advanced book, it is innovative way of thought, compatible to the all-human transition to the Open World Society. Dr. A.K. Mukhopadhyay has presented the whole theoretical frame work”.

“We look for distinguished thinkers like you, because only distinguished thinkers – elite of the world – it is the avant-guard of the people solving the problems of tomorrow’s world.”

-Dr. Jan Maria Szymansky, PhD., President, H.S.R.(Human Survival and Revival)

5. “Your work deserves to be recognised, which I trust will indeed happen I feel a kindred spirit with you, because we are attempting to accomplish the same goal - you in the East, I in the West. I am sure that we shall succeed although the challenge is great”.

-Dr. Larry Dossey, M.D., Author of several books on New Paradigm and Co-Chair Alternative Medicine, NIH, U.S.A.

6. “I enjoyed very much, reading your theories on brain and mind functioning and it seems to me that you have in a conceptual context, advanced or perhaps even more advances, than the rest of us are in our thinking. Congratulation!”

- Dr. Robert J. White, M.D., Ph.D, Honorary Member, Pontifical Academy of Sciences, Vatican, Professor of Neurological Surgery, MetroHealth Medical Center, Ohio, USA.

7. “The work is clearly an achievement of a high intellect and reflects a rare quality among the community of medical professionals. My congratulations!”

-Prof. H.D. Tandon, MD. FAMS, Ex-Director, A.I.I.M.S.

8. “It will go through many reprints.”

“Your books will be recognized as historic contribution early next century.”

“I am sanguine that the next generation will look to your work as monumental! It will go in the pages of history as a great vision on understanding the brain.”

-Dr. Sampooran Singh, Ph.D., D.Sc., Chandigarh, India.

9. “It is not very often in the human history, that human ideas are challenged with new (? Strange) concept. But the history in her own time immortalizes once persecuted Galileo.”

“Your treatise is a challenge to our intelligence. I shall be grappling with it for the rest of life. Thank you very much for giving me such a challenge to feel young for ever.”

“Any conventional greeting for your monumental work will be belittling you. I shall always remember you as a beacon of New Light.”

-Prof. (Col.) R.N. Banerjee, Formerly Prof. and Head of the Dept. of Medicine, Cardiology, Endocrinology, Hematology & Nuclear Medicine, Safderjung Hospital, University College of Medical Sciences, New Delhi.

10. “Remarkablevery remarkable,...when most biologists remain stuck in the Individual brain and are not dealing with global brain”

-Robert Muller, Chancellor, UN University for Peace, Costa Rica.

11. "I cannot appreciate in word about the beauty of your work. Conquering the Brain will really be a guide book for the seekers of Scientific Spirituality. Both biomedical professional as well as aspirants will be benefited by your scholarly work."
Dr. Pranav pandya, MD., Director, Brahmavarchas Shodh Smasthan, Hardwar (India).
12. "Very comprehensive and a high quality book."
-Prof. Avshalom Mizrahi, Ph.D., Chairperson, Third Dead Sea Conference, Israel.
13. "The book synthesizes old and new knowledge in a very original and scientific way.The many subdivisions makes it easier to overview. Very ordered and enlightened."
-Dr. Lise lynge, Ph.D. Denmark, Special Projects Coordinator for ISPE.
14. "delightful and educational work.....ideas and concepts are challenging and fascinating."
-Dr. Gail Waldstein, M.D., D.M.C., Children Hospital of Michigan, USA.
15. "I learnt much from it, esp, about the nature of Indian thinking."
-Erika Erdmann, Canada.
16. "Scholarly work blending Indian Mysticism and neurology".
-International Institute of Ayurveda, Coimbatore, India.
17. "In my own developments I must refrain from judgement on the elaborate cosmic structures you have set out in your book. I can neither refute it nor support it, but must continue to search."
- Gordon Gray, Manchester, UK.
18. "It's clear, however, that you've given much thought to a vast subject and have embarked on a most comprehensive inquiry"
- Dr. James Austin, MD, Prof. of Neurology, Author of *Zen and the Brain*, USA.
19. "I am sympathetic with your hypothesis concerning brain/vacuum interaction"
- Prof. Hall Puthoff, Institute for Advanced Studies at Austin, Texas, USA.
20. "Your book has been helpful to me in its alternative concepts of what transpires - and because at one place you describe almost exactly the physical feeling that came to me when I had been 'treated' energetically in spirit".
- Dr. Julia Illiott, PhD, Peterborough, UK.
21. "Your proposals about brain and consciousness are clearly related to Hindu Philosophy and Interesting. However, those proposals are really in the metaphysical realm. There would seem to be no way in which a scientific approach, with observable testing, could be applied. If you can generate experimental designs for testing your proposals, you could by all means describe them. In the absence of scientific testability I would regard your proposals as metaphysical philosophy. That may still be useful, but it should not be termed scientific".
- Prof. Benjamin Libet, University of California, San Francisco, USA.

Impact of Publications of *The Millennium Bridge*

I. Sri K. R. Narayanan, Hon'ble President of India, graced the author by receiving the original manuscript of *The Millennium Bridge* from the author at Rastrapati Bhavan, New Delhi.

II. Listed in the Books Received column of

1. *Science*, October 13, Vol. 290, No, 5490, 2000, on line issue
2. *Journal of Consciousness Studies*, 7(10), p 85, 2000
3. *Journal of Scientific Exploration*, <http://www.spectrometer.org/jsebooks/index.html>
4. *Frontier Perspectives* 9(2), p 48, 2000

III. Acknowledged by the Editorial Office of

1. *Nature*
2. *Scientific American*

IV. Reviewed in Journal

1. *Indian Journal of Physics*, 75B (2), 2001 pp. 151-152,
2. *Scientific & Medical Network Review*, August, 2001, pp. 49-50
3. *Journal of Personality and Clinical Studies*, Sept, 2001, p. 108
4. *Journal of Consciousness Studies*, Volume 8, No. 12 (2001), pp. 87-88
5. *National Medical Journal of India*, Volume 15, No 4 (2002), p. 237
6. *Prabuddha Bharata*, November 2005, p. 588

V. Personal Acknowledgement

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2. Prof. Francis Crick, **Nobel Laureate**, The Salk Institute for Biological Studies, USA (acknowledged by sending Email to author)
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4. Prof. Dr. Werner Arber, **Nobel Laureate**, University of Basel, Switzerland, also The President, International Society for Scientific unions. (acknowledged by hand written letter)
5. Prof. Gerald Edelman, **Nobel Laureate**, The Scripps Research Institute, USA (acknowledged by facsimile)
6. Prof. Ernst, **Nobel Laureate**
7. Prof. Gerard't Hooft, **Nobel Laureate**, Institute for Theoretical Physics. Universiteit Itrecht, Netherland. (acknowledged by letter)
8. Prof. AJ Leggett, **Nobel Laureate**, Dept. of Physics, USA
9. Prof. Nicola Cabibbo, **President, Pontifical Academy of Sciences**, Vatican
10. Prof. Stephen Hawking, **FRS, CBE, Lucasian Professor of Physics**, Cambridge
11. Prof. Robert Muller, **Ex-Chancellor, UN University for Peace**, Costa Rica, CA
12. Prof. Henry Stapp, Eminent Physicist Lawrence Berkeley. Nat. Lab., California

BOOK REVIEWS

Indian Journal of Physics 75B (2), 151-152, 2001

The Millennium Bridge

Towards the Mechanics of Consciousness and the Akhanda Paradigm

An Equation of Scientific rationale and the Spiritual abstraction

by Dr. A. K. Mukhopadhyay
Conscious Publications : New Delhi (2000);
Xx + 244 pages, illustrated; Price 30\$, Rs. 650/ in India, Hard bound.
ISBN 81-900033-3-X.

Those who think that it is possible to overarch, at least conceptually, quantum physics, cybernetics, depth psychology, neuroscience, phenomenology, human biology and a philosophy which the author calls the Akhanda philosophy (dealing with the divisions of the Indivisible), would find their feast in this work. The book, in short, deals with a fascinating subject describing whether one can link, connect, bridge the present paradigm in Science of classical and quantum worlds with the paradigm of Consciousness through an evolving brain. It raises hope that human kind eventually may become successful to work under such an overarching paradigm which can accommodate Science, Humanity and Spirit (consciousness) together. Affirmative in its approach the work stems the tide of uncertainties by proposing a series of integration (chapter seven) in an evolving brain. The brain, in this work, occupies the central throne. It is the phase-specific consciousness of the brain which develops state-specific theory and bridging elements to connect different domains of science.

The domain of science got separated from the domain of consciousness since Rene Descartes drew the boundary separating Matter and Mind. Probably it was a necessity, at that point of time, to keep the bigots from the respective domain at a distance. Further, it helped the respective domain to grow and mature within their respective boundary and thus to sharpen the relevant epitopes which are essential to develop this connection, link or bridge. More than three hundred years have passed and now those relevant epitopes of the respective domains are seen to be in sharp focus. On the Science front, the material and physical sciences have started recognizing a domain, which could be beyond / deeper to the plane of 'quantum'. Acknowledgement of the existence of nonlocal communication in the realm of new physics seems to have radical bearings on information technology. Neuroscience, interestingly, has discovered 'stem cells' in the 'marrow' of the brain. Advanced phenomenological research has been helping to develop a science of 'self' which seems to accommodate cultural and religious pluralism. On the Spiritual front, the humanity has started appreciating the difference between the spirit (higher consciousness) and religious rituals. The mankind has started looking into the possibility of how each one of us can become and behave as an individual indivisible from the Whole. The concept of multiple universe forming a holistic system, *The Multiversity*, is a further conceptual advancement (chapter one) towards understanding of this Whole. At this point of time this work seems to build a remarkable canvas overarching these developments.

The buzz words for this century are *information*, *genes* and *consciousness*. If information technology appears to be the technology for today, genomic divide has been predicted to become more powerful than digital divide in near future. The wide spectrum and fantastic shade of human conscious experience is no less either. Information technology, Human genome project and Consciousness project are three grand macro ideas to reshape our destiny. The present work envisages the future of information technology in nonlocal communication Type I, II & III. It also proposes that genomes are scrutinized from a deeper plane of nature, plane IV (Mother Nature). Throughout the book it deals with the entire breadth and depth of human consciousness. This work, therefore, is a kind of work which has the ability to integrate information technology, human genome project and consciousness. To quote the author from the concluding paragraph of the last chapter of this book, "Love is cortical manifestation of supracortical consciousness. Love also has a genetic basis. One cannot love music or a flower unless one has genes for it. The biochemistry of love is intimately connected with molecular biology of gene expression. The missing links are to be found out." - a practical integration of Science, Humanity and Spirit.

According to this work, consciousness can be investigated from neuroscience point of view as well as from the viewpoint of materialistic science. In the latter approach the author proposes five planes having respective mechanics run by respective currency (chapter three). The pieces of puzzle, which can connect quantum mechanics with the mechanics of consciousness, are the mechanics of elementary phenomena (plane III, chapter five) and mechanics of Mother Nature (plane IV, chapter six). Mother Nature, according to author, is the nature of all natures and the kinetic front of consciousness as well. The work addresses systematically the anatomy and physiology of every plane. The properties of each plane have also been narrated in a lucid way. The constants under the umbrella of which the present science works are (i) the velocity of light for the classical plane (plane I in this work), (ii) Planck's constant in the quantum plane (plane II in this work) and (iii) the constant entropy barrier in the plane of irreversible processes (plane III in this work). According to the author, Einstein's constant excludes absolute simultaneity of events, Planck's constant excludes absolute continuity of events and entropy barrier excludes absolute identity of events. The author says that these three constants form the cosmological pleasure triangle of Mother nature. Could any reflection of this triangle be found in the construction of human brain? Yes, says the author. He builds up the concept of neurological pleasure triangle inside the brain at the level of limbic nuclei namely, midline septal nuclei and right and left amygdaloid nuclei (page 160).

A hierarchy of uncertainties (page 134) and of information (page 92), relating those to nonlocal communication type I, II, III (page 110), three levels of voids (page 110), and finally putting the whole canvas in the context of information processing in the brain and evolution of the being (page 127), - remains the charm of this work. We often hear that we are inseparable divisions of an indivisible cosmos. But the question remains how? This work answers this 'how' by defining our position in this cosmos in intellectual and perceptual realm.

The work is seen to make a dent in an ever-rocky terrain by a materialistic proposition that over the present composite *Triune Brain* (Reptilian, Mammalian and Human) of *Homo sapiens sapiens*, a *new brain* (chapter eight) is likely to develop to support a higher level of consciousness and nonlocal communication. Proliferation and migration of the stem cells from the brain-marrow to develop this *new brain* has been proposed to occur during passage of the brain through an extremely stressful situation, like death. This new brain, although small in size, is suggested to be robust in activity to execute its authoritative and homeostatic function over the existing brain. This message of vertical evolution of the brain is a remarkable gain while one tries to establish an equation of Science and Spirit.

In summary, this work tries to build up a bridge between the domain of present science and the domain of consciousness through an evolving brain. In the process, it holds consciousness as an irreducible constant and places three constants of present science under umbrella of consciousness. This which makes reinterpretation of various data possible in a wider context. As a result of this reframing our vision, there are three definite creative emergent in the field of ideas. First, the elements of depth psychology (page 38-40) emerge as components of elementary phenomenology (Love, Sex, Ego, Life and Death). Their relevance in the context of psychosomatic disease is worth exploring. Second, an extraordinary working association of Photon, Phonon, Conformon and Neutrino, which author relates to Life or Life-Force (page 166-8). Third, inter-convertibility of different currency in the five proposed planes, i.e., inter-convertibility of energy, field, form, information, causal currency and life (page 90).

What precisely one needs now for this conceptual framework is to put some aspects of this multidisciplinary idea-packed canvas in research perspective, to formulate research hypothesis and chalk out some experiments to collect data which can falsify or induct these theoretical ideas. Also worth would be to examine the creative emergent in this work from the point of view whether those were of

any help to open the various locks of nature to explore her deeper and more complex planes. In this sense this is a new challenge for the scientists!

The work, although, appears to be studded with wild speculations, there seems to be a genuine attempt to make the presentation logically coherent. Sustainability of this bridge would be put to test as the people begin trading through it. The reinterpretation of data as a result of elevation of the position of the constant would be meaningful when the proposed paradigm can accommodate phenomena which have been hitherto neglected as 'paranormal' or 'anomalous'. The survival of the work would be determined by practical usefulness of its emerging ideas. Congratulations to the author! A welcome addition in the beginning of the new millennium.

T. P. Singh,
Department of Biophysics,
All India Institute of Medical Sciences,
Ansari Nagar, New Delhi - 110029

BOOK REVIEW

Journal of Personality and Clinical Studies, Sept, 2001, p.108

The Millennium Bridge. *Towards the Mechanics of Consciousness and the Akhanda Paradigm. An Equation of Scientific rationale and the Spiritual abstraction*

By Dr. A. K. Mukhopadhyay

Conscious Publications : New Delhi (2000), 244 pages, illustrated; Price 30\$, Rs. 650/ in India, Hard bound, ISBN 81-900033-3-X..

This book makes a departure from all conventional views of consciousness known in the discipline of Psychology. Whether such a non-negotiable, inscrutable 'consciousness' can be subjected to research? A brain-quaking question! While the practitioners of western science think that consciousness is skull-bound and is an epi-phenomenon in the brain, the eastern mystics accept it as all-pervading. It pervades you, me and all. Being within it, how can one start research on this? This type of attitude, so far, has led the eastern thinkers not to take consciousness as an issue for scientific research. The West, having perceived a hint of it while doing quantum physics, has turned emphatically towards consciousness as a point of saturation has been reached in their materialistic accomplishment. *The Millennium Bridge* has been published during a period when both East and West are finding a convergence in their research interest, may be with different aim and for different objectives.

'Science investigates *Nature*, not consciousness'. However, consciousness is believed to have a causal aspect. Like all serious studies on scientific formulation of consciousness, the emphasis here is laid on this causal aspect of consciousness, which the author prefers to call *Nature of all natures* or *Mother Nature* (chapter 6). Consciousness, although *a-priori*, has connections with different depths or planes of nature through its causal aspect. These connections may not be operational for the trivial show of the world. However, those are surely switched on to action when a radical change like, transformation, evolution or a new formation is in demand. To put forward this view, the author synthesizes impressively from the disciplines of philosophy, neuroscience, physics, cybernetics and psychology. He proposes that every plane of nature has a specific mechanics (chapter 3) run by a specific currency. And, it is the efficacy of this currency conversion in the brain synapses (p 179), which holds the key for transition of ordinary awareness to an elevated or super-awareness. Extending this view he goes on to say that '*Life is the currency through which consciousness plays its mechanics*'

(chapter 9). It would be interesting to explore this research frontier taking neurotransmitters as the basic classical currency.

The author, probably unknowingly, takes the knower-position, as if he knows what all are happening in nature. A flow of logic supports his views which, however, makes many conventional scientists uncomfortable. The play here is with ideas rather than facts. May be the `facts' are yet to be spotted in this field. The picture painted is a composite one. At best, this may form the starting point of a multi-disciplinary gigantic research project. Worst, it may be ignored by the conventional scientists. The readers of the book, in its *Introduction*, has been assigned the task to develop suitable methodology to gather and consolidate facts which may help in induction or falsification of the proposed hypothesis. A brilliant attempt which behooves only a pioneer. Therefore, this is a work which is a must-read for all who are interested in consciousness study. It is certainly a welcome addition for all libraries.

Prof. Surya Gupta, Department of Psychiatry, AIIMS

BOOK REVIEW

**Network, The Scientific and Medical Network Review, August, 2001, pp. 49-50. By Max Payne
*The Millennium Bridge, 2000***

The Open Brain

A book which sets out to solve all the problems of morality, science and spirituality by reference to the workings of the brain is usually a somewhat gloomy piece of reductionism. One knows the argument: all emotion is nothing but the action of chemicals on the neurones, all thought is nothing but software within the hardware wiring of the cranium, and so on. It is therefore a relief to read a book which has exactly the opposite vision. According to Mukhopadhyay the surface layers of the cortex generate a coherent quantum state which puts it in touch with the zero point energy state of the quantum vacuum. In this state the brain accesses the infinite energy of creativity and unites with infinite power of total reality.

Such a sweeping and remarkable conclusion requires some explanation. Mukhopadhyay's justification is a wide ranging synthesis of quantum physics, brain physiology, and Indian mysticism. Neurones, neutrinos and chakras are linked together in a vast edifice of thought. In addition to a wide range of standard scientific and medical works, unorthodox thinkers like Capra, Bohm and Jahn are brought in. The result is an encyclopediac perspective of turn of the century science and its fringes. Although it is clearly written and extremely well organised, this book requires almost as much breadth of learning as the author's. In order to grasp it, it is best to begin at the end. The last sections anticipate some of the questions a critical reader might ask, and the answers illuminate the complexity of the total structure of thought.

All descriptions of reality have to start somewhere, and the start usually determines the conclusion. Mukhopadhyay starts from the "Akhand" paradigm which declares that the One Reality is indivisible but that thought has to divide it up in order to grasp it. (see previous review of his "Conquering the Brain" in Network). It follows from this paradigm that each division must reflect the whole to some degree, but that each division is inadequate in itself. The world of science divides into the mechanical universe and the quantum universe, and to these are added the inward phenomenology of experience, 'Mother Nature' or the world of meaning and ultimate consciousness. Each level mirrors the others in its model of operation.

It follows from this that there is no contradiction between scientific knowledge on the lower levels - horizontally as it were - and the vertical aspiration to reach higher levels. The higher and the lower must conform to each other. It is therefore possible to use quantum physics and neurophysiology to argue that the surface of the cortex can provide a uniquely sensitive location for the reception of the creative energies of the Divine One. From the point of view this is the quantum vacuum. In terms of yoga this is the opening of the thousand petalled lotus at the summit of the head. Mukhopadhyay terms this state the 'Open Brain'. This is the "Millennium Bridge" of the title.

In what way therefore can the brain be "opened". There are five modal points, Life, Death, Ego, Love and Sex, and the fringes of each represent possibilities at which the normal operations of the brain can be widened. Thus Near Death Experiences, the clash of deeply held opinions within the Ego, the right use of sexual energy, intense compassionate love, can all be used to open the brain. However the aim of the open brain is not to be pursued with careless optimism. Just as the discovery of sub-atomic energy led to the atom bomb, so any widespread knowledge of the techniques of opening the brain might have even more dangerous consequences. All power can be misused, and great power for good offers equally great power for evil. The open brain should only be sought by those who are committed to the highest moral aims.

Has Mukhopadhyay wrapped up all physics, morality, psychology and spirituality into one system? Even on his own terms of reference the answer has to be almost certainly not. At every point of his argument it is possible to imagine issues at which the expert theoretical physicist or clinical neurosurgeon might quibble. Yet if the unhappy and chaotic 20th and 21st centuries do finally lead to a unified world civilization with a synthetic spiritual view of the meaning of existence, then this book will be one of the prophetic texts. In the end everything does fit together, scientific knowledge, brute experience, our highest strivings, the meaning of existence, the lot. If this is not the final synthesis, then at least it points towards the sort of thing the final synthesis may yet be.

BOOK REVIEW

Journal of Consciousness Studies, Volume 8, No. 12 (2001), pp. 87-88.

A. K. Mukhopadhyay

The Millennium Bridge: Towards the Mechanics of Consciousness and the Akhanda Paradigm

Conscious Publications : New Delhi (2000), 244 pp., \$30.00, Rs. 650/- ISBN 81-900033-3-X. (hbk).

To appreciate the work of Dr. A. K. Mukhopadhyay in his book *The Millennium Bridge*, it is perhaps necessary to be familiar with certain key features of Indian thought, since much of the book is very difficult to understand. From Buddha to Sri Aurobindo consciousness is held to be a fundamental reality, irreducible to any other entity whether physical or not. The world therefore, is constituted of conscious experience, its contents (sensation, perception, emotion etc.) and associated material or physical events. These three causally interact to give rise to a universe (Loka), and it is the central task of an analytical philosopher to elucidate these causal processes. It is further asserted that not only are there several varieties of conscious experience, the causal interactions between consciousness, its contents and matter can have several modes each distinct from the other. The 24 Bridging Relations of Shakyamuni in the Abhidhamma was conceived primarily to delineate these modes. It therefore follows that there are several worlds each with a sublet of possible experiences coupled to a dominant causal scheme applicable in it. As the Copernican Revolution demolished the unique position of the Earth in the cosmos, Indian philosophy rejects the uniqueness of the universe we inhabit. There are many universes and we occupy only one of a whole series of distinct though connected worlds.

It is this many-worlds view which Mukhopadhyay calls the 'Akhand Paradigm', which, he says briefly, 'recognizes the existence of multiple universes'. He then goes on to propose five distinct planes of existence: the planes of classical mechanics, quantum mechanics, elementary phenomena, Mother Nature and Consciousness. Each plane has its own dominant causal mode, which he terms its mechanics. The planes of classical and quantum mechanics are those where Newtonian and quantum laws hold in the physical sense of the term, whereas the plane of elementary phenomena deals with the meaning and purpose of events notably those related to love, sex, ego, life and death. The plane of Mother Nature is unique in that every possible causal mode of every potential or actualized universe has its genesis in this realm. Finally the plane of Consciousness or Being is wholly transcendental.

There are quite a few problems in the scheme proposed by Mukhopadhyay, even if it is taken for granted that the Akhand Paradigm is essentially correct. Firstly, he does not compare his organization of planes with those of Buddha and Sri Aurobindo and justify why it is necessary to formulate yet another scheme. Both Buddha and Sri Aurobindo conceive a world-system primarily based on either the type of conscious experience prevalent in each realm (Kamavachara, Rupavachara, Arupavachara chittas of Shakyamuni) or the fundamental reality which exercises dominant causal control (Matter, Prana, Mind, Vigyana, Sat, Chit, Ananda for Sri Aurobindo). But Mukhopadhyay does not strictly follow either programme. To divide planes on the basis of classical and quantum mechanics appears somewhat artificial if not arbitrary. Again one cannot give full approbation to Mukhopadhyay in his method to substantiate his thesis. After making several statements which he believes to be true there follows a long succession of scientists, philosophers and mathematicians who apparently support his contention. It would have perhaps been better had Mukhopadhyay restricted his attention to the many-world systems in Indian philosophy and given a detailed discussion of his proposals in this context, instead of rapidly moving from one domain of knowledge to another, which serves only to confuse the reader. Secondly, the book contains a very limited discussion of first-person methodologies in order to gain access to these planes, though Mukhopadhyay does mention self-surrender as the only means to arrive at the realm of Mother Nature.

Finally, in the closing chapters of the book the question whether man is the last term in an evolutionary series is addressed. A strong case is presented that the human brain is still actively evolving to make contact or accommodate higher forms of consciousness. An interesting suggestion is made that the neocortical stem cells are in the process of forming supracortical structures to trigger the next phase of evolutionary activity whereby man will surpass his present day mental and physical capabilities.

All in all, The Millennium Bridge is an extremely interesting book, a veritable gold mine of engaging and fruitful ideas. Even a casual perusal through the book is sufficient to convince the reader of the erudition and sincerity of its author.

- Rahul Banerjee

BOOK REVIEWS

The National Medical Journal of India 15(4), 237, 2002

The Millennium Bridge

Towards the Mechanics of Consciousness and the Akhand Paradigm

An Equation of Scientific rationale and the Spiritual abstraction

DR. A. K. MUKHOPADHYAY, FORMER HOD, DEPARTMENT OF LABORATORY
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by Dr. A. K. Mukhopadhyay
Conscious Publications : New Delhi (2000);
244 pp, Rs. 650
ISBN 81-900033-3-X.

We learn from the author's prologue that he headed the Department of Laboratory Medicine at the All India Institute of Medical Sciences (AIIMS), New Delhi. During his stint there, he met Dr. Wlodzimier Lugowski of the Institute of Philosophy and Sociology of the Polish Academy of Sciences in Warsaw. While presenting a poster at a conference in Cambridge, England, he met Dr. David Lorimer, Director, Scientific and Medical Network. These two experts have written introductory notes to the book. The former wonders about how the 'Scientific' [quotes in original text] community will respond to the idea in this book, while the latter has no hesitation in proclaiming that this is an important book.

The first paragraph in the author's prologue leaves me puzzled. I reproduce it to give you a feel of the text that follows on subsequent pages. 'In the summer of 1995 when *conquering the brain* was published ... it did strike my ego that following publication of this work, I would gain considerable freedom to fly independently in the sky and possibly I had not to come back any more to face the sorrows of the earth. I never realised that I had yet to investigate the hell. The circumstances beyond my control made me a victim of spiritual politics. I suffered from another discontinuity. For the first time I became aware of the boundary of a defined system. I was found to stand outside the boundary of systems at AIIMS, outside the boundary of systems holism of a large autonomous institute. Everything for me stopped for a while. I understood that the boundary kept one sane. As soon as there is freedom from a boundary, one is on the verge of insanity. A clarion call for a living integrity indeed was heard. My innate consciousness reached the bottom of classical consciousness with a total lack of Will and Purpose. There were no phenomena, no event.'

The book abounds in terms such as 'ontology of mechanics', 'epistemological pluralism', 'organismic biology and vitalism', 'quantum paradigm', 'elementary phenomenology', 'ontology of different uncertainties' and 'nonlocal communication'. We also have statements such as 'Unless the brain is opened up, the bridge cannot be built.' Or, 'A bridge that has already been built cannot be noticed.' (All these are from the prologue itself).

The prologue asks whether the author's approach can be called scientific. Answering his own question he tells us: 'The genesis of this work has started in an extraordinary situation when the scientific community, although keen to develop a science of consciousness, is seen to suffer from poverty of idea. The humanity, as a whole, is in danger although believed to be on the threshold of a new formation. The universal spirit (one may call it transuniversal or interuniversal consciousness as well) being perturbed by the situation, designed an experiment... The *experiment* has been done *on the nature of the brain*, by consciousness.' (I have made no changes in the quoted text).

The 19 chapters carry titles such as 'The paradigm of consciousness', 'The scientific paradigms of classical and quantum mechanics - their triumph and limitations', 'The dynamics of the Akhanda paradigm-the ontology of the mechanics as required for doing science of consciousness', 'Quantum phenomenology interface-experiential philosophy, metaphors and the science of self, developing a theory on elementary phenomena', and so on.

The query uppermost in the reader's mind is answered on page 2. 'It is called the Akhanda paradigm since it handles the divisions of the Indivisible with deft and dexterity.... Divisions become apparent because of certain fundamental divisions in functional states of brain. There is a state of brain, really a unique one, when the existence of divisions cannot even be imagined. As soon as the brain, even from that unique state, begins expressing or manifesting, the divisions become apparent. The Akhanda experience is, therefore, concomitant to the highest evolutionary status of the brain...'

The author's concept of consciousness is equally thought provoking: 'Consciousness has been traditionally labeled as something transcendental. It has immanent properties as well variously qualified as Mother, kinetic facet or executive front of consciousness. The transcendental Essence is hierarchically immanent, is the dictum of Perennial philosophy...'

The 'Akhandification' (term used by the author) that pervades the book appears to follow insights from interactions with his Gurudev (Sri Sri Ma Moni Brahmacharini Samhita Devi?), his parents, relative, teachers, colleagues and friends. The book attempts to promote thoughts on philosophical, spiritual, mystical, divine, sacred and transcendental aspects of the brain, focusing on supracortical consciousness.

I remained greatly perplexed throughout the study of this volume. All my training in the neurological sciences, attempts at understanding philosophy and clinical experiences with patients over four decades counted for nought. The author's sweeps of fancy, flourish of language and attempts at synthesis of widely disparate concepts left me benumbed.

If you are made of finer mettle you might like to wade through this volume yourself.

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***Prabuddha Bharata*, November 2005, p. 588**

The Millennium Bridge

Towards the Mechanics of Consciousness and the Akhanda Paradigm
An Equation of Scientific rationale and the Spiritual abstraction

Dr. A. K. Mukhopadhyay
Conscious Publications : New Delhi (2000);
244 pp, Rs. 650
ISBN 81-900033-3-X.

Professor Mukhopadhyay of the All India Institute of Medical Sciences, Delhi, is a familiar and formidable voice in consciousness studies. His earlier book, *Conquering the Brain*, has achieved wide recognition as breaking new ground in the interrelated areas of biology, psychology, neuroscience, cosmology and yoga. The present book is particularly relevant as neuroscientists such as V. S. Ramachandran (in the *Phantoms in the Brain* and *A Brief Tour of Human Consciousness*) are exploring, with characteristic postmodern openness, the apparently elusive areas of brain, consciousness and awareness.

‘I appreciate the *timing* of this work,’ says the Polish scientist, Lugowski, in his note on the book. The old paradigms ‘are exhausted’ and ‘a new holistic approach which takes a processual view of the world (you may call it a paradigm or *Weltanschauung*) has been much needed both for the further progress of science and for the common people to understand their place in nature and in society,’ he adds. He rightly identifies the uniqueness of the book: ‘It would be really interesting to see how the ancient Eastern (Indian) thinking responds to supposedly universal “Western science”.’

This openness is somewhat rare among Western scientists. Correspondingly, the task Dr. Mukhopadhyay set himself is fascinating but formidable, often frustrating. The willful one-sidedness of the pervasive Anglo-American and European explorer is enough to annoy even a sage. The Newtonian, Darwinian and Freudian hypotheses (they are no more than hunches), for instance, are so embedded that few can disengage themselves from their sway without irrationally writing them off. This delicate balance is held by the author in a remarkable way. He follows the methodology of scientific exploration without ceasing to highlight areas of consciousness which are not amenable to objective analysis.

The Akhanda Paradigm holds the various chapters together: beginning with ‘Consciousness-Mother Nature’, followed by a discussion of classical and quantum mechanics, the ‘Dynamics of the Akhanda Paradigm’, ‘Elementary Phenomena’, the phenomenological implications and the problems of integrating the brain, and the science of consciousness. Of the three concluding chapters, those on ‘Ananda, the Mechanics of Being’ and ‘The Open Brain’ seem exceptionally fascinating to me. At every stage, Professor Mukhopadhyay provides visual texts – diagram, graphs, etc. – which make the arguments come through clearly.

The author foresees the difficulty of the reader interested in but unfamiliar with the technical idiom (there is plenty of it). Hence, the extremely helpful glossary and the format of ‘Questions and Answers’ for basic insights into the arguments.

‘The Akhanda Paradigm is’, says the author, ‘the domain of Mother Nature as the kinetic extension of consciousness.’ In this ‘Systems Holism, Perennial Philosophy and Goethian science find a common place’, and this is ‘the paradigm designated for the third millennium’. In other words, this is ‘the paradigm of Consciousness-Mother Nature, the paradigm of Science, Humanity and Spirit’. But firmly rejecting a facile openness and endless relativism, the Professor holds firmly that ‘Consciousness-Mother Nature is the inviolable, irreducible, fundamental constant. All other constants, man-made or universal are regarded as flux in nature.’ With this constant, the Akhanda Paradigm grows into an open-ended theory of multiversity and supracortical consciousness.

The book is admittedly complex but is never abstract. The impression of complexity is just that, an impression. *Human Being in Depth* – the title of Rev. Ranganathandaji’s book on the same areas – is the area which Professor Mukhopadhyay explores. In effect, for its originality, authenticity, sincerity and, above all, depth and range, *The Millennium Bridge* remains an indispensable source book (Only one rider: Why not ‘Dynamics’ instead of ‘Mechanics’ of consciousness?)

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BOOK REVIEWS

The Readings in Science and Spirituality, pp. 236-238

Sri Sathya Sai International Centre for Human Values, New Delhi, July 2010

The Millennium Bridge

Towards the Mechanics of Consciousness and the Akhanda Paradigm

An Equation of Scientific rationale and the Spiritual abstraction

by Dr. A. K. Mukhopadhyay

Conscious Publications : New Delhi (2000);

244 pp, Rs. 650/-

ISBN 81-900033-3-X.

Dr. A. K. Mukhopadhyaya is a distinguished neuroscientist serving in the country's première medical institution, All India Institute of Medical Sciences, New Delhi, for the past 30 years. He has authored a number of books and research papers related to human brain. He is a professor at the Institute.

Before starting with summarizing the pioneering researches of the book, it is necessary to offer some introductory understanding of human brain and the mind. For, the endowments which distinguish the human race from all other forms of life are summed up in what is known as the human spirit; the mind is its essential quality. And the brain acts as the receptacle of the mind. So what is the brain? The brain is the most complex organ in the human body. It produces our every thought, action, memory, feeling and experience of the world. This jelly-like mass of tissue, weighing in at around 1.4 kilograms, contains a staggering one hundred billion nerve cells, or neurons.

The complexity of the connectivity between these cells is mind-boggling. Each neuron can make contact with thousands or even tens of thousands of others, via tiny structures called synapses. Our brains form a million new connections for every second of our lives. The pattern and strength of the connections is constantly changing and no two brains are alike. It is in these changing connections that memories are stored, habits learned and personalities shaped, by reinforcing certain patterns of brain activity, and losing others. Beyond this there are spiritual dimensions, particularly consciousness and its interface with present-day scientific studies with a new term being introduced by the author "supracortical consciousness."

From Buddha to Sri Aurobindo consciousness is held to be a fundamental reality, irreducible to any other entity whether physical or not. The world, therefore, is constituted of conscious experience, its contents (sensation, perception, emotion etc.) and associated material or physical events. These three causally interact to give rise to a universe (Loka), and it is the central task of an analytical philosopher to elucidate these causal processes. It is further asserted that not only are there several varieties of conscious experience, the causal interactions between consciousness, its contents and matter can have several modes each distinct from the other.

Grey matter

Continuing with the description of the brain, people often speak of their "grey matter", the brain also contains white matter. The grey matter is the cell bodies of the neurons, while the white matter is the branching network of thread-like tendrils - called dendrites and axons - that spread out from the cell bodies to connect to other neurons.

But the brain also has another, even more numerous type of cell, called glial cells. These outnumber neurons ten times over. Once thought to be support cells, they are now known to amplify neural signals and to be as important as neurons in mental calculations. There are many different types of neuron, only one of which is unique to humans and the other great apes, the so called spindle cells.

Brain structure is shaped partly by genes, but largely by experience. Only relatively recently it was discovered that new brain cells are being born throughout our lives - a process called neurogenesis. The brain has bursts of growth and then periods of consolidation, when excess connections are pruned. The most notable bursts are in the first two or three years of life, during puberty, and also a final burst in young adulthood.

How a brain ages also depends on genes and lifestyle too. Exercising the brain and giving it the right diet can be just as important as it is for the rest of the body.

Chemical messengers

The neurons in our brains communicate in a variety of ways. Signals pass between them by the release and capture of neurotransmitter and neuromodulator chemicals, such as glutamate, dopamine, acetylcholine, noradrenalin, serotonin and endorphins.

Some neurochemicals work in the synapse, passing specific messages from release sites to collection sites, called receptors. Others also spread their influence more widely, like a radio signal, making whole brain regions more or less sensitive. These neurochemicals are so important that deficiencies in them are linked to certain diseases. For example, a loss of dopamine in the basal ganglia, which control movements, leads to Parkinson's disease. It can also increase susceptibility to addiction because it mediates our sensations of reward and pleasure. Similarly, a deficiency in serotonin, used by regions involved in emotion, can be linked to depression or mood disorders, and the loss of acetylcholine in the cerebral cortex is characteristic of Alzheimer's disease.

Brain scanning

Within individual neurons, signals are formed by electrochemical pulses. Collectively, this electrical activity can be detected outside the scalp by an electroencephalogram (EEG).

These signals have wave-like patterns, which scientists classify from alpha (common while we are relaxing or sleeping), through to gamma (active thought). When this activity goes awry, it is called a seizure. Some researchers think that synchronizing the activity in different brain regions is important in perception.

Other ways of imaging brain activity are indirect. Functional magnetic resonance imaging (fMRI) or positron emission tomography (PET) monitor blood flow. MRI scans, computed tomography (CT) scans and diffusion tensor images (DTI) use the magnetic signatures of different tissues, X-ray absorption, or the movement of water molecules in those tissues, to image the brain.

These scanning techniques have revealed which parts of the brain are associated with which functions. Examples include activity related to sensations, movement, libido, choices,

regrets, motivations and even racism. However, some experts argue that we put too much trust in these results and that they raise privacy issues.

Before scanning techniques were common, researchers relied on patients with brain damage caused by strokes, head injuries or illnesses, to determine which brain areas are required for certain functions. This approach exposed the regions connected to emotions, dreams, memory, language and perception and to even more enigmatic events, such as religious or "paranormal" experiences.

One famous example was the case of Phineas Gage, a 19th century railroad worker who lost part of the front of his brain when a 1-metre-long iron pole was blasted through his head during an explosion. He recovered physically, but was left with permanent changes to his personality, showing for the first time that specific brain regions are linked to different processes.

Structure in mind

The most obvious anatomical feature of our brains is the undulating surface of the cerebrum—the deep clefts are known as *sulci* and its folds are *gyri*. The cerebrum is the largest part of our brain and is largely made up of the two cerebral hemispheres. It is the most evolutionarily recent brain structure, dealing with more complex cognitive brain activities. It is often said that the right hemisphere is more creative and emotional and the left deals with logic, but the reality is more complex. Nonetheless, the sides do have some specializations, with the left dealing with speech and language, the right with spatial and body awareness.

Further anatomical divisions of the cerebral hemispheres are the occipital lobe at the back, devoted to vision, and the parietal lobe above that, dealing with movement, position, orientation and calculation.

Behind the ears and temples lie the temporal lobes, dealing with sound and speech comprehension and some aspects of memory. And to the fore are the frontal and prefrontal lobes, often considered the most highly developed and most "human" of regions, dealing with the most complex thought, decision making, planning, conceptualizing, attention control and working memory. They also deal with complex social emotions such as regret, morality and empathy.

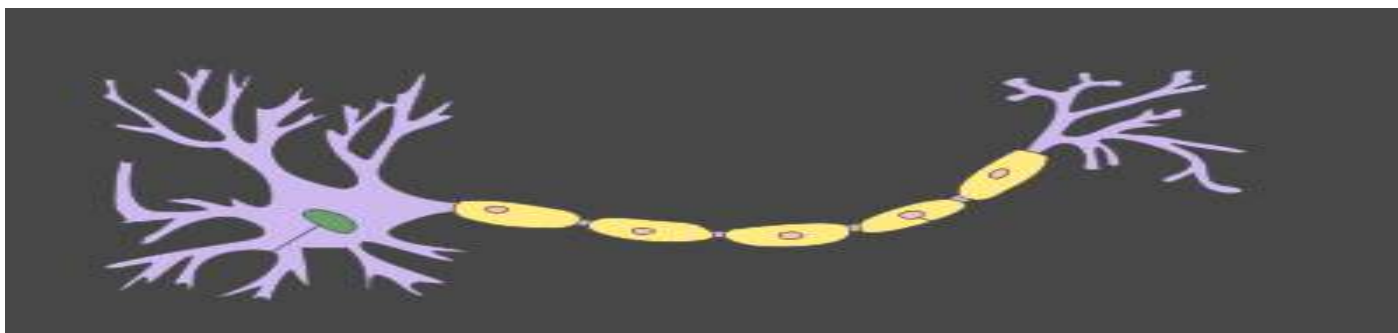
Another way to classify the regions is as sensory cortex and motor cortex, controlling incoming information, and outgoing behaviour respectively. Below the cerebral hemispheres, but still referred to as part of the forebrain, is the cingulate cortex, which deals with directing behaviour and pain. And beneath this lies the corpus callosum, which connects the two sides of the brain. Other important areas of the forebrain are the basal ganglia, responsible for movement, motivation and reward.

Urges and appetites

Beneath the forebrain lie more primitive brain regions. The limbic system, common to all mammals, deals with urges and appetites. Emotions are most closely linked with structures called the amygdala, caudate nucleus and putamen. Also in the limbic brain are the hippocampus - vital for forming new memories; the thalamus - a kind of sensory relay station; and the hypothalamus, which regulates bodily functions via hormone release from the pituitary gland.

The back of the brain has a highly convoluted and folded swelling called the cerebellum, which stores patterns of movement, habits and repeated tasks - things we can do without thinking about them. The most primitive parts, the midbrain and brain stem, control the bodily functions we have no conscious control of, such as breathing, heart rate, blood pressure, sleep patterns, and so on. They also control signals that pass between the brain and the rest of the body, through the spinal cord. Though we have discovered an enormous amount about the brain, huge and crucial mysteries remain. One of the most important is how does the brain produces our conscious experiences? The vast majority of the brain's activity is subconscious. But our conscious thoughts, sensations and perceptions - what define us as humans - cannot yet be explained in terms of brain activity.

Structure of a neuron



Akhanda Paradigm

The reasons for providing an overview on the brain and its various functions and the consequences of any deficiencies and how it impacts and alters one's life was felt essential to understand the monumental contribution made by the author in his *The Millennium Bridge*.

The full title is: *The Millennium Bridge Towards The Mechanics of Consciousness and The Akhanda Paradigm An Equation of Scientific Rationale and Spiritual Abstraction* It is an exploration into a field where few would dare to venture. The work, although studded with wild speculations, seems to be a genuine attempt to make the presentation logically coherent. Unfolding the “Akhanda paradigm” brings to fore a whole gamut of present-day findings on the human brain and the concepts that have evolved to understand its functions. The brain is understood here as a bridge dealing with the divisions of the Indivisible. “It is the organ which unites finite with Infinite, mortal with Immortal, evanescent with the Eternal. It is the organ which is responsible for Love seen as Action, Worship seen as Work, Divinity seen as Material. Its purpose is to unify the consciousness within and the consciousness without”. The author calls this approach the Akhanda Paradigm where the word Akhanda means Indivisible. The highest state of the brain is explained to be an experience of Unity and Indivisibility, but as soon as rational thinking begins, division arises as a necessary manifestation. If Consciousness represents the Spirit and Nature is the domain explored by Science, the author's specific concept of Mother Nature stands at an intermediary stage. An important feature of this work is the way in which ‘appropriate epistemological methods unfold in successive ontological planes’ with great many supporting sketches, illustrations and tables.

As the author notes: “today the quantum mechanics is considered as most important science to describe nature. We do, however, require to penetrate deeper through the ‘emptiness’ of quantum discontinuity and ‘stillness’ of quantum nonlocality for designing that science of tomorrow. This science of tomorrow would develop inclusive of the mechanics of Mother’s place. It would be then easier to understand the situation whereby the brain can become the sounding board of Mother Nature.” The claim to consciousness becomes possible only when one’s nature has become Mother Nature.

Never before, or nothing falling short of that. The scientists explore nature and the nature reveals herself accordingly in response to scientist’s enquiry. As a result of such enquiries and consequential revelations the science has progressed enormously but to a stage where science appears value-neutral, value-independent and value-free. Mother Nature is the beginning of Infinity. She is the ‘reality’ that switches on the ‘light’. To fully experience ‘infinity’ one needs to transpass the point of ‘zero.’ And the spectrum from ‘zero’ to ‘infinity’ understanding requires two integrations of brain. Quantum vacuum is not a true vacuum. It is akin to “phenomenal world is vacuous”, a Buddhist concept also postulated as “vacuity is phenomenal”, and in the Christian cosmology “creation ex nihilo”, and what the Chinese sages discovered: “non-existence precedes existence”. The elemental atoms which constitute all phenomenal existence and being in this illimitable universe are in perpetual motion, undergoing continuous degrees of progression. Our universe is really an unfamiliar universe operating with countless laws as yet unknown to us residing in a hidden but consistent set of symbols as yet undiscovered and by exploring the mysteries of human brain we are crossing new frontiers. If each created thing were subject to absolute annihilation, the eventual outcome would be a universe in which all matter/energy simply disappeared. When we consider energy / mass transformations we know that basic matter, once created, is combined and recombined in an infinitude of forms. Form, structure and order are what define a universe both for science and for religion, not chaos and disorder. This is the great wisdom that Mother Nature conveys to us.

The journey towards the Mechanics of Consciousness

Moving from chapter to chapter and illustration to illustration in the book one grapples with the science of consciousness and traverses the realms of Quantum Mechanics, the Mechanics of Elementary phenomena and the Mechanics of the Being which is characterized by freedom, ease, creativity and ultimate bliss. If the Divine Spirit can manifest itself in an almost infinite variety of created forms throughout the universe, then the human spirit, personified by the mind and the brain, should also be able to manifest itself in a variety of unique combinations. If this is true, then we have discovered the secret of how individuals can differ from one another and be distinct and unique personalities. The one thing that connects us all and makes us alike is the expression of the Divine Spirit as the rational soul or mind. Mind as awareness of self and other becomes the highest power of our human spirit. Neuroscience interestingly, has discovered ‘stem cells’ in the ‘marrow’ of the brain. Advanced phenomenological research has been helping to develop a science of ‘self’ which seems to accommodate cultural and religious pluralism. On the Spiritual front, humanity has started appreciating the difference between the spirit (higher consciousness) and religious rituals. Mankind has started looking into the possibility of how each one of us can become and behave as an individual indivisible from the Whole.

Consciousness is known by what consciousness does. Consciousness although has its own mechanics, called the *mechanics of consciousness*, it runs the world through the *mechanics of mother nature*. Mother Nature is ‘nature’ of all natures and is the executive front of

consciousness as well. The paradigm for the third millennium would be the paradigm of Consciousness-Mother Nature. Its philosophy is rooted in the existence of the multiversity, a system of several universes(s). The systems here are inclusive of '*consciousness-mother nature*'. This inclusion accounts for an inside-out phenomenon at the 'boundary' of the existing system. On this 'boundary', through which the nature makes transit to Mother's place are elementary phenomena namely, Life, Death, Ego (conditional existence), Love and Sex. These elementary phenomena too have their own mechanics, called the Mechanics of Elementary phenomena. Access to this plane of elementary phenomena may be gained transcending the mechanics of the quantum world, the Quantum Mechanics, and penetrating through the quantum discontinuity. The Classical Mechanics forms the mechanics of sensible, usual, classical conscious world.

However, this classical plane does not form the rock bottom. There is a huge unconscious underneath it. This 'unconscious' underneath the classical conscious world has four planes overlying it. Respectively those are the plane of fringe consciousness, the plane of implicit perception and memory, the plane of fringe unconscious and the rock bottom unconscious. These four unconscious planes have their respective mechanics too.

Conclusion

At the end of the book, starting with a couple of pages of the Glossary once more the author takes on the question-answer format as was done in second chapter and answers 82 questions to further enrich the discussion and debate that he has launched through his pioneering researches in human brain and its relationship with the human body and the "multiverse" at large. In fact, this occupies about a fifth of the book and is most helpful to further plumb the depths of the Akhanda Paradigm.

The science of consciousness in the third millennium is to account for each of the nine mechanics as nine divisions of the In-divisible (A-khanda) consciousness. Certainly it warrants the development of a New Brain, which is regarded as *sine-qua-non* of transition of *homo sapiens sapiens* to *homo spiritualis*. A brilliant brain-teasing effort which only a pioneer or an explorer might undertake. Therefore, this is a work which is a must-read for all who are interested in consciousness study.

Preliminary comments on The Millennium Bridge
communicated through letter and mail to the Author on receiving the book

"It looks like a fine collection of your foundational views."

- Prof. H. Puthoff, Institute for Advanced Studies at Austin, Texas, USA

"Many thanks for sending me a copy of your latest book, which has just arrived. In return I enclose a copy of my latest book Understanding Consciousness. I hope that you enjoy it."

- Prof. Max Velmans, Goldsmiths College, London.

"I think this book is better written and more interesting than your previous book. There are many insightful points made".

- Prof. Benjamin Libet, University of California, USA.

"It looks like another fine comment in the area of brain consciousness"

- Dr. Robert J. White, M.D., Ph.D, Honorary Member, Pontifical Academy of Sciences, Vatican, Professor of Neurological Surgery, MetroHealth Medical Center, Ohio, USA.

"Greetings from England and thank you for the book". "It gives a feeling of intensity in the words." ... "Are you still intensely gathering pollen from many sources in the process of going from flower to flower, trying to fertilize the ideas of different scientists? I wonder how many of them are brave enough to take an aspect of Consciousness/E-C into their own sphere, and run with it. But, as you say, they have to commit and work on themselves first in order to be into a position to make the journey required to experience directly. Has anyone yet asked you to help them do serious follow-up work in any areas? I hope so".

- Julia Illiott, PhD, Peterborough, UK.

"Please accept once again my congratulations for being present with your book in "Science". Now you are known all over the world - at least our (terrestrial) world in traditional sense, and may be - also in the other worlds (i.e. in the Multiversity).the next Millennium has a chance to acquire self-consciousness - simply by reading your excellent book which - exactly by this reason - may (and should) be treated as a real bridge: between us (transitive material beings) and the Eternity (i.e. Cosmic Consciousness, or rather cosmic Self-consciousness).

....I must confess that after having the possibility to speak with you and after the lecture of your books - each of them is better than the former and "Millennium" of course the best - the process of my personal spiritual Akhandification has been considerably accelerated. Special regards for (the memory of) your Gurudev!"

- dr hab. Włodzimierz Lugowski, Institute of Philosophy and Sociology of the Polish Academy of Sciences, Warsaw.

"I am delighted with your news. I like "The Millennium Bridge" very much. More power to your elbow! May there be a breakthrough into the common scientific consciousness".

- Max Payne, Philosopher, Chair, Network Board of Trustees, in responding to getting the book enlisted in *Science*.

"When your package arrived, I was pleasantly surprised to see that you had produced a new book relating to the topic that is so close to my heart. In examining this fine manuscript,

I can see that you did an excellent job in explaining consciousness and The Akhanda Paradigm".

"In addition to forwarding this book out for review, it will be listed in the volume 9 (2) issue of *Frontier Perspectives* under New Books received. It will also be added to the Center's library collection of distinguished manuscript".

- Nancy Kolenda, Director, Center for Frontier Sciences, Temple University, USA.

"I am so pleased to hear the good news that your book has been enlisted in the prestigious journal, "Science." This will surely benefit you and bring you the recognition that you so well deserve".

- Nancy Kolenda, Director, Center for Frontier Sciences, Temple University, USA, in responding to getting the book enlisted in *Science*

"I thank you for bringing to light Van Gulick's 25 options for addressing Mind-Matter problems. I have just returned from a conference on science and the spiritual quest where such options were also discussed and during these various sessions I mentioned your work and most were interested to learn more. I told them that a review of your book, "The Millennium Bridge" will appear in a future issue of our journal and they could contact our office if they wish more information on how they may obtain a copy."

"From my experience at this meeting I found that the conference attendants were instrumental in bringing to light the need for a bridge to fill the gap that lies between science and religion, but I am afraid that they are not aware of the various materials and tools that are needed in building this so-called bridge. Hopefully they will discover these items in time."

- Nancy Kolenda, Director, Center for Frontier Sciences, Temple University, USA, in responding to getting the book enlisted in *Science*

"It is a wonderful development."

- Dr. Larry Dossey, M.D., Author of several books on New Paradigm and Co-Chair Alternative Medicine, NIH, U.S.A., in responding to getting the book enlisted in *Science*.

"I am glad that your book 'The Millennium Bridge' has received a favourable review in the Indian journal of Physics. What we have to jointly endeavour is to place consciousness research at the front of the higher education system in this country. I am sure that the work done by you will be a step forward in this direction"

-Mr. M. K. Kaw, IAS, Secretary, Govt. of India, Ministry of Human Resource Development.

"It solves a number of problems in the science-spirituality issue.The distinction between East and West has vanished."

- Prof. S.C. Tewari, MD, DM, a Senior Faculty member at All India Institute of Medical Sciences.

"I admire your wide readership and the breadth of thinking.I congratulate you for having received wide acclaim for the present as well as the previous books from philosophers world over".

-Prof. C. Kartha, Sree Chitra Tirunal Institute for Medical Sciences and Technology, Trivandrum, Member, Editorial Board, *Current Science*.

"This is for the first time you emphasize in your work on *brahmacharya*, dwelling in consciousness, and connect this dwelling-in with bone marrow and brain marrow. ... You are also seen to put emphasis on *The Open Brain* and *The Brain of a brain*. ... Carry the ideas forward".

- Ayachak (Sri Ashok. Kumar Roy), Retired civil servant, West Bengal, author of several books which guide readers towards the Akhanda World View.

"I am happy to know that your books are receiving the kind of attention they deserve".

- Ravi Ravindra, Professor of Comparative Religion & Adjunct Professor of Physics, Dalhousie University, Canada.

"Dear Dr Mukhopadhyay -- Just a brief note,..... your book is on our list for possible review at some future date".

- Dr. Christian de Quincey, Institute of Noetic Sciences, USA.

"Your book has arrived in good order a few days ago. I have started to read it with much interest and appreciation. Thank you for sending it to me".

- Ervin Laszlo, President of The Club of Budapest, Author of several books on New Paradigm.

"As I have time I will read your book carefully and feed back my comments to you. Don't expect an early reply as I am on the final rewrite of my new book, *Conscious act of creation: The emergence of a new physics*".

- William A. Tiller, Prof. Emeritus, Material Science & Engineering, Stanford University, USA.

"Thank you very much for sending me a copy of your latest book, *The Millennium Bridge*. I look forward to reading it."

- Fritjof Capra, Physicist, better known for his books on new age

" I want to thank you for your thoughtfulness in sending it on to me"

- Dr. James Austin, MD, Prof. of Neurology, Author of *Zen and the Brain*, USA.

"splendid thoughts contained in *The Millennium Bridge* and had hoped to have had time to respond with some intellectual content".

-Prof. Allan Snyder, Director, Center for the Mind. The Australian National University.

"I have been away and just returned today. The book has indeed arrived, thanks for sending it. It may be a while before I have time to go through it since I have a mountain of mail, plus dozens of emails to deal with - as well as my ongoing projects. Best wishes"

- Rupert Sheldrake, Biologist, better-known for his *Morphogenetic Field Theory*.

"Very many thanks for the book. I will write to you when I have finished it if I have any useful comments to make. With all good wishes,"

- Prof. Raymond HIDE CBE, FRS, Department of Physics, University of Oxford.

"You must be delighted with the positive reviews of your book. Congratulations! As a straight geophysicist, I have little by way of constructive comments to make, for you are tackling some very tough problems. With all good wishes"

- Prof. Raymond HIDE, CBE, FRS, Department of Physics, University of Oxford.

"Delighted that your work is being valued by leaders in the field! It must be very rewarding to know that your contribution is going to help move this crucial debate forwards".

- Dr. Andrew Powell, Royal college of Psychiatry, England

"I really did like the last part of your book where you answer the questions. ..You are a pioneer and going in the right direction. And we will win because Consciousness is greater than all of us."

- Daniel Jeanrendaud, Germany

"Thank you for sending me copies of the review of your book. I am happy to note the laudatory comments - my congratulations. As I have personally discussed with you I have my limitations in respect to the philosophical underpinning of your hypothesis. This is my weakness, not any of your shortcoming. I sincerely wish you all success."

- Prof. P. N. Tandon, MS, FRCS, FNA, President, National Brain Research Center, India

"It is absolutely profound.....will take me some time to assimilate"

- Asiananda, Prof. Debasia, Sri Aurobindo Centre for Human Unity

I have enjoyed reading the critique. You have really undertaken a mammoth task of establishing a unified theory from atom to universe with human brain playing the role of both.

- K Hasanat. Asst Professor in Psychiatry at North Western University, Chicago, USA.

"I happened to try and struggle making some sense out of your highly philosophical and cerebral piece of work. I must first express my near total failure to continue reading a few pages and to make some sense out of them. The cerebral quality of your writing is evident from the kind of people who have written the introduction and the prologue, as well as the personal references you have given in your writing. I have struggled to get some sense out of the Akhanda Paradigm, but my effort could not last much long. However, I cannot but express my appreciation for this highly philosophical piece of work, which one could not have expected from a medically qualified scholar. Your job at the AIIMS in Laboratory Medicine only serves to give you as formal association with an institution of learning, a living wage and a place to live, but not the intellectual companionship that one expects living and working with an academic community. I get lost struggling through your expressions like "multidimensional dismantling of his conditioned existence" (p 67) Your book will continue to adorn my library, if only to provide me an occasional peep".

"All the reviews of your book pay you rich tributes for your work, for which I congratulate you. The most complimentary seems to be commentary by Max Payne who labels your work as an "encyclopedic perspective of turn of the century science.....", in which you have "wrapped up all physics, morality, psychology and spirituality" into one system. Nothing could be more flattering that the reviewer labeling your work as a "prophetic text."

I have also enjoyed reading the critical review by TP Singh who has taken pains to write a detailed commentary citing even the page numbers of the book on which some comments are made, I am also appreciative of the comments made by Surya Gupta. In these commentaries, I have read terms which are likely to bounce in the heads of lesser mortals like me or those not familiar with such philosophical texts.

I have to revise my remarks made in my last communication to you. The AIIMS -whatever one may say on the performance of the great institution, it still continues to nurture the intellectual elite befitting the Institution. In a way also, the position that you occupy in the Institute should be an asset to you. A respectable position on an elite faculty, comfortable working and living environment in a respected society, ideal for growing children, and no heavy demands on your time, to service or teaching. In my opinion, you should have no illusions about your productivity. You don't have to publish only works relating to your designated specialty. What you are doing should in my opinion bring you as well as the Institution more kudos than writing on desiderata relating to Lab Medicine."

- Prof. H. D. Tandon, from Auckland, Ex. Director, All India Institute of Medical Sciences, New Delhi.

"I was intrigued to read the reviews and am fascinated now I see the book. I firmly expect to be extremely dissatisfied by your physics, yet hope to be inspired and perhaps stimulated to some new scientific endeavour on reading a work so clearly brimming with evidence of your intelligence, energy and zeal for truth."

- J. Andrew Ross, Technical Editor with the German Software Company SAPAG, Former Editor in Physics and Computer science with German Academy Publisher Spriger-Verlag, Teacher of Physics and Mathematics in London, Teacher of English in Japan, Tutor in Logic and Philosophy at Oxford.

"I am sure you accept that advanced work first of all is totally ignored, then it is noticed but disparaged, only thirdly is it fairly assessed and welcomed. You seem to have reached the second stage."

- Max Payne, Philosopher, Chair, Network Board of Trustees, in responding to the Review published in National Medical journal of India, in 2002.

"It is excellent that you are a medical doctor and can view the human consciousness from a medical standpoint..... I have a great deal of difficulty in reconciling my personal experience with your several planes of activity..... I applaud your efforts to provide a better understanding. However, your physics needs to be updated.One of the most important and thoroughly neglected part of the understanding of human consciousness is the vast amount of information that has been collected from the afterlife..... With your permission, I'll mention your book as one of the explorations into that realm."

- Hal Fox, Ed. Journal of New Energy.

"I have just "skimmed" The Millennium Bridge and now understand why you sent it to me..... How did you know this book would be so important to me and our work?..... A key concept in my book, which makes powerful predictions that question, once and for all, the concept of "randomness" is INDIVISIBILITY IN OPEN SYSTEMS..... the idea of THE INDIVISIBLE UNIVERSE is suggested by your book..... Is the Multiversity "indivisible" from your point of view? I suspect we have a lot to talk about..."

- Gary E. Schwartz, Ph.D. Director, Center for Frontier Medicine in Biofield Science & Director, Human Energy Systems Laboratory, University of Arizona, USA.

"I had the privilege to study your book, "The Millennium Bridge" which you kindly sent to me. Thank you very much.

You have nicely and originally embedded the present scientific/epistemological effort into a larger whole providing deep links with philosophy and religion. Moreover you are proposing a challenging research program. I would like to share with you a few remarks:

- 1. I have never seen so far, an explicit demonstration of supracortical consciousness. This is, as you also say, the greatest challenge for 21st century. The situation is analogous to Quantum Mechanics. All interpretations of Quantum Mechanics lead to the same predictions. As there is no verifiable or falsifiable difference, everyone is free to choose what fits better to his/her taste. I feel it is necessary to find at least one such demonstration of supracortical consciousness.**
- 2. I did not see chaos and non-integrability in your discussion of classical and quantum mechanics (Poincare, Prigogine), Ch. 2,3.**
- 3. Due to chaos and non-integrability, the problem of Time Asymmetry is not posed as whether Thermodynamics is Primary and the Dynamics of Newton, Maxwell and Schroedinger Secondary (p.80), but for which type of Dynamics, Irreversibility is an objective property. This has been demonstrated to be so for Chaotic and non-integrable Dynamics obeying Newton, Maxwell, Schroedinger equations. (I. Prigogine: The End of Certainly, which I send you).”**

- Prof. Dr. Ioannis E. Antoniou, CHAOS AND INNOVATION Research Unit, Aristotle University of Thessaloniki, Greece.

“I have received the copy of your book. I am afraid I have not yet had time to read it, and am not sure when I will, but thank you anyway for sending it. With best wishes,”

- Tony Leggett, Nobel Laureate, Dept. of Physics, University of Illinois at Urbana-Champaign