Dr. KRISHNADAS NANDAGOPAL

Education:

1997 Ph.D., in Biomedical Sciences - Oak Ridge Graduate School of Biomedical Sciences, University of Tennessee, Knoxville TN, USA.
Title of thesis: The roles of leucine-15 and histidine-16 of human epidermal growth factor in the reception and relay of mitogenic signals by the epidermal growth factor receptor.

1991 M.Sc., in Biochemistry – 1st class; specialization in Molecular Biology, Calcutta University

1989 B. Sc., in Chemistry (Hons.) – 1st class; Presidency College - Calcutta University

Teaching and Administrative Experience

i) Oct 2012 – present: Assistant Professor, Dept. of Genetics, Calcutta University

ii) Feb 2014-June 2015: Assistant Professor & Head of Department of Genetics, Calcutta University

iii) Aug 2001 – Sept 2012: Guest teacher; Departments of Biotechnology, Genetics, Microbiology, Neuroscience, Physiology, Calcutta University, India
Guest teacher; Dept. of Human Physiology with Community Health, Vidyasagar University, West Bengal
Guest teacher; Dept. of Biotechnology, Presidency University, Kolkata, India

Courses that I have "team taught" are given below:

- Principles of Genetics, Cell & Molecular Biology, Regulation of gene expression, Human Genetics & Genomics, Neurogenetics, Developmental Genetics
- Bio-molecules, Molecular Biology, Enzymology & Metabolism, Medical Biotechnology

I have enjoyed teaching students from diverse educational backgrounds and continually solicit feed-back with regard to effective learning. Accordingly, didactic lectures are supplemented with class-room discussions of research papers, case studies, problem-solving exercises, web-based online exercises or videos available on Youtube. This permits syllabus enrichment by providing additional resources to students. I strongly value the development of self-help skills in oral and written communication. When students have faced difficulties in understanding lectures delivered in English, I explain myself in Bangla. If their background preparation for a given course has been found to be sub-optimal, I have conducted tutorials to help students achieve learning targets. I also participate in student evaluation-related activities such as paper setting, grading of answer scripts, moderation of university exam questions & conducting viva-voce examinations.

Previous Employment and Post-doctoral Research Experience

Feb 2003–Aug 2011: Scientist, Manovikas Biomedical Research & Diagnostic Centre (MBRDC), Manovikas Kendra Rehabilitation and Research Institute for the Handicapped (MRIH), an NGO in Kolkata, India

May2001- Jan 2003: Senior Research Scientist, Chembiotek, Kolkata, India

Apr 2000 – Apr 2001: Research Associate, Wyeth-Ayerst (AHP), Princeton, New Jersey, USA

Jan 1998 – Mar 2000: Post-doctoral Fellow, Department of Neurology, Johns Hopkins University School of Medicine, Baltimore, MD, USA

Aug 1992–Dec 1997: Graduate Research Assistant, Oak Ridge Graduate School of Biomedical Sciences – University of Tennessee, Knoxville, TN, USA

Research Experience & Academic Contributions

i) Number of research papers published in refereed journals – 25

ii) Conference papers as full proceedings (abstracts not included) – 3

iii)	Subject books by Natl. publishers	–	1
iv)	Chapters contributed to edited knowledge-based vols. by Intl. publishers	–	1
v)	Completed Major projects (5.0 lakhs – 30.0 lakhs)	–	5
	On-going major project	-	1
vi)	Research guidance:		
	Ph.D. degree awarded	–	5
	Dr. Pijush Paul (Ph.D. – Genetics) 2016, Cal. Univ. (assoc. supervisor)		
	Dr. Anusree Das (Ph.D. – Genetics) 2016, Cal. Univ.		
	Dr. Debarati Ghosh (Ph.D. - Genetics) 2012, Cal. Univ.		
	Dr. Disha Banerjee (Ph.D. - Genetics) 2011, Cal. Univ.		
	Dr. Emili Banerjee (Ph.D. - Biotechnology) 2010, Cal. Univ.		
	Ongoing as supervisor / joint - associate supervisor	–	2
	Mr. Mrinmay Dhauria (Ph.D. – Genetics)		
	Mr. Tushar Pyne (Ph.D. – Genetics)		
	M.Sc., summer student projects	–	8
vii)	Conference presentations / abstracts / workshops:		
	International meetings	–	24
	National meetings	–	7
viii)	Invited lectureships:		
	International conferences / symposia	-	3
	National / local ,,	-	14

Research Projects Completed

1. 2013-2015 University Grants Commission – BSR Startup grant – to study Apoptotic cell death in Down syndrome (Principal Investigator; Rs. 6 lakhs).
2. 2006 – 2009 Life Sciences Research Board, DRDO, Govt. of India – to study the role of Serotonin transporter and Serotonin receptor gene polymorphisms in Attention Deficit Hyperactivity Disorder (Principal Investigator; Rs.18.30 lakhs).
3. 2006 – 2009 Department of Science and Technology, Govt. of India – to study the role of GRIK1 gene polymorphisms in Down syndrome-related mental retardation (Principal Investigator; Rs.16.63 lakhs).
4. 2004 – 2007 Council for Scientific and Industrial Research, Govt. of India – to detect mutations and biochemical studies on the GARS-AIRS-GART gene in regard to Down syndrome-related mental retardation (Principal Investigator; Rs.17.50 lakhs).
5. 2004 – 2007 Department of Biotechnology – Mental Retardation: Awareness generation among rural women, screening for early detection and genetic counseling (Co-PI; Rs.18.70 lakhs)

Professional Honors / Awards:

1. 2011-2015 – Member, Editorial Board, World Journal of Experimental Medicine
2. 2011 – Ad-Hoc Reviewer of research grant projects for the Department of Science & Technology and for the Department of Biotechnology, India
3. Ad-Hoc reviewer: Current Science, Journal of Psychiatric Research, Journal of Genetics, World Journal of Psychiatry, Indian Journal of Medical Research, Journal of the National Academy of Sciences (India)

4. 2010 – Member, Ph.D. Committee in Genetics, Calcutta University. Member, Post-Graduate Board of Studies in Genetics, Cal. Univ., Member, Post-Graduate Board of Studies in Neuroscience, S.N. Pradhan Centre for Neuroscience, Calcutta University
5. 2002 – Certificate from Confederation of Indian Industry (CII) – Kolkata
6. 1998 – 2000: Post-doctoral Research Fellowship, Dept. of Neurology, Johns Hopkins University School of Medicine; Certificate of training in Molecular Neurobiology
7. 1994 – Travel Fellowship from the International Union of Biochemistry and Molecular Biology
8. 1992 – 1997: Graduate Research Assistantship from Univ. of Tennessee, Knoxville USA
9. 1992 – Qualified for Junior Research Fellowship (CSIR-UGC-NET)
10. 1991 - Shanti Bhakta Memorial Certificate – Dept. of Biochemistry, Calcutta University
11. 1990 – Summer Res. Fellow, Centre for Cellular & Molecular Biology, Hyderabad, India
12. 1989 – 1991: National Merit Scholarship from the Govt. of India

Academic Memberships:

1 2011 – Member, International Society for Neurochemistry
2 2009 – Life Member, Calcutta Consortium of Human Genetics
3. 2008 – Life Member, Indian Society for Human Genetics (L/1403/2008)
4. 2007 – Life Member, Indian Academy for Neuroscience (LN 17)
5. 2001 – Member, International Brain Research Organization (IBRO)
6. 1999 – Member, Society for Neuroscience

Research areas and highlights

1. (a) Set up in 2012, my laboratory in the Department of Genetics, University of Calcutta focuses on the neurogenetics of a complex behavioral trait such as happiness and subjective well being among Indians. Candidate gene approaches are being used to verify association of genetic polymorphisms in serotoninergic and endocannabinoid system genes with happiness. Case control study designs are used to ascertain statistical significance of purported association followed by functional genomics approaches to understand the underlying mechanism(s). The goals of research include identification of genetic markers associated with risk. The efforts may be useful in devising new tools for therapeutic management and genetic counseling of unhappy individuals and / or their families.

(b) Set up in March 2003, my laboratory at Manovikas Kendra studied molecular aspects of mental retardation with a special focus on identifying genetic markers associated with non-disjunction of chr-21 in Down syndrome. In family-based study designs, we garnered evidence for allelic non-disjunction of intronic microsatellites and single nucleotide polymorphisms located within genes implicated in learning and memory. The GRIK1 kainate receptor which mediates excitatory neurotransmission in the brain and the GARS-AIRS-GART enzyme which is involved in *de novo* purine biosynthesis proved informative in this regard. We showed that non-disjunction stems from an increased ratio of errors in meiosis-I relative to meiosis-II for both maternal and paternal origins. We were the first research group to demonstrate utility of the SNaPshot™ assay in rapid and quantitative detection of tri-allelic inheritance. The molecular test is of particular significance as even partial trisomy may cause mental retardation in Down syndrome. The test may thus be useful in genetic counseling of affected individuals and / or their families. The work was supported by extramural research grants from CSIR and DST.

The second area of study in my laboratory at Manovikas Kendra, was the identification of genetic markers conferring susceptibility to Attention Deficit Hyperactivity Disorder. As with most psychiatric disorders, we used the candidate gene approach to examine transmission of parental alleles to affected offspring in family-based study designs and then sought statistical validation for association with disease.

To our surprise, we discovered that selective inheritance of maternal alleles contributes significant risk of ADHD in the offspring. Furthermore, we reported a novel genetic interaction between the serotonin transporter (SLC6A4) and the serotonin receptor (5HTR-1B) in ADHD, not previously established by biochemical or pharmacological means. The findings are significant in the context of non-stimulant-based therapeutic management of ADHD which targets the serotonergic neurotransmitter system. The work was supported by an extramural research grant secured from LSRB-DRDO.
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© Prior to my return to India in 2001, I completed two post-doctoral fellowships in the United States in the broad area of molecular neurobiology. As Research Associate in the Neurosciences Division of Wyeth-Ayerst, a pharmaceutical company of American Home Products (now acquired by Merck, USA), I worked on target validation of genes implicated in neuronal apoptosis by using antisense technology in various culture models of neuronal cell death (Potassium depolarization, Oxygen-Glucose Deprivation, & Excitotoxic injury). As post-doctoral fellow in the Dept. of Neurology at Johns Hopkins University, USA, I studied the mechanism of neuronal ischemic preconditioning in murine cortical cell cultures and showed involvement of the NMDA subtype of glutamate receptors, nitric oxide, and activation of the small GTPase Rap1 in this model. As Senior Research Scientist at Chembiotek, a contract research organization in Kolkata where I worked briefly for about 1½ years, I carried out Bio-informatics studies pertaining to hereditary spastic paraplegia, a neurodegenerative disorder while trying to set up an experimental laboratory for biological research.

(d) As Graduate Research Fellow at the Oak Ridge National Laboratory – Univ. of Tennessee, Knoxville, USA my dissertation research focused on protein engineering and mitogenic signal transduction involving the human epidermal growth factor-receptor complex. The studies revealed that site-directed mutagenesis of leucine-15 of EGF could partially uncouple receptor binding from receptor activation and that partial agonists such as L15A of human EGF recruit spare receptors to amplify MAP kinase activation and cell proliferation in culture.

Peer-reviewed Research Publications:

1. Pijush Paul, **Krishnadas Nandagopal**, Niraj Agarwala, Sudripta Das, Sumita Jha and Binay Chaubey (2017) A Proteomic Approach to Evaluate the Effects of Endogenous Expression of Cryptogein Gene in Crypt-Transgenic Plants of *Bacopa monnieri*. *J Appl Biotechnol Bioeng* **4(3)**: 00104. DOI: 10.15406/jabb.2017.04.00103
2. **Krishnadas Nandagopal**, Mihir Halder, Biswabhushan Dash, Sanghamitra Nayak and Sumita Jha (2017) Biotechnological approaches for production of anti-cancerous compounds resveratrol, podophyllotoxin and zerumbone. *Curr Med. Chem.,* **24** doi:10.2174/ 092986732466170404145656
3. Shreya Routh and **Krishnadas Nandagopal** (2017) Patent Survey of Resveratrol, Taxol, Podophyllotoxin, Withanolides and Their Derivatives Used in Anticancer Therapy. *Recent Pat Biotechnol.*, **11(2):**85-100 doi: 10.2174/1872208311666170127114804
4. Anusree Das, **Krishnadas Nandagopal** and Timir Baran Jha (2016) Molecular characterization of some Indian *Aloe vera* populations through RAPD and ITS markers. *Plant Biosystems* doi:10.1080/11263504.2016.1203833
5. Emili Banerjee and **Krishnadas Nandagopal** (2015) Does a serotonin deficit cause ADHD? *Neurochem. Intl.,* **82**:52-68
6. Anusree Das, Sk. Moquammel Haque, Biswajit Ghosh, **Krishnadas Nandagopal** and Timir B. Jha (2015) Morphological and genetic characterization of micropropagated field grown plants of *Aloe vera L., Plant Tissue Cult. and Biotech.,* **25**: 231-246
7. Rahul Bose and **Krishnadas Nandagopal** (2013) Genetic and biochemical consequences of adenosine deaminase deficiency in humans. *Ind. J. Biochem. & Biophys.* **50**:345-356

8. Subhendu Bandyopadhyay, **Krishnadas Nandagopal** and Timir Baran Jha (2013) Characterization of RAM to SAM transitions in *Selaginella microphylla* grown *in vitro*. *Biologia Plantarum* **57**(3):597-600.
9. Debarati Ghosh, Sailesh Gochhait, Disha Banerjee, Anindita Chatterjee, Swagata Sinha and **Krishnadas Nandagopal** (2012) SNaPshot™ assay in quantitative detection of allelic non-disjunction in Down syndrome. *Genetic Testing and Mol. Biomarkers* **16**:1226-1235
10. Debarati Ghosh, Swagata Sinha, Anindita Chatterjee and **Krishnadas Nandagopal** (2012) Discerning non-disjunction in Down syndrome patients by means of GluK1-$(AGAT)_n$ and D21S2055-$(GATA)_n$ microsatellites on chromosome 21. *Ind. J. Hum. Genet.,* **18**:204-216
11. Emili Banerjee, Disha Banerjee, Anindita Chatterjee, Swagata Sinha, **Krishnadas Nandagopal** (2012) Selective maternal inheritance of risk alleles and genetic interaction between the serotonin receptor-1B (5-HTR1B) and serotonin transporter (SLC6A4) in Attention deficit hyperactivity disorder (ADHD). *Psychiatr. Res.,* **200**:1083-1085
12. Disha Banerjee, Debarati Ghosh, Swagata Sinha, Anindita Chatterjee and **Krishnadas Nandagopal** (2012) No evidence for mutations that deregulate GARS-AIRS-GART protein levels in children with Down syndrome. *Ind. J. Clin. Biochem.,* **27**:46-51
13. Partha Sarathi Saha, **Krishnadas Nandagopal**, Biswajit Ghosh, Sumita Jha (2012) Molecular characterization of *Oryza sativa* L., cultivars from West Bengal, India. *The Nucleus* **55**:85-88
14. Debarati Ghosh, Swagata Sinha, Anindita Chatterjee and **Krishnadas Nandagopal** (2009) A study of GluK1 kainate receptor polymorphisms in Down syndrome reveals allelic non-disjunction at 1173(C/T). *Disease Markers* **27**:45-54
15. Disha Banerjee and **Krishnadas Nandagopal** (2009) Phylogenetic analysis and *in silico* characterization of the *GARS-AIRS-GART* gene which codes for a tri-functional enzyme protein involved in *de novo* purine biosynthesis. *Mol. Biotechnol*., **42**:306-319
16. Emili Banerjee, Swagata Sinha, Anindita Chatterjee, **Krishnadas Nandagopal** (2009) No causal role for the G482T and G689T polymorphisms in translation regulation of serotonin transporter (SLC6A4) or association with Attention-deficit-hyperactivity disorder (ADHD*). Neurosci. Lett.,* **454**:244-248
17. Disha Banerjee and **Krishnadas Nandagopal** (2007) Potential interaction between the *GARS-AIRS-GART* gene and CP2/LBP-1c/LSF transcription factor in Down Syndrome-related Alzheimer Disease. *Cell & Mol. Neurobiol.,* **27**:1117-1126
18. Emili Banerjee, Swagata Sinha, Anindita Chatterjee, Prasanta Kumar Gangopadhyay, Manoranjan Singh and **Krishnadas Nandagopal** (2006) A family-based study of Indian subjects from Kolkata reveals allelic association of the serotonin transporter intron-2 (STin2) polymorphism and Attention-Deficit-Hyperactivity disorder (ADHD). *Am. J. Med. Genet. Part B (Neuropsychiatric Genet.)* **141**:361-366
19. Samikshan Dutta, **Krishnadas Nandagopal**, Prasanta Kumar Gangopadhyay and Kanchan Mukhopadhyay (2005) Molecular aspects of Down syndrome – Review Article. *Indian Pediatrics* **42**:339-344
20. **Krishnadas Nandagopal**, Ted M Dawson and Valina L Dawson (2001) Critical role for nitric oxide signaling in cardiac and neuronal ischemic preconditioning and tolerance. *J. Pharmacol. Exp. Therap*., **297**: 474-478
21. **Krishnadas Nandagopal**, Diana M Popp and Salil K. Niyogi (2001) Utilization of a receptor reserve for effective amplification of mitogenic signaling by an epidermal growth factor mutant deficient in receptor activation. *J. Cell. Biochem*., **83**:326-341
22. **Krishnadas Nandagopal**, Margaret Terzaghi-Howe and Salil K. Niyogi (1999) Receptor recognition by histidine 16 of human epidermal growth factor by hydrogen bond donor/acceptor interactions. *J. Cell. Biochem*., **72**:16-24
23. Beena Neelam, Audrey Richter, Stephen G Chamberlin, Sarah M Puddicombe, Laura Wood, Mary-Beth Murray, **Krishnadas Nandagopal**, Salil K. Niyogi and Donna E. Davies (1998)

Structure-function studies of ligand-induced epidermal growth factor receptor dimerization. *Biochemistry* **37**:4884-91

24. B. Nelson Chau, **Krishnadas Nandagopal**, Salil K. Niyogi and Stephen R. Campion (1996) The EGF receptor binding of recombinant heregulin beta1/EGF hybrids is determined by heregulin residue glutamate 195. *Biochem. Biophys. Res. Commun*., **229**:882-886
25. **Krishnadas Nandagopal**, Douglas K. Tadaki, John A. Lamerdin, Engin H. Serpersu and Salil K. Niyogi (1996) The functional importance of Leucine 15 of human epidermal growth factor in receptor binding and activation. *Protein Eng*., **9**:781-788

Book chapters:

1. Krishnadas Nandagopal (2011) "Statistics in Biology: Perspective from a Biologist." Proceedings of workshop on *Statistical Methodologies in Modern Biology* for teachers from under-graduate colleges; Centre for Modern Biology, University of Calcutta. pp. 25-27
2. Krishnadas Nandagopal and Debarati Ghosh (2010) "Genetics and Molecular Biology of Kainate Receptors" in Kevin V. Urbano (Ed.) *Advances in Genetic Research Vol. 3* Chp.7 NOVA Publishers, USA (**ISBN: 978-1-61668-543-0**) pp. 205-226
3. Debarati Ghosh and Krishnadas Nandagopal (2009) "Medical Biotechnology in the efforts to understand and develop therapies for Down syndrome." Proceedings of UGC-sponsored *National Seminar on Biotechnology for Human Welfare and Prosperity* organized by Science College Hinjilicut, Berhampore, Odisha. pp. 66-69
4. Krishnadas Nandagopal, Usha Rajamma and Kunal Ray (2008) "Genetic Polymorphisms in Neurologic Disease" in Sumantra Das & K.P. Mohanakumar (Eds.), *A Handbook of Neurobiological Techniques*, 10th IBRO-APRC School of Neuroscience. pp. 61-74
5. Dhruba J. Chattopadhyay and Krishnadas Nandagopal (2007) "Macromolecules" in H.K. Das (Ed.), *Textbook of Biotechnology* 5th Revised Edn. Wiley India (P) Ltd. pp. 61-98 (**ISBN 13: 978-81-265-1014-6**)

Invited Lectureships:

1. Nov 2016 – "Mental health disorders" – Dipta Memorial Symposium, Bose Institute, Kolkata.
2. Dec 2015 - "Neurogenetics of Attention Deficit Hyperactivity Disorder" – 17th All India Congress of Cytology & Genetics and International symposium on "Exploring Genomes – The new frontier"
3. Mar 2013 – "Enzyme defects in purine metabolism: an overview" – International meeting on metabolic disorders under the aegis of Dept. f Biochemistry, JNM Hospital, Kalyani.
4. Jul 2012 – "Curriculum Adaptations" - as part of CRE (continuing rehabilitation education) programs under the aegis of Manovikas Kendra, Kolkata & Rehabilitation Council of India.
5. Dec 2011 – (i) "Techniques for stress management and counseling of caregivers & parents of children with disability" & (ii) "Interpretation & Report writing for Special Educators" – as part of CRE, Manovikas Kendra, Kolkata & Rehabilitation Council of India.
6. Nov 2011 – "Epigenetics" Refresher course "Life Sciences" for College and University Teachers organized by the UGC – Academic Staff College, Dept. of Physiology Univ. of Calcutta.
7. Nov 2011 – Mentorship Workshop for women scientists – aegis of Biotech consortium India Ltd., Dept. of Biotechnology, India and Department of Botany, Calcutta University.
8. Aug 2011 – "Statistics in Biology; Perspective from a Biologist" – Refresher course for College and University teachers, Centre for Modern Biology, Calcutta University.
9. Sept 2010 – "Genetic perspective on Behavioral Disorders in Children" – Indian Academy of Neuroscience, Kolkata Chapter & Dept. of Physiology, Calcutta University.
10. Apr 2010 – "Learning Disabilities and Remedial Instruction" – Continuing Rehabilitation Education for Special Education Teachers and Professionals under the aegis of Manovikas Kendra, Kolkata & Rehabilitation Council of India.

11. Mar 2010 – "Genetics of Behavioral Disorders in children" – 3rd International Conference on Genetic and Molecular Diagnosis in Modern Medicine and Biology (GMDMMB), Yenepoya University, Mangalore, India.
12. Feb 2010 - "Silencing gene expression with catalytic antibodies and ribozymes" - refresher course in "Life Sciences: At the crossroads" for College and University Teachers organized by the UGC – Academic Staff College, University of Calcutta.
13. Jan 2009 - Laboratory course on "Genetic Polymorphisms in Neurologic Disease"; 10th International Brain Research Organization – Asia Pacific Region Countries School of Neuroscience, IICB, Kolkata, India.
14. Dec 2008 - Serotonin system polymorphisms in Attention-deficit-hyperactivity disorder (ADHD) International Conference on Advances in Neurosciences & XXVI Annual meeting of the Indian Academy of Neurosciences, Kochi, India.
15. Sept 2008 - "From Bench to Bedside in Down syndrome" Neuro-update 2008 organized by Calcutta National Medical College and Indian Institute of Chemical Biology, Kolkata, India.
16. Aug 2008 - "Prevention of Mental Retardation" under the aegis of the National Human Rights Commission & Centre for Human Rights and Citizenship studies of the West Bengal National University of Juridical Sciences.
17. Mar 2008 – "Role of Bioinformatics in advancing Biomedical Research" under the aegis of the All India Congress of Rehabilitation Professionals; conference organized jointly by the Paschim Banga Rajya Pratibandhi Sammilani & Department of Mass Education Extn. Government of West Bengal.
18. Mar 2008 - "Human Genome Project, Genetic Screening and Genetic Counseling" – University Grants Commission Academic Staff College – Calcutta University program.
19. Mar 2005 – Extension Lecture delivered at Department of Human Physiology with Community Health, Vidyasagar University, Medinipur, West Bengal.
20. Dec 2004 - "Genetics in Molecular Medicine" - refresher course "Life Science" for College and University Teachers organized by the UGC – Academic Staff College, University of Calcutta.

International Conference Presentations / Abstracts / Workshops / Symposia

i) Krishnadas Nandagopal (2015) Neurogenetics of ADHD – 17th AICCG organized by Archana Sharma Foundation and CSIR. pp: 14

ii) Debarati Ghosh, Swagata Sinha, Anindita Chatterjee and Krishnadas Nandagopal (2010) "The $(GATA)_n$ short tandem repeat polymorphism in intron-3 of the kainate-subtype glutamate receptor GluK1: a study from Kolkata, India" - 14th Human Genome Meeting at Montpellier, France.

iii) Disha Banerjee, Swagata Sinha, Anindita Chatterjee and Krishnadas Nandagopal (2010) "Molecular studies on *GARS-AIRS-GART* that is involved in *de novo* purine biosynthesis and Down syndrome" - 14th Human Genome Meeting at Montpellier, France.

iv) Emili Banerjee, Swagata Sinha, Anindita Chatterjee, Krishnadas Nandagopal 2008. Genes, chromosomes and disease: **A380** Gene-gene interaction between SLC6A4 and 5HTR1B contributing to the risk of ADHD in Indian population. *Genomic Medicine* **2**: 351-380. Human Genome Organization (HUGO) Mtg.- Workshop participation by Ms. Emili Banerjee (organized by Wellcome Trust, Cambridge, UK at CCMB, Hyderabad, India)

v) Disha Banerjee and Krishnadas Nandagopal 2008. Genes, chromosomes and disease: **A379** Evolution of human tri-functional GART gene and identification of elements important for gene transcription in neurodevelopment. *Genomic Medicine* **2**:351-380. Human Genome Organization (HUGO) Mtg. - Workshop participation by Ms. Disha Banerjee (organized by Wellcome Trust, Cambridge, UK at CCMB, Hyderabad, India)

vi) Debarati Ghosh, Swagata Sinha, Anindita Chatterjee, and Krishnadas Nandagopal 2008. **A487** A study of GRIK1 gene polymorphisms in mental retardation related to Down syndrome". *Genomic Medicine* **2**:389-400. Human Genome Organization (HUGO) Mtg. - Workshop participation by Ms. Debarati Ghosh (organized by Wellcome Trust, Cambridge, UK at CCMB, Hyderabad, India)

vii) Krishnadas Nandagopal, Emili Banerjee, Disha Banerjee, Anindita Chatterjee and Swagata Sinha (2008) Serotonin system polymorphisms in Attention-deficit-hyperactivity disorder (ADHD) International Conference on Advances in Neurosciences & XXVI Annual meeting of the Indian Academy of Neurosciences, Kochi, India. *Annals of Neurosci.,* 15: OP-23, pp.56

viii) Emili Banerjee, Swagata Sinha, Anindita Chatterjee, Krishnadas Nandagopal (2008) Evidence for Distortion in Familial transmission of Serotonin Transporter Intron-2 (STin2.12) and Serotonin Receptor-1B (861C) alleles in ADHD. XXXIII Annual Conference of the Indian Society for Human Genetics and International Symposium on Genetics Revisited: the Genomics and Proteomics Advantage, Department of Human Genetics, Andhra University, Visakhapatnam, 11^{th}-13^{th} Feb. **A**:P-14 pp. 61.

ix) Debarati Ghosh, Swagata Sinha, Anindita Chatterjee and Krishnadas Nandagopal (2008) "Characterization of GRIK1/GluR5 polymorphisms in healthy volunteer samples from the Kolkata region of India". XXXIII Annual Conference of the Indian Society for Human Genetics and International Symposium on Genetics Revisited: the Genomics and Proteomics Advantage, Department of Human Genetics, Andhra University, Visakhapatnam, 11^{th}-13^{th} Feb.

x) Emili Banerjee and Krishnadas Nandagopal (2007) Manually curated functional annotation of the 3'-untranslated region of the Human Serotonin Transporter (SLC6A4). International Symposium on Neurodegeneration and Neuroprotection, Indian Institute of Chemical Biology, Kolkata

xi) Disha Banerjee and Krishnadas Nandagopal (2007) Potential interaction between the *GARS-AIRS-GART* gene and CP2/LBP-1c/LSF transcription factor in Down Syndrome-related Alzheimer Disease. International Symposium on Neurodegeneration and Neuroprotection, Indian Institute of Chemical Biology, Kolkata

xii) Debarati Ghosh, Swagata Sinha, Anindita Chatterjee and Krishnadas Nandagopal (2007) "A study of GRIK1/GluR5 kainate subtype glutamate receptor polymorphisms in the Indian population" - International Symposium on Advances in Neurosciences & Silver Jubilee Conference of Indian Academy of Neurosciences at Banaras Hindu University, Varanasi, India.

xiii) Krishnadas Nandagopal, Disha Banerjee, Debarati Ghosh, Achintya Goswami, Somnath Paul, Anindita Chatterjee and Swagata Sinha (2007) "Mutation screening of *GARS-AIRS-GART*, a candidate gene implicated in Down syndrome-related mental retardation" - International Symposium on Advances in Neurosciences & Silver Jubilee Conference of Indian Academy of Neurosciences at Banaras Hindu University, Varanasi, India.

xiv) Emili Banerjee, Swagata Sinha, Anindita Chatterjee, Krishnadas Nandagopal (2007) Association of Serotonin Transporter Polymorphisms and Attention-Deficit-Hyperactivity Disorder (ADHD) in India. International Symposium on Advances in Neurosciences & Silver Jubilee Conference of Indian Academy of Neurosciences. Banaras Hindu University, Varanasi. November 22^{nd}-25^{th}, 2007. *Annals of Neurosci.,* 14, **A**15 pp.74

xv) Krishnadas Nandagopal, Ted M Dawson and Valina L Dawson (1999) N-methyl-D-aspartate receptor-mediated activation of the Rap1 GTPase in primary cortical neurons is mediated by nitric oxide. *Soc. Neurosci., **A25***: 1866.

xvi) Salil K. Niyogi, Krishnadas Nandagopal, Mary-Beth Murray, Sarah M. Puddicombe, Audrey Richter, Donna E. Davies, Cartikeya C. Reddy and Douglas A. Lauffenburger (1998) Use of

engineered variants of human epidermal growth factor (hEGF) in elucidating growth signaling. *FASEB J.*, **12**: A1342

xvii) Krishnadas Nandagopal, Diana M. Popp and Salil K. Niyogi (1997) Mitogenic signal transduction by a human epidermal growth factor (hEGF) mutant in the presence of a receptor reserve. Symposium on "40 years of Protein Phosphorylation" honoring Nobel laureates Edwin Krebs and Edmond Fischer, Univ. of Washington, Seattle, USA.

xviii) Krishnadas Nandagopal, Diana M. Popp and Salil K. Niyogi (1997) Utilization of a receptor reserve for mitogenic signal amplification by a human epidermal growth factor (hEGF) mutant with partial agonist activity (1997). Symposium on tyrosine phosphorylation in cellular signaling, Cold Spring Harbour, NY – USA.

xix) Krishnadas Nandagopal, Diana M. Popp and Salil K. Niyogi (1997) Signal transduction by a human epidermal growth factor (hEGF) mutant partially deficient in receptor activation. *FASEB J.*, **11**: A

xx) Mary-Beth Murray, John A. Lamerdin, Krishnadas Nandagopal, Salil K. Niyogi and Engin H. Serpersu (1996) *FASEB J.*, **10**, A1400

xxi) Krishnadas Nandagopal and Salil K. Niyogi (1996) Characterization of a human epidermal growth factor (hEGF) mutant with partial agonist activity. *FASEB J.*, **10**: A993

xxii) Krishnadas Nandagopal and Salil K. Niyogi (1995) Functional analysis of histidine-16 of human epidermal growth factor by site-directed mutagenesis. *FASEB J.*, **9**: A1415

xxiii) Krishnadas Nandagopal, Douglas K. Tadaki and Salil K. Niyogi (1994) Site-directed mutagenesis of leucine-15 of human epidermal growth factor. 16th International Union of Biochemistry & Molecular Biology Congress, New Delhi, India.

xxiv) Krishnadas Nandagopal, Douglas K. Tadaki and Salil K. Niyogi (1994) Mutational analysis of leucine-15 of human epidermal growth factor (hEGF). *FASEB J.*, **8**: A1460

National Conference Presentations / Abstracts / Workshops / Symposia

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