

Curriculum Vitae

Dr. K. Muruga Poopathi Raja, Ph.D.

Chemical Biology & Biophysics Laboratory
Department of Physical Chemistry
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Education

Ph.D Molecular Biophysics, Indian Institute of Science, Bangalore (Dec 2005)

M.Sc. Chemistry (First class), The American College (MKU), Madurai, India (Jul 1997)

M.Ed. Education, M. K. University, Madurai (Apr 1998)

B.Ed. Education, Thiyagarajar College of Preceptors (MKU), Madurai (Apr 1997)

B.Sc. Chemistry (First class), S. N. College (MKU), Madurai (Jun 1993)

Academic Positions

Assistance Professor (from **April 2010** – till now) at Department of Physical Chemistry, School of Chemistry, Madurai Kamaraj University, Madurai, India.

Research Experience

Post-doctoral research fellow with **Prof. Dr. Harald Schwalbe**, J.W. Goethe University-Frankfurt am Main, Germany (Dec 2007 – Mar 2010)

- Conformational analysis of Ψ -RNA-NCp7 complex in solution by high resolution multidimensional NMR, other biophysical methods.
- Design, synthesis & characterization (biochemical, biophysical and viral cell biology assay) of potential ligands to interrupt HIV-1 viral RNA-NC-protein complex
- Structural & dynamic investigations of small model membrane proteins by NMR & EPR.

Post-doctoral research fellow with **Prof. Dr. Jaume Torres**, School of Biological Sciences, Nanyang Technological University, Singapore (Sep 2005 –Nov 2007)

- Structural investigations of Cry toxin trans-membrane helical peptides by NMR & ATR-FTIR.
- Protein expression, purification & isotopic labeling of *Bt* Cry toxin protein for multidimensional NMR studies.

Ph.D student & Research Assistant with **Prof. Dr. P. Balaram**, Indian Institute of Science, Bangalore (Aug 1997 – Sep 2005)

- Design, synthesis and conformational analysis (NMR, CD, X-ray crystallography and molecular modeling) of peptides containing unnatural α,α -dialkyl, Omega (β , γ , δ and ϵ) and D-amino acids.

Research interests

Aggregation Chemical Neurobiology, Viral-Structural Biology, Peptidomimetics, Biophysical and Biochemical analysis of RNA, Proteins, Peptides and Lipids, Bioactive membrane Proteins and peptides, *de novo* design of novel structural and functional motifs, Cell Biology, Single-molecule microscopic detection, manipulation and analysis, viral RNA-Protein & RNA-Ligand interactions, Thermodynamic and kinetic manipulation and analysis of biomolecules, Structural biology, Real-time spectral analysis of biomolecules, Molecular modeling, dynamics and simulation.

Fields of expertise

NMR spectroscopy of biomolecules (proteins, RNA, small bioactive molecules), peptide synthesis, conformational analysis, spectroscopic and biophysical characterization, molecular modeling, dynamics and simulation, structure calculation, Ligand design, data mining and database analysis.

Technical expertise

Hands on experience in NMR data collection & analysis, inhibitor design, peptide synthesis, purification (HPLC, FPLC) and characterization, spectroscopic analysis (ATR-FTIR, Fluorescence, CD, ESI-MS, MALDI). Experience in cloning, protein expression (in *E.Coli*), isotope labeling, purification and characterization. Experience in *In vitro* RNA transcription, purification and analysis. Experience in pulsed EPR analysis. Familiar with X-ray crystallography techniques and experience in crystallization. Familiar with SAXS analysis, DLS, ITC and SPR. Familiar with magnetic trapping & tweezers and optical trapping & tweezers for single molecule manipulation.

Research Projects Awarded

Department of **Science & Technology** (Govt. of India) -Fast Track Young Scientist Award Project (**2013-2016**) – “Chemical Synthesis and Biophysical Characterization of Homoleucine Peptide Foldamers Inspired from Proteins”. (Completed)

Department of **BioTechnology** (Govt. of India) – **Rapid Grant for Young Investigators Award** Project (**2013-2016**) – “Biophysical Investigation on the Folding and Aggregation of Homo-Asparagine Peptide Repeats in *Plasmodium falciparum* Proteome”. (Completed)

Science and Engineering Research Board (Govt. of India)- (**2013-2017**) – “*Biophysical Probing on Conformations and Aggregation Properties of Poly-Glutamine Peptides*”. (Completed)

UGC-Innovative Research Activities (XII plan) (**2015-2016**) – “*Design of Peptide Gel Nano biomaterials for Biomedical Application*”. (Completed)

Defence Research and Development Establishment (Govt. of India) (2016-2017) – “*Design, Development and Evaluation of Peptide based Inhibitors for Bacillus anthracis*”. (Completed)

Science and Engineering Research Board (Govt. of India) (2018-2021) – “*Design, Synthesis and Evaluation of Potential Peptidomimic Inhibitors for β -Secretase (BACE1) Enzyme of Neurodegenerative Alzheimer’s Disease*”. (Ongoing)

Science and Engineering Research Board (Govt. of India) (2019-2022) – “*Poly-Glutamine Peptides Aggregation of Neurodegenerative Spinocerebellar Ataxias: Mechanistic Investigation towards Developing Inhibitors*”. (Ongoing)

Board of Research in Nuclear Sciences (Govt. of India) (2020-2022) - “*Development and Evaluation of Anti-Viral Peptidomimetics to Combat SARS-CoV-2*”. (Ongoing)

Department of BioTechnology (Govt. of India) – COVID-19 Research Consortium (2020-2022) – “*Development of Anti-viral Peptide Aptamers for SARS-CoV-2: Design and Evaluation*” (Ongoing)

Science and Engineering Research Board (Govt. of India) (2020-2023) – **Intensification of Research in High Priority Areas (IRHPA) - COVID-19 Life Sciences** - “*Design, validation, and development of novel peptidomimetic therapeutics targeting SARS-CoV-2 replication*”. (Ongoing)

Rashtriya Uchcharar Shiksha Abhiyan (RUSA), MKU (2020-2022) - "Molecular Design and Development of Imaging agents and Inhibitors: A Chemical Biology Approach". (Ongoing) **Rs. 3,58,44,000 (Project Coordinator)**

Research Students Guided (Project)

Ph.D (Chemical Biology & Biophysical Chemistry) – **7** (on going)

M.Phil (Chemistry) – **11** (Awarded)

M.Tech (Bioinformatics) – **1** (Awarded)

M.Sc. (Computational Biology) – **3** (Awarded)


M.Sc. (Chemistry) – **15** (Awarded) and **3** (on going)


M.Sc. (Genomics) – **1** (Awarded)

M.Sc. (Biochemistry) – **1** (Ongoing)

Publications

Number of patents (International)	3 (three)
Number of peer reviewed journal articles published	14 (fourteen)
Number of conference presentations	30 (thirty)
Number of Manuscripts in pipeline	6 (Six)
Total citations:	> 455
Total impact factors:	> 90
Average Impact factor:	~7
h-index:	11



Dr. Muruga Poopathi Raja Karuppiyah 

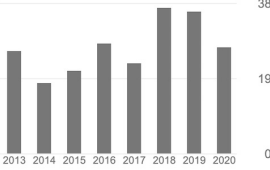
Assistant Professor, Dept. of Physical Chemistry, School of Chemistry, Madurai Kamaraj University, Madurai, India
Verified email at mkuniversity.ac.in

Chemical Biology Molecular Biophysics Neurodegenerative Disorder Peptide Design Peptidomimetics

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	All	Since 2015
Citations	424	172
h-index	10	7
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Co-authors [EDIT](#)

TITLE	CITED BY	YEAR
<input type="checkbox"/> Polypeptide helices in hybrid peptide sequences K Ananda, PG Vasudev, A Sengupta, KM Poopathi Raja, N Shamala, ... Journal of the American Chemical Society 127 (47), 16668-16674	80	2005
<input type="checkbox"/> Specific inhibition of β-secretase processing of the Alzheimer disease amyloid precursor protein SB Hallima, S Mishra, KMP Raja, M Willem, A Baici, K Simons, O Brüstle, ... Cell Reports 14 (9), 2127-2141	68	2016
<input type="checkbox"/> C-H...O Hydrogen Bond Mediated Chain Reversal in a Peptide Containing a γ-Amino Acid Residue, Determined Directly from Powder X-ray Diffraction Data EY Cheung, EE McCabe, KDM Harris, RL Johnston, E Tedesco, ... Angewandte Chemie International Edition 41 (3), 494-496	66	2002

Ph.D Thesis

Design, Synthesis and Conformational analysis of Peptides Containing Omega & D-Amino Acids, **K. Muruga Poopathi Raja**, 2005, *Ph.D. Thesis*, Indian Institute of Science, Bangalore, India.

Patents

Graphene and Functional Graphenes In Frictional Materials And Uses thereof, S. Venkatesh & **K. Muruga Poopathi Raja**, Patent application no. **202141003489**, Office of the Controller General of Patents, Designs & Trade Marks (CGPDTM), India. (Filed on 25th January 2021).

Gabapentin analogues and Process thereof. Kuppuswamy, Nagarajan; Hariharan, Sivaramakrishnan; Iyer, Venkatachalam Sankar; Balakrishnan, Suresh Babu; Krishnamurthi, Gopalakrishnan; Kuppanna, Ananda; **Karuppiyah, Muruga Poopathi Raja**; Padmanabhan, Balaram; Subrayashastry, Aravinda;

Prema, Gouriamma Vasudev; Narayanaswamy, Shamala. (Hikal Limited, India; Indian Institute of Science). **U.S. Pat. No. US7632864 B2** (Dec 15, 2009).

Cis (z) 4-t-butylgabapentin and its Synthesis. Kuppuswamy, Nagarajan; Hariharan, Sivaramakrishnan; Iyer, Venkatachalam Shankar; Balakrishnan, Suresh Babu; Krishnamurthi, Gopalakrishnan; Kuppana, Ananda; **Karuppiah, Muruga Poopathi Raja**; Padmanabhan, Balaram; Subrayashastry, Aravinda; Prema, Gouriamma Vasudev; Narayanaswamy, Shamala. (Hikal Limited, India; Indian Institute of Science). **European Patent Application Number: EP2172445 A1** (07 Apr, 2010)

4-t-butylgabapentin and its Synthesis. Kuppuswamy, Nagarajan; Hariharan, Sivaramakrishnan; Iyer, Venkatachalam Shankar; Balakrishnan, Suresh Babu; Krishnamurthi, Gopalakrishnan; Kuppana, Ananda; **Karuppiah, Muruga Poopathi Raja**; Padmanabhan, Balaram; Subrayashastry, Aravinda; Prema, Gouriamma Vasudev; Narayanaswamy, Shamala. (Hikal Limited, India; Indian Institute of Science). PCT **International Publication Number: WO2005/087709 A1** (22 Sep, 2005),

Research Articles in Journals

CREB acts as a common transcription factor for major epigenetic repressors; DNMT3B, EZH2, CUL4B and E2F6, Cheemala Ashok, Murugan Selvam, Saravanaraman Ponne, Phani K. Parcha, **Karuppiah Muruga Poopathi Raja** and Sudhakar Baluchamy, **Medical Oncology**, 2020, **37** (68) (<https://doi.org/10.1007/s12032-020-01395-5>) **IF: 2.834**

Structural Dimorphism of Achiral α,γ -Hybrid Peptide Foldamers: Coexistence of 12- and 15/17-Helices, Rajkumar Misra, Abhijith Saseendran, Gijo George, Kuruva Veeresh, **K. Muruga Poopathi Raja**, Srinivasarao Raghothama, Hans-Jörg Hofmann and Hosahudya N. Gopi, **Chemistry - A European Journal**, 2017, **23**, 3764-72. **IF: 5.317**

Modulating the Structural Properties of α,γ -Hybrid Peptides by α -Amino Acid Residues: Uniform 12-Helix Versus “Mixed” 12/10-Helix, Rajkumar Misra, **K. Muruga Poopathi Raja**, Hans-Jörg Hofmann and Hosahudya N. Gopi, **Chemistry - A European Journal**, 2017, **23**, 16644-52. **IF: 5.317**

Non-classical Helices with Backbone cis Carbon-Carbon Double Bonds: Structural Features of alpha, gamma-Hybrid Peptide Foldamers, Mothukuri Ganesh Kumar, Varsha J. Thombare, Mona M.Katariya, KuruvaVeeresh, **K. Muruga Poopathi Raja** and Hosahudya N. Gopi, **Angewandte Chemie International Edition**, 2016, **55**, 7847-51. **IF: 11.261**

Specific inhibition of β -secretase processing of the Alzheimer’s disease Amyloid Precursor Protein, Saoussen Ben Halima, Sabyashachi Mishra, **K. Muruga Poopathi Raja**, Michael Willem, Antonio Baici, Kai Simons, Oliver Bristle, Philip Koch, Christian Haass, Amedeo Caflich and Lawrence Rajendran, **Cell Reports**, 2016, **14**, 2127-2141. **IF: 8.361**

Engineering polypeptide folding through trans double bonds: transformation of miniature

β -meanders to hybrid helices, Mothukuri Ganesh Kumar, Sushil N. Benke, **K. Muruga Poopathi Raja*** and Hosahudya N. Gopi*, **Chemical Communications**, 2015, **51**, 13397-13399. IF: 6.834

Design of Stable β -Hairpin Mimetics through Backbone Disulfide Bonds, Mothukuri Ganesh Kumar, Sachitanand M. Mali, **K. Muruga Poopathi Raja** and Hosahudya N. Gopi, **Organic Letters**, 2015, **17**, 230-233. IF: 6.364

Synthesis and Structural Investigations of Functionalizable Hybrid β -Hairpin, AnupamBandyopadhyay, Sachitanand M. Mali, Pooja Lunawat, **K. Muruga Poopathi Raja** and Hosahudya N. Gopi, **Org. Lett.**, 2011, **13**, 4482-4485. IF: 6.364

Optimization of Transversal Relaxation of Nitroxides for PELDOR Spectroscopy in Phospholipid Membranes, Reza Dastvan, Bela E. Bode, **Muruga Poopathi Raja Karupiah**, Andriy Marko, Sevdalina Lyubenova, Harald Schwalbe and Thomas Prisner, **The Journal of Physical Chemistry B**, 2010, **114**, 13507-13516. IF: 3.302

Structural studies of model peptides containing β -, γ - and δ -amino acids. Anindita Sengupta, S. Aravinda, N. Shamala, **K. Muruga Poopathi Raja** and P. Balaram. **Organic & Biomolecular Chemistry** 2006, **4**, 4214-4222. IF: 3.562

Polypeptide Helices in Hybrid Peptide Sequences, K. Ananda, Prema G. Vasudev, Anindita Sengupta, **K. Muruga Poopathi Raja**, N. Shamala and P. Balaram, **Journal of American Chemical Society** 2005, **127**, 16668-16674. IF: 12.113

Solid state conformations and solution equilibria, K. Ananda, S. Aravinda, P. G. Vasudev, **K. Muruga Poopathi Raja**, H. Sivaramakrishnan, K. Nagarajan, N. Shamala and P. Balaram, Stereochemistry of gabapentin and several derivatives: **Current Science**, 2003, **85**, 1002-1011. IF: 0.833

C-H...O Hydrogen Bond Mediated Chain Reversal in a Peptide Containing a γ -Amino Acid Residue, Determined Directly from Powder X-ray Diffraction Data. E. Y. Cheung, E. E. McCabe, K. D. M. Harris, R. L. Johnston, E. Tedesco, **K. Muruga Poopathi Raja**, and P. Balaram, **Angewandte Chemie International Edition** 2002, **41**, 494-496. IF: 11.26

Ab initio structure determination of a peptide β -turn from powder X-ray diffraction data. E. Tedesco, K. D. M. Harris, R. L. Johnston, G. W. Turner, **K. Muruga Poopathi Raja** and P. Balaram, **Chemical Communications** 2001, 1460-1461. IF: 6.834

Articles in Science Magazines

Biopharmaceuticals – Emerging Peptide Therapeutics, **K. Muruga Poopathi Raja**, **Cutting Edge**, May 2016, **6**(1), 16-20.

(<http://www.spincotech.com/ebook/may2016/>)

Conference Presentations

Invited Talks:

Drug Design Strategies for Neurodegenerative Disorders, **K. Muruga Poopathi Raja**, "C HEM AMIGOs-2k20 One day National Level Seminar" 09March, 2020, Mary Matha College, Periyakulam, Tamil Nadu.

Asparagine and Glutamine Homopeptide Repeats: Conformations to Aggregations, **K. Muruga Poopathi Raja**, National Conference on " Synthetic and Biological Peptides: Structures and Strategies for the Development of Drugs, Biologics and Materials", 14-15 March, 2019, Bangalore University.

Structure and Aggregation probing of Short Poly-Glutamine Peptides, **K. Muruga Poopathi Raja**, "International Conference on Advanced Chemical and Structural Biology-ICAC SB-2019" 19-21 February, 2019, PRIST University, Chennai.

Probing Peptides by Vibrational Spectroscopy, **K. Muruga Poopathi Raja**, "A Satellite Symposium on Peptides in Biology & Material Science (sIPS-2018)", 22-24 February, 2018, Shankarpur, West Bengal.

NMR based Peptide Ligand Design for Psi-RNA-NCp7 of HIV-1, **K. Muruga Poopathi Raja**, "National workshop on computational Approach to drug discovery at centre for bioinformatics", 13-19 Dec 2017, Pondicherry University.

Aggregation and Functions of PolyQ: Do metal Ions Play a Role?, **K. Muruga Poopathi Raja**, Symposium on Inorganic Chemical Biology, 17-18 Mar, 2017 at Madurai Kamaraj University, Madurai.

Folding and Aggregation Studies on Homopeptide Repeats of Glutamine and Asparagine, **K. Muruga Poopathi Raja**, 6th Indian Peptide Symposium, 23-24 February, 2017 at Homi Bhabha Center for Science Education HBCSE, Mumbai.

Conformational Switch of Hairpin Peptides Probed by NMR Spectroscopy, **K. Muruga Poopathi Raja**, NMRS-2016, IIT-Kharagpur, India, 18-21 February, 2016

NMR Based Structural Bioinformatics for Drug Design, **K. Muruga Poopathi Raja** at National Seminar on Modern Trends in Chemistry (MTC-20), 30-31 January, 2015 at Vivekananda College, Madurai.

Disease Causing Intrinsically Unfolded Peptides, **K. Muruga Poopathi Raja**, "National Conference on Bioactive Peptides-Application in Veterinary Medical and Food Sciences (N BAP-TANUVAS-2014)" 18-19 Dec, 2014, Madras Veterinary College, Chennai.

Development of peptide ligands for drug targeting of HIV-1, **K. Muruga Poopathi Raja**, National Conference on "Advanced developments of Medicinal chemistry in target drug design", 11-12 Sep, 2014, Kongunadu Arts and Science college, Coimbatore.

Chemical Biology: From Structured to Unstructured, **K. Muruga Poopathi Raja** at International 3rd Congress on Research Awareness and Science career opportunities in India and Abroad on 6 Feb, 2014 at Arunai Engineering College, Thiruvannamalai.

Biophysical Characterization of Packaging Signal Psi-RNA of HIV-1 and Peptide Ligands, **K. Muruga Poopathi Raja** at a one day National Seminar on "Emerging Trends in Infectious and Non- infectious Diseases" on February 15th, 2013 at School of Biotechnology, Madurai Kamaraj University, Madurai.

NMR Based Structural Bioinformatics for Drug Design, **K. Muruga Poopathi Raja** at one day seminar workshop on "Structural Bioinformatics Applications in Drug Discovery

Process" 17-18th Oct, 2012, Center of Excellence in Bioinformatics, School of Biotechnology, Madurai Kamaraj University, Madurai.

Proteins – To Fold or Not to Fold: Causes and Consequences, **K. Muruga Poopathi Raja** at 1st Annual Seminar on Alzheimer's Disease (ALZINFO-2012), Bharathidasan University, Tiruchirappalli, 21st September, 2012.

To fold or not to fold: lessons from beta-turns in peptides, in the Systems and Cell Biology of Neurodegeneration, Division of Psychiatry Research, University of Zurich, **Switzerland**, 27th August, 2012.

Peptide Inhibitors for ψ -RNA-NCp complex in HIV-1, **K. Muruga Poopathi Raja**, 3rd Indian Peptide Symposium, Pune, India, 24-25 February, 2011.

An NMR Analysis of a 19-residue peptide containing three Centrally Positioned D-Amino acids, **K. Muruga Poopathi Raja**, H. N. Gopi and P. Balaram, Special Symposium on Recent Developments in NMR methodology and National Symposium on Magnetic Resonance, Bangalore, India, 3-6 February 2003.

Poster Presentations:

Inhibition of BACE1 of Alzheimer's Disease by Peptidomimetic Ligands: Computational and Chemical Biology Approach, Muneeswaran S, Thamaraiselvam M and **Muruga Poopathi Raja K**, International Conference on Drug Discovery 2020 (ICDD- 2020), 29 February-2 March, 2020.

Inhibition of BACE1 of Alzheimer's Disease by Peptide-based Substrates: An in silico approach, Muneeswaran S, Thamaraiselvam M and **Muruga Poopathi Raja K**, Student Indian Peptide Symposium on Peptides at the Interfaces of Chemistry, Biology and Material Science (sIPS-2020), Madurai Kamaraj University, Madurai, 20-21 February, 2020

Synthesis, Characterization and Computational studies of Peptide based inhibitors for BACE1 of Alzheimer's Disease, Muneeswaran S, Thamaraiselvam M and **Muruga Poopathi Raja K**, Recent trends in structural bioinformatics and computer aided drug design 2019 (ICSBCADD-19), Alagappa University, Karaikudi, 11-13 December, 2019.

Structural Plasticity of BACE1 and BACE2 of Alzheimer's Disease: A Computational Approach, Muneeswaran S and **Muruga Poopathi Raja K**, Alzinfo 2019, Bharathidasan University, Trichy, 23 October, 2019.

Structural Plasticity of BACE1 and BACE2 of Alzheimer's Disease: A Computational Approach, Muneeswaran S and **Muruga Poopathi Raja K**, Synthetic and Biological Peptides: Structures and strategies for the Development of Drugs, Biologics and Materials, Bangalore University, Bangalore, 14-15 March, 2019.

NMR analysis of SL3 analogue of HIV-1 packaging signal Psi-RNA, **Muruga Poopathi Raja Karuppiah**, Neda Bakhtiari, Christian Richter, Julia Dietz, Ursula Dietrich and Harald Schwalbe, NMRS-2012, Bangalore, India, 5-8 February 2012.

Resolution enhancement for PELDOR distance measurements in Phospholipid Membranes, Reza Dastvan, Bela E. Bode, **Muruga Poopathi Raja Karuppiah**,

AndriyMarko, SevdalinaLyubenova, Harald Schwalbe and Thomas Prisner, Joint EURMAR 2010 and 17th ISMAR Conference (WWNMR-2010), Florence, Italy, 4-9 July, 2010

NMR analysis of SL3 analogue of HIV-1 packaging signal Psi-RNA, **Muruga Poopathi Raja Karuppiyah**, Neda Bakhtiari, Christian Richter, Julia Dietz, Ursula Dietrich and Harald Schwalbe, 3rd Annual user meeting of EU-NMR, Autrans France, 26-29 Jan 2009.

NMR analysis of helix alpha-5 of the Bacillus thuringiensis Cry1Ba2, **K. Muruga Poopathi Raja and J. Torres**, Joint Third AOHUPO and Fourth Structural Biology and Functional Genomics Conference, Singapore, 4-9 December 2006.

Conformational analysis of helix alpha-5 of the Bacillus thuringiensis Cry toxins by NMR, **K. Muruga Poopathi Raja** and J. Torres, International Conference on Magnetic Resonance in Biological Systems (ICMRBS), Gottingen, Germany, 21-25 August 2006.

NMR analysis of designed beta-hairpin peptides with modified beta-turn, **K. Muruga Poopathi Raja** and P. Balam, International Conference on Magnetic Resonance in Biological Systems (ICMRBS), Hyderabad, India, 16-21 January 2005.

Expanding the turn segment of designed beta-hairpin peptides: NMR analysis, **K. Muruga Poopathi Raja** and P. Balam, International Conference on Magnetic Resonance in Biological Systems (ICMRBS), Hyderabad, India, 16-21 January 2005.

Gabapentin: A Novel Conformationally constrained gamma-Amino acid, **K. Muruga Poopathi Raja**, K. Ananda, S. Aravinda, N. Shamala and P. Balam, In-house symposium, Molecular Biophysics Unit, Indian Institute of Science, Bangalore, 2003.

Manuscripts in pipeline

From beta to gamma: Conformational drives in hairpin folding, **K. Muruga Poopathi Raja** (in preparation)

Solution NMR analysis of SL3 analogue of HIV-1 packaging signal Psi-RNA and peptide ligand complex, **K. Muruga Poopathi Raja**, Neda Bakhtiari, Christian Richter, Julia Dietz, Ursula Dietrich and Harald Schwalbe (in preparation)

Structural analysis of homo-peptides in proteins, **K. Muruga Poopathi Raja** (in preparation)

Conformational consequences in expanding the turn segment of designed beta-hairpin peptides, **K. Muruga Poopathi Raja** (in preparation).

Stereochemical control of beta-hairpin folding by beta-amino acids at i+2 position, **K. Muruga Poopathi Raja** (in preparation).

An NMR Analysis of a 19-residue peptide containing three Centrally Positioned D-Amino acids, **K. Muruga Poopathi Raja**, H. N. Gopi and P. Balam (in preparation).

Professional Affiliations

Life member, National Magnetic Resonance Society, India (from 2005)

Life member, Indian Peptide Society, India (from 2015)

Life Member, Chemical Research Society of India (from 2017)

Life member, Association of Chemistry Teachers (from 2017)

Member, Royal Society of Chemistry (from 2016)

Member, American Chemical Society (from 2017)

Professional Training Courses/Schools/workshops Participated

- Workshop on “Super Resolution Imaging” 30-31 July 2012, Frankfurt am Main, **Germany**.
- IMI practical course on “Mathematical Techniques in Life Sciences” 4-12 January, 2011, IISc, Bangalore, **India**.
- EMBO Practical course on “Computational RNA Biology” 26 April – 1 May, 2010, Cargese, Corsica, **France**.
- World EMBO Practical course on “Structure and dynamics of biomolecules by NMR Spectroscopy” 21-30 September, 2009, Rosario, **Argentina**.
- EMBO Practical course on “Single-molecule manipulation and analysis of DNA-Protein interactions” 5-18 July, 2009, Paris, **France**.
- E-MeP-Net Advanced Practical Course in NMR Techniques for Membrane Proteins, 11-14, May 2009, Rutherford Appleton Laboratory, Oxford, **UK**.
- FEBS Advance course on QCM, SPR/Ellipsometer& AFM as novel techniques in bioimaging and biomaterials. 22-29, June 2008, Ankara, **Turkey**.
- BNRA Advanced NMR Workshop “From Data to Structures” 26 May- 6 Jun 2008. Utrecht, **Netherlands**.
- Practical course on “Biomacromolecules in solution by Small-Angle Scattering”, 25 Nov – 29 Nov 2007, University of Copenhagen, **Denmark** & MaxLab, Lund, **Sweden**.
- 2nd Copenhagen workshop on “Biomacromolecules in solution studied by Small-Angle Scattering”, 30th Nov 2007, Copenhagen, **Denmark**.
- EMBO course on “Multidimensional NMR in Structural Biology”, 27 Aug – 1 Sep 2006, IlCiocco, **Italy**.
- 1st European Schools on “Solid-State NMR: Advanced level - Biological Solids”, 29 May - 2 June 2006, **Germany**.
- Practical training on “Fundamentals of HPLC Training” in Shimadzu (Asia Pacific) Pte Ltd, **Singapore**, 12-13 April, 2006.
- Course and hands-on training workshop on “Cryo Electron Microscopy for

Biological samples” Indian Institute of Science and American Society for Microbiology, Aug 2005, Indian Institute of Science, Bangalore, **India**.

Awards & Fellowships:

- **D**epartment of **S**cience & **T**echnology (Govt. of India)-Fast Track Young Scientist Project Award, 2012.
- **D**epartment of **BioT**echnology (Govt. of India)-**R**apid **G**rand for **Y**oung Investigators Project Award, 2012.
- Post-doctoral Research Fellowship, J.W.Goethe-University, Frankfurt am Main, Germany (EU-NMR project), Dec, 2007 – Apr, 2010.
- Post-doctoral Research Fellowship, Nanyang Technological University, Singapore (Project funded by Biomedical Research Council (BMRC), A*Star, Singapore), Feb, 2006 – Nov, 2007.
- Research Associate Fellowship, Nanyang Technological University, Singapore (Project funded by Biomedical Research Council (BMRC), A*Star, Singapore), Sep, 2005 – Jan, 2006.
- Research Assistant Fellowship, Center for Scientific and Industrial Consultancy (CSIC), IISc., Bangalore., Apr, 2004 – Sep, 2005.
- Research Assistant Fellowship, Department of Biotechnology (DBT), India, Apr, 2003 – Mar, 2004.
- Research Assistant Fellowship, Department of Science & Technology (DST), India, Aug, 2002 – Mar, 2003.
- Senior Research fellowship, Indian Institute of Science, Bangalore, India, Aug, 1999 – Jul, 2002.
- Junior Research fellowship, Indian Institute of Science, Bangalore, India, Aug, 1997 – Jul, 1999.
- EMBO course fee support to attend the EMBO Practical course on “Single-molecule manipulation and analysis of DNA-Protein interactions” 5-18 July, 2009, Paris.
- E-MeP partial travel support to attend E-MeP-Net Advanced Practical Course in NMR Techniques for Membrane Proteins, 11-14, May 2009, Rutherford Appleton Laboratory, Oxford, UK.

- FEBS-YTF award to attend FEBS Advance course on QCM, SPR/Ellipsometer & AFM as novel techniques in bioimaging and biomaterials. 22-29, June 2008, Ankara, Turkey.
- BMRC-A*Star (Singapore) travel support to attend EMBO course on “Multidimensional NMR in Structural Biology”, 27 Aug – 1 Sep 2006, IlCiocco, Italy.
- BMRC-A*Star (Singapore) travel support to attend 1st European Schools on “Solid-State NMR: Advanced level - Biological Solids”, 29 May - 2 June 2006, Germany.
- Qualified Graduate Aptitude Test for Engineering (GATE), Ministry of Human Resource and Development, India, 1996.
- Merit scholarship (during B.Sc), Government of Tamil Nadu, India, 1990-1993.

Collaborative Research Visits:

- Visiting research professor, Prof. Dr. Harald Schwalbe, Institute for Organic Chemistry and Chemical Biology, J.W.Goethe University-Frankfurt am Main, Germany, 15 June - 31 August, 2012.
- Visiting research Professor, Prof. Dr. Lawrence Rajendran, Systems and Cell Biology of Neurodegeneration, Division of Psychiatry Research, University of Zurich, Switzerland, 24-28 August, 2012.
- Visiting research scientist, Prof. Dr. Harald Schwalbe, Institute for Organic Chemistry and Chemical Biology, J.W.Goethe University-Frankfurt am Main, Germany, 1 May - 31 July, 2010.
- Visiting research scientist, Dr. Marc Baldus, Solid-state NMR laboratory, Department of NMR based Structural Biology, Max-Planck Institute for Biophysical chemistry, Gottingen, Germany, 17Aug, 2006 – 8Sep, 2006.

Delivered Invited Lectures

Several invited lectures and lecture series on *Biophysics, Chemical biology, Spectroscopy and Molecular modeling* were delivered in many colleges, universities and institutions.

Educational/Teaching Interests

Multidisciplinary Education, Biological Education, Chemical Education, Educational Technology, Innovative Education, eLearning, Content Design & Analysis, Educational Policy, Educational Management, Learning Theories & Educational Models, Web Tools for Learning and Educational Psychology.

Teaching at University

Ph.D (Chemistry)

Research Methodology – **Course Teacher** (Philosophy of Scientific Research and Methodology, Good Lab Practice)

M.Phil (Chemistry)

Research Methodology – **Course Teacher** (Philosophy of Scientific Research and Methodology, Good Lab Practice)

Course Work - Unit Teacher (Advanced Spectroscopy)

M.Sc. (Chemistry)

Physical Chemistry-I - **Course Teacher** (Quantum Chemistry and Group Theory)

Physical Chemistry-II - **Course Teacher** (Principles of Molecular Spectroscopy)

Physical Chemistry-III – Unit Teacher (Advanced Biophysical & Bioinorganic chemistry - Elective)

Physical Chemistry IV – Unit Teacher (Computational Chemistry & Cheminformatics)

M.Sc. (BioChemical Technology) – School of Biological Sciences, MKU

Bioinformatics – **Course Teacher**

M.Sc. (Computational Biology) – School of Biotechnology, MKU

Fundamentals of Biological Molecular Spectroscopy – Unit Teacher

Molecular Modeling and Simulations – Unit Teacher

Systems Biology – Unit Teacher

M.Sc. (Biotechnology) – School of Biotechnology, MKU

Fundamentals of Biophysics – Unit Teacher

M.Sc. (Genomics) – School of Biological Sciences, MKU

Proteomics – Unit Teacher

External Academic Activities

- Deputy Coordinator, Choice Base Credit System (CBCS), MKU
- Coordinator, SWAYAM Courses, MKU

- Member, Academic Committee, MKU
- Member, **C**urriculum **D**evelopment **C**ell (Chemical Sciences), MKU
- Resource person, UGC-HRDC, Bharathiyar University, Coimbatore.
- Resource person, UGC-HRDC, M. K. University, Madurai.
- Member, Admission Monitory Committee (2013-2015)
- Member, University Budget Committee (2013-2015)
- Member, **I**nternal **Q**uality **A**ssurance **C**ell, MKU (2013-2017)
- Member, **NAAC** Steering Committee, MKU (2013-2014)
- Member, **I**ndustrial **C**onsultancy**C**ell, MKU (2014-2018)
- Faculty in-charge, HR-TEM Facility, Central Instrumentation Center (2014-2019)

Educational Workshops Participated

- Blended Learning *Act II* (NTU Teaching & Learning Seminar), Nanyang Technological University, Singapore, 27-28, Feb, 2007.
- Redesigning Teaching Delivery for Learner-centred Active Learning, Nanyang Technological University, Singapore, 26, Feb, 2007.

Popularizing Science- Active member in Tamil Nadu Science Forum

Passion driven Interests / Activities / Sills / Expertises

- Learning Skill Trainer for School and College Students
- Personalized evaluation tool making and analysis
- Mind map trainer
- Failure Analysis
- Vision Building
- Value based System Development Approach
- Human Resource Development
- Leadership Analysis

Leadership Activities

- Organizing Secretary, “Nationwide Sensitization Workshop on Chemistry Teaching” organized by Vigyan Prasar (DST)-Tamil Nadu Science Forum-School of Chemistry (MKU), Madurai, 09-11 November, 2011.
- Organizing Secretary, “National Seminar on Nanostructured Materials and Applications (NSNMA-2011)” School of Chemistry, Madurai Kamaraj University, Madurai, 4-5 March, 2011.
- Served as Chairman, Students’ Council, Indian Institute of Science, Bangalore, 1999-2001.
- Served as Chairman, Students’ Advisory Committee, Indian Institute of Science, Bangalore, 1999-2001.
- Served as Hostel President, Indian Institute of Science, Bangalore, 1998-1999.
- Served as Member & Students’ representative, Senate Library Committee, Indian Institute of Science, Bangalore, 1998-2001.
- Served as Member & Students’ representative, Placement Committee, Indian Institute of Science, Bangalore, 1998-1999.
- Served as Member & Students’ representative, Campus Welfare Committee, Indian Institute of Science, Bangalore, 1998-2001.
- Served as Students’ representative, Chairmen of Departments meetings, Indian Institute of Science, Bangalore 1998-2001.
- Organized several events (scientific, social & cultural) during my education in schools, colleges and Indian Institute of Science.
- Organized “A dialogue on Bridging Science to Humanity” at Indian Institute of Science campus, 11-12 December, 2000.

Personal Particulars

Date of Birth : 17th June 1973

Sex : Male

Marital status: Married and blessed with one Son and one Daughter

Nationality : Indian

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