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Dr. S. BALAJI

HIGHLIGHTS

- Received a Young scientist award from VGST, Govt. of Karnataka, India 2010
- Obtained a Cambridge International certificate for teachers & trainers, 2012
- Recognized as a "Senior Consultant" by the Director, Novoinformatics (an IIT-Delhi based Drug Discovery R & D company), 2012
- Recognized as a 'subject expert in Bioinformatics' appointed by Agricultural Scientist Recruitment Board (ASRB), New Delhi, India, 2017
- Received an award for 'best video lecture' under 'Biology' category, 2013
- Nominated as an External Expert in Bioinformatics, by the Director, Indian Institute of Spices Research, Calicut, Kerala, India
- Experience in challenging roles at various positions ranging from Research Associate or Lecturer to Associate Professor
- Appointed as a Member, Board of Examiners in University of Madras, TN, India
- Appointed as a Member, Board of Examiners in Kannur University, KL, India
- Member, Board of Studies & Examiners at St. Aloysious college, M'lore, India
- Appointed as a Member, Doctoral Advisory committee, VIT, Vellore, TN, India
- Resource person at the NIT, Calicut, Calicut University and other prestigious colleges/institutions.
- Expertise in theoretical 3D-modeling of proteins (Ref: PDB 1UZ7 & 1VZF), Biological data interpretation, Primer Design (Ref: EMBL, AM286692, AM422703-05), Sequencing (KT984127 to KT984163), Sequence and structure analysis and *in silico* rational drug design.

EDUCATION

Ph.D. **Bio/chem-informatics**, (*Insilico* analysis and drugability of the compounds from the family *Zingiberaceae*), April 2010

M.Phil., **Bioinformatics**, 2007, Bharathidasan University, First Class

M.Sc., **Bioinformatics**, 2003, Bharathiar University, CGPA:5.54/6.0, First Class with Distinction

B.Sc., **Biochemistry**, 2001, Bharathidasan University, 75.13%, First Class with Distinction (Ranked University 14th out of 96 Colleges)

PROFESSIONAL EXPERIENCE

- **June 2003, Lecturer-Bioinformatics,**
  Dept. of Biochemistry, Srimad Andavan Arts & Science College, India
- **July 2003 to September 2004, Lecturer-Bioinformatics,**
  School of Chemical & Biotechnology, SASTRA University, India
- **20th September 2004 to 16th June 2007,**
  Research Associate, Bioinformatics, DISC, Indian Institute of Spices Research, Calicut, India
- **Currently, Associcate Professor (Senior Scale), Department of Biotechnology, Manipal Institute of Technology, Manipal.**

POST-DOCTORAL RESEARCH

- Prestigious INSA-NASI-IASc Research Fellow, 2010
- Post-doctoral research on "Physio-chemico-thermo-mechanical properties of Green Composites", 2012 (supported by MU with a seed money of Rs. 150000)

RESEARCH PROJECTS/ GRANTS

RESEARCH PROJECTS/ GRANTS

Sl. #	RESEARCH PROJECTS (DURATION)	NAME OF THE FUNDING AGENCY	DATE OF RECEIPT/ COMPLETION	TOTAL BUDGET
1	'In silico Analysis and in vitro synthesis of Anticholesteremic compounds from Turmeric' (for 2 YEARS)	GOVERNMENT OF KARNATAKA, Vision Group on Science and Technology, Department of Information Technology, Biotechnology and Science & Technology	Completed on 29th June 2013	Rs. 500,000/
2	Centre for interactive biomolecular 3D-literacy (C-In-3D) (for 3 YEARS)	Center of Innovative Science Engineering and Education (CISEE), VGST, Govt. of Karnataka	Notified on 17th Oct 2017	Rs. 3,000,000/

GUIDED PHDS

- Ms. Rama completed her thesis on "**IN-SILICO DESIGN OF DRUG CANDIDATES FOR NEGLECTED TROPICAL DISEASES**" 2017

- Currently guiding four PhDs, two full-time, and on two part-time basis

PROFESSIONAL CONTRIBUTIONS

VISITING PROFESSOR/ GUEST FACULTY

- Visiting Professor at the Integrative Pharmacogenomics Institute (iPROMISE), Universiti Teknologi MARA (UiTM), Selangor, Malaysia

- Served as a Guest Faculty for DOEACC-BIA level and guided 18 students in their individual project work during November to December, 2004 at **DOEACC** (Department of Electronics Accredition of Computer Courses) Centre, Calicut, India

- Served as a Guest Lecturer for **M.Tech (Computer Science and Engineering)** students at the **National Institute of Technology**, Calicut. Delivered major aspects of "Bioinformatics" as an Elective course during the session 'Winter 2006'.

INVITED CHAIR

- Invited as a Chairperson for a technical session in International Conference on Computational Methods in Engineering & Health Sciences (ICCMEH) held during 17th -19th December, 2014

ORGANIZED TRAININGS & WORKSHOPS

SERVED AS A RESOURCE PERSON AND TOOK LEADERSHIP IN ORGANIZING THE FOLLOWING TRAININGS AND WORKSHOPS

- Organizing secretary, "National level workshop on Protein Modelling", Held on 21 -23 Feb 2004, SASTRA Deemed University.

- DBT Sponsored 21 days Scientist training programme on Biotechnology & Bioinformatics Applications in Agricultural Research during 26 Sept – 16 Oct, 2004 (*9 trainees*).

- DBT sponsored Workshop on "Agri-Informatics" during 15-16 Oct, 2004 (*38 delegates*).

- DBT Sponsored 21 days Scientist training programme on Biotechnology & Bioinformatics - Tools & Applications (Recognized by ICAR for Centre Advancement) during 19 Oct – 08 Nov, 2005 (*9 trainees*).

- Summer training for M.Sc., students in Biochemistry, Biotechnology and Bioinformatics during 05 May- 04 June, 2005.

- DBT Sponsored training programme (open to all) on Bioinformatics - Tools & Applications during 14-18 Nov, 2006.

- Summer training for M.Sc., students in Biochemistry, Biotechnology and Bioinformatics during 05 May - 03 June, 2006.

- ICAR Sponsored Winter school on "Diagnostics and Molecular Characterization of Pathogens of Horticultural Crops and their Bio-control Organisms" during 01-21 December, 2006.

INVITED LECTURES

- Delivered Lecture and Demonstrations on "**Protein Modeling**" held on 15-Sep-2005 at Central Sericultural Research and Training Institute (CSRTI), Mysore, Karnataka.

- Delivered guest lecture on **"Molecular Graphics and Drug Designing"** and **"Applied Bioinformatics"** at Dhanalakshmi Srinivasan College of Science, Perambalur, Trichy, Tamilnadu, India.

- Delivered a Lecture on '**Molecular Modeling**' on a training program at Central Plantation Crops Research Institute (CPCRI) funded by DBT on 'Molecular docking and functional genomics' during 9^{th}-13^{th} October, 2006.

- One day seminar on "**Bioinformatics**" on 05-Aug-2006 at Pazhassi Raja College, Pulpally, Wayanad (Affiliated to University of Calicut).

- Demonstrated "**Applications of Bioinformatics**" in the UGC sponsored refresher course in Biotechnology and Bioinformatics, Calicut University on 07- Oct- 2006.

- Guest lecture on **"Protein Modeling"**, DBT funded training program on 'Application of Bioinformatics and Biotechnology in Plantation Crops Research'. Organized by CPCRI (ICAR), Kasaragod-671 124, Kerala, India, 3rd to 12th Dec, 2007.

- Keynote address on **"Bioinformatics"** for the National Level Paper presentation Competition (Anveeksha - 2010) organized by the IT Dept of St Aloysius Institute of Management & Information Technology (AIMIT) on 5th Oct.2010.

- Guest lecture for the National Consultative Meet on Bioinformatics in Horticulture (11-12 October 2010) titled Hortinformatics-2010, was jointly

organized by Indian Institute of Spices Research (IISR), Calicut and the Department of Biotechnology, Govt. of India, New Delhi.

- Key note address on 'Protein structure visualization and Analysis' for a DBT sponsored Two day National Workshop on Computational and Structural Biology (26th and 27th March, 2012) organized by the PG Dept of Bioinformatics, St Aloysius Institute of Management & Information Technology (AIMIT), St Aloysius College, Beeri, Madoor, Mangalore.

- Guest lecture on 'Bioinformatics and Drug Discovery' (July 3, 2012) for an AICTE sponsored Quality Improvement Programme "An Insight into Biopharmaceuticals – Technologies, Analysis and Regulatory Issues" (June 25 - July 7, 2012) organized by Manipal College of Pharmaceutical Sciences, Manipal.

- Resource person for 'Structural Bioinformatics' for a DBT sponsored Two day National Workshop on Computational and Structural Biology (25th and 26th Feb, 2015) organized by the St Aloysius Institute of Management & Information Technology (AIMIT), St Aloysius College, Beeri, Mangalore.

- Resource person for "Bioinformatics" (3 June to 11 June 2014) for PG students and Research Associates of Integrative Pharmacogenomics Institute (iPROMISE), Universiti Teknologi MARA (UiTM), Selangor, Malaysia

- Guest lecture for a "one-day workshop in Bioinformatics" (12 Dec 2014) for the UG students of Management and Science University (MSU), Selangor Darul Ehsan, Malaysia

- Session chair: Softcomputing & Bioinformatics for the International conference on Advanced IT, Engineering and Management, SACAIM 2015, organized by the St Aloysius Institute of Management & Information Technology (AIMIT), St Aloysius College, Beeri, Mangalore.

- Resource person for the DBT sponsored National conference on "Frontier contemporary horizons in Bioinformatics and Computational Biology" (21-22nd Jan, 2016), organized by Department of Botany and Bioinformatics, Nirmala College for Women, Coimbatore, India

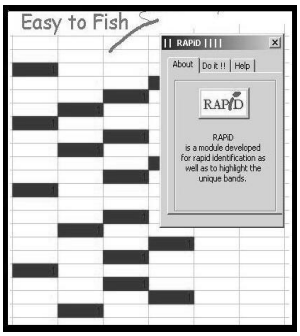
- Resource person for a hands-on workshop (Dec 6-8, 2016) at National level in cheminformatics, organized by Bioinformatics infrastructure facility, Dept. of Biotechnology, University of Calicut

WEB SERVERS DEVELOPED

http://spices.res.in/juzbox

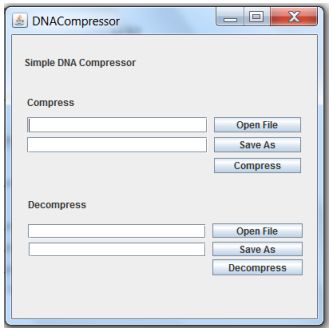
http://spices.res.in/readthro

SOFTWARE DEVELOPED

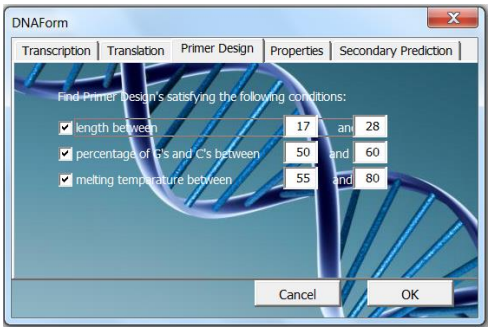


1. RAPiD – An add-on to MS Excel to identify unique bands from PAGE data. http://spices.res.in/rapid

2. DNA Compressor – A Java applet to compress/ genomes



3. An add-on to MS Word for Nucleotide/Protein analysis



DATABASES DEVELOPED

- **http://www.spices.res.in/spicebioinfo/project/chitinase/index.htm**
- **http://220.227.138.213/passcom/**

RESEARCH PUBLICATIONS.

(a) International Journals

1. **Balaji S**, Chempakam B. Anti-bacterial effect of essential oils extracted from selected spices of Zingiberaceae. The Natural Products Journal, 7, 2017 (DOI: 10.2174/2210315507666171004161356)

2. Dhara, D., Sunil D., Kamath PR., Shrilakshmi AK, **Balaji S**. New Oxadiazole Derivatives: Synthesis and Appraisal of Their Potential as Antimicrobial Agents. Letters in Drug Design & Discovery 14: 2017 (DOI: 10.2174/1570180814666170425160545)

3. Joy, Amitha and **Balaji, S** (2017) Interactions of phytic acid with anticancer drug targets. International Journal of Computational Biology and Drug Design, 10 (1). pp. 49-62. ISSN 1756-0756

4. Madhoolika B, Anil Kumar NV, **Balaji S**. In vitro analysis of 4-methylumbelliferone as a sole carbon source for Lactobacillus helveticus 2126. Lett Appl Microbiol. 2017, 65(3):249-255

5. Kannan N, **Balaji S**, Anil K. Structural and elemental characterization of traditional Indian Siddha formulation: Thalagak karuppu. J Ayurveda Integr Med. 2017, 8(3):184-189

6. Sandhya P.N. Dubey, N. Gopalakrishna Kini, M. Sathish Kumar, **S. Balaji**, M.P. Sumana Bhat and Harshad R. Kavathiyal (2016). A Novel Conformation Generation Framework for De novo Protein Structure Prediction Using Hydrophobic-Polar Model. Asian Journal of Biochemistry, 11(3). DOI: 10.3923/ajb.2016.

7. Dubey, Sandhya P and Kini, Gopalakrishna N and Kumar, Sathish M and **Balaji, S** (2016) Ab initio protein structure prediction using GPU computing. Perspectives in Science, 8. pp. 645-647.

8. Kini, Gopalakrishna N and Dubey, Sandhya P and **Balaji, S** and Kumar, Sathish M (2016) A Comparative Study of Various Meta-Heuristic Algorithms for Ab Initio Protein Structure Prediction on 2D Hydrophobic-Polar Model. Advances in Intelligent Systems and Computing, 2. pp. 387-399. ISSN 2194-5357

9. Amitha Joy and **S.Balaji**. Drug-likeness of Phytic Acid and Its Analogues. The Open Microbiology Journal, 2015, 9, 141-149.

10. M. Rama, N.V. Anil Kumar and **S.Balaji**. Virtual screening of approved drugs against purine nucleoside phosphorylase of Schistosoma mansoni. Int. J. Computational Biology and Drug Design, Vol. 8, No. 4, 2015

11. M. Rama, N.V. Anil Kumar, **S. Balaji**. A comprehensive review of patented antileishmanial agents. *Pharmaceutical Patent Analyst*, **2015**, 4(1), 37-56

12. **S. Balaji**, K. S. Mukunthan, and N. Kannan. Bio-Nanomaterials: Structure and Assembly. *Reviews in Advanced Sciences and Engineering*, **2014**, 3(3), 1–11.DOI: http://dx.doi.org/10.1166/rase.2014.1068

13. K.S. Mukunthan, N.V. Anil Kumar, **S. Balaji** and N.P. Trupti. Analysis of Essential Oil Constituents in Rhizome of Curcuma caesia Roxb. from South India. *Journal of Essential Oil Bearing Plants*, **2014**, 17(4), 647-651, DOI: 10.1080/0972060X.2014.884781

14. Dhanya Sunil, C. Ranjitha and M. Rama and **S. Balaji**. 3-[(E)-(4-Hydroxy-3-methoxybenzylidene)amino]-2-thioxoimidazolidin-4-one as Snail1 Inhibitor with Anticancer and Anti-migratory Properties Against Colorectal Cancer. *Chemical Science Transactions*. **2014**, 3(4),1-7, DOI:10.7598/cst2014.896

15. Dhanya Sunil, Ranjitha, **S Balaji** and KSR Pai.(E)-1-(2,3-dimethoxyphenyl)-N-(4-methylpyridin-2-yl)methanimineas a potent anticancer agent against colorectal cancer. *International Journal of Pharmaceutical Chemistry*, **2014**, 04(01),11-14, DOI:10.7439/ijpc

16. **Balaji S** . Biomorphic Presentation of Proteins: Artistic Science or Scientific Art? *Leonardo*, **2013**, 46 (3), 226–231

17. **Balaji S** and Neela S. Protein Kolam: An Artistic Rendition of Molecular Structure Data. *Leonardo*, **2013**, 46 (1), 24–29.

18. SSK Nair, N. V. Subba Reddy, K. S. Hareesha and S. Balaji. A Diverse Assimilation of Sequence and Structure Dependent Features for Amyloid Plaque Prediction Using Random Forests. Current Proteomics, 2013, 10, 38-44

19. P. Priyodip, **S. Balaji**, M. Vijaya Kini. Physio-chemico-thermo-mechanical properties of selected biodegradable polymers. *Green Materials*, **2013**, 1(3), 191-200

20. Vinoth R and **Balaji S**. Biomolecular Mimic Circuit for an Allosterically Regulated Enzyme of Pyrimidine Biosynthetic Pathway. *J. Biosens Bioelectron*, **2012**, 3:117, doi:10.4172/2155-6210.1000117

21. Mukunthan K.S and **Balaji S**. Cashew Apple Juice (Anacardium occidentale L.) Speeds Up the Synthesis of Silver Nanoparticles. *International Journal of Green Nanotechnology*, 2012, 4:2, 71-79.

22. Mukunthan K.S and **Balaji S**. Silver Nanoparticles Shoot Up from the Root of Daucus carrota (L.). *International Journal of Green Nanotechnology*, 2012, 4:1, 54-61.

23. N.Kannan, K.S.Mukunthan and **S.Balaji**. A Comparative study of morphology, reactivity and stability of synthesized silver nanoparticles using *Bacillus subtilis* and *Catharanthus roseus* (L.) G. Don. *Colloids and Surfaces B: Biointerfaces,* **2011,** 86: 378-383

24. K.R. Sathisha, Shaukath A. Khanum, J.N. Narendra Sharath Chandra, F. Ayisha, **S.Balaji**, G.K.Marathe, Shubha Gopal, K. S. Rangappa. Synthesis and xanthine oxidase inhibitory activity of 7-methyl-2-(phenoxymethyl)-5H-[1, 3, 4] thiadiazolo[3,2-a]pyrimidin-5-one derivatives. *Bioorganic & Medcinal Chemistry*, 2011, 19 (1): 211-220.

25. **S.Balaji** and B.Chempakam. Toxicity Prediction of compounds from Turmeric (*Curcuma longa* L). *Food and Chemical Toxicology,* **2010**, 48: 2951-2959.

26. **S.Balaji** and B.Chempakam. Pharmacokinetics Prediction and Drugability Assessment of Diphenylheptanoids from Turmeric (*Curcuma longa* L). *Medicinal Chemistry,* **2009**, 5:130-138.

27. P.Bobby, **S.Balaji**, V.Sathyanath and S.J.Eapen. JUZBOX: A web server for extracting biomedical words from the protein sequence. *Bioinformation,* **2009**, 4(5):179-181.

28. Sandeep Varma R, Johnson George K, **Balaji S**, Parthasarathy, VA. Differential induction of chitinase in Piper colubrinum in response to inoculation with Phytophthora capsici, the cause of foot rot in black pepper. Saudi Journal of Biological Sciences (2009) 16, 11–16.

29. **S.Balaji** and V.Muralikrishnan. In silico Analysis of Alkaline Shock Proteins in Enterobacteria. *Journal of Proteomics & Bioinformatics*, 2008, 2: 21-32.

30. **S.Balaji** and B.Chempakam**.** Mutagenicity and Carcinogenicity Prediction of Compounds from Cardamom (*Elattaria cardamom* L.). *Ethnobotanical Leaflets,* **2008**, *12: 682-689*.

31. P.G.R. Chandran and S.Balaji. Phytochemical Investigation and Pharmocological Studies of the Flowers of Pithecellobium dulce. Ethnobotanical Leaflets, 2008, 12: 245-253.

32. S.Manikandan, **S.Balaji**, K.Anil and K.Rita. Comparative sequence analysis of acid sensitive/ resistance proteins in *Escherichia coli* and *Shigella flexneri*.

Bioinformation, **2007**, 2(4):145-152.

33. **Balaji, S**., Kalpana, R., and Shapshak, P. Paradigm development: Comparative and predictive 3D modeling of HIV-1 Virion Infectivity Factor (vif), **2006**. *Bioinformation* 1(8): 290-309.

34. Balaji, S., Kalpana, R., and Eapen, S.J. PIR pair-wise alignment: A slip up for signal peptides. *Bioinformation,* **2006**, 1(3): 188-193.

35. S. Balaji, S. Lakshminarayanan. Conceptual comparison of metabolic pathways with electronic circuits. *Journal of Bionics Engineering*, 2004, 1(3), 175–182.

(ii) National Journals

36. Priyodip, P and Prakash, Peralam Yegneswaran and Balaji, S (2017) Phytases of Probiotic Bacteria: Characteristics and Beneficial spects. Indian Journal of Microbiology, 57 (2). pp. 148-154. ISSN 00468991

37. **S.Balaji**, D S Prasanna and K S Rangappa. Docking, QSAR and COMFA studies on Arecoline analogues as muscarinic acetylcholine receptor (mAChR) M1 agonists. Proc Indian Natn Sci Acad (2013). 79 (1):41-50

38. C.Sheji, S.G.Renu, **S.Balaji** and M.Anandaraj. Ribosomal DNA analysis of three *Phytophthora* species occurring in India. *Indian Phytopath*. (2009). 62(2):155-162.

39. **S.Balaji**, A.I. Bhat and S.J.Eapen. A phylogenetic reexamination of cucumber mosaic virus isolates based on 1a, 2a, 3a and 3b proteins. *Indian J.Virol* (2008). 19(1):17-25.

40. Wilson, M., **Balaji, S**., and Eapen, S.J. Druggability of lead compounds from turmeric (C*urcuma longa L*). *Journal of Medicinal and Aromatic Plant sciences* (2007)*,* Vol 29, No.1.

(iii) Book Chapters

41. **Balaji S**, Ramachandran A, Nandy K, Shapshak P. Sequence Accuracy in Primary Databases: A Case Study on HIV-1B. In Global Virology II - HIV and NeuroAIDS, pp 779-822, 2017

42. Sneha P, **Balaji S**, Shapshak P. Amyloidogenic Pattern Prediction of HIV-1 Proteins In Global Virology II - HIV and NeuroAIDS, pp 823-895, 2017

43. Shapshak P, Foley BT, **Balaji S**, Segal DM, McCoy C, Page JB. Socioepidemiology of Injection Drug Users in Miami and HIV-1B Envelope

(V1–V5) Genetic Diversity: A Preliminary Study. In Global Virology II - HIV and NeuroAIDS, pp 347-373, 2017.

44. **S Balaji**, Chapter No: 7, An overview of Biological Data Mining, Ed Shri Ram, Library and Information Services for Bioinformatics Education and Research, © IGI Global, Hershey PA, US **2017**, pp 130-154, ISBN: 978-1-5225-1871-6

45. **S Balaji**, P Sneha, M Rama and P Shapshak , **Chapter No: 24**, Global Protein Sequence Variation in HIV-1-B Isolates Derived from Human Blood and Brain, Eds P Shapshak, JT. Sinnott, C Somboonwit, J H. Kuhn, Global Virology I: Identifying and Investigating Viral Diseases, Springer New York 2015, pp613-666, ISBN 978-1-4939-2409-7

46. B.Chempakam and **S.Balaji**, **Chapter No: 17**, Star Anise, eds V.A Parthasarathy, B.Chempakam and T.J. Zachariah, Chemistry of Spices, © CAB International 2008, pp319-330.

(iv) Books

47. **Balaji**, **S** and Chempakam, B. **Masala or Medicine?** – Drugability of the compounds from the family zingiberaceae, LAP LAMBERT Academic publishing, Germany (**ISBN 978-3-659-13088-5**)

48. **Balaji**, **S**. **Alkaline shock proteins – sequence, structure and phylogeny**, LAP LAMBERT Academic publishing, Germany (**ISBN 978-3-8484-4749-7**)