

## **T. Govindaraju, Ph.D, FRSC, FASc**

Professor

Bioorganic Chemistry Laboratory

New Chemistry Unit

Jawaharlal Nehru Centre for

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Homepage: <https://www.jncasr.ac.in/faculty/tgraju>

Co-founder, VNIR Biotechnologies Pvt. Ltd, Bengaluru



## **EDUCATION**

2006 **PhD** (Chemistry), National Chemical Laboratory and University of Pune, Pune, India.

2000 **Master of Science** (Chemistry), Bangalore University, Bengaluru, India

1998 **Bachelor of Science**, Govt. Science College, Bangalore University, Tumkuru, India

## **WORK EXPERIENCE**

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| 2020-present     | Professor, Bioorganic Chemistry Laboratory, New Chemistry Unit and School of Advanced Materials (SAMat), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru. |
| 2020-2023        | Chair, Education Technology Unit, JNCASR, Bengaluru.   |
| 2014 - 2020      | Associate Professor, Bioorganic Chemistry Laboratory, New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru.                                |
| 2008-2014        | Assistant Professor, Bioorganic Chemistry Laboratory, New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru.                                |
| 2018 (April-May) | Visiting Professorship, University of Paris-Sud, University of Paris-Saclay  |
| 2015 (Apr-May)   | Visiting Professor, RMIT University, Australia   |
| 2011 (Jun-July)  | Visiting Scientist, Sam Stupp's Laboratory, Northwestern University, USA.  |
| 2006-2008        | Alexander von Humboldt Research Fellow, Department of Chemical Biology, Max Planck Institute of Molecular Physiology, Dortmund, Germany  |
| 2005-2006        | Postdoctoral Fellow, Departments of Biochemistry, and Chemical and Biological Engineering, University of Wisconsin-Madison, Madison, USA   |
| 2001-2005        | Research Fellow, National Chemical Laboratory, Pune.   |
| 2000-2001        | Research trainee (Campus selection), Cadila Pharmaceuticals, Dholka, Ahmadabad, Gujarat.   |

## **PROFESSIONAL RECOGNITION, AWARDS AND FELLOWSHIPS**

**2023 National Technology Award (Translational Research)**, Govt. of India

**2023 Fellow, Indian Academy of Sciences**, Bengaluru

- 2022 Sun Pharma Science Foundation Research Award in Pharmaceutical Sciences**
- 2022 Featured in THE ASIAN SCIENTIST 100**
- 2022 Bhagyatara Award**, Punjab University
- 2022 SASTRA-CNR Rao Award 2022** for excellence in Chemistry & Materials Science
- 2022 Dr. Shoba Ramakrishnan Endowment lecture**, WCC, Chennai
- 2021 Shanti Swarup Bhatnagar (SSB) Prize** for the year 2021 in Chemical Sciences
- 2021 Fellow of Royal Society of Chemistry (FRSC)**, Royal Society of Chemistry (London), (invited) under “Leader in the Field” Category in the field of Bioorganic Chemistry.
- 2020 Health & Wellbeing Winner**, Commonwealth Chemistry Posters – Building the Partnership, **Commonwealth Chemistry**, Federation of Chemical Sciences Societies
- 2020 National Prize for Research in Chemistry of Peptides and Nucleic Acids**, CNR Rao Education Foundation and JNCASR, Bengaluru
- 2019 Special Lecture Award of the Pharmaceutical Society of Japan**, Kyoto University, Japan
- 2019 CDRI Award for Excellence in Drug Research**, CSIR-Central Drug Research Institute, Lucknow, India
- 2018 Visiting Professorship**, University of Paris-Sud, University of Paris-Saclay, France
- 2017 IPS-Young Scientist Award** (2017), Indian Peptide Society
- 2017 R.A. Mashelkar Endowment Lecture**, CSIR-National Chemical Laboratory (NCL), NCL-Research Foundation, Pune
- 2017 MRSI Medal** (2017), Materials Research Society of India
- 2016 SwarnaJayanti Fellowship** (2015-2016), the Department of Science and Technology (DST), Govt. of India
- 2016 AVRA Young Scientist Award** (2015), AV Rama Rao Research Foundation, Avra Laboratories Private Limited, Hyderabad
- 2015 Sir C V Raman Young Scientist Award** (2014), by Government of Karnataka
- 2015 CRSI Bronze Medal** (2016) of Chemical Research Society of India
- 2015** Founding member of **Indian National Young Academy of Science (INYNAS)**. Selected by INSA council

- 2015 Prof. CNR Rao Award 2014/2015**, Royal Melbourne Institute of Technology (RMIT) University, Australia
- 2015** Selected for “**Emerging Young Investigator issue 2015**” of ChemComm, RSC Publications
- 2014** Selected for ‘**Emerging Career Series**’ of ChemPlusChem. **An initiative to feature up and coming researchers** whose focus is on multidisciplinary research centering on chemistry
- 2014 Prof. C. N. R. Rao Oration Award 2014**, JNCASR, Bangalore
- 2014 Sheikh Saqr Career Award Fellow**, 2014, Sheikh Saqr Laboratory, JNCASR, Bangalore.
- 2012 Prof. D. K. Banerjee Memorial Lecture Award** for the year 2012, Indian Institute of Science, Bangalore
- 2011 Affiliate member**, International Union of Pure and Applied Chemistry (IUPAC)
- 2011 INSA Medal for Young Scientist (2011)**, Indian National Science Academy, New Delhi, India
- 2011 Innovative Young Biotechnologist Award (IYBA) 2010**, Department of Biotechnology (DBT), Ministry of Science and Technology, Government of India.
- 2011 Associate (2011)**, Indian Academy of Sciences, Bangalore, India
- 2006 Alexander von Humboldt Fellowship (2006-2008)**: Awarded by Alexander von Humboldt Foundation, Germany
- 2006** Profiled as one of the **India’s Young Blood**, in **Chemical and Engineering News (C&EN), American Chemical Society (ACS), USA, 2006**, Vol. 84, (12). (**Indian Science Coverage**)
- 2004 Keerti Sangoram Endowment Award**: Best research scholar, **2004** (Chemical sciences), NCL Research Foundation
- 2004** Invited to NOST symposium (Selected from J-NOST)
- 2004 Best Poster Award: IUPAC International Conference** on Biodiversity and Natural products: Chemistry and Medical Applications BNP-2004
- 2000** CSIR-JRF awarded through National Entrance Test (NET) conducted by CSIR-UGC
- 2000 University Topper**, Master of Science, 2000. Awarded **four Gold Medals** with citations and **two cash prizes** with citations, Bangalore University, Bengaluru
- Dr. B. D. Laroia Memorial Gold medal** for having secured the highest marks in **Chemistry** (M. Sc. Chemistry).

**Prof. Siddappa's 60<sup>th</sup> Birthday Commemoration Gold medal** for having secured the highest marks in *M. Sc. Chemistry*.

**Prof. K. M. Shivanandaiah Gold medal** for having secured the highest marks in *Organic Chemistry* (M. Sc. Chemistry).

**Smt. Myna Bai & Narayana Rao Gold medal** for having secured the highest marks in *Organic Chemistry* (M. Sc. Chemistry).

**Fakir Saheb Cash prize** for having secured the highest marks in *Chemistry* (M. Sc. Chemistry).

**Prof. Vrishabendrappa Endowment Cash prize** for having secured the highest marks in *Organic Chemistry* (M. Sc. Chemistry).

**1998- Professor Shivanandaiah Scholarship (1998 and 1999)** awarded to topper in each academic year, Bangalore University, Bengaluru.

**1998 National merit scholarship** (1998): Awarded by UGC, Govt. of India.

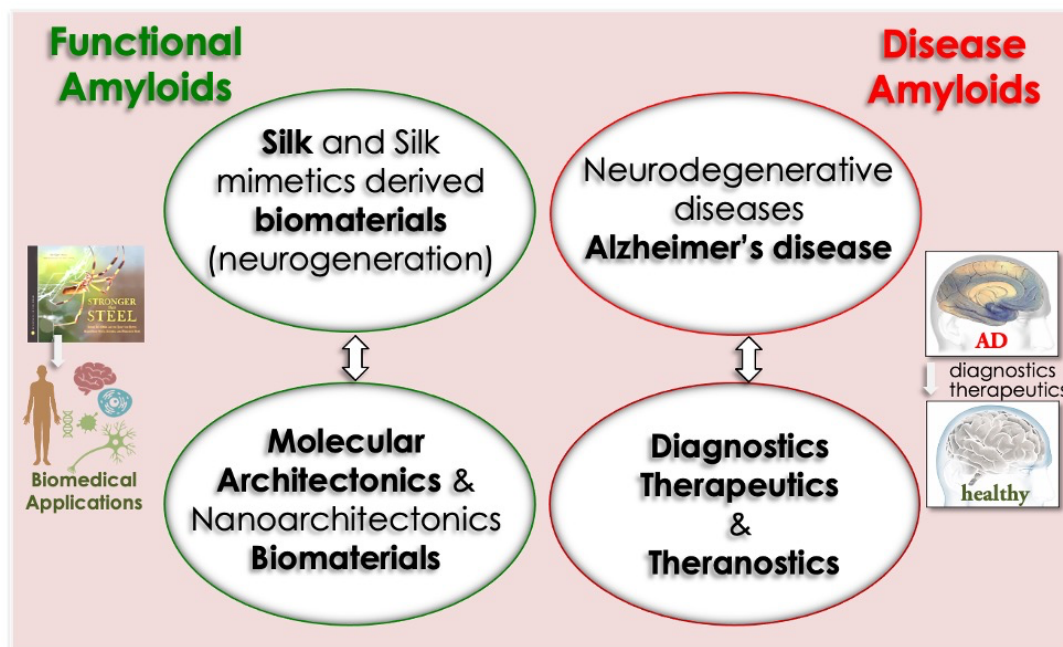
**Editorial Advisory Board member**, Journal of Peptide Science (European Peptide Society and Wiley Publications)

**Guest Editor** for a themed collection on 'Molecular and nanotheranostics' in **RSC Chemical Biology**, The Royal Society of Chemistry, London.

**Profiled in ACS Axial:** National Technology Day: Celebrating India's Achievements in Science and Technology, [Perspectives from Innovators in India](#).

## Research and translational accomplishments

Govindaraju's research focuses on the intersection of chemistry, biology, and materials science, with a particular emphasis on the chemical biology of 'functional and disease amyloids'. Utilizing his expertise in organic synthesis, peptide chemistry, bioconjugate chemistry, biophysical techniques, and chemical biology, Govindaraju has tackled complex problems related to human health and society. His work has led to a deeper understanding of disease mechanisms and the development of innovative diagnostic and therapeutic tools.



### Highlights:

- After a decade of research, Govindaraju has discovered a novel drug candidate, TGR63, for the treatment of Alzheimer's disease. The drug has been licensed to IGC Pharma in the USA for further development and clinical trials (IGC Pharma, USA, [Businesswire](https://www.businesswire.com/news/home/20220620005637/en/IGC-Acquires-Exclusive-Rights-for-a-Potential-Alzheimer's-Drug-Development-Candidate), <https://www.businesswire.com/news/home/20220620005637/en/IGC-Acquires-Exclusive-Rights-for-a-Potential-Alzheimer's-Drug-Development-Candidate>).
- Additionally, diagnostic tools and methods have been developed to detect Alzheimer's disease and differentiate it from other neurodegenerative diseases. A startup company, VNIR Biotechnologies Pvt Ltd, is developing an AD diagnostic platform based on this invention (<https://vnir.life/addiagnostics/>).
- Govindaraju has also identified and validated a new combination biomarker for the reliable diagnosis of Alzheimer's disease, which has the potential to include in the National Institute

on Aging and Alzheimer's Association (NIA-AA) research framework 2018 designated list of biomarkers.

- In 2017, Govindaraju co-founded VNIR Biotechnologies Pvt Ltd to commercialize molecular tools for imaging and diagnostics developed in his lab. The company has successfully raised funds and generated employment. VNIR is working on an Alzheimer's diagnostics-based NIR and PET-based platform for early diagnosis and developing a "Retina Scan" based diagnostic platform.
- He has discovered the first small molecule-based theranostic drug candidate (TGP18) for lung cancer with a novel noncanonical DNA target, which has implications in personalized medicine.
- He has developed a modular technology platform for rapid detection of SARS-CoV-2 targeting unusual DNA conformational targets (**GQ-RCP**), which can be adopted for detection of HIV, influenza, HCV, Zika, Ebola, TB and bacteria.
- Additionally, he has developed several diagnostic and theranostic platforms including a theranostic candidate for malaria, which is capable of providing rapid detection with therapeutic value.
- Govindaraju has also developed an silk fibroin formulations for controlled and sustained insulin delivery, diabetic wound healing, skeletal and neuronal tissue engineering applications. These inventions are ready for translation for human use.
- Govindaraju has introduced a state-of-the-art research theme known as "Molecular Architectonics," which draws inspiration from functional amyloids. This innovative approach aims to design a wide range of molecular and material architectures. By employing biomolecular auxiliaries with minute structural mutations and chirality, this reductionist molecular strategy integrates the domains of molecules, nano and microscale architectures into functional applications.

Some of the applications demonstrated encompass bioelectronics, homochirality, chirality switching, reductionistic systems for understanding protein folding, high-strength biomaterials, self-cleaning surfaces, biosensors, biomimetic catalysis, multi-stimuli-responsive CT-hydrogel for RT-organic ferroelectric thin-film devices, fluorescent organic nanoclusters, drug delivery, wound-healing, stem cell to neuronal differentiation, and tissue engineering.

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## SUMMARY OF PUBLICATIONS

Total number of research papers published: **162+**

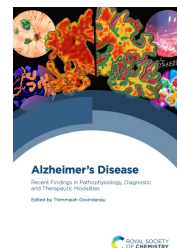
Patents (sanctioned/filed): **>35** (Granted: 6 US patents; 5 Indian patents; many are at PCT and various stages of national phase in several countries). Most of the patents have been licensed/commercialized through startup for the benefit of society.

Citation analysis: h-index: **53** & i10-index: **118** with over **7801** citations (Google Scholar)

### BOOKS: 4

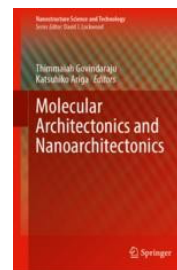
#### Alzheimer's disease

(recent findings in pathophysiology, diagnostic and therapeutic modalities), Royal Society of Chemistry, London, 669 pages, T. Govindaraju (Ed.), 2022.

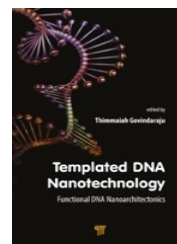


#### Molecular Architectonics and Nanoarchitectonics

In the series of Nanostructure Science and Technology, Springer Nature, Singapore, 548 pages, T. Govindaraju and Katsuhiko Ariga (Eds.), 2021.



**Templated DNA Nanotechnology: Functional DNA nanoarchitectonics**, Jenny Stanford Publishing (CRC Press), Singapore, 426 pages, T. Govindaraju (Ed.), 2019.



#### Book translation

**The Periodic Table: An Introduction** (by CNR Rao and Indumati Rao)

English to Kannada translation by T. Govindaraju (Navakarnataka Publications Pvt. Ltd.)

## STUDENTS MENTORED

Ph.D: 15

MS: 5

PGDMS: 2

Project Assistants (trained): 25

Research Associates/postdocs (trained): 15

Supervised more than 45 summer research fellows (SRFP of JNCASR and Academies) and students of project oriented chemical education (POCE).

**Alumni:** Many of his PhD students and postdocs have already joined as Faculty/ Scientists in reputed academic institutions and industry (IIT BHU, CSIR-IICT, RGCB, Amity University, US Pharmacopeia, Jubilant Biosys Ltd etc.)

## TEACHING ACTIVITIES

**Undergraduate level:** Project Oriented Chemical Education (POCE)

### Graduate level:

2010-2012	Convener: Int. Ph.D (Chemical Science) program & designed course structure
2017-2020	Convener: Integrated. Ph.D (Chemical Science) program
2009-2011	Organic Chemistry, Credits 3:0 (JNC201)
2011-2019	NMR and Infrared Spectroscopy, part of 3:0 Credits Course
2010-2015	Biomaterials, Credits 3:0 (JNC303)
2015-2016	Coordinator: Physical Methods for Chemists, Credits 3:0
2010-2012	Coordinator: Chemistry Lab I, Credits 0:4 (JNC203)
2010-2012	Coordinator: Chemistry Lab II, Credits 0:4 (JNC204)
2017-	Chemical Biology (JNC312), Credits 3:0
2020-	'Translational Research' for Scientific Communications Course

## MEMBERSHIPS OF SCIENTIFIC SOCIETIES

American Chemical society (ACS)	Member
Royal Society of Chemistry (RSC)	Member
Chemical Research Society of India (CRSI)	Life member
Indian Peptide Society (IPS)	Life member
Indian Society of Chemical Biologists (ISCB)	Life member
Asian Chemical Biology Initiative (ACBI)	Life member (and actively involved)
American Peptide Society	Member
Indian National Young Academy of Science (INYAS)	Founder member
Indian Society for Radiation and Photochemical Sciences (ISRAPS)	Life member

## PROFESSIONAL CONTRIBUTIONS

<b>2016-</b>	: Chemical Research Society of India (CRSI)	<b>Secretary</b>
<b>2016-2023:</b>	Indian Peptide Society (IPS)	<b>Secretary</b>
<b>2023-</b>	: Indian Peptide Society (IPS)	<b>Executive Committee Member</b>



## ORGANISATION OF SCIENTIFIC MEETINGS

- 2011 Convener, JNCASR Chemistry Symposium organized by New Chemistry Unit, JNCASR in celebration of International Year of Chemistry 2011, during January 11-12, 2011. National and international eminent speakers participated in the programme.
- 2015 Elected Organizing Secretary, Indian Peptide Symposium 2015 (IPS2015), held at JNCASR, Bengaluru, during September 24-25, 2015.
- 2015 Invited co-chair for the satellite meeting on 'BioInspiration' symposium organized in London by Royal Society London in celebration of 350<sup>th</sup> anniversary of first scientific journal "Philosophical Transactions". Satellite symposium was held at JNCASR (AV). May 27, 2015.
- 2016 Co-organizer, Advanced School on "Nano, structural and single molecule approaches to biology: understanding and handling life at higher resolution conducted by ICTP, Italy and JNCASR, India during 11-16 January 2016.
- 2018, 2020 Coordinator to organize the "Salters Chemistry Camp" a flagship programme of Royal Society of Chemistry.
- 2015- As Secretary (Chemical Research Society of India and Indian Peptide Society) involved in organizing Symposia and Conference on regular basis.

## Science Education and Outreach Programmes

### Chair, Educational Technology Unit (Department), JNCASR

#### Coordinator for outreach programmes

Prof. Govindaraju is deeply passionate about science education and actively participates in delivering popular science talks (in English, Hindi and local language), demonstrations, and organizing programs for school children, college students and teachers at JNCASR, Bengaluru and various places in the state and the country.

As the Chair of the Educational Technology Unit and with a personal interest in the subject, Prof. Govindaraju played a pivotal role in establishing the "Chemical Heritage Exposition" at JNCASR in 2020. This unique Science-



Chem Expo/Museum in India and is an attraction for students, teachers and public at large, featuring working models, stories of famous chemists, and audio-visual facilities.

## **INSTITUTIONAL RESPONSIBILITIES**

- 2022- Member, the Institutional Biosafety Committee (IBSC), JNCASR
- 2022 Member, Modified Assured Career Progression Scheme (MACPS) Committee, JNCASR
- 2021- Member, Academic Council, JNCASR
- 2021 Chair, Committee for human resource contract and management
- 2019- Chair, Education Technology Unit (Department), JNCASR
- 2019- Chair, Committee, Staff Welfare Fund, JNCASR
- 2020- Member, COVID19 Task Force, JNCASR
- 2017 -2018 Convener: Summer Research Fellowship Programme, JNCASR
- 2017 - Member, Medical Committee, JNCASR
- 2016 Member, Vision Document (20 yrs Road Map) Preparation Committee, JNCASR
- 2009 - 2012 Member, Library Committee, JNCASR
- 2014-2018 Member, Intellectual Property Management Committee (IPMC), JNCASR
- 2012 - 2016 Chair, Day Care Facility (DCF) Committee, JNCASR
- 2010- In-charge Faculty: NMR, HPLC and LCMS facility.
- 2008- Played a key role in establishing the New Chemistry Unit at JNCASR, Including developing academic structure , infrastructure and MSc, Int.PhD and PhD programme

## **EXPERT MEMBER ON COMMITTEES OR BOARDS**

- 2023- Expert Member, Area Review Panels (ARPs), BIRAC, DBT, Govt. of India
- 2023- Member, Academic Council of M. S. Ramaiah University of Applied Sciences (Including Ramaiah Medical College and Ramaiah Institute of Technology) Bengaluru
- 2023- Invited to be on the Advisory Board, IGC Pharma, USA
- 2022 Member, CSIR Young Scientist Awards 2022, Advisory Committee in Chemical Sciences
- 2022 Member, Early Career Fellowship Selection Committee, DBT/Wellcome Trust India Alliance
- 2022 Expert member, review-recommend setting up of CoEs (Autonomous Centre for Neuroscience, CUSAT, Kerala)
- 2022 Member, Committee to suggest the best practices to be adapted in VGST for effective reviewing and monitoring of proposals/project.
- 2021 & 2022 Expert Committee Member, Falling Walls Lab India- a pitch competition for young researchers and entrepreneurs, German Centre for Research and Innovation- DWIH New Delhi
- 2021- Expert member, review-recommendation of setting up or renewal of the international Joint Usage/Research Centre (iJURC) as sought by the Institute of Chemical Research, Kyoto University, Japan
- 2020- Member, Faculty Selection Committees (IIT and others)
- 2021- Co-Opted member, Start-up Research Grant (SRG) & National Post-Doctoral Fellowship (N-PDF), and Early Career Research Award Schemes
- 2021 Reviewer (Projects), Czech Science Foundation, Czech Republic
- 2021 Reviewer (Projects), Research Grants Council, and French National Research Agency (ANR) / RGC Joint Research Scheme (JRS) 2

- 2020- Member, promotion and recruitment committees
- 2020 Panelist in Webinar Session on Drug Discovery, Repurposing and Drug Delivery, VAIBHAV Summit (October 2020), Govt. of India. AatmaNirbhar Bharat initiative
- 2020 Panelist, discussion on possibilities and mechanisms of collaboration in the area of biomaterials, Materials & Processing Technologies (MPT), VAIBHAV Summit (October 2020), Govt. of India. Aatma Nirbhar Bharat initiative
- 2020 Expert Committee Member, Teachers Associateship for Research Excellence (TARE) selection
- 2020 SERB, DST Govt of India, CRG project evaluation committee, Task force on COVID19
- 2020 Committee member, Selection of Outstanding Teachers Award
- 2018 Expert Member, Panel Discussion, Brainstorming workshop on "Sericulture by-product utilization & diversification" at Central Silk Board (CSB), Bengaluru
- 2018 Reviewer (Projects), French National Research Agency (ANR), France
- 2017 - Reviewer (Projects), The Fund for Scientific Research-FNRS (F.R.S.-FNRS), Belgium
- 2015 - Member, Evaluation, Reviewer and Selection Committee, Vision Group on Science and Technology (VGST) and Karnataka State Council for Science & Technology (KSCST), Govt. of Karnataka
- 2010 - Reviewer, DST, SERB, DBT, Govt. of India

## Research Publications

- 162. B. Roy and **T. Govindaraju**, Enzyme-mimetic catalyst architectures: the role of second coordination sphere in catalytic activity, *Bull. Chem. Soc. Jpn.* <https://www.journal.csj.jp/doi/abs/10.1246/bcsj.20230224>.
- 161. B. Maity and **T. Govindaraju**, Intrinsically disordered Ku proteins-derived cell-penetrating peptides, *ACS Bio Med Chem Au*, <https://doi.org/10.1021/acsbiochemau.3c00032>.
- 160. M. Ramesh, C. Balachandra, P. Baruah and **T. Govindaraju**, Cyclic dipeptide-based small molecules modulate zinc-mediated liquid-liquid phase separation of tau, *J. Pept. Sci.*, **2023**, *29*, e3465. <https://doi.org/10.1002/psc.3465>
- 159. S. Pratihari, K. Bhagavath, **T. Govindaraju**, Small molecules and conjugates as theranostic agents, *RSC Chem. Biol.*, **2023**, *4*, 826-849.
- 158. P. Baruah, H. Moorthy, M. Ramesh, D. Padhi, **T. Govindaraju**, A natural polyphenol activates and enhances GPX4 to mitigate amyloid- $\beta$  induced ferroptosis in Alzheimer's disease, *Chem. Sci.* **2023**, *14*, 9427-9438.
- 157. B. Maity, H. Moorthy, **T. Govindaraju**, Glucose responsive self-regulated injectable silk fibroin hydrogel for controlled insulin delivery, *ACS Appl. Mater. Interfaces* **2023**, *15*, 49953-49963.
- 156. S. Pratihari, M. N. Mattath, T. Govindaraju, Coronavirus genomic cDNA derived G-quadruplex as a selective target for fluorometric detection, *Chem. Commun.* **2023**, *59*, 5717-5720.
- 155. M. Ramesh and **T. Govindaraju**, Multipronged diagnostic and therapeutic strategies for Alzheimer's disease, *Chem. Sci.* **2022**, *13*, 13657-13689.

154. M. N. Mattath, H. Zhang, D. Ghosh, and **T. Govindaraju**, S. Shi, Nanoclusters with specific DNA overhangs: modifying configurability, engineering contrary logic pairs and the parity generator/checker for error detection, *Nanoscale* **2023**, *15*, 17386-17397
153. M. Ramesh, C. Balachandra, P. Andhare and **T. Govindaraju**, Rationally designed molecules Synergistically modulate multifaceted A $\beta$  toxicity, microglial activation, and neuroinflammation, *ACS Chem. Neurosci.* **2022**, *13*, 2209-2221.
152. D. Padhi and **T. Govindaraju**, Mechanistic insights to drug repurposing and designing hybrid drugs for Alzheimer's disease, *J. Med. Chem.*, **2022**, *65*, 7088-7105.
151. D. Padhi, C. Balachandra, M. Ramesh and **T. Govindaraju**, Multifunctional molecules with bipyridyl core ameliorate multifaceted amyloid toxicity, *Chem. Commun.*, **2022**, *58*, 6288-6291. "ChemComm Pioneering Investigators issue 2022"
150. H. Moorthy, L. P. Datta, S. Samanta, T. Govindaraju, Multifunctional architectures of cyclic dipeptide copolymer, composites, and modulation of multifaceted A $\beta$  toxicity, *ACS Appl. Mater. Interfaces* **2022**, *14*, 56535-56547.
149. B. Maity, S. Alam, S. Samanta, R. G. Prakash, **T. Govindaraju**, Drug-loaded silk fibroin-melanin composite hydrogel for rapid healing of diabetic wound, *Macromol. Biosci.*, **2022**, 2200097.
148. D. Ghosh, M. Konar, T. Mandal and **T. Govindaraju**, Differential copper-guided architectures of amyloid  $\beta$  peptidomimetics modulate oxidation states and catalysis, *Nanoscale Adv.*, **2022**, *4*, 2196-2200. Nanoscale Advances Popular Advances Collection 2022 (Included in articles which have been very well received by the community)
147. M. N. Mattath, D. Ghosh, C. Dong, **T. Govindaraju**, and S. Shi, Mercury mediated DNA-Au/Ag nanocluster ensembles to generate a gray code encoder for biocomputing, *Mater. Horiz.* **2022**, *9*, 2109-2114.
146. S. Pratihar, V. Kumar, R. Agrawal, A. Singh and **T. Govindaraju**, Reliable fluorometric detection of SARS-CoV-2 by targeting the G-quadruplex through pH-triggered conformational polymorphism, *ACS Sensors*, **2022**, *7*, 453-459. A modular technology platform for rapid detection of SARS-CoV-2, HIV, influenza, HCV, Zika, Ebola, TB and bacteria. (covered in the news media)
145. Y. V. Suseela, P. Sengupta, T. Roychowdhary, S. Panda, S. Talukdar, S. Chattopadhyay, S. Chatterjee and **T. Govindaraju**, Targeting Oncogene Promoters and Ribosomal RNA Biogenesis by G-Quadruplex Binding Ligands Translate to Anticancer Activity, *ACS Bio & Med Chem Au* **2022**, *2*, 125-139. Editors Choice Article. (Cover Page)
144. M. Konar, D. Ghosh, and **T. Govindaraju**, Combating amyloid-induced cellular toxicity and stiffness by designer peptidomimetics, *RSC Chem. Biol.* **2022**, *3*, 220-226. A novel approach to study and combat amyloidogenic stress induced adverse cellular mechanics and toxicity.
143. M. N. Mattath, D. Ghosh, S. Pratihar, S. Shi, **T. Govindaraju**, Nucleic acid architectonics for pH-responsive DNA systems and devices, *ACS Omega*, **2022**, *7*, 3167-3176. Editors Choice Article.
142. A. Mukherjee, S. Samanta, R. Al-Lahham, A. M. Schmeichel, W. Singer, P. A. Low and **T. Govindaraju**, C. Soto, Identification of multicolor fluorescent probes for heterogeneous A $\beta$  deposits in Alzheimer's disease, *Front. Aging Neurosci.* **2022**, *13*, 802614. doi: 10.3389/fnagi.2021.802614.
141. B. Roy and **T. Govindaraju**, Biomolecules-guided molecular architectonics to nanoarchitectonics, in Concepts and design of materials nanoarchitectonics, O. Azzaroni and K. Ariga (Eds.), The Royal Society of Chemistry, **2022**, pp 337-360.
140. M. Ramesh, A. Acharya, N. A. Murugan, H. Ila and **T. Govindaraju**, Thiophene-based dual modulators of A $\beta$  and tau aggregation, *ChemBioChem* **2021**, *22*, 3348-3357.
139. Y. V. Suseela, P. Satha and **T. Govindaraju**, Mitochondria-specific recognition of GQ by flavylum-based NIR fluorogenic turn-on rotor probe, *Analysis & Sensing* **2021**, *1*, 180-187. **Cover Feature**. First selective mitochondrial DNA (mtDNA) G-quadruplex targeting red fluorescent probe.
138. S. Ganguly, N. A. Murugan, D. Ghosh, N. Narayanaswamy, **T. Govindaraju** and Gautam Basu, DNA minor groove-induced cis-trans isomerization of a NIR fluorescent probe, *Biochemistry* **2021**, *60*, 2084-2097.

137. C. Balachandra, D. Padhi, and **T. Govindaraju**, Cyclic dipeptide: a privileged molecular scaffold to derive structural diversity and functional utility, *ChemMedChem* **2021**, *16*, 2558-2587.
136. S. Samanta, K. Rajasekhar, M. Ramesh, N. A. Murugan, S. Alam, D. Shah, J. P. Clement and **T. Govindaraju**, Naphthalene monoimide derivative ameliorates amyloid burden and cognitive decline in a transgenic mouse model of Alzheimer's disease, *Adv. Therap.* **2021**, *4*, 2000225. (Cover Page Article)
- A novel drug candidate (TGR63) discovered for the treatment of Alzheimer's disease. The efficacy of TGR63 is demonstrated in AD animal model, showed significant reduction of amyloid burden in the AD brain and reversal of cognitive decline. This drug candidate is licensed to a pharmaceutical company and clinical studies are planned by the company. Highlighted in major newspapers and media/TV
135. H. Moorthy and **T. Govindaraju**, Dendrimer Architectonics to Treat Cancer and Neurodegenerative Diseases with Implications in Theranostics and Personalized Medicine, *ACS Appl. Bio Mater.* **2021**, *4*, 1115-1139. Discuss inverse relationship between cancer and neurodegenerative disease (eg. Alzheimer's disease).
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