**Curriculum Vitae**

**Rajasekhar R. Ramireddy**

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**EDUCATION**

**University of Massachusetts Amherst,** **MA, USA** **2008 - 2014**

*M.S. and Ph.D. in Chemistry; 93.5%*

**University of Hyderabad, AP, India 2006 - 2008**

*M.Sc. in Chemistry; 80%*

**Sri Venkateswara University, India 2003 - 2006**

*B.Sc. in Sciences; 90%*

**WORK EXPERIENCE**

**Scientific Manager Dec 2020 – Present**

**Aragen Life Sciences (Previously known as GVK Bio), Hyderabad, TA, India**

* Identify, evaluate, and design synthetic route and reaction parameters. Ensure efficient delivery of compounds through scientific guidance to team.
* Monitor project progress to ensure adherence to timelines, make weekly and final project reports.
* Provide periodic project updates on productivity and quality to the client and take appropriate action on client feedback.
* Ensure safety at work through enforcement of good laboratory practices by identifying and mitigating potential safety risks.
* Train & develop team members through knowledge sharing sessions and nominate for training programs. Regularly review performance of the team members and provide constructive feedback for improvement.

**Subject Matter Expert, Chegg India Pvt. Ltd** **Sept 2019 – Dec 2020**

* To aid with solving and addressing chemistry subject related queries to higher education students in USA and Canada.
* Provides online classes teaching and tutoring for students in USA in complex chemistry subject matter.

**Bioneeds India Private Limited, Bengaluru, KA, India Aug 2018 – Jun 2019**

**Principal Scientist-1**

* Lab scale and bench scale discovery chemistry route designs to develop new chemical entities, innovative compounds of biological activities for multiple disease domains
* Design reaction schemes to prepare active pharmaceutical ingredients, troubleshoot the problem areas of project and execute as per the requirement of the clients.
* Process development and optimization for multi-step reaction schemes, proper documentation of work on a timely manner, taking responsibility for clear individual deliverables
* Supervise the subordinates for timely completion of assigned projects, prepare periodic reports and update to project leader, participate in teleconferences and update clients.

**Johns Hopkins University School of Medicine, Baltimore, MD, USA 2014-2018**

**Postdoctoral Research Fellow**

Advisor: Prof. Rangaramanujam M. Kannan

Research focus: Design and synthesis of nanoparticles for the treatment of neurological disorder and the study of their pharmacological effects.

* Designed and developed Dendrimer-1-Methyl Tryptophan nanodevices to study the role of kynurenine pathway in various key metabolites concentrations in cerebral Palsy rabbit model.
* Established a sensitive HPLC method for quantifying various tryptophan metabolites from brain tissue, serum, plasma of cerebral Palsy rabbit model.
* Engineered, Synthesized, characterized and developed standard protocols for dendrimer-drug conjugates (BLZ945, N-Acetyl Cysteine, Glutaminase inhibitor-JHU29, Docosahexaenoic Acid, and Prostaglandin-J2) for enhancing the bioavailability/solubility, targeting ability, and therapeutic efficacy for the treatment of Cerebral Palsy, Adrenoleukodystrophy (ALD), RETT syndrome, and non-arteritic ischemic optic neuropathy.
* Synthesized various fluorescently labeled (Cy5, Cy5.5, Cy3, and FITC) dendrimer nanoparticles for studying bio distribution and quantification of these nanoparticles in various organs of various animal models

**University of Massachusetts Amherst, MA, USA 2008 - 2014**

**Ph.D. in Chemistry**

Advisor: Prof. Sankaran Thayumanavan

* Teaching assistant for advanced organic chemistry CHEM 551, organic chemistry lab course, medicinal chemistry, synthetic and general chemistry courses.
* A new methodology to introduce zwitterionic moieties onto dendrimers via click chemistry was developed and the resulting dendritic assemblies molecular scale interactions with proteins were studied.
* Amphiphilic dendrimers possessing protein/UV-light/temperature responsive functionalities were designed, synthesized, and their self-assembly characteristics, responsiveness to stimuli were investigated.
* Water-soluble zwitterionic amphiphilic homopolymers were prepared; their self-assembly characteristics and cytotoxicity’s compared to structurally similar ionic polymers were evaluated.
* Degradable nanogels from random copolymers possessing carbonate backbones were synthesized and their degradation characteristics with stimuli such pH or enzymes were investigated.
* Amphiphilic polymers capable of forming inverse micelle aggregates were prepared and their ability to selectively extract peptides or proteins from complex biological mixtures was explored.

**University of Hyderabad, AP, India 2006 – 2008**

**Master of Sciences in Chemistry**

Advisor: Prof. Balamurugan

* Studied the ability of Gold (III) salts to function as Lewis’s acid catalysts for diastereoselective Mukaiyama Aldol reactions and learnt that they make excellent catalysts for these reactions.

**TECHNICAL SKILLS**

* Expertise in design and synthesis of APIs, new chemical entities (NCE’s), and their characterization using analytical techniques such as NMR (1H and 13CNMR, 19F-NMR, 31P-NMR, gradient NMR), Spectroscopic techniques (UV-VIS-NIR spectroscopy, FT-IR, Fluorescence techniques), microscopic techniques (AFM, TEM, and SEM), light scattering techniques (DLS, Zeta potential, and SLS), and Mass Spectrometry (MALDI-Tof, LC-MS, GC-MS, and ESI-MS).
* Good understanding of current US and EU drug administration regulations, cGMP manufacturing protocols, and experience working in CRO/CDMO/pharma industries.
* Process development and scale-up of small molecule drugs and nanoparticle technologies in laboratory scale (1 – 1000 grams) for various animal studies.
* Expertise in purification technologies such as Column chromatography, Ultra-filtration, Tangential flow filtration, Semi-prep HPLC, analytical HPLC, and Ion-exchange chromatography.
* Strong polymer chemistry background. Expertise in monomer preparation, polymer synthesis, and purification; especially RAFT, ATRP and NMP and multi-generation dendrimer synthesis (involving cross coupling reactions and air sensitive reagents).
* Extensive experience in design, synthesis, and analysis of physicochemical characteristics of therapeutic nanoparticles (1-300 nm size particles) with focus on translational research.
* Expertise in purification technologies such as Column chromatography, Ultra-filtration, Tangential flow filtration, Semi-Prep HPLC, analytical HPLC, and Ion-exchange chromatography.
* Experience with live cell assays, tissue analysis, extraction, and analysis of metabolites of interest by techniques such as plate readers and bio-analytical techniques such as gel-electrophoresis and analytical HPLC, respectively.
* Expertise in pharmacokinetics (PK) and pharmacological effects of nanoparticle therapies in animal models such as canine, monkeys, rabbit, mouse, and Rats.
* Strong understanding of neuroscience with specific focus on neuroinflammation and its pathological role in various CNS disorders.

**PEER-REVIEWED PUBLICATIONS AND PATENTS**

**Granted Patents:**

**1.** Thayumanavan, S.; **Rajasekhar, R. Ramireddy.;** Polymeric nanogels with degradable backbones and from gras components, and compositions and methods thereof. **US Patent App. 15/841,388**

**Peer-Reviewed Publications**

1. Liew, K.; **Rajasekhar, R. Ramireddy**.;Jiangyu, L.; Kannan, S.; Kannan, R.;Dendrimer Mediated CSF-1R Inhibitor Delivery Reduces Regulatory Cytokines: Implications for Glioblastoma Multiforme Immunotherapy, **2021**, *Bioeng and Translational Medicine.*
2. Khoury, E. S.; Sharma, A.; **Rajasekhar, R. Ramireddy**.; Thomas, A. G.; Alt, J.; Fowler, A.; Rais, R.; Tsukamoto, T.; Blue, M. E.; Slusher, B.; Kannan, S.; Kannan, R. M.; Dendrimer-conjugated glutaminase inhibitor selectively targets microglial glutaminase in a mouse model of Rett syndrome. *Theranostics*, **2020**; 10(13):5736-5748.
3. Bela R. Turk, Christina L. Nemeth, Joel S. Marx, Carol Tiffany, Richard Jones, Benjamin Theisen, Siva K, **Rajasekhar, R. Ramireddy**.; Sarabdeep Singh, Melissa Rosen, Miriam L. Kaufman, Connor F. Murray, Paul A. Watkins, S. Kannan, R. M. Kannan, Ali Fatemi.; Dendrimer–N‐acetyl‐L‐cysteine modulates monophagocytic response in adrenoleukodystrophy, *Annals of Neurology*, **2018**, 84 (3), 452-462.
4. Rishi Sharma, Anjali Sharma, Siva P. Kambhampati, **Rajasekhar. R. Ramireddy**.; Zhi Zhang, J. L. Cleland, Sujatha Kannan, R. M. Kannan.; Scalable synthesis and validation of PAMAM dendrimer‐N‐acetyl cysteine conjugate for potential translation, *Bioeng and Translational Medicine*, **2018**, 3 (2), 87-101.
5. Mahalia A.; He, H**.**; Zhao, B.; **Rajasekhar, R. Ramireddy**.; Vachet, R.W.; Thayumanavan, S., Polymer mediated supramolecular interactions for sensitive detection of peptides, *Analyst,* **2017**, (142), 118-122.
6. **Rajasekhar, R. Ramireddy**.; Priyaa, P.; Finne, A.; Thayumanavan, S., Facile preparation of zwitterionic amphiphilic homopolymers assemblies, *poly. Chem,* **2015**, 6(33), 6083*.*
7. **Rajasekhar, R. Ramireddy**.;Subrahmanyam, A. V.; Thayumanavan, S., Zwitterionic moieties from the Huisgen Reaction-Study with amphiphilic dendritic assemblies. *Chem. Eur. J*., **2013**, *19* (48), 16374-16381.
8. Wang, F.; Gomez-Escudero, A.; **Rajasekhar, R. Ramireddy**.; Murage G.; Thayumanavan, S.; Vachet, R.W., Electrostatic control of peptide side-chain reactivity using amphiphilic homopolymer-based supramolecular assemblies. *J. Am. Chem. Soc.,* **2013**,*135* (38), 14179-14188*.*
9. Fuller, J. M.; Raghupathi, K. R.; **Rajasekhar, R. Ramireddy**.; Subrahmanyam, A. V.; Yesilyurt, V.; Thayumanavan, S., Temperature-sensitive transitions below LCST in amphiphilic dendritic assemblies: Host-guest implications. *J. Am. Chem. Soc.,* **2013**, *135* (24), 8947-8954.
10. **Rajasekhar, R. Ramireddy**.; Raghupathi, K. R.; Torres, D. A.; Thayumanavan, S., Stimuli-sensitive amphiphilic dendrimers. *New. J. Chem.,* **2012**, *36* (2), 340-349.
11. Rodthongkum, N.; **Rajasekhar, R. Ramireddy**.; Thayumanavan, S.; Vachet, R. W., Selective enrichment and sensitive detection of peptide and protein biomarkers in human serum using polymeric reverse micelles and MALDI-MS. *Analyst.,* **2012**, *137* (4), 1024-1030.
12. Yesilyurt, V.; **Rajasekhar, R. Ramireddy**.; Azagarsamy, M. A.; Thayumanavan, S., Accessing lipophilic ligands in dendrimer-based amphiphilic supramolecular assemblies for protein-induced disassembly. *Chem. Eur. J.,* **2012**, *18* (1), 223-229.
13. Yesilyurt, V.; **Rajasekhar, R. Ramireddy**.; Thayumanavan, S., Photo-regulated release of noncovalent guests from dendritic amphiphilic nanocontainers. *Angew. Chem. Int. Ed.,* **2011**, *50* (13), 3038-3042.

**SELECTED CONFERENCE AND POSTER PRESENTATIONS**

* **Rajasekhar, R. Ramireddy**.; Smith. E.; Blue, M.; Slusher, B.; Kannan, S.; Kannan, R.; Dendrimer-glutaminase inhibitor conjugates for the treatment of Rett Syndrome, ***NanoDDS Symposium***, Baltimore, September 2016.
* **Rajasekhar, R. Ramireddy.; *3rd ACS Entrepreneurial Summit*,** Spotlighting the efforts of large and small chemistry-based innovators, Washington, D.C. National Education Association, September 2015.
* **Rajasekhar, R. Ramireddy**.; Subrahmanyam, A. V.; Thayumanavan, S.*,* Zwitterionic amphiphilic dendritic assemblies – Utility in reducing non-specific interactions with proteins. ***245th ACS Spring National Meeting***, New Orleans, April 2013.
* **Rajasekhar, R. Ramireddy**.; Feng, W., Vachet, R. W., Thayumanavan, S., Selective labeling of peptides inside polymeric inverse micelles. ***Center for Hierarchical Manufacturing Session***, UMass Amherst, May 2012.
* **Rajasekhar, R. Ramireddy**.; Yesilyurt, V.; Thayumanavan, S., Protein-induced disassembly of dendritic supramolecular aggregates using lipophilic ligands. ***7th International Dendrimer Symposium***, NIST-Maryland, June 2011.

**KEY AWARDS AND AFFILIATIONS**

Equity Research Analysis Externship, T-Rowe Price Stock Pitch Competition 2017

Graduate School Travel Grant Award, UMass Amherst 2013

Merit scholarship for academic excellence, University of Hyderabad 2006 – 2008

First Rank in Chemistry M.Sc. Entrance Test Sri Krishnadevaraya University 2006

Third Rank in Chemistry M.Sc. Entrance Test Osmania University 2006

Fifth Rank in Chemistry M.Sc. Entrance Test Sri Venkateswara University 2006

Ninth Rank in Chemistry M.Sc. Entrance Test University of Hyderabad 2006

College top ranker, Bachelor of Science, Sri Venkateswara University 2003 – 2006

**References:**

* ***Selva Kumar***, Principal Scientist (at Bioneeds India Private Limited).

Currently works as Principal Scientist at Vachichem International Private Limited.

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Currently works as Senior Scientist at Vachichem International Private Limited.

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* ***Bharath. B. B,*** Research Scientist (at Bioneeds India Private Limited).

Currently works as Senior Executive at Rallis India limited.

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* ***Prof. Sankaran Thayumanavan***, (PhD advisor), Professor-Chemistry, UMass Amherst, MA, USA

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* ***Prof. Richard W. Vachet***, Professor, Chemistry, (thesis committee member) UMass Amherst, MA, USA

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