

## Biographical Sketch

Name: **Aarti Sevilimedu V**  
 Designation: **Principal Scientist.**  
 Department/Institute/University: **Center for Innovation in Molecular and  
 Pharmaceutical Sciences (CIMPS)  
 Dr. Reddy's Institute of Life Sciences.**  
 Date of Birth: **14-December 1980**  
 Place of Birth: **Chennai, TamilNadu.**  
 Sex (M/F): **Female**  
 SC/ST: **N/A**

### Education (Post-Graduation onwards & Professional Career)

S. No.	Degree	University	Year	Subjects	Percentage
1	B.Tech in Industrial Biotechnology	Anna University	2002	Biochemistry, Genetics, Cell Biology, Molecular Biology, Protein engineering, Bioprocess Engineering, Thermodynamics, Kinetics and reaction engineering.	98%
2	Ph.D. Biochemistry, Cell and Molecular Biology	Cornell University	2008	Advanced Biochemistry, cell and molecular biology with a minor in advanced genetics	98% (3.92/4)

### Position and Honors

#### Position and Employment (Starting with the most recent employment)

SI No.	Institution/Place	Position	From (Date)	To (date)
1	Dr.Reddy's Institute of Life Sciences, Hyderabad.	Principal Scientist	July 1, 2018	Present
2	Dr.Reddy's Institute of Life Sciences, Hyderabad.	Senior Scientist	July 1, 2013	June 30, 2018
3	Vegrandis Therapeutics (Formed under BIG scheme, BIRAC)	Co-founder, Director	2014	2020
4	Harvard Medical School, Boston, USA.	Postdoctoral Research Fellow	July 1, 2009	May 17, 2012

## **Honors/Awards**

1. **Postdoctoral research fellow** supported by HHMI **2009-2012**
2. **Graduate student Fellowship**, Cornell University **2002-2003**
3. **Gold medal** for graduating at the top of the class – Bachelors in Industrial Biotechnology, Anna University **2002**
4. **Dept. of Biotechnology (DBT) scholarship** for outstanding performance in biology (Grade XII) awarded by the Govt. of India. **1998**
5. **Certificate of merit** awarded by the Central Board of Secondary Education, India for being in the top 0.1% nationwide in Grade XII examinations. **1998**
6. **National Talent Search Examination scholarship** awarded by NCERT (National Council of Educational Research and Training), India **1997-2002**

## **Professional Experience and Training**

Dr Aarti Sevilimedu has around 15 years of experience in the fields of nucleic acid biochemistry and molecular biology. During her graduate study in the Lis group at Cornell University, she successfully carried out SELEX to isolate several aptamers, and studied them in vitro as well as in vivo in yeast. As part of her postdoctoral fellowship in the Moazed group, she explored the role of noncoding RNA in silencing in vivo in yeast. She also has experience with advanced cloning techniques, bacterial and yeast genetics, chromatin IP and gene expression analysis, and protein biochemistry.

At DRILS, Aarti's group continues to work on studying basic cellular process using the fission yeast model system, including RNA mediated regulation. The primary focus in recent years has been on developing reagents, methods and tools required to create models for rare genetic disorders, specifically in zebrafish. The group has used both novel and existing technologies to create transient knockdowns as well as stable CRISPR edited zebrafish lines to model rare diseases such as FXS, Gaucher's disease, GAL and DMD. Currently with a collaborative grant with KMC, MAHE, the group is involved in functional validation of novel genes and variants implicated in rare disorders.

### **Harvard Medical School, Boston, MA.**

**2009-2012**

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*Postdoctoral fellowship (PI: Prof. Danesh Moazed)*

- Investigation of the mechanism of heterochromatin silencing in *S.pombe*, lead to identification of novel factors and pathways.
- Mentored graduate, undergraduate and exchange students on research projects, set up collaborative research projects with peers.
- Set up quantitative RT-PCR assay in the lab and trained peers and students.

### **Cornell University, Ithaca, NY.**

**2002-2008**

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*Graduate Research (PI: Prof. John T Lis)*

- Developed and thoroughly characterized RNA aptamers to yeast transcription factors and used these to study molecular interactions in transcription in vitro and in vivo .
- Teaching assistant (2 graduate level courses), research mentor to undergraduate and graduate students

## **Publications (Numbers only)**

Books : None Research Papers and preprints: 13 Reports : None. General articles: None.

Patents : 3 Others (Please specify) : Posters presentations at International Meetings: 4

## **Selected peer-reviewed publications (Ten best publications in chronological order)**

1. Raghavender Medishetti, Keerthana Balamurugan, Krishnaveni Yadavalli, Rita Rani, **Aarti Sevilimedu**, Anil Kumar Challa, Kishore Parsa, Kiranam Chatti. CRISPR-Cas9-induced gene knockout in zebrafish, STAR Protocols, Volume 3, Issue 4, **2022**.
2. Rani R, Parsa KVL, Chatti K, **Sevilimedu A**. An efficient and cost-effective method for directed mutagenesis at multiple dispersed sites – a case study with Omicron Spike DNA. *Biology Methods and Protocols*, Vol 8, Issue 1, **2023**.
3. Raghavender Medishetti, Keerthana Balamurugan, Krishnaveni Yadavalli, Rita Rani, **Aarti Sevilimedu**, Anil Kumar Challa, Kishore Parsa, Kiranam Chatti. CRISPR-Cas9-induced gene knockout in zebrafish, STAR Protocols, Volume 3, Issue 4, **2022**.
4. P Kulkarni, **A Sevilimedu**. The known unknowns: Missing pieces in in vivo models of Fragile X syndrome, **2020**. *Journal of Rare Diseases Research and Treatment* 5 (1), 1-9
5. Medishetti R, Rani R, Kavati S, Mahilkar A, Akella V, Saxena U, Kulkarni P, **Sevilimedu A**. A DNase based knockdown model for Fragile-X syndrome in zebrafish reveals a critical window for therapeutic intervention. *J Pharmacol Toxicol Methods* **2019**; 101:106656.
6. Rani R, Yaseen AM, Malwade A, **Sevilimedu A**. An RNA aptamer to HP1/Swi6 facilitates heterochromatin formation at an ectopic locus in *S.pombe*. *RNA Biol* **2019**; 16:742–53.
7. Dwivedi S, Medishetti R, Rani R, **Sevilimedu A**, Kulkarni P, Yogeeswari P. Larval zebrafish model for studying the effects of valproic acid on neurodevelopment: An approach towards modeling autism. *J Pharmacol Toxicol Methods* **2019**; 95:56–65.
8. Uday Saxena\*, Marina Rajadurai\*, Surendar Basaveni, Swapna Yellanki, Raghavender Medishetti, **Aarti Sevilimedu** and Pushkar Kulkarni. Double PEGylation Significantly Improves Pharmacokinetic Properties of Irinotecan Containing Nanoparticles in a Zebrafish Model. *Current Nanomedicine*, **2018**, Vol. 8, No. 1.
9. **Sevilimedu A**, Shi H, Lis JT. TFIIB aptamers inhibit transcription by perturbing PIC formation at distinct stages. *Nucleic Acids Res.* 2008 May; 36(9):3118-27.
10. Shi H, Fan X, **Sevilimedu A**, Lis JT. RNA aptamers directed to discrete functional sites on a single protein structural domain. *Proc Natl Acad Sci U S A.* 2007 Mar 6; 104(10):3742-6.

#### Patents:

1. **Sevilimedu, A** and Rajadurai, M. Aptamer-directed antimicrobial nanoparticles, Indian provisional patent, Application No: 202241043324, Application date: July 28, **2022**
2. **Sevilimedu, A.**, & Kulkarni, P. Embryonic Zebrafish models using DNase mediated knockdown. **2019**. WO/2019/171191
3. Rajadurai, M., Kulkarni, P., **Sevilimedu, A.** and Saxena, U. Magnetic nanoparticle formulations for targeted delivery of drugs to lungs for treatment of pulmonary diseases. **2018**. WO/2018/150362.
4. Rajadurai, M., Kulkarni, P., **Sevilimedu, A.** and Saxena, U. Magnetic nanoparticle formulations for targeted delivery of drugs to lungs for treatment of pulmonary diseases. PCT/IB2018/050952, Filed Feb 16, **2018**

**Mentorship:****Current:**

Senior Scientist: 1; Associate Scientist 1; PhD student: 1; JRFs: 2; Research fellows:2; Project students 1; High school students:2

**Past:**

JRFs: 9; Research fellows:4; Project students 5; High school students:2

**Research Support****Ongoing and Submitted Research Projects**

Sl. No	Title of Project	Funding Agency	Amount (INR)	Date of sanction and Duration
1	Repositioning of mitochondria-targeted FDA approved small molecules, and development and testing of a novel mRNA-based MFN2 gene therapy for Mitochondrial Skeletal Disorders (MSDs), <b>PI</b>	ICMR	1,15,41,720	Recommended, awaiting sanction
2	Design and development of gene therapy for methylmalonic acidemia, <b>Co-PI</b>	ICMR	1,48,54,920	Recommended, awaiting sanction
2	Understanding the functional significance of RNA exosome complex sub-unit EXOSC1, implicated in the rare disease pontocerebellar hypoplasia, using cellular and zebrafish model systems, <b>Co-PI</b>	DBT	89,98,220	Under review
3	Antibiotic-Free Nanoparticles for Treatment of Mastitis Associated Staphylococcus Aureus and Escherichia Coli, <b>Co-PI</b>	BIRAC/AIR/PAC E	36,00,000	Recommended
4	Center for Rare Disease Diagnosis, Research and Training. <b>PI from DRILS</b>	DBT-Wellcome Clinical Research grant	1,99,99,760	October 2021, 5 years, INR 2.2 Crores (DRILS)

5	Virtual research Center for Rare monogenic disorders in India. <b>Co-I.</b>	ICMR, recommended for funding, awaiting sanction.		5 years, INR 2.2 Crores (DRILS)
6	Functional Analysis of PHLPP1 in Myogenesis: Implications for skeletal muscle dystrophies, <b>Co-PI</b>	DBT	92,86,720	January 2022, 3 years

**Completed Research Projects: 4** (Only major projects of last 3 years)

<b>Sl. No</b>	<b>Title of Project</b>	<b>Funding Agency</b>	<b>Amount</b>	<b>Date of sanction and Duration</b>
1	Identification of optimal therapeutic window for efficacious intervention in a Zebrafish model of Fragile X syndrome	DBT Genome Engineering technologies	49,56,800	May 2019, 3 years
2	Identification of the mechanistic basis of early striatal damage in Glutaric Aciduria Type I	DBT Human Genetics and Genome Analysis	40,66,800	17 July, 2018, 3 years