

Inspirational Interview



Dr. Priya Sethu Chockalingam
Vice President and Head of
Clinical Bioanalytics &
Translational Sciences at a
Cell & Gene therapy (CGT),
Boston, MA

Dr. Priya Sethu Chockalingam has more than 2 decades of drug discovery and development experience in several major biopharma and biotechs in the US. Currently, she is the Vice President and Head of Clinical Bioanalytics & Translational Sciences at a Cell & Gene therapy (CGT) company in Boston, and she is working towards a cure for serious genetic diseases.



Sivakami Ganesh, Northville, MI (Interviewer)

Sivakami Ganesh (Shiva), owns and directs a Montessori school in Michigan for the past 15 years. She is a certified Montessori Teacher. She also has Masters in Business Administration and a Masters in Human Resources and Organizational Development. She participates in various events through the American Montessori Society. She is a mother of 3 children. She authors early childhood based articles for various publications. She does an ongoing workshop for parents of her community called "Parenting the Montessori Way". She teaches Mahabharatam in Chinmaya Mission's Balavihar for the past 14 years.



Deepa Veerappan, Windsor, ON (Interviewer)

Deepa is a grade 12 student at Riverside Secondary School in Windsor, Ontario. She is interested in science and medicine, and plans on becoming a Doctor. In her free time, Deepa volunteers for NSNA and is a member of the NANAL team. She also volunteered for Silambu Tamil School, and Windsor Regional Hospital.

Shiva: Priya, please tell us about your personal background, your family, and their pursuits?

I live in Sudbury, a suburb of Boston. My husband, Dr. Mark Chockalingam, is a supply chain expert. We have two sons: Vignesh, who just started his MBA at UPenn, and Kannan, who began his undergraduate studies at Cornell. I grew up in Coimbatore, India. My late father, Shri VR. Kumarappan, emphasized education and self-esteem for girls, and provided the best education to me and two younger sisters. With my parents' support, I completed my PhD in India before getting married.

Deepa: What are your hobbies and interests outside of work?

When my boys were younger, we enjoyed biking and baking together. Now that they're busy, I hike

with friends and colleagues around Boston. I learnt yoga as a child from my maternal grandfather, and still continue that along with meditation for mental peace and inner calm.

Shiva: Priya, please describe how your educational background has helped shape your career in the US?

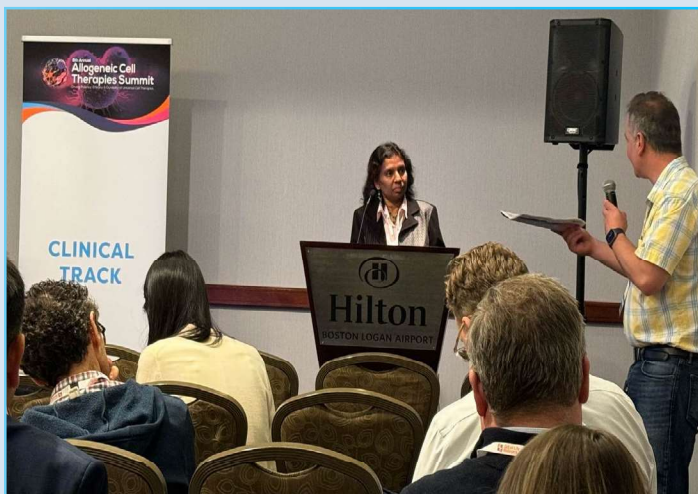
I have a Bachelor's, Master's, and PhD in Biochemistry. As an alternative for medical education, I chose Biochemistry which was then a newer & tougher subject under medical sciences. My parents encouraged me to take the CSIR NET exam in Delhi, leading to a PhD fellowship at CFTRI in Mysore, a CSIR institute; I wrapped up my PhD in 4 years, thanks to my advisors. Then received a post-doctoral offer in Japan but chose to move to the US after getting married. I began my postdoc research at the University of Tennessee Medical School and worked on the disease, muscular dystrophy.

Deepa: How did you manage the transition from studying in India to building your career in the US?

In the US, I enjoyed teaching alongside research. Prof/Dr. Jarrett at UT allowed me to lecture on biochemistry and physiology for medical students, which transitioned my role from postdoc to instructor within a year. While I wanted to stay in academics, I moved to Boston with my family and switched to industry based on my muscular dystrophy work. I started at Wyeth (now under Pfizer) as a drug discovery Scientist which was a key turning point in my career.

Shiva: You began in academia. How did that experience shape your career in the industry?





In academia, I focused on understanding disease mechanisms that helped my work on drug discovery and early development in the biopharma setting. After a few years, I found my passion and progressed to later drug developmental stages. I then moved to a company called Shire (now under Takeda), where I worked on clinical development of several novel drugs for rare genetic diseases.

Deepa: What were the challenges in the early years of your career? How did you balance work and family?

I enjoyed finding cures for incurable diseases, publishing, presenting in conferences and managing excellent teams all along. However, acquisitions and mergers along the way, that are inevitable in any industry, felt like a roller coaster ride, but all those experiences made me stronger & better; grateful for all wonderful colleagues and mentors. Industry work-life balance is better than in academia; being organized and able to multitask help me balance work and family effectively.

Shiva: What is your current focus in drug development, and what are the recent advancements in treating major diseases?

I work for a CGT company focused on rare genetic diseases, managing a function that takes care of bioanalysis & translational medicine for clinical trials; safety and efficacy are critical readouts in a clinical study. Gene therapy replaces or corrects faulty genes, while cell therapy restores or alters a certain set of cells. Recent advancements include CRISPR technologies, which enable targeted DNA changes for treating devastating conditions like sickle cell disease and genetic liver diseases, and engineered T-cells that target cancer cells.

Deepa: Can you explain your work on Glycogen Storage Disease Type 1 in children?

This inherited disease manifests around 3-4 months of age, due to deficiency of an enzyme that converts glycogen into glucose in the body, leading to life threatening hypoglycemia, seizures and glycogen deposition in organs. Patients are treated with starch supplements every few hours round the clock; we aim to correct the gene and provide a permanent cure so children can live normally.

Shiva: How much do gene and cell therapies cost, and will insurance cover these expenses?

The costs vary. The first gene therapy ever approved cost around \$2 million. Chronic treatments for certain diseases can range from \$15-100 million over a lifetime, making gene therapy appear cost-effective. Developing these therapies involves significant investment in extensive R&D efforts and safety follow-ups. Insurance companies are starting to cover some approved therapies, and payment models tied to treatment effectiveness are being explored.

Shiva: Could you share your experience with autoimmune diseases? Are there any cures, or are they manageable?

Autoimmune diseases, like rheumatoid arthritis and lupus, occur when the immune system attacks healthy cells of the body. Treatments historically managed symptoms, but new antibody treatments are emerging. Most autoimmune diseases are still managed, not cured, but lifestyle changes-like plant-based diet, exercise, avoiding smoking, stress reduction, and sleep-help manage disease burden.

Deepa: How can a plant-based diet impact autoimmune diseases?

A plant-based diet reduces inflammation and improves gut health, and helps to manage autoimmune diseases. Free radicals are controlled by antioxidants in plants, and a healthy gut microbiome contributes to immune regulation. High fiber, polyunsaturated fatty acids, polyphenols and flavanols in plants all help in different ways.

Shiva: Even with lifestyle changes, are medications still necessary?

Yes, depending on the disease severity. Combining lifestyle changes with medication can enhance treatment effectiveness, especially in severe cases.

Akila: Is hemolytic anemia linked to iron deficiency, especially in Indian women with low ferritin levels?

Hemolytic anemia is not necessarily related to iron deficiency. Chronic anemia in Indian women often results from menstrual blood loss, which requires iron supplements. However, low iron levels don't cause hemolytic anemia directly.

Akila: Some doctors recommend red meat for iron, but you advocate for plant-based foods. What's your perspective?

Red meat provides iron, but plant-based options exist. Due to concerns about additives and animal treatment, red meat isn't ideal for those with autoimmune diseases. Plant-based sources, like moringa powder, can meet iron needs effectively.

Visa: Is rheumatoid arthritis hereditary, and can consuming too much starch trigger it?

Some autoimmune diseases, like RA, have hereditary links, but they are complex with several causes. Starch and carbohydrates can contribute to weight gain, which increases inflammation, potentially worsening RA symptoms.

Deepa: What advice do you have for young people starting careers in healthcare and science?

Follow your passion. There are various paths, including academia, pharma, and biotech. Gaining hands-on experience, volunteering, and networking are essential for exploring your interests and choosing the right career.

Deepa: What specific subjects or skills should students focus on for careers in pharmacology and computational chemistry?

Students should pursue biology degrees that align with their interests; further specialization in pharmacology, bioinformatics, or others is important, as are interpersonal skills for teamwork. A positive attitude and willingness to learn are invaluable.

Shiva: How can a career in pure sciences combine

with fields like law or computer science?

Combining science with fields like law, engineering or computer science opens many opportunities. A science background is valuable in business strategy within pharma, and fields like bioinformatics require data analysis skills. Program management keeps projects on track.

Shiva: What are the internship opportunities for high schoolers and undergraduates in this field?

High school students can find opportunities in academic and non-profit research labs. Undergraduates can apply for internships after their first year, but a head-start with applications and networking are crucial for securing valuable opportunities.

Shiva: Could you share some of your noteworthy patents and awards?

The biggest reward is hearing from patients who feel we've brought hope into their lives. I have several publications, patents and awards for drug approvals, including a recent drug named Takhyro for Hereditary Angioedema (HAE), a condition where patients experience recurrent attacks of severe swelling in the entire body. One of the recent patents is for a rapid test for HAE, a critical need for quick diagnosis.

**Thank you so much for your time, Priya!
You are truly inspirational!**



Deepa Veerappan

Deepa is a grade 12 student at Riverside Secondary School in Windsor, Ontario. She is interested in science and medicine, and plans on becoming a doctor. In her free time, Deepa volunteers for NSNA and is a member of the NANAL team. She also volunteered for Silambu Tamil School, and Windsor Regional Hospital.

Windsor, ON

Scan here to
watch the part 1 interview



Scan here to
watch the part 2 interview