

## **CITATION REPORT BRIEF SUMMARY**

I R. Kamarajan, Recently, I have submitted my PhD thesis entitled on “Understanding the molecular mechanism of regeneration through AICP studies” (Reg no: 2021195101, Submission Date: 12.07.2024). I am very glad to apply for this Sun Pharma Award.

### **Vaccine Research Contribution – (769 citations)**

In 2020, India recorded a total of 44,585 cases of dengue, as reported by the Ministry of Health & Family Welfare. During my B-Tech studies, I gained extensive knowledge in reverse vaccinology. This allowed me to make significant contributions to the design and production of epitope vaccines specifically targeting the dengue virus. The findings of this research were published in the **Proceedings of Applied Pharmaceutical Science (IF: 1.37)**. The vaccine construct being developed will enable scientists to create highly effective vaccines, potentially saving countless lives from viral infections.

Amidst the Covid-19 pandemic, I successfully developed an epitope vaccine using the reverse vaccinology approach. The groundbreaking results of my research were published in the **Journal of Bimolecular Structure and Dynamics (IF: 4.4) (Citation: 2)**. We have recently published a groundbreaking vaccine construct that has the potential to save millions of lives from viral infections. This remarkable development will greatly aid in the production of the vaccine construct and its widespread distribution. In addition, I have submitted a review article to the **Journal of Science of Total Environment (8.8) (citation: 767)** that covers the current treatment options, available drugs, ongoing trials, and recent diagnostics for Covid-19.

### **Community Service Project– (44 citations)**

The population at risk is officially estimated to be around 11.7 million, although NGOs warn that the threat is much more widespread, affecting over 60 million people nationwide. I have completed a community service project focused on addressing the issue of removing fluoride iron from the groundwater in the Madurai and Viruthunagar District. I have created a chromatography method using tea ash and turmeric that can effectively trap fluoride ions found in groundwater. This project was recognized as the **top project in 2017** by Kalasalingam Academy of Research and Education, Madurai. We have made significant progress in developing a prototype model for effectively removing fluoride from ground water. It can help protect individuals from the harmful effects of fluorosis.

Water availability for plants and agriculture is a significant concern in our society. In 2023, I have developed a cutting-edge irrigation system that efficiently delivers water, fertilizers, and pesticides directly to plant roots. I have submitted an Indian patent application that is currently being reviewed for potential approval (**Patent Application No. 202241036037**). This unit has the potential to significantly reduce water usage at a high level. It can also have a positive impact on various areas such as artificial forests and watering roadside plants.

One of the major challenges faced during the pandemic, both in India and worldwide, is the issue of solid waste management. I have written a review article that discusses the current global situation of waste generation and its management. The article includes relevant literature on advancements in waste management services such as collection and transport, different techniques used for waste management, policies and legislation, countries' investments in waste management, and the impact of solid waste management during the Covid-19 pandemic. We have published this information in the **Journal of Heliyon (IF: 3.4) (Citation: 44)**

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## Animal Science and Cell Culture– (149 citations)

I have discovered that the heat-inactivated coelomic fluid of the earthworm *Perionyx excavatus* could potentially serve as a substitute for fetal bovine serum in animal cell culture. This groundbreaking research has been published in the prestigious **Journal of Biotechnology Progress (IF: 2.5) (Citation-13)**. Additionally, an Indian patent has been successfully granted on 22/12/2023 (**Patent Number: 487479**).

Based on a report by Peta, a significant amount of FBS, derived from a large number of bovine fetuses, is produced globally every year, reaching up to 600,000 liters. I have conducted research on a promising alternative target and have made a contribution to a review article. This article discusses the reported effective alternatives for serum, which was published in the **Journal of Heliyon in 2022 (IF: 3.4) (Citation-126)**.

I have also conducted research on the impact of UV-C radiation on the integrity of the earthworm genome. This publication can be found in the prestigious **Nature - Journal of Scientific Reports (IF: 3.8) (Citation-10)**. This will help educate the public about radiation and improve the production of materials that protect against UV-C.

## Human Genetics (Citation-5)

I recently published a comprehensive review article on the topic of Autism. I have discussed the global and Indian landscape of autism research, focusing on the connection between mitochondrial abnormalities and autism. Additionally, I have explored potential therapeutic strategies to address this issue. These findings have been published in the esteemed **Journal of Genes and Diseases with an impressive impact factor of 6.9 (Citation-5)**. This research will greatly benefit the global scientific community by directing their attention towards the mtCo3 mutation in Autism. The findings will have a significant impact on understanding and potentially treating Autism.

## Aging Research

I have examined the possible interactive role of wild as well as mutant type lamin A in connection with telomere repeat binding protein trf2. Briefly, bioinformatic prediction shows that lamin A has strong interaction with telomeric complexes. DNA binding assay confirms the strong interaction between wild type lamin A and telomeric DNA sequences. Loss of 39 amino acids at C-terminal end of lamin A impairs the nuclear structural integrity and induce chromosomal fusion. I conclude that C-terminal 39 amino acids from tail domain of mature lamin A possibly interact with trf2 and telomere, not lamin C and HGPS mutant lamin A. The complete findings published in **Authorea preprints**.

## Regeneration, Stem Cell Biology and Cancer Research (Citation-5)

I have successfully developed the protocol for *in-vitro* culturing of earthworm's tissue and organs like prostate gland, testis and heart. I have found the novel modes of earthworm *Eudrilus eugeniae* blastema regeneration under the *in-vitro* conditions that have been reported on 2022 in the **journal of In Vitro Cellular & Developmental Biology-Animal (IF: 2.7) (Citation-4)**. I have also reported the TCTP synchronously is involved in the process of stem cell activation, cell proliferation, morphallaxis, and organ development in the regeneration event which is published in the **journal of Tissue Engineering and Regenerative Medicine (IF: 4.5) (Citation:1)**

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From these findings, revealing the original survivability and regeneration ability of earthworm body parts upon *in vivo* and *in vitro*. My PhD is about **“Exploring the molecular mechanisms of regeneration through apoptosis-induced compensatory proliferation and its target induction for therapeutic applications”**. Pro-apoptotic caspases activate stem cell proliferative signals for tissue loss compensation this context of research is called Apoptosis induced Compensatory Proliferation (AICP). I have reported my vision, rulers behind this context, research gaps and future prospects of AICP in the **Journal of Apoptosis (IF: 7.2)**. Also, I have suspect the metal targets for cancer and successful regeneration, it will help the scientific community to conduct the research on those contexts and perform effectively. I have revealed the AICP context which is required for successful regeneration and if the AICP context is missing cause abnormality in earthworm regeneration that have been reported in the **journal of *In Vitro* Cellular & Developmental Biology-Animal (IF: 2.7)**. It will be revealing the importance of AICP context of research in regeneration will help the scientific community to conduct research in these context for future regeneration therapy. **I have recently discovered the role of metal co-factors key role in the kinase activation and stemness of cancer. This work is now reviewing by the Journal of Angiogenesis.**

**My total citation is 1108.**

### **References:**

**Google ScholarLink:** <https://scholar.google.com/citations?user=ZHzzmmWMAAAAJ&hl=en>

A handwritten signature in black ink, appearing to be 'P. J. H.' with a stylized horizontal line extending from the end.

**Applicant Signature**