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FIRST PERSON

First person – Luv Kishore Srivastava

First Person is a series of interviews with the first authors of a selection of papers published in Journal of Cell Science, helping early-career researchers promote themselves alongside their papers. Luv Kishore Srivastava is first author on 'Spatial distribution of lamin A/C determines nuclear stiffness and stress-mediated deformation', published in JCS. Luv Kishore is a PhD student in the lab of Allen Ehrlicher at McGill University, Montreal, Canada, investigating the role of lamin A/C in global and local nuclear deformation.

Luv Kishore Srivastava

How would you explain the main findings of your paper in lay terms?

The nucleus is the largest organelle inside the cell, and it houses important cellular components required for the normal physiological behaviour of the cell. Diverse regulatory structures are spatially confined and organized into the nucleus, which is always in a state of tension and which needs an appropriate compressibility for the cell to function. There are many factors that help in maintaining proper nuclear shape and architecture. Of these, the nuclear lamina is the major contributor to nuclear stiffness. It is composed of lamin A/C proteins, and in our study, we have shown a direct relationship between the expression of lamin A/C and global nuclear deformation. Additionally, we also showed that not only global deformation, but also local nuclear deformation is directly linked with lamin A/C density at the nuclear membrane.

Were there any specific challenges associated with this project? If so, how did you overcome them?

One of the most intricate aspects of the project has been quantification of the local strain on the nucleus under osmotic pressure and challenging 3D strain mapping of the nucleus. Thankfully, we found a MATLAB code from Christian Frank's lab that worked on the principle of fast iterative digital volume correlation (FIDVC) which, after customization, helped to overcome this challenge.

When doing the research, did you have a particular result or 'eureka' moment that has stuck with you?

In the beginning of the project, I had an idea about lamin A/C playing a role in global nuclear stiffness but the local nuclear deformation as a function of lamin A/C density has never been documented before. It was a nervous moment when I ran the FIDVC code on the nucleus *z*-stacks, but in the end, we observed a very beautiful anti-correlation between local lamin A/C expression levels and local nuclear deformation. Without doubt I would say this result was the 'eureka' moment in our study.

Why did you choose Journal of Cell Science for your paper?

I have been following articles from Journal of Cell Science for quite a long time now. The quality of research published here is excellent, covering most of the topics in cell biology and nuclear mechanics is no exception to this. There have been many research articles related to nuclear mechanics and mechanotransduction published in JCS, which helped me immensely with my research. The manuscript submission process is very simple and the response time from the editor is very quick. These factors helped me make an easy decision selecting JCS as the journal to publish my paper.

Have you had any significant mentors who have helped you beyond supervision in the lab? How was their guidance special?

It would be unjust on my part not to mention the name of my mentor and PhD supervisor Prof. Allen Ehrlicher whose constant guidance both in and out of the lab helped me complete this research successfully. The atmosphere in the lab is very conducive, friendly and has a positive impact on your psyche. Prof. Ehrlicher is always open to new ideas and never forces or imposes his ideologies on us.

What motivated you to pursue a career in science, and what have been the most interesting moments on the path that led you to where you are now?

My father is a doctor by profession and that was a major motivation for me to pursue science as a career. I always used to observe him diagnosing complicated cases, and that was the time I started becoming interested in biology. With better understanding of the

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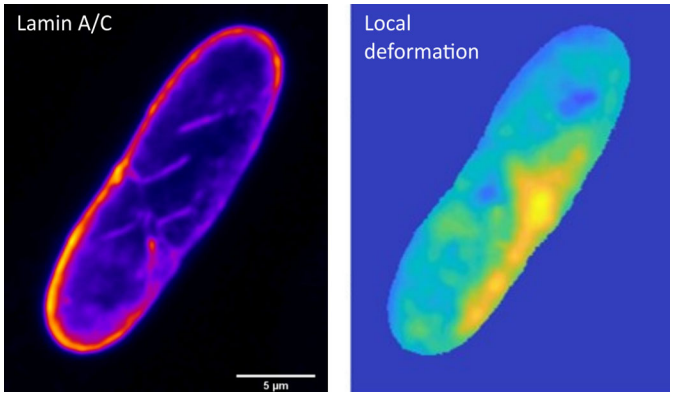

The image on the left shows the heterogeneity of lamin A/C density and the image on the right shows high local deformation in regions of low lamin A/C.

subject, we used to discuss various aspects of diseases, and eventually I could make out that most of the diseases were originating at the cellular/molecular level. To know the correct etiopathogenesis of many diseases, comprehensive knowledge of cell biology is a must. This motivated me to choose cell biology as a career.

Who are your role models in science? Why?

I have many heroes in science but the one name on top is Shinya Yamanaka, who discovered the technology to induce pluripotency in differentiated cells. I believe that is one of the most amazing discoveries of recent times. This discovery has opened gates to so many new possibilities from growing organs to developing new treatments for various diseases.

What's next for you?

After the completion of my PhD, I intend to pursue a post-doctoral position in a lab that suits my expertise and fits my interest. I love doing research and would never leave it for anything else in the world.

Tell us something interesting about yourself that wouldn't be on your CV

I am a BIG cricket lover, be it watching the sport on TV or playing it physically. I am a reasonably good cook and, as a new hobby, I have started singing. I am convinced that music is one of the best ways to deal with stress.

Reference

Srivastava, L. K., Ju, Z., Ghagre, A. and Ehrlicher, A. J. (2021). Spatial distribution of lamin A/C determines nuclear stiffness and stress-mediated deformation. *J. Cell Sci.* **134**, jcs248559. doi:10.1242/jcs.248559