FIRST PERSON

First person – Ahmad Alamri

First Person is a series of interviews with the first authors of a selection of papers published in Disease Models & Mechanisms, helping early-career researchers promote themselves alongside their papers. Ahmad Alamri is first author on 'Expanding primary cells from mucoepidermoid and other salivary gland neoplasms for genetic and chemosensitivity testing', published in DMM. Ahmad is Assistant Professor of Clinical Laboratory Sciences (Histopathology) at King Khalid University, Saudi Arabia, and previously was a PhD student in the lab of Priscilla A. Furth at Georgetown University, Washington, USA. His research interests are precision medicine, and establishing and exploiting preserved primary cells from patients to identify therapeutic targets and test sensitivity to candidate agents in tumors.

How would you explain the main findings of your paper to non-scientific family and friends?

Cancer is a combination of mutations and abnormal pathways that may differ from one person to another. For example, if two patients have the same cancer we may find each patient with different genetic mutations or abnormal pathways. Therefore, both patients may have a different response to the treatment. To understand and investigate these abnormalities we need to have cells growing in the laboratory to identify mutations and therapies' targets, and then test the potential drugs that may kill cancer cells in what is known as 'precision medicine'. Therefore, here we were able to grow primary cells from patients' salivary glands tumors using a technology known as conditional reprogramming cell culture (CRC) that propagates epithelial cells. Then, we investigated gene mutations and abnormal pathways using DNA and RNA sequencing. Finally, we identify a pathway that has been previously reported in different types of cancer known as the AKT pathway, and test drugs that inhibit this pathway that could be a potential treatment for such cancer.

What are the potential implications of these results for your field of research?

There are two implications: (1) Salivary glands neoplasms (SGNs) are rare cancers that lead to limited access to these rare patient tumors and the inadequacy of understanding of SGNs pathophysiology. Establishing primary cells will provide a promising contribution to the field with more access to these tumors and will help in understanding the pathophysiology of SGNs. (2) We were able to develop a workflow that was efficient in generating primary cancer cell cultures and performed genetic and chemosensitivity studies that demonstrated the reproducibility of this approach. This approach can be applied to different types of tumor.

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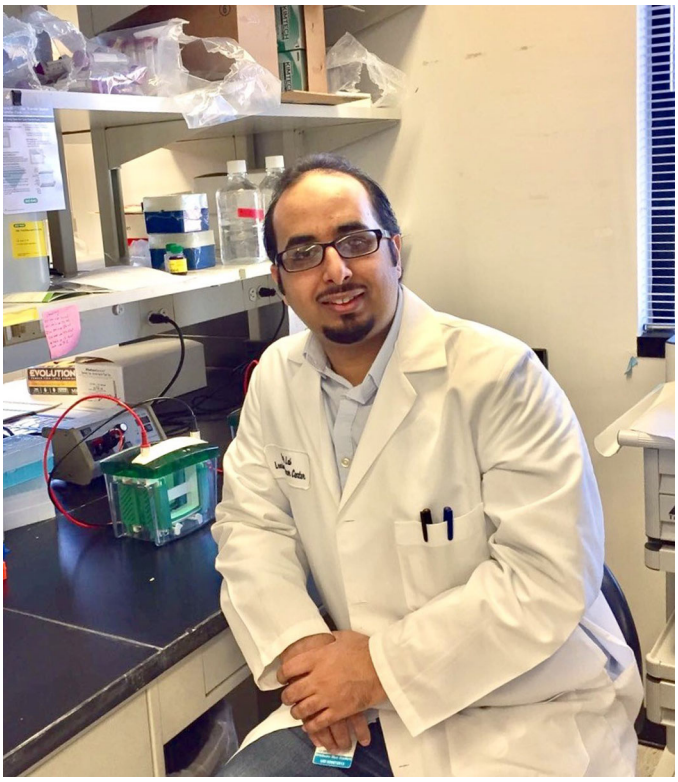

Ahmad Alamri

What are the main advantages and drawbacks of the model system you have used as it relates to the disease you are investigating?

The main advantage is that we established and propagated primary cells from a small tumor that preserved pathways as if the original tumor and that made us confident about this model. The disadvantage is that in this model system we used only population data on the transcriptome, and we could not infer specific information on individual cells. For example, the type of data that would be obtained by single cell tracking.

What has surprised you the most while conducting your research?

Fifty percent of mucoepidermoid carcinoma have the *CRTC1-MAML2* fusion gene that leads to upregulated amphiregulin as reported before. However, the mucoepidermoid carcinoma sample that we studied was lacking this fusion gene and still has amphiregulin upregulated. In addition, we did not find any known driver mutations.

What changes do you think could improve the professional lives of early-career scientists?

I think the most critical change is to give them an opportunity to publish their work independently of their mentors. I believe if journals help early-career scientists to publish their findings then that will promote their professional lives.

What's next for you?

I am interested in precision medicine, and my long-term goal is to implement this as a routine practice in clinical laboratories while exploring new technologies and directions as a translational researcher. That is why I chose to work on establishing and then exploiting preserved primary cells from patients to identify high probability therapeutic targets and test sensitivity to candidate agents. In my current work in salivary mucoepidermoid cancer, I accomplished this goal using CRC in combination with next-generation sequencing (RNAseq and exome sequencing) and direct chemosensitivity testing under different growth conditions, and it will allow me to apply this approach to various tumors here in Saudi Arabia.

Reference

Alamri, A. M., Liu, X., Blancato, J. K., Haddad, B. R., Wang, W., Zhong, X., Choudhary, S., Krawczyk, E., Kallakury, B. V., Davidson, B. J. and Furth, P. A. (2018). Expanding primary cells from mucoepidermoid and other salivary gland neoplasms for genetic and chemosensitivity testing. *Dis. Model. Mech.* **11**, doi:10.1242/dmm.031716.