The battle against triple-negative breast cancer

By: Dr. Nur Syamimi Ariffin

Wildlife biologists say that wolf packs in the wild are not led by a domineering alpha male. "He's just the father of the family," says wolf researcher L. David Mech. That same belief lingers in triple-negative breast cancer (TNBC). It is the most aggressive subtype of breast cancer, mainly due to the lack of hormonal receptors for a targeted treatment. However, they are a sensitive subtype of breast cancer, hence it is their weakness that we can use to develop sensitization towards chemotherapy. In this case, low levels of drugs exposed to TNBC cells are likely to change their phenotypes, if not killing them, without triggering unnecessary side effects. Though this is speculative, there is a possibility, and we believe that it is encouraging, as the tricky part in treating TNBC patients is when the disease has spread to secondary organs. So far, there is no specific drugs that can efficiently target the metastatic breast cancer cells. Therefore, our team works on tackling this problem, one of which is to find a molecular protein that can specifically inhibit this particular phenotype from occurring in TNBC.

We have found that the transcription factor RUNX1 has the potential to prevent breast cancer metastasis and this was documented back in 2017. Moving forward with this finding, the team is eyeing the mechanisms by which this transcription factor is involved in delaying breast cancer progression through metastasis. In order to maximise the chances of success in this pursuit, RUNX1 is targeted through several different approaches, one is to integrate the work with drug intervention and in addition to that, a couple of molecular proteins that are involved in the process have been included.

In addition to deciphering the potential means of preventing breast cancer metastasis, data obtained in vitro has to be translatable in vivo. This is a well-known hurdle that remains challenging to many researchers. When working with TNBC, including many other lines of cancer, not everything we have in mind goes as planned. Giving its aggressiveness in patients, TNBC is expected to metastasise when it is implanted in animal models. However, this is not the case in some studies. Indeed, the less aggressive subtype of breast cancer is seen to be more aggressive in vivo. This is unexpected and raised questions among researchers. What change that compromises the phenotypes of TNBC? Though many things are possible, we believe that it is likely cellular adaptation from in vitro to in vivo is taking more than we anticipate. With the work done in the laboratory and more in line, we wish to find answers and solutions to this question and the expectation with the establishment of our team, though from various field of research, will allow us to understand better the intertwined mechanisms contributing to the phenotypes of TNBC. We will glean more information on this subtype of breast cancer in the anticipation that it will be beneficial for breast cancer patients in the future.

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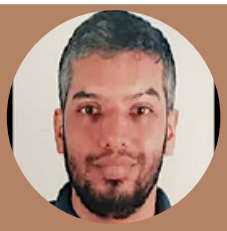

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