



# Tumour models could improve cancer treatment

New and improved in vitro tumour models could advance our understanding of cancer biology.

**Dimakatso Senthebane** is a PhD student specialising in cancer biology at the University of Cape Town.



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#### Orcid ID:

<https://orcid.org/0000-0003-3837-4318>

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The major challenge that cancer patients face during treatment is the fact that most of them develop therapy resistance. One suggested contributor to this is that most studies have focused on the mechanisms of cancer cells alone. However, cancers inhabit a unique environment, known as the tumour microenvironment.

The tumour microenvironment can influence patient outcomes. It plays a key role in the development of chemoresistance and malignancy progression. Within the tumour microenvironment are different cell types, including fibroblasts, cancer stem cells and the extracellular matrix, which contributes to tumour initiation

and progression by interacting with tumour cells.

As many tumour micro-environments are characterised by non-malignant cells, targeting them may have applications across cancer types and could complement other treatment options for patients.

Researchers at the University of Cape Town are investigating cancer cell-stromal interactions within the tumour microenvironment, focusing on fibroblasts, cancer stem cells and the extracellular matrix, as well as the development of a tumour model that mimics solid tumours' cellular characteristics and drug response.

This will potentially allow better strategies to combat

chemoresistance mediated by the tumour microenvironment.

"New and improved in vitro tumour models that recapitulate the in vivo microenvironment will advance our understanding of cancer cell-microenvironment interactions," says Dimakatso Senthebane.

In order to identify new cancer therapeutic agents and overcome resistance to existing treatments, scientists should consider the tumour microenvironment at an early stage of drug discovery, using these tumour models.

"The future success of cancer therapy is dependent on the use of these in vitro tumour models," says Dimakatso.

*Studying tumour microenvironments could help to find new cancer treatments.*

