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Using various 2 DimensionalZandile Nxumalo (2D) cancer cell lines to screen for anti-cancer drugs for applications in the development of a predictive high throughput (HTS) drug screening platform.

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The efficacy of widely available cancer therapy options is mainly based on the molecular and biochemical profile from patient cohort from high income countries. Thus, there is a critical need to study on low-middle income countries cancer patient such as African cohort. In addition, gynecological cancer is under-studied and hence is an unmet medical need due to high chemo-resistance and recurrence rates in African patients. The project goals are to develop a high-throughput in-vitro drug screening platform that will use patient-derived samples to predict how adjuvant therapy would affect African ovarian cancer patients. By employing our proposed approach, we hope to find drug or drug combinations that can combat chemotherapy resistance and ultimately offer tailored-specific therapeutic alternatives for African cancer patients within clinically appropriate timeframes to the prescribing oncologist. We have demonstrated the cytotoxicity of clinically approved drugs on various 2D cancer cell lines. We believe drug sensitivity screening would be a gold standard to evaluate the drug dosage response. Thus, we aim to implement this method with automated drug screening pipeline in

cancer cell lines and patient derived samples due to the controlled conditions and repeatable procedures. Based on our findings we are certain that by choosing the correct tumor model at the stage of ex-vivo testing we will establish an automated technology platform for drug sensitivity screening on patient samples, thereby allowing immediate benefit to the patient who donates the sample for analysis and thus contributing towards efforts for individualized treatment as a part of personalized medicine.