Dancan Sandys Oruko – Research Summary
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Research Focus

For over two years, I have conducted research in the Barroso Lab at Albany Medical College, where I developed machine learning and automation pipelines to classify treatment responses in triple-negative breast cancer cells using 3D organelle morphology and topology. The Organelle Topology Cancer Cell Profiling (OTCCP) project integrates confocal imaging, Imaris software, Python-based data extraction, and machine learning models (Random Forest, PyMC hierarchical models).

Technical Skills & Tools

- Python (Pandas, Scikit-learn, PyMC, Matplotlib)
- Imaris Xtensions and 3D feature extraction
- Django dashboards for interactive analysis
- Machine Learning (Random Forests, Hierarchical Modeling)
- Data visualization and web tools for translational research

Contributions & Achievements

- Reduced 3D imaging processing time from weeks to days via automation.
- Developed visual dashboards for feature analysis and model accuracy.
- Supported NIH grant submissions and collaborative cancer studies.
- Presented 5 research posters and gave 1 oral presentation.
- First-author manuscript under review; second-author conference publication.