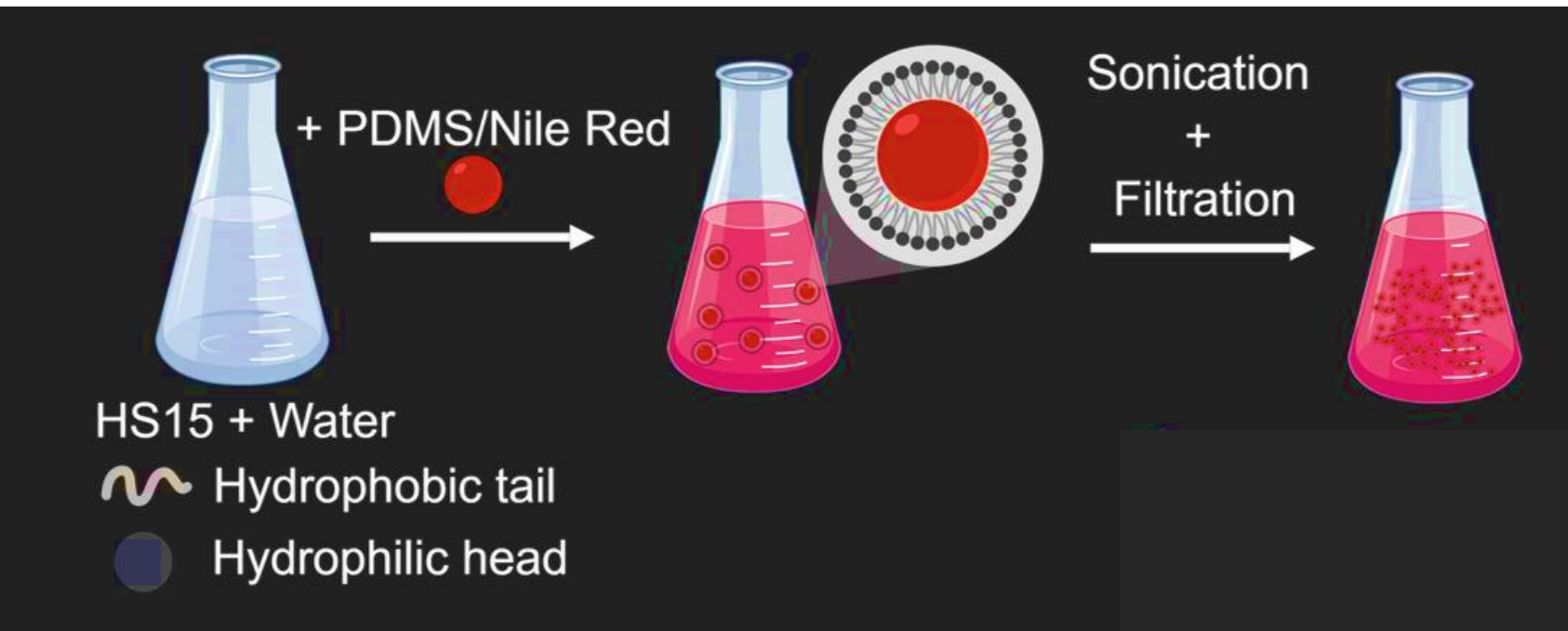


Adaptable Multi-Modality Nanoprobes for Non-Invasive Real-Time Monitoring of Engineered Cells and Tissues

Albert Essuman, Biomedical Engineering
Mentor: David Brafman, Associate Professor.
School of Biological and Health Systems Engineering.

RESEARCH QUESTION/MOTIVATION

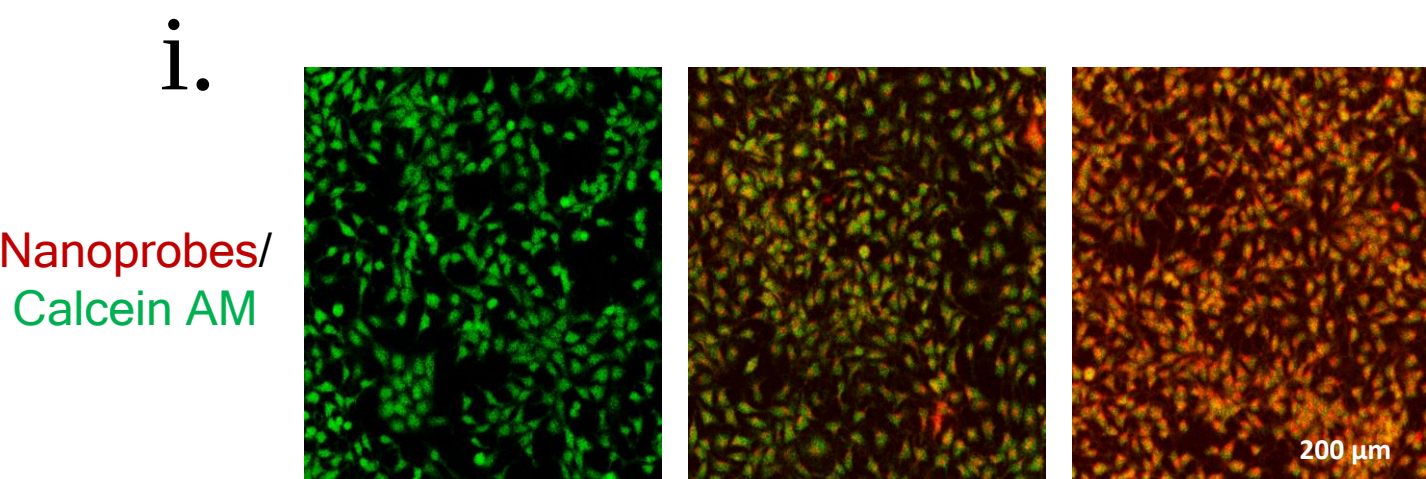
A versatile method for assessing cell and tissue viability in different culture systems remains a concern in the large-scale biomanufacturing industry. The objective of this project is to utilize the advantages of nanotechnology to noninvasively monitor the activities of cells and tissues. Cell viability assessment of nanoprobes already developed by the team at Brafman Lab will be investigated through this work. The use of the nanoprobes in downstream applications such as drug development and disease modeling will improve the field of bioengineering.



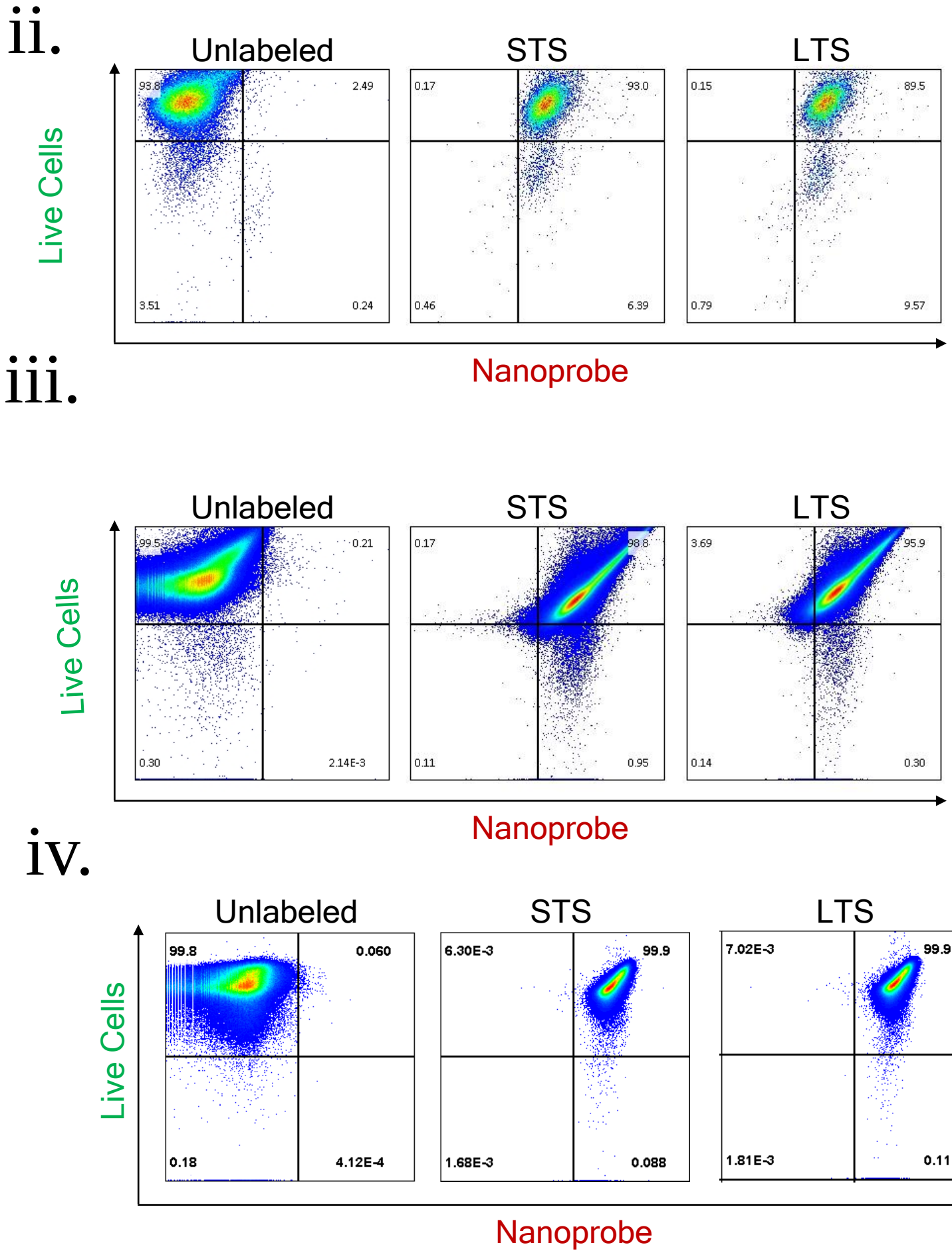
METHODOLOGY

- For every culture system, we perform labeling efficiency test, proliferation studies, qPCR studies, calcium imaging analysis and Immunofluorescence test to decide on the performance of the nanoprobes in that culture system.
- Each test has its own protocols developed in our lab or by others and has been tested by our lab to be effective.

RESULTS



Results Continued



Figures description

i. Fluorescence image showing safe labeling of NPC with nanoprobes ii. Flow data showing labeling efficiency of 2D NPCs. iii and iv Flow data showing labeling efficiency for Neurons in Microcarrier and 3D Matrigel system, respectively.

CONCLUSIONS AND FUTURE WORK

- The nanoprobes have proved to be efficient in labeling cells in 2D and microcarrier culture systems under effective testing protocols
- Further assessment of the nanoprobes in 3D Matrigel will be continued to study its effectiveness in 3D culture systems.
- Application in disease modeling and drug development

REFERENCES

Scan for references on this work



ACKNOWLEDGEMENT

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