Developing Magsifter to Measure Resistance to Targeted Therapy in CTCs

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CCNE T32 update
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Dilemma of measuring resistance to targeted therapy in renal cell carcinoma (RCC)

How do I know it’s working?

Empiric selection

Response

Resistance

CT scan
Magsifted cells from mRCC patients appear distinct from WBCs

Unpublished data from the Wang Lab

Legend
Green: Pan-cytokeratin
Red: CD45
Blue: DNA

Next:
confirmatory staining of RCC-specific markers (PAX8)

PAX8 identifies distinct cell populations in a mixing study.
PAX8 identifies distinct cell populations in a mixing study.
Candidate CTCs from Ficoll-Extracted RCC 186
PCA plot of IF intensities:

DAPI

CD45

KERATIN8

PAX8

First Principle Component
PCA plot of IF intensities: magsifted CTC 143
PCA plot of IF intensities:

- DAPI
- CD45
- KERATIN8
- PAX8

First Principle Component
PCA plot of IF intensities:

DAPI  CD45

KERATIN8  PAX8

First Principle Component
Next steps:

• Optimize image acquisition & pipeline
  • manual segmentation
• Image more patient samples
  • confirm trends
• Mixing RCC cell lines into healthy donor blood —> magsift —> IF to confirm capture
• PCR to visualize transcript expression
The End
Pair Plot IF Intensities of CTC 143
Pair Plot IF Intensities of CTC 647