



**Delaware Flow NanoCytometer™:**  
**Ultrasensitive Detection of Nanoparticles**

Napoli, Italy – May 17, 2023

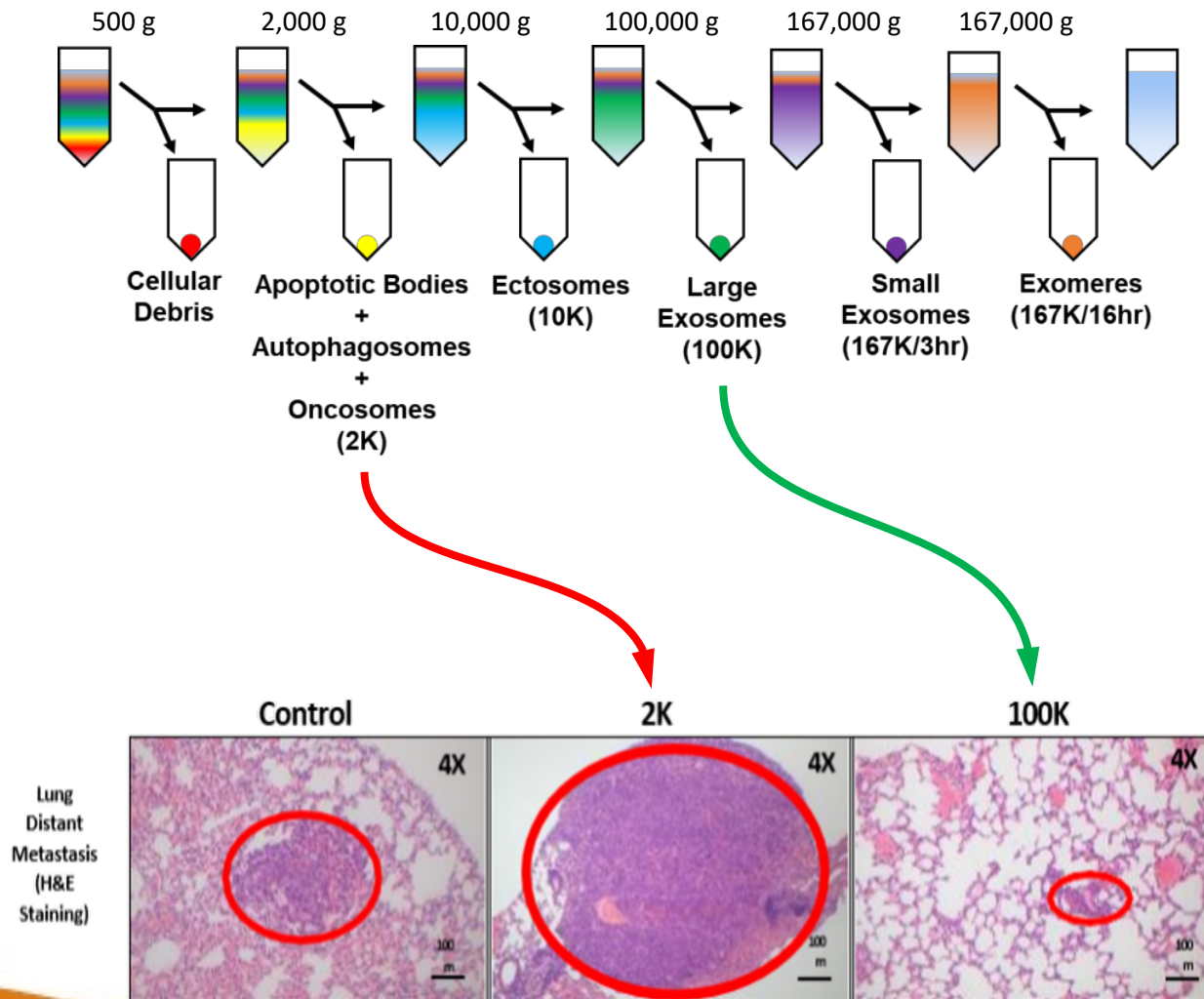
41<sup>a</sup> Conferenza Nazionale di Citometria

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<sup>1</sup>Kinetic River Corp.; <sup>2</sup>JKI

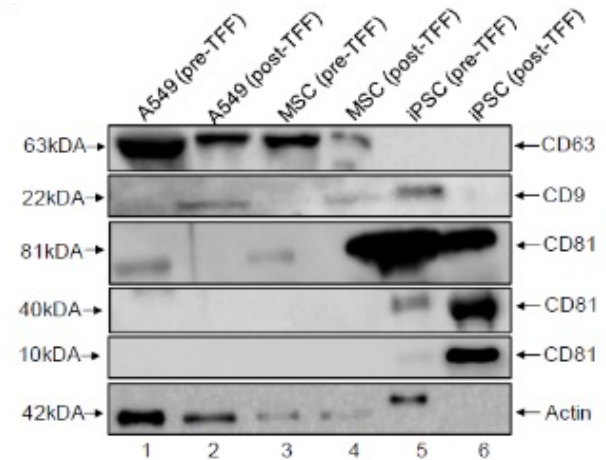
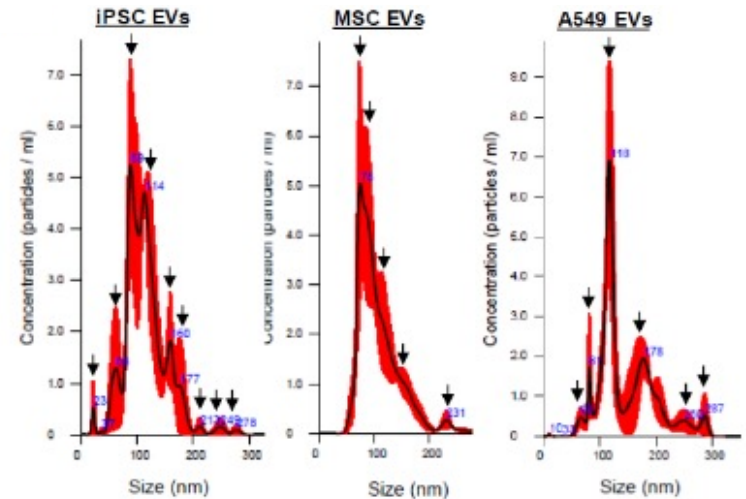
# Different Size EVs Affect Metastasis

- differential ultracentrifugation (dUC)
- sentinel lymph node (SLN) sensitization with injection of specific WV populations
- larger EVs promote lung metastasis; smaller EVs inhibit metastasis
- Kashanchi Lab, Liotta Lab @ George Mason University



# Emerging Needs

- better EV characterization
  - size fractions
  - surface protein expression
  - nature of cargo
  - all simultaneously measured
- faster EV characterization
  - current standards (NTA, WB, EM) too slow
  - not enough simultaneous functional information
- pave the way for flow-based EV sorting
  - current standard (dUC) too slow, cumbersome, nonspecific
  - need EV-by-EV isolation based on functional characteristics



• Kashanchi Lab

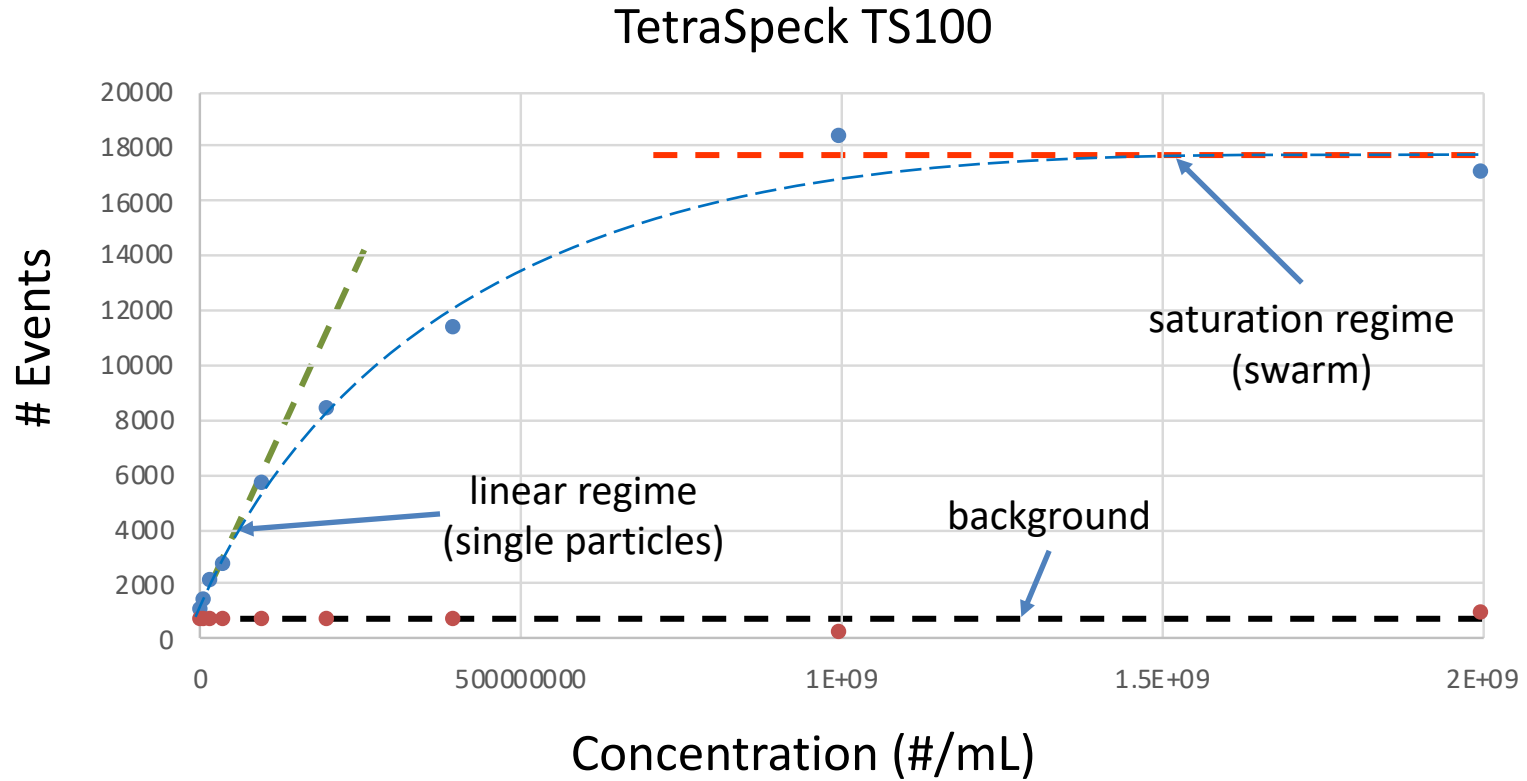


# Delaware NanoCytometer™

- designed from the ground up for ultrasensitive detection
- tailored to nanoparticles and EVs
- up to 5 lasers
- up to 3 scattering channels
- up to 6 fluorescence channels



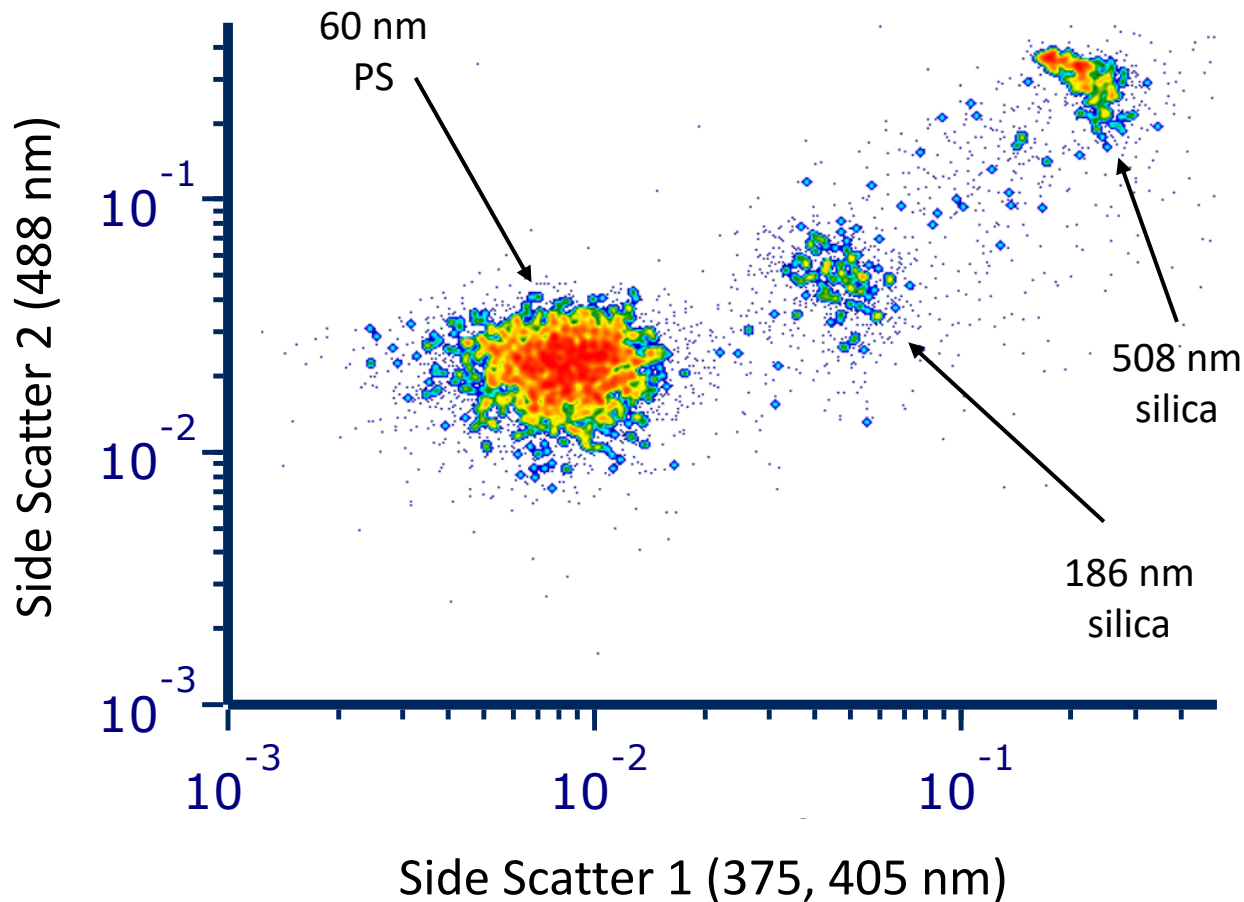
# Ensuring Single-Nanoparticle Detection



- TetraSpeck: ThermoFisher

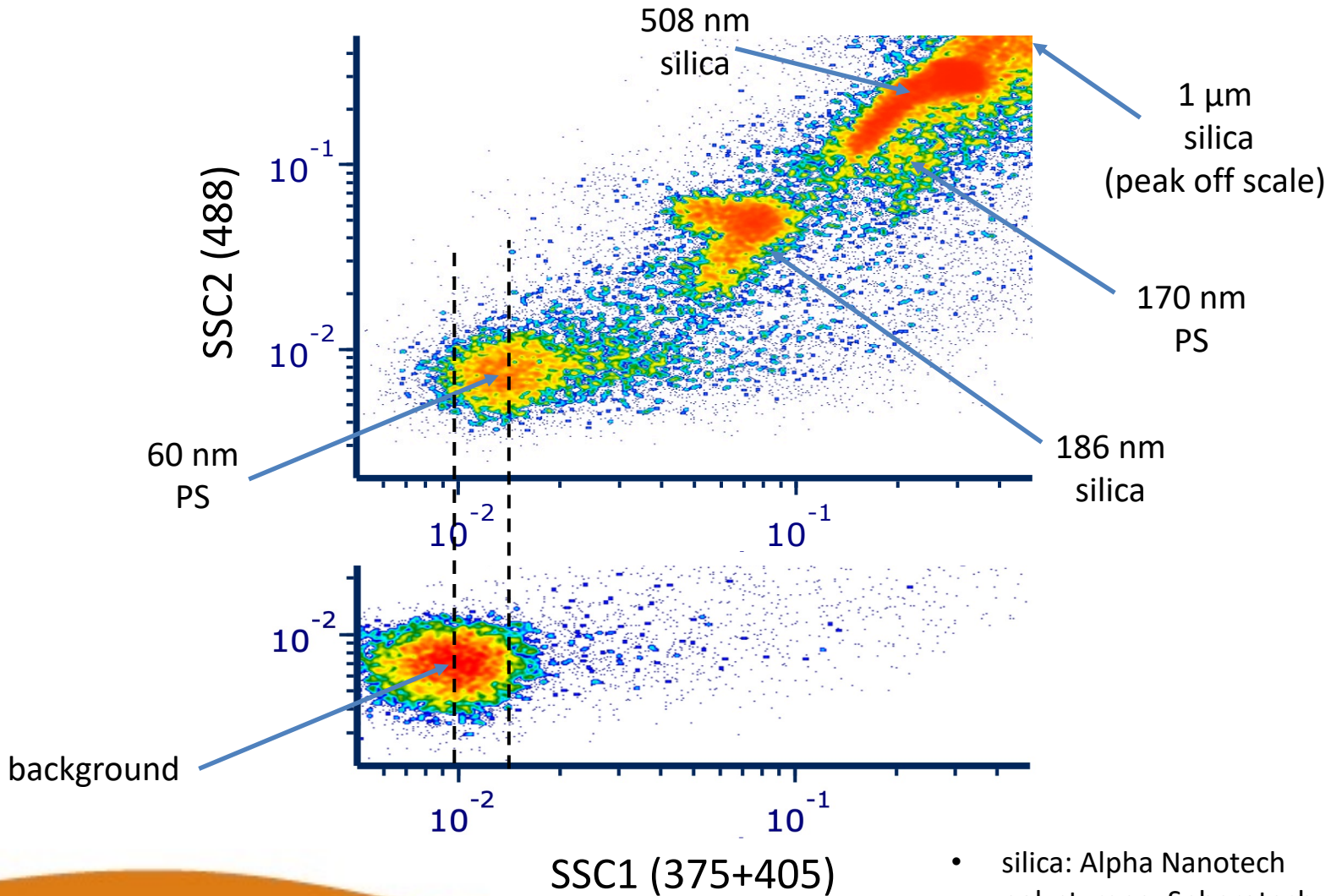


# Resolution of 60-nm Nanoparticles

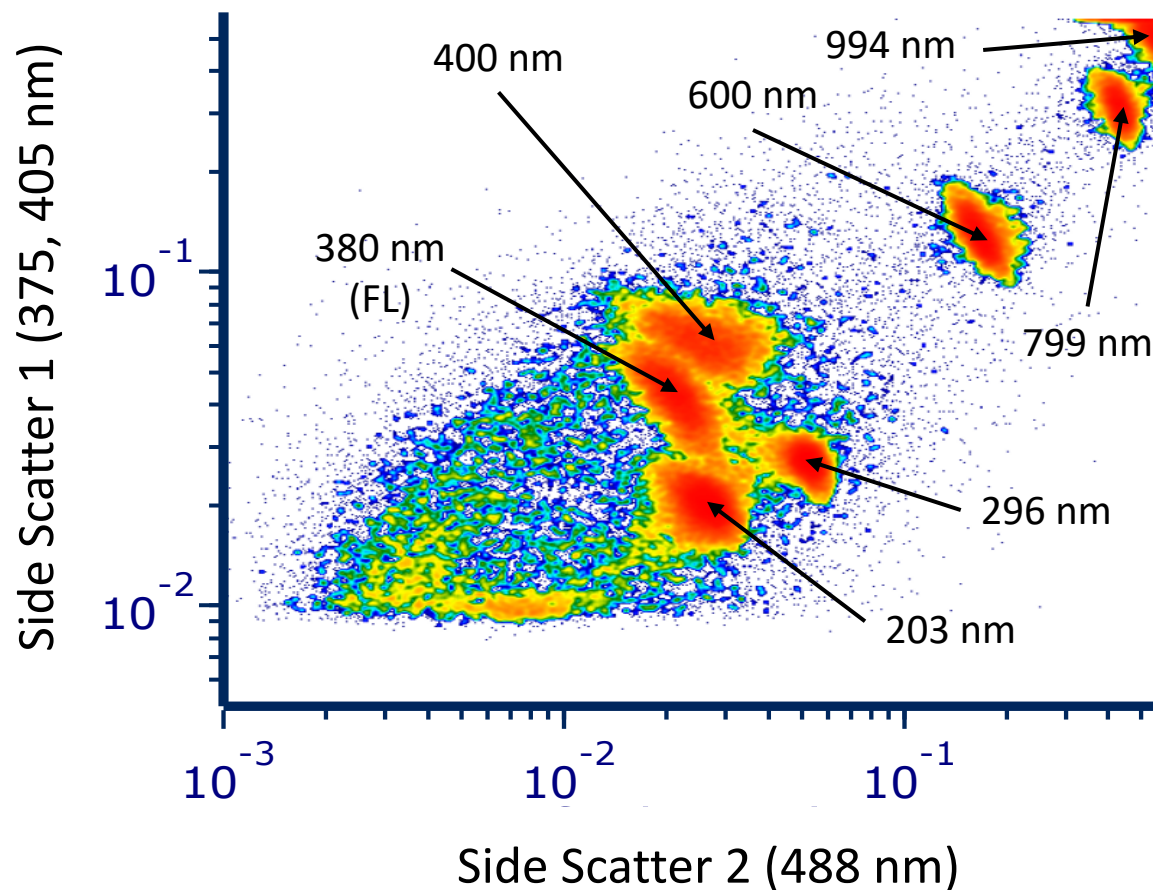


- silica: Alpha Nanotech
- polystyrene: Spherotech

# Another Look at 60 nm



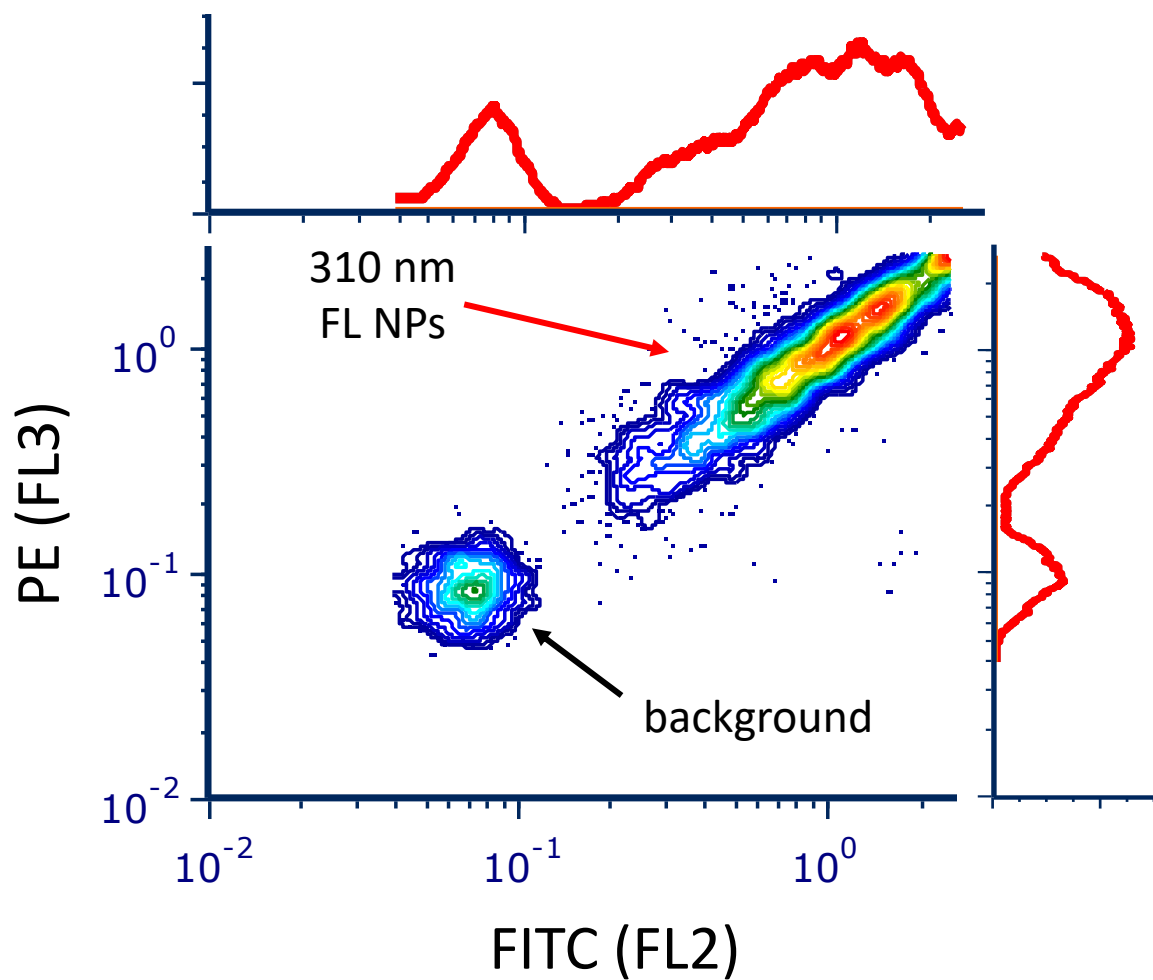
# Wide Dynamic Range, Good Resolution



- Exometry Rosetta Calibration NPs



# Fluorescence Co-characterization

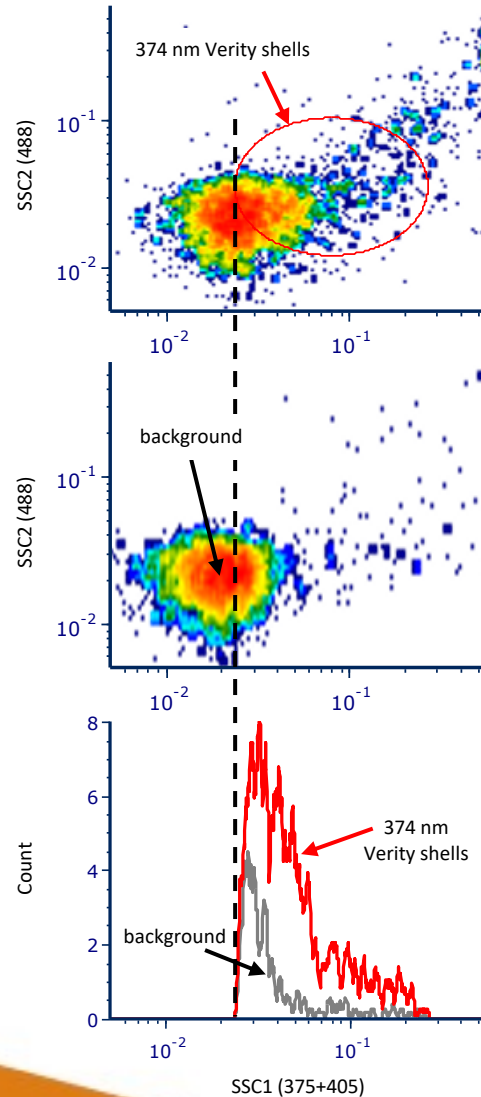


- FL NPs: Spherotech URB 310



# Not Just Beads: Organosilica Shells

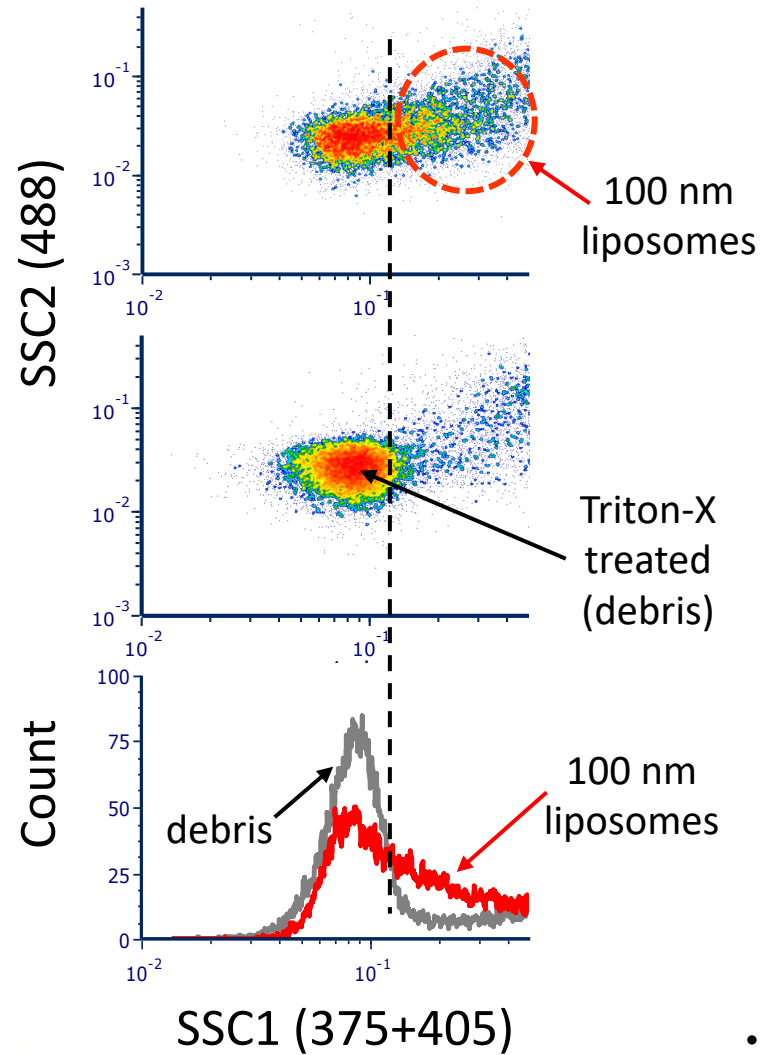
- shells have a structure more similar to biological EVs than solid microspheres



- shells: Exometry Verity Shells

# Not Just Beads: Liposome Detection

- lipoprotein shells are even closer surrogates to biological EVs



- liposomes: Cellarcus Lipo100

# Delaware Flow NanoCytometer™ for EV Analysis

- 60-nm single-nanoparticle resolution
- 100-nm single-liposome detection
- wide dynamic range
- intuitive user interface
- *also* measures cells

