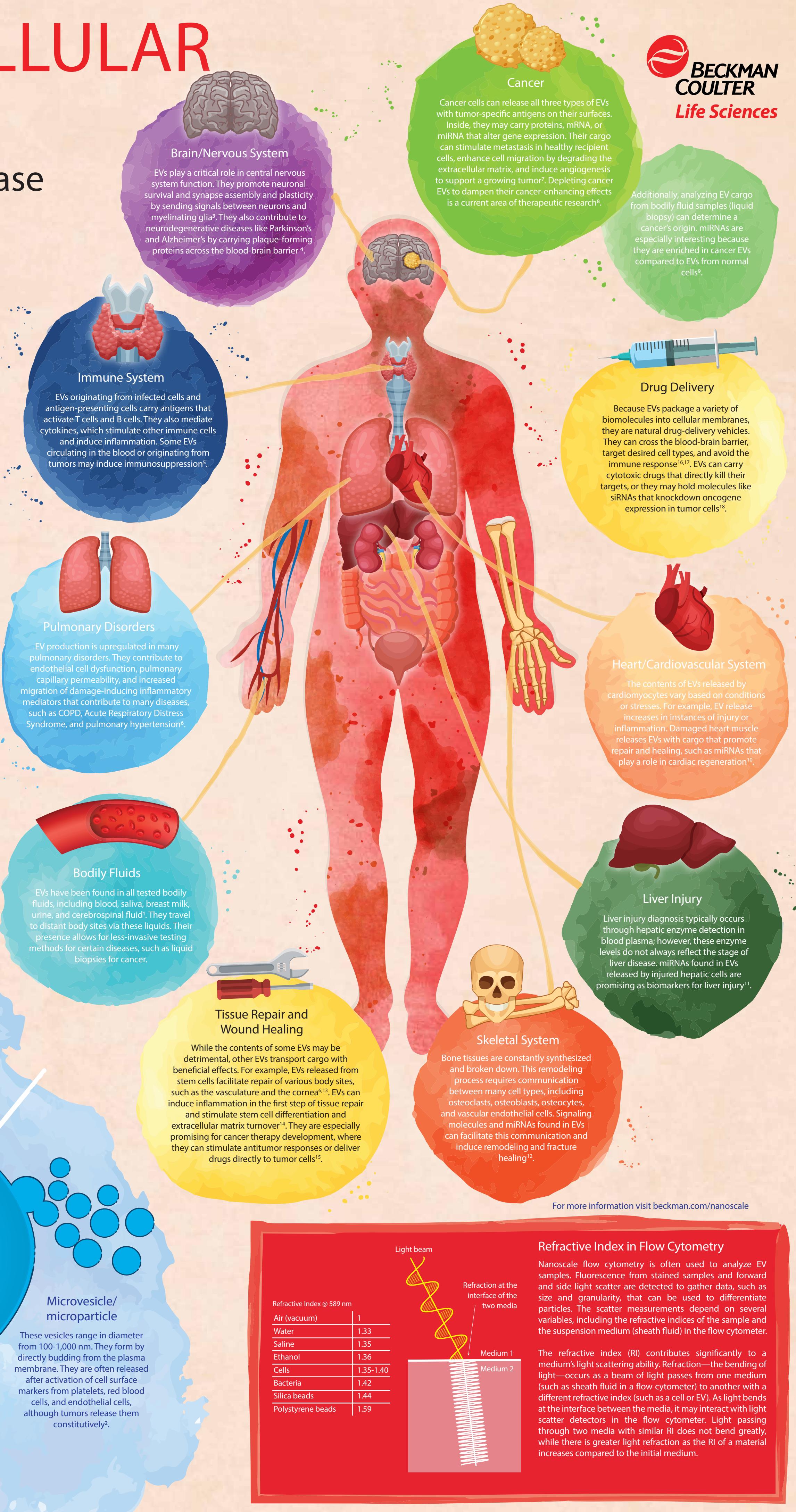
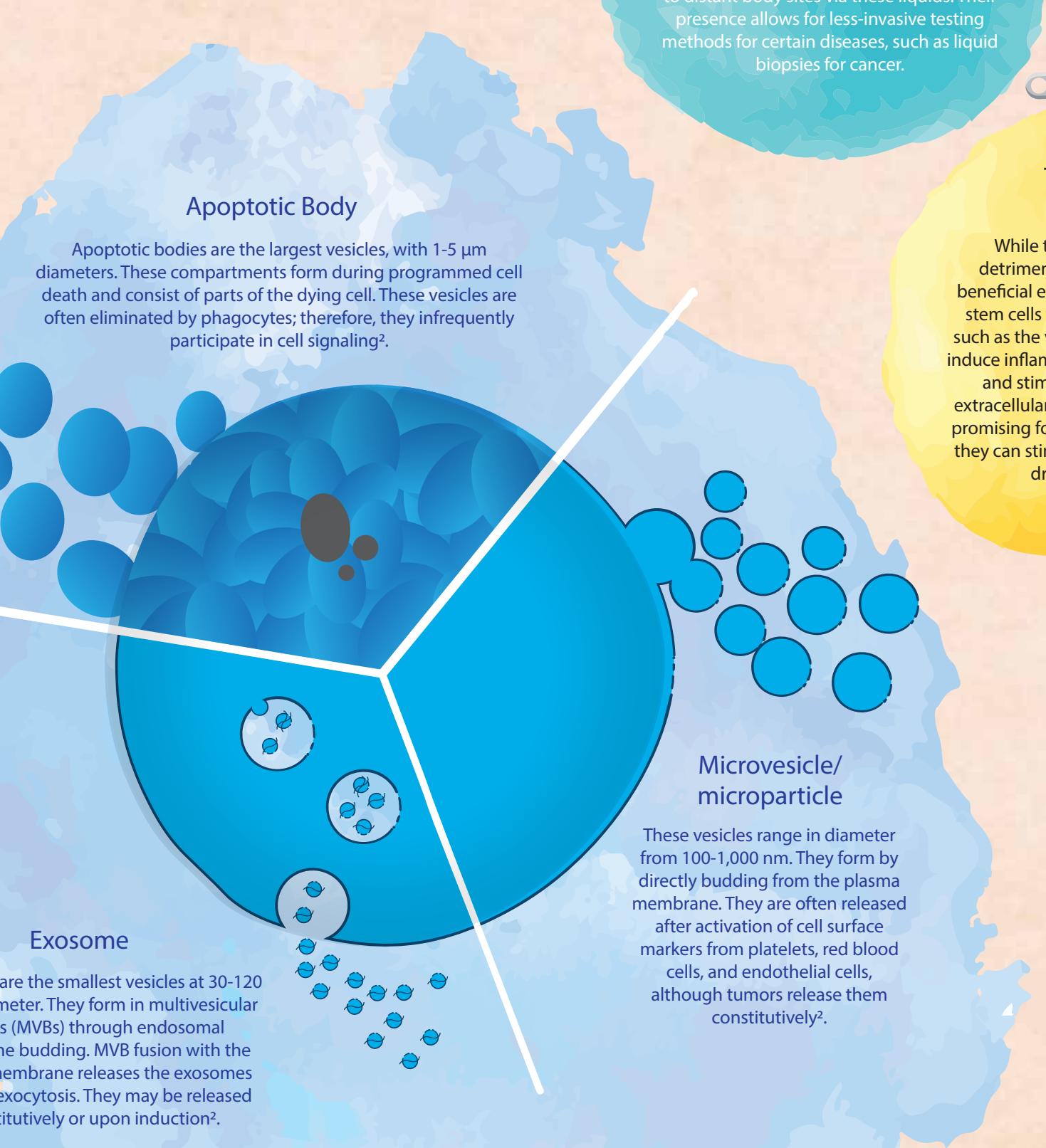


EXTRACELLULAR VESICLES

in Health and Disease

Extracellular vesicles (EVs)—exosomes, microvesicles, and apoptotic bodies—are small, membrane-bound vesicles of various sizes. Both prokaryotic and eukaryotic cells release EVs, which are comprised of the origin cell's plasma membrane and cytoplasmic contents¹. EVs carry and transport bioactive cargo, such as proteins, nucleic acids, and lipids, that can participate in intracellular communication. EVs and their cargo can indicate disease, but they are difficult to characterize due to their small size, variable composition, and heterogeneous refractive indices.

Checklist for Standardization of Extracellular Vesicle Characterization by Flow Cytometry	
The following experimental conditions and results should be reported in standard units ¹⁹	
<input checked="" type="checkbox"/>	Source, sample collection, isolation, and storage variables
<input checked="" type="checkbox"/>	Staining method and reagent descriptions according to MiFlowCyt guidelines ²⁰
<input checked="" type="checkbox"/>	All washing and dilution steps
<input checked="" type="checkbox"/>	Settings used for buffer-only controls and samples. Data should be recorded for a set period of time rather than a set event count
<input checked="" type="checkbox"/>	Detergent type, concentration, and lysis results, if applicable
<input checked="" type="checkbox"/>	Trigger channels and thresholds used for detection
<input checked="" type="checkbox"/>	Fluorescence calibration: materials and methods, catalog and lot numbers, reference units for standards, type of regression used, and plot showing arbitrary versus standard data for reference particles. Fluorescence parameters in units of ERF, MESF, or ABC beads
<input checked="" type="checkbox"/>	Light-scatter calibration details needed to repeat the model. Use standardized units of nm ²
<input checked="" type="checkbox"/>	Flow cytometry calculation of EV diameter, surface area, and/or volume
<input checked="" type="checkbox"/>	Approximation of EV refractive index
<input checked="" type="checkbox"/>	Link to data in a public repository



Refractive Index @ 589 nm	
Air (vacuum)	1
Water	1.33
Saline	1.35
Ethanol	1.36
Cells	1.35-1.40
Bacteria	1.42
Silica beads	1.44
Polystyrene beads	1.59

