

CELL LABELING AND TRACKING TECHNOLOGY

In Vivo Survey Technology (IVST)

There is a clear need for technology to label and track cells *in vivo* as demonstrated by the recent development of cell therapy and potential applications of stem cells for organ regeneration. Such technology has application in the fundamental study of cellular systems as well as serving as an enabling technology in the development of biotechnology and cell-based pharmaceuticals. Therefore, BioPAL developed the *IVST* product line that combine the properties of MRI contrast agents, neutron activation, fluorescence and electron microscopy detection in a single chemical entity.

BioPAL offers several *IVST*-based reagents. The first is a 30 nm iron/europium colloid or a 30 nm gadolinium/europium colloid each having a neutral colloidal surface. The iron and the gadolinium provide the ability to image in real time *via* MRI technology, while the europium provides both the ability to quantify labeled cells in large biological samples *via* neutron activation using BioPAL's assay service and provides the ability to histologically visualize cells *via* time-resolved fluorescent (TRF) technology. Because the colloid is electron dense, the reagent can also be visualized by electron microscopy. The second reagent is a 30 nm iron/europium colloid or a 30 nm gadolinium/europium colloid each having a positive colloidal surface. The positive surface may enhance cellular uptake in certain applications. The third reagent is a 30 nm iron/europium colloid or a 30 nm gadolinium/europium colloid each with amino groups. This reagent retains all the properties discussed above, but also provides the opportunity to attach an antibody or other ligand of interest to the colloid. As a result, new biological properties can be conferred to the reagent, such as targeting to a specific cell type. Moreover, the iron-based reagents can be adapted for magnetic cell-sorting applications. Lastly, we offer a 30 nm iron/europium colloid or a 30 nm gadolinium/europium colloid co-labeled with either rhodamine or fluorescein allowing additional detection *via* conventional fluorescent techniques.

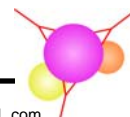
***IVST* Iron-based colloids.**

Cell labeling reagents that combine the properties of MRI iron-based contrast agents, neutron activation detection, fluorescence detection and electron microscopy detection in a single chemical entity.

Catalog Number

CL-30QK02-2	<i>IVST</i> Colloidal Iron/Europium \$ 425.00 2.0 ml of 30 nm iron-based colloid sprinkled with europium packaged in a 2 ml sealed serum bottle.
CL-30QK02-5	<i>IVST</i> Colloidal Iron/Europium (+) \$ 450.00 2.0 ml of 30 nm iron-based colloid sprinkled with europium having a positive surface packaged in a 2 ml sealed serum bottle.
CL-30QK02-A	<i>IVST</i> Colloidal Iron/Europium - Amine \$ 475.00 2.0 ml of 30 nm iron-based colloid sprinkled with europium with amine groups packaged in a 2 ml sealed serum bottle.
CL-30QK02-50	<i>IVST</i> Colloidal Iron/Europium/Rhodamine \$ 450.00 2.0 ml of 30 nm iron-based colloid sprinkled with europium and labeled with rhodamine packaged in a 2 ml sealed serum bottle.
CL-30QK02-51	<i>IVST</i> Colloidal Iron/Europium/Fluorescein \$ 450.00 2.0 ml of 30 nm iron-based colloid sprinkled with europium and labeled with fluorescein packaged in a 2 ml sealed serum bottle.

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***IVST* Gadolinium-based colloids.**

Cell labeling reagents that combine the properties of MRI gadolinium-based contrast agents, neutron activation detection, fluorescence detection and electron microscopy detection in a single chemical entity.

Catalog Number

CL-30PK02-2	<i>IVST</i> Colloidal Gadolinium/Europium	\$ 475.00
	2.0 ml of 30 nm gadolinium-based colloid sprinkled with europium packaged in a 2 ml sealed serum bottle.	
CL-30PK02-5	<i>IVST</i> Colloidal Gadolinium/Europium (+).....	\$ 500.00
	2.0 ml of 30 nm gadolinium-based colloid sprinkled with europium having a positive surface packaged in a 2 ml sealed serum bottle.	
CL-30PK02-A	<i>IVST</i> Colloidal Gadolinium/Europium - Amine.....	\$ 525.00
	2.0 ml of 30 nm gadolinium-based colloid sprinkled with europium with amine groups packaged in a 2 ml sealed serum bottle.	
CL-30PK02-50	<i>IVST</i> Colloidal Gadolinium/Europium/Rhodamine.....	\$ 500.00
	2.0 ml of 30 nm gadolinium-based colloid sprinkled with europium and labeled with rhodamine packaged in a 2 ml sealed serum bottle.	
CL-30PK02-51	<i>IVST</i> Colloidal Gadolinium/Europium/Fluorescein.....	\$ 500.00
	2.0 ml of 30 nm gadolinium-based colloid sprinkled with europium and labeled with fluorescein packaged in a 2 ml sealed serum bottle.	

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