

Materials List for:

Mammalian Cell Encapsulation in Alginate Beads Using a Simple Stirred Vessel

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Materials

Name	Company	Catalog Number	Comments
Reagents and consumables			
LVM alginate (transplantation-grade)	Novamatrix	Non-applicable	Referred to as "alginate #1" in the results.
MVG alginate (transplantation-grade)	Novamatrix	Non-applicable	Referred to as "alginate #2" in the results.
Alginate (cell culture-grade)	Sigma	A0682 (low viscosity) or A2033 (medium viscosity)	A2033 is referred to as "alginate #3" in the results.
DMEM	Life Technologies	11995-065	
Fetal bovine serum, characterized, Canadian origin	Thermo Fisher Scientific	SH3039603	
Glutamine	Life Technologies	25030	
Penicillin and streptomycin	Sigma	P4333-100ML	
HEPES, cell culture tested	Sigma	H4034-100G	
NaCl	Thermo Fisher Scientific	S271-1	
Fine-grain CaCO ₃	Avantor Materials	1301-01	After preparing the CaCO ₃ suspension, sonicate and use within one month.
Light mineral oil	Thermo Fisher Scientific	O121-4	Sterile filter through a 0.22 µm pore size membrane prior to use.
Glacial acetic acid	Thermo Fisher Scientific	A38-500	Handle with caution: refer to MSDS.
Sterile spatulas	Sigma	CLS3004-100EA	
Sterile nylon cell strainers, 40 µm	Thermo Fisher Scientific	08-771-1	
Serological pipettes (2 mL, 5 mL, 10 mL, 25 mL)	Sarstedt	86.1252.001, 86.1253.001, 86.1254.001 and 86.1685.001	
Pasteur pipettes	VWR	14673-043	
Toluidine Blue-O	Sigma	T3260	
Equipment			
100 mL microcarrier spinner flasks	Bellco	1965-00100	The impeller configuration with recent models may not be suitable for adequate emulsification. A blade able to sweep the oil down to 0.5 cm from the bottom of the flask can be custom-made from a Teflon sheet.
Magnetic stir plate with adjustable speed	Bellco	7760-06005	The rotation speed should be calibrated (e.g. using a tachometer) prior to use.

Cell counter	Innovatis	Cedex AS20	This system is now sold by Roche. This automated cell counter can also be replaced by manual cell enumeration after Trypan blue staining using a hemocytometer.
LED light box	Artograph	LightPad® PRO	This item can be replaced by other types of illuminators.
Handheld camera	Canon	PowerShot A590 IS	A variety of handheld cameras can be used to capture toluidine blue-stained bead images. A ruler should be placed next to the Petri dish containing the beads prior to acquiring images.
Fluorescence microscope with phase contrast and adequate fluorescence filters	Olympus	IX81	Several microscopy systems were used to image the beads. The results shown here were obtained with an IX81 microscope equipped with GFP and TRITC fluorescence filters. To capture entire beads, 4X to 20X objectives were used depending on the agitation rate. Live/dead staining images were typically captured with 20X to 40X objectives.
Image acquisition software	Molecular Devices	Metamorph	A variety of image acquisition software can be used to acquire phase contrast and fluorescence images.
Image analysis freeware	CellProfiler	Non-applicable	A variety of image analysis software can be used to identify beads as objects and analyze bead size (e.g. ImageJ).