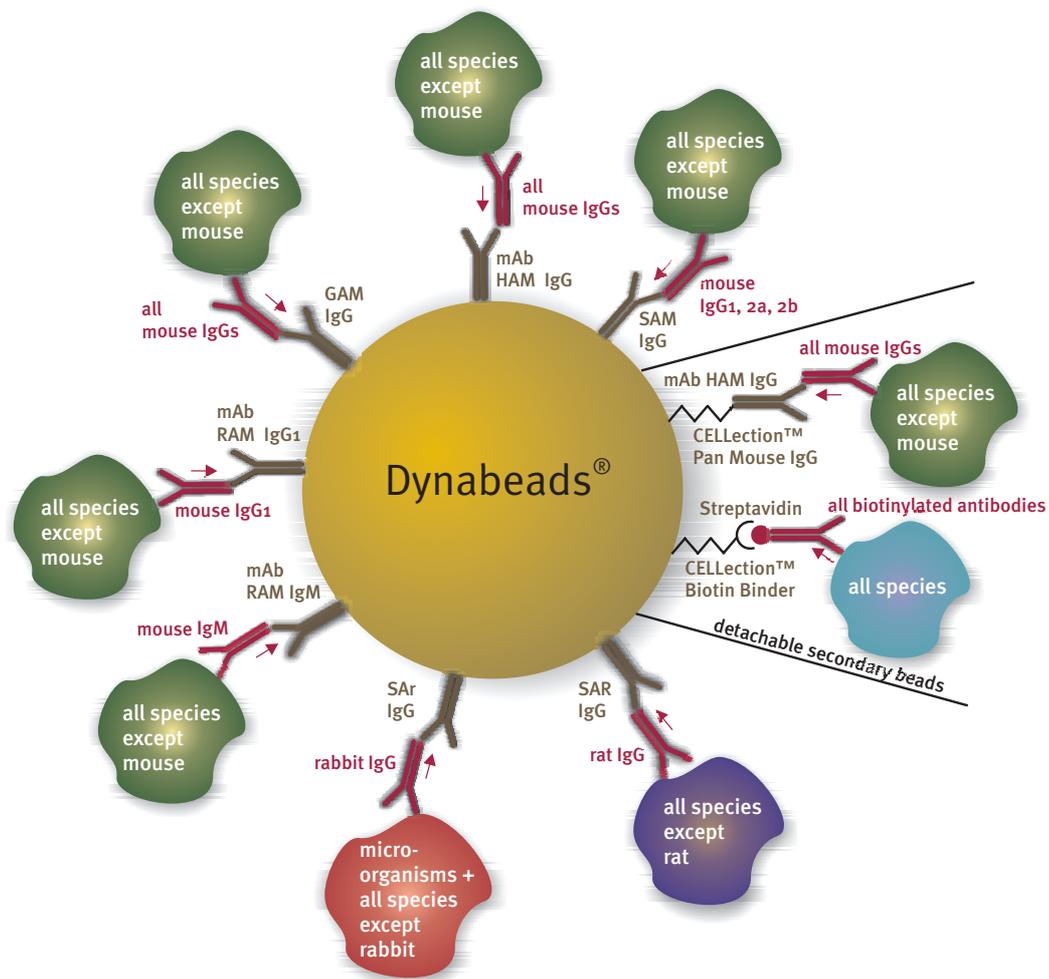


# Isolate almost any cell type from any species with Secondary Coated Dynabeads®

- All in one tube - no columns or centrifugation needed
- Get high yield, purity and viability of your specific cell subset
- Separate directly from whole blood and bone marrow

Use positive isolation, negative isolation or depletion!



Use this chart to help you select the best Dynabeads® for your antibody and cell type.

mAb - monoclonal antibody	 - customer's own antibody added
SAM - Sheep anti-Mouse	 - type of cells to be isolated
HAM - Human anti-Mouse (Pan Mouse)	 - DNA linker (enzymatically cleaved to detach beads from isolated cells)
GAM - Goat anti-Mouse	
RAM - Rat anti-Mouse	
SAR - Sheep anti-Rat	
SAR - Sheep anti-Rabbit	

## Introduction

Immunomagnetic cell separation is based on the interaction between unique cell surface antigens and Dynabeads® coated with antibodies that recognise them. Secondary-coated Dynabeads® are coated with a secondary antibody or streptavidin that binds primary monoclonal antibodies (pure or biotinylated, respectively) specific for the target cell of interest. A small amount of primary antibody is required to couple the secondary Dynabeads® and pure cell subsets are separated from whole blood, bone marrow, mononuclear cells (MNC), buffy coats or tissue digests in just 20 minutes, using only a tube and a magnet.

## Principle of cell separation

Isolate cells directly by coupling the primary antibody onto the secondary-coated Dynabeads® prior to cell separation. In the indirect technique, add primary antibody to the sample and allow to react with the antigen on the target cell(s) (fig.2). Add the secondary-coated Dynabeads® to the labeled cells for cell isolation. They can be used for positive cell isolation for subsequent molecular analysis, depletion or for negatively isolating untouched target cells (fig. 2).

**Positive isolation:** Positively isolate cells from any suspension by adding Dynabeads® coated with a specific antibody. The target cells will bind to the Dynabeads® and are easily separated with a magnet. Use the isolated cells directly in downstream molecular analysis for protein, mRNA and DNA isolation etc. In addition, Dynabeads® with a cleavable linker are available where the beads are detached from the cells before further studies (see CELLlection™ info on page 3).

**Depletion:** Remove particular cell subset from a suspension of cells by adding Dynabeads® coated with antibodies against that cell type. This approach can be used to study signalling between cells and also to remove tumour cells from bone marrow in clinical research and therapy.

**Negative isolation:** Negatively isolate cells from an MNC suspension by adding a cocktail of antibodies against antigens on the unwanted cells. Multiple populations of unwanted cells can be depleted simultaneously (fig. 2 - indirect technique). This approach is used in the ready-to-use negative isolation kits for human and mouse cells and the remaining cells are untouched and viable. Isolated cells can be used directly in flow cytometry and for further functional studies.

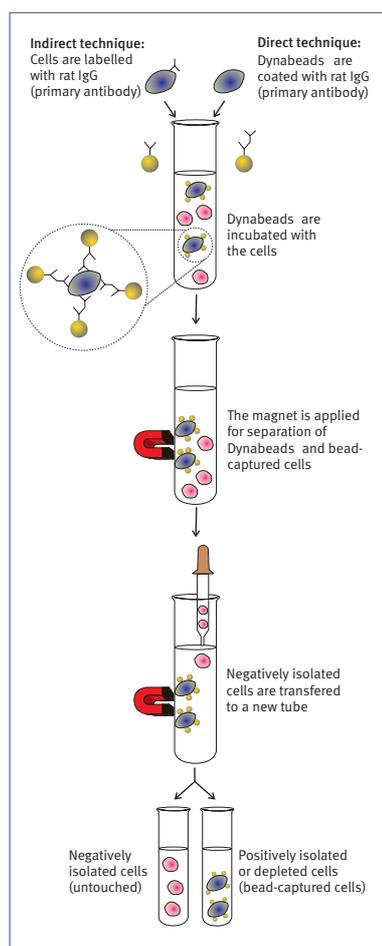


Fig. 2. Overview of direct and indirect technique.

## Use your own mouse antibodies

Isolate any cell type from all species except mouse

### Dynabeads® Pan Mouse IgG

These 4.5 µm beads are coated with a monoclonal antibody specific for the Fc part of all mouse IgG antibody subsets. The monoclonal antibody is a unique human\* anti-mouse IgG4. It has a high affinity for mouse IgGs and does not cross-react with IgGs from any other species (e.g. human, rat, pig). Depletion efficiency is high (fig. 3).

These universal Dynabeads® provide you with:

- **consistency** - a monoclonal with broad binding similar to that of a polyclonal
- **cost efficiency** - low price and small amounts of primary antibody required
- **flexibility** - can be used with all mouse IgGs
- **Fc-specificity** - optimal orientation of the added antibody
- **reproducibility** - monosized beads with monoclonal antibodies ensure high batch reproducibility, giving consistent results every time.

### CELLlection™ Pan Mouse IgG Kit

**For positive selection of cells with detachment.** The antibody coated onto the Dynabeads® in this kit is the same as that described for Dynabeads® Pan Mouse IgG.

Compatible with flow cytometry and can be used in all functional studies.

The Dynabeads® in this kit have a DNA linker attached, which provides a cleavable site for the supplied DNase to remove the beads from the cells. Detached cells are pure and viable and can be used directly in further studies.

#### Dynabeads® Sheep anti-Mouse IgG

4.5 µm beads coated with polyclonal sheep anti-mouse antibodies that recognise mouse IgG1, IgG2a and IgG2b, but not IgG3.

**For clinical use:** For *ex vivo* cell separations or modifications as part of clinical trials, a sterile version of this product is available. The Dynabeads® *ClinExVivo*™ Sheep anti-Mouse product IgG is manufactured under validated aseptic conditions with full quality control and testing for sterility and endotoxins, according to United States Pharmacopeia. It holds a master file from FDA (CBER) and is CE marked (0434) - complying with Medical Device Directive (MDD) 93/42/EEC).

#### Dynabeads® Goat anti-Mouse IgG

4.5 µm beads coated with a polyclonal goat anti-mouse antibody that recognises all mouse IgG subclasses. Fc-reactive, but not Fc-specific.

#### Dynabeads® Rat anti-Mouse IgG1

4.5 µm beads coated with a monoclonal rat anti-mouse antibody that recognises mouse IgG1 with high efficiency and specificity.

#### Dynabeads® Rat anti-Mouse IgM

4.5 µm beads coated with a monoclonal rat anti-mouse antibody that recognises mouse IgM antibodies with high efficiency and specificity. Not recommended for isolating mouse B cells expressing surface IgM.

### Use your own rat antibodies

Isolate any cell type from all species except rat

#### Dynabeads® Sheep anti-Rat IgG

4.5 µm beads coated with a polyclonal sheep anti-rat antibody that recognises rat antibodies of all IgG subclasses. Make your own negative isolation kit (for mouse cells).

### Use your own rabbit antibodies

Isolate microorganisms or any cell type from all species except rabbit

#### Dynabeads® M-280 Sheep anti-Rabbit IgG

2.8 µm beads coated with a polyclonal sheep anti-rabbit antibody that recognises rabbit antibodies of all IgG subclasses. Due to the smaller bead size they are ideal for isolation of microorganisms, as well as cell isolation.

### Use antibodies from any species

Isolate any cell type from all species with detachment

#### CELLlection™ Biotin Binder Kit

4.5 µm beads that bind biotinylated antibodies and are used to positively isolate cells with detachment. The Dynabeads are coated with recombinant streptavidin via a DNA linker which provides a cleavable site for DNase (included in the kit) to remove the beads from the cells. Detached cells are pure and viable and can be used directly in further studies.

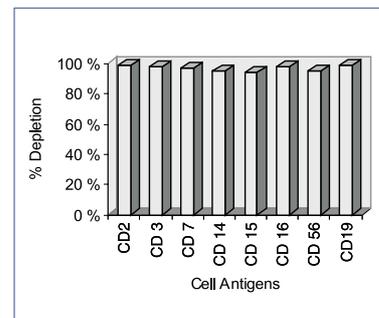


Fig. 3. Cell depletions from MNC samples. Cell depletions were performed using a cocktail of antibodies and Dynabeads® Pan Mouse IgG. Results shown are average depletions from 10 experiments.

\* The human monoclonal antibody coated onto the Dynabeads® is produced in a hybridoma cell line. The human donor was tested by serology and found free from HIV, HBV and HVC.

### References

1. Liu DY *et al.* (2002) An anti-actin monoclonal antibody inhibits the zona pellucida-induced acrosome reaction and hyperactivated motility of human sperm. *Mol. Hum. Reprod.* 8:37-47.
2. Soltys J *et al.* (1999) Isolation of bovine neutrophils with biomagnetic beads: comparison with standard Percoll density gradient isolation methods. *J. Immunol. Meth.* 226:71-84.
3. Nagy M *et al.* (2002) Expression of transcription factors Pu.1, Spi-B, Blimp-1, BSAP and oct-2 in normal human plasma cells and in multiple myeloma cells. *J. Hematol.* 116(2):429-435.
4. Butthet P *et al.* (2002) Increased circulating activated endothelial cells, vascular endothelial I growth factor, and tumor necrosis factor in thalassemia. *Am. J. Hematol.* 70(2):100-106.
5. Flatmark K *et al.* (2002) Immunomagnetic detection of micrometastatic cells in bone marrow of colorectal cancer patients. *Clin. Cancer Res.* 8(2):444-449.
6. Moreau G *et al.* (2002) Natural killer cell-dependent apoptosis of peripheral murine hematopoietic progenitor cells in response to Fas cross-linking: involvement of tumor necrosis factor- $\alpha$ . *Blood* 97(10):3069-3074.

## Product specifications

Product name	Antibody/binder	Specificity on beads	Primary antibody need
Dynabeads® Pan Mouse IgG	monoclonal human* anti-mouse	Fc-specific binding of all mouse IgG subclasses. No cross-reactivity with other species	0.1 - 1 µg /10 <sup>7</sup> beads
CELlection™ Pan Mouse IgG Kit	monoclonal human* anti-mouse	Fc-specific binding of all mouse IgG subclasses (with detachment). No cross-reactivity with other species	0.1 - 1 µg /10 <sup>7</sup> beads
Dynabeads® Goat anti-Mouse IgG	polyclonal goat anti-mouse	Binds all mouse IgG subclasses, Fc-reactive	up to 1.5 µg /10 <sup>7</sup> beads
Dynabeads® Sheep anti-Mouse IgG	polyclonal sheep anti-mouse	Binds mouse IgG1, IgG2a and IgG2b, Fc-reactive	0.15 - 1.5 µg /10 <sup>7</sup> beads
Dynabeads® Rat anti-Mouse IgG1	monoclonal rat anti-mouse	Binds mouse IgG1, Fc-reactive	0.4 - 2 µg /10 <sup>7</sup> beads
Dynabeads® Rat anti-Mouse IgM	monoclonal rat anti-mouse	Binds mouse IgM, Fc-reactive	0.4 - 1.5 µg /10 <sup>7</sup> beads
Dynabeads® Sheep anti-Rat IgG	polyclonal sheep anti-rat	Binds rat IgG, Fc-reactive	up to 1.5 µg /10 <sup>7</sup> beads
Dynabeads® M-280 Sheep anti-Rabbit IgG	polyclonal sheep anti-rabbit	Binds rabbit IgG, Fc-reactive	0.8 - 3 µg /10 <sup>7</sup> beads
CELlection™ Biotin Binder Kit	recombinant streptavidin	Binds all biotinylated antibodies (with detachment)	0.2 - 2 µg /10 <sup>7</sup> beads

\* The human monoclonal antibody coated onto the Dynabeads® is produced in a hybridoma cell line. The human donor was tested by serology and found free from HIV, HBV and HVC.

## Ordering information

Product Name	Product Number	Product Volume
Dynabeads® Sheep anti-Mouse IgG	110.31	5 ml
Dynabeads® Goat anti-Mouse IgG	110.33	5 ml
Dynabeads® Sheep anti-Rat IgG	110.35	5 ml
Dynabeads® Rat anti-Mouse IgG1	110.37	5 ml
Dynabeads® Rat anti-Mouse IgM	110.39	5 ml
Dynabeads® Pan Mouse IgG	110.41/110.42	5 ml/5 x 5 ml
Dynabeads® M-280 Sheep anti-Rabbit IgG	112.03/112.04	2 ml/10 ml
CELlection™ Pan Mouse IgG Kit (includes Releasing Buffer)	115.31	5 ml
CELlection™ Biotin Binder Kit (includes Releasing Buffer)	115.33	5 ml
Dynal MPC®-S	120.20	0.2 - 2 ml
Dynal MPC®-L	120.21	1 - 8 ml
Dynal MPC®-1	120.01	2 - 35 ml
Dynal MPC®-50	120.24	15 - 50 ml

Dynal Biotech will not be responsible for violations or patent infringements that may occur with the use of our products.

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