

# MAGDEM is the simple, labor saving way to obtain a cell suspension from very adherent cultures.

## Introduction to the System

When a cell suspension is required from an adherent cell culture, the cells must first be removed from the tissue culture flask without damaging them. This is generally achieved by means of enzymatic treatment in order to overcome the time consuming nature and decreased viability caused by manual detachment using “scrapers or rubber policemen” However, enzymatic treatment may not always be preferable, especially in some fragile primary cell lines. The **MAGDEM** has been developed in order to expedite and standardize mechanical scraping by automating this process. The **MAGDEM** is a system composed of two parts: 1) a magnetic field generator and 2) microscrapers called **FLYcons**, which are driven by the magnetic field generator. Both devices were developed in cell culture laboratories by cell biologists to address the challenges of cell handling. The magnetic array inside the **MAGDEM** scans the top of the device in an iterative mode. The **FLYcons** are particularly innovative in both their composition and shape (patent pending); they are biologically inert plastic infused with paramagnetic particles and are shaped like small cutting blades. Once the **FLYcons** are added to the tissue culture flask containing the adherent cells and the flask is placed on the top of the **MAGDEM**, the **FLYcons** are pulled to the bottom surface of the tissue culture flask by the magnetic field of the **MAGDEM**. When power is applied to the **MAGDEM**, the **FLYcons** move around the bottom of the tissue culture flask with just enough force to scrape the cells off with out damaging them. The **FLYcons** are sized and shaped specially to cover the entire surface the flask.

## Operating Instructions

**MAGDEM** can perform cell detachment in most plastic tissue culture flask, round petri dished, square flasks or plates with either single or multi-well arrangements. The following procedure can be applied to a tissue culture flask containing cell culture medium or to a flask in which the medium has been replaced with a gentle declumping reagent such as Accutase.

- ◆ Check the liquid level of the culture container before starting. This is the most important prerequisite for correct operation of the **MAGDEM**. Ensure a minimum of 3mm of liquid is inside the tissue culture flask when it is laid on it's side. For example, a 500 ml flask requires about 10 ml of liquid. **FLYcons** float in the proper amount of liquid. When the tissue culture flask is placed on the top of the **MAGDEM**, the **Flycons** will adhere to the bottom of the flask. The liquid can be the culture media the cells were growing in or our companion product, **Accutase**, cell detachment solution. If the cells are not clumped after using the **MAGDEM** machine, **Accutase** is not necessary.
- ◆ **Flycons** are sterile. Add the entire bag of **Flycons** to the tissue culture flask in a sterile manner if required.
- ◆ Gently agitate the flask to allow the **FLYcons** to float in the liquid.



◆ Place the tissue culture flask containing the **FLY**cons on the top of the **MAGDEM** and verify that the **FLY**cons are now on the bottom of the flask. If they are not, gently move the flask around on the **MAGDEM** until the **FLY**cons adhere to the bottom of the flask.



◆ Turn on the **MAGDEM**. The **Fly**cons will start moving around the bottom of the tissue culture flask, lifting off the cells.



◆ Let the **MAGDEM** operate for a few minutes (about 5, dependent on cell and flask type). Round flasks will finish more quickly than square ones.



◆ Switch off the **MAGDEM**. Inspect with an inverted microscope to ascertain that all adherent cells have been removed from the bottom of the flask.



◆ When all the cells have been detached, remove the cell suspension from the flask with a pipette, leaving the **FLY**cons behind. **FLY**cons can also be collected into one corner using an external magnet.



#### Note

**FLY**cons are biologically inert and sterile. **FLY**cons may be left in a cell culture flask for extended periods of time and then re-used to perform subsequent detachments in the same flask.

The **MAGDEM** system has been developed and is manufactured by Consul TS ([www.consul-ts.com](http://www.consul-ts.com)), a leader in Europe of BSE tissue homogenization apparatus. Consul TS has asked Innovative Cell Technologies ([www.innovativecelltech.com](http://www.innovativecelltech.com)), manufacturer of Accutase, the superior replacement for trypsin, to act as their representative for the **MAGDEM** system in the US. Inquiries from end users as well as distributors in the US are welcome. Come visit us at ASCB in San Diego in December of 2006.

