

# Medimachine™

The Automated, Mechanical  
Disaggregation System



Fast and Safe Sample Preparation

## Introduction

An increasing number of laboratories are performing flow cytometric analyses of solid tissues and tumors for antigen expression, ploidy, and proliferative index. The quality of the final result in the flow cytometric analysis of any tissue depends upon the quality of the prepared suspension. Various manual methods for dissociating tissue have been used alone or in combination and include:

- Chemical treatment
- Manual disaggregation
- Enzymatic digestion
- Enucleation techniques

These methods can be time consuming and all have limitations with regard to operator safety and the quality of the final cell suspension. Some tissues disaggregate more readily than others and some, such as abnormal tissue, include very delicate cells. In addition, cell viability and cell yield can be low and the reproducibility poor as a result of technician differences.

## The System

The Becton Dickinson Medimachine System<sup>®</sup> is a safe, standardized sample preparation system for the automated, mechanical disaggregation of solid animal or plant tissues for flow cytometric analysis, cell culture, or DNA amplification techniques. The Medimachine System makes tissue preparation operator-independent and facilitates standardizing the preparation of all tissue types. The Medimachine System consists of three components:

- Medimachine
- Medicons<sup>™</sup>
- Filcons<sup>™</sup>

### Medimachine

The compact Medimachine unit is the heart of the system. It works together with the Medicons and operates at a constant speed of approximately 80 rpm.

## Medicons

Medicons are disposable polyethylene chambers containing an immobile stainless steel screen with approximately 100 hexagonal holes. Around each hole are 6 microblades designed for efficient cutting of hard and soft tissues.



## Filcons

After disaggregation of the tissue in the Medicons, the cell suspension is filtered using a Filcon disposable filter device. Depending upon the chosen Filcon pore size, cells or cell aggregates pass through while larger particles are trapped. There are two types of Filcons: a syringe-fitting form which can be used with either suction or compression and works well for quantities over 5 mL, and a cup type that works well for small quantities.



## Procedure

The following is an overview of the steps followed when using the Medimachine System for typical tissue disaggregation. The procedure should be adapted to your laboratory and each tissue type you receive.

A small piece of tissue (up to 10 mm<sup>3</sup>), free of fat and necrosis, is inserted into the Medicon together with ~1.0 mL of the desired suspension buffer (PBS, etc.).

The Medicon is then inserted into the Medimachine and the machine is started. The machine can be run from 10 seconds to 4 minutes depending upon the tissue type and the resultant cell suspension desired. The disaggregation time can be standardized across labs for each tissue type and desired cell preparation. As the tissue is disaggregated, the cells pass through the screen into the suspension liquid in the bottom of the Medicon (Figs. 1 and 2).

Once the tissue is disaggregated, the Medicon can be removed from the Medimachine. Remove the cover and use a syringe in the syringe port to recover the cell suspension. The Medicon may be rinsed with suspension buffer to ensure maximum cell recovery (Fig. 3).

Select the appropriate Filcon pore size for isolation of the desired cells (Fig. 4).



Fig. 1



Fig. 2



Fig. 3



Fig. 4

## Features & Benefits

Feature	Benefits
Fast tissue preparation	<ul style="list-style-type: none"><li>■ Improves lab productivity</li><li>■ Saves time and money</li></ul>
Closed disposable disaggregation unit	<ul style="list-style-type: none"><li>■ Improves operator safety</li><li>■ Eliminates cross-contamination of tissues</li></ul>
Compact design easily fits in biohazard hood	<ul style="list-style-type: none"><li>■ Improves operator safety</li></ul>
Standardization of tissue disaggregation	<ul style="list-style-type: none"><li>■ Improves reproducibility in cell suspensions</li><li>■ Facilitates standardization for each tissue type</li></ul>
Can be used with or without enzymes for disaggregation	<ul style="list-style-type: none"><li>■ Flexible to meet laboratory needs</li></ul>
Can be used for sterile and non-sterile applications	<ul style="list-style-type: none"><li>■ Flexible to meet laboratory needs</li></ul>

## Technical Tips

### Medicons

- Never place the tissue into a dry Medicon.
- Do not overfill the Medicon with suspension buffer. This will cause the tissue to float and can result in inadequate disaggregation.
- If the amount of tissue is very small, the suspension buffer can be replaced with the staining solution for maximum cell recovery.
- As the rotating element passes over the microblades it tends to blunt the edges, reducing the cutting efficiency. Do not reuse the Medicons for successive samples.
- Medicons are manufactured with two mesh sizes:

*35  $\mu\text{m}$*

*50  $\mu\text{m}$*

*Recovery of cell sizes up to 160  $\mu\text{m}$*

*Recovery of cell sizes up to 230  $\mu\text{m}$*

### Filcons

- Before use, wet the Filcon filter membrane with cell suspension buffer to reduce the surface tension and facilitate the filtration process.
- Isolation of nuclei, cells and cell clusters can be achieved by varying the Filcon pore size:

*20  $\mu\text{m}$  and 30  $\mu\text{m}$*

*50  $\mu\text{m}$  and 70  $\mu\text{m}$*

*100  $\mu\text{m}$  and 200  $\mu\text{m}$*

*500  $\mu\text{m}$*

*Isolation of nuclei*



*Isolation of cells*




*Isolation of cells and cell clusters for cell culturing*












*Isolation of tissue fragments obtained by enzymatic disaggregation*

## Medimachine and Consumables

Medimachine						
Product	Part No.	Voltage	Height	Width	Depth	Weight
BD Medimachine	340587	115 V	20 cm	15 cm	15 cm	2.5 kg
BD Medimachine	340588	230 V	20 cm	15 cm	15 cm	2.5 kg

Medicons*				
Product	Part No.	Mesh Pore Size	Type	
Medicon 	340590	35 µm	Non-Sterile	
Medicon 	340592	50 µm	Non-Sterile	
Medicon	340589	35 µm	Sterile	
Medicon	340591	50 µm	Sterile	
*10 units per package				

Filcon Sterile Syringe Type				Filcons Non-Sterile Syringe Type		
Product	Pore Size	Catalog No.	Product	Pore Size	Catalog No.	
Filcon 100 pack 	10 µm	340728	Filcon 100 pack 	10 µm	340730	
Filcon 300 pack	10 µm	340729	Filcon 300 pack	10 µm	340731	
Filcon 100 pack 	20 µm	340593	Filcon 100 pack 	20 µm	340595	
Filcon 300 pack	20 µm	340594	Filcon 300 pack	20 µm	340596	
Filcon 100 pack 	30 µm	340597	Filcon 100 pack 	30 µm	340599	
Filcon 300 pack	30 µm	340598	Filcon 300 pack	30 µm	340600	
Filcon 100 pack 	50 µm	340601	Filcon 100 pack 	50 µm	340603	
Filcon 300 pack	50 µm	340602	Filcon 300 pack	50 µm	340604	
Filcon 100 pack 	70 µm	340605	Filcon 100 pack 	70 µm	340607	
Filcon 300 pack	70 µm	340606	Filcon 300 pack	70 µm	340606	
Filcon 100 pack 	100 µm	340609	Filcon 100 pack 	100 µm	340611	
Filcon 300 pack	100 µm	340610	Filcon 300 pack	100 µm	340612	
Filcon 100 pack 	200 µm	340613	Filcon 100 pack 	200 µm	340615	
Filcon 300 pack	200 µm	340614	Filcon 300 pack	200 µm	340616	
Filcon 100 pack 	500 µm	340617	Filcon 100 pack 	500 µm	340619	
Filcon 300 pack	500 µm	340618	Filcon 300 pack	500 µm	340620	









Filcons Sterile Cup Type				Filcons Non-Sterile Cup Type			
Product		Pore Size	Catalog No.	Product		Pore Size	Catalog No.
Filcon 100 pack		10 µm	340732	Filcon 100 pack		10 µm	340734
Filcon 300 pack		10 µm	340733	Filcon 300 pack		10 µm	340735
Filcon 100 pack		20 µm	340621	Filcon 100 pack		20 µm	340623
Filcon 300 pack		20 µm	340622	Filcon 300 pack		20 µm	340624
Filcon 100 pack		30 µm	340625	Filcon 100 pack		30 µm	340627
Filcon 300 pack		30 µm	340626	Filcon 300 pack		30 µm	340628
Filcon 100 pack		50 µm	340629	Filcon 100 pack		50 µm	340631
Filcon 300 pack		50 µm	340630	Filcon 300 pack		50 µm	340632
Filcon 100 pack		70 µm	340633	Filcon 100 pack		70 µm	340635
Filcon 300 pack		70 µm	340634	Filcon 300 pack		70 µm	340636
Filcon 100 pack		100 µm	340637	Filcon 100 pack		100 µm	340639
Filcon 300 pack		100 µm	340638	Filcon 300 pack		100 µm	340640
Filcon 100 pack		200 µm	340641	Filcon 100 pack		200 µm	340643
Filcon 300 pack		200 µm	340642	Filcon 300 pack		200 µm	340644
Filcon 100 pack		500 µm	340645	Filcon 100 pack		500 µm	340647
Filcon 300 pack		500 µm	340646	Filcon 300 pack		500 µm	340648

**Medimachine Color Key**

**Medicons Pore Size**

-  35 µm
-  50 µm

**Filcons Pore Size**

-  10 µm
-  20 µm
-  30 µm
-  50 µm
-  70 µm
-  100 µm
-  200 µm
-  500 µm



## Worldwide Headquarters

United States Becton Dickinson Immunocytometry Systems Ordering Information Tel (800) 223-8226 Fax (408) 954-BDIS (2347) <b>www.bdfacs.com</b>	Asia Pacific Becton Dickinson and Company Tel (65) 860-1478 Fax (65) 860-1590	Canada Becton Dickinson Canada, Inc. Tel (905) 822-4820 Fax (905) 855-1243 Technical Service: 1-800-268-5430	Europe Becton Dickinson European HQ Tel (32) 53-720211 Fax (32) 53-720450	Japan Nippon Becton Dickinson Company, Ltd. Tel (81) 3-5413-8251 Fax (81) 3-5413-8155	Mexico Becton Dickinson Mexico Tel (525) 237-1200 Fax (525) 237-1288
--	--	---	---	---	---

## International Offices

Africa Becton Dickinson Worldwide Inc Kenya Tel (254) 2 449 608 Fax (254) 2 449 619	Denmark Becton Dickinson AS Tel (45) 43 434566 Fax (45) 43 434166	Hong Kong Becton Dickinson Asia Ltd Tel (852) 2575-8668 Fax (852) 2803-5320	Israel Bactlab Diagnostics Ltd. Tel (972) 6-6309600 Fax (972) 6-6230777	Norway Laborel A/S Tel (47) 23 05 19 30 Fax (47) 22 63 07 51	Sweden Becton Dickinson AB Tel (46) 8 775 5100 Fax (46) 8 645 08 08
Australia Becton Dickinson Pty Ltd Tel (612) 9978-6800 Fax (612) 9978-6850	Eastern Europe Becton Dickinson International Germany Tel (49) 6221 3050 Fax (49) 6221 305 388	Hungary Becton Dickinson Tel (36) 1 216 48 93 Fax (36) 1 216 48 93	Italy Becton Dickinson Italia SpA Tel (39) 02 482401 Fax (39) 02 48200323	Philippines Becton Dickinson Philippines, Inc Tel (632) 818 9727 Fax (632) 810 5687	Switzerland Becton Dickinson AG Tel (41) 61 385 44 22 Fax (41) 61 385 44 00
Austria Becton Dickinson Austria Tel (43) 1 706 36 60-0 Fax (43) 1 706 36 60-11	Finland Oriola OY Prolab Tel (358) 942 92 520 Fax (358) 942 92 080	Iceland Icelandic American Trad Co Tel (354) 168 27 00	Korea Becton Dickinson Korea Inc Tel (822) 5694030 Fax (822) 5694048/9	Poland Becton Dickinson Polska Tel (48) 22 6517921 Fax (48) 22 6517924	Taiwan Becton Dickinson Worldwide Inc Tel (8862) 722-5660 Fax (8862) 725-1772
Benelux N.V. Becton Dickinson S.A. Belgium: Tel (32) 53 720211 Fax (32) 53 720200 The Netherlands: Tel (31) 76 5037720 Fax (31) 76 5014133	France Becton Dickinson SA Division Immunocytométrie Tel (33) 476 683730 Fax (33) 476 683544	India Becton Dickinson India Pvt Ltd Tel (91-11) 6913092 Fax (91-11) 6831783	Latin America Becton Dickinson Immunocytometry Systems USA Tel (408) 954-2157 Fax (408) 526-1804	Portugal ENZifarma, Diagnostica e Farmaceutica Tel (351) 1 4420100 Fax (351) 1 4420110	Thailand Becton Dickinson Thailand Ltd Tel (662) 643 1371-80 Fax (662) 643 1381
China Becton Dickinson Asia Ltd. Tel 8610-6593 3072-77 Fax 8610 6593 3070	Germany Becton Dickinson GmbH Tel (49) 6221 3050 Fax (49) 6221 303798	Indonesia Becton Dickinson Asia Ltd Tel (6221) 577 1920 Fax (6221) 577 1925	Malaysia Becton Dickinson Sdn Bhd Tel (0203) 7571323 Fax (0203) 7571153	South Africa BD Immunocytometry Systems Tel (27) 11 807 1531 Fax (27) 11 807 1953	Turkey BD Turkey Tel (90) 212 222 87 77 Fax (90) 212222 87 76
	Greece Becton Dickinson Hellas SA Tel (30) 1 940 77 41 Fax (30) 1 940 77 40	Ireland Becton Dickinson Diagnostic Systems Tel (353) 1 285 48 00 Fax (353) 1 285 43 32	Middle East Becton Dickinson Tel (971) 4 379525 Fax (971) 4 379551	Spain Becton Dickinson España SA Tel (34) 91 8488100 Fax (34) 91 8488104	United Kingdom Becton Dickinson UK Ltd Tel (44) 1865 748844 Fax (44) 1865 781635

\* The BD Medimachine System is for laboratory use.

Medimachine, Medicon, and Filcon are trademarks of Consul TS.

©1998 Becton Dickinson and Company.

Visit the BDIS website at <http://www.bdfacs.com>.

**BECTON  
DICKINSON**