

**TERUMO Corporation  
Business Strategy Conference**

**CARIDIANBCT AND TERUMO TRANSFUSION ARE BECOMING**

**TERUMOBCT**

**Unlocking the Potential of Blood**

**THERAPEUTIC SYSTEMS  
& CELL PROCESSING**

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**MARK FLOWER | GLOBAL MARKETING**

**December 5, 2011**

# Regenerative Medicine, Cell Therapy, & Cell Processing

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Regenerative Medicine is a rapidly evolving interdisciplinary field in health care that translates fundamental knowledge in biology, chemistry and physics into materials, devices, systems and therapeutic strategies, including cell-based therapies, which augment, repair, replace or regenerate organs and tissues.



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## REGENERATIVE MEDICINE

### CELL THERAPY

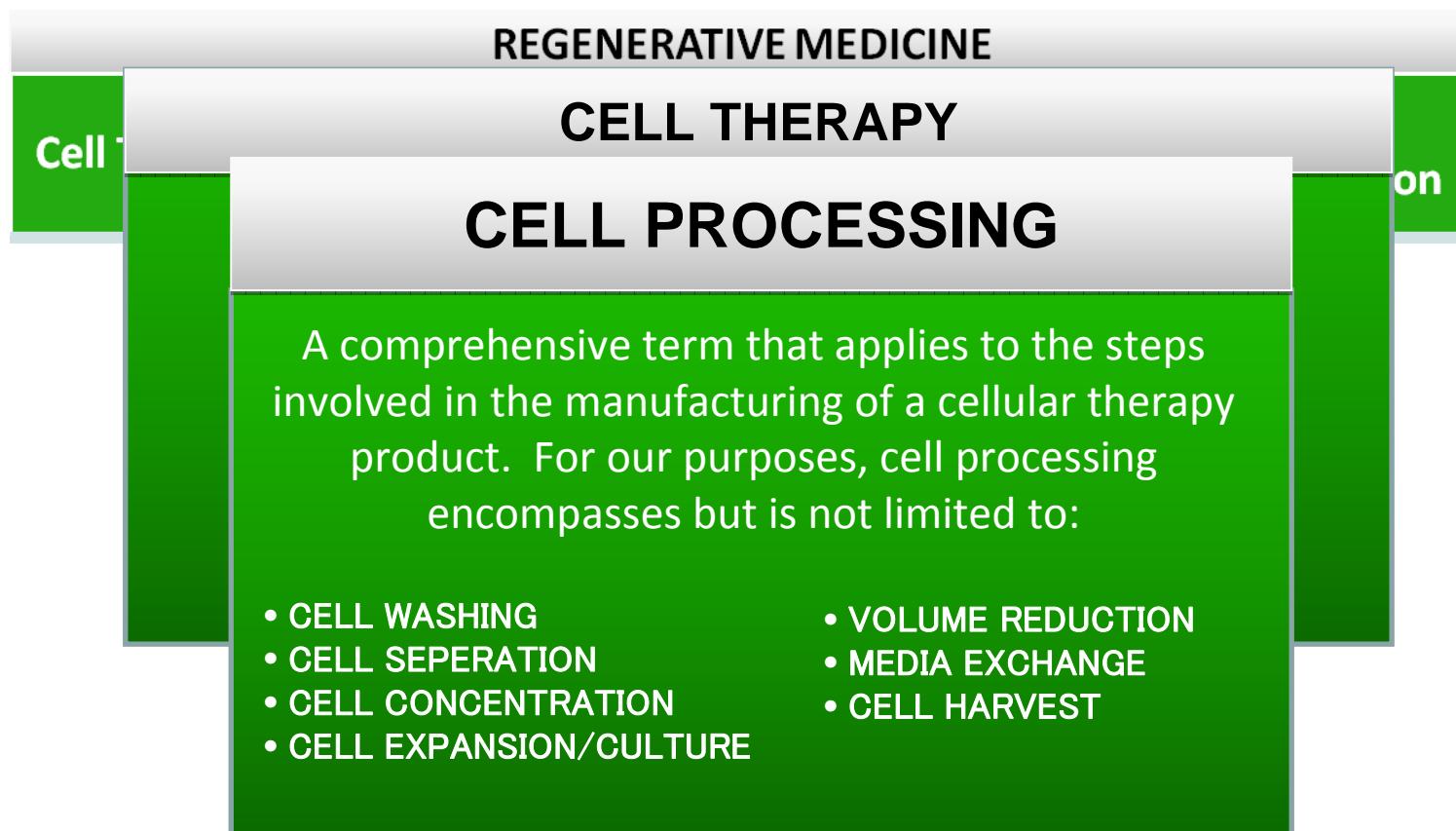
Cell

on

Using cells therapeutically to repair function to bodily tissue or organs. The two dominant forms of cell therapy are *autologous* (using one's own cells) and *allogeneic* (donated cells).

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# Industry Examples: Cell Therapy

There are approximately 275 therapeutic companies with roughly 240 cell-based therapies that are currently on the market or in some stage of clinical development.\*

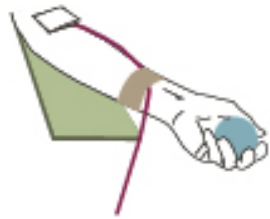
- **Tigenix: Chondrocelect** – (approved in EU) expanded autologous cartilage used to repair cartilage defects
- **Advanced BioHealing – Dermagraft:** – human fibroblast derived dermal substitute
- **Dendreon: Provenge** – the first (FDA approved) therapeutic cellular immunotherapy to treat prostate cancer

\*Buckler, Lee. Cell Therapy Industry Overview: Products and Applications, CELL MANUFACTURING 2010 SYMPOSIUM, October 13, 2010.

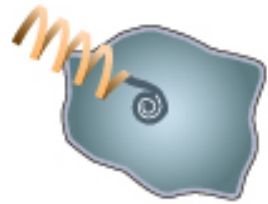
# Cell Therapy: Cancer Vaccine

## Cancer Vaccine

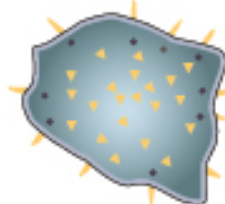
On Thursday, an FDA advisory panel endorsed the safety and effectiveness of Provenge, which could become the first approved treatment to specifically direct the immune system to attack tumors. Here is how it works:



1. White blood cells are drawn from the patient. Certain immune system cells are isolated.



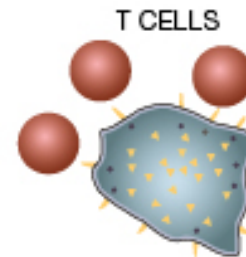
2. The immune system cells are exposed to a protein often found in prostate cancer cells.



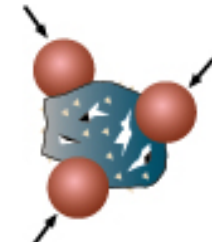
3. These immune system cells display part of the protein on their surface, alerting the immune system.



4. Days after the white cells are drawn, these immune system cells are put back in the patient.



5. The body's T cells are stimulated...



6. ...multiplying in the body and attacking cancer cells bearing the protein.

Source: Dendreon Corporation

**The New York Times**

F.D.A. Approves 'Vaccine' to Fight Prostate Cancer | Published: April 29, 2010



Terumo BCT is the global leader in therapeutic apheresis and cell collection. Terumo BCT technology is used.

# Potential Application of Cell Therapy: Mesenchymal Stem Cells

## Brain & Spinal Cord

- Multiple sclerosis
- Stroke
- Amyotrophic lateral sclerosis (ALS)
- Multiple System Atrophy
- Parkinson's Disease
- Neuroblastoma
- Spinal cord injury

## Lung

- Chronic Obstructive Pulmonary Disease

## Liver

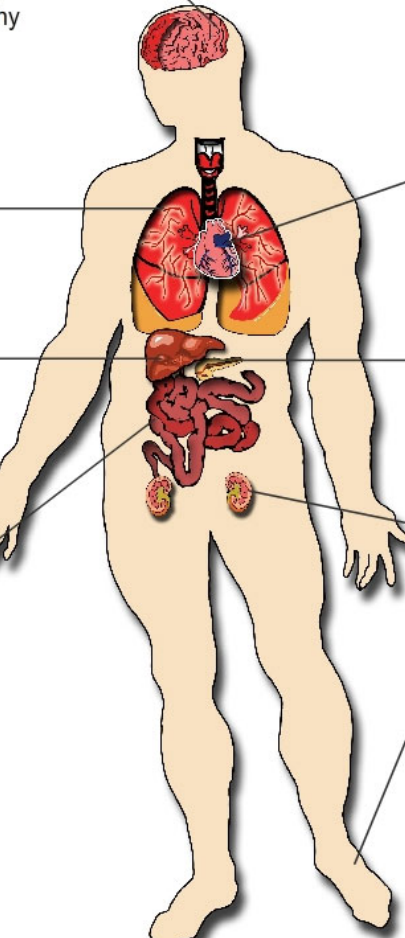
- Decompensated
- Cirrhosis
- Improvement of Liver Function in Liver Cirrhosis Patients

## Intestines

- Crohn's disease

## Others

- Systemic Sclerosis
- Prevention for Graft Rejection and Graft-versus-Host Disease
- Burn Injury



## Heart

- Ischemic Stroke
- Myocardial Ischemia
- Acute Myocardial Infarction

## Pancreas

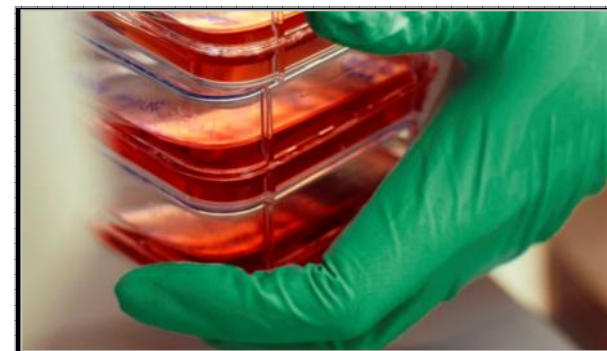
- Type 1 diabetes
- Type 2 diabetes

## Kidney

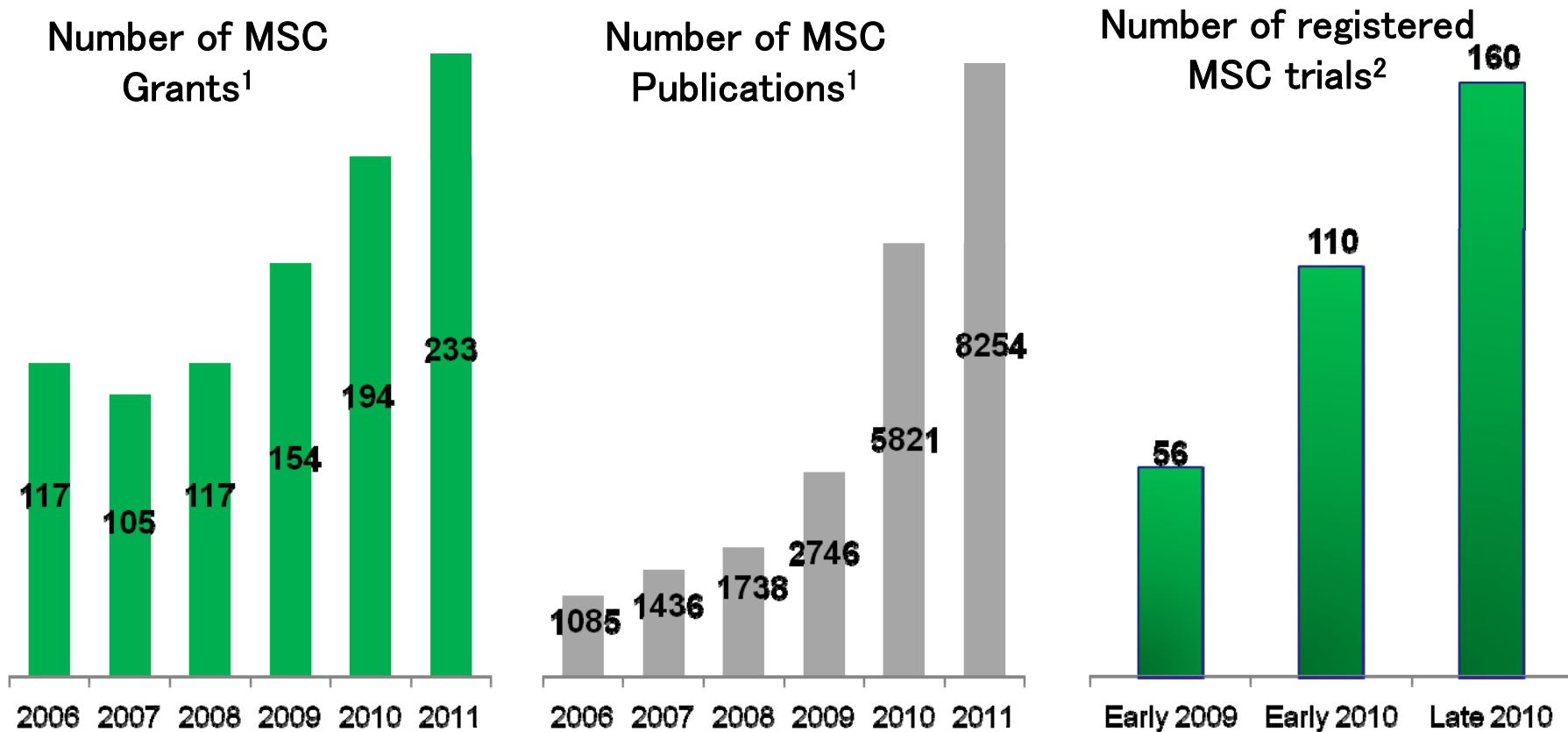
- Lupus Nephritis
- Treatment of Chronic Allograft Nephropathy

## Foot

- Diabetic foot
- Articular cartilage defects
- Osteonecrosis of the femoral head
- Critical Limb Ischemia



# Very strong growth in MSC activity



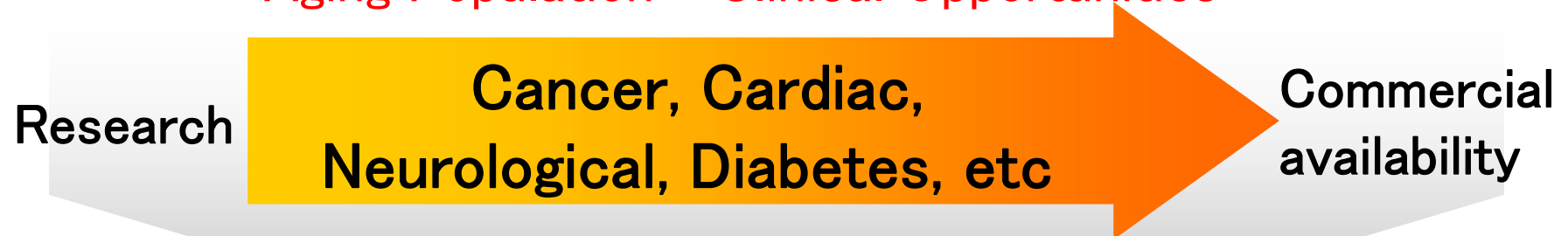
Activities projected to accelerate in 2011, making MSCs the fastest growing area of stem cell research<sup>1</sup>

1) Source: *Mesenchymal Stem Cells, Advances and Applications*, BioInformant 2010. 2011 numbers are forecasts

2) Registered trials including the word "Mesenchymal", [www.clinicaltrials.gov](http://www.clinicaltrials.gov), early 2009, early 2010, late 2010

# Opportunity for Terumo BCT: Enabling Technologies

Aging Population = Clinical Opportunities



The essential requirements for success of any cell therapy is:

Most innovative and safety **“Cell Processing Technology”**

- Collection, washing, separation, & processing of targeted cells
- Controlled, efficient, cell expansion

The role played by Terumo BCT as global No.1 leader in automated collection and therapeutic apheresis is very important.

# CaridianBCT + Terumo Transfusion Facts

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<b>acquisition close:</b>	13 April, 2011	<small>CARDIANBCT AND TERUMO TRANSFUSION ARE BECOMING</small> <b>TERUMOBCT</b> <small>Unlocking the Potential of Blood</small>
<b>company:</b>	Terumo Corporation	
<b>division:</b>	Blood Management Business	
<b>chairman:</b>	David Perez	
<b>combined organization:</b>	Terumo BCT	
<b>revenues:</b>	In excess of \$830M in 2010	
<b>president &amp; CEO:</b>	David Perez	
<b>classification:</b>	Medical device manufacturer	
<b>industry:</b>	Blood banking, transfusion medicine, cell therapies	
<b>customer segments:</b>	Blood banks/centers, hospitals and biotechnology	
<b>global headquarters:</b>	U.S., Lakewood, Colorado	
<b>regional headquarters:</b>	Brussels, Buenos Aires, Hong Kong, Tokyo	

# Value Creation: CaridianBCT + Terumo Transfusion

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- Improving our abilities to meet the needs of blood banks, hospitals and biotechnology customers with a wider range of solutions within:

Automated Collections

Therapeutic Apheresis

Manual Whole Blood Processing

Cell Processing

Automated Whole Blood Processing

Cell Collections

Pathogen Reduction Technologies

Cell Expansion

- Delivering unsurpassed value, knowledge and quality in all aspects of our products and services
- Collaborating more closely with customers to drive future innovations to meet their needs and aspirations while continuously increasing their efficiency
- Driving the industry standards for quality, safety, service and the delivery of innovative solutions

# Terumo BCT in field of Cell Therapy

We are the only company leveraging unique technology, innovation and core competencies in therapeutic apheresis, cell collections, cell processing and cell expansion.

## THERAPEUTIC APHERESIS

Improving patients lives with a powerful and diverse platform to treat multiple disease states



Spectra Optia<sup>®</sup>  
Apheresis System



COBE<sup>®</sup> Spectra  
Apheresis System

## CELL PROCESSING

Providing devices that wash, separate, process and expand cells for research, industry and clinical use



COBE<sup>®</sup> 2991  
Cell Processor



Elutra<sup>®</sup>  
System



Quantum System

# Overview of Customer Segments

INCREASING THE VALUE OF BLOOD DONATIONS

BLOOD CENTERS

EXPANDING THE NUMBER OF TREATMENT OPTIONS FOR PATIENTS

HOSPITALS AND THERAPEUTIC APHERESIS CENTERS

**CELL COLLECTIONS**

**THERAPEUTIC APHERESIS**

ENABLING SCALABLE PRODUCTION

**CELL PROCESSING**

BIOTECH AND CELL PROCESSING

# Products in the Cell Processing Value Chain



## Activity:

Cells are **collected** from bone marrow, cord blood, tissue or peripheral blood



Cells are **separated and sorted**



Cell population is **analyzed and characterized**

Cells are **expanded (cultured)** and/or modified



Cells are **washed or concentrated** prior to storage or administration



Cell population is **analyzed and characterized**

Cells are **stored** prior to patient administration



## Products:

COBE Spectra  
Spectra Optia

COBE 2991 cell processor  
Elutra system (Elutriation)  
TSCD II

Quantum system (Cell expansion)  
TSCD II

COBE 2991 cell processor  
Elutra system (Elutriation)

TSCD II

# Cell Therapy Product Portfolio

## Quantum Cell Expansion System



Spectra Optia® Apheresis System



COBE® Spectra Apheresis System



Quantum System



COBE® 2991 Cell Processor



Elutra® System

# Quantum System: Benefits & Value

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- All required components integrated into one system
  - Bioreactor, incubator, media and waste management
- Closed system (reduced risk of contamination)
- Automation and ease of use
- Decreased manual labor
- Controllable, reproducible processes
- Process control
- Scalable cell manufacturing process
- Potential for improved efficiency and cost savings



# *IR Contact*

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## **TERUMO Corporation**

**Corporate Communication (IR) Dept.**

**E-mail: [kouhou\\_terumo01@terumo.co.jp](mailto:kouhou_terumo01@terumo.co.jp)**

**Among the information that Terumo discloses, forecasts of financial performance on future projections contain potential risks and uncertainty since these are forecasts on projections made by Terumo based on limited information available at the moment of disclosure. Accordingly, it should be noted that actual results may differ from those forecasts on projections due to various factors. Factors affecting to actual results include, but are not limited to, changes in economic conditions surrounding Terumo, fluctuations of foreign exchange rates, and state of competition.**

**The market share information in this presentation is partly derived from our own independent research.**