

Partnering presentation

2011

SGAUSTRIA

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Executive Summary

Overview

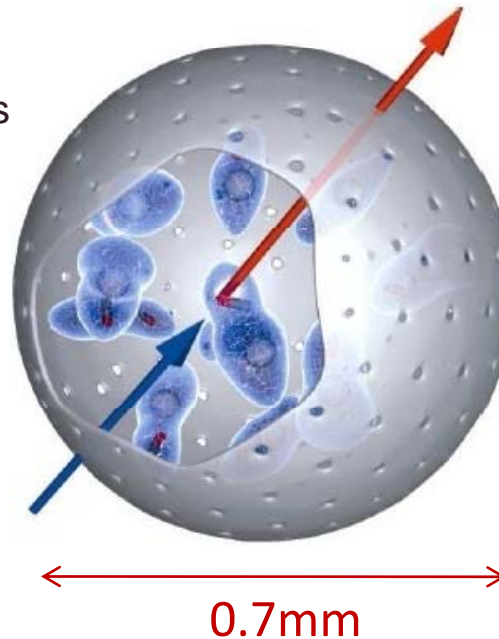
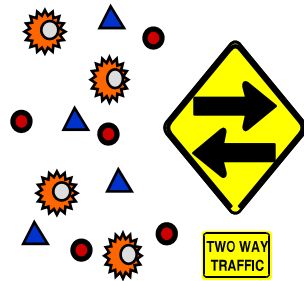
- SG AUSTRIA PTE LTD (“SGA”) is a Singapore based biotech company
- SGA is a solution provider for the industry
 - it encapsulates living cells using a proprietary platform technology
 - based on a novel inert and biocompatible cellulose derivative
- SGA’s partners are companies that have developed cell lines for use in
 - Biotechnology, Production, Fermentation, Biomedicine
- SGA places these cells in microcapsules, providing them with
 - Protection (from sheer forces, immune system, freezing stress)
 - Pre-filtration
 - Storage
 - Transport
 - Typical partnerships are feasibility studies followed by scale-up and production



The Technology

Cellulose Sulphate is Permeable

- Small molecules like nutrients waste products can pass through pores



Bioproducts released from capsule

- Long term release possible
- Release of products can be controlled

- Excellent biocompatibility
- Long term survival of encapsulated cells *ex vivo* and *in vivo*

- Cellulose sulphate based
- Artificial semi-permeable capsule
- Stable, flexible and biocompatible
- All cell types encapsulatable
- Cells survive long periods
- Frozen product
- Storage more than 2 years

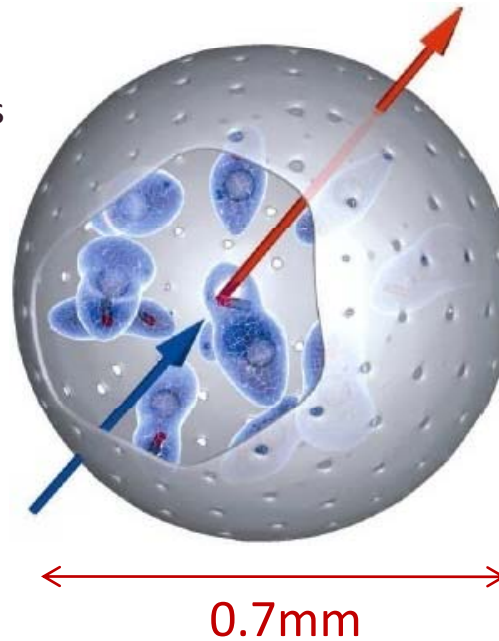
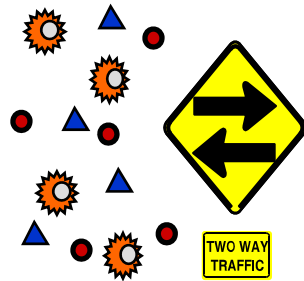




Use in biotechnology

Cellulose Sulphate is Permeable

- Small molecules like nutrients waste products can pass through pores



Bioproducts released from capsule

- Long term release possible
- Release of products can be controlled

- Prefiltration through capsule
- Cells protected from shear stress
- High density growth possible
- Cost savings in down-stream processing
- All cell types encapsulatable
- Stem cells
- mAb producing cells
- Enzyme production
- Cells survive long periods
- Storage more than 2 years when frozen

- Excellent biocompatibility
- Long term survival of encapsulated cells *ex vivo* and *in vivo*



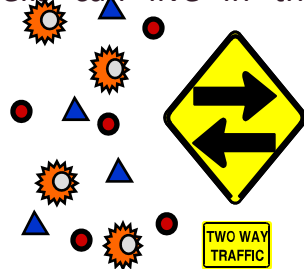
**CELL
IN A BOX**
YOUR CELLS, OUR DELIVERY

Use as an implantable biomedical device

Cellulose Sulphate is Permeable

- Small molecules like nutrients and waste products can pass through pores

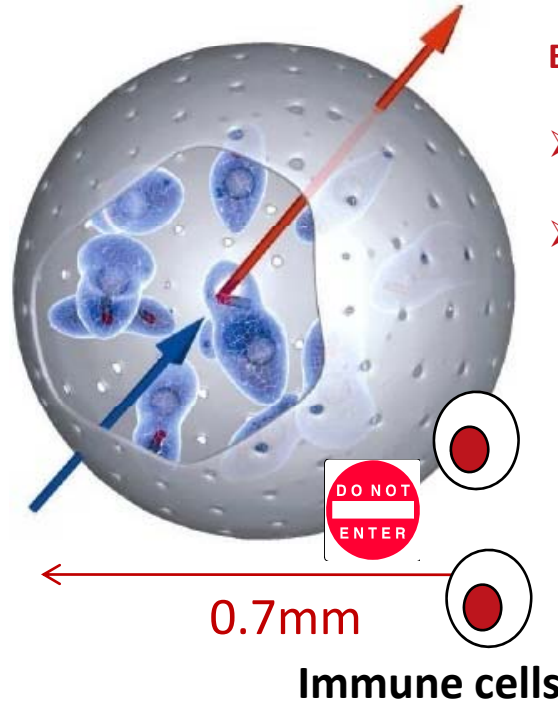
- Therapeutic cells can live in the body



- Immune cells are too large to pass through pores enabling therapeutic cells to evade the immune system

- **Excellent biocompatibility**

- Long term survival of encapsulated cells *in vivo*



Bioproducts released from capsule

- Long term release possible
- Release of products can be controlled

- Cells confined to site of implantation
- Removal possibility
- Cells immune protected
- Physiologic control of release
- “One-for-all-patients” product
- Stable, flexible and biocompatible
- All cell types encapsulatable
- Cells survive long periods
- Frozen product
- Storage more than 2 years



Innovative delivery of therapeutic products by cell encapsulation

Characteristics

Precise implantation of a **wide range** of therapeutic living cells

Different types of implantation **methods and sites**

Cells are **immunoprotected**

Cellulose sulphate as encapsulation agent

One-for-all-patients products

Benefits

Physiologic release of the therapeutic in **response to a metabolic stimulus**

Local or systemic production of therapeutic and removal possibility

No need for **immunosuppressive** drugs

Non immunogenic, stable, flexible and biocompatible

Off the shelf, simplifies production, **long shelf life**

Applications include (but are not limited to):

FOOD ADDITIVES

- Encapsulation of probiotic bacteria: Cellulose sulphate capsules enhance the efficiency of probiotic survival in food and feed additives.

NITROGEN FIXING BACTERIA

- Co-encapsulating seeds & N₂-fixing bacteria: a head start for crops

BIOLOGICAL PEST CONTROL

- Encapsulation of bacteria or viruses used to control pests.
- These capsules can be dropped onto the fields from an airplane.

BIOSENSORS

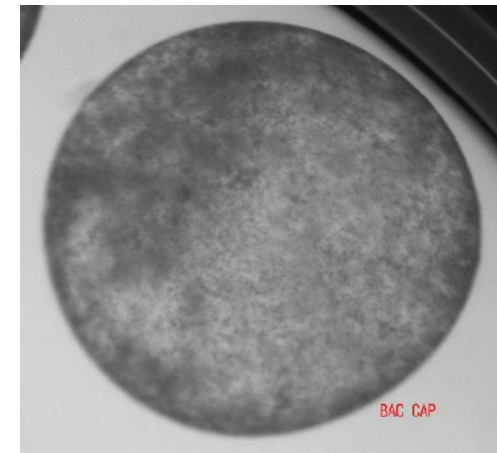
- Encapsulation of indicator organisms that react to environmental influences with a clear, easy-to-monitor change.

FISH FARMING

- Improvement of water quality by oxygen production from encapsulated plant cells.

HORMONE PRODUCTION

- Long term release of hormones from encapsulated cells in animals

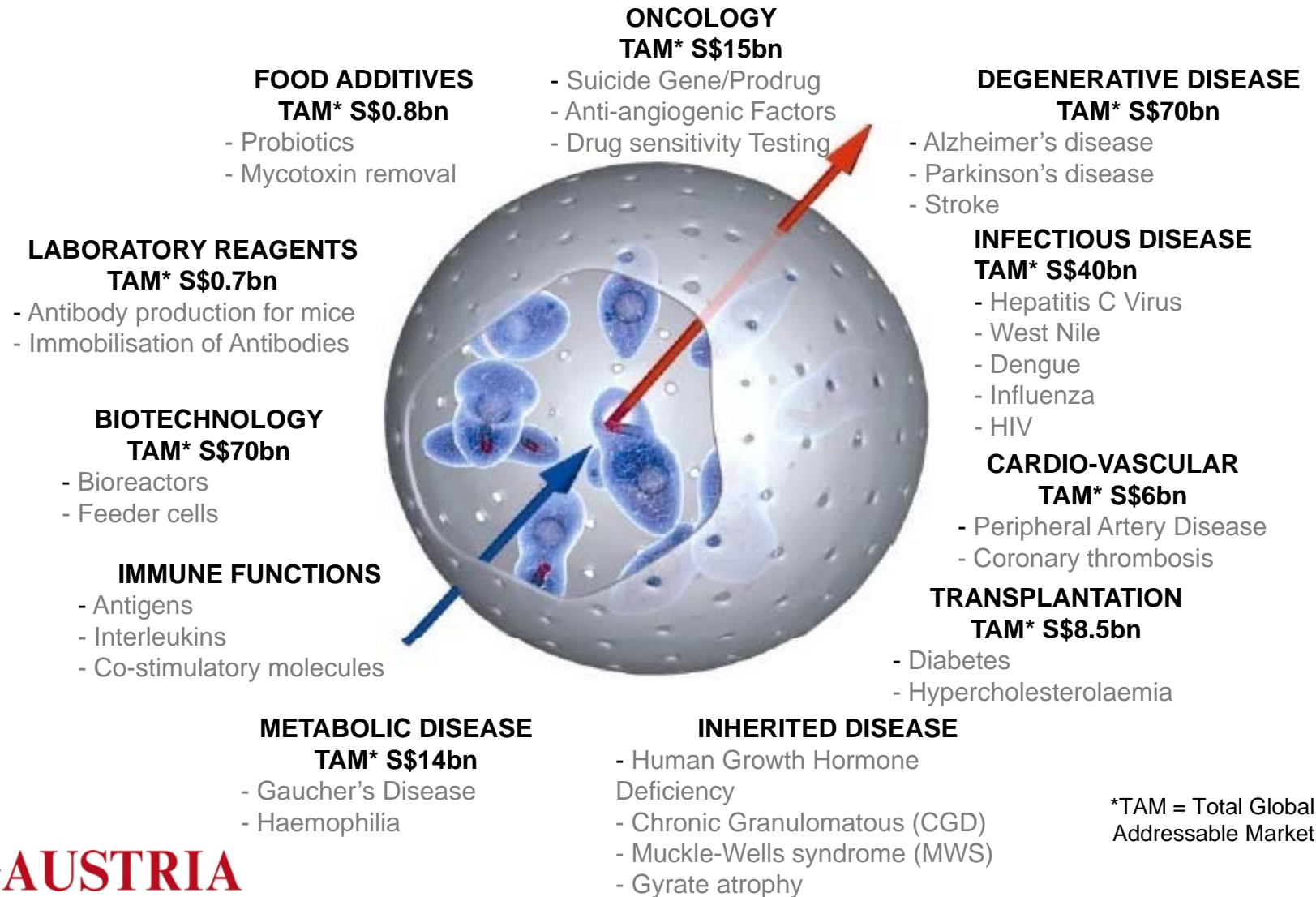


Encapsulated probiotic
bacteria



**CELL
IN A BOX**
YOUR CELLS, OUR DELIVERY

Platform Technology: Broad Applications



*TAM = Total Global Addressable Market