Initiatives to Promote the Healthcare Industry in Malaysia

Abd Ghani Abd Aziz
Principal Assistant Secretary
National Biotechnology Division
Ministry of Science, Technology & Innovation

FRAMEWORK FOR THE NATIONAL POLICY ON SCIENCE, TECHNOLOGY AND INNOVATION (NPSTI)

Transformation Programme

A High Income, Inclusive and Sustainable Nation

ECONOMIC TRANSFORMATION PROGRAMME

National Social Transformation Programme (NSTP)

Political Transformation Programme (PTP)

Vision

A scientifically advanced nation for socio-economic transformation and inclusive growth

Mission

Advancing and mainstreaming STI at all levels and in all sectors

Strategic Thrusts

ST 1	ST 2	ST 3	ST 4	ST 5	ST 6
Advancing scientific and social research, development and commercialisation	Developing, harnessing and intensifying talent	Energising industries	Transforming STI governance	Promoting and sensitising STI	Enhancing strategic international alliances

Foundation

- STI for Policy
- Policy for STI
- Industry Commitment to STI
- STI Governance
- STI for Stable, Peaceful, Cohesive and Resilient Society

NATIONAL BIOTECHNOLOGY POLICY

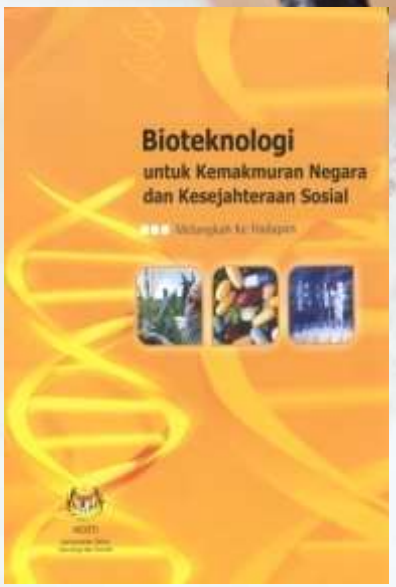
The Malaysian Government commits itself to undertake the role of developer and catalyst of the country's biotechnology sector

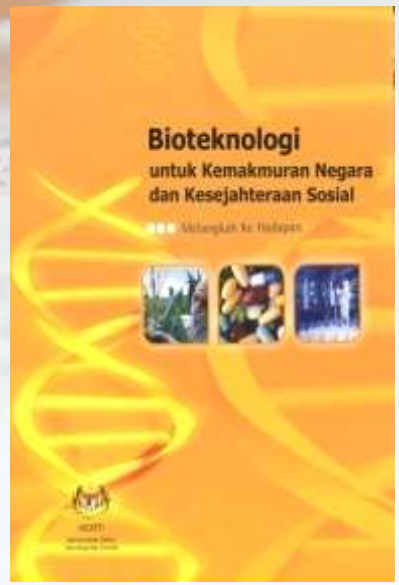
BRAND STATEMENT

Biotechnology for wealth creation and social well-being

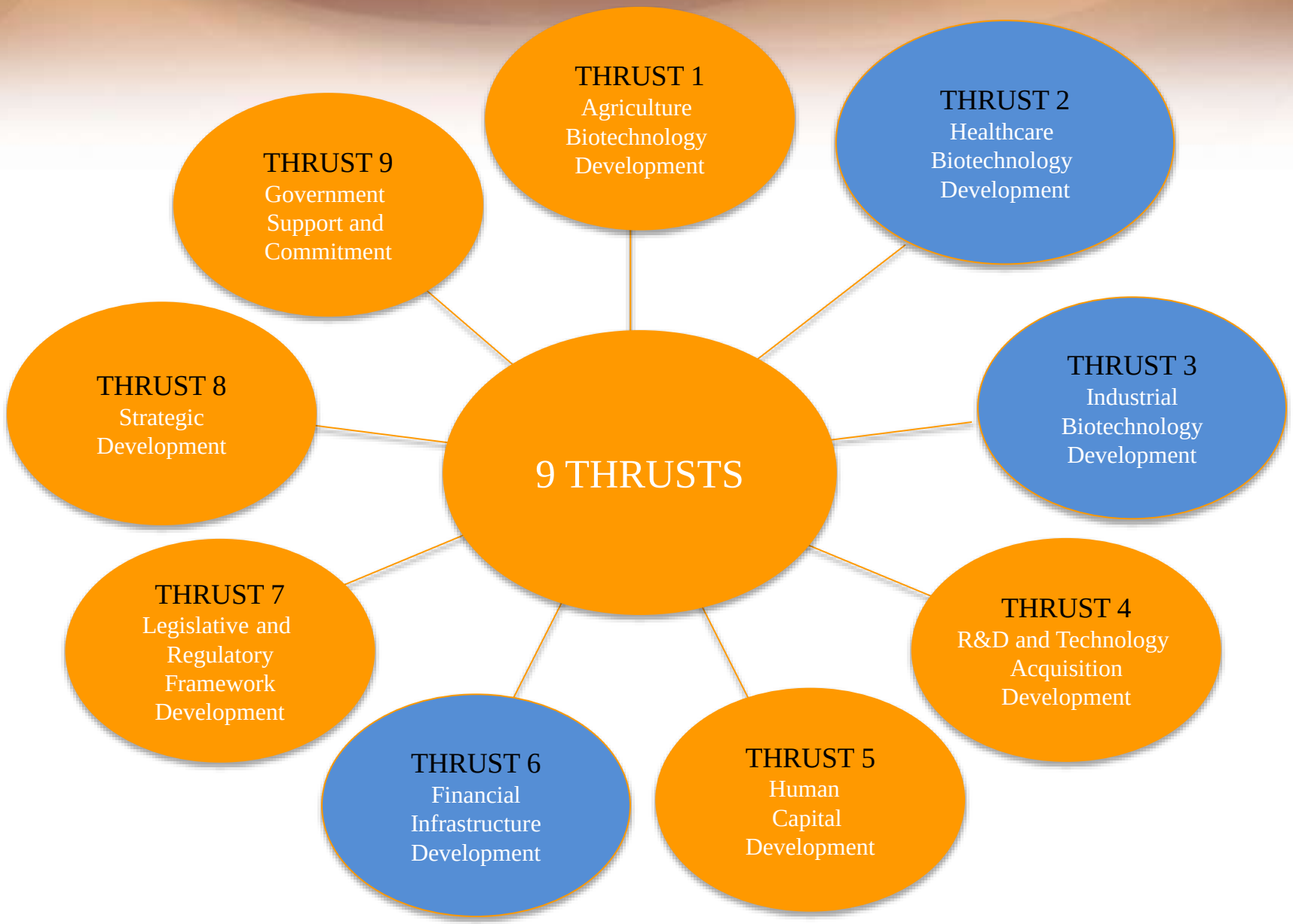
VISION

Position biotechnology as the new economic engine to enhance prosperity and wellness of the nation by 2020





National Biotechnology Policy



3 PHASE STRATEGIE

PHASE I CAPACITY BUILDING 2005 - 2010

- Provide Biotechnology Development Incentives
- Improve Human Capital & Skills Development
- Improve Job Creation
- Intensify R&D
- Accelerate Development In Agricultural, Healthcare & Industrial Biotechnologies
- Strengthen Legal & IP Framework
- Develop Bioinformatics
- Develop Bionexus Companies

PHASE II SCIENCE TO BUSINESS 2011 - 2015

- Intensify RDI Participation
- Expand Pool of Knowledge Workers
- Develop Expertise In Drug Discovery & Development On Biodiversity & Natural Resources
- Improve New Products Development
- Intensify Technology Acquisition
- Develop Capability In Technology Licensing
- Create Global Brands

PHASE III GLOBAL BUSINESS 2016 - 2020

- Consolidate Strengths & Capabilities In Biotechnology Development
- Intensify Expertise & Strength In Drug Discovery & Development
- Create Leadership In Innovation & Technology Licensing
- Create Greater Value Through Global Malaysian Companies
- Strengthen Branding Of Malaysia As A Global Biotech Hub

BIOTECH CLUSTER CORE BUSINESS

Commercialisation Arms

BIOTECHCORP
MALAYSIAN BIOTECHNOLOGY

Facilitating lead agency for Commercialisation and Investment in Biotechnology Industry

InnoBio

Contract Manufacturing Organisation (CMO) specialising in biomanufacturing and biopharmaceuticals

BIOTEK MALAYSIA

Formulation and Implementation of Biotechnology Policy

Research Arms

NIBM

ABI — Agro-biotechnology development

GENOM MALAYSIA
Malaysia Genome Institute

Translational research on genomics and molecular biology

PHARM

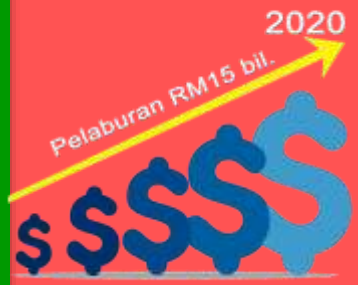
Drugs discovery and development

Biotechnology Incubator

TPM Biotech

Integrated Incubator Park with herbal biotechnology facilities providing innovative solutions for industry

Pelaksanaan Dasar Bioteknologi Negara



Fasa I (2005-2010)
Pembangunan Kapasiti

2005
- ✓ Dasar Bioteknologi Negara
- ✓ Makmal Interim Bioteknologi
- ✓ BioNexus

2007
- ✓ Bangunan baru ABI, MGI & IPharm
- ✓ ICGEB
- ✓ Pelaksanaan GLP
- ✓ biotech@school
- ✓ Kerjasama Malaysia – MIT

2008
- ✓ Bioteknologi mikrograviti
- ✓ Genom Computing Centre (GCC)
- ✓ biotech@community

2009
- ✓ Bio-IAP

Fasa II (2011-2015)
R&D ke pasaran

2012
- ✓ Pelancaran Program BTP
- ✓ Penubuhan Majlis Bioetika Negara

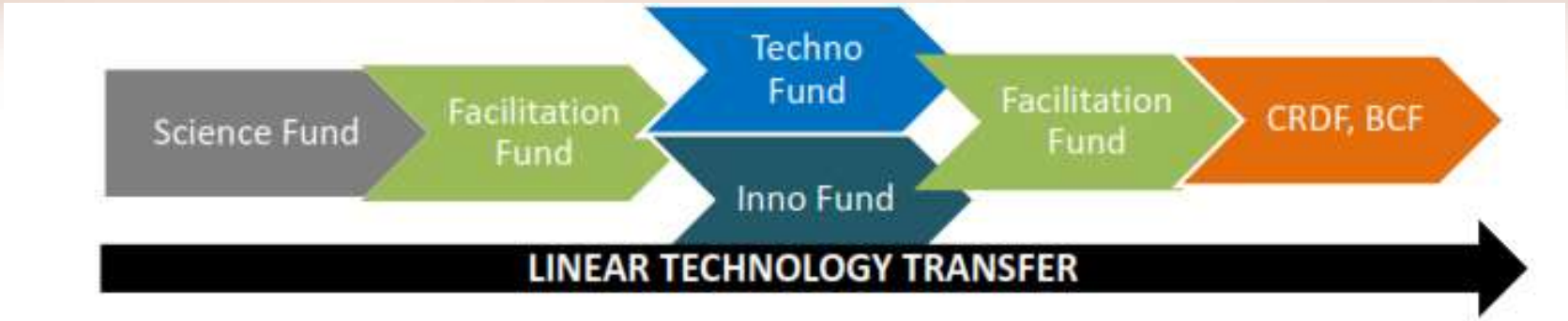
2013
- ✓ BioBorneo
- ✓ National Biotechnology Seminar

2014
- ✓ Pengkorporatan NIBM
- ✓ Bio- Accelarat
- ✓ BioShoppe

Fasa III (2016-2020)
Perniagaan Global

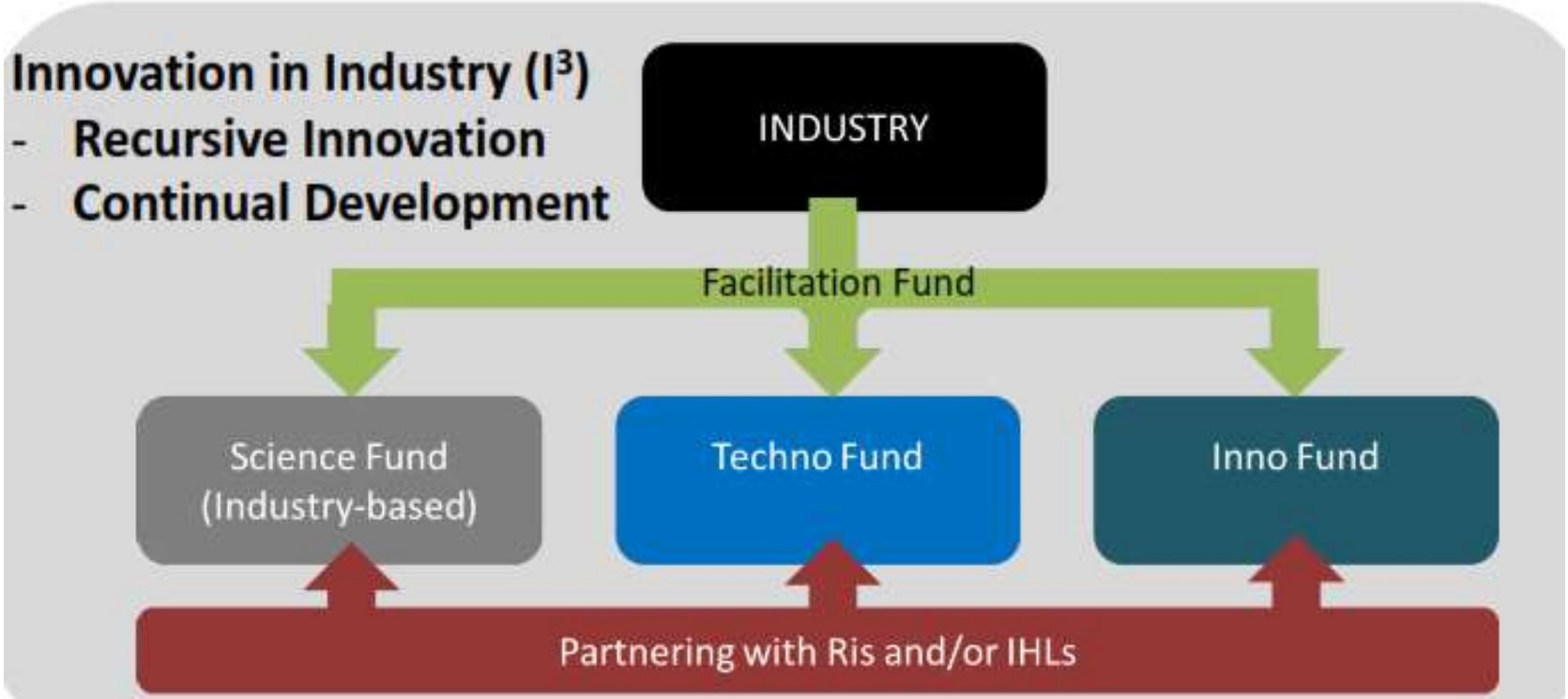
2020
- ✓ Syarikat bioteknologi bertaraf global
- ✓ BioMalaysia sebagai Hab Global

SCOPE & FLEXIBILITY



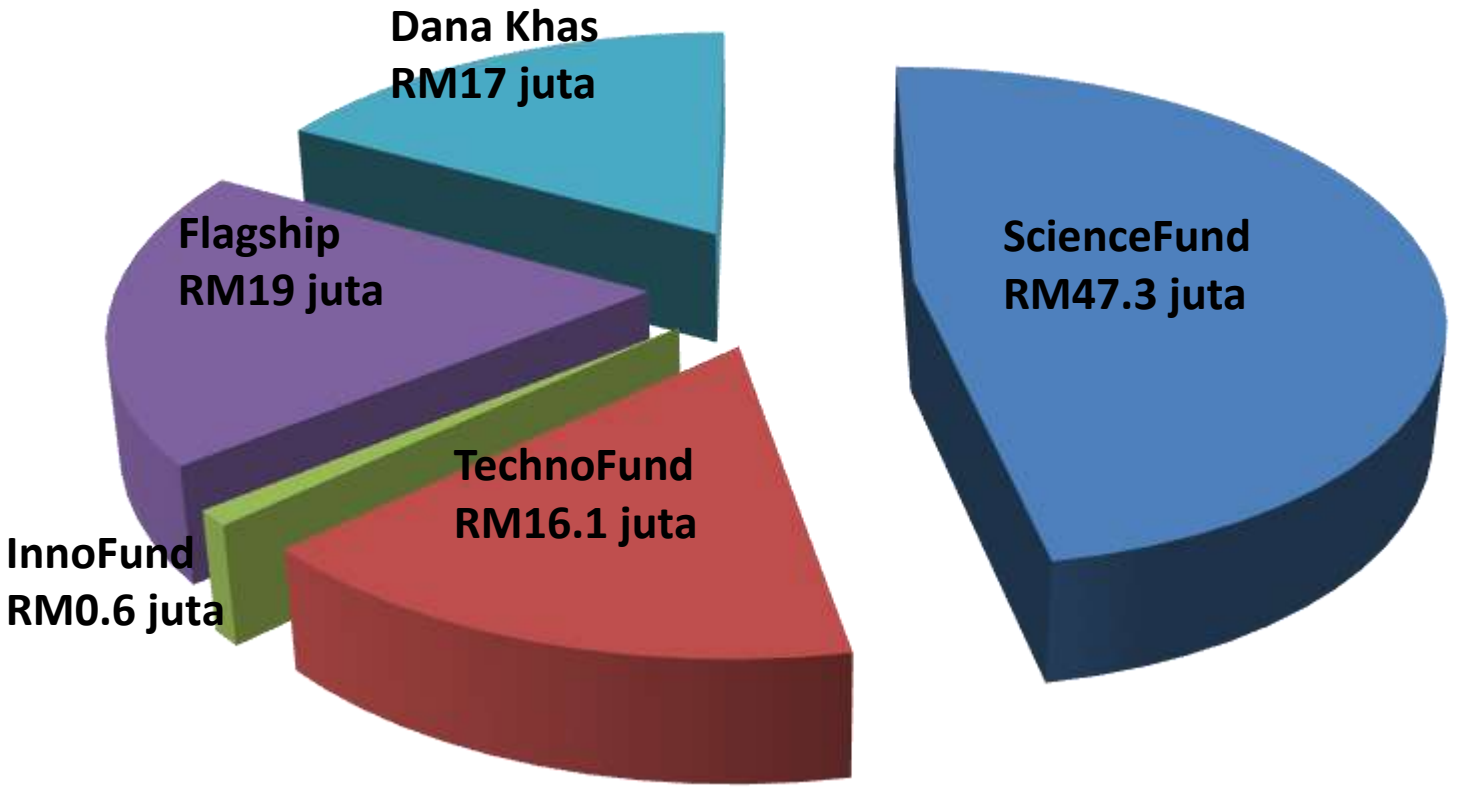
Innovation in Industry (I^3)

- **Recursive Innovation**
- **Continual Development**



3.1 PENYELIDIKAN & PEMBANGUNAN BIOTEKNOLOGI

Pembiayaan Dana R&D Bioteknologi (2011-2015)



Jumlah Keseluruhan RM100 juta

R&D HEALTHCARE BIOTECHNOLOGY

MARDI
Product : Dermaco Tm M7

A novel value added virgin coconut oil based product with broad spectrum of antimicrobial activity against selected pathogenic microorganism

(1 Patent filed)

EntoGeneX Industries Sdn. Bhd.

Product : Biolarvicide Mostique

The production of Trypsin Modulating Oostatic Factor (TMOF), a small mosquito-derived peptide expressed within the *Pichia Pastoris* yeast cells to stops the digestive protein synthesis in larval and adult mosquitoes

SEMI-REFINED CARRAGEENAN

(TF1107B040)

(OMNI-GEL SDN BHD)
gankiantee@gmail.com

DESCRIPTION

Upgraded facilities for production of Food Grade Carrageenan from Non-Grade food carrageenan in compliance with GMP requirement and HACCP quality control to produce functional products such as drug delivery capsules and new hydrocolloids.

NOVELTY OF THE PRODUCT

Wide range of usage for production of food additives, binders and emulsifier and functional products

CULTIVATED KACIP FATIMAH PLANTS

(TF0707B004)

PHARMANIAGA BERHAD

DESCRIPTION

Pharmaniaga Berhad has accomplished the research on propagation and cultivation of Kacip Fatimah (*Labisla Pumila var alata*) plants according to Good Agriculture Practice (GAP), Skim Akreditasi Malaysia (SALM) in a old oil palm plantation.

Cultivated Kacip Fatimah will give advantages to ensure sustainable Kacip Fatimah source to meet market demand, preserve wild forest and also to served as corporate social responsibility to small contract farmers.

BIOTECHNOLOGY COMMERCIAL
READY PROTOTYPES/ PRODUCTS

STEM CELL REGENERATIVE THERAPHY

(TF0409B104)

TECHNOFUND

DATUK DR. AHMED TASIR LOPE
(Inno Bio Ventures Sdn Bhd)
www.innobioventures.com

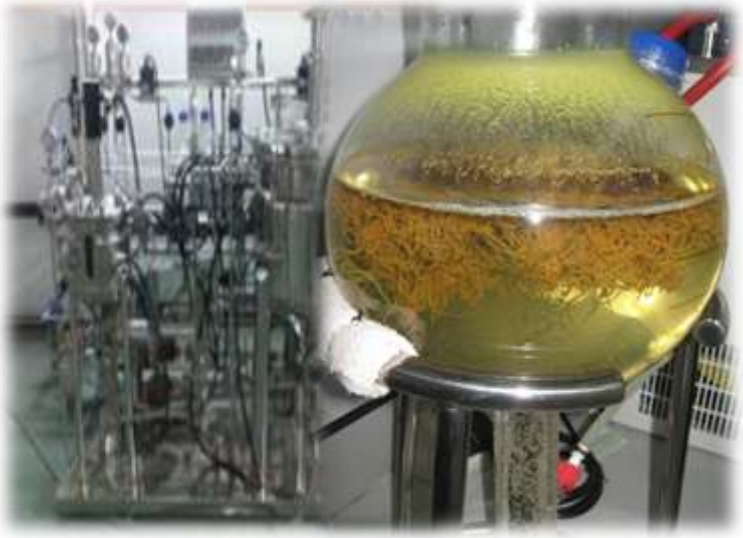
DESCRIPTION

Combination of peripheral blood-derived stem cell (PSC) and hyaluronic acid has a function to regenerate hyaline cartilage. This theraphy has functional outcome of microfracture surgery on damaged knee cartilage.

NOVELTY OF THE PRODUCT

The regeneration of hyaline cartilage with the novel therapy method that comprises of arthroscopic subchondral drilling, postoperative intra-articulsar injections of autologous pheripheral blood stem cells in combination with hyaluronic acid

TONGKAT ALI HAIRY ROOT



(TF0508B064)

Dr. Nor Hasnida Hassan
(FRIM)
hasnida@from.gov.my

DESCRIPTION

The Tongkat Ali hairy root culture considered as the best alternative and promising sources for the production of Tongkat Ali biologically active compounds for both commercial and scientific applications as well as to ensure adequate supply for both herbal industries and conservation purposes.

NOVELTY OF THE PRODUCT

Faster production of Tongkat Ali hairy root through bioreactor technology in approximately 3 months as compared to conventional method (5 years).

Patent : P2010003919 (Pending)

HEALTHCARE

Contracts secured with Indian and Korean companies

"Emerging Company of the Year 2010 "
Award at 2nd BioSpectrum Asia Pacific Awards

Successful humanisation of antibody

- Using the technology licensed from Centre of Molecular Immunology (CIM), IBL has successfully humanised 2 anti cancer antibodies targeted for colorectal cancer.
- IBL is currently conducting the animal study in mouse.

Strategic partnerships with global companies

- Established partnership with Boehringer Ingelheim, GE Healthcare, Centre of Molecular Immunology (CIM), Cuba and CEVEC GmbH.
- Member of MIT Centre for Biomedical Biomanufacturing Alliance.

Establishment of the FIRST cGMP biomanufacturing facility in Malaysia

- Biologics manufacturing using recombinant DNA in mammalian cell

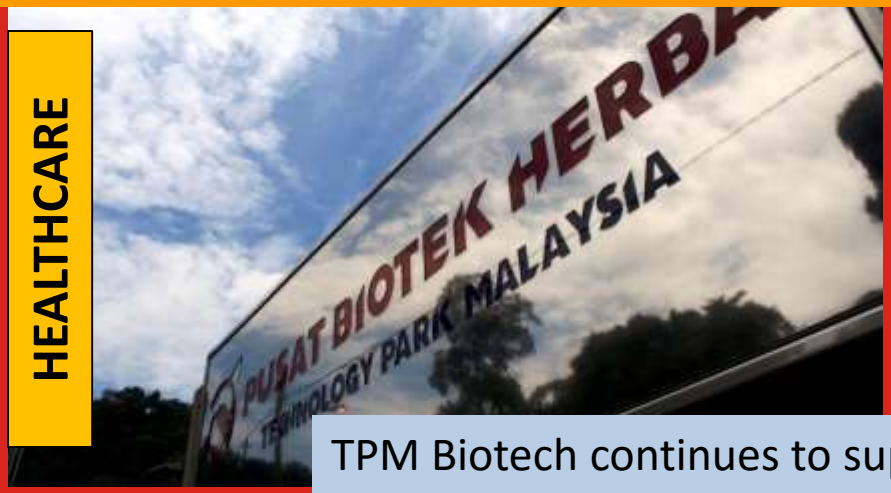
-large-scale production of therapeutic proteins to treat a variety of diseases.

Inno Biologics
FIRST cGMP biomanufacturing facility in Malaysia

The Herbal Biotech Centre, Raub, Pahang

ISO 17025

HEALTHCARE



TPM Biotech continues to support the herbal industry by leveraging on its people and facilities. The latest development include HALAL testing and analysis which supports the food and feed industry

The Biotechnology Development Centre, TPM Bukit Jalil, Kuala Lumpur

NIBM
NATIONAL INSTITUTES OF BIOTECHNOLOGY MALAYSIA

Malaysian Institute of Pharmaceuticals & Nutraceuticals

Vision

A centre of excellence for commercialization-driven R&D in healthcare biotechnology

Mission

To implement R&D, develop human capital & practice, s trengthen strategic collaboration in global healthcare biotechnology leading to commercialization

MOSTI

THRUST 2 HEALTHCARE BIOTECHNOLOGY DEVELOPMENT

Research Focus:

Discovery of functional food and drug from natural tropical resources for healthcare biotechnology development

Platform:

Bioactive Compunds, Bioprocessing & Advanced Drug Delivery System

Development of Natural Products Library from Malaysian biodiversity for systematic discovery of potential active therapeutic agents for Obesity

504 Plant Species

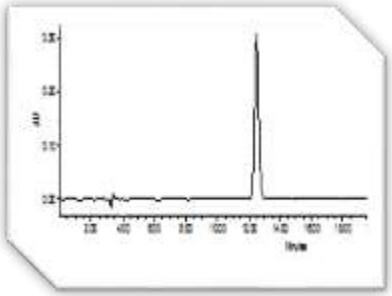
Plant collection

Herbarium

National Natural Product Repository

1000 Partitions

552 crude extracts
Methanol and Water extract



Isolated Compounds

myNature 50000 Database

www.ipharm.gov.my/2014/Nature/index.php

Search keyword

Hanim | Change Theme

MAIN

- Home
- About Us
- Search
- Dataset

EDITOR

- Add Plant List
- Add Researcher
- Add Grant List
- New Extraction
- New Partition
- New Fractions
- New Compound
- New Microbial

Home / Dashboard

Dataset

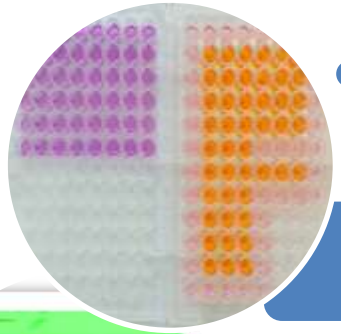
Info | Researcher | Grant | Plant | Extraction | Partition | Fractions | Compound | Microbial

IPharm Natural Product Bank

Database Stat

500	Plant Information
23	Researcher Information
552	Extraction Information
588	Partition Information
190	Fractions Information
0	Grant Information
32	Chemical Compound Information
0	Microbial Information

myNature 50000



Cytotoxicity and Bioassay activity

TLC Profiling

HPLC Profiling

Herbarium

40 DNA profiling

my nature 50000

.OVERVIEW

MyNature 50000 comprises a chemical library; extracts, fractions and compounds of local Malaysian plants for research purposes. This library is developed by Natural Product Drug Discovery (NPDC) team under Malaysian Institutes of Pharmaceuticals and Nutraceuticals (IPharm).

Our goal is to create a global resource for natural product. To achieve this purpose, we collaborate in construction of chemical library, validation of biological activities, and determination of target molecules.

NATURAL PRODUCT LIBRARIES

A RAPID COST EFFECTIVE APPROACH

CHEAP, EASY, FAST AND REPRODUCIBLE

EASY ACCESS TO A PARTICULAR PLANT CHEMICAL PROFILE AND ACTIVITY

CONVENIENT AND EASY ACCESS TO MALAYSIAN NATURAL PRODUCT

WE PROVIDE SOLUTIONS FOR:

PLANT EXTRACTS
PLANT PARTITIONS
PLANT FRACTIONS
PURE COMPOUNDS

READY FOR SALES

DIVERSITY SET

It is our most popular competitively priced collection of 500 plant species

Dried plant species also available in stock

Upon customer request the sample stock also available in DMSO solvent

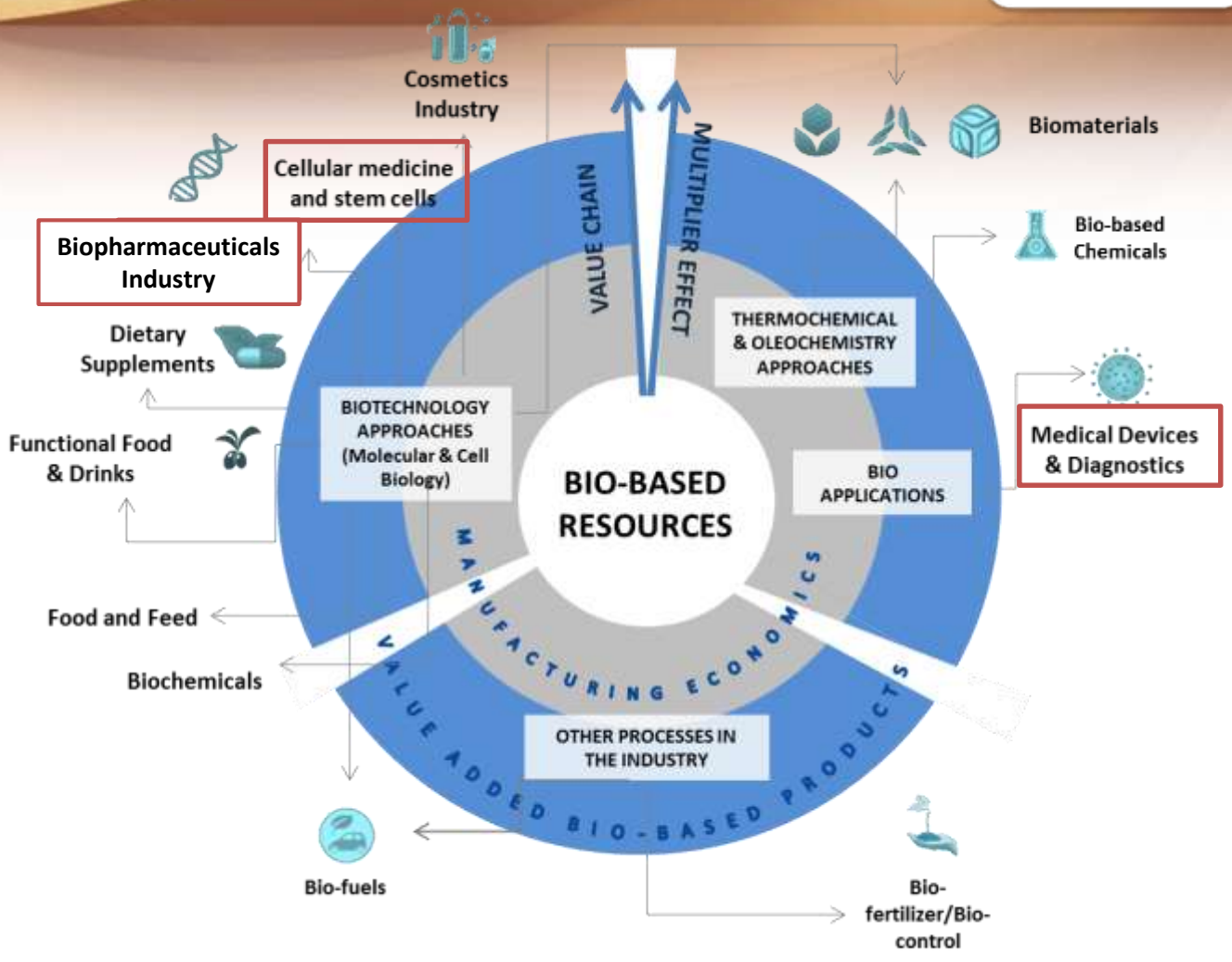
Price depends on the type, number of extract or compounds selected and a sample size.

1mg samples size in dry form varies from RM35-60

my nature 50000

BioMedical within the Bio-Based Industry

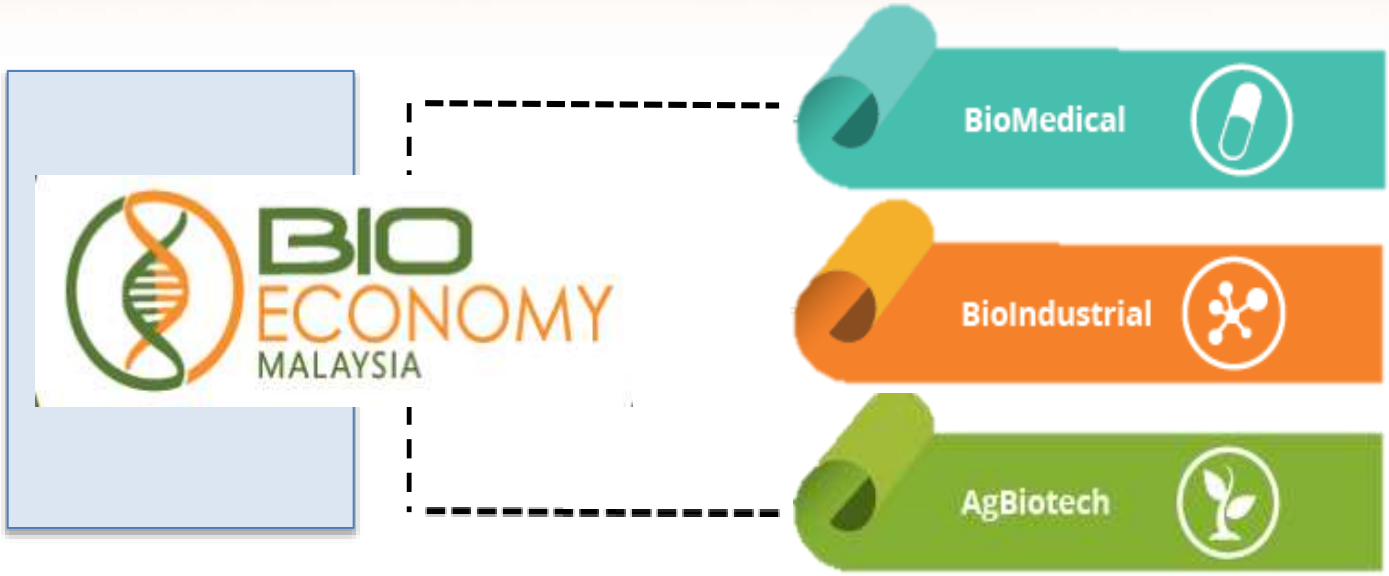
Innovations are driving a growing demand for sustainable and bio-based products from renewable bio-based materials



The application of **bio-based technologies is the GAME CHANGER** that transform conventional processes and industries in the bioeconomy into major contributors to the national economy

Bioeconomy Transformation Programme (BTP)

A platform for the private sector to channel and maximise commercial opportunities from bio-based technologies



Benefits of BTP
National Visibility and Government Support

BTP Trigger Projects are expected to generate impacts on GNI, job creation and investment

9 BioMedical Companies under 4 Entry Point Projects (EPP)

- Biopharmaceuticals
- Stem Cells and Regenerative Medicine
- Molecular Screening and Diagnostics
- Drug Discovery & Preclinical Services

B BRAUN SHARING EXPERTISE · InnoBio · StemLife · INFOVALLEY · sengenics · MGRC · AccoBiotech

GNI in 2020
RM 0.79 bil

Job Opportunities by 2020
2,611

Investment by 2020
RM 1.33 billion

Bio-Accelerators

Government Support

National Visibility

BIO ECONOMY MALAYSIA

Benefits of Being Part of BTP

Funding Access

Market Access

THANK YOU