

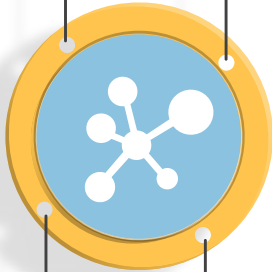




BIOTECHCORP
MALAYSIAN BIOTECHNOLOGY
CORPORATION

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2014
HIGHLIGHTS



INDICATORS

TARGET



**PHASE I
(2005-2010)**



INVESTMENT

RM **6** BILLION



**NUMBER OF
BIONEXUS
COMPANIES**

25





EMPLOYMENT

60,000



**ANNUAL
REVENUE**

RM **20** BILLION

TARGET  PHASE II (2011-2015)	TARGET  PHASE III (2016-2020)	PHASE II ACHIEVEMENTS AS OF 2013
RM 9 BILLION	RM 15 BILLION	RM 14.8 BILLION
25	25	228
80,000	160,000	83,400
RM 50 BILLION	RM 100 BILLION	RM 2.9 BILLION*

CALENDAR OF EVENTS



01

BTP WORKSHOP IN JOHOR

BiotechCorp, in collaboration with J-Biotech, organised a two-day Bioeconomy Transformation Programme (BTP) Workshop which identified several proposed BioMedical, AgBiotech and BioIndustrial Bioeconomy Trigger Projects within the Southern Region.

02

MEET THE CEO SESSION & BNX FUNDING SEMINAR 2014

Delivered by BiotechCorp's CEO Dato' Dr. Mohd Nazlee Kamal, the session provided an overview of the Government's latest plans and initiatives under the National Biotechnology Policy and the BTP. The session was followed by the BioNexus Funding Seminar, a two-day event, aimed at offering developmental funds and programmes to BioNexus-status companies.

03

PLANT GENOMICS CONGRESS ASIA

BiotechCorp and Global Engage Ltd (a UK company specialising in organising events for the life science industries) organised Asia's first plant genomics congress. The congress was part of a Next Generation Sequencing (NGS) series of events that gathered plant-based industry leaders and Malaysian, regional and international experts in the fields of plant sciences, NGS and genomics to discuss latest developments in plant genomics.

04

BIOECONOMY IN SCIENCE TO ACTION (S2A) SEMINAR

BiotechCorp's plan to generate more than RM43 billion in Gross National Income via Bioeconomy received a significant boost with this seminar, which was aimed at bridging the gap between the industry and academia to achieve the nation's target by focusing on the implementation of the Malaysian Bioeconomy Accelerator Programmes (Bio-Accelerators).

05

LAUNCH OF THE MALAYSIAN GLOBAL INNOVATION AND CREATIVE CENTRE (MaGIC)

In conjunction with the launch of MaGIC by the President of the United States and the Malaysian Prime Minister, a collaboration proposal was executed between BiotechCorp and the California Institute for Quantitative Biosciences (QB3) which allows Malaysian bio-based entrepreneurs to tap into the expertise of QB3 to help them launch successful business start-ups in the industry. BiotechCorp also participated as an exhibitor during the two-day event.

01

26

JANUARY 2014

Pulai Springs Resort, Johor



02

25

FEBRUARY 2014

Hotel Istana, Kuala Lumpur



03

24-25

FEBRUARY 2014

Shangri-La Hotel, Kuala Lumpur



04

06

MARCH 2014

Hotel Pullman Putrajaya Lakeside, Putrajaya



05

25

APRIL 2014

1MET, Cyberjaya



06

BIO BORNEO 2014

Themed "Sustaining the Bioeconomy Community", the Bio Borneo 2014 Conference and Exhibition was organised by the Ministry of Science, Technology and Innovation. This marked the second time the event was held in Sarawak.

07

11TH BIO WORLD CONGRESS ON INDUSTRIAL BIOTECHNOLOGY 2014

The congress is the world's largest industrial biotechnology event for business leaders, investors and policy-makers in biofuels, bio-based products and renewable chemicals. BiotechCorp's participation created opportunities to profile Malaysia's capabilities in the industrial bio-based field.

08

BIOPARTNERING 2014

Organised by BiotechCorp, this conference themed "Generating Biotechnology-based Economy", brought together life sciences and biotechnology industry players, entrepreneurs, manufacturers, researchers, academia and heads of key R&D&C facilities to explore business opportunities in the Northern Region.

09

BIOTECHCORP, MOSTI & MIDA – JOINT VISIT TO BIOCON LTD IN BANGALORE, INDIA

A flagship project of BiotechCorp is a partnership with Biocon Ltd for the construction of a large-scale biotech manufacturing facility in Johor. 221 Malaysian employees were sent for practical training at Biocon's HQ in Bangalore. A team from BiotechCorp, together with En. Sherulanuar Abd Karim from MIDA Mumbai, visited the facility to meet with the trainees, who will be provided with job opportunities and equipped with the latest technological know-how and expertise in the biopharmaceutical industry.

10

BIOGAS ASIA PACIFIC FORUM 2014

BiotechCorp, together with the International Clean Energy & Sustainability Network (ICESN), hosted the 3rd Biogas Asia Pacific Forum, which served to bring international attention to Malaysia's plans for biogas development. Besides developing Malaysia as a biogas hub in Asia, the forum provided commercial opportunities for suppliers to implement biogas technology.

06

05-07 MAY 2014DeTAR Putra, Unimas, Kota Samarahan,
Sarawak

07

12-15 MAY 2014

Philadelphia, USA



08

15 MAY 2014

Kulim Golf & Country Resort, Kulim, Kedah



09

15 MAY 2014

Biocon HQ, Bangalore, India



10

02 JUNE 2014

JW Marriot Hotel, Kuala Lumpur



11

BIO CONFERENCE AND EXHIBITION 2014

BIO is the world's largest biotechnology organisation, providing advocacy, business development and communications services to members. BiotechCorp's participation, as part of a series of Bio-Trade and Investment missions, focused on exploring the prospect of investment and partnerships with global players in the bio-based sector, specifically in the areas of BioMedical and BioIndustrial, and on strategically positioning Malaysia as the prime hub for Bioeconomy investment in Asia.

12

LAUNCH OF BIOSHOPPE AT NOVA

BiotechCorp launched its first BioShoppe retail presence, which features health and beauty products from its stable of BioNexus status companies, at Nova Natural Supplement and Skincare, IOI Mall. The Bioshoppe plays a vital role in demonstrating how science contributes to the nation's economy and benefits its people.

13

ASEAN SCIENCE & TECHNOLOGY WEEK (ASTW)

Hosted by the Ministry of Research and Technology, Indonesia, the ASTW showcased major achievements and the potential of science and technology generated by both ASEAN member countries and Dialogue Partners. BiotechCorp promoted BioMalaysia & Bioeconomy Asia Pacific 2014 and also offered services from four technologies under its Technology Management Office to ASEAN member countries.

14

BIO JOHOR 2014

BiotechCorp announced four key initiatives under the Bioeconomy Community Development Programme (BCDP) at this event, which also witnessed collaboration proposals involving four bio-based companies in the BCDP.

15

GABUNGAN RAKAN ENTREPRENEUR ASPIRASI TERHEBAT (GREAT)

GREAT was the first gathering of Malaysian entrepreneurs, start-ups and funders, bringing together players relevant to the formation of a complete ecosystem for entrepreneurs. The four-day event included activities designed to share information and experience and provide networking opportunities as well as facilities access to relevant Government agencies. BiotechCorp was one of the exhibitors and was also involved in a talk entitled "Entrepreneurship in the biotechnology industry and BioNexus incentives" which provided useful insights and information on incentives given by the Government under the BioNexus status programme.

11

18-26 JUNE 2014

San Diego, USA



12

17 JULY 2014

IOI Mall, Puchong



13

22-25 AUGUST 2014

Bogor, Indonesia



14

25-27 AUGUST 2014

Persada Convention Centre, Johor



15

17-20 SEPTEMBER 2014

MaGIC, Cyberjaya



16

INTERNATIONAL ADVISORY PANEL (IAP) MEETING

Key issues discussed at this meeting included the importance of enhancing the contribution of the Bioeconomy to the nation's economy and sustaining growth beyond 2020. The BIO-IAP meeting also saw the exchanges of three collaboration agreements.

17

10TH WORLD ISLAMIC ECONOMIC FORUM (WIEF)

Themed "Innovative Partnerships for Economic Growth", the 10th WIEF aimed to forge collaborations between nations. BiotechCorp, together with the Halal Industry Development Corporation and AJ Pharma Group, organised a special programme entitled "Developing Halal Bioeconomy in Islamic Countries" to ensure sustainability of the Halal industry to meet demands of the global Muslim population for food, healthcare and other services.

18

NATIONAL INNOVATION CONFERENCE AND EXHIBITION (NICE) 2014

Themed "Technology Empowers Innovation", NICE 2014 was a three-day event organised by BiotechCorp aimed at raising awareness among Malaysians on the importance of cultivating a culture of innovation in STI towards wealth creation, knowledge creation and socio-economic development.

19

BIOMALAYSIA & BIOECONOMY ASIA PACIFIC 2014

This event, themed "Partnership for Innovation, Investment and Growth for the Bio-Based Industry", was a significant meeting point for industry professionals in the region. It witnessed 10 Memoranda of Understanding exchanges and the official launch of supercritical technology-driven Haruan-based skincare products developed by Prof. Abdul Manan from Universiti Putra Malaysia.

20

STELIS BIOPHARMA GROUNDBREAKING CEREMONY

The groundbreaking ceremony marked the beginning of the construction of Stelis Biopharma's customised, multi-product, biopharmaceutical manufacturing facility. Key features of the facility are the incorporation of "next-gen" single-use bio-processing technology with both mammalian and microbial manufacturing suites as well as job opportunities for 180 people, of which a significant number will be local employees.

16

24 SEPTEMBER 2014

Marriot Hotel, New York, USA



17

28-30 OCTOBER 2014

Dubai, UAE



18

31 OCTOBER 2014 - **02** NOVEMBER 2014

Putra World Trade Centre, Kuala Lumpur



19

19-20 NOVEMBER 2014

Universiti Malaya, Kuala Lumpur



20

03 DECEMBER 2014

Bio-XCell Park, Johor



CHAIRMAN'S MESSAGE



**THE YEAR 2014 MARKED
ANOTHER SUCCESSFUL
YEAR FOR THE MALAYSIAN
BIOTECHNOLOGY
CORPORATION
(BIOTECHCORP).**



**Y.BHG. PROFESSOR TAN SRI
ZAKRI ABDUL HAMID**
Chairman





I am delighted that we have witnessed significant progress from several Bioeconomy Transformation Programme (BTP) Trigger Project owners that have expanded their presence globally in 2014.

In almost a decade of operations, we have continued to witness the steady growth of bio-based industries in Malaysia. Together with the Ministry of Science, Technology & Innovation (MOSTI), we are proud to have further advanced the industry by delivering ground-breaking innovations, business models and partnerships.

I am delighted that we have witnessed significant progress from several Bioeconomy Transformation Programme (BTP) Trigger Project owners that have expanded their presence globally in 2014.

As a result, we are expecting higher market penetration worldwide from local bio-based companies, triggered by one of our Bio-Accelerator programmes, BioNexus Go Global, which will go into full swing in 2015. This initiative will support local bio-based industries through facilitation and will help inform us on ways to increase product visibility via international branding.

BiotechCorp also recorded notable developments in the area of commercialisation this year. This saw various initiatives successfully

implemented in our pursuit to deliver tangible economic benefits to bio-based industries in Malaysia through innovation, commercialisation and public understanding.

This would not have been achieved without the contributions from the outstanding players and companies in Malaysia's biotechnology industry. I would therefore like to acknowledge the support, commitment and coordinated efforts of all our stakeholders, namely the Government, academic institutions and industry, for their role in the industry's growth this year.

A Platform for the Biotech Industry

Since its establishment in 2005, BiotechCorp has emerged as an important platform for the industry to collaborate, share and do business. In this regard, we have helped to showcase industry players and academia along the entire biotechnology value chain, enabling them to exhibit their latest discoveries, products and cutting-edge solutions.

This, in turn, has raised the profile of our biotech industry players locally and on the international stage, allowing them to secure contracts and collaborations to attain future growth.

Our progress thus far is a clear representation of how innovative individuals and organisations continue to fuel Malaysia's economy and establish the country as a leader in technology and life sciences.

As we approach the year 2020, I am optimistic that the holistic approach taken by the BTP will transform Malaysia into a sustainable high-income nation with Bioeconomy as an engine of growth. This will see the development of a sustainable ecosystem of research and development (R&D) and commercialisation in the areas of agriculture, healthcare and industrial biotechnology.

The BTP is envisioned to create RM48 billion in Gross National Income (GNI) in 2020, and create 170,000 job opportunities and attract RM50 billion in investments by 2020.

We are optimistic of achieving these targets based on the Bioeconomy's increasing importance in the economy in the future. This will be driven by the implementation of the Bioeconomy Malaysia Accelerator Programmes (Bio-Accelerators), namely Bioeconomy Community Development, Technology Development & Innovation, BioNexus Go Global and Bio-Entrepreneurship.

Facilitating Growth

The economic and environmental benefits of bio-based technologies have created a growing strategic interest in Bioeconomy across the world. However, in order for it to succeed, considerable challenges must be overcome.

Among these challenges is a lack of funding, as biotech companies face difficulties in accessing traditional sources of funding due to the perceived risk of emerging industries. In view of this, BiotechCorp, with the assistance of Malaysia Debt Ventures Berhad, is implementing the BTP Fund to provide soft loans to eligible approved BTP applicants. The BTP Fund is envisioned as a bridging mechanism to mitigate and reduce conventional financing institutions' concerns on the risk of a project.

Another key hurdle faced by bio-based project owners is the overlap that sometimes exists in the roles of Government agencies. As many bio-based projects involve cross-cutting disciplines such as healthcare, agriculture, industrial and green technology, clear ownership and specific responsibilities should be addressed by each ministry or agency to effectively contribute to the development of a specific project.

With a distinct and cohesive strategic direction, the risks of miscommunication between and within the ministries can be mitigated effectively. This will ensure a clear understanding between ministries on their roles in a particular project.

Becoming a Centre of Excellence

As we pursue our aspiration of making Malaysia a centre of excellence for bio-based industries, we must build on our successes achieved thus far and continue to intensify our efforts.

To further develop and strengthen the industry, we not only need to reaffirm Malaysia's position as a global bio-based hub but must also enhance existing biotechnology initiatives.

Biotechnology and the Bioeconomy must be recognised as game changers to attain sustainable economic growth, while R&D expenditure needs to be recognised as an investment that can increase income generation.

We must also leverage existing infrastructure to create exciting new investment opportunities to develop bio-clusters by magnifying their economic returns and benefits. Of further importance is a commitment to reduce our dependency on commodities through value adding activities and innovation.

We remain committed to facilitating the creation of 20 global biotech companies, establishing a niche in funding biotech projects and creating more bio-entrepreneurs through initiatives such as our partnership

with the California Institute for Quantitative Biosciences (QB3), bioentrepreneurship programmes with the Larta Institute in the US and the BioNext Programme.

To further drive the Government's goals in the area of biotechnology, we also pledge to create more BioNexus status companies that can help generate and achieve targets under the National Biotechnology Policy to propel the industry towards becoming a significant economic contributor.

Moving forward, I am optimistic of our efforts in shaping our Bioeconomy as well as Malaysia's future.

Acknowledgements

I would like to take this opportunity to extend BiotechCorp's appreciation to the Government, industry players, clients, business partners and all other stakeholders for their support and cooperation.

My gratitude also goes to my fellow members of the Board of Directors, the Management of BiotechCorp and most importantly, our employees, for their diligence and dedication in the development of Malaysia's bio-based industry.



Y.Bhg. Professor Tan Sri Zakri Abdul Hamid
Chairman



CHIEF EXECUTIVE OFFICER'S REPORT



**THE BIO-BASED INDUSTRY
CONTINUED TO RECORD
PROMISING GROWTH IN 2014,
PROVIDING A STRONG
FOUNDATION FOR THE
FURTHER DEVELOPMENT OF
THE MALAYSIAN BIOECONOMY.**



**DATO' DR. MOHD
NAZLEE KAMAL**
Chief Executive Officer



During the year, BiotechCorp continued to focus its efforts on developing the bio-based ecosystem in Malaysia. This was achieved by promoting innovative technologies and putting in place components of the bio-based value chain to drive the growth of the industry and create a ripple effect for the country and rakyat.

Our activities have shown that Malaysia possesses the potential to significantly impact the global Bioeconomy, supported by a robust platform for scientific and commercial collaborations in the bio-based industry. We also boast the intellectual infrastructure, diversity of resources and human talent needed to drive the growth of this industry.

BTP Remains on Track

I am proud to note the introduction of nine new trigger projects under the Bioeconomy Transformation Programme (BTP) in 2014. This brings the number of BTP Trigger Projects announced since 2012 to 31, which are estimated to contribute RM4.9 billion of Gross National Income (GNI), create 19,445 job opportunities and investments of RM15.9 billion by 2020.

Significant BTP investments were also recorded during the year, namely a collaboration between US-based Verdezyne Inc and Sime Darby Berhad for the production of chemical intermediaries from palm oil derivatives. The agreement was signed during an event witnessed by the Prime Minister YAB Datuk Seri Najib Tun Razak and US President Barack Obama. Additionally, Genting Plantations Berhad and Elevance, another US-based company, have agreed to collaborate on the development of an integrated bio-refinery complex in the Palm Oil Industrial Cluster.

Key investments in the BioMedical and BioIndustrial sectors were also secured, including the establishment of Abbott Medical Optics' (AMO)

first manufacturing venture in Malaysia. A leading global healthcare company, AMO will be represented here through Abbott Medical Optics Malaysia Sdn Bhd.

These investments will bolster the sustainability of Malaysia's bio-based ecosystem while reflecting the country's growing significance as an investment destination for global biotech giants. This, in turn, will help propel our country into the global Bioeconomy.

During the year, the Bioeconomy Community Development Programme (BCDP), a leading component of the BTP's Bio-Accelerators introduced to catalyse inclusive economic growth through collaboration between farmers, smallholders and BioNexus status companies to create innovative bio-based products, showed promising potential in contributing to the growth of the Malaysian Bioeconomy.

This past year saw the launch of seven pilot projects under the BCDP and five collaborative proposals formed around the country.

The implementation of these BCDP pilot projects will play a crucial role in achieving the BCDP's goal of raising the income of farmers and developing their bio-entrepreneurship skills to help uplift the rakyat's welfare.

Promoting the Malaysian Bioeconomy

The launch of the European Commission's Bioeconomy Observatory Project marks another milestone for the Malaysian Bioeconomy, as our country became the only non-European Union Bioeconomy player to be highlighted on the website. Launched in October 2014, the project is a database of quantitative information relevant to the Bioeconomy.

Back home, BiotechCorp continued to advocate the bio-based industry,

conducting BTP workshops and labs in Johor, the East Coast Economic Region and the BioCentral Region comprising Malacca, Selangor, Negeri Sembilan and the Federal Territory. This followed the success of similar workshops held in Sabah, Sarawak and the Northern Corridor Economic Region in 2013. These workshops are aimed at identifying private sector bio-based projects to be included in the BTP project pipeline, with the goal of formulating a strategic roadmap to develop the Bioeconomy in these regions.

Fostering Industry Collaboration

Our retail arm, BioShoppe, has become an important avenue for market access and commercialisation of naturally-based wellness products by BioNexus status companies, particularly in bio-cosmeceuticals and pharma nutrition.

During the year, we established a collaboration with Kedah Bio Resources Corporation Sdn Bhd to open a BioShoppe at UTC Alor Setar, Kedah, during an event witnessed by Kedah Chief Minister YAB Dato Seri Hj Mukhriz Tun Dr Mahathir.

Additionally, BioShoppe's first store-within-a-store concept, in collaboration with Nova Laboratories Sdn Bhd, a BioNexus status company, was launched in IOI Mall Puchong by YB Datuk Dr Ewon Ebin, the then-Minister of Science, Technology and Innovation.

To further expand BioShoppe activities, we signed a collaboration proposal with Perbadanan Nasional Berhad (PNS) during the Biotechnology International Advisory Panel (Bio-IAP) meeting in New York to explore potential business models and support that PNS could extend to the programme.

Public-private partnerships are another central component in pushing the industry forward. To this end,

BiotechCorp successfully facilitated collaborations between BioNexus status companies and institutions of higher learning and research institutes. These include cooperation in the areas of diploid oyster production, Tiger Milk mushroom cultivation, bacteriophage production for bio-pesticides and the production of a locally-invented biomaterial made from limestone to be used as a bone graft substitute in various types of surgery.

Facilitating Growth

BioNexus status companies and BioNexus Partners (BNP) play a key role in driving the Malaysian Bioeconomy and enabling the commercialisation of bio-based products.

Through the efforts of BNPs, RM1.7 million worth of services and projects were generated from the industry, as 53 BNP laboratories offered their services and expertise to the industry and 400 services were offered to BioNexus status companies and other bio-based companies, SMEs and entrepreneurs. The BNP network was also further expanded with the inclusion of Melaka Biotechnology Corporation's Good Laboratory Practice (GLP) and ISO Product Testing Laboratory.

Beyond investments and infrastructure, the industry requires talent to place Malaysia on firmer footing in the global Bioeconomy. In view of this, BiotechCorp is committed to developing Malaysian life sciences and bio-graduates by strengthening linkages between industry and educational institutions to solve the shortage of talent in the industry. As a result, 292 students were trained under the Biotechnology Executive Special Training (BeST) programme in 2014.

As another agenda that is crucial for BiotechCorp, I am pleased to note that biotechnology commercialisation is gaining traction with numerous innovations monetised. However, we

see an increasing need to move away from being solely technology-driven towards being a more value-driven model. Many bio-entrepreneurs therefore require training and facilitation to better strategise their business plans and enhance competitiveness.

This is where efforts such as BioShoppe and the Bio Partnering 2014 event facilitate strategic partnerships between BioNexus status companies and BNP laboratories in marketing their products and services. Further to this, BiotechCorp has also partnered with US-based entrepreneur training, commercialisation and technology transfer services company Larta Institute to address entrepreneurs' challenges in commercialising their products.

Propelling the Growth of Malaysia's Bioeconomy

Looking ahead, there is an urgent need to create a platform that can accelerate commercialisation. More importantly, we must fully optimise our resources to ensure we achieve our objectives. Nonetheless, I am optimistic that the bio-based industry remains promising and will continue to play an important role in ensuring Malaysia's sustainable development agenda and creating socio-economic benefits for the nation.

To this end, BiotechCorp will focus on exploring new opportunities in high-impact areas and priority sectors of the Bioeconomy. These include cellular medicine and stem cells, bio-cosmeceuticals, wellness, pharma nutrition and bio-based chemicals.

Efforts will also be undertaken to expand the presence of bio-based companies in regional and global markets. This will be achieved by setting market access as an important strategy under the third phase of the National Biotechnology Policy (NBP) – Global Business, commencing in 2016.

Moving forward, we also foresee a need to establish a Bioeconomy master plan to map an effective direction for the Malaysian Bioeconomy. We should also identify and leverage the strengths of our Bioeconomy to capitalise on major emerging trends and opportunities arising worldwide.

On our part, BiotechCorp remains committed to promoting the growth of Malaysia's bio-based sectors and branding Malaysia as an attractive investment destination for innovative, bio-based activities.

I am proud of the progress we have contributed thus far, and look forward to further supporting the growth of the Malaysian Bioeconomy. On this note, I would like to take the opportunity to express our appreciation to the Government for their untiring support for the Bioeconomy agenda.

I would also like to thank our Board of Directors for their guidance and the Management team for their leadership in BiotechCorp's operations. My gratitude also extends to our employees, whose loyalty and dedication have been instrumental in ensuring our organisation achieves its goals.

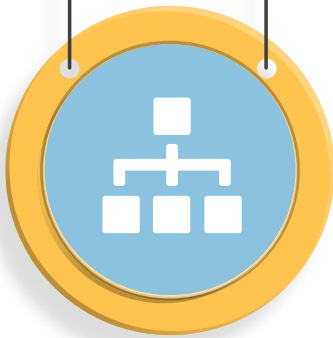
Finally, I would like to record our thanks to our stakeholders, including private sector industry players, academia and other partners for their continued support in furthering the Malaysian Bioeconomy.

I believe that with continued efforts from all parties, Malaysia will realise its ambitions of becoming a driving force in the global Bioeconomy, presenting a wealth of opportunities for us all to share in.



Dato' Dr. Mohd Nazlee Kamal
Chief Executive Officer

ORGANISATION STRUCTURE

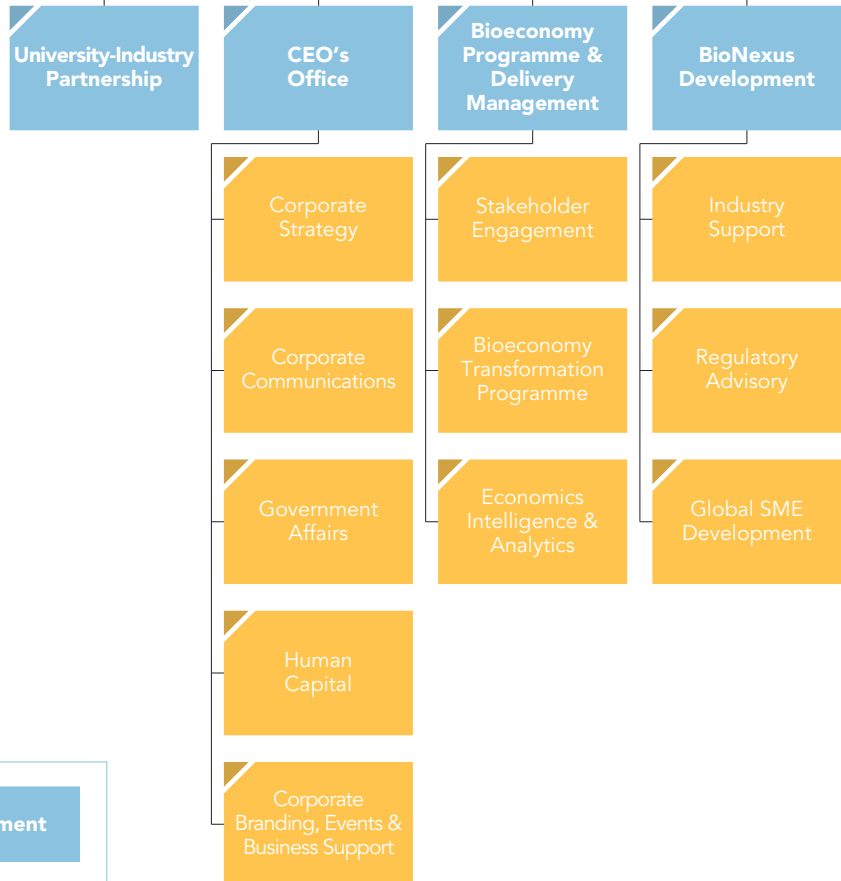


BIOTECHCORP
MALAYSIAN BIOTECHNOLOGY CORPORATION

BiotechCorp

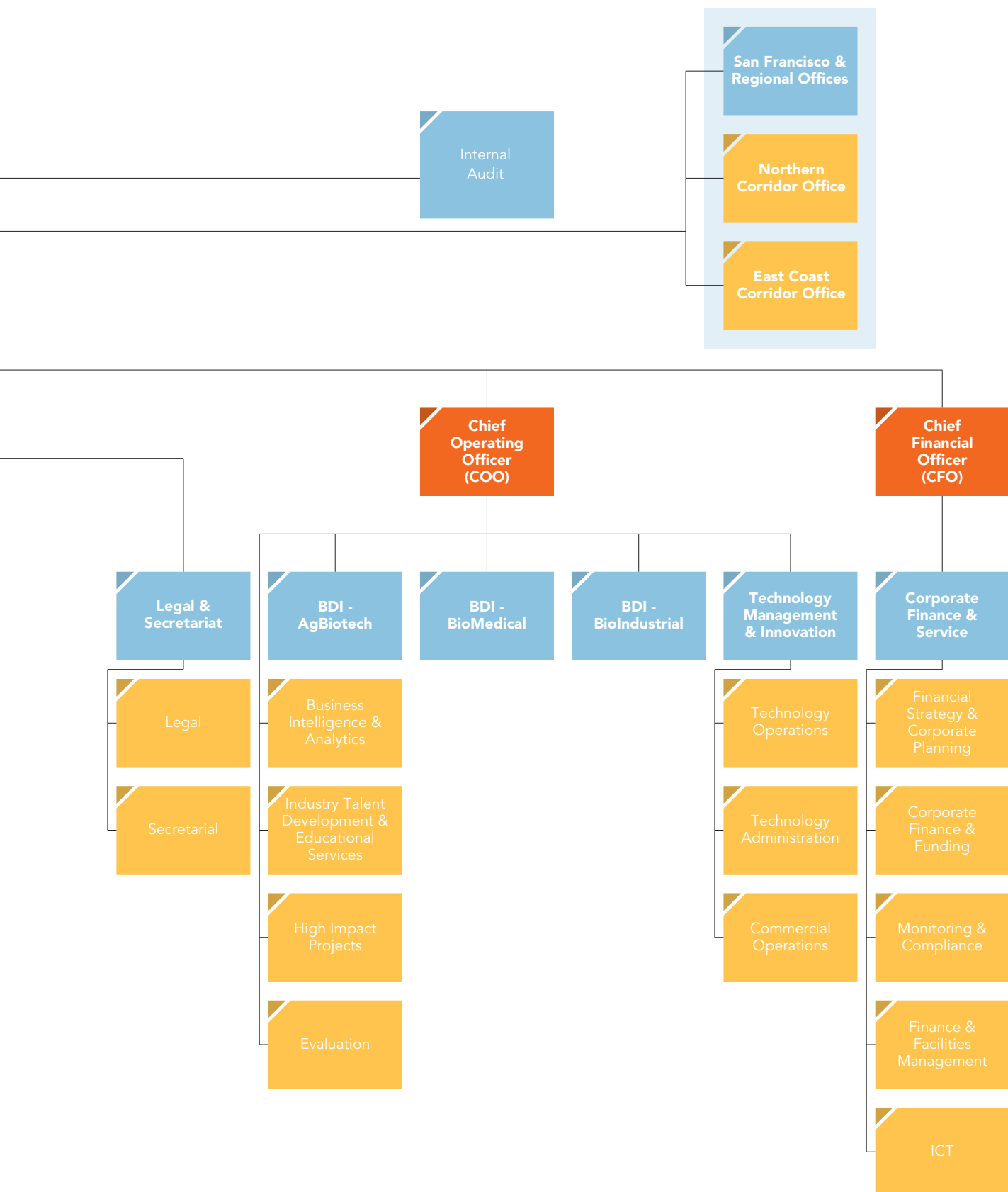
Board

Chief Executive Officer (CEO)



Division

Department



BOARD OF DIRECTORS



▶ **Y.BHG. PROFESSOR TAN SRI ZAKRI ABDUL HAMID**
Director



▶ **Y.BHG. DATO' DR. MOHD NAZLEE KAMAL**
Director



▶ **Y.BHG. TAN SRI DATO' DR. JEGATHESAN A/L N.M. VASAGAM**
Director



▶ **Y.BHG. DATO' SRI DR. NOORUL AINUR MOHD. NOR**
Director



▶ **Y.BHG. DATUK WAN AHMAD SHIHAB WAN ISMAIL**
Director



▶ **Y.BHG. DATUK DR. NOOR HISHAM ABDULLAH**
Director



▶ **Y.BHG. DATO' MOHD ARIF AB RAHMAN**
Director



▶ **Y.BHG. DATUK DR. ABD HAPIZ ABDULLAH**
Director



▶ **PUAN NORSIMAH AB WAHAB**
Director



▶ **DR. RADZUAN A. RAHMAN**
Director



▶ **ENCIK AMIRUL FARES WAN ZAHIR**
Director

THE SENIOR MANAGEMENT TEAM



- ▶ **Y.BHG. DATO' DR. MOHD NAZLEE KAMAL**
Chief Executive Officer
- ▶ **ENCIK RAZWIN SULAIREE HASNAN TERMIZI**
Chief Operating Officer
- ▶ **TUAN SYED AGIL SYED HASHIM**
Chief Financial Officer
- ▶ **DR. ABDUL MANAF MOHAMMAD RADZI**
Senior Vice President, University-Industry Partnership
- ▶ **CIK SHARIFAH HANIFAH SYED ABDUL AZIZ**
Senior Vice President, Legal & Secretarial
- ▶ **ENCIK JAY PADASIAN**
*Senior Vice President, Business Development and Investment
– BioMedical*
- ▶ **ENCIK ZAINAL AZMAN BIN ABU KASIM**
*Senior Vice President, Business Development and Investment
– BioIndustrial*
- ▶ **DR. KODI ISPARAN KANDASAMY**
*Senior Vice President, Business Development and Investment
– AgBiotech*
- ▶ **PUAN ZURINA CHE DIR**
Senior Vice President, Bioeconomy Programme & Delivery Management
- ▶ **DR. HARCHARAN SINGH**
Senior Vice President, Technology Management & Innovation
- ▶ **ENCIK ADNAN BAHARUM**
Senior Vice President, CEO's Office

▶ **Y.BHG. DATO' DR. MOHD NAZLEE KAMAL**
Chief Executive Officer



Y.Bhg. Dato' Dr. Mohd Nazlee Kamal was appointed to the Board of the Malaysian Biotechnology Corporation Sdn Bhd (BiotechCorp) on 18 July 2011.

An academician, scientist and innovator with business and entrepreneurship acumen, he brings a wealth of marketing and technical expertise to BiotechCorp. He is well-recognised for his wide industrial leadership and has played a pivotal role in the formulation of the National Biotechnology Policy.

Dato' Dr. Mohd Nazlee began his career as an academician at Universiti Teknologi Malaysia (UTM), where he was involved in the development and establishment of the Bioprocess Engineering programme under the Faculty of Chemical and Natural Resources. One of his other key achievements during his 10-year tenure there was the invention of the "External Spinfilter", which is now marketed by Sartorius BBI Systems (Patent No. PI9701436MY-131798-A).

He entered the corporate sector in 1997, joining B. Braun Malaysia. He

subsequently served Amersham Biosciences as the ASEAN Business Area Manager (Separation) where he led the sales and marketing effort for the Separations product range in the region. In 2001, he was the Business Development Manager in Sartorius (M) Sdn Bhd where he made significant contributions to the company's sales and marketing effort for bioreactors in Malaysia.

Dato' Dr. Mohd Nazlee was instrumental in the establishment of Inno Biologics Sdn Bhd, the first contract manufacturing organisation for biopharmaceuticals in Malaysia, and continued at the helm of the company as Chief Executive Officer for 10 years. He was also the Group Managing Director of Inno Bio Ventures Sdn Bhd, the holding company of the Inno Bio Group of Companies.

Dato' Dr. Mohd Nazlee is a member of the International Society of Pharmaceutical Engineering (ISPE), the Malaysian Society for Molecular Biology and Biotechnology (MSMBB) and the Institution of Chemical Engineers (IChemE). He also sits on the Advisory Panel of the Northern Corridor Implementation Authority

(NCIA) for Plant Science and Tissue Culture Node (PSTCN). His involvement as a council member of the National Innovation Council (NIC) and the Global Science and Innovation Advisory Council (GSIAC) as well as the Steering Committee for National Biomass Strategy saw him playing a major role in the effort of integrating Government initiatives with industry players in biotechnology.

Dato' Dr. Mohd Nazlee Kamal is currently the Chairman of Malaysian Bio-XCell Sdn Bhd, and also a member of the Boards of BiotechCorp Investment Holdings Sdn Bhd, BiotechCorp Technology Management Sdn Bhd, Melaka Biotech Holdings Sdn Bhd and the Malaysian Forestry Research and Development Board.

He holds a Ph.D in Chemical Engineering (Bioprocess) from the University of Queensland (Australia), a Masters of Applied Science in Biotechnology from the University of New South Wales (Australia) and a Bachelor of Science in Chemical Engineering from Oregon State University (US).



from left:

▶ **ENCIK RAZWIN
SULAIREE HASNAN
TERMIZI**

Chief Operating Officer

▶ **ENCIK SYED AGIL
SYED HASHIM**

Chief Financial Officer

Encik Razwin Sulairee Hasnan Termizi is the Chief Operating Officer of BiotechCorp, responsible for leading and overseeing the implementation of the biotechnology sector as one of the key economic drivers of the nation.

He brings to BiotechCorp 20 years of experience and expertise in investment, business development and strategic planning.

Prior to that, he was the Vice-President of the Industry Development and Investment Division, Senior Vice President at the Business Development and Investment-Industrial Division (BDI-I) and Senior Executive Vice President.

Encik Razwin Sulairee holds a Masters in Business Administration from Universiti Teknologi MARA (UiTM), a degree in Industrial Chemistry from University Putra Malaysia and a diploma in Plastic & Rubber from the Plastic and Rubber Institute of Malaysia (PRIM). He has also attended the Senior Executive Program at Ross School of Business.

Encik Syed Agil Syed Hashim joined BiotechCorp in 2006 and was appointed as Chief Financial Officer on 17 August 2010.

Prior to his joining BiotechCorp, he was the Finance Manager of the Multimedia Development Corporation. He also had the opportunity to contribute towards the development of the Multimedia Super Corridor (MSC), another Government initiative in the ICT sector.

He is a registered Chartered Accountant and holds a degree in Accountancy and a Masters degree in Business Administration specialising in Finance.



from left:

▶ **DR. ABDUL MANAF
MOHAMMAD RADZI**

*Senior Vice President,
University-Industry Partnership*

▶ **CIK SHARIFAH
HANIFAH SYED
ABDUL AZIZ**

*Senior Vice President,
Legal & Secretarial*

Dr. Abdul Manaf Mohammad Radzi joined BiotechCorp as Senior Vice President, Agriculture in January 2010 and is now responsible for the University-Industry Partnership department under the CEO's Office.

Prior to joining BiotechCorp he was the General Manager in charge of Export Sales and then the Chief Scientific Officer of a leading local pharmaceutical company.

He holds a Ph.D from the University of Tennessee, Knoxville majoring in Physical Chemistry and minoring in Inorganic Chemistry. He also holds an MBA degree from Ohio University.

Cik Sharifah Hanifah Syed Abdul Aziz joined BiotechCorp in 2008 as Company Secretary and Vice President, Legal & Secretarial. She was promoted to the position of Senior Vice President, Legal & Secretarial in 2011.

Cik Sharifah Hanifah was called to the Malaysian Bar in 1989 and practised law for five years prior to joining Perusahaan Otomobil Kedua Sdn Bhd (Perodua).

Cik Sharifah Hanifah holds an LLB (Hons) from the University of Wolverhampton and a Certificate in Legal Practice. She was empanelled as an Adjudicator with the Kuala Lumpur Regional Centre for Arbitration in 2014.



from left:

▶ **MR. JAY PADASIAN**
Senior Vice President, Business Development and Investment – BioMedical

▶ **ENCIK ZAINAL AZMAN BIN ABU KASIM**
Senior Vice President, Business Development and Investment – BioIndustrial

Mr. Jay Padasian joined BiotechCorp in 2009 and has been a member of BiotechCorp's Senior Management since April 2012.

Mr. Padasian is a registered pharmacist, who was trained in the United Kingdom before returning to Malaysia to take up various national and regional (Asia Pacific) roles in the medical device and pharmaceutical industry including in US and German multinational companies such as Johnson & Johnson, B. Braun and Covidien. Prior to joining BiotechCorp, he was Country Manager-Malaysia/Brunei at Covidien (now part of Medtronic).

Mr. Padasian is a member of the National Key Economic Area (NKEA) Healthcare Steering Committee as well as the Bioeconomy Transformation Programme Steering Committee. He is also a Malaysian Government Cleared Advisor for the Trans-Pacific Partnership Agreement (TPPA) and a member of the Board of Studies for Universiti Sains Malaysia's M.Sc BioMedicine course.

Encik Zainal Azman bin Abu Kasim joined BiotechCorp in June 2010 as Vice President (Industrial) where his successful strategies led to the securing of multiple foreign direct investments for the industrial biotechnology sector in Malaysia.

In October 2012, he was promoted to Senior Vice President to lead the Business Development and Investment (Bio-Industrial) Division of BiotechCorp. As Senior Vice President (BioIndustrial), he is tasked with spearheading the country's initiatives in promoting and developing the industrial biotechnology landscape in Malaysia.

Prior to joining BiotechCorp he was an Assistant Director of Procurement and General Services at the Malaysia Tourism Promotion Board (Tourism Malaysia), Assistant Trade Commissioner in Los Angeles and subsequently Malaysian Trade Commissioner for the Western Region of North America (Los Angeles), and ultimately Senior Manager for the Central and West Asian Division.

He holds a degree in Communication and Media Studies (Public Relations) from UiTM, Shah Alam.



from left:

▶ **DR. KODI ISPARAN KANDASAMY**

Senior Vice President, Business Development and Investment – AgBiotech

▶ **PUAN ZURINA CHE DIR**

Senior Vice President, Bioeconomy Programme & Delivery Management

Dr. Kodi Isparan Kandasamy is a plant biotechnologist with over 30 years of experience in the field of plant science.

Currently, he is the Senior Vice President (for Agriculture Biotechnology) at the Business Development & Investment Division, a position he has held for the last two-and-a-half years. Prior to that he was the Vice President in the same division since 2010.

Dr. Kodi Isparan has also served as a Senior Scientist and the head of the Tissue Culture Laboratory at the Forest Research Institute Malaysia (FRIM) and was the R&D Manager for TropBio Research Sdn Bhd, a private biotechnology company in Malaysia.

Dr. Kodi is the inventor of the award-winning (including a Gold Medal) "Tropicalised Plant Weaning System for Acclimatising Tissue-Cultured Plantlets" (Malaysia Patent: MY-140884), and the "On Site Laboratory" for plant tissue culture (Malaysia Patent: MY-140433).

He is also a member of the Genetic Modification Advisory Committee (GMAC), representing BiotechCorp. He is also a member of the executive editorial board for the Journal of Tropical Medicinal Plants, and a referee for several other local and foreign scientific journals, especially in the field of plant cell, tissue and organ culture.

Puan Zurina Che Dir currently holds the position of Senior Vice President, Bioeconomy Programme & Delivery Management Division. She was appointed to BiotechCorp's Senior Management team in 2013.

Her main role is to ensure the successful implementation of the national Bioeconomy initiatives, especially the Bioeconomy Transformation Programme and Bioeconomy Community Development Programme to contribute significantly to Malaysia's Gross National Income, employment and investment.

Prior to her current position, Puan Zurina was the Vice President of Business Intelligence and Vice President of Healthcare in BiotechCorp for the previous four years.

Prior to joining BiotechCorp, Puan Zurina held a managerial position at Bursa Malaysia Stock Exchange. Puan Zurina was also a former Senior Associate at the Securities Commission, involved in analysing and processing the suitability of an issuer to be listed on Bursa Malaysia, mergers and acquisitions.

Puan Zurina graduated from the University of Leeds, UK with a BA (Hons) in Accounting and Finance.



from left:

▶ **DR. HARCHARAN SINGH**

*Senior Vice President,
Technology Management &
Innovation*

▶ **ENCIK ADNAN BAHARUM**

*Senior Vice President,
CEO's Office*

Dr. Harcharan Singh started his career as a lecturer with the Department of Chemical Engineering at the University of Malaya and was there for nine years. He then served as the Vice President and Head of the Innovation and Knowledge Management Centre at Mewah Group, a Singaporean palm oil refining conglomerate.

In 2009, he joined BiotechCorp as the Vice President for the Business Development and Investment Division. He now heads the Technology Management Office which is involved in the management and commercialisation of four core bio-based platform technologies.

Dr. Harcharan Singh graduated from the University of New South Wales, Australia with a doctoral degree majoring in Supercritical Fluid Extraction of Natural Products.

Encik Adnan Baharum has 18 years of experience in MNCs and GLCs in various industries including commodities, FMCG, oil & gas, healthcare and consulting. He specialises in business development, market research, business intelligence and strategic management, corporate communication and branding and sales and marketing.

He has been with BiotechCorp since June 2014 and is currently the Senior Vice President in the CEO's office and is responsible for the company's corporate communications and events, Government liaison and human capital development.

Prior to that, he was a Director, Business Development of Frost & Sullivan Malaysia Sdn Bhd.

Encik Adnan obtained his Bachelor's degree in Marketing from UiTM in 1996.



▶ **ENCIK ADRIAN
ABDUL GHANI**
*Senior Vice President,
CEO's Office*

Encik Adrian Abdul Ghani began his career as an advocate and solicitor in a legal firm with regional presence in 1995 that accorded him the opportunity to diversify his areas of expertise to include the then nascent laws relating to cyberspace.

Specialising in legal and regulatory compliance, policy formulation and stakeholder advocacy, Encik Adrian joined BiotechCorp in 2009 as Vice President of the Legal and Regulatory Department.

In this role, he devised and implemented a progressive engagement strategy for BiotechCorp in relation to key policy and regulatory stakeholders towards achieving the goal of creating a conducive regulatory framework for the development of the biotechnology industry in Malaysia.

On the international front, he represented the organisation as part of the Malaysian delegation in meetings concerning the development of international laws relating to biotechnology, including meetings of the UNEP/CBD Working Group on Access Benefit Sharing under the auspices of the United Nations and the Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore under the World Intellectual Property Organisation.

In November 2012, Encik Adrian became a member of BiotechCorp's Senior Management team as Senior Vice President of the BioNexus Development Division.

ABOUT MALAYSIAN BIOTECHNOLOGY CORPORATION

Malaysian Biotechnology Corporation Sdn Bhd (BiotechCorp) (Company No. 691431-D) was incorporated under provisions of the Companies Act 1965 on 13 May 2005 to identify value propositions in research, development and commercialisation (R&D&C) as well as to support and facilitate these ventures through financial assistance and advisory services. BiotechCorp is an agency of the Ministry of Science, Technology and Innovation (MOSTI) and owned by the Ministry of Finance Incorporated and Federal Lands Commissioner.

It is governed by the National Bioeconomy Council (NBC) (formerly known as Biotechnology Implementation Council) and counselled by the Bioeconomy International Advisory Panel, both chaired by the Honourable Prime Minister of Malaysia.

KEY MANDATES

- Act as a focal point for all biotechnology initiatives in Malaysia.
- Nurture and accelerate growth of Malaysian biotechnology companies.
- Actively promote foreign direct investments in biotechnology.
- Create a conducive environment for biotechnology in Malaysia.

VISION

To enhance the economic, health and social wellbeing of the nation.

MISSION

Lead the development of the biotechnology industry in Malaysia.

CORPORATE VALUES

Teamwork:

In a relationship based on mutual respect & understanding, we work together with our colleagues, clients and partners to achieve common goals.

Integrity:

We conduct our business with uncompromising integrity.

Excellence:

We strive to achieve excellence in all that we do.

Accountability:

We drive the delivery of results for the organisation and the nation.

BIOECONOMY DEVELOPMENT

Launched in 2012 by the Prime Minister, the Bioeconomy Transformation Programme (BTP) aims to further develop the bio-based industry in Malaysia and act as a platform to maximise the commercial potential of biological resources in the region. The BTP is designed to create a sustainable ecosystem of R&D and commercialisation in AgBiotech, BioMedical and BioIndustrial under the identified Entry Point Projects (EPPs) that will boost the Malaysian Bioeconomy.

The BTP also harnesses the nation's economic potential and contribution by amplifying bio-based technologies. This will be achieved by enhancing the productivity, yield and quality of outputs to create a ripple effect throughout the entire supply chain with the development of upstream sectors via the Bioeconomy Malaysia Accelerator Programmes (Bio-Accelerators).

One of the lead components of the Bio-Accelerators under the BTP is the Bioeconomy Community Development Programme (BCDP), a platform for private sector players to develop and commercialise their ideas within the bio-based industry.

The BCDP was mandated by the Prime Minister in Malaysia's Budget 2014. Its main objectives are:

- to ensure stable and consistent supply of raw materials and extracts of bio-ingredients for BioNexus (BNX) status companies.
- to increase the revenue of BNX status companies/BTP companies through sustainable supply of raw materials from cooperatives/farmers through contract farming.
- to train unskilled farmers to be bio-agropreneurs and enhance social mobility through technology-based entrepreneurship.
- to provide certification through the Malaysian Organic Scheme and Ecocerts for sustainable development.
- to develop idle land through the application of biotechnology.

The BCDP will focus on three focus areas in providing a conducive environment for BNX status companies. These focus areas consist of bio-cosmeceuticals, pharma nutrition and wellness, which are deemed as high-impact products.

2014 HIGHLIGHTS

In 2014, the BTP continued to grow with nine new trigger projects identified and tabled by the BTP Technical Working Committee. Five of these trigger projects are involved in the production of biogas and biochemicals from palm oil derivatives and waste.

During the year, the BTP facilitated major investments in the bio-based chemical and biogas sectors, parallel with the current national agenda to diversify the palm oil industry through downstream activities utilising biotechnology. Significant investments recorded last year included the production of chemical intermediaries from palm oil derivatives through a collaboration between US-based Verdezyne Inc and Sime Darby Berhad. US-based Elevance and Genting Plantations Berhad also signed an agreement to collaborate on the development of an integrated bio-refinery complex

in the Palm Oil Industrial Cluster (POIC), Sabah.

Aside from the palm oil sector, other Bioeconomy projects showed significant developments through the identification of four other projects in the AgBiotech sector, i.e. integrated aquaculture, bird's nest and its downstream products, high-value honeybees and royal jelly production, as well as commercialisation of high-value pineapples through large-scale tissue culture.

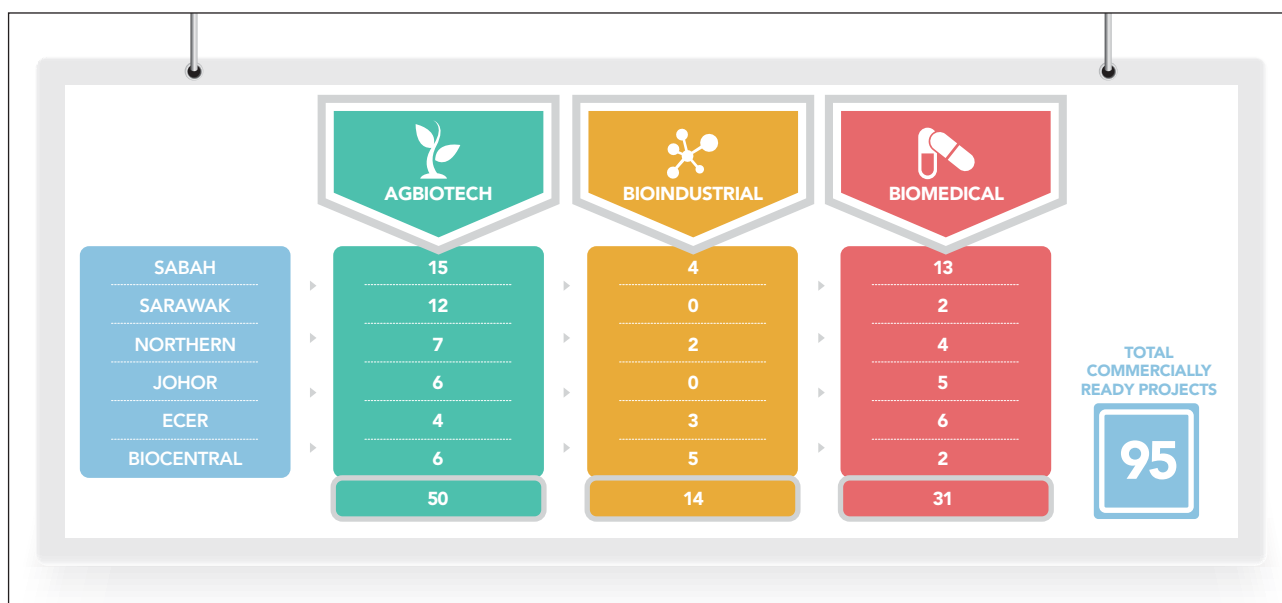
In line with emerging trends across the globe in establishing Bioeconomy initiatives and roadmaps, the BTP hopes to spur and attract important investments to boost our local sectors. In October 2014, the European Commission launched the Bioeconomy Observatory project, a database compiling quantitative information relevant to the global Bioeconomy. Malaysia was the only non-European Union (EU) country to be highlighted among the many

players on its website launched during the 3rd European Bioeconomy Stakeholders' Conference held in Turin, Italy. Malaysia's inclusion in the Bioeconomy Observatory project serves as a significant achievement which places Malaysia on the global Bioeconomy map.

BTP Workshops and Labs

In 2014, BTP Workshops and Labs were conducted in Johor, the Northern and BioCentral regions, the ECER as well as in Sabah and Sarawak, providing a comprehensive insight of the industrial landscape and enabling BiotechCorp to develop a Bioeconomy roadmap towards the year 2020 and beyond. 175 projects were identified during these workshops, of which 95 were shortlisted as commercially ready and the remainder classified as early-stage projects. Of the commercially ready projects, five were selected for inclusion in the BTP.

NUMBER OF SHORTLISTED PROJECTS FROM BTP WORKSHOPS BY FOCUS AREAS

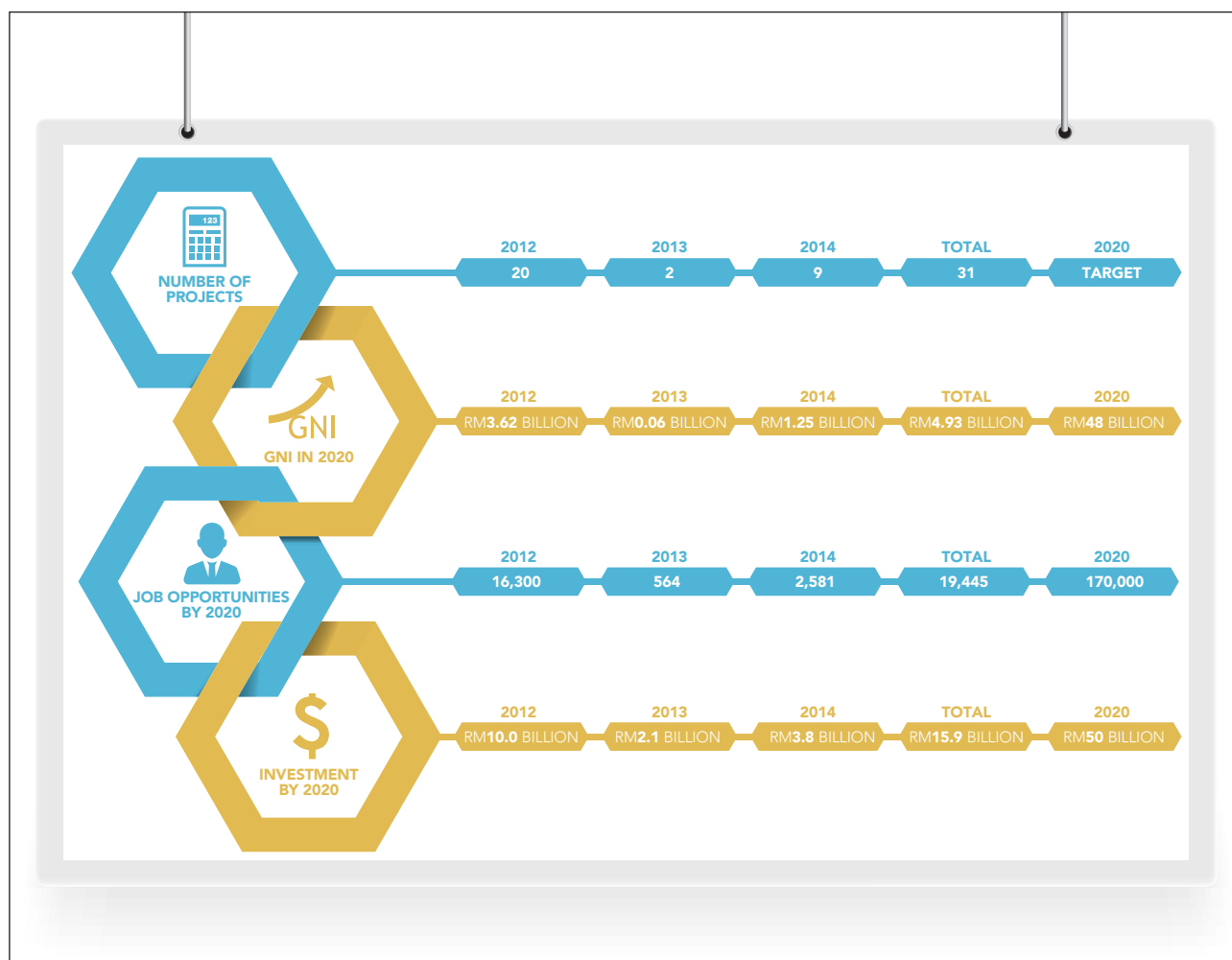


Projects are identified as commercially ready based on the Technology Readiness Level (TRL) assessment system adapted from the United States National Aeronautics and Space Administration (NASA) and the Michigan State University Bioeconomy Institute. TRL1-6 (Stage 1) includes basic research and feasibility, TRL7-8 (Stage 2) refers to pilot scale, and TRL 9 (Stage 3) is defined as large-scale commercial operations.

BTP Trigger Projects

As of 2014, a total of 31 trigger projects have been endorsed by the BTP Technical Working Committee, from 20 in 2012. Of these, nine were endorsed during the year. These projects are expected to contribute an estimated RM4.9 billion in GNI, create 19,445 employment opportunities and investment of RM15.9 billion by 2020. The following table depicts the progress of the BTP from 2012 to 2014.

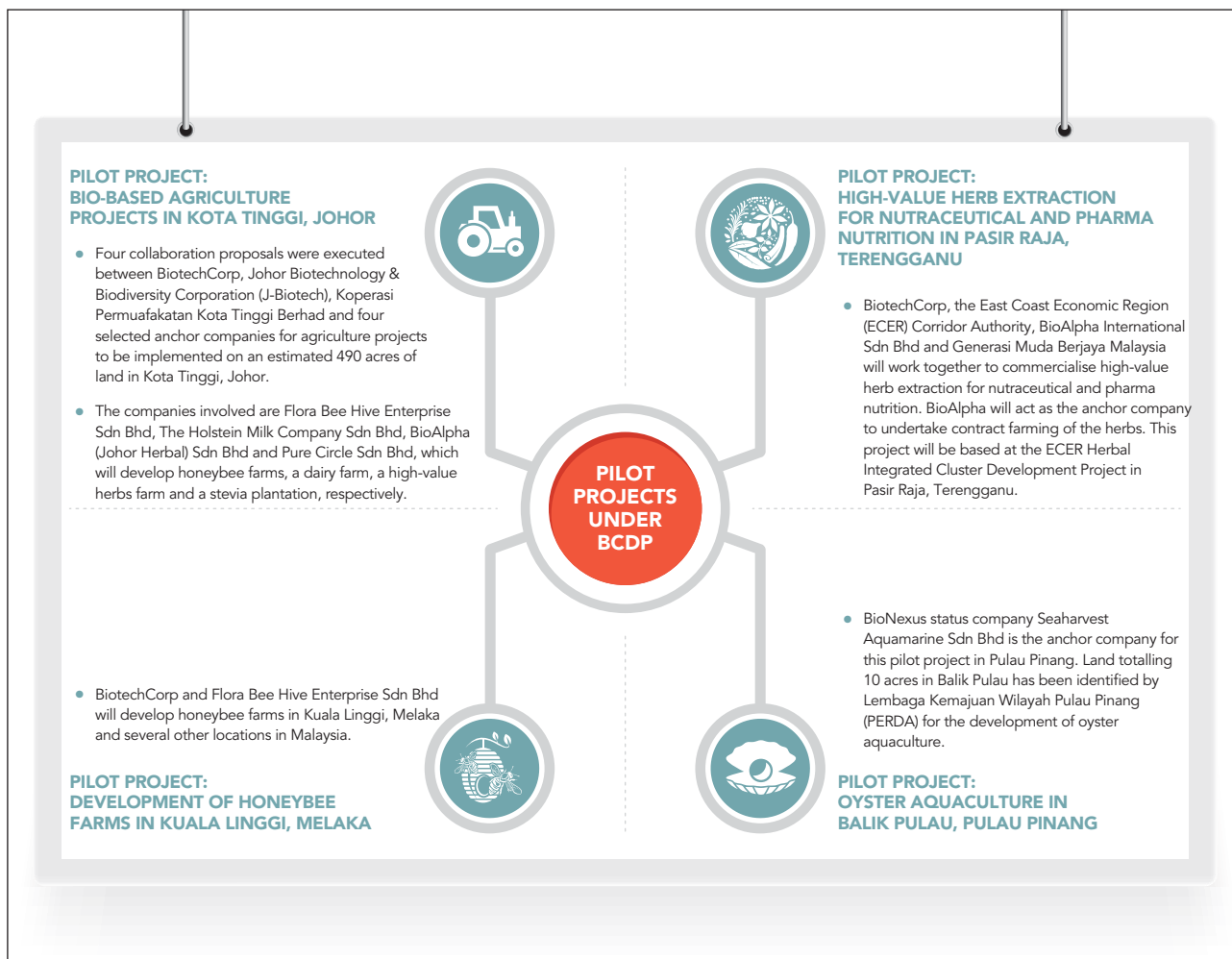
PROGRESS OF THE BTP FROM 2012 TO 2014



BCDP Pilot Projects

As the lead component of the BTP's Bio-Accelerators, the BCDP has recorded significant progress in promoting the growth of bio-based industry while creating an avenue for inclusive economic growth through the participation of farmers and smallholders as contract farmers.

PILOT PROJECTS UNDER BCDP



BTP Fund

On 19 November 2014, BiotechCorp exchanged a Service Agreement with Malaysia Debt Ventures Berhad to mark its formal cooperation in implementing the BTP Fund for Bioeconomy projects.

One BTP project involved in biogas production from palm oil waste has been tabled to the BTP Funding Committee for recommendation to utilise the BTP Fund amounting to RM1.2 million. Shortly after, another BTP project involved in the production of bio-compressed natural gas (BioCNG) was also recommended to utilise RM10 million of the BTP Fund.

With the immediate demands on the BTP Fund, BiotechCorp looks forward to continue working closely with MDV in the coming years to support the commercialisation of Bioeconomy projects.

2014 KEY EVENTS

Stakeholder advocacy and awareness and education programmes form a crucial part of BiotechCorp's efforts in promoting the BTP and BCDP. In addition to raising awareness on the programmes, workshops and labs are also conducted nationwide to map out the Bioeconomy potential across Malaysia. Furthermore, BiotechCorp actively participates in international events not only to share Malaysia's experiences and progress in the bio-based industry on the global stage, but also to gain a deeper understanding of developments and opportunities in the global Bioeconomy.



KEY EVENTS

LOCAL

<p>① 27 – 28 January 2014 BTP Workshop – Johor Bahru</p> <p>② 17 April 2014 BTP Lab – Johor Bahru</p> <p>③ 21 – 22 April 2014 BTP Workshop ECER – Kuantan</p> <p>④ 24 – 26 April 2014 Karnival Inovasi Keusahawanan Herba Kelantan 2014 – Gua Musang</p> <p>⑤ 5 – 7 May 2014 BioBorneo Conference and Exhibition – Kota Samarahan, Kuching</p> <p>⑥ 15 May 2014 BioPartnering – Kulim</p> <p>⑦ 6 June 2014 BTP Lab, ECER – Kuala Lumpur</p>	<p>⑧ 19 – 21 June 2014 BioKelantan Carnival – Kota Bharu</p> <p>⑨ 25 June 2014 Bioeconomy Investor Forum 2014 – Kuala Lumpur</p> <p>⑩ 25 – 27 August 2014 BioJohor – Johor Bahru</p> <p>⑪ 8 – 9 September 2014 BTP BioCentral Workshop – Melaka</p> <p>⑫ 20 October 2014 BTP BioCentral Lab – Kuala Lumpur</p> <p>⑬ 19 – 20 November 2014 BioMalaysia 2014 – Kuala Lumpur</p>
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KEY EVENTS

INTERNATIONAL

<p>① 20 – 22 May 2014 EU Bioeconomy Observatory and Malaysia-EU Partnership and Collaboration – Brussels, Belgium</p> <p>② 23 – 26 June 2014 BIO San Diego 2014 – San Diego, United States</p> <p>③ 24 September 2014 Bioeconomy International Advisory Panel (BioIAP) meeting – New York, United States</p>	<p>④ 8 – 9 October 2014 3rd Bioeconomy Stakeholders' Conference (TOBE 2014) – Turin, Italy 2nd Bioeconomy Observatory Stakeholder Roundtable – Turin, Italy</p> <p>⑤ 28 – 30 October 2014 10th World Islamic Economic Forum (WIEF) – Dubai, UAE</p> <p>⑥ 1 – 6 November 2014 BMEL Conference – Berlin, Germany Participated in Bioeconomy presentation themed, "The Bioeconomy – Alternative to Fossil-Based Economy"</p>
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MOVING FORWARD**Strengthening the Entire Bioeconomy Value Chain through BCDP**

In order to strengthen the value chain, from supply to market, it is crucial to develop the upstream Bioeconomy. This segment will be supported by downstream growth areas for the future advancement in bio-based industries. Extensive engagement with stakeholders will also help boost the industry parallel with global and local Bioeconomy trends and opportunities to identify higher value markets and sectors.

Development of Bioeconomy Contribution Index (BCI)

BiotechCorp is developing the Bioeconomy Contribution Index (BCI) which is expected to be completed in 2016. The BCI will measure a yearly adjusted baseline against actual achievements as a tool to aid policymakers in implementing more effective policies and strategies moving forward. BiotechCorp envisions the BCI to provide a reference point for key Bioeconomy stakeholders, allowing for a co-operative approach in determining the next step in developing bio-based industries.

Focusing on New Emerging Sectors

Sectors such as bio-cosmeceuticals, wellness and pharma nutrition have been identified as emerging niche areas which can strengthen the growth and development of the local biotechnology ecosystem. These sectors show compelling growth potential to maximise Malaysia's rich biodiversity and could turn the country into a leading player in the global wellness industry.

Bio-based chemicals represent another promising sector as it continues to mitigate volatility in the palm oil industry by diversifying upstream portfolios. Malaysia has also received interest from BioMedical players to further develop cellular therapy and stem cells in the country. These new sectors are expected to contribute significantly to the Malaysian economy.

Increasing International Bioeconomy Collaborations

In line with the National Biotechnology Policy (NBP) and moving forward to Phase 3 of the BTP, Going Global, international collaborations will be established to bridge the Bioeconomy network globally to intensify the commercial opportunities of Malaysia's bio-based industries in foreign markets. These collaborations will also strengthen government-to-government understanding and implementation of best practices for the Bioeconomy.

BUSINESS DEVELOPMENT & INVESTMENT (AGBIOTECH)



Global demand for agriculture produce is expanding rapidly with the increasing global population and shrinking availability of arable land. The Food and Agriculture Organisation (FAO) estimates that to feed a global population of 9.3 billion people by 2050, food production will need to increase by 70%. This intensifies the need for biotech tools in every aspect of agriculture to maximise yield as well as to optimise value-added downstream food and feed processing. Research and development into agricultural technologies is also increasingly focused on more than just food security issues and producing food efficiently. It also assesses how food can be produced in a safe and sustainable manner. Due to these considerations, BiotechCorp places a significant emphasis on the Agbiotech Sector and through the AgBiotech Division, has supported BioNexus status companies in the following four focus areas through numerous initiatives.

FOCUS AREAS



- This focus area includes product development using biotechnology processes such as extraction technologies and standardisation as well as the validation of these extracts, which can be applied in the health and wellness industry that encompasses the nutraceuticals, cosmeceuticals, food ingredients, functional food and dietary supplements industries. These natural products are derived from herbs, agricultural resources, flora, fauna and the microbial biodiversity of a country.
- As consumers are becoming more concerned about the ingredients in personal care products due to numerous product safety scares, we believe that there will be an increasing demand for halal and organic based cosmeceuticals. According to Transparency Market Research, global demand for organic personal care products will reach USD13.2 billion by 2018, growing at a CAGR of 9.6% annually. Malaysia's herbal industry is estimated to grow at 15% per annum, and is projected to have an estimated market value of RM15 billion by 2015.

- This focus area can be divided into several key sub-sectors, namely the production and development of planting materials and propagation techniques that include validated hybrid seeds and tissue culture methods respectively. Mushroom cultivation both for food and medicinal applications has also been actively supported within this sector. Good quality planting materials will ensure maximum agricultural yield and economic returns on investment. Bio-based plant improvement and protection products, which include bio-fertilisers, bio-pesticides and/or bio-controls as well as soil enhancers also play a crucial role in ensuring the production of safe and sustainable agricultural produce. These reduce our reliance on harmful agro-chemicals, thus directly influencing food safety and environmental sustainability. Several BioNexus status companies specialising in this area have been successful in expanding their market share, both locally and globally.



- This focus area includes the breeding of ruminants such as goats and cattle for meat and milk utilising biotechnology tools, e.g. artificial insemination, embryo transfer and embryo sexing. Livestock biotechnology also includes the research, development and commercialisation of livestock related health products, feed and feed additives, as well as animal waste management and remediation systems.
- BiotechCorp also supports industries in the feed additives sector that use fermentation processes for better bioavailability as well as the production and application of pre- and probiotics for better animal health and production. Malaysia is the third largest producer of poultry meat in the Asia Pacific region. However, although the country is self-sufficient in poultry, pork and eggs, about 80% of the country's beef is imported. Nonetheless, Malaysia has developed capabilities to produce dairy products such as milk powder, sweetened condensed milk, pasteurised or sterilised liquid milk, ice cream, yoghurt and other fermented milk.

- This area encompasses the breeding of both marine and freshwater species for better quality seed (fry and fingerling) production to meet the demands of the country's expanding grow-out industry. It also emphasises and supports integrated aquaculture projects encompassing the whole value chain, from hatchery to nursery through to grow-out either in sea cages or ponds, including the use of Advanced Recirculation Aquaculture Systems to ensure traceability and quality.



2014 HIGHLIGHTS

In 2014, 14 companies specialising in AgBiotech's four focus areas were awarded BioNexus status. These comprised four companies in the Natural Products Biotechnology sector, five in the Crop Biotechnology sector, one in the Livestock Biotechnology sector and four in the Aquaculture Biotechnology sector. The projects undertaken by the companies are illustrated below:

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
1	Brazilia Propolis Sdn Bhd	DDI with 30% Taiwanese shareholding	RM2,250,000	With technology from Taiwan, produces propolis extracts (as a natural product) for both cosmeceutical and nutraceutical applications	The company gained BioNexus status by utilising biotechnology processes to extract and standardise its propolis extracts for commercialisation
2.	Cambridge Herbal Sdn Bhd	DDI	RM1,761,000	Produces natural products based on plant extracts for both cosmeceutical and nutraceutical applications	The company gained BioNexus status by utilising biotechnology processes to formulate and commercialise its cosmeceutical products based on natural standardised extracts
3.	Kayu Gaharu (M) Sdn Bhd	DDI	RM124,688,700	Agarwood company that produces standardised high value Gaharu oil for the fragrance industry	The company was awarded the BioNexus status for utilising biotechnology processes to extract and standardise its Gaharu oil for the perfumery industry
4.	Ganofarm R&D Sdn Bhd	DDI	RM13,000,000	Production and commercialisation of standardised extracts of mushroom ingredients	This well-known mushroom cultivation company has commercialised the extraction of active ingredients (with medicinal properties) from mushrooms thus enabling it to be awarded the BioNexus status
5.	AGR Smart Biotech Sdn Bhd	DDI	RM1,165,500	Produces quality planting material through tissue culture	AGR Smart Biotech has successfully commercialised the production of ginger and banana planting materials through tissue culture and was awarded the BioNexus status
6.	Heleogenics Sdn Bhd	DDI	RM1,000,000	Provides plant trait discovery and metabolomics services	Heleogenics was awarded the BioNexus status for its services in identifying traits with high commercial value for breeding purposes via trait identification and metabolomics technology

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
7.	Agrovery Sdn Bhd	DDI	RM6,868,164	Known for its famous "ROMPINE" pineapples this company produces high quality planting materials through tissue culture techniques	This company was awarded the BioNexus status for commercialising the production of high quality MD2 pineapples planting materials using tissue culture techniques (liquid immersion bioreactor technology)
8.	Bio Delta Sdn Bhd	48% China	RM45,000,000	A Malaysia-China joint venture company involved in the research, development and production of high quality Dendrobium officinale, a wild orchid known for its medicinal properties	Bio Delta gained BioNexus status for its successful commercialisation of the cultivation of wild orchids (with known medicinal properties) using tissue culture techniques
9.	Hope Biotech Sdn Bhd	DDI	RM11,266,400	Planting, harvesting and processing of agarwood for the fragrance industry as well as other high value downstream products. Developed its own natural microbial-based inoculant with support from its technical partners in China	This Sarawak-based company was awarded the BioNexus status for successfully commercialising the production of inoculants as well as the cultivation of Gaharu trees and promoting a sustainable agarwood industry
10.	Putra-al Mawashi Genetics Sdn Bhd (PalmGen)	DDI	RM3,250,000	A nucleus cattle breeding company utilising artificial reproductive tools in its breeding programmes	PalmGen was awarded the BioNexus status for successfully demonstrating the ability to provide its services in Artificial Reproduction Techniques to the local cattle industry through the NKEA programme
11.	Hong Len Aquatic Sdn Bhd	DDI	RM6,000,000	First in Malaysia to commercially breed the Jade Perch successfully	Hong Len gained the BioNexus status for successfully breeding, using biotechnology tools, the Australian native Jade Perch as a potential high value fish species

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
12.	Gertak Sanggol Hatchery Sdn Bhd	DDI	RM30,000,000	Successful technofund recipient involved in the breeding and production of Specific Pathogen Free (SPF) shrimp post larvae for the shrimp aquaculture industry	This company has positioned itself to be a major producer and supplier of shrimp post larvae and a broodstock centre for which it was awarded the BioNexus status
13.	Peak Science Aquaculture Sdn Bhd	DDI	RM30,500,000	Successfully commercialised the sustainable indoor production of Artemia	Peak Science has demonstrated the ability to cultivate Artemia in-house using biotechnology processes thus paving the way for Malaysian produced Artemia for the aquaculture industry
14.	Wibawa Biotech Sdn Bhd	DDI	RM32,000,000	Successfully expanded its business from a tilapia hatchery to one producing shrimps utilising in-house produced probiotics to ensure the success of the harvest	Wibawa Biotech has successfully commercialised the production of shrimps using biotechnology elements for clean and safe production methods as well as the development of a SPF hatchery (in progress)

Summary of Investment

No	Investment Related Initiatives	RM	Details of Outcome
1	Approved Investment	308,749,264	From 14 companies awarded the BioNexus status in 2014
2	Realised Investment	211,804,437	Realised from a total of 125 AgBiotech BioNexus status companies that have continued to invest in 2014
3	Job Creation Across AgBiotech Division	N/A	From the 14 companies awarded the BioNexus status in 2014, 723 employment opportunities were created

MOVING FORWARD

From 2015 onwards, the AgBiotech division will continue to centre its efforts on its four focus areas, with a view of expanding into new sub-sectors within those areas. To further drive Agricultural Biotechnology forward, six overall key strategies will be adopted:

1. Intensify investments through strategic business planning.
2. Increase BiotechCorp's direct involvement in community development projects.
3. Increase the visibility of BiotechCorp locally and globally.
4. Actively facilitate investment realisation.
5. Bolster sustainability and continued growth of the ecosystem.
6. Promote global linkages to facilitate companies going global.

Furthermore, the following strategies have been identified for each of the focus areas moving forward:

Natural Products Biotechnology

Companies must be encouraged to be proactive in enhancing their products to comply with International Health Standards and develop a competitive edge over global players. The following initiatives are expected to assist companies in

venturing beyond Malaysian shores and expand further into the global market to boost the development of Malaysian natural products and increase global market penetration:

- Encourage local scientists to work together with companies to produce commercially ready and viable products with scientifically proven benefits.
- Initiate contract farming programmes that link industry players directly with farmers, ensuring companies have a steady and secure source of quality materials.
- Encourage and help more companies to participate in Entry Point Project 1 (EPP1) and Economic Transformation Programme (ETP) initiatives, supporting companies in developing their existing product lines by encouraging and funding pre-clinical and clinical trials.
- Work closely with the Ministry of Health to assist companies in complying with registration requirements, which will enable companies to register their products as nutraceuticals.
- Develop strategic and smart partnerships / collaborations as well as network with capable and local international players to develop botanical drugs.
- Nurture more natural products-based companies towards obtaining BioNexus status.

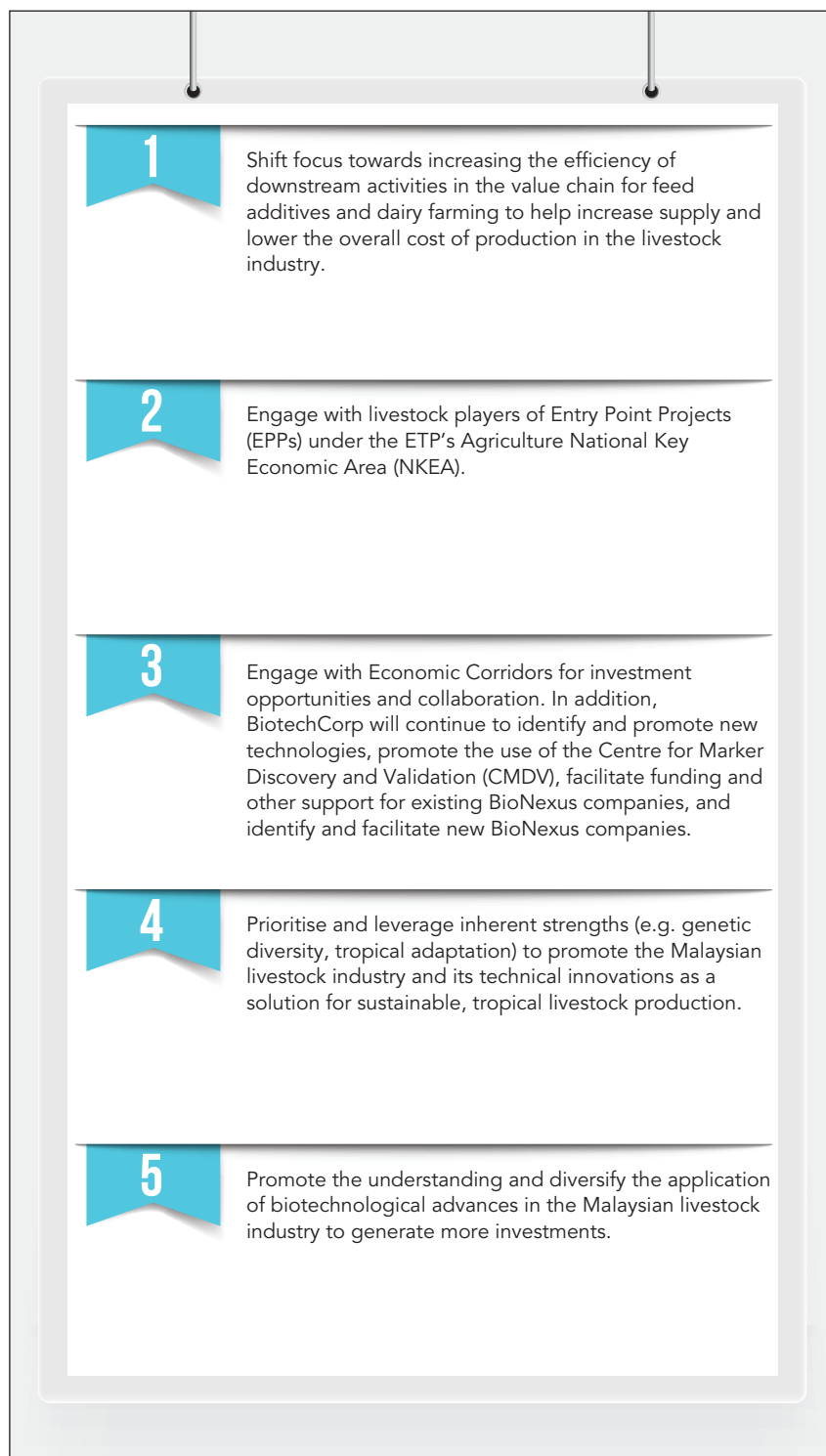
Crop Biotechnology

With the growing scarcity of agricultural land, it is necessary to improve farming yield without increasing input cost by using biotechnology tools. Marker Assisted Selection (MAS), hybridisation, mutation breeding, genetic engineering, micro propagation and bio-fertilisers are some such tools being employed. The demand for biotechnology products and services is expected to grow steadily in tandem with the growth of the agriculture industry, locally, regionally and globally. In view of this, the following initiatives will be undertaken for the Crop Biotechnology sub-sector going forward:

- Empower local farmers with biotechnology to help them maximise their return on investment.
- Enhance Malaysia's competitiveness globally through technology-based agricultural practices.
- Support the Government's initiative to promote the use of biotechnology to enhance the delivery system in farming practices.

Livestock Biotechnology

While the global population has illustrated continued and growing demand for livestock products, measures must be taken to move the livestock industry higher up the value chain, in view of existing constraints on livestock farming. Moving forward, the following initiatives will be undertaken to catalyse the Livestock Biotechnology sub-sector:



Aquaculture Biotechnology

In line with efforts to improve biosafety and food security in aquaculture, efforts will be made to promote sustainable aquaculture using biotech tools through community-based aquaculture projects. This will be executed with the support of the Department of Fisheries Malaysia (DoF), and is also in line with the National Food Policy and the Bioeconomy Agenda.

This will allow participation in downstream activities by even smallholders, leading to improved productivity, economic returns and quality of life for these communities, in tandem with the Government's emphasis on eradicating poverty.

BiotechCorp will also work with the DoF to identify and assist in securing aquaculture land or sea-space for existing and new companies, as well as to introduce new aquaculture technologies not only for the cultivation of fish, but also for the production of feed and feed additives, immune-stimulants and vaccines.

BUSINESS DEVELOPMENT & INVESTMENT (BIOINDUSTRIAL)



The BioIndustrial division encompasses key developers that promote and create strategies to spur the growth of the Industrial Biotechnology sector. Malaysia's palm oil plantations and petrochemical refineries provide many options for sustainable feedstock and thus present opportunities which can be leveraged to drive the growth of this sector.

The BioIndustrial division also continuously strives to integrate Malaysia's feedstock resources with advanced bio-based technology and available incentives to attract Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI) from BioIndustrial players. This includes joint promotional efforts undertaken with other established Biotechnology clusters such as the Malaysian Investment Development Authority (MIDA), East Coast Economic Region Development Council (ECERDC), Northern Corridor Implementation Authority (NCIA), Palm Oil Industrial Cluster (POIC), and other relevant Government agencies.

FOCUS AREAS

BIOINDUSTRIAL DIVISION'S SIX FOCUS AREAS

1

BIOCHEMICAL

- Biochemicals are derived from platform or intermediate chemicals produced from bio-based feedstocks either by fermentation, chemical or enzymatic conversion to become fine, specialty and bulk chemicals. Such bio-chemicals are either emerging chemicals (e.g. polylactide [PLA] and PHA) or drop-in replacements for existing chemicals synthesised from fossil fuel-based products which can reduce reliance on non-renewable resources. Palm oil, agriculture (biomass), domestic and industrial waste are some of the available feedstocks in Malaysia that can be converted into biochemicals.

2

BIOFUEL

- Biofuels are a renewable energy derived from bio-based feedstock such as plants from agriculture waste (biomass), food, domestic or industrial waste. Biodiesel and bioethanol are the two commonly produced biofuels in the world and can be blended with petrol or biodiesel in vehicles as a substitute to increase the octane level and reduce carbon monoxide emissions. This promotes less greenhouse gas emissions, cleaner burning and renewable substitutes for petroleum.

3

BIOMATERIAL

- Biomaterials in the context of BioIndustrial is a general term for biopolymers (bioplastics), bioadhesives, biofibres and biocomposites. These can be produced from cellulose, starch or sugar derived from bio-based feedstock. The most commercially available biopolymer is PLA, which is used mainly for food and product packaging, fabrics and plastic component fabrication. Biomaterials are often biodegradable, which can help to reduce greenhouse gases and toxic pollutants from products made from fossil fuels as well as reduce waste streams to landfills or to incinerators.

4

ADVANCED BIOGAS

- Advanced biogas refers to gases produced from the breakdown of organic matter or raw material such as agriculture waste, municipal waste, animal or even food waste. It is a renewable energy source produced by anaerobic digestion (AD). Biogases are primarily methane gas, hydrogen or carbon monoxide which can be used as energy to fuel transportation, gas for cooking or in gas engines to convert energy to electricity.

5

BIOTRANSFORMATION

- Biotransformation is a process of performing large-scale biosynthesis of drugs, materials, fuels or chemicals. Through this process, bio-based feedstock such as agricultural products (vegetable oils, biomass), organic waste (food waste, municipal waste, effluents) and flue gas can be transformed into bio-based products used in sectors as diverse as bulk and fine chemicals, food and feed, textiles and materials and fuels and energy.

6

BIOREMEDIATION

- Bioremediation is a process of waste management that involves using microorganisms to process or remove pollutants from contaminated sites, such as waste or sludge from sewerage, agriculture, food and domestic waste. The advantages of bioremediation are that it is typically less expensive and can be employed in areas without excavation. Examples where bioremediation can be applied in Malaysia are palm oil mill effluent (POME), municipal waste water treatment and COD (Chemical Oxygen Demand) and BOD (Biochemical Oxygen Demand) treatment of an industrial park.

2014 HIGHLIGHTS

During the year, five projects were implemented with a total investment of RM3.16 billion. The projects comprised:

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
1	Global Goldenway Biotech Sdn Bhd (GGB)	FDI	720,819,000	Commercialisation of a biological humid acid compound fertiliser made from palm oil biomass by utilising microbial-based fermentation technology	GGB is a joint venture with local palm oil mills whereby a commercial plant was set up in Malaysia to convert palm oil biomass to produce a biological humid acid compound fertiliser
2	PGEO Biotech Sdn Bhd	DDI	47,383,000	Commercialisation of specialty fats and their related by-products by utilising a biotechnological process	The company gained BioNexus status by utilising a biotechnological process in its production of specialty fats from palm oil derivatives
3	J-Bio Microbes Industries Sdn Bhd	DDI	5,000,000	Commercialisation of effective microorganisms for various applications, which include agriculture, bioremediation and household applications	The company gained BioNexus status by establishing the first Malaysian bio-processor of local microbial cultures for the agriculture, environmental and household industries
4	Genting Plantations Berhad & Elevance Renewable Sciences	DDI	2,286,000,000	Metathesis bio-refinery of biomass and renewable oils, including palm oil derivatives to produce bio-based lubricants, surfactants and detergents	Transfer of frontier technology to set up a 240,000 tonne bio-refinery plant to produce bio-based products, the first of its kind in Malaysia
5	Sime Darby & Verdezyne Inc	FDI	96,000,000	Production of Dodecanedioic Acid (DDDA) from palm oil products	Sime Darby acquired a significant stake in Verdezyne to bring in cutting-edge technology to Malaysia which was used in a manufacturing hub set up to produce DDDA for the bio-based industry

Summary of Investment

No	Investment Related Initiatives	RM	Details of Outcome
1	Approved Investment <ul style="list-style-type: none"> • FDI • DDI 	<ul style="list-style-type: none"> • 816,819,000 • 2,338,383,000 	<ul style="list-style-type: none"> • From 2 Projects • From 3 Projects
2	Realised Investment <ul style="list-style-type: none"> • FDI • DDI 	<ul style="list-style-type: none"> • 491,713,419 • 373,098,178 	<ul style="list-style-type: none"> • From 2 Projects • From 3 Projects
3	Job Creation Across BioIndustrial Division	N/A	599 employment opportunities were created

MOVING FORWARD

To further drive BioIndustrial development forward, the following key strategies will be adopted:

- Position Malaysia as the regional hub for BioIndustrials:** Through joint promotional efforts with MIDA, ECERDC, NCIA, POIC and other agencies, initiatives will leverage the country's tropical biomass, petrochemical-related industries and BioIndustrial Clusters.
- Accelerate the growth of BioIndustrials:** This will be achieved by creating more high impact projects to attract more FDI and encourage strategic acquisitions of technology by local companies. Economic Corridors will also be leveraged to inject value to BioIndustrial projects by accessing customised incentives as well as assistance with the securing of sites and feedstock from relevant industries.
- Nurture local BioIndustrial players:** Companies will be assisted to expand their revenue stream and explore new business opportunities through participation in international trade shows and conferences, trade missions and through strategic business matchmaking.

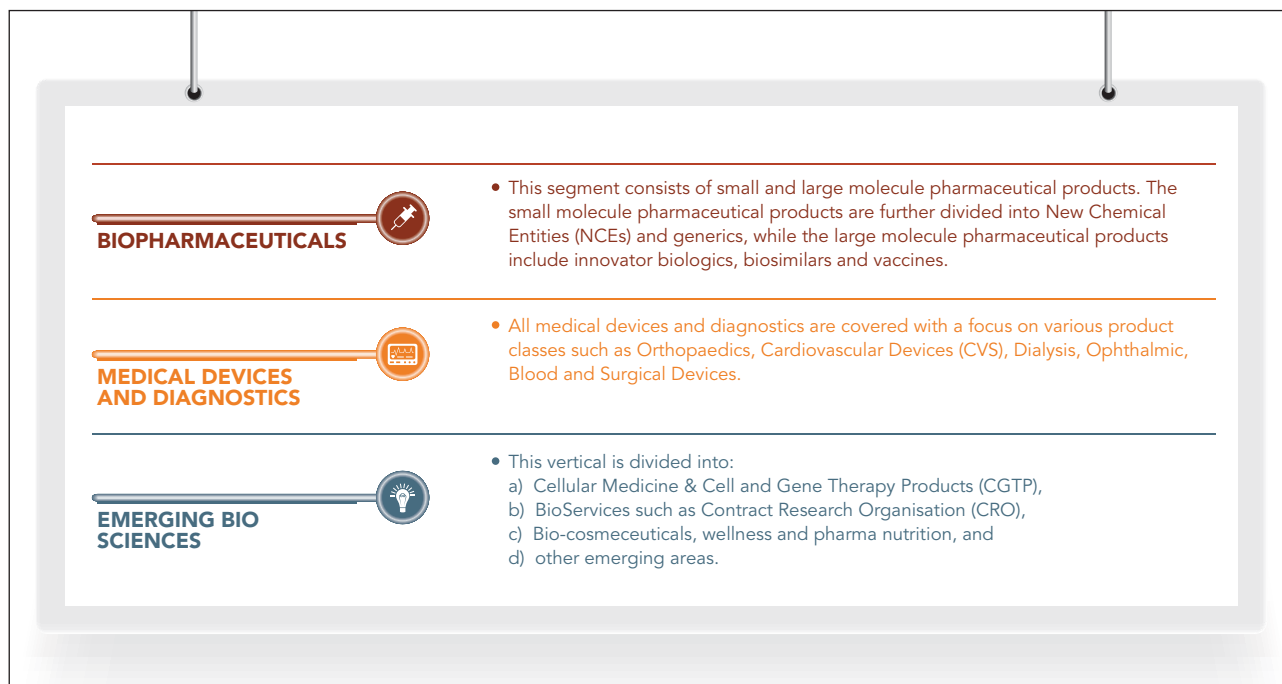
BUSINESS
DEVELOPMENT
& INVESTMENT
(BIOMEDICAL)



The BioMedical division champions the development of the BioMedical industry in Malaysia by securing strategic investments in target sectors as well as by creating a conducive environment for these target sectors to thrive in. In 2014, initiatives were focused on seeking out and securing foreign investments, nurturing and growing local BioMedical companies, and creating new employment. Efforts were also taken to ensure a conducive business environment for BioMedical companies by addressing regulatory hurdles and creating market demand, as well as by assisting with business matchmaking activities.

FOCUS AREAS

BIOINDUSTRIAL DIVISION'S THREE KEY VERTICALS



2014 HIGHLIGHTS

As at the end of 2014, 10 BioMedical companies had been awarded BioNexus status and other incentives, and were undertaking projects worth RM1.8 billion.

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
1	Abbott Medical Optics	FDI (US)	RM492,000,000	A greenfield facility for the production of intraocular lenses (IOLs)	The facility marks the first manufacturing investment in Malaysia for Abbott, a leading international healthcare company. The IOLs to be produced in the facility will be supplied to the global IOLs market for usage in the treatment of cataracts and myopia. The facility, which is being built in Kedah, is expected to employ 711 workers by 2020.

BUSINESS DEVELOPMENT & INVESTMENT (BIOMEDICAL) (CONTINUED)

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
2	Fresenius Medical Care Production Sdn Bhd (FMC)	FDI (Germany)	RM181,100,000	A medical devices manufacturing facility to produce haemodialysis concentrates as well as peritoneal dialysis, hemofiltration and automated dialysis solutions	The facility will cater to the Malaysian market and potentially, other Southeast Asian markets to add to the 270,000 patients FMC provides dialysis treatments to around the globe.
3	Natural Wellness Pharmaceuticals Sdn Bhd	DDI	RM151,500,000	To establish a formulation, fill and finish facility for the development of halal meningococcal vaccines and halal biopharmaceuticals	Natural Wellness Pharmaceuticals will leverage its BioNexus status and work with an established foreign partner to develop a platform for its halal meningococcal vaccines and halal biopharmaceuticals programme.
4	Genome Solutions Sdn Bhd	DDI	RM2,250,000	Provision of genomic services and bioinformatics solutions	Genome Solutions was granted the BioNexus status for its core business of providing genomic services and bioinformatics solutions to scientists from both academia and industry. Genome Solutions offers a wide range of genomic research services, and is also actively involved in R&D to keep abreast of new developments and trends in this fast-growing market.
5	Genting TauRx Diagnostic Centre Sdn Bhd (GTDC)	DDI	RM313,000,000	Commercialisation and development of the value chain for Alzheimer's disease therapy, from diagnostics to care delivery	A joint venture between Genting Berhad and TauRX Pharmaceuticals Ltd, GTDC aims to develop tools and systems to diagnose and detect Alzheimer's disease and frontotemporal dementia.
6	Enaltec Labs (Malaysia) Sdn Bhd	FDI (UAE)	RM60,910,000	To establish an R&D centre and subsequently, a manufacturing facility specialising in the development and manufacturing of Active Pharmaceutical Ingredients (API) for generic oncology related small molecule pharmaceuticals	This project promotes investments in high-tech industries, especially in the pharmaceuticals field and serves to complete the value chain of the ecosystem, helping to reduce import dependency. Many local vendors and suppliers of raw materials, equipment and packaging materials will stand to benefit from this project.

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
7	Tenaga Jati Bumi (TJB) Sdn Bhd	DDI	RM9,000,000	Commercialisation of Belalai Gajah (Sabah Snake Grass) as an adjuvant treatment for breast cancer	The company was listed as an Anchor Company under EPP1 – High Value Herbs of the ETP's Agriculture NKEA. It is currently conducting pre-clinicals for standardisation. It has received a grant from the Ministry of Agriculture to upgrade products through pre-clinical studies. To date, the company is on track with its committed milestones.
8	Xepa-Soul Pattinson (Malaysia) Sdn Bhd	DDI	RM80,000,000	To manufacture high-quality off-patent pharmaceuticals for domestic and export markets	Xepa represents the manufacturing division of Apex Healthcare Berhad, a Malaysian public listed company which also operates in Singapore, Vietnam and Myanmar. Xepa produces high-quality off-patent pharmaceuticals for domestic and export markets. In 2014, it expanded its manufacturing line to cater to growing global demand.
9	Getz Pharma Sdn Bhd	FDI (Pakistan)	RM313,500,000	Focusing on R&D, manufacturing, export and domestic sales of lyophilized and liquid injectable oncology related products, oral solid oncology related products and general oral solid pharmaceutical products	Getz Pharma intends to conduct R&D on and manufacture lyophilized and liquid injectable oncology related products, oral solid oncology related products and general oral solid pharmaceutical products in the areas of cardiovascular, diabetes, gastrointestinal, hepatology, neurological, anti-infectives, pulmonology, rheumatology, urology and nephrology.

BUSINESS DEVELOPMENT & INVESTMENT (BIOMEDICAL) (CONTINUED)

No	Company	Origin (FDI/DDI)	Investment	Activity	Outcome
10	Caya Primer Sains Sdn Bhd (CPS)	DDI	RM5,500,000	To develop molecular diagnostic products and provide lab/ diagnostic services	CPS was awarded the BioNexus status in 2014 and intends to embark on the production and commercialisation of specifically designed primers and the provision of molecular laboratory services for disease detection in animal and plants using molecular biology technology. CPS also aims to develop and commercialise its own molecular diagnostic kit through in-house R&D in collaboration with local universities and research institutes as well as technology acquisition from potential technology partners. The primers developed by the company will then be incorporated and packaged together with molecular diagnostic detection kits for end-users.

Summary of Investment

No	Investment Related Initiatives	RM'(Million)	Details of Outcome
1	Approved Investment <ul style="list-style-type: none"> • FDI • DDI 	1,798.9 (Total) <ul style="list-style-type: none"> • 1,237.6 • 552.3 	A total of 11 projects secured approved investments in 2014, comprising: <ul style="list-style-type: none"> • 5 FDI projects including investments by Abbott Medical Optics (AMO) from the US, Fresenius Medical Care Production Sdn Bhd (FMC) from Germany, Stelis Biopharma (Malaysia) Sdn Bhd from India, Getz Pharma Sdn Bhd from Pakistan and Enaltec Labs (Malaysia) Sdn Bhd from the United Arab Emirates • 6 DDI projects including investments by Natural Wellness Pharmaceuticals Sdn Bhd, Genome Solutions Sdn Bhd, Genting TauRx Diagnostic Centre Sdn Bhd (GTDC), Tenaga Jati Bumi (TJB) Sdn Bhd, Xepa-Soul Pattinson (Malaysia) Sdn Bhd and Caya Primer Sains Sdn Bhd

No	Investment Related Initiatives	RM'(Million)	Details of Outcome
2	Realised Investment <ul style="list-style-type: none"> • FDI • DDI 	268.1 (Total) <ul style="list-style-type: none"> • 217.3 • 50.8 	Realised Investment in 2014 consisted of 21 projects: <ul style="list-style-type: none"> • 3 FDI non-BioNexus related projects including investments by Fresenius Medical Care Production Sdn Bhd from Germany, Stelis Biopharma (Malaysia) Sdn Bhd from India and Biocon from India • 18 DDI projects consisting of investments from BioNexus status companies
3	Job Creation Across AgBiotech/ BioIndustrial/BioMedical Divisions	N/A	1,782 employment opportunities were created

MOVING FORWARD

The strategy moving forward for the BioMedical segment is to achieve the targets of the NBP and 11MP. Efforts will also be taken to realise investments through project implementation, conducting communication outreach to increase the visibility of BiotechCorp's activities in this area, undertaking more advocacy development, establishing BioMedical hubs and completing the BioMedical ecosystem. In order to achieve both the NBP and 11MP's objectives, more DDI will need to be structured to ensure that local capabilities are leveraged. Societal impact projects for the B40 Income Group and the rural population will also be emphasised.

BIONEXUS DEVELOPMENT



The BioNexus Development Division is focused on promoting the BioNexus status and its benefits to bio-based companies and entrepreneurs as well as nurturing the further growth of existing BioNexus status companies through funding and business advisory services. These efforts are undertaken through three main platforms, namely Engagement, BioShoppe and Evaluation.

BIONEXUS ENGAGEMENT

The BioNexus Engagement Unit (BE Unit) provides facilitation and engagement services to BioNexus status companies to enhance their access to market.

2014 HIGHLIGHTS

Participation in Local and International Exhibitions and Events

In BiotechCorp's efforts to further expand the reach of BioNexus status companies, the BE Unit continued to participate in international events in 2014. As a result, BioNexus status companies which participated in these trade shows saw potential deal values amounting to USD24.5 million.

In addition to international exhibitions, BioNexus status companies participated in five local events as part of a continuous effort to further extend their reach within the country. During the year, these events included:

Local	International
<ul style="list-style-type: none"> • MIHAS, held on 9 – 12 April 2014 at KL Convention Centre, Kuala Lumpur. • BioJohor Biotechnology Conference & Exhibition, from 25 – 27 August 2014 at Persada Johor Convention Centre, Johor Bahru, Johor. • International Greentech & Eco Products Exhibition & Conference Malaysia (IGEM2014), from 16 – 19 October 2014 at KL Convention Centre, Kuala Lumpur. • National Innovation Conference & Exhibition (NICE) from 30 October – 2 November 2014 at Putra World Trade Centre (PWTC), Kuala Lumpur. • International Trade Malaysia (INTRADE), from 4 – 7 November 2014 at Menara MATRADE, Kuala Lumpur. 	<ul style="list-style-type: none"> • Science and Technology delegation to Myanmar led by the Ministry of Science, Technology and Innovation (MOSTI) from 14 – 17 January 2014 at Nay Pyi Taw, Myanmar. • Vitafood Europe, from 6 – 8 May 2014 at Palexpo, Geneva, Switzerland. • The 11th China-ASEAN Expo from 16 – 19 August 2014 at Nanning International Convention & Exhibition Center, Guangxi Exhibition Hall, South China City, Nanning, China. • Vietnam Medi-Pharm Expo 2014 from 21 – 23 August 2014 at Tan Binh Exhibition and Convention Center, Ho Chi Minh City, Vietnam. • Vitafood Asia, from 3 – 4 September 2014 at Asia World-Expo, Hong Kong. • Medical Fair Thailand, from 12 – 14 September 2014 at Queen Sirikit National Convention Center, Bangkok, Thailand.

Facilitation of Product Launches and Showcases

In collaboration with MOSTI, the BE Unit also facilitated a number of BioNexus product launches and showcases, including the following:

- **L a u n c h o f M O S T I** Commercialisation Year 2014 on 23 January 2014 at SIRIM Berhad, Shah Alam: 4 BioNexus status companies showcased their latest products at the event.
- MOSTI's R&D product launching ceremony at Melaka International Trade Centre (MITC) from 2 – 6 April 2014: 6 new products by 6 BioNexus status companies were launched at this event.
- MOSTI Commercialisation Conference & Exhibition (MCCE), from 13 – 15 August 2014 at Shah

Alam Convention Centre (SACC): 5 BioNexus status companies launched their products during the opening ceremony while another 24 BioNexus status companies showcased their products at the event.

Pitching for Funding

In an effort to support the advancement of BioNexus status companies, the BE Unit facilitated 8 BioNexus status companies in pitching for funds to Platcom Ventures, a subsidiary of Agensi Inovasi Malaysia (AIM), in 2014.

BioNexus Funding Seminar

In a bid to create awareness on the funding options and developmental programmes available to BioNexus

status companies, the BE Unit organised a two-day programme on 25 and 26 of February 2014 and a BioNexus Funding Seminar. Speakers included representatives from the Malaysian Technology Development Corporation (MTDC), SME Corp, Malaysia Debt Ventures (MDV), Malaysian Industrial Development Finance Berhad (MIDF) and Export Import Bank (EXIM).

E-Commerce Workshop

On 11 March 2014, the BE Unit organised an e-commerce workshop for BioNexus status companies to gain better understanding on the various social media platforms and strategies to increase their online presence.

SUPERB

In 2014 BiotechCorp was appointed as an official partner of the SUPERB programme under the Unit Peneraju Agenda Bumiputra (TERAJU). The BE Unit will act as the reference point between TERAJU and BiotechCorp and serve as a panel member in SUPERB auditions and semi-final pitching as well as disburse approved grants to recipients. BiotechCorp will also serve as a member of the SUPERB Monitoring Committee and nurture, mentor, and monitor SUPERB grant recipients in accordance with milestones approved by the Monitoring Committee.

MOVING FORWARD

In an effort to ensure that BioNexus status companies continue to thrive, the BE Unit is committed to increasing market penetration of BioNexus status companies both in Malaysia and in the international market. This will be achieved by intensifying engagement and facilitation with the companies and collaborating with other agencies to develop BioNexus status companies. The BE Unit will also be collaborating with Bank Negara Malaysia, Government funding agencies, local developmental financial institutions (DFI) and other financial institutions to assist BioNexus status companies in applying for funds for commercialisation and business expansion.

BIOSHOPPE

In an effort to enhance market access and commercialisation for BioNexus status companies, BiotechCorp established BioShopper as a platform for these companies to showcase nature-based wellness products, specifically in bio-cosmeceuticals and pharma nutrition. These include health supplements, cosmetics and personal care products, functional food products and aromatherapy products.

FOCUS AREA

The BioShopper is tasked with grooming BioNexus SMEs into global champions and providing assistance in the retailing and branding of their products.

2014 HIGHLIGHTS

Date	Events
9 – 12 April 2014	<p>Malaysia International Halal Showcase 2014 (MIHAS), Kuala Lumpur Convention Centre</p> <p>Marking BioShopper's first event appearance in 2014, the event highlighted halal BioNexus products for both international and local markets</p>
26 – 27 April 2014	<p>Malaysian Global Innovation and Creative Centre (MaGIC), Cyberjaya</p> <p>The BioShopper showcase at MaGIC reflected the entrepreneurship element of the BioShopper programme. This event was held in conjunction with US President Barack Obama's visit to Malaysia</p>
15 May 2014	<p>BioPartnering 2014 (Northern Series), Kulim Golf and Country Resort</p> <p>A collaboration between BiotechCorp and Kedah Bio Resources Corporation Sdn Bhd to open a BioShopper at UTC Alor Setar, Kedah was signed during the event and witnessed by the Chief Minister of Kedah YAB Dato' Seri Hj Mukhriz Tun Dr Mahathir</p>
23 – 26 June 2014	<p>BIO International Conference and Exhibition 2014, San Diego</p> <p>The first appearance for BioShopper at an international event, the conference and exhibition helped to create awareness on Malaysian biotechnology products in the global market. During the event, the BioNexus product logo was launched by YB Datuk Dr Ewon Ebin, the then-Minister of MOSTI</p>

Date	Events
17 July 2014	<p>Opening Ceremony of BioShoppe at Nova, IOI Mall Puchong</p> <p>The first Store-within-a-Store concept of BioShoppe in collaboration with Nova Laboratories Sdn Bhd, a BioNexus status company, was launched by YB Datuk Dr Ewon Ebin, the then-Minister of MOSTI</p>
25 – 27 August 2014	<p>BioJohor 2014, Persada, Johor Bahru</p> <p>Serving as a platform to showcase BioShoppe to the Southern Region, the event was officiated by the Honourable Chief Minister of Johor, YAB Datuk Seri Mohamed Khalid Nordin</p>
31 October – 2 November 2014	<p>National Innovation Conference & Exhibition (NICE) 2014, PWTC</p> <p>The full BioShoppe set-up was showcased during the event, generating interest from stakeholders and the public. Awareness activities were also carried out during the event to promote innovation in local biotechnology products</p>
24 September 2014	<p>Signing Ceremony of Collaboration Proposal, New York</p> <p>BiotechCorp and Perbadanan Nasional Berhad (PNS) signed a collaboration proposal to explore potential business models and forms of support which could extend to the BioShoppe programme</p>
19 – 20 November 2014	<p>BioMalaysia & Bioeconomy Asia Pacific 2014, Universiti Malaya, KL</p> <p>This marked the second appearance of BioShoppe at the BioMalaysia & Bioeconomy Asia Pacific event, which saw the launch of Life Springs Pharmacy by Bioalpha International Sdn Bhd, a BioNexus status company, by the Prime Minister YAB Dato' Seri Mohamad Najib Tun Abdul Razak at the BioShoppe exhibition</p>
20 – 30 November 2014	<p>Malaysia Agriculture, Horticulture & Agrotourism (MAHA) Show 2014, MAEPS Serdang</p> <p>This was BioShoppe's first appearance at MAHA, where Bioshoppe won the "Best Private Sector Exhibition" award. Moreover, sales amounting to RM80,000.00 were achieved during the 8-day event</p>

BioShoppe Collaboration Partners

In its continuous efforts to explore the potential of BioNexus products, BiotechCorp via BioShoppe initiated working collaborations with several Government agencies and relevant ministries, including:

a. Federal Agricultural Marketing Authority (FAMA)

This collaboration saw 20 BioNexus products showcased at the Agro Bazaar Singapore, a FAMA-led initiative aimed at penetrating the Singapore market.

b. Malaysia External Trade Development Corporation (MATRADE)

BioShoppe was invited to display its products at the Malaysia Trade Centre in Hong Kong. Located in the bustling commercial area of Wan Chai, the centre is a focal point for Hong Kong and China buyers.

c. Kedah State Government

During the year, BiotechCorp together with Kedah Bio Resources Corporation Sdn Bhd (KBioCorp) set up a BioShoppe in UTC Alor Setar, targeted at encouraging more entrepreneur involvement in the biotechnology industry. The BioShoppe in Kedah is the first of its kind in the Northern Region.

MOVING FORWARD

BioShoppe plans to act as an incubator for branding and marketing of BioNexus status companies and to facilitate the companies towards becoming more competitive in the wellness market. In collaboration with Perbadanan Nasional Berhad (PNB), BioShoppe will be developed under a franchising scheme to encourage entrepreneurs to participate and invest in establishing a BioShoppe network nationwide.

In an effort to further its reach, collaborations with BioNexus status companies that own other retail outlets or pharmacies to operate the Store-within-a-Store BioShoppe concept have been established. Finally, as part of a continuous drive to promote BioNexus products both locally and internationally, BioShoppe will continue participating in promotional exhibitions and events.

EVALUATION

The BioNexus status is awarded to qualified Malaysian and international companies undertaking value-added biotechnology and life sciences activities. Under the National Biotechnology Policy, the status enables companies to receive fiscal incentives, grants and other guarantees to assist their growth.

In order for a project to be eligible for BioNexus status, it must be within the purview of the National Biotechnology Policy and must fall within three focus areas, namely agricultural biotechnology, healthcare biotechnology, and industrial biotechnology.

FOCUS AREAS

Under the BioNexus Development Division, the Evaluation Department is responsible for evaluating applications for BioNexus status. It also oversees funding assistance and the various income tax exemptions applicable for biotechnology companies. The department consists of three units:



2014 HIGHLIGHTS

BioNexus Evaluation Committee (BEC) Meetings

The BEC Meeting is a platform to review all recommendations and approvals of companies that qualify for BioNexus status and other related matters.

In 2014, the BEC approved 20 companies for BioNexus status while 2 companies – Global Goldenway Bio Tech Sdn Bhd and Cell Therapies Malaysia Sdn Bhd – were recommended to be offered the status. The companies approved for BioNexus status included:

1. Brazilia Propolis Sdn Bhd
2. Cambridge Herbal Sdn Bhd
3. Kayu Gaharu (M) Sdn Bhd
4. AGR Smart Biotech Sdn Bhd
5. Heleogenics Sdn Bhd
6. Putra Al-Mawashi Genetics Sdn Bhd
7. Oriental Plenitude Sdn Bhd
8. Hong Len Aquatic Sdn Bhd
9. Gertak Sanggol Hatchery Sdn Bhd
10. Agrovery Sdn Bhd
11. Bio Delta Sdn Bhd
12. Hope Biotech Sdn Bhd
13. Natural Wellness Pharmaceuticals (M) Sdn Bhd
14. Peak Science Aquaculture Sdn Bhd
15. Ganofarm R&D Sdn Bhd
16. J-Bio Microbe Industries Sdn Bhd
17. Medical Innovation Ventures Sdn Bhd
18. Caya Primer Sains Sdn Bhd
19. Genome Solutions Sdn Bhd
20. Verdezyne Sdn Bhd.

The meetings also saw the approval of 18 variation requests from BioNexus status companies as a continuation of meetings held in 2013. Among them were requests for additional and more expansive qualifying activities, change of company name and acquisition of a company.

Biotechnology Commercialisation Fund

The Biotechnology Commercialisation Fund (BCF) is a funding scheme under the 10th Malaysian Plan that is managed by BiotechCorp as part of the financial incentives offered to BioNexus status companies. It combines term loans and grants with a maximum funding of up to RM3 million for each BioNexus status company. Aimed at facilitating ongoing commercialisation efforts of biotechnology products and services, it also aids in expansion activities of BioNexus status companies.

In 2014, the BCF was disbursed to seven BioNexus status companies, amounting to RM21 million. The companies approved for funding comprised:

1. Medivet Laboratory (M) Sdn Bhd
2. Hovid Research Sdn Bhd
3. Agrovery Sdn Bhd
4. Sciencegates Biotech Sdn Bhd
5. Ligno Biotech Sdn Bhd
6. Fuciphagus Agritech Sdn Bhd
7. Wibawa Biotech Sdn Bhd.

Tax Advisory Services Unit

The Tax Advisory Services Unit processes and evaluates applications for income tax exemptions for BioNexus status companies as well as other relevant tax incentives for the biotechnology industry. The companies granted 100% income tax exemption for a period of 5 or 10 years in 2014 were as follows:

10 Years Tax Exemption		5 Years Tax Exemption
1. Kayu Gaharu (M) Sdn Bhd	11. Bio Delta Sdn Bhd	1. AGR Smart Biotech Sdn Bhd
2. Cambridge Herbal Sdn Bhd	12. Oriental Plenitude Sdn Bhd	
3. Brazilia Propolis Sdn Bhd	13. Peak Science Aquaculture Sdn Bhd	
4. Global Goldenway Bio Tech Sdn Bhd	14. Ganofarm R&D Sdn Bhd	
5. Putra Al-Mawashi Genetics Sdn Bhd	15. J Bio Microbe Sdn Bhd	
6. Heleogenics Sdn Bhd	16. Natural Wellness Pharmaceuticals Sdn Bhd	
7. Hope Biotech Sdn Bhd	17. Cell Therapies Malaysia Sdn Bhd	
8. Hong Len Aquatic Sdn Bhd	18. Caya Primer Sains Sdn Bhd	
9. Gertak Sanggol Hatchery Sdn Bhd	19. Genome Solutions Sdn Bhd	
10. Agrovery Sdn Bhd	20. Medical Innovation Ventures Sdn Bhd	

The Tax team also received and processed 10 applications for the evaluation of import duty exemption, while audit/verification exercises were also conducted as part of monitoring for BioNexus status tax incentives, as outlined below:

Applications received and processed for evaluation of import duty exemption		Audit/verification exercises conducted
1. Bioremeds (M) Sdn Bhd	5. ACGT Sdn Bhd	1. Genting Green Tech Sdn Bhd – Investment Tax Deduction
2. Questra Clinical Research Sdn Bhd	6. DNA Laboratories Sdn Bhd	2. B-Crobes Laboratory Sdn Bhd – Expansion Project
3. Orthomedics Innocations Sdn Bhd	7. JHR Aquaculture Sdn Bhd	3. YSG Biotech Sdn Bhd – Expansion Project
4. ScienceGates Biotech Sdn Bhd	8. Stemlife Berhad	
	9. Nichi-Asia Life Science Sdn Bhd	
	10. Agrovery Sdn Bhd	

The Tax team also successfully organised a Goods and Services Tax (GST) Seminar at Hotel Istana on 27 August 2014 in collaboration with the Royal Malaysian Customs Department. The seminar was presented by Ms Pushpalatha, Senior Assistant Director of Customs and attended by 105 representatives from BioNexus status companies.

Participation in BioNexus Promotional Events

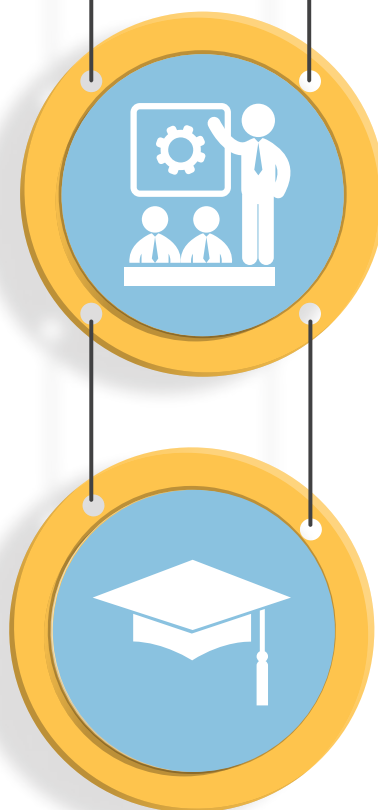
To strengthen the BioNexus brand and to create a heightened awareness of biotechnology and BiotechCorp among the public, the Evaluation Department actively participated in 25 promotional events and exhibitions in 2014. These events included Bioeconomy Transformation Workshops in Johor, Pahang and Melaka, BioBorneo 2014 in Sarawak and BioJohor 2014 in Johor, BioMalaysia, as well as Bioeconomy Asia Pacific 2014. Participation in these events has enabled the team to identify and engage potential buyers, companies and interested applicants for BioNexus status. It has also increased interest in funding facilities available, namely the BCF.

MOVING FORWARD

Moving forward, the Evaluation Department will focus on the following areas:

- Improve the current BioNexus framework to remain relevant within the current business environment;
- Implement the established R&D Incentives for the bio-based industry;
- Establish collaborations for new funding assistance for BioNexus status companies; and
- Intensify promotional activities for BioNexus status.

INDUSTRY DEVELOPMENT

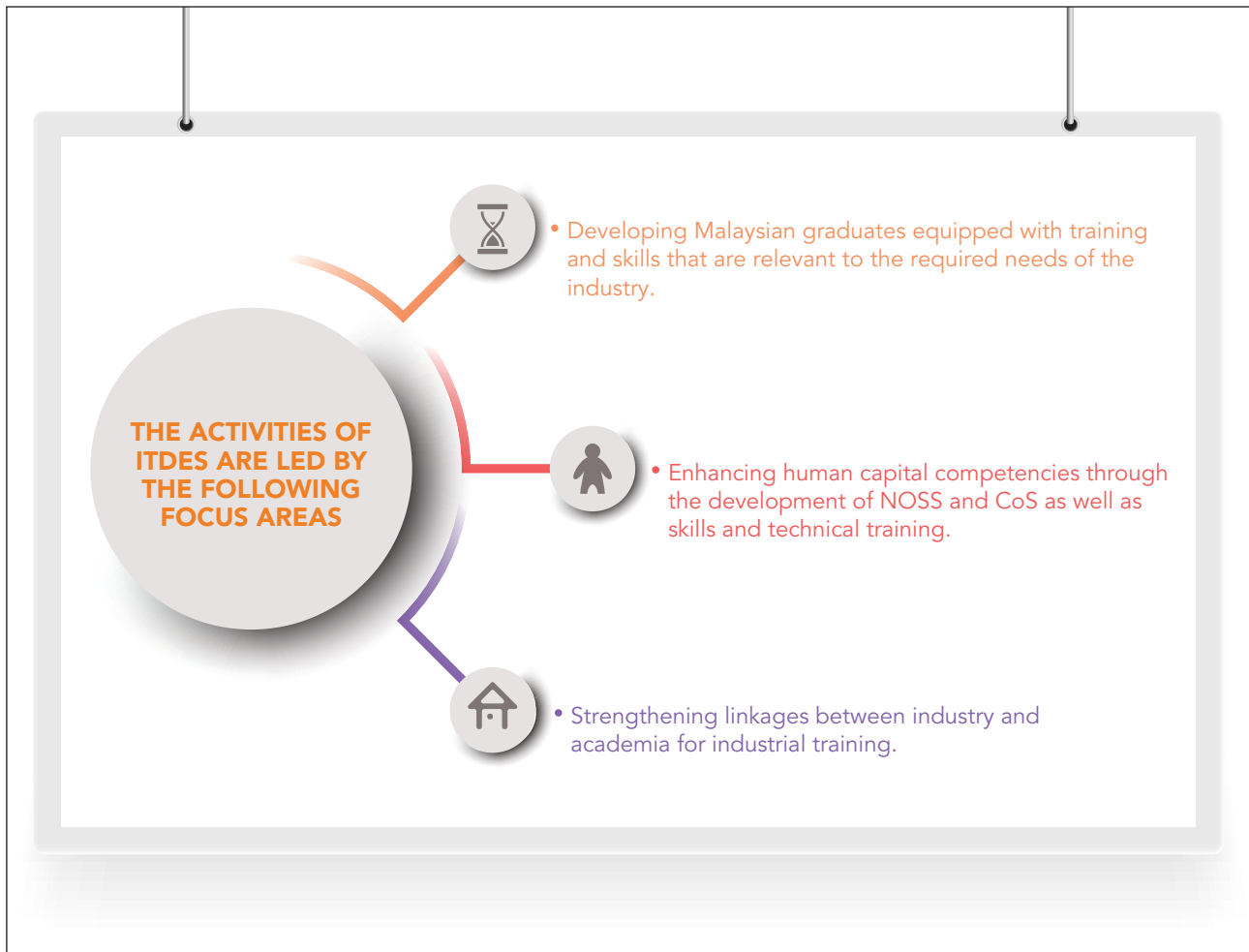


INDUSTRY TALENT DEVELOPMENT AND EDUCATIONAL SERVICES

BiotechCorp's Industry Talent Development and Educational Services (ITDES) Department aims to inspire graduates to pursue careers in biotechnology by providing on-site recruitment, job search, personal development and career coaching programmes. ITDES has also launched an online portal, BioKerjaya, allowing job seekers to submit their resumes and participate in job matching with companies which advertise vacancies on the portal.

The National Biotechnology Policy has also emphasised human capital development as a key thrust essential to the biotechnology ecosystem, which requires more talent with specialised technical competencies. This initiative is in line with the Ministry of Human Resources' (MoHR) fifth Strategic Thrust, which entails the development of skilled and competent human resources.

In support of these initiatives, in 2011 BiotechCorp was appointed by MoHR's Department of Skills Development (DSD) as Industry Lead Body (ILB) for the biotechnology industry. As the ILB, BiotechCorp is tasked with undertaking analysis of the biotechnology job market and developing National Occupational Skills Standards (NOSS) and Courses of Study (CoS). An ILB also acts as a coordinator for providing a standard training curriculum to produce knowledgeable and highly-skilled workers within the industry and develops the strategies to fulfil the needs of skilled workers in the biotechnology sector.

FOCUS AREAS**2014 HIGHLIGHTS****Development of NOSS and CoS**

Over the past few years, BiotechCorp, together with the DSD and industry players, has developed nine NOSS and CoS for the biotechnology industry. Following this, two NOSS were completed in 2014:

- i. BioPolymerisation
- ii. BioAlgae.

Biotechnology Executive Special Training

The Biotechnology Executive Special Training (BeST) programme is a graduate employability programme organised by BiotechCorp, targeted at biotechnology and life sciences graduates. The programme is offered at selected public and private universities in Malaysia, providing training to enhance graduate employability.

In 2014, 292 graduates were trained under the BeST programme.

2014 Key Events

Date	Events
25 – 27 August 2014	<p>BioJohor</p> <p>ITDES organised a Talent Education programme for the participants from primary and secondary schools in Johor</p>
2 – 4 September 2014	<p>BioTalent Summer Camp</p> <p>BiotechCorp in collaboration with TalentCorp organised a 3-day BioTalent Summer Camp which was attended by approximately 40 biotechnology students currently pursuing their studies in the US and the UK at institutions including Oxford University, the University of Cambridge, Rutgers University and the State University of New Jersey, as well as in local universities in Malaysia. Participants were exposed to industry updates and taken on site visits to BioShoppe @ Nova, the Global Halal Support Centre (with support from the Halal Development Corporation), Inkubator Teknologi Makanan (INTEM), Supercritical Fluid Extraction Centre at UPM and Centre for Marker Discovery & Validation at MARDI</p>
26 – 28 September 2014	<p>Karnival Kerjaya dan Keusahawanan Graduan 2014 (K3G)</p> <p>During the event, BiotechCorp provided insights into the biotech industry as well as conducted career coaching and promotion of biotech programmes to biotechnology/life sciences students. BiotechCorp also promoted the BioKerjaya portal as an online resume depository</p>
11 October 2014	<p>Seminar Makanan Halal 2014 (HaFoS 2014)</p> <p>The objective of HaFoS was to provide awareness to students and the public on the importance of the Halal Food Chain and the role of biotechnology in the halal industry, while promoting careers related to biotechnology. The event attracted approximately 500 biotechnology and life sciences students from universities and community colleges. BeST programme trainers also contributed by hosting a live cooking show by renowned Chef Moh Johari Edrus, better known as Chef Jo, who shared his experiences as a Muslim chef in understanding the science and halal status of food and beverages</p>
18 – 19 October 2014	<p>Karnival Pendidikan Pekan Kreativiti & Science4U</p> <p>A national event co-organised by the Pahang State Government and MOSTI, the carnival promoted education and careers in biotechnology through edutainment games and a poster display. Approximately 5,000 visitors, including students and parents, attended the event</p>
19 – 20 November 2014	<p>BioCareer 2014</p> <p>BioCareer 2014 comprised a BioTalk Show, BioCareer Coaching and BioTalent Networking targeted at biotechnology and life sciences graduates. ITDES adopted a more creative and appealing edutainment approach to attract Gen Y graduates with the theme "BioCoffee Planet". The event witnessed:</p> <ul style="list-style-type: none"> – 1,031 visitors – 412 resumes collected for the BioKerjaya portal – 122 jobs on offer – 103 candidates shortlisted for interview – Participation of 14 recruiting companies

MOVING FORWARD

BiotechCorp will continue to develop industry-driven NOSS in collaboration with the DSD and has also received approval from the MoHR to promote NOSS for 2015. Furthermore, BiotechCorp will continuously partner with the Biotechnology Industry Centre of Excellence (ICoE) to reach out to potential biotechnology talent studying in local universities.

In addition, the ITDES Department will work closer with MARA and the Public Services Department (Jabatan Perkhidmatan Awam, JPA) to jointly offer the BeST programme at local campuses. To further nurture biotechnology talent in the country, BiotechCorp will also develop more industry-relevant education products. ITDES will also introduce a new concept of career coaching to Gen Y students to attract more participation.

KNOWLEDGE MANAGEMENT

The BiotechCorp Resource Centre (BRC) plays a vital role in providing essential information, resources and services to researchers, the public and other biotechnology stakeholders. The BRC caters to the information needs of both entrepreneurs and academia with additional emphasis on the Bioeconomy. Its role is to act as a knowledge centre for businesses, research institutes, the educational sector and individuals by providing knowledge management, research and competitive intelligence services.

The BRC's other roles include:

- Developing and maintaining knowledge collections, including hardcopy and digitised publications, to support BiotechCorp's activities,

- Providing relevant, timely and trusted information services to be disseminated across the corporation and to be shared with external users,
- Providing a conducive environment for research and learning,
- Contributing effectively to the development of BiotechCorp's knowledge infrastructure in accordance with the organisation's mission, and
- Promoting awareness to BiotechCorp's employees and the general public on new instructional resources which are of value.

2014 HIGHLIGHTS

The BRC's activities during the year focused on promoting its resources and services to newcomers and

existing members. Sessions were also organised to encourage the utilisation of the BRC's website and raise awareness on its enhanced search capabilities through subscription-based databases and its use as a resource for news, information and business intelligence.

As of 31 December 2014, the BRC also published 453 issues of BioNews, BiotechCorp's online, digital electronic news on biotechnology and the life science industry in Malaysia and worldwide. The news, which is compiled weekly, also covers information on investment and economic development in Malaysia.

In promoting the BRC's services, the BRC team also participated in the following programmes organised by the Bioeconomy Division:

Date	Events
21 – 22 April 2014	BRC membership drive at BTP Workshop ECER – Kuantan, Pahang
5 – 7 May 2014	BRC membership drive at BioBorneo Conference and Exhibition – Kuching, Sarawak
8 – 9 September 2014	BRC membership drive at BTP BioCentral Workshop – Melaka

MOVING FORWARD

The Knowledge Management unit's strategies for 2015 will cover the following areas:

- Strategic collaboration with other libraries to provide and share information related to life sciences, biotechnology, economy and management.
- Develop services tailored to different users and provide value-added services.
- Build a comprehensive digital infrastructure (collections, services, operations) with the implementation of the Knowledge Management portal and upgrading of the BRC's website.

SHARED FACILITIES

BiotechCorp's Shared Facilities unit provides technical R&D and commercialisation support to BioNexus companies as well as to the wider bio-based industry by facilitating access to a network of BioNexus Partners' (BNP) laboratory services and expertise.

2014 HIGHLIGHTS

BiotechCorp, through the Shared Facilities unit, has a network of 53 BNP laboratories from 13 institutions of higher learning, 3 research institutes and 3 Government-Linked Companies all over Malaysia offering their services and expertise to the industry. Melaka Biotechnology Corporation's (MBC) GLP and ISO Product Testing Laboratory also joined the BNP network in 2014.

These activities saw over 500 services offered to BioNexus and other bio-based companies, SMEs and entrepreneurs in 2014, amounting to RM1.7 million worth of services and projects. Of these, 295 projects were in the BioIndustrial sector, 160 projects in the BioMedical sector and 73 projects in the AgBiotech sector.

Reflecting the world-class standards of BNP laboratories, during the year the following four laboratories received internationally recognised accreditation:

- Orthopaedic Research Laboratory, International Islamic University Malaysia (IIUM) for ISO 17025 for Musculoskeletal Biocompatibility Test in Orthopaedic Medical Devices.

- GLP and ISO Testing Laboratory, MBC for OECD GLP in toxicological studies.
- Biosafety and Biocompatibility Laboratory, SIRIM Berhad for OECD GLP in toxicological studies.
- Fermentation Technology Unit, Universiti Putra Malaysia (UPM) for Current Good Manufacturing Practice for vaccine production.

2014 Key Events

On 15 May 2014, the BNP unit organised BioPartnering 2014: The Northern Series in Kulim, Kedah, as a partnering platform for the bio-based industry, entrepreneurs and SMEs to meet with BNP experts on their technical R&D&C needs. The event, which also offered business matching opportunities with expertise from BNP laboratories, saw the participation of over 300 entrepreneurs, bio-based companies, Government agencies and researchers from the Northern Region. 75 of the participants were also provided the opportunity to visit Kedah BioResources Corporation's (KBioCorp) facilities and BNP laboratories.

The following 9 BNP laboratories exhibited their services during the event:

1. Nano Electronic Laboratory, Universiti Malaysia Perlis (UniMAP)
2. NanoBiotechnology Research Laboratory, Universiti Sains Malaysia (USM)

3. Biomedical Analysis Unit, USM
4. Pharmaceutical Design and Simulation Laboratory, USM
5. Advanced Mass Spectrometry Laboratory, USM
6. LC/MS Metabolic Laboratory, USM
7. Proteomics and Drug Discovery Laboratory, USM
8. BioAnalytical Unit, KBioCorp
9. Microbiological and Nutritional Unit, KBioCorp.

MOVING FORWARD

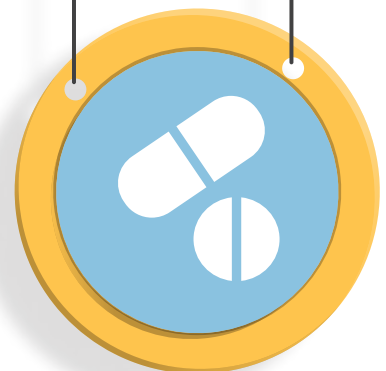
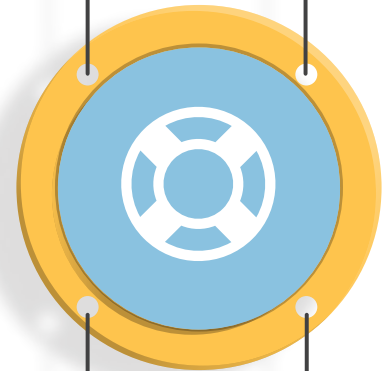
In the year ahead, BNP will focus on the establishment of a BNP Transaction Centre, aimed at creating a one-stop platform for bio-based services, facilities, expertise and training. The unit also plans to conduct a survey on the R&D and commercialisation needs of BioNexus companies in an effort to assess existing gaps in the R&D and commercialisation of BioNexus products and services and provide relevant technical support.

In order to enhance Malaysia's position as a biotechnology hub, BNP will also undertake measures to expand the BNP network globally by providing a conducive R&D and commercialisation ecosystem by promoting Malaysia's expertise in the bio-based industry and the country's accredited facilities.

POLICY AND REGULATORY ENGAGEMENT



BiotechCorp is actively engaged in various initiatives to support the formulation of a progressive regulatory agenda for the biotechnology sector in accordance with Thrust 7 of the NBP. The main emphasis of Thrust 7 is the establishment of a robust, balanced and supportive regulatory framework for the development of biotechnology in Malaysia.



FOCUS AREAS:

- Biosafety
- Access & Benefit Sharing
- Intellectual Property
- Pharmaceutical Regulations

2014 HIGHLIGHTS

Activity	Results
Biosafety Framework	<p>BiotechCorp continues to work closely with the Ministry of Natural Resources and Environment's (MONRE) Department of Biosafety in the implementation of the Biosafety Act and its regulations by providing advisory services and facilitating biosafety submissions from BioNexus status companies and potential investors.</p> <p>In line with the Cartagena Protocol on Biosafety (CPB) under the Convention of Biodiversity (CBD) obligations, Malaysia is required to establish socio-economic considerations on the utilisation of living modified organisms (LMOs). To this end, BiotechCorp participated in a workshop on the socio-economic considerations in the use of LMOs organised by the Department of Biosafety which covered issues concerning human health and the environment.</p> <p>BiotechCorp also participated in the National Seminar for Institutional Biosafety Committees (IBC) organised by MONRE on biosafety applications and latest procedures for IBCs.</p>
Access & Benefit Sharing	<p>As a member of the Conference of the Parties to the Convention on Biological Diversity (CBD), Malaysia requires a comprehensive national regulatory framework on Access and Benefit Sharing (ABS) in line with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity adopted by the CBD in 2010.</p> <p>In 2014, BiotechCorp continued to engage with MONRE in the consultation process for the ABS law and will continue to provide input on behalf of the industry. This followed consultation sessions organised by MONRE's Biodiversity Management and Forestry Division held in 2013 to review the amended ABS draft law.</p> <p>While the draft ABS law was expected to be tabled in Parliament before the end of 2013, it is now anticipated to be tabled in 2015 due to the need to seek stakeholders' inputs, especially from Sabah and Sarawak.</p> <p>Once implemented, the domestic ABS framework will provide a balanced means to enable Malaysia to combat biopiracy while providing an effective means for the country to leverage its rich and diverse genetic resources. This is in line with Malaysia's objective to promote biotechnology development as an engine of growth.</p> <p>BiotechCorp is also actively engaged in discussions on revisions to the NBP, providing input under the Industry cluster to ensure that amendments will take into account efforts being undertaken to promote the Bioeconomy.</p>

Activity	Results
Intellectual Property (IP)	<p>Intellectual Property Financing</p> <p>Intellectual Property Financing Scheme</p> <p>In 2014, BioNexus company Microwell BioSolutions Sdn Bhd qualified for financing under the Intellectual Property Financing Scheme (IPFS).</p> <p>Launched in 2013 by the Intellectual Property Corporation of Malaysia (MyIPO), the IPFS provides alternative funding avenues for companies through monetising their valuable IPs. Offered through Malaysia Debt Ventures Berhad (MDV), the IPFS amounts to RM200 million. Through this initiative, the Government provides for a 2% interest rate subsidy and will guarantee 50% through Credit Guarantee Corporation Malaysia Berhad. Under the same scheme, RM19 million was also allocated to train local IP valuers by MyIPO and to create an IP market platform.</p> <p>During the year, advanced training courses were conducted to enhance the skills of valuers who had received training and certification in a pilot scheme introduced in 2013. A total of 23 IP valuers were trained, of whom two were from BiotechCorp.</p> <p>In an effort to strengthen stakeholder relations and promote BioNexus IPs among stakeholders, BiotechCorp was part of a Working Group for the IP Financing Conference 2014 organised by Bank Negara Malaysia on 23 September 2014.</p>
Pharma Regulations	<p>Pharmaceutical Regulations</p> <p>Malaysia's Control of Drugs and Cosmetics Regulations (CDCR) 1984 were promulgated under the Sale of Drugs Act 1952. The authority (known as the Drug Control Authority, DCA) established under these regulations is tasked with ensuring the quality, safety and efficacy of medicinal products through registration, including quality control, inspection and licensing, and post-registration activities. The National Pharmaceutical Control Bureau (NPCB) acts as the secretariat to the DCA.</p> <p>In 2014, the following directives/guidelines were issued and/or revised by the NPCB:</p> <ul style="list-style-type: none"> • Drug Registration Guidance Document (DRGD) (November 2014) • Guidelines for Vaccine Lot Release, 1st Edition (July 2014) • Registration Guidelines for Veterinary Products (REGOVP) Version 3 (July 2014). <p>The revisions to the DRGD were as follows:</p> <ul style="list-style-type: none"> • Amendment and addition at Section A: General Overview (Section 6: General Conditions for Registration of Drug Products Under the Control of Drugs and Cosmetics Regulations 1981) on item 6.3.1 Shrink Wrapping • Updates on Section A: General Overview on content and table format for Medical Device-Drug-Cosmetic • Amendment at Section A: General Overview (Section 6: General Conditions for Registration of Drug Products Under the Control of Drugs and Cosmetics Regulations 1984) on item 6.1 Registration Number • Additional information for Appendix 5 on Section 2.7.2 Specific Labelling Statements/ Warning & Precautions • Additional information for Appendix 5 on Section 2.7 Labelling Requirement • Additional information for Appendix 9 on Section 9.2 Specific Labelling Requirements • Additional information for Appendix 9 on Section 9.1 General Labelling Requirements • Additional information for Appendix 12 on Conditions and Supporting Documents Required for an Application of Variation.

Activity	Results
<p>Pharma Regulations <i>(continued)</i></p>	<p>Medical Device Regulations</p> <p>In 2014, the following directives/guidelines were issued and/or revised by the Medical Device Authority (MDA):</p> <ul style="list-style-type: none"> • Guidelines for Implementation of Medical Device Regulatory System: How to Apply for In-Vitro Diagnostic (IVD) Medical Device Registration under Medical Device Act 2012 (Act 737), 1st Edition (May 2014) • Guidelines for Implementation of Medical Device Regulatory System: How to Apply for Medical Device Registration Under Medical Device Act 2012 (Act 737), 2nd Edition (June 2014) • Common Submission Dossier Template, 1st Edition (March 2014) • The Rules of Classification for General Medical Devices, 1st Edition (March 2014) • Essential Principles of Safety & Performance of Medical Device, 1st Edition (March 2014) • Definition of Medical Device, 1st Edition (March 2014). <p>Harmonisation of Standards and Technical Requirements in ASEAN</p> <p>Throughout 2014, Malaysia continued to play an active role in the harmonisation of standards and technical requirements in ASEAN. This was undertaken through avenues including the ASEAN Consultative Committee for Standards and Quality (ACCSQ) Pharmaceutical Product Working Group (PPWG), the Traditional Medicines and Health Supplement Product Working Group (TMHS PWG) as well as the Medical Devices Product Working Group (MDPWG).</p> <p>During the year, BiotechCorp also participated in the following ASEAN Technical Working Group (TWG) meetings:</p> <ol style="list-style-type: none"> 1. 18th ACCSQ MDPWG in Singapore 7 – 8 May 2014: Updates on the status of endorsement and signing of the ASEAN Medical Device Directive (AMDD) 2. 21st ACCSQ PPWG in Kuala Lumpur, 19 – 20 June 2014: Updates on the status of MRA for GMP and Bioequivalence Studies 3. 22nd ACCSQ TMHS PWG in Vientiane, Lao PDR 13 – 14 November 2014: Updates on the status of the ATSC, GMP Taskforce, Head of Delegation and the Taskforce of Regulatory Framework meetings. <p>Through the ACCSQ PWG participation, BiotechCorp was able to keep abreast with the progress and time frames targeted in harmonising standards and reducing technical barriers towards a single market by 2015.</p>
<p>International Accreditation</p>	<p>Good Laboratory Practice</p> <p>In line with the Good Laboratory Practice (GLP) Compliance Programme, which ensures test facilities have implemented requirements as described in documents of the Organisation for Economic Cooperation and Development's (OECD) Series on Principles of Good Laboratory Practice and Compliance Monitoring, BiotechCorp continues to support industry players, particularly BioNexus companies and BioNexus Partnering Programme (BNP) laboratories, in obtaining the accreditation for their test facilities.</p> <p>Good Distribution Practice</p> <p>The Good Distribution Practice (GDP) ensures the quality of registered products is consistent and preserved especially in the process of storing, transportation and distribution.</p> <p>In 2014, BiotechCorp continued to engage with and provide support to industry players, particularly BioNexus companies, in complying with GDP requirements.</p>

MOVING FORWARD

As the Malaysian biotechnology industry moves towards the third phase of the NBP, BiotechCorp's efforts in Policy and Regulatory Engagement will focus on:

Biosafety and ABS: BiotechCorp will continue to engage with the Biosafety Department in its efforts to advocate the development of balanced and industry-centric regulations to ensure the industry's compliance with world-class standards and facilitate the growth of the biotechnology sector.

BiotechCorp will also remain active in the consultative process towards the promulgation of the ABS law with MONRE and in creating awareness in the industry on the developments of the national ABS law.

Intellectual Property: BiotechCorp, working closely with MyIPO and MDV, will continue to encourage and guide BioNexus status companies to avail themselves of the IPFS.

Furthermore, IP valuation training and enhancement programmes organised by MyIPO will be leveraged to further equip experts to assist financiers in valuing biotechnology IPs, which can be used as collateral for financing.

Pharma Regulations: BiotechCorp remains committed to contributing to the development of pharmaceutical regulations, including harmonisation of the regulatory framework for the ASEAN region. The organisation's strong relationship with regulators will be leveraged to provide continuous and constructive inputs from the industry perspective to drive the development of healthcare biotechnology.

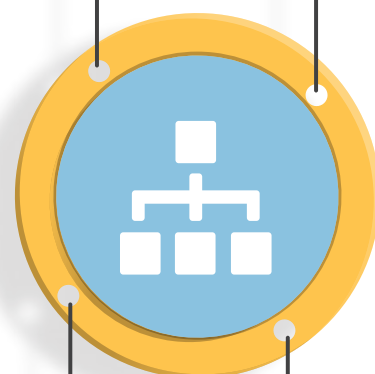
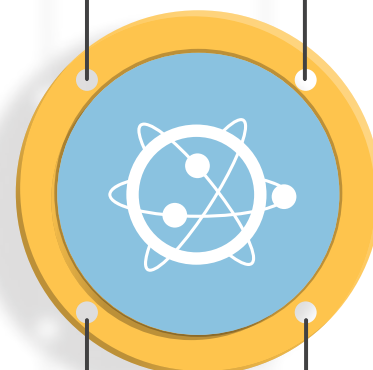
The involvement and participation in Technical Working Groups (TWGs) within the Ministry of Health and NPCB has also positioned BiotechCorp as a definitive agency in promoting biopharmaceuticals within the healthcare sector.

International Accreditation: BiotechCorp will continue to support efforts to encourage OECD certification of BioNexus companies' test facilities to promote international market access, avoid duplicative testing and thus save resources as well as reduce trade barriers.

TECHNOLOGY MANAGEMENT OFFICE



BiotechCorp Technology Management Sdn Bhd (BTM), incorporated on 16 March 2011, is a wholly-owned subsidiary of BiotechCorp which oversees the company's Technology Management and Innovation (TMI) division. Its key responsibilities are to manage, develop and commercialise the technology platforms acquired by BiotechCorp under the Ninth Malaysian Plan's Biotechnology Acquisition Programme (BAP).



FOCUS AREAS

In managing, developing and commercialising the acquired technology platforms, TMI focuses on areas that are directly related to the technology platforms. These are:

- i. DNA Marker development and molecular breeding under the Marker Assisted Selection (MAS) technology platform
- ii. High-purity plant extraction utilising carbon dioxide (CO₂) at supercritical levels under the Supercritical Fluid Extraction (SFE) technology platform
- iii. Nano-particles and conjugation of/encapsulation of nano-particles under the Nanotechnology (Nano) platform
- iv. Early disease detection/diagnosis under the DotScan Antibody Microarray (DotScan) technology platform.

2014 KEY ACTIVITIES

In 2014, activities undertaken by the TMI division aimed at supporting the utilisation and commercialisation of BiotechCorp's technology platforms. The following is the list of activities and events participated in by the division during the year:

No	Activity	Outcome
1	Conference/Trade fair participation, domestic and overseas such as: <ul style="list-style-type: none"> • BioMalaysia 2014 • BioBorneo 2014 • Plant Genomics Congress Asia 2014 • PAG Asia Singapore 2014 • VitaFoods Asia Hong Kong 2014 • NanoKorea 2014 	<ul style="list-style-type: none"> • Generation of business leads that were subsequently converted into revenue-generating business deals for MAS and SFE platforms • Generation of research interests which were converted into research collaborations for all technology platforms
2	Business Development initiatives conducted concurrently with TMI's participation in the above-mentioned conferences and trade fairs to optimise cost	<ul style="list-style-type: none"> • The potential results from this activity are: <ul style="list-style-type: none"> – Collaborative Proposals (CPs) – Memoranda of Understandings (MOUs) – Memoranda of Agreements (MOAs)
3	Workshops/Training on the understanding and the operation of the technology platforms for the following target segments: <ul style="list-style-type: none"> • Industry players • Academic personnel • Research institutes 	<ul style="list-style-type: none"> • The main objective of organising workshops and training sessions was to create awareness on and interest in BiotechCorp's technology platforms to increase adoption and utilisation of the platforms, as well as to generate revenue via continuous utilisation of the technology platforms in business operations and research projects

MOVING FORWARD

TMI plans to intensify its efforts in establishing partnerships in the areas of public-private R&D, international commercial collaborations and smart strategic alliances. These efforts are expected to help create regional clusters and centres for technology development, which in turn, will provide an ecosystem where technology providers are better able to provide technical support for current users, as well as promote their technologies to potential new users.



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