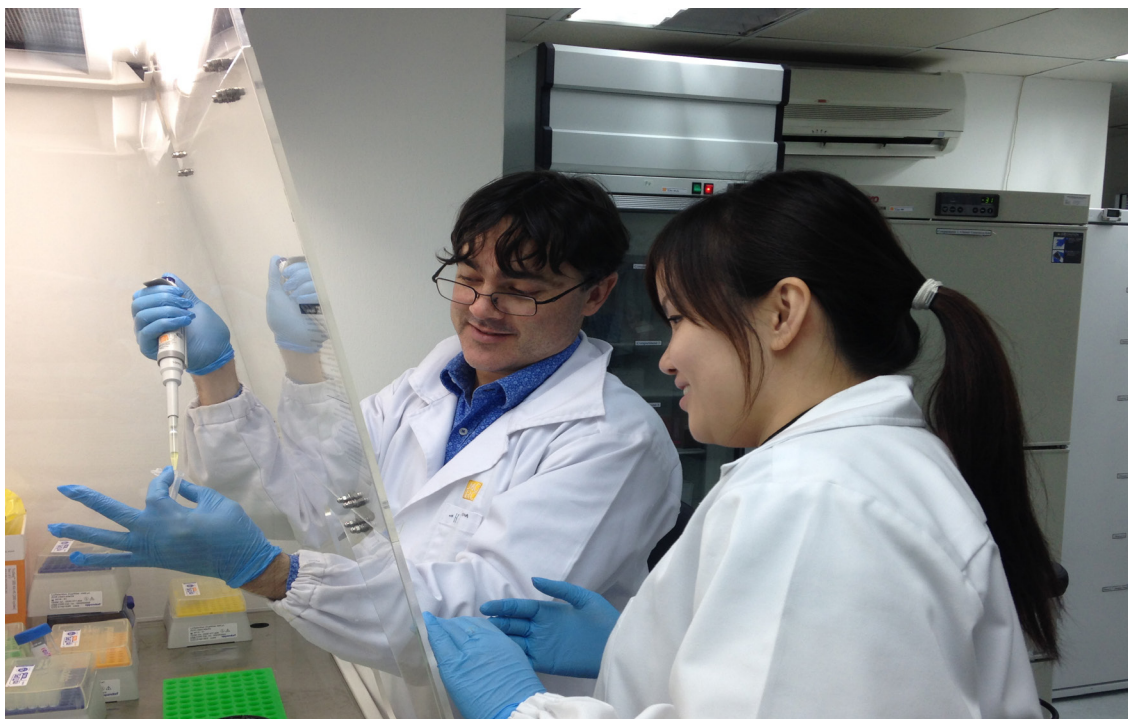
MGRC - At the forefront of genomics science



THE science of genomics has come a long way. Beginning with Gregor Mendel's discovery of the laws of heredity, to the recognition of DNA as life's biological software, scientists have explored the role of this remarkably complex material and the encrypted code it contains to enhance the understanding of life.

With the genetic code of thousands of life forms now sequenced, and countless genomic data profiles analysed, scientists are able to extend research into the genetic roots of diseases, how global viral pandemics arise, how transformative agricultural research can help feed our planet's growing population, and how genetic mutation and variation determine survival at the species level.

In 2000, the announcement of the first draft assembly of the Human Genome Project led to rapid advancements in genomics and new methods to analyse DNA. The founders of Malaysian Genomics Resource Centre Berhad (MGRC), Robert Hercus and his wife Munirah Hamid, envisioned how sequencing, which converts all the collective sum of genetic information from the DNA of living things into data, could be analysed and studied to serve the human cause.

Robert and Munirah understood that there would be a growing need to manage and extract value from the large volumes of data generated from global DNA sequencing projects. Thus, they formed Synamatix Sdn Bhd in 2001 to help various organisations, largely industry players, to manage and analyse DNA sequence data. Understanding this complex information could help researchers and scientists in their downstream research.

MGRC was later established in 2004, as a genomics services company to promote genomics in Malaysia. With the help of Malaysian Biotechnology Corporation (BiotechCorp), MGRC helped raise awareness of the potential of genomics within the Malaysian scientific community. In a short span of time, MGRC came to be the go-to bastion for a comprehensive range of genome sequencing and analysis services. In 2010, MGRC was publicly listed on Bursa Malaysia's ACE Market.

> "MGRC continues to be one of our preferred partners for genomics-based R&D, due to their innovative, highly customisable and cost effective services. Their collaborative approach towards providing solutions to genomics projects has enabled us to focus on our own results and deliverables. We are confident that our partnership will continue to grow and strengthen over the next few years."
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> **Dr Indu Bala Jaganath**
> **Deputy Director Molecular Biology and Genetic Engineering Programme, Biotechnology Research Centre, MARDI**

For the past 10 years, MGRC has provided genome sequencing and analysis services to customers worldwide, working on projects involving genomes of human, plants, animals and microorganisms. MGRC's services help agricultural research organisations find ways to perform selective breeding through trait screening methods. The services can also be used to study genetic material within an environment, such as forest soil, or even the human gut. This is called meta-genomics and is useful in giving a clearer picture of the genetic relationship among living things in a specific ecosystem.

For Robert and Munirah, every day brings something new and exciting. It is with this philosophy in mind that MGRC embarked on its venture in healthcare, where the company offers Genetic Screening Services (GSS) under the brand Dtect®. These Dtect tests are designed to screen a person's DNA for a particular group of diseases or disorders such as cardiovascular diseases, metabolic disorders, cancers and developmental disorders. Knowledge of this genetic predisposition can help doctors make more informed decisions about numerous aspects of medical care, including susceptibility to disease, effectiveness of various drugs and adverse reactions to specific drugs.

MGRC also offers a new Dtect Wellness test which does not focus on diseases, but instead on traits and conditions that may affect an individual's health and wellness, such as bodily functions, metabolism of nutrients, and cellular detoxification.

Based on the Dtect test results, an individual can work closely with a doctor, or a wellness practitioner, to develop a suitable health management plan to help live a better quality of life, and to mitigate or delay the possible onset of disease through preventive actions.

OUR GENOME SEQUENCING AND ANALYSIS SERVICES

WHOLE GENOME SEQUENCING

Whole genome sequencing (WGS) is carried out to obtain the sequence of the entire genome from an organism. This includes plant, animal, microbial and human genomes. WGS enables you to:

- Detect and identify known and novel mutations
- Detect and characterise pathogens from infected plants and animals, or from clinical samples
- Identify alleles or variations in a genome

METAGENOMICS AND METATRANSCRIPTOMICS

Metagenomics is the study of DNA recovered directly from complex environmental samples while metatranscriptomics is the analysis of the genes within those samples. The primary goals of these approaches are to characterise the organisms present in a sample and to identify the activities which are occurring in the sample. Metagenomics and metatranscriptomics are highly relevant in areas such as healthcare, agriculture, and environmental conservation. Metagenomics and metatranscriptomics enable you to:

- Characterise the organisms present in environmental samples
- Identify the activities that occur in the community of organisms
- Investigate how these activities change in response to the environment

TRANSCRIPTOME SEQUENCING

The transcriptome is the complete set of transcripts in a cell or a population of cells, and the quantity of these transcripts at a specific developmental stage or under specific conditions. Transcriptome sequencing can be utilised to analyse transcriptome profiles and deliver dependent information. Subsequently, transcriptome analysis can identify genetic function in cells and tissues, and help in understanding the development of diseases and their impact on cell functions. Transcriptome sequencing enables you to:

- Detect rare and novel transcripts
- Quantify transcriptomes
- Analyse differential gene expression
- Identify fusion genes and alternative splicing
- Identify and quantify both common and rare variants
- Detect single nucleotide polymorphisms (SNPs), insertions and deletions (InDels), and single nucleotide variants (SNVs)

OUR GENETIC SCREENING SERVICES

The types of Dtect tests currently offered by MGRC are:

Dtect Test	Description
Dtect Wellness	Identifies genetic markers that affect health, wellness and fitness.
Dtect Cardio	Evaluates genetic markers associated with cardiovascular diseases.
Dtect Onco	Evaluates genetic markers associated with familial cancers.
Dtect Metabolic	Evaluates genetic markers associated with metabolic disorders.
Dtect Child	Evaluates genetic markers associated with inherited illnesses or developmental disorders in children 13 years and below.

Dtect® **Find out more at www.dtect.com**

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