



Researchers at the Center for Medical Genomics (pictured) and the Center of Excellence for Life Sciences have joined forces to study pharmacogenomics.

FINDING THE RIGHT DRUG

Thailand's **CENTER FOR MEDICAL GENOMICS** is advancing the region's genomic toolkit so that clinicians can better determine if a patient will respond well to a drug.

Pharmacogenomics is an emerging discipline exploring how a person's genome reveals probable responses to drugs. It's proving to be a financial boon to middle-income and developing countries, says Wasun Chantratita, a professor within Ramathibodi Hospital's Faculty of Medicine at Mahidol University in Thailand.

Pharmacogenomic tests will avoid exposing vulnerable patients to drugs that won't suit them, he explains, without upgrading entire populations to newer, more expensive options. In addition, it will help healthcare systems avoid ineffective treatments, and the costs of severe adverse reactions to drugs or ineffective treatments.

Figures from Mahidol University suggest that between 2013 and 2018, Thai pharmacogenomic tests may have had a social benefit of almost six billion baht (approx. US\$185 million).

In 2014, Thailand's Center for Medical Genomics (CMG) joined forces with the Center of Excellence for Life Sciences (TCELS) on pharmacogenomics research, a partnership that has since been backed more than US\$30 million in research funding.

The collaboration has built on groundwork conducted at the TCELS since 2004, including gaining expertise in medical services, such as improving genetic screening of embryos for inherited disorders and non-invasive prenatal testing and newborn screening.

Researchers at the CMG and TCELS are now working with governmental and other stakeholders under the auspices of the Genomics Thailand Initiative to help bridge the gap between genomic medicine and clinical practice.

The Genomics Thailand Initiative focuses on strengthening Thailand's competitiveness in genomic

medicine. To this end, it has set out a 20-year roadmap that includes establishing a detailed medical database of 50,000 Thai people, and developing guidelines for best practice and a regulatory framework.

Chantratita has been coordinating the pharmacogenomics project at TCELS. He points out that sharing genomic knowledge with other southeast Asian countries will also improve regional responses, given that the genomic data that underlies the research informing many of these tests has largely focused on Caucasian populations. Through the establishment of the Southeast Asian Pharmacogenomics Network (SEAPHARM) in 2012, knowledge gained in Thailand is being shared among countries including Myanmar, Laos, Malaysia, Philippines, Indonesia, Brunei and Vietnam. There are also growing opportunities to work with Singapore, which

has recently sequenced a large number of local genomes.

The SEAPHARM network meets annually and discusses topics such as drug-related adverse effects, appropriate prescription and dosage, and the pharmacogenomics of severe adverse drug reactions (SCARs) based on HLA genes. Genes that impact the production of cytochrome p450 enzymes, for example, are now being assessed across the region for their role in drug metabolism and as indicators of a predisposition to adverse reactions to a number of commonly used drugs. ■



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