

# OPSRI - OIL PALM SIMPLE SEQUENCE REPEAT (SSR) RESOURCE INTERFACE

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**T**he rapid growth of oil palm sequence information has resulted in a big data resource, useful for genomics based research. As such, the implementation of computational based bioinformatics tools is crucial to effectively and efficiently mine targeted information from this huge resource. The mining of simple sequence repeats (SSR) embedded within the sequence data and widely used as molecular markers is one such example. In this study, we developed a SSR data management and automated web-based pipeline, *Oil Palm SSR Resource Interface* (OPSRI), which can mine SSR from a large collection of oil palm sequences. The graphical user interface is also integrated with the primer design function, facilitating the development of SSR markers in a simple process flow.

## THE PRODUCT

OPSRI is a web-based pipeline system that is integrated with several useful tools, namely MISA (Thiel *et al.*, 2003), Primer3 (Rozen *et al.*, 2000) and BLAST (Altschul *et al.*, 1997) for SSR, primer design and annotation. Three modules (Analysis, Database and Query) are provided in a graphical user interface to facilitate tasks and assist in data archiving. In addition, other useful information in specific populations, such as SSR type, SSR motif, primer information, and marker profile are also captured. A total of 1983 SSR markers are available in the database for access by both the Public and MPOB personnel.

## MATERIALS AND METHODS

OPSRI was developed using the Apache HTTP server, PHP (<http://www.php.net>) and MySQL database management system (<http://www.mysql.com>). The system can operate in both

Linux and Windows operating systems. The analysis pipeline was built using open source bioinformatics tools.

## BENEFITS

- An efficient pipeline for mining and managing SSR related data.
- Facilitates the development of oil palm SSR markers.
- Ability to identify the most useful SSR markers via a search function or by similarity search (BLAST) against an in house primer database.

## NOVELTY OF THE PRODUCT

- Comprehensive collection of experimentally tested oil palm SSR primers.
- *In silico* mining for SSR.

## POTENTIAL USERS

The OPSRI is valuable to the oil palm research community and post-graduate students who are using molecular markers in their fields of work/research.

## ACCESSIBILITY

Users need to register to access the database and analysis system. Standard users will only be able to view and download publicly available SSR primers, while approved MPOB registered users will be able to access both public and private databases. This database can be accessed via <http://opsri.mpob.gov.my>

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Figure 1. Overview of OPSRI.

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