PGM BOOK PRIZE AWARD

The PGM Book Prize is awarded to final year university students who have accomplished outstanding final year project in the field of genetics. The award, which carries a gift voucher worth RM500, is established to bring increasing recognition of the scholarly interests and to promote the culture of research among students. Universities will be invited to submit their nominations for the winners of the prize. At present, seven students have been awarded the book prize from various universities since its establishment in 2011.

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Yeaw Zi Xuan was born on 25th March 1997 in Klang, Selangor. She received her early education in Banting, Selangor before migrating to Muar, Johor where she now resides. Currently, she has been graduated from Universiti Malaysia Sarawak, majors in Molecular Biology and Genetics with a CGPA of 3.82. Genetics and Molecular Biology studies have always been her passion ever since she was in high school. Her interest develops even further in her undergraduate years, particularly in animal biotechnology, genetics, and molecular biology. During her undergraduate years, she has received practical skills not only in genetics and molecular biology, but also other techniques such as animal tissue culture, cloning and bioinformatics. In addition, she has completed her industrial training at Virology Laboratory, Tropical Infectious Diseases Research and Education Center (TIDREC), University of Malaya. She has also received Dean's List Award for every semester during her undergraduate years.

MUTAGENESIS ANALYSIS OF ABCB4 GENE PROMOTER OF *Danio rerio*

Yeaw Zi Xuan and Chung Hung Hui

Zebrafish abcb4 gene is one the members of ABCB subfamily (MDR/TAP) in the ATP-binding cassette (ABC) transporter superfamily. Zebrafish ahhh4 gene (orthologous to human ABCB1 gene) serves primarily in multidrug resistance (MDR) mechanism by effluxing chemotherapetitic agents, chemicals, xenobiotics, and numerous anti-cancer drugs out of the cells. Due to it, MDR mechanism appears to be a major root in failing the chemotherapy to huiiian malignancies. Therefore, this study aims to identify the specific transcription factor binding sites (TFBS) within the promoter region of zebrafish abcb4 gene and subsequently, to determine the functional involvement of these factors in abcb4 gene expression and regulation via mutagenesis analysis. Firstly, primers were designed to target and amplify the promoter region in the extracted zebrafish abch4 gene through gradient PCR. The zebrafish ahch4 gene promoter was then cloned into pGL3.0 vector and sent for sequencing. Wherewitli, the sequencing results revealed high similarity to zebrafish DNA sequence from clone DKEY-24I24 in linkage group 16, indicating a successful cloning of targeted gene. Thereafter, consensus sequence of zebrafish abcb4 gene promoter was generated with the length of 1,392 bp which was close to its expected size while designing primers (1,500 bp). By using MATCH tool, 155 binding sites were found within the zebrafish nbcb4 gene promoter region. Among these TFBS detected, only AP-1 TFBS at 1,255 bp was chosen to be mutated through site-directed mutagenesis. Mutagenic primers (forward primer: 5′ GGG CAA GGC AGT ATA AAC GTG 3′ and reverse primer: 5′ TTA TGT TTC TAG GGA TTA CGT CAC 3′) were then designed to substitute bases AGT within AP-1 TFBS into bases GGG. Ergo, the targeted AP-1 TFBS was deleted after mutation was introduced. By mutating AP-1 TFBS, the MDR phenomenon that driven by zebrafish ahcb4 gene can be revealed, thus disclosing the development of tumor and malignancy in human. Withal, these results may enlighten the future shidies or chemotherapy or cancer treatments in medical field.