VICTORIA UNIVERSITY OF WELLINGTON
TE HERENGA WAKA

BEANZ BIOLOGY EDUCATORS OF AOTEAROA NZ
TE RŌPŪ WHAKAAKO KOIORA O AOTEAROA

Hands-on Genetics Lab for Teacher Personal Development & BEANZ workshop

Te Herenga Waka – Victoria University of Wellington & BEANZ

Date & time: **Monday 25th November 2024, 8:30am – 3pm.**

Location: **Alan MacDiarmid and Te Toki a Rata Buildings, Kelburn Campus, Victoria University of Wellington.**

Maximum capacity: **32 participants. BEANZ is able to subsidize travel for participants travelling from outside Wellington.**

Register: **At the following link: https://forms.office.com/r/Q28nEUGywk**

Plan for the Day

8:30am: **In AM102/AM104 Alan MacDiarmid Building, Kelburn Campus, Wellington. Arrive, welcome, housekeeping**

9am-1pm: **Hands-on genetic workshop in TTR101 lab with Dr Diane Ormsby**

1pm-1:30pm: **Lunch (provided) in AM102/AM104**

1:30pm-2:45pm: **BEANZ workshop led by Jan Szydlowski**

2:45pm-3pm: **Wrap up**

Contact for further information:

Event + lab: Dr Diane Ormsby on diane.ormsby@vuw.ac.nz

BEANZ workshop: Jan Szydlowski on jan.szydlowski@onslow.school.nz

Attendees who apply in the registration form for the BEANZ travel subsidy for out-of-Wellington will receive this after the workshop (83c/km). If you applied for but did not receive the subsidy, contact Allan at biologynz@beanz.org.nz

Content of Genetics Workshop

Led by Dr Diane Ormsby, a hands-on lab experience.

You will get the opportunity to extract DNA from your own blood and use restriction enzymes, PCR, and electrophoresis to work with a specific locus that can be used to distinguish individuals but does not code for a specific characteristic.

DNA is able to be used as a forensic tool as a direct result of the development of polymerase chain reaction (PCR) and the sequencing of the human genome.

PCR allows for targeted amplification of DNA sequences within minute samples of DNA. The DNA of all humans is largely identical, thought there are regions on the human chromsosomes that show a great deal of variability - polymorphisms. Polyporphisms occur predominantly within the non-coding regions of DNA and provide the basis for DNA fingerprinting.

We will work with the D1S80 locus, a polymorphic sequence termed variable number of tandem repeats (VNTR) located on Chromosome 1. This region of the DNA that we will work with therefore does not specifically code for any specific condition. A subunit of the D1S80 locus sequence is repeated a different number of times for different individuals and can therefore be used to distinguish individuals.

At the D1S80 locus a specific 16 nucleotide sequence is repeated between 14 and 41 times, allowing for 27 different alleles. Eighty percent of the population is heterozygous at the D1S80 locus and the frequency of each allele varies between populations, so this locus can be used to discriminate between individuals.

You will each work with your own blood to extract DNA, use restriction enzymes, PCR, and electrophoresis to amplify the D1S80 VNTR locus from your own genome and attempt to distinguish your own two alleles.

Content of BEANZ Workshop

Discussion about Level 1 Biology internals led by Jan Szydlowski.