

Decoding the Human Whipworm

A number of particularly keen Biology students have taken part in a fascinating research programme this year, decoding the human Whipworm genome as part of an Institute for Research in Schools (IRIS) initiative.

Biology Teachers Dr Anna Thomas and Val Ross explain the project.

The human Whipworm is a parasite of the intestine that causes huge problems globally, especially in the developing world where access to medical care and clean water is difficult. It is estimated that in the order of 600-800 million people have the infection with a large proportion of those being children.

Genomes are comprised of DNA (deoxyribonucleic acid) which is essentially a code of four different chemicals (bases) known to us as Adenine (A) Guanine (G) Thymine (T) and Cytosine (C).

The double helix of DNA has two chains or strands held together by hydrogen bonds which effectively coil around each other to make the helical shape. Specific locations of DNA in a genome are sectioned into genes. These genes code for specific proteins that carry out every function within living cells. Being a code, it lends itself very well to computer analysis.

The human Whipworm project originates from the Cambridge Sanger Institute, the birthplace of the human genome project. The girls have been working to analyse the data created from chemical DNA sequencing of the Whipworm parasite.

They have been using software to investigate areas of the worm's genome and double-check the DNA has been correctly annotated into genes. This is done by verifying the DNA has elements of a fully functioning gene (for example a Start codon, ATG and a Stop codon TAG, TAA or TGA).

It is hoped a fuller understanding of the worms' genetic structure will allow new drugs to be created to combat this infection.

Several girls will be attending the annual conference and exhibiting their findings at St Bartholomew's Hospital and The London School of Medicine in early July with staff from the Biology Department and Sue Harris, Benenden's STEM Outreach co-ordinator, who established the project within the school.

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