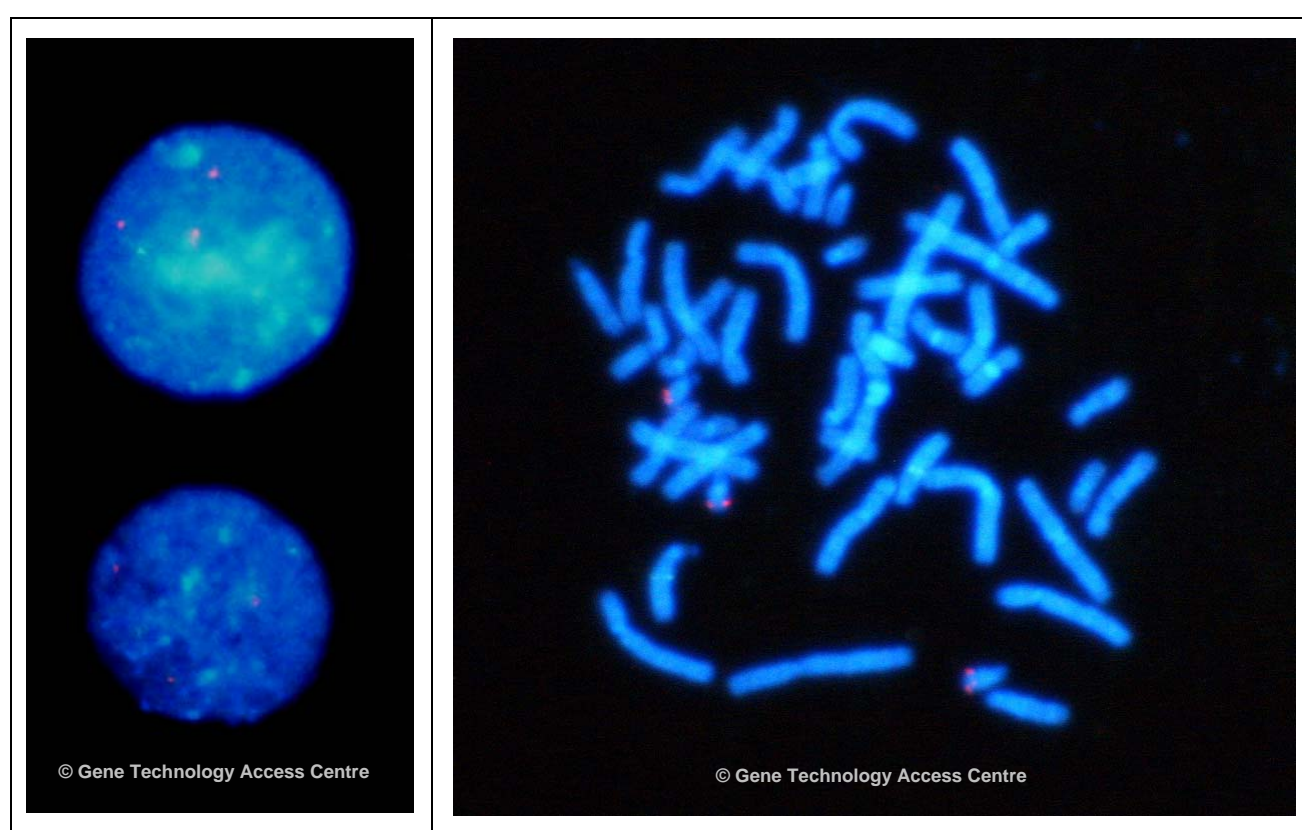
	<h2 style="margin: 0;">CELLS ONLINE WORKSHEET</h2> <h3 style="margin: 0;">Unit 4 Biology</h3>
TOPIC	FLUORESCENCE <i>IN SITU</i> HYBRIDIZATION (FISH)

Fluorescence *in situ* hybridization, or FISH, is a method for detecting DNA sequences in cell chromosomes with fluorescent probes. The red fluorescent probes in this experiment bind to a target sequence in chromosome 21. After sequence-specific binding with the probes, the DNA is counter-stained with DAPI, a blue fluorescent dye, and observed by fluorescence microscopy. In the image on the left you are viewing the nuclei of two human white blood cells in interphase at 1000X magnification. In the image on the right you are viewing the chromosomes of a human white blood cell undergoing division at 1000X magnification.



Download this page, place in your notebook and answer the following questions.

- Q1: How many copies of chromosome 21 should a normal, diploid human cell contain?
- Q2: Examine the nuclei of the interphase cells on the left. How many red probes do you observe inside each nucleus?
- Q3: Examine the chromosomes of the dividing cell on the right. How many chromosomes are labelled by red probes?
- Q4: Based on your observations, what condition would you say this individual had?
- Q5: Explain the difference in the pattern of DAPI DNA stain between the interphase cells and the dividing cells.

These images were taken at GTAC using our Nikon TE2000-U Microscope