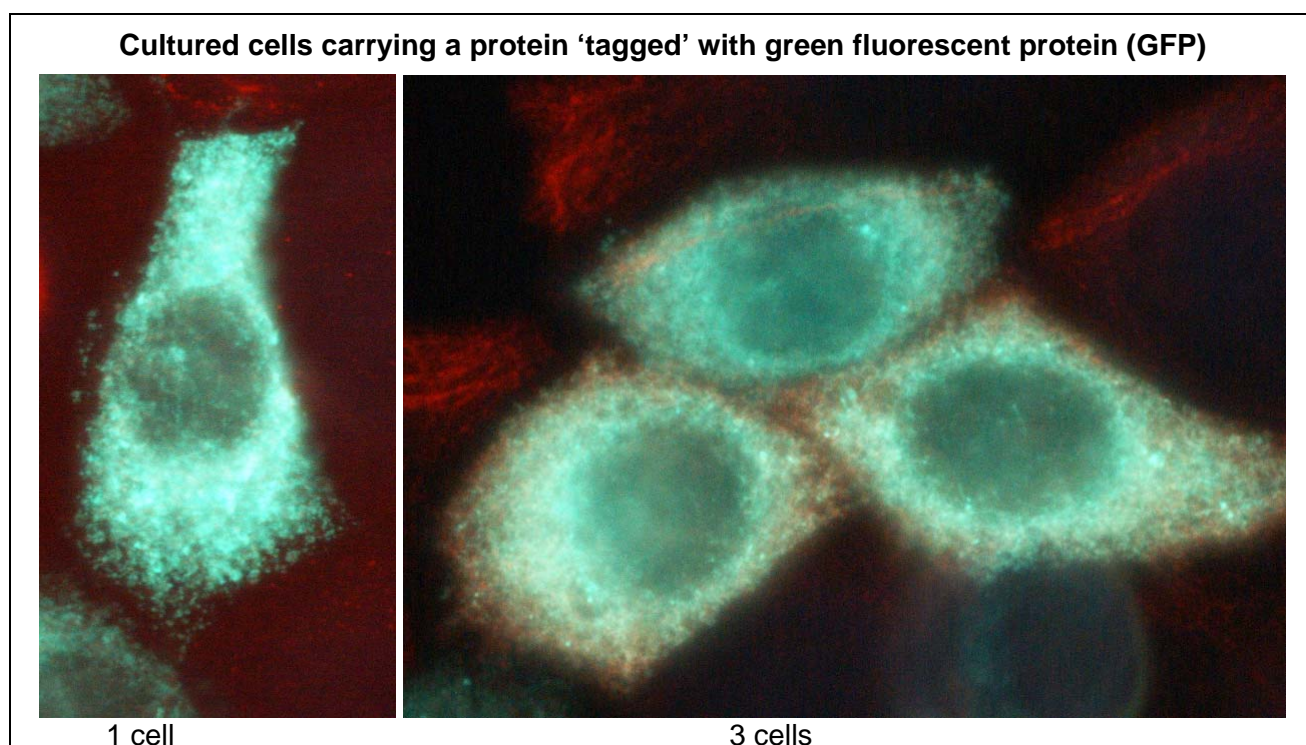


	<h1>CELLS ONLINE WORKSHEET</h1>
<b>TOPIC</b>	<b>CYTOPLASMIC PROTEINS</b>

When scientists discover a new protein, a starting point for their research is to find out where in the cell it is located as this gives clues to the protein's function. Some proteins are located in the plasma membrane, some in the cytoplasm, others in various organelles. A group of scientists found a protein which they thought may be located in the cytoplasm. To test this, they used recombinant DNA technology to 'tag' the protein with another protein called green fluorescent protein (GFP) which glows green when viewed under UV light. They inserted the GFP-tagged protein into cultured animal cells and viewed the cells using UV light in a fluorescence microscope. This allowed them to identify the protein's location in the cell.



Use the following information about fluorescence microscopy to work out the location of the protein.

- A protein in the plasma membrane may fully cover the cell surface so that no organelles can be seen inside the cell or it shows up only at the edges of round cells.
- A cytoplasmic protein is spread throughout the cell but not in the nucleus, giving an effect called a 'nuclear shadow'.
- Proteins in organelles show discrete patterns where these organelles are located.

Q1: Were the scientists correct in thinking the protein was located in the cytoplasm? **Yes/No**

Q2: Suggest reasons for your answer.

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

Cell slides were provided by the laboratory of Prof. Len Harrison, Walter and Eliza Hall Institute.  
The image was taken using GTAC's Nikon TE2000-U Microscope