Topic	Why classify organisms?	Level	GCSE and A Level
Outcomes	1. To describe how Taxol can be used to treat breast cancer 2. To explain why the classification of organisms is useful to biologists and society		

Taxonomy and Taxol: how classification saves lives

In the early 1960s, scientists in the United States began searching for plant compounds that could kill cancer cells. One compound called taxol was found to be particularly good at stopping rat cancers. Taxol is made naturally by the Pacific Yew tree (*Taxus brevifolia*) and is extracted from the bark of the tree.

Taxol works by damaging the proteins inside the cytoplasm of the cancer cells so that the cells can no longer undergo cell division.

Extraction of taxol from Yew trees involves killing them. Unfortunately, the *Taxus brevifolia* species is one of the slowest growing trees in the word and therefore is not an efficient source of taxol. It would take six, 100-year old trees to provide enough taxol to treat just one patient.

Luckily, a closely related species of the Pacific Yew, called the European Yew (*Taxus baccata)* was known to taxonomists. This species also makes taxol but grows quickly and therefore is an efficient source of taxol.

Today taxol is used throughout the word for the treatment of breast cancer.

European Yew

Pacific Yew

Taxol Drug

Questions:

1.) What is the binomial name of the Pacific Yew tree?

2.) Why could scientists not use the Pacific Yew tree as their source of taxol?

3.) How did taxonomy (the study of classification) help scientists find an alternative source of the taxol compound?

4.) Is a tree a plant? Why/why not?

5.) In what other ways can taxonomy be useful?

6.) How do you think taxol stops cell division? What types of proteins do you think taxol may interact with?

Progress: further resources on classification are available here:
http://thescienceteacher.co.uk/classification/