DR. JULIET COATES
SHINING A LIGHT ON MUSTARD CRESS

POSITION
LECTURER
BIOSCIENCES, UNIVERSITY OF BIRMINGHAM

RESEARCH AREA
ENERGY FUTURES
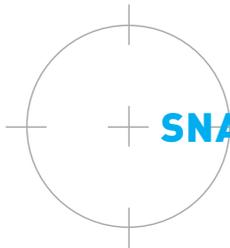
SNAPSHOTS OF SCIENCE 2010

What does the image show?
Arabidopsis thaliana (mustard cress) is a little weed that scientists use to study plant biology. This image of mustard cress cells shows the 'microtubules' (green) that help to ensure the correct production of cellulose fibres, the plant material that we break down to produce biofuel. The red spots are chloroplasts, the structures that enable the plant to photosynthesise – using carbon dioxide, water and light to produce sugars and hence energy for the plant.

How is the work you are doing relevant to everyday life?
My research group is interested in how plant development has evolved. This may not sound all that relevant to real life, but let's put it in perspective. All the complex many-celled land plants (trees, flowers, grass, shrubs, mosses, ferns etc) that we see today arose from a single common ancestor about half a billion years ago. That ancestor somehow managed to go from living in water to living on land. If that had not happened all the plants that we rely on today for oxygen, food, fuel, building and clothing would not exist, and so society as we know it would not exist either!

What does your research hope to achieve?
Whilst moving from water to land plants had to overcome huge environmental challenges, particularly the risk of dessication, or drying out. If we can understand how they managed this, then we can use this knowledge to grow plants that are even better at facing current global challenges. Water shortage is a big problem in many parts of the world, and engineering crops that are better equipped to deal with drought could make a huge difference to world food supply. In addition, if we understand how plant cells have evolved to have the chemical make-up that they now have, we are more likely to be able to find ways of breaking them back down into their component parts to produce biofuels.