



## Battling the brown tree snake

Guam is a small island in the Pacific ocean which is being overrun by brown tree snakes. People have even woke up with them in their beds!



Small snake, big problem  
[goo.gl/nzBAAj](http://goo.gl/nzBAAj)

Scan the QR code or type in the web address to watch the video.

**Why are the snakes such a problem for other wildlife on the island?**

**Extra:**

**The snake is also found in another country called Papua New Guinea. Why is it not causing problems there?**

## Person in UK gets rabies

Rabies is an infectious disease which is very rare in the UK. The person picked it up in South East Asia, where it is lot more common. The green countries in the map below are where it is no longer found.



Do some research on the internet about rabies and then answer the questions.

**How is rabies caught?  
What type of microorganism causes it?**

**Extra:** Explain how a rabies vaccination can stop you from catching the disease.

## Man jumps from plane with no parachute... and survives!

He wore a special suit which has 'wings' and slowed down his fall. Watch the video of the jump.



[goo.gl/1eIMo](http://goo.gl/1eIMo)

**Name the force that the winged suit helped to increase and slow down his fall.**

**Extra:** Draw force diagrams for a man falling with nothing, a parachute and the winged suit. Use them to explain the difference in falling of the man in each case.



## Teacher guide

- This resource has been written for students aged 8-12 and links with the KS2 and 3 science curriculum. It can be used as a poster, homework task or extension activity.
- Each story has two questions. The 'extra question is designed to get the students thinking in more depth or apply their knowledge from other areas of the curriculum.
- Students can use mobile devices such as phones or tablets to scan the QR codes (using an installed app). This will take them directly to the webpage. Alternatively, they can type the shortened URL into a browser.

### **Battling the brown tree snake**

Answers:

They are eating most small prey including birds and rodents. This will have a massive effect on the food webs in most habitats on the island. Because it has no predators (apart from humans) its population is increasing.

**Extra:** Papua New Guinea is the snake's own habitat. Here it's population is controlled by predators. It is an invasive species on Guam probably brought over by accident following WWII.

### **Person in UK gets rabies**

For further information on the story see [goo.gl/BaBUO](http://goo.gl/BaBUO)

Answers:

Rabies is passed from infected animal to human by a bite. It is caused by a virus.

**Extra:** The rabies vaccination contains an inactivated rabies virus which does not cause the disease but provokes the body's immune system into producing antibodies against the virus. We say they are now immune. If the person is then infected with the live virus the body is able to quickly produce the antibodies and destroy the virus before it gets a chance to damage the body.

### **Man jumps from plane with no parachute... ... and survives!**

Answers:

Air resistance is the force which slowed down the man.

**Extra:** Gravity acting down will be the same on each of the force diagrams. Air resistance will be low on the man with nothing, high with the parachute and in between with the wing suit. The man will fall the quickest with nothing and the slowest with the parachute. More able students may be able to discuss terminal velocity.

**For further KS2-5 science lesson ideas and free resources based on topical stories please visit the Snapshot Science blog: [www.snapshotscience.co.uk](http://www.snapshotscience.co.uk)**

## SPIDER-GOAT, SPIDER-GOAT...



Credit: theprodgal/united3g @ Flickr

...does whatever a spider-goat does.

Can she swing

from a web?

No she can't

she's a goat...

...however, she can produce spider silk proteins in her milk

### THE STORY

You may have watched the Horizon programme *Playing God* on BBC2 on Tuesday, and if you didn't there is still time to catch it on iPlayer. If you are teaching about genetic engineering it is well worth spending time watching it as it covers some amazing uses of this branch of biotechnology.

Despite the range of 'synthetic biology' examples out there, in this post I have decided just to concentrate on the spider-goats, the transgenic poster girls of the moment.

Spider silk is incredibly lightweight yet strong. It is five times stronger than steel of the same diameter. It is also biodegradable and compatible with the human body. This amazing material has a myriad of applications in industries as diverse as space flight, fashion and neurosurgery.

There is no wonder that biotechnology companies have been scrambling to find a successful way of mass producing it over the past few years. Attempts have included farming spiders (fail - they tend to eat each other), and the genetic modification of different organisms such as tobacco plants, before Nexia Biotechnologies was successful with the modification of goats that expressed the silk proteins in their milk. The spider-goat was born.

### TEACHING IDEAS

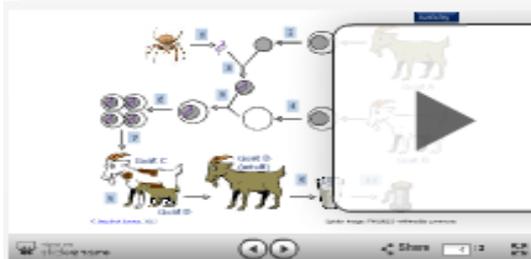
#### A novel material

Silk is a natural polymer so you could use this as an example when teaching about materials in GCSE chemistry. Can the students match up its uses to its properties? For example, it could be used instead of nylon in fishing lines because it is strong but biodegradable and therefore better for the environment.

As I have already covered, silk has properties that often mean it is a better choice of material than its more traditional rivals. Students can research into the advantages and disadvantages of silk compared to another material for a range of applications.

#### Genetic engineering

The actual process by which the goats were created is an example of genetic modification. This resource can be used to teach the method and can be used with KS5 students when studying recombinant DNA or as a way of extending the more able at GCSE.



download

Students are given slide 2 printed out as cards. They have to use the diagram on slide 1 to put the statements in the correct order to show the method used. Slide 2 contains some extension questions.

#### Ethical questions

Of course, there is scope for an ethical debate on this and other examples of transgenic animals. As the scientists 'playing God' (as the title of the Horizon programme mentioned suggests) and what opinions do your students have about the ethics surrounding the spider goats?

### WEBLINKS

Video clip of the Horizon programme showing the spider goats.

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