

Scientists discover secret of limb regeneration: It's all down to vitamins

• Worked out exactly how zebrafish uses special acid to re-grow body parts

By SIMON TOMLINSON

Last updated at 10:38 AM on 25th November 2011

Comments (0) Share Tweet 3 Like

Scientists have finally discovered how some animals can regenerate amputated limbs or damaged organs after three decades of research.

It was previously known that some species used a special acid to re-grow parts of their body, but no-one was sure exactly how it worked.

Now a team of researchers from the University of Konstanz in southern Germany claim they have solved the riddle after studying a master in the art of limb regeneration - the zebrafish.



Breakthrough: By studying zebrafish (pictured), scientists worked out exactly how the freshwater species uses retinoic acid to re-grow parts of its body

While it was understood that retinoic acid played a part in the tropical freshwater fish's ability to rebuild its fins and even heart muscles, the team found it was a critical element.

- More...
- A shortage of genes explains why some people are short, study reveals
 - The alcoholic gene: Scientists find 'echo' of brain wave that predisposes problem drinkers

Gerrit Begemann, lead researcher at Konstanz, told The Local: 'It is a huge success for us. Up to now, no-one has really looked into what the actual function of this acid is.'

Before the zebrafish's fins regenerate, the wound is closed with multiple layers of tissue. The cells beneath the stump then lose their identity and form what is called blastema.

Researchers found that the fish uses a special genetic trick that allows the acid to control the formation of blastema, which means the animal is able to produce a store of cells that can rebuild the fin.

Retinoic acid is produced by animals, including humans, from vitamin A and can activate the necessary genes for regeneration.

It has been shown that pregnant women who do not take enough vitamin A in their diet can have underdeveloped foetuses.

But it will be some time before this knowledge can bring any benefit to humans.

'I wish I could say there is some medical application,' said Dr Begemann.

'The problem is humans can't regenerate tissue. And at the moment we don't understand enough about why not. Ultimately we want to know why.'



Far off hope: Humans can produce the acid used in limb regeneration from vitamin A, but it is not known how this discovery can be applied to us, if at all

Posteingang



Sie haben 1 neue Nachricht
[Öffnen Sie Ihre Nachricht jetzt](#)

14:04 - Freitag, 25 November 2011

Headlines

Most Read

- ▶ Whist players astonished after each receives full suit in one hand... at odds of 2,235,197,406,895,366,368,301,559,999-to-one
- ▶ How will you fit all that under the tree? Vast Amazon warehouse gears up for Christmas rush on Black Friday and Cyber Monday
- ▶ 'Cleverest Facebook scam yet' accuses users of violating site policy and threatens to delete their account
- ▶ Climate change fears 'have been exaggerated' say scientists who claim apocalyptic predictions are unlikely
- ▶ Oh no! Another Mayan prediction of an apocalypse in 2012 is found
- ▶ Found in space: Russia makes contact with lost probe... but now it speaks gibberish
- ▶ Daleks are coming! New BBC gadget brings evil enemies of Dr Who right into your living room
- ▶ The icicle of death: Bizarre 'Bricicle' forms beneath the sea and kills everything in its path
- ▶ Welcome to Earth, population - one: Three billion years ago the sea was a single huge creature that split to form life as we know it
- ▶ Spaceball: Astronaut on the International Space Station filmed playing baseball... with himself
- ▶ Scientists discover secret of limb regeneration: It's all down to vitamins
- ▶ Last line of 'bee-fence': Farmers protect against elephant attacks using beehives
- ▶ Changing faces in a single photo: The moving image that will blow your mind
- ▶ Cheeky 'Facedrink' offers a shot of 'social energy' - at least until lawyers blast it out of existence

FEMALE TODAY

▶ Copycat Kitty: X Factor star is accused of trying to steal the life of Britain's Got Talent Britney impersonator Kitty (L) not so innocent



▶ 'I still love you Nicole': Lewis Hamilton hopes for reunion with Pussycat Doll Scherzinger The pair split up last month after four years



▶ 'God you ate a lot of wedding cake' Kris Humphries takes a dig at Kim Kardashian's weight in new reality show footage



▶ Thought there was X Factor drama on screen? We discover a whole lot more after being given unprecedented access behind the scenes



▶ Fancy learning Zumba with Penny's Strictly partner? Or what happens when the professionals have danced their last tango...



▶ 'He told me I was