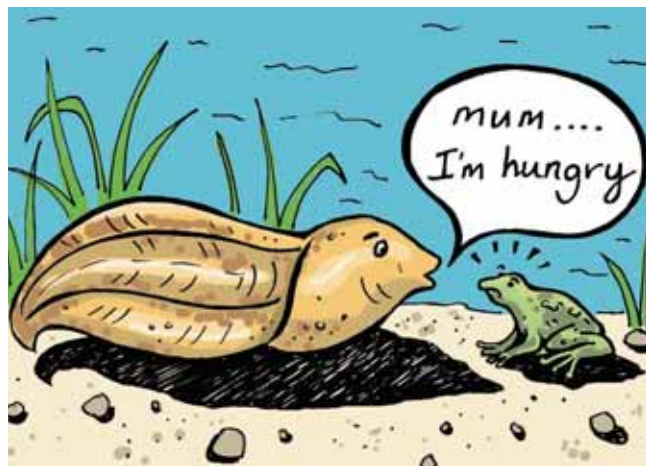


Type 2 diabetes and the incredible shrinking frog

Research at the University of Ulster has suggested a possible treatment for type 2 diabetes. The researchers have discovered that a synthetic version of a natural peptide called pseudin-2 can be used to produce a drug to stimulate the production of insulin in pancreatic cells in the laboratory. There seem to be no toxic effects on the cells.

The peptide is found naturally in the skin of a frog and protects the amphibian from infection.

The species under investigation is something of an oddity. It was named the paradoxical frog (*Pseudis paradoxus*) because of a strange contrast in size between the tadpole and the adult frog. The frogs are green with dark green and olive stripes. They eat mainly small insects, larvae and invertebrates, which they stir up from the mud with their strong toes. The female frog lays its eggs among the water plants growing in ponds in Trinidad and Amazonia. These hatch and grow into tadpoles up to 25cm long. They appear to remain as tadpoles for longer than many other species but then mature into frogs only about 4cm long. The benefit of the shrinking process remains a



mystery. For many years the frogs and tadpoles were thought to be different species.

Frogs are not new to medicine: in 2003 scientists found that venom from some poisonous frogs found in the rainforests could be developed into a new generation of antibiotics. Another recently introduced anti-diabetic drug, exenatide, was developed from a hormone in the saliva of the gila monster, a lizard found in northern Mexico and the south-western US.

More work is needed on the new frog peptide, but such drugs would become part of the new class of medicines known as incretin mimetics which mimic natural substances.

Brain-taxing puzzles and competitions

Much of our daily work demands mental agility but using our brains can also be relaxing. New word and number puzzles appear constantly. We have brain training software on game consoles and most newspapers have adopted *su doku*. Some have whole pages devoted to challenging the reader's brain, with hidden word games, anagram puzzles and the ever-frustrating crossword.

Word games are by no means new. Word squares were found in the ruins of Roman Pompeii and by the 19th century primitive crossword puzzles were appearing. Aimed at children, they often used pictures as well as written clues.

The crossword as we know it dates from Christmas 1913, when Arthur Wynne devised a "word-cross" in the *New York World*. The game was instantly popular and soon became known as the crossword.

Later, in 1924, when the Simon & Schuster publishing business was set up, one of its first products was a book of crosswords. It became a huge international hit, so launching crossword puzzles worldwide.

Many newspapers and magazines have long-standing competitions, such as "spot the ball" puzzles, in which the aim is to put a cross where you think the previously erased ball would be on a picture of football action.

As a variation on this, the *Westmorland Gazette* has since 1993 run a weekly "spot the dog" challenge. A photograph shows a group of sheep being herded, with the sheepdog blanked out. Competitors must place a cross where they think the dog's nose would be.

You can't choose your ancestors

Research at the University of Louisville in Kentucky by Joanna Rowe has found that blue-eyed students perform better academically than brown-eyed individuals. They plan better, study more effectively and produce better examination results. Brown-eyed people have better reaction times in trials and so are more likely to be successful football or tennis players.

A decade of research all over the world, led by Hans Eiberg from the University of Copenhagen, concluded that all blue-eyed people have a mutation of the OCA2 gene. This turns off the ability to produce brown eyes by reducing the production of melanin in the iris.

All Professor Eiberg's blue-eyed subjects had the same mutation at the same place in their DNA and he concluded that all are linked to one ancestor. He believes that at one time all humans had brown eyes and that the blue eye colour originated some 6,000 to 10,000 years ago, probably in the northern part of Afghanistan. Incidentally, although many mammals have blue eyes, including some cats, dogs, rabbits and horses, the only other blue-eyed primate is the aptly named blue-eyed lemur, a subspecies of the black lemur (*Eulemur macaco*).

Talking of common ancestors, researchers at the University of Central Florida found that the purple sea urchin has 7,000 genes in common with humans. Some of these genes are associated with Parkinson's, Alzheimer's and Huntington's diseases and muscular dystrophy. Odder still, this creature, which has no eyes, nose or ears, also has genes that in humans are involved in seeing, smelling and hearing.

The man who left us his "Ch"

The name Joseph-Frédéric-Benoît Charrière may not roll easily off the tongue, and its 19th century owner may now be largely forgotten. But although few will be aware of his full name, the first two letters of his surname still live on in the field of urology.

Of Swiss descent, Charrière lived and worked in Paris, where he was a renowned cutler and surgical instrument maker. Modern developments in surgery owe a lot to his profession, and Charrière is credited with the crossing the legs of forceps so that they open when compressed and close on release, the idea behind spring forceps. He also designed the screw-action lithotrite, an instrument that is passed through the urethra to facilitate the crushing of bladder stones.

Another of Charrière's inventions was the "French unit" — the "Ch" number that we still use to indicate the gauge of catheters. Charrière's system was a scale that rose uniformly by one French unit equivalent to 0.33mm. The size in French units is roughly equal to the circumference of the bore of the catheter in millimetres. Therefore 12Ch is 12mm in circumference, which works out to a diameter of 4mm, and 16Ch is 16mm in circumference, and so on.

Catheters had already been around for centuries when Charrière invented his scale. Apparently the ancient Egyptians made catheters from reeds and probably did not worry too much about the Ch size. The Greeks used a hollow metal tube — a *katheter* — inserted through the urethra into the bladder to drain urine. The word comes from *kathiemai*, meaning to sound with a probe.