

Scientists unlock potential of frog skin to treat cancer

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Scientists at Queen's University Belfast have discovered proteins in frog skins which could be used to treat cancer, diabetes, stroke and transplant patients by regulating the growth of blood vessels.

The award-winning research, led by Professor Chris Shaw at Queen's School of Pharmacy, has identified two proteins, or 'peptides', which can be used in a controlled and targeted way to regulate 'angiogenesis' – the process by which blood vessels grow in the body. The discovery holds the potential to develop new treatments for more than seventy major diseases and conditions that affect more than one billion people worldwide.

The proteins are found in secretions on the skins of the Waxy Monkey Frog and the Giant Firebellied Toad. Scientists capture the frogs and gently extract the secretions, before releasing them back in to the wild. The frogs are not harmed in any way during this process.

Professor Shaw said: "The proteins that we have discovered have the ability to either stimulate or inhibit the growth of blood vessels. By 'switching off' angiogenesis and inhibiting blood vessel growth, a [protein](#) from the Waxy Monkey Frog has the potential to kill cancer tumours. Most cancer tumours can only grow to a certain size before they need blood vessels to grow into the tumour to supply it with vital oxygen and nutrients. Stopping the blood vessels from growing will make the tumour less likely to spread and may eventually kill it. This has the potential to transform cancer from a terminal illness into a chronic condition.

"On the other hand, a protein from the Giant Firebellied Toad has been found to 'switch on' angiogenesis and stimulate blood vessel growth. This has the potential to treat an array of diseases and conditions that require blood vessels to repair quickly, such as wound healing, organ transplants, diabetic ulcers, and damage caused by strokes or heart conditions."

Explaining how his research team looks to the natural world to solve problems where other methods of drug discovery have failed, Professor Shaw said: "Because of its huge potential, angiogenesis has been a prime target for drugs development research over the past forty years. But despite an investment of around \$4-5 billion by scientists and drugs companies around the world, they have yet to develop a drug that can effectively target, control and regulate the growth of [blood vessels](#)."

"The aim of our work at Queen's is to unlock the potential of the natural world – in this case the secretions found on [frog](#) and toad skins - to alleviate human suffering. We are absolutely convinced that the natural world holds the solutions to many of our problems, we just need to pose the right questions to find them."

"It would be a great shame to have something in nature that is potentially the wonder drug to treat [cancer](#) and not aim to do everything in our power to make it work."

The Queen's researchers will receive the Commendation in the Cardiovascular Innovation Award at the Medical Futures Innovation Awards in London this evening (Monday 6 June). The Awards are one of Europe's most prestigious healthcare and business awards, rewarding innovative ideas from front line clinicians, scientists and entrepreneurs. Professor Shaw's team are the only entry from Northern Ireland to be successful at this year's awards.

Congratulating Professor Shaw and his colleagues, Professor Brian

Walker and Dr Tianbao Chen, on their commendation award, Queen's Vice-Chancellor Professor Peter Gregson said: "This award is not only an honour for Professor Shaw and his team, it is recognition of the world-class research taking place at Queen's School of Pharmacy, and the life-changing potential of the University's work in drug discovery."

Provided by Queen's University Belfast

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