

Back to the future for flu fighters

July 20 2010

(PhysOrg.com) -- Australian National University researchers have breathed new life into an old protein drug target in a discovery that could open the door to a new range of drugs to combat influenza.

ANU Researchers have breathed new life into an old protein drug target in a discovery that could open the door to a new range of drugs to combat [influenza](#).

The researchers, Dr Marco Casarotto and Mr Matthew Rosenberg of the John Curtin School of Medical Research at ANU, looked at how older influenza drugs, known as the adamantanes, interacted with a key protein M2, found in the [influenza virus](#). In the process, they settled an ongoing dispute between researchers around the world and raised the prospect of creating a new generation of influenza drugs.

The paper on their findings, Coexistence of two adamantane binding sites in the influenza A M2 [ion channel](#), is published in the latest issue of [Proceedings of the National Academy of Sciences](#) (*PNAS*).

“This discovery gives us the starting point for the design of a new generation of drug which might lead to new anti-virals,” said Dr Casarotto. “It’s a significant step forward in combating influenza.”

The researchers looked at older-style flu drugs which target the M2 protein. These drugs are no longer used because mutations have developed in most [flu strains](#), leading to [drug resistance](#) and rendering this class of drugs useless. However, researchers around the world have

been debating how and why these drugs used to work, with two rival camps offering very different theories on exactly how the drugs work.

Dr Casarotto and Mr Rosenberg have now settled that debate, and this means that groups around the world can move forward, leading to the possibility of new drugs.

“These drugs have been around for over 40 years and were effective until resistance to them developed. Only a handful of mutant sites on the M2 [protein](#) are required to make these drugs ineffective and the key is to find other drugs that overcome these mutations. Now scientists can exploit our recent findings and potentially create the next blockbuster flu drug,” said Dr Casarotto.

The researchers added that it was essential that new drugs to fight flu continue to be developed.

“Tamiflu and Relenza are the main drugs out there, but we can’t get too relaxed - resistance to Tamiflu is already evident,” said Dr Casarotto. “In a few years, those drugs may be ineffective, and we’ll be left with nothing frontline to fight an outbreak. This research paves the way for the next generation of drugs.”

Provided by Australian National University

Citation: Back to the future for flu fighters (2010, July 20) retrieved 25 April 2024 from <https://medicalxpress.com/news/2010-07-future-flu-fighters.html>

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