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Discovery shook medical, pharmaceutical industries

BY ALDEMARO ROMERO
AND DAVID GILMORE
SPECIAL TO THE SUN

JONESBORO — The announcement Monday that the 2006 Nobel Prize in Physiology or Medicine had been awarded to Barry J. Marshall and J. Robin Warren, two Australian scientists, was not as unexpected as the discovery they made in the 1980s.

These two scientists advanced an idea that was viewed with scorn by the scientific community when it was first proposed.

They claimed they had discovered a bacterium, *Helicobacter pylori*, commonly found in the stomach of humans, and argued that this bacterium was the cause of gastritis and peptic ulcers in humans.

The idea was received with skepticism because until that time doctors and researchers alike thought that the cause of this condition was either a stressful lifestyle or diet. Further, given that the environment in the stomach is so acidic few thought that living organism could survive under those conditions.

This also sent shockwaves to the pharmaceutical industry. Because doctors had assumed that ulcers were caused by stress that triggered the production of excess stomach acid, treatment consisted of a continuous regimen of drugs that blocked the release of stomach acid, preventing much of the pain which resulted from acid irritating the stomach lining.

Because it was only a treatment and not a cure, the drug had to be taken indefinitely. With 5 million U.S. citizens suffering from ulcers, drug companies were reaping great profits. With this discovery, suddenly it was possible to not just treat ulcers, but to cure them with antibiotics.

Faced with a sizeable loss of profit as well as the expiration of the patent on Tagamet, one of the top sellers, drug companies increased their offerings of over the counter drug sales as well as switching targets from ulcers to acid reflux disease and other forms of heartburn. Although many other economic factors were involved, the reverberations of Marshall and Warren's discovery are still noticeable in many of the drug commercials on TV today.

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QuickINFO |

The winners: Drs. Barry Marshall and Robin Warren of Australia won the Nobel Prize in medicine for their discovery in 1982 that bacteria causes ulcers.

The research: They showed *Helicobacter pylori* causes ulcers.

The benefit: It transformed peptic ulcer disease from a chronic condition to one that can be cured relatively quickly with antibiotics.

He and Marshall, from the University of Western Australia, analyzed biopsies from many patients and were successful in growing the newfound bacteria in the lab.

Because of the original skepticism on this issue, Dr. Marshall drank a sample of the bacterium, developed stomach inflammation, and treated himself with antibiotics. Later research showed that the bacterium was present in almost all patients with stomach inflammation or peptic-ulcer disease.

Although this microbe can be found in the stomach of about half of all people worldwide, most of them do not experience any symptoms. Of all who are infected, only 10 to 15 percent will eventually develop peptic-ulcer disease. It was later discovered that people who had this infection were at higher risk of developing stomach cancer, the second most deadly form of cancer among humans.

A few years ago, the potential for this bacterium to be spread by houseflies was reported. However, a 1997 paper followed up on this and reported that there was a low likelihood of this occurring. The best hypothesis for transmission of *Helicobacter* appears to be close contact, poverty and poor hygiene, with rates of infection higher in developing countries.

Current research suggests that a strain of *Helicobacter* can be shared among family members. Mothers can pass the bacterium to their children, and siblings can spread it among each other. Thanks to this discovery, now a host of researchers worldwide are looking into the possibility that other bacteria could cause other inflammatory conditions such as rheumatoid arthritis.

For more information contact the ASU Department of Biological Sciences at biology@astate.edu. Dr.

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For more information contact the ASU Department of Biological Sciences at biology@astate.edu. Dr. Romero is chairman and professor of biology, and Dr. Gilmore is assistant professor of biology at Arkansas State University.