



April 15, 2014

## **Results from Non-Tuberculous Mycobacteria (NTM) Study Using Aradigm's Liposomal Ciprofloxacin to be Presented at the American Thoracic Society 2014 International Conference**

HAYWARD, Calif.--(BUSINESS WIRE)-- Scientists from the Oregon State University, Corvallis (OSU) and Aradigm Corporation (OTCBB: ARDM) (the "Company") demonstrated that after 4 days of in vitro treatment of macrophages infected with *Mycobacterium avium* and *Mycobacterium abscessus*, Aradigm's liposomal ciprofloxacin was associated with a decrease of greater than 99% of these infections at ciprofloxacin concentrations of 200 mcg/ml, which approximate the peak sputum levels observed in humans in prior Aradigm clinical studies. At a lower concentration of 20mcg/ml, the liposomal concentrations still showed statistically significant decreases greater than 70% for *M. avium* and greater than 90% for *M. abscessus*. Unencapsulated ciprofloxacin showed smaller decreases which were only statistically significant at 200 mcg/ml. Liposomal ciprofloxacin at a concentration of 100 mcg/ml significantly reduced the population of these mycobacteria in a biofilm assay by more than 50% whereas unencapsulated ciprofloxacin did not show statistically significant decreases.

"These results are very encouraging as the current treatments are not particularly effective and have many side-effects. The airway delivery of ciprofloxacin in a vehicle that shows capability of killing specific mycobacteria harbored in macrophages and biofilms may be a promising way to help patients with these debilitating chronic infections," said Dr. Luiz Bermudez, professor of Biomedical Sciences at OSU.

The detailed description of this research and its findings will be presented at Session C30 entitled "Late Breaking Abstracts in Disease Treatment and Clinical Outcomes at 8:15 am-10:45 am on Tuesday, May 20, 2014 (Abstract ID/Title: #57372 - Liposomal Ciprofloxacin Preparation is Active against *Mycobacterium Avium Subsp Hominissuis* and *Mycobacterium Abscessus* in Macrophages and in Biofilm) at the American Thoracic Society 2014 International Conference in San Diego, CA.

The research reported in this publication was supported by the National Institute of Allergy And Infectious Diseases of the National Institutes of Health under Award Number R43AI106188. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

### **About Pulmonary Non-Tuberculous Mycobacteria (PNTM) Infections**

NTM is found almost everywhere - for example, in tap water and the soil. People with severe pulmonary diseases including cystic fibrosis, chronic obstructive pulmonary disease (COPD), and Alpha-1 Antitrypsin deficiency are particularly vulnerable to pulmonary non-tuberculous mycobacteria (PNTM) infections. PNTM symptoms include: fever, cough (including coughing up blood), weight loss/loss of appetite, fatigue and night sweats.

PNTM patients are treated with antibiotics. Some species of mycobacteria may also be resistant to certain antibiotics. Treatment may last more than one year.

A publication from the National Institutes of Health based on U.S. Medicare data from 1997-2007 determined that the annual prevalence of patients infected with PNTM in the U.S. increased 8.2% per year from 20 cases/100,000 to 47 cases/100,000 in people over 65.

### **About Aradigm's inhaled ciprofloxacin formulation brands - Pulmaquin® and Lipoquin®**

Ciprofloxacin, available in oral and intravenous formulations, is a widely prescribed antibiotic. It is used to treat acute and chronic lung infections and is often preferred because of its broad-spectrum antibacterial activity against various bacteria such as *Pseudomonas aeruginosa*. Pulmaquin is a dual release formulation that is a mixture of liposome encapsulated (Lipoquin) and unencapsulated ciprofloxacin. It will be evaluated in two Phase III studies to be started in the first half of 2014 to determine its safety and effectiveness as a once-a-day inhaled formulation for the treatment of non-cystic fibrosis (CF) bronchiectasis.

Pulmaquin has been extensively tested through preclinical studies and a Phase IIb study (ORBIT-2). Previous studies have demonstrated no significant clinical safety concerns.

Aradigm has been granted orphan drug designation for the combination of liposomal ciprofloxacin and free ciprofloxacin for non-CF bronchiectasis in the U.S.

## **About Aradigm**

Aradigm is an emerging specialty pharmaceutical company focused on the development and commercialization of drugs delivered by inhalation for the prevention and treatment of severe respiratory diseases. Aradigm has product candidates addressing the treatment of bronchiectasis, cystic fibrosis, inhalation tularemia, pneumonic plague and Q-fever infections, and prevention of respiratory and other diseases in tobacco smokers through smoking cessation.

More information about Aradigm can be found at [www.aradigm.com](http://www.aradigm.com).

Aradigm, Pulmaquin, Lipoquin and the Aradigm Logo are registered trademarks of Aradigm Corporation.

Aradigm Corporation  
Nancy Pecota, 510-265-8800  
Chief Financial Officer

Source: Aradigm Corporation

News Provided by Acquire Media