

## Technology Offer

### Novel method of treating COPD

Reference Number  
TO 01-00245

#### The Challenge

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of chronic morbidity and mortality throughout the world. COPD is currently the fourth leading cause of death in the world, and further increases in the prevalence and mortality of the disease can be predicted in the coming decades.

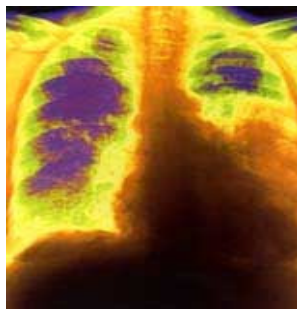
COPD is usually a progressive disease, and a patient's lung function can be expected to worsen over time, even with the best available care. Various therapeutics are used to control symptoms, among others bronchodilators, glucocorticosteroids, antibiotics, antimycolytics, immunoregulators, antitussives, vasodilators, respiratory stimulants and vaccines. However non of the existing medications for COPD has been shown to modify the long term decline in lung function that is the hallmark of this disease.

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#### The Technology



COPD lung: [http://www.mcd.hu/hirek/2004/49\\_week/5077.htm](http://www.mcd.hu/hirek/2004/49_week/5077.htm)

Disorders in the protease/protease inhibitor equilibrium are the cause underlying the pathogenesis of chronic lung diseases, especially of COPD. Matrix metalloproteases (MMPs), secreted by alveolar macrophages lead to irreversible damages of the lung tissue and thus result in decrease of respiratory functions. Among MMPs in COPD, it is particularly the secretion of MMP-9 metalloprotease which is increased in the airways and alveoles and can no longer be completely neutralized by its natural antagonist TIMP-1 (tissue inhibitor of metalloprotease).

It has been shown according to the invention that liposomal vitamin A inhibits MMP-9 expression and at the same time stimulates expression of TIMP-1.

The novel therapeutic approach for COPD treatment could be established via the efficient reduction of tissue destructive potential of the proteolytic system by delivery of liposomal vitamin A derivatives. To avoid potential side effects known by oral administration of vitamin A in cancer therapy, delivery will be done with significantly lower doses as local treatment via direct inhalation of vitamin A liposomes. The inhaler of choice is commercially available. Since beginning of 2008 first compassionate use studies are underway showing very promising results.

#### Commercial Opportunity

Seeking strategic partnership for further development towards clinical phase I (GMP production of liposomes, animal Tox-study).



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## **Patent situation**

A priority application DE10012151A1 was filed March 13th, 2000. International applications and patents: WO0168081A1: agent for treating illnesses of the tracheobronchial tract, esp. chronic obstructive pulmonary disease (COPD), US07074389, EP01263422B1 and JP23528055T2.

## **Further Reading**

Frankenberger M. et al.; Mol Med. 2001 Apr;7(4):263-70.

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