

# New European research project aims to tackle antibiotic resistance issue raised by WHO via inhalable nanotherapeutics



A new research project (PneumoNP) is aimed at tackling antibiotic resistance in respiratory tract infections via the use of inhalable nanotherapeutic compounds. Funded under the FP7 programme by the European Commission, the 4-year long PneumoNP project brings together top research institutes, universities, clinicians and enterprises from 6 EU member states. This novel collaboration will contribute to answer the call of the World Health Organization (WHO), who recently released an alarming report on the global threat of antibiotic resistance. The project will develop an innovative solution to antibiotic resistance by coupling new antibiotics to inhalable carrier molecules, resulting in more efficient targeting of antibiotics to infection-causing bacteria present in the respiratory tract.

## WHO reports on the global threat of antibiotic resistance

Only 2 months ago, the WHO revealed that the threat of global antibiotic resistance was no longer a prediction, but a real-life fact, affecting every region of the world and potentially people of any age. The key findings of the report focused on the bacterium *Klebsiella pneumoniae*, a major cause of hospital-acquired respiratory tract infections such as pneumonia. In some countries, this bacterium is so resistant that carbapenem antibiotics (our most powerful weapon against antibiotic resistant bacteria) does not work in more than half of the people treated for this infection. In their report, the WHO specifically called attention to the need to develop new diagnostics, antibiotics and other tools to allow healthcare professionals and the public to stay ahead of this worrying increase in antibiotic resistance.

## Nanotherapeutics to treat antibiotic resistant pneumonia infections

In this context, the European Commission launched 15 projects under its 7<sup>th</sup> Framework Programme to fight antimicrobial resistance, with PneumoNP being one of these projects. Started in 2014, the aim of this 4-year project is to develop novel therapeutic and diagnostic tools for bacterial respiratory tract infections, focusing on infections caused by *Klebsiella pneumoniae*. PneumoNP will pioneer the development of a therapeutic treatment based on a combination of nanocarriers coupled to new antibiotics. This novel combination is expected to enhance the efficiency of antibiotic delivery to the patient. The project is expected to generate:

- a new inhalable drug system made of a new nanotherapeutic system (an antimicrobial peptide or an active pharmaceutical ingredient and a nanocarrier);
- a new aerosol technology that will allow direct access to the main focus of infection;
- an innovative efficiency-efficacy test to follow-up the treatment;
- a new diagnostic test for faster detection and identification of antibiotic resistance in bacteria causing respiratory infections.

## European expertise

European funding allows PneumoNP to combine scientific research capacities with the expert healthcare capabilities of European enterprises. The result is an interdisciplinary collaboration between 11 teams from 6 EU member states - Spain, Italy, France, Germany, The Netherlands, and Denmark. Each partner has a distinct yet collaborative role according to its own expertise involving a total of 8 work packages. ###



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### More about PneumoNP on:

www.pneumonp.eu  
@PneumoNP

## Resources

WHO press release, 30<sup>th</sup> April 2014: WHO's first global report on antibiotic resistance reveals serious, worldwide threat to public health

<http://www.who.int/mediacentre/news/releases/2014/amr-report/en/>

PneumoNP infographics (available upon request)

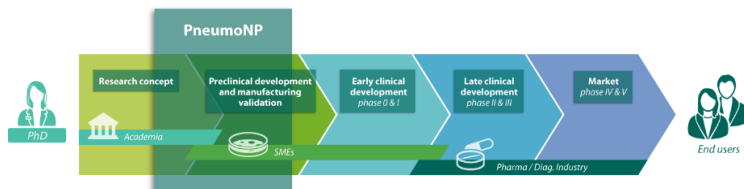


Figure 1 - PneumoNP in the nanomedicine value chain

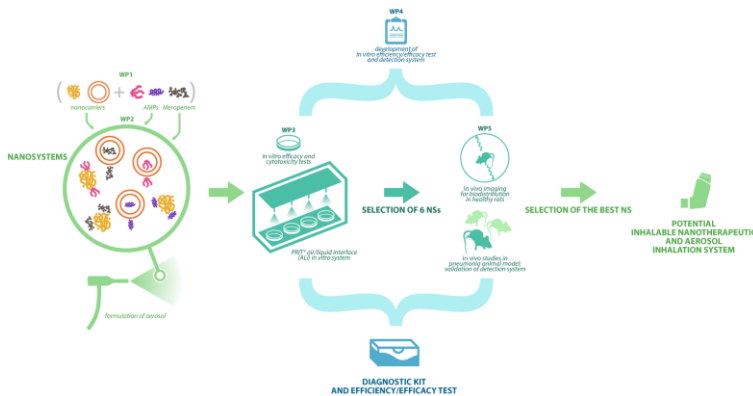


Figure 2 – PneumoNP concept

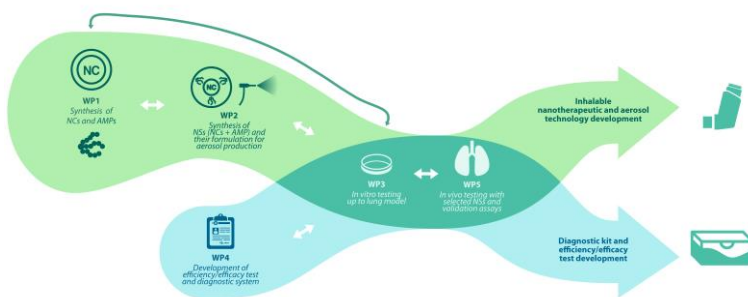


Figure 3 – Pert diagram

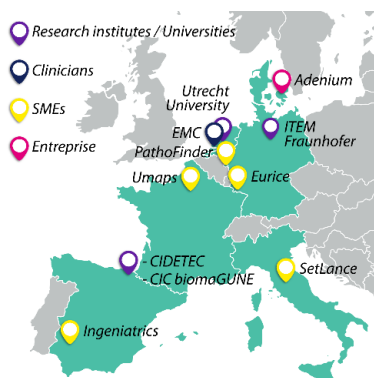


Figure 4 – Partners map