**Pulling the plug on tuberculosis: Koen Andries (Belgium) nominated for the European Inventor Award**

* **First new anti-tuberculosis drug in over 40 years**
* **Game-changing approach: cuts off the energy supply in TB bacteria**
* **Even multidrug-resistant tuberculosis strains can be successfully treated**
* **Chance to cure 8 million new TB infections each year. TB claims up to 2 million victims annually**
* **EPA President Battistelli: “A pharmaceutical development that opens up new perspectives for tuberculosis victims everywhere.”**

Munich/Beerse, 29 April 2014 – Reducing treatment times for tuberculosis (TB) with an innovative approach and achieving a full recovery faster: this is the mission of the research team led by Koen Andries (Belgian) and Jérôme Guillemont (French)[[1]](#footnote-1). Together, they developed a medication that quickly cuts off the energy supply in tuberculosis bacteria. This makes it possible to successfully treat even multidrug-resistant strains of the disease. Their medication is the first new anti-TB drug in 40 years. For this achievement, Andries and his team have been nominated as finalists by the European Patent Office (EPO) for the 2014 European Inventor Award in the category “Industry”. The European Patent Office will present the prize on 17 June in Berlin, Germany.

After AIDS, tuberculosis is the second most widespread cause of death by disease worldwide. However, unlike HIV, TB bacteria can be treated and recovery is possible. Currently, simple infections are treatable in about six months; up to 20 months can be required for serious cases. Because symptoms disappear shortly after starting to administer conventional medications, many patients quit therapy prematurely and thus forego the possibility of a full recovery. The pathogen remains in the body and becomes increasingly resistant to pharmaceuticals. Each year, TB claims up to two million victims worldwide; eight million new cases are registered annually. Especially in areas where tuberculosis is widespread – primarily in poorer countries – the infection can also be devastating to the market because of growing infection rates.

**From veterinary to human medicine**

Koen Andries is a microbiologist with a PhD in veterinary medicine. He began his career with research on viral diseases in animals. After reading a WHO report in 2001 that described the increasing prevalence of tuberculosis as well as its growing unpredictability, he decided to switch his focus to human medicine and began to search for a cure for tuberculosis together with French chemist Jérôme Guillemont. Sometimes even curable in about six months, normal forms of tuberculosis, proved to be less problematic than aggressive strains which resist treatment with available drugs. “Multi-drug-resistant” (MDR) and “extensively drug-resistant” (XDR) tuberculosis were either extremely difficult or impossible to treat. “Resistance to different drugs is one of the biggest problems we face in the battle against tuberculosis,” Professor Andries explains. “Our compound is particularly effective in treating these bacterial strains.”

**Finding the proverbial needle in the haystack**

Professor emeritus at the University of Antwerp, Andries pored over the “compound library” of his employer Janssen Pharmaceutica, headquartered in Beerse, in the Flemish region of Belgium, together with his team. The researchers tested thousands of chemical substances, repeatedly recombining and retesting them until they finally stumbled upon the quinoline molecule, one of 100,000 substances stored at Janssen. With 20 different quinoline derivatives to choose from, the scientists decided to go with the practically titled “R207910” compound. Later renamed “bedaquiline”, the molecule proved to be the most effective inhibitor of mycobacterial growth. Unlike all previous TB medications, which only slowed bacterial reproduction, bedaquiline paralyzes the energy supply in the bacterial cell, which then gradually dies.

Because the molecule has a completely different effect than previous drugs to which many TB bacteria have grown resistant, bedaquiline is also significantly more effective in the battle against MDR tuberculosis. “We have saved so many people’s lives,” says Andries. “Sometimes it’s just so exciting that I can’t sleep at night.”

**Fast-track approval in several countries**

Because of its revolutionary effectiveness, the U.S. Food and Drug Administration (FDA) accelerated the approval of bedaquiline in 2013 for use as part of combination therapy for adults with multi-resistant tuberculosis when no other options are available. Other countries including Germany have also fast-tracked approvals: this is an exceptional status that demonstrates the drug’s importance in battling this insidious disease.

Of the approximately eight million people that become infected with tuberculosis each year roughly four percent have MDR-TB and are thus resistant to “first-line” drugs. Among this group, roughly ten percent are also resistant to the most important second-line treatments and suffer from XDR-TB. Up to two million tuberculosis cases end fatally each year. For these cases, bedaquiline, marketed under the name Sirturo, is the last chance of survival.

Developing a new drug until it’s approved for use can take decades and cost millions. Without patent protection, only a handful of companies would be willing to risk such heavy investments. Backed by a Belgian pharmaceutical corporation, which has since come under U.S. ownership, Andries and Guillemont had the perfect prerequisites and working conditions.

“The fact that it took so many years to achieve a real breakthrough in treating tuberculosis shows just how difficult it is to fight this terrible disease,” says EPO President Benoît Battistelli. ”With their revolutionary new therapy, Koen Andries and his team have found an extremely promising approach that can save innumerable lives. I am very pleased that our independent jury has nominated Koen Andries and his team for the European Inventor Award.”

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| **Media and services package for Koen Andries:** |
| **Media package:**  [**Video materials and photos on Koen Andries for online use**](http://www.epo.org/news-issues/press/inventoraward/industry.html)  **Background to the topic**  **How the invention works**  **Economic aspects: facts and figures**  **View the patent**  [**EP1527050**](http://worldwide.espacenet.com/publicationDetails/originalDocument;jsessionid=70E374972F442073656D222A12733839.espacenet_levelx_prod_3?FT=D&date=20100407&DB=&locale=en_EP&CC=EP&NR=1527050B1&KC=B1&ND=1)  **The disease that wouldn’t go away**  From its beginnings in antiquity through to the 21st Century, tuberculosis – known under such names as phthisis and consumption – has been a widespread killer that has proven difficult to fight. Although a basic immunisation against TB has existed since the early 1900’s, the immunity it offers lessens over time. This problem is compound by the disease’s ability to evolve into drug-resistant strains which render standard antibiotic treatments ineffective.  The Quinoline-derivative drug developed by Koen Andries and his team at Janssen Pharmaceutica represents a novel approach to treating TB – and was the first new TB medicine in over forty years. It now joins other drugs being developed and tested as well as new combinations of existing drugs, which may be able to put TB on the defensive. Read more about the ongoing fight against [a worldwide killer](http://www.epo.org/news-issues/press/inventoraward/industry.html).  ***For more information about these topics send us an email***  **Statistics of European patent applications in pharmaceuticals**  **About the European Patent Office:**  [**The EPO - Promoting innovation to enhance Europe's competitiveness**](http://www.epo.org/news-issues/press/background/epo.html)  **Study on the economic impact of patents and other IP rights:**  [**Executive summary**](http://documents.epo.org/projects/babylon/eponet.nsf/0/8E1E34349D4546C3C1257BF300343D8B/$File/ip_intensive_industries_en.pdf)  **For more information, please contact:**  Oswald Schröder  Spokesperson/Project manager  Tel. +49 (0)89 2399 1800,  Mobile: +49 (0)163 8399 668  [oschroeder@epo.org](mailto:oschroeder@epo.org)  Rainer Osterwalder  Media Relations Officer  Tel. +49 (0)89 2399 1820,  [rosterwalder@epo.org](mailto:rosterwalder@epo.org)  Riet Devogelaere Shepard Fox Communications Telephone        +32 2 210 02 53  Mobile             +32 479 56 38 83  [riet.devogelaere@shepard-fox.com](mailto:mieke.demeulenaere@shepard-fox.com) |

1. Besides Andries and Guillemont, the team of inventors at Janssen Pharmaceutica included Jozef F.E. Van Gestel, Marc Venet, Laurence F.F. Marconnet-Decrane, Daniel Vernier, Frank C. Odds and Imre Csoka [↑](#footnote-ref-1)