



evotec

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DRUG DISCOVERY INSIGHTS

EVOTEC AND BAYER ALLIANCE TO FIGHT CHRONIC COUGH

*Endometriosis alliance
expanded into new field with
high unmet medical need*

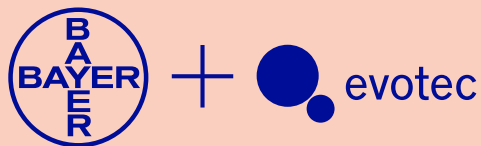
THE EVOTEC - BAYER COLLABORATION

Background

In October 2012, Evotec and Bayer entered into a multi-target collaboration with the goal of developing three clinical candidates for the treatment of endometriosis. Both parties contribute innovative drug targets and high-quality technology infrastructures and share the responsibility for early research and pre-clinical characterisation of potential clinical candidates.

Recently, the scope of the alliance was expanded to include chronic cough. The potential to treat patients with a persistent chronic cough was highlighted due to the nature and expression of the target protein that was initially being explored for the treatment of endometriosis.

The first very promising programme that arose from the Bayer-Evotec alliance, has now entered Phase II clinical trials and is expected to show results in 2019.



Achievements so far

- ▶ Six pre-clinical development candidates developed + three programmes progressed into Phase I in endometriosis and chronic cough
- ▶ Advancement of a promising drug candidate into Phase II development in chronic cough

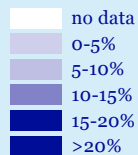
Why chronic cough

- ▶ No adequate solutions for patients with unexplained chronic cough or refractory patients who do not respond to medication of underlying condition
- ▶ Global prevalence of approx. 10%

Agreement with Bayer

- ▶ Upfront payment of € 12 m to Evotec
- ▶ Potential pre-clinical, clinical and sales milestone payments of up to approx. € 580 m and tiered royalties of up to a low double-digit percentage of net sales
- ▶ Integrated collaboration with substantial efforts from both partners
- ▶ Strategic five-year collaboration (agreement has been extended for a further year)

CHRONIC COUGH — HIGH GLOBAL EPIDEMIOLOGICAL BURDEN



- ▶ High global prevalence (9.6%), comparable to that reported for asthma or chronic obstructive pulmonary disease
- ▶ Prevalence in Europe (12.7%) and America (11%) significantly higher than in Asia (4.4%)
- ▶ No ethnic difference in cough reflex sensitivity found

Sources
<http://erj.ersjournals.com/content/early/2015/02/05/09031936.00218714>

WHY DO WE COUGH?

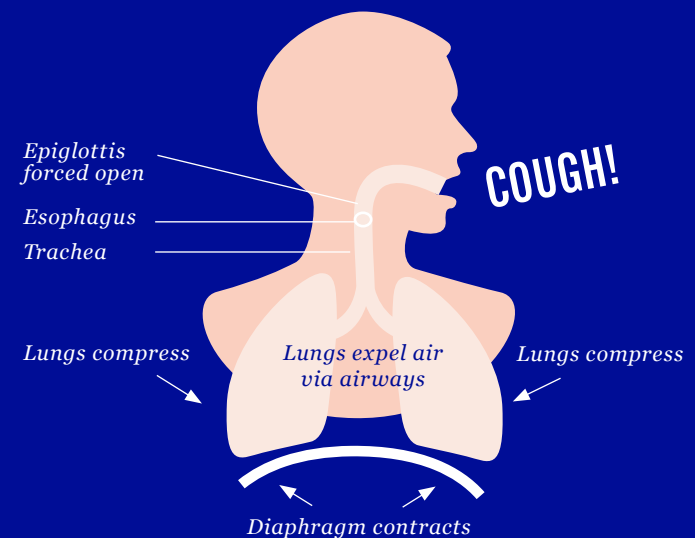
A cough is a sudden and often repetitively occurring, protective reflex, which helps to clear the large breathing passages from fluids, irritants, foreign particles and microbes.

All coughs are meant to protect us in some way!

The cough reflex consists of three phases:

- ▶ An inhalation
- ▶ A forced exhalation against a closed glottis
- ▶ And a violent release of air from the lungs following opening of the glottis, usually accompanied by a distinctive sound

Coughing is either voluntary or involuntary. Frequent coughing usually indicates the presence of a disease. A cough is the most common reason for visiting a primary care physician in the United States.



4 facts about chronic cough

1. It lasts longer than 8 weeks in adults or 4 weeks in children.
2. Cough frequency can range from 10–100s times per hour.
3. Can last for months or even years.
4. It is one of the most common reasons for seeing a doctor.

Major causes of chronic cough

- Postnasal drip
- Asthma
- Allergies
- Gastroesophageal reflux disease
- Chronic bronchitis
- Chronic sinusitis
- Treatment with ACE inhibitors

Complications

A chronic cough can have the following effects:

- Affecting a person's ability to sleep well
- Daytime fatigue
- Difficulty concentrating at work and school
- Headaches
- Dizziness

Effects apart from physical complications can include:

- Depression
- Anxiety
- Anger
- Distress
- Social disruption

HOW TO TREAT CHRONIC COUGH

Medications used may include

- Antihistamines, glucocorticoids and decongestants
- Inhaled asthma drugs
- Antibiotics
- Acid blocker
- Cough suppressants

But, there is currently **no drug** approved for the treatment of chronic cough directly, all drugs used try to treat the underlying condition!

Especially for patients with unexplained chronic cough or refractory patients, new and effective treatment options are urgently needed.

There are only very few programmes in clinical development for chronic cough, less than a handful in late-stage clinical trials.

The Bayer – Evotec collaboration is strongly committed to bring new treatment possibilities to patients in a fast and efficient manner.