Collaboration Update

Novel collaboration with Medical Research Council gives UK academia access to AstraZeneca compounds

“Our initial ground-breaking compound collaboration with AstraZeneca attracted a huge amount of interest from the academic community and saw the MRC award £7 million for research into Alzheimer’s, cancer and rare diseases. By funding studies using these compounds, which otherwise would not be carried out, we are enabling scientific breakthroughs that will improve the health of patients in the UK and worldwide.”

Chris Watkins,
Director of Translational Research,
UK Medical Research Council
The Medical Research Council has been at the forefront of scientific discovery to improve human health. Founded in 1913 to tackle tuberculosis, the MRC now invests taxpayers' money in some of the best medical research in the world across every area of health.

In 2011, a landmark agreement between the MRC and AstraZeneca gave unprecedented access to 22 of our clinical and preclinical compounds to academic researchers across the UK. These compounds had stalled at some point in early testing, often because they did not prove effective against the original target disease. However, they may still be useful against other diseases with shared biological pathways.

These compounds are therefore incredibly valuable to academic researchers, who can use them to understand how a disease takes hold in the body and how it might be stopped or slowed down. Re-purposing such compounds could lead to the development of new medicines for many debilitating conditions and, because the compounds have already undergone some preliminary development such as safety testing, any new treatments arising from the research could reach patients much faster.

**Collaboration in practice**

Together with the MRC, we invited preclinical and clinical research proposals from across the UK academic community, with a view to finding new treatment opportunities for our compounds. We worked with the academic collaborators to develop scientific proposals and the MRC selected the best ones for funding. The successful applicants work collaboratively with AstraZeneca to deliver new studies.

15 clinical and preclinical studies are currently underway, covering disease areas such as respiratory illness, Muscular Dystrophies, bone disease and various mental health conditions.

**University of Manchester, UK: Creating hope for millions of chronic cough patients**

Jacky Smith is Professor of Respiratory Medicine/Honorary Consultant, Centre for Respiratory and Allergy, University of Manchester. She was given access, under the MRC collaboration, to AstraZeneca compound AZD3355, a GABA-B receptor agonist, which had originally been developed to treat heartburn by reducing the gastro-oesophageal reflux but did not have the desired results.

Professor Smith is now assessing whether the compound could become a new treatment for chronic cough.

Cough is the single most common reason for seeking medical care, with an estimated 12% of the population suffering from chronic coughing (lasting longer than eight weeks). Severe cases are referred to the regional specialist centre at the University of Manchester.

Professor Smith’s first study with AZD3355 assessed the compound against an older receptor agonist and a placebo in healthy volunteers where coughing was experimentally induced. AZD3355 was well tolerated, and a second study involving up to 60 chronic cough patients is now recruiting. These patients will be given AZD3355 or a placebo and their coughs will then be monitored over a 24-hour period by a recording device developed by the University. The results will be synchronised with earlier reflux monitoring data, to see which patients have a link between reflux and cough.

“Our hope is that AZD3355 will be able to break the link between reflux and cough,” said Professor Smith.

“Some patients have surgery to reduce reflux and stop coughing. We hope that AZD3355 will have a similar outcome as surgery but through clinical rather than invasive means.”

“Getting access to the compound means an enormous amount. Much of my work involves collaborating with pharmaceutical companies to try to understand the causes of cough. By getting access to a compound like this, no matter the end outcome, we would still have advanced our knowledge. There have been no new treatments for cough in over 50 years, so there is so much potential for patients.”

The team’s findings on the role of GABA-B receptor mechanisms in the human cough reflex were recently presented at the British Thoracic Society meeting and also published in the *Thorax journal.*
Making progress in many research areas

Royal Veterinary College, University of London, UK

Researchers are assessing whether lung disease drug AZD1236 could be re-purposed to treat Muscular Dystrophies. There are more than 30 types of Muscular Dystrophy (MD), yet no approved drug to prevent progressive muscular wastage leading to severe disability and premature death.

We initially developed AZD1236 (Matrix metallopeptidase 9/12 (MMP9/MMP12) inhibitor) to treat Chronic Obstructive Pulmonary Disease. It is now being assessed in mouse models for two types of MD, to see if it can slow disease progression. If successful, the study will spur human trials, aimed at giving MD patients a better quality, longer life.

University of Bristol, UK

Scientists are working with AstraZeneca compound zibotentan (Endothelin A Receptor Antagonist) in the hope of creating a new approach to treating Alzheimer’s.

Alzheimer’s is the most common form of dementia, affecting around half a million people in the UK and rising. It occurs when protein plaques and tangles develop in the brain, damaging the nerve cells.

The team is investigating why blood flow through the brain is reduced in people with Alzheimer’s. They are testing whether zibotentan, originally developed for the treatment of prostate cancer, could delay or even reverse disease progression by improving blood flow through the brain.

The collaboration with AstraZeneca has given us access to a drug with unique properties, which are exactly what we’re looking for in trying to treat Alzheimer’s disease. It’s also given us access to a large amount of background information and safety data. The positive feedback and encouragement at all stages from AstraZeneca has also been great for team morale and the success of the project.

Seth Love, Professor of Neuropathology, University of Bristol

What’s special about the collaboration?

Based on the success of our initial collaboration with MRC, we are making a further 30 compounds available as part of a new agreement. Another six pharmaceutical companies are now following our example, by offering access to their deprioritised compounds.


“Our collaboration with MRC plays a crucial role in helping to unlock the potential of new treatments and transform our understanding of diseases. This ground-breaking partnership has set the standard for openness and new scientific thinking and has the possibility to bring real benefit to patients in need. The MRC are flexible and forward thinking. Our initial collaboration paved the way for a new transparency in how industry and academia work together to improve patient health in the UK.”

MRC perspective: “This is a unique collaboration, which is helping to maximise the potential of many compounds, any one of which could prove a scientific breakthrough,” said Chris Watkins, Director of Translational Research at the MRC.

“Our partnership with AstraZeneca is a perfect combination because it enables academia to benefit from the work of a leading pharmaceutical company in a way that could advance scientific understanding of a wide range of diseases.”

“We’re now building on this success by expanding into a rolling programme with seven companies. This will allow the academic community to access even more assets for use in innovative research projects.”

The ground breaking MRC partnership enables AstraZeneca scientists to collaborate with the best academic scientists across a range of disease areas. This project was born from our strong belief in the strength of UK science and in the important role that funding agencies like the MRC play in supporting the life sciences sector here.

Mene Pangalos, EVP, Innovative Medicines & Early Development biotech unit, AstraZeneca