To develop a new targeted therapy for the treatment of naive and PARP inhibitor-resistant BRCA1/2-mutated tumors

Results in Brief

A new hope for treatment-resistant breast and ovarian cancer

The EU-funded TargetBRCA project has identified new ways to attack tumours that resist conventional treatments such as chemotherapy.

Over 2.5 million people worldwide were diagnosed with breast or ovarian cancer in 2020. Within these are cancers that are resistant to current forms of treatment, carrying a high rate of mortality.

“The emergence of cancers that are resistant to existing therapies highlights the urgent and unmet need for additional therapeutics,” says Raphael Ceccaldi, a researcher at the Curie Institute.

With the support of the TargetBRCA project, Ceccaldi is leading an effort to develop new methods for treating aggressive forms of breast and ovarian cancers that can resist such treatments as chemotherapy.

Stopping tumours in their tracks
Ceccaldi’s research, which received additional support from the European Research Council, focused on characterising new molecules with the potential for targeting and inhibiting a specific enzyme associated with the formation of aggressive tumours.

“The main goal of our proof-of-concept project was to generate enough data to establish partnerships with pharmaceutical companies or private investors to develop a clinical-grade inhibitor for treating chemo-resistant breast and ovarian tumours,” explains Ceccaldi.

This goal was achieved in August 2023, when the project entered into a research collaboration agreement with ArgoBio Studio, a private investor. Together, they have since launched a start-up dedicated to developing targeted therapies for breast and ovarian cancers.

Innovation linked to basic research

In addition to securing this important partnership, the project generated data about potential new tumour-blocking molecules. However, getting this data wasn’t always easy.

For example, after several months of intense investigation on a potential molecule, researchers realised they were likely heading down a dead end. The project was paused while researchers conducted additional research on the biology of the DNA repair target.

Understanding this, they were then able to adapt their work on the potential tumour-blocking molecule accordingly. “It’s important to always remember that innovation must be tightly linked to basic research,” notes Ceccaldi. “You simply cannot innovate without first having the strong basic science to back you up.”

Thanks to this flexibility, the project now has a portfolio of candidate molecules that are entering the ‘hit-to-lead’ phase. This is an important milestone on the route to becoming a preclinical grade molecule, and one that will be further accelerated by the new start-up’s fundraising prowess.

A paradigm shift in cancer treatment

According to Ceccaldi, TargetBRCA represents a new hope in the race to cure aggressive breast and ovarian cancers. “Our treatment is nothing short of a paradigm shift, the first step towards the development of safe and effective therapies for treating chemo-resistant tumours,” he concludes.

In addition to the work that will be carried out by the soon-to-be announced start-up,
Ceccaldi has lodged an application with the European Innovation Council Transition Programme, where he hopes to be able to further advance the work started during the TargetBRCA project.

**Keywords**

TargetBRCA, breast, cancer, ovarian cancer, chemo-resistant tumours, tumours, pharmaceutical companies, innovation, science

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