

## Towards a better understanding of triple negative breast cancer and new treatment strategies



Brussels, December 19<sup>th</sup>, 2019 – In an article that was published recently in the *Journal of the National Cancer Institute*, the Breast Cancer Translational Research Laboratory at the Jules Bordet Institute highlighted for the first time the heterogeneity of the tumour microenvironment and immune system in triple negative breast cancers. This research is aimed at improving the treatment available to patients suffering from this kind of cancer

for which the prognosis is often unfavourable.

### Triple negative breast cancer: a heterogeneous disease

Triple negative breast cancer, which represents between 15% and 20% of all breast cancers, is defined by an absence of expression in the tumour cells of the oestrogen and progesterone receptors as well as the absence of HER2 gene overexpression or amplification. The prognosis for this type of breast cancer is more unfavourable than for other breast cancer subtypes. Despite the major progress made in treating other breast cancer subtypes, the treatment options for triple negative breast cancer remain limited. This is why various studies have looked at how to improve our understanding of the biology of this type of cancer. In a recent study based on the analysis of 500 patients, the team headed by Professor Christos Sotiriou of the Bordet Institute showed, among other things, that triple negative breast cancer is a heterogeneous disease including at least five molecular subtypes characterised by specific gene mutations and expression profiles. Despite this better characterisation of triple negative breast cancer, treatment strategies remain limited.

### Heterogeneity of tumour microenvironment and immune system

The tumour microenvironment, and in particular that of immune cells, is an important factor in the response to immunotherapy that aims to reactivate the immune response of patients to cancer cells. In this connection, Professor Christos Sotiriou's team deepened its study of triple negative breast cancer by characterising at the molecular level the microenvironment of each subtype of triple negative breast cancer. In particular, they studied the expression of the various immune system markers targeted by

current immunotherapy treatment as well the various biological processes such as the vascularisation or metabolism of the tumour microenvironment. These processes may influence the response to immunotherapy and permit a better identification of patients who may benefit from this kind of treatment. This study, carried out on a cohort of more than 1500 patients, shows that each molecular subtype exhibits different tumour microenvironment profiles as well as specific immune composition and localisation. There are three different subgroups depending on the lymphocyte localisation in relation to the tumour cells. In the first subgroup the lymphocytes enter into direct contact with the tumour cells. Patients exhibiting this type of tumour with a totally “inflamed” spatial pattern are those for whom immunotherapy could prove most effective. For the two other subtypes the lymphocytes do not succeed in entering into contact with the tumour cells and remain either in the tumour stroma or outside of it. In these cases the aim would be to develop new treatment strategies making it possible to recruit and activate the lymphocytes.

### **Towards new treatment strategies**

The results of this new study published in the JNCI pave the way for the rational development of new immunotherapies that are specific to each molecular subtype of triple negative breast cancer, thereby permitting improved treatment for patients.

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#### **About the Jules Bordet Institute**

An integrated multidisciplinary centre, unique in Belgium, the Jules Bordet Institute is an autonomous hospital devoted exclusively to cancer.

For 80 75 years, the Jules Bordet Institute has been providing its patients with diagnostic and therapeutic strategies at the forefront of progress to prevent, detect and actively combat cancer. The Institute pursues three missions: care, research and teaching. Its international reputation attracts the world's leading cancer experts. Its spirit of innovation has enabled it to participate in the development and discovery of major new methods of diagnosis and treatment with the aim of bringing the findings to the patient as rapidly as possible.

In May 2018, the Jules Bordet Institute received official accreditation and designation from the OECI (Organisation of European Cancer Institutes) as a "Comprehensive Cancer Centre", a quality label reserved for multidisciplinary cancer care institutions whose activities include research and teaching. The only Comprehensive Cancer Center accredited by the OECI in Belgium.

The Jules Bordet Institute is a member of the Iris and Université Libre de Bruxelles hospital networks. With its 160 beds dedicated exclusively to cancer patients, every year the Institute treats more than 6,000 in-patients., 15,000 out-patients and provides 84,000 consultations. To effectively meet future demographic and scientific developments, a new Bordet Institute is being built on the ULB Anderlecht campus, next to the Erasmus Hospital. Inauguration is scheduled for the end of 2021.

[www.bordet.be](http://www.bordet.be)

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Institut Jules Bordet, Association Hospitalière de Bruxelles régie par la loi du 8 juillet 1976  
Jules Bordet Instituut, Ziekenhuisvereniging van Brussel onderworpen aan de wet van 8 juli 1976



## About the Friends of the Bordet Institute

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The Friends of the Jules Bordet Institute is a non-profit-making organisation with the sole aim of supporting and financing research at the Jules Bordet Institute, a cancer centre that is a reference in Belgium and abroad. As the largest private donor to the Bordet Institute, "The Friends" have donated almost 12 million euros in the past five years.

Considerable progress has been made in the field of oncology in recent years. Our understanding of the biological origin of cancer is growing all the time. Whereas 10 years ago we spoke of the microscopic analysis of tumours, today we speak of genetic profile, of sequencing, etc. Dozens of new molecules and markers have been developed, permitting the advent of personalised treatment. This progress has to a large extent been made possible through the extraordinary technological progress of recent years. But these new techniques that now enable us to probe the infinitesimally small are increasingly expensive.

For more than 50 years, the help of the "Friends" has enabled the Jules Bordet Institute to pursue its research using the most advanced technologies, thereby providing patients with the most innovative screening and treatment techniques. Techniques that generate life and hope.

By helping and supporting "The Friends of the Bordet Institute" you are participating in the many research programmes that they support and that all pursue a single aim: victory for life.

To find out more about the association The Friends of the Jules Bordet Institute, go to the website [www.amis-bordet.be](http://www.amis-bordet.be)  
To find out more about the "101 tables pour la vie", go to the website [www.101tables.com](http://www.101tables.com)