**NEWS RELEASE**

**New antibody breakthrough to lead the fight against cancer**

**Southampton, UK - 13 November 2018** – Scientists at the University of Southampton have developed a new antibody that could hold the key to unlocking cancer’s defence against the body’s immune system.

In a new study published in *Immunity*, the team, which is based at the Centre for Cancer Immunology, engineered antibodies to target a particularly significant immune receptor called 4-1BB, which can activate killer T-cells to find and destroy cancer cells.

The team discovered that 4-1BB, which is a target for immunotherapy, is present mainly on a population of T cells within the tumour called regulatory T cells, which switch off the killer T cells. Killer T cells also expressed 4-1BB, but to a lesser extent, the team found.

In a pre-clinical tumour setting an anti-4-1BB antibody that deleted regulatory T cells caused regression of the tumour. However, because the type of antibody that is good at deleting regulatory T-cells is not as good at stimulating killer T-cells and vice versa, it is not possible to use a regular type of antibody to harness both therapeutic approaches.

The Southampton team, funded by Cancer Research UK and in collaboration with BioInvent International, were able to design and engineer an antibody that can both delete regulatory T cells within the tumour and therefore remove the suppression they exert and activate the killer T cells at the same time. In laboratory studies, this dual-purpose antibody was highly effective in eradicating tumours.

The study is the culmination of more than 10 years of research from Southampton scientists and their collaborators. They believe that this finding could lead to a new wave of cancer-fighting antibodies.

“Antibody immunotherapy has transformed patient outcomes in a number of cancers, but responses are frequently restricted to a minority of patients,” said Professor Stephen Beers, who jointly led the study with Professor Aymen Al-Shamkhani and Dr Juliet Gray.

“This is really very exciting breakthrough. Immune activating antibodies targeting immune receptors like 4-1BB have failed to translate successfully to the clinic but hold great potential if we can understand how to target them successfully in cancer patients. We have identified some of the reasons that stop them treating cancer and for the first time, demonstrated that you can
combine the two approaches of deleting regulatory T cells and activating killer T cells. This could potentially improve the way we treat patients in the clinic.”

The research findings can be applied to both ovarian cancer and a common form of non-melanoma skin cancer called Squamous Cell Carcinoma. However, the Southampton team believe that they could be applicable to more cancers, following further research.

Dr Sean Lim, Cancer Research UK’s expert in immunotherapy, said: “This study is an important step towards improving immunotherapy. It helps us to understand why this type of treatment isn’t as successful in patients as hoped. But critically, it also presents a potential solution as to how we can overcome these challenges to develop effective immunotherapy that works for more patients.

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Notes to Editors


2. The University of Southampton drives original thinking, turns knowledge into action and impact, and creates solutions to the world’s challenges. We are among the top 100 institutions globally (QS World University Rankings 2019). Our academics are leaders in their fields, forging links with high-profile international businesses and organisations, and inspiring a 24,000-strong community of exceptional students, from over 135 countries worldwide. Through our high-quality education, the University helps students on a journey of discovery to realise their potential and join our global network of over 200,000 alumni. www.southampton.ac.uk.

3. BioInvent International AB (OMXS: BINV) is focused on the discovery and development of novel and first-in-class immuno-modulatory antibodies to treat cancer. The Company’s lead program is BI-1206, currently in Phase I/II for non-Hodgkin lymphoma and chronic lymphatic leukemia. BioInvent’s pre-clinical portfolio is focused on targeting key immune suppressive cells and pathways of the tumor microenvironment, including regulatory T cells, tumor-associated myeloid cells and mechanisms of antibody drug-resistance. The Company has a strategic research collaboration with Pfizer Inc., and partnerships with Transgene, Bayer Pharma, Daiichi Sankyo, and Mitsubishi Tanabe Pharma. BioInvent generates near term revenues from its fully integrated manufacturing unit producing antibodies for third parties for research through to late-stage clinical trials. More information is available at www.bioinvent.se.

4. Cancer Research UK is the world’s leading cancer charity dedicated to saving lives through research. Cancer Research UK’s pioneering work into the prevention, diagnosis
and treatment of cancer has helped save millions of lives. Cancer Research UK receives no funding from the UK government for its life-saving research. Every step it makes towards beating cancer relies on vital donations from the public. Cancer Research UK has been at the heart of the progress that has already seen survival in the UK double in the last 40 years. Today, 2 in 4 people survive their cancer for at least 10 years. Cancer Research UK’s ambition is to accelerate progress so that by 2034, 3 in 4 people will survive their cancer for at least 10 years. Cancer Research UK supports research into all aspects of cancer through the work of over 4,000 scientists, doctors and nurses. Together with its partners and supporters, Cancer Research UK’s vision is to bring forward the day when all cancers are cured. For further information about Cancer Research UK’s work or to find out how to support the charity, please call 0300 123 1022 or visit www.cancerresearchuk.org. Follow us on Twitter and Facebook.

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