

Gustave Roussy and Biognosys Announce Partnership

The Collaboration Aims at Advancing Anti-cytokines Targeting Immunotherapy against COVID-19

April 28th, 2020 – SCHLIEREN, Switzerland and VILLEJUIF, France. The severe pneumonitis in patients infected by the severe acute respiratory syndrome coronavirus-2 (SARS-Cov-2) requires prolonged treatment in intensive care units with mechanical ventilation. This has led to overwhelmed hospital facilities and the shortage of medical supplies in countries profoundly affected by the COVID-19 pandemic.

Recent data from hospitals in China, Italy, and France have shown that severe pneumonitis is associated with cytokine storm induced by high serum levels of cytokines and chemokines. The pro-inflammatory cytokine Interleukin-6 (IL-6) is known to have a prominent role in this inflammatory cascade, suggesting that IL-6 may be a potential actionable target to treat severe COVID-19 disease.

At Gustave Roussy, a leading European center of cancer immunotherapy, the team of Drs Aurélien Marabelle and Jean-Marie Michot recently published encouraging results by administering the anti-cytokine agent tocilizumab, a drug initially developed for rheumatic arthritis (Actemra, Roche). Tocilizumab is a chimeric antibody, which binds to the IL-6 receptor, blocking its activation. Groups in China and Italy reported similarly positive results. In addition, a phase III clinical trial was recently approved by the FDA, raising the hope of repurposing tocilizumab as an effective treatment against severe COVID-19 disease.

One of the obstacles associated with anti-cytokine therapies is that patients respond differently to the intervention. Considering the high fatality rate and rapid progression of severe COVID-19 disease, it is an unmet medical need to develop biomarkers to differentiate potential responders from non-responders to these anti-cytokine therapies in order to guide, and eventually personalize medical treatment.

To this end, Gustave Roussy is collaborating with Biognosys to investigate the molecular and proteomic profiles of patients by profiling serum samples from severe COVID-19 cases treated with anti-cytokines. With Biognosys' Next Generation Proteomics platform, hundreds of seral proteins can be quantified simultaneously from clinical samples using single-shot Hyper Reaction Monitoring (HRMTM) mass spectrometry. Based on the acquired proteomics data, Biognosys and Gustave Roussy will perform statistical and functional analyses on treated versus baseline samples to provide insights on the biological states associated with response to IL-6 receptor inhibitor intervention. This will potentially lead to the discovery of a protein biomarker candidate panel, which is a vital first step towards predictive biomarkers for anti-cytokine targeting therapy in COVID-19.

Dr. Jean-Marie Michot (Oncologist, Gustave Roussy) said: "At the beginning of the COVID-19 pandemic, we treated one of our patients at Gustave Roussy with an anti-cytokine therapy targeting the IL-6 receptor, and the treatment seems to have been immediately effective as reported in *Annals of Oncology* this month. Subsequently, other patients received this treatment with efficacy in some patients and insufficient effect or an escape from treatment in others.

Ongoing clinical trials with anti-cytokines are searching for activity to determine which anti-cytokine treatments should be the more appropriate.”

Dr. Aurélien Marabelle (Oncologist, Head of Immunotherapy Program at Gustave Roussy) adds: “From a medical point of view, immunotherapies are preferably being given to patients most likely to benefit from them. We have been developing this personalized medicine approach at Gustave Roussy in oncology for several years; our patients with COVID-19 should also benefit. We are gratified to join our efforts with those of Biognosys, which has innovative tools for in-depth research into new biomarkers for a personalized medicine approach.”

Dr. Oliver Rinner (CEO, Biognosys) said: “We are grateful that we can be part of this unprecedented effort by the research community to find a treatment for COVID-19 patients with acute symptoms. Combining biomarkers with repurposed drugs is a promising approach to provide relief for COVID-19 and many other diseases. Mass spectrometry-based proteomics is highly compatible with these timelines because, as a physical method, it does not require the development of affinity assays. Our HRM discovery proteomics technology is immediately available to measure hundreds of proteins, and to select from amongst those the most promising protein biomarkers.”

About Gustave Roussy

Gustave Roussy, a leading cancer center in Europe, covers the full range of expertise in oncology and is fully committed to patients. Its 3,100 professional staff are dedicated to patient care, research, and teaching. www.gustaveroussy.fr/en

About Biognosys

Biognosys is a leader in next-generation proteomics, dedicated to transforming life science by developing the most advanced proteomics tools and making them available for pharmaceutical and biotech research and development. The company offers a suite of products and services to decode the proteome and equip researchers from all fields with a deep view of protein expression and regulation in cells, tissues, or body fluids. Biognosys’ technology is based on high-resolution mass spectrometry, combined with a novel parallel signal processing approach, for unprecedented quantification of large proteomes in a single experiment. More information at www.biognosys.com

Media Contact:

Kristina Beeler, PhD
Head of Business Development
Mobile +41 (0) 78 664 47 11
kristina.beeler@biognosys.com

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