Shedding light on COVID-19

Research Luxembourg presents CoVaLux

[Luxembourg. 24th February 2022]

Research Luxembourg is announcing the CoVaLux research programme (COVID-19, Vaccination & long-term health consequences of COVID-19 in Luxembourg), a comprehensive study aimed at addressing key unanswered questions related to COVID-19. It focuses specifically on vaccination and the longer-term health impact of COVID-19. The programme benefits from the close collaboration within Research Luxembourg, public research institutions and clinical partners. It relies on the expertise of national academic and healthcare players for the collection, integration and analysis of various health and socio-economic data. This unique research programme showcases Luxembourg's ability to build interdisciplinary approaches to tackle the pandemic, and improve the prevention, diagnosis and treatment of the disease.

Despite the worldwide COVID-19 pandemic entering its third year, open questions pertaining to the occurrence of new variants, ensuing new waves, vaccination effectiveness and immune responses remain to be elucidated. In addition, more than 25000 individuals in Luxembourg are estimated to be affected by Long COVID[i], an emerging long-term medical condition characterised by persisting COVID-19 related symptoms such as fatigue, anxiety, headaches, muscle pain, shortness of breath, loss of smell or taste, but also cognitive impairment as well as cardiac and gastrointestinal complications. "*The significant public health burden of the pandemic on the Luxembourg population is shifting from that of a purely infectious disease to that of a de-facto chronic infection, which also more broadly extends to the psychological and socio-economic sphere. It needs to be addressed*," says Dr Guy Fagherazzi, Director of the Department of Precision Health at the Luxembourg Institute of Health (LIH) and co-spokesperson of CoVaLux.

In this context, CoVaLux will assess the short- to mid-term impact of vaccination, vaccine effectiveness, post-vaccination and breakthrough infections. The study will also investigate the evolution of the immune response, the emergence of new variants and clinical symptoms in cases of re-infection. An additional objective will be to identify both the viral factors associated with resistance to vaccines and patient characteristics that can be linked to re-infections. As for Long COVID, CoVaLux will elucidate several aspects such as the characteristics and prevalence of symptoms in COVID-19 patients, the existence of risk factors for developing Long COVID, potential links to pre-existing comorbidities or co-infections. Socio-economic and environmental determinants of Long COVID will be examined as well, in view of enhancing its prevention, diagnosis and treatment.

CoVaLux will build on previous national studies such as Predi-COVID and CON-VINCE, and rely on complementary data retrieved from different sources. Medico-administrative data together with health and socio-economic information on COVID-19, vaccination and Long COVID will be obtained through regular national population-based surveys and

questionnaires. New biological samples and data on post-vaccination infections and re-infections will also be collected through the recruitment of participants, first appointments are scheduled for the next days. A long-term digital follow-up of patients enrolled in Long COVID consultations will be carried out among the population to collect information about patient outcomes during and after Long COVID care, focusing on patients with severe symptoms. Psychological health data will also be collected.

"*CoVaLux represents a coordinated effort at the national level to answer important unsolved questions related to COVID-19 and its consequences, relying on an interdisciplinary approach at the crossroads of immunology, psychology, epidemiology, digital health, social science and public health*," states Paul Wilmes, Professor in Systems Ecology at the Luxembourg Centre for Systems Biomedicine (LCSB) of the University of Luxembourg and co-spokesperson of CoVaLux.

"*CoVaLux illustrates Luxembourg's ability to put in place a unique research programme, with the potential to advance the understanding and management of the COVID-19 pandemic and of future outbreaks*," concludes Dr Fagherazzi.

"*This has been made possible by the close-knit collaborative environment fostered by Research Luxembourg since the beginning of the pandemic, which has resulted in an integrated, holistic and comprehensive study protocol*," adds Prof Wilmes.

CoVaLux is a research programme led by Research Luxembourg in cooperation with a consortium of national players including the Luxembourg Institute of Health (LIH), the University of Luxembourg (uni.lu), the Luxembourg Centre for Systems Biomedicine (LCSB), the Integrated Biobank of Luxembourg (IBBL), the Laboratoire national de santé (LNS), the Luxembourg Institute of Socio-Economic Research (LISER), the Luxembourg Institute of Science and Technology (LIST), the Centre Hospitalier de Luxembourg (CHL), the Centre Hospitalier Neuro-Psychiatrique (CHNP), the Rehazenter (Centre National de Rééducation Fonctionnelle et de Réadaptation) and Mondorf Domaine Thermal. The programme is supported by the Luxembourg Government.

About Research Luxembourg

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Research Luxembourg is a joint initiative of the main actors in Luxembourg public research with the support of the Luxembourg Minister of Higher Education and Research, including Luxembourg Institute of Health (LIH); Luxembourg Institute of Socio and Economic Research (LISER); Luxembourg Institute of Science and Technology (LIST); the Luxembourg National Research Fund (FNR); Luxinnovation; the University of Luxembourg (uni.lu).

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Further information on Covalux via website: https://researchluxembourg.lu/covalux/

[i] Based on data from literature reviews and prevalence numbers obtained from other countries.