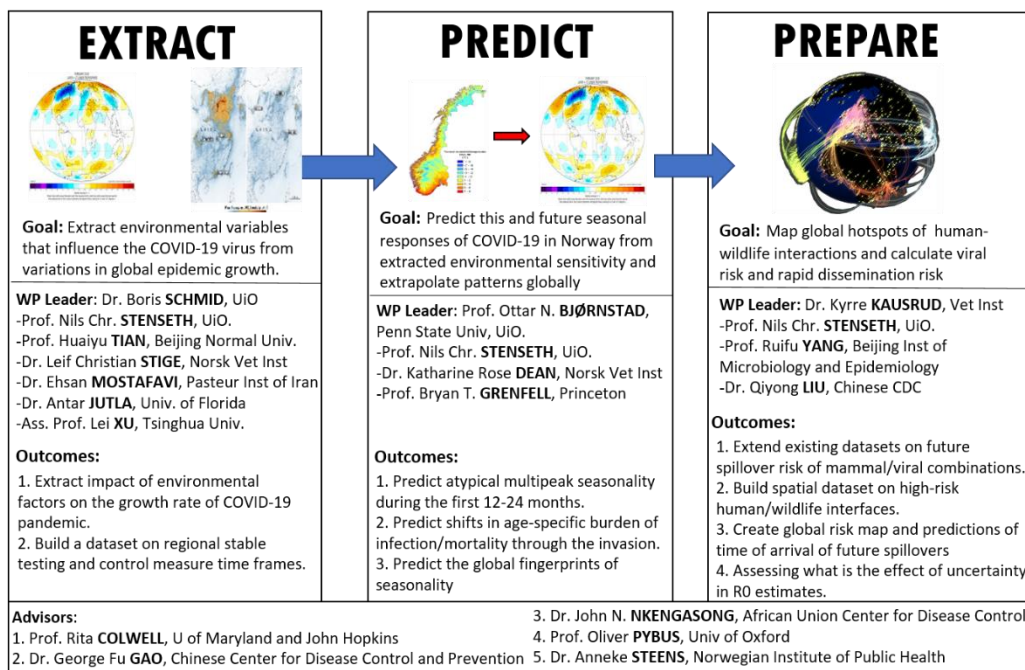


COVID-19 Seasonality: The effect of environmental variation on the spatio-temporal dynamics at national, regional and global scales



COVID-19 Seasonality is a Norwegian based project with strong collaborations with research and response organisations in **China, Iran, UK, USA, and the African Union** to develop fundamental information and inform the response to the ongoing COVID-19 pandemic. The objectives are organized into three Work Packages (WP) to **(I) Extract** the functional response of SARS-CoV-2 to environmental factors (including seasonal factors) from changes in growth rate of the COVID-19 pandemic; to **(II) Predict** the near and long term seasonality and age-specific burden of COVID-19 infection in Norway and other countries; and to **(III) Prepare** Norway (and other countries) for future pandemics by assessing the potential speed and intensity with which new emerging infectious diseases (EIDs) will arrive from high-risk regions. **For these purposes, we have assembled a highly competent team; the project leader, Professor Stenseth – with his background from plague work, coupled with his broad background within ecology and evolution, as well as his extensive international network – is highly suited for orchestrating the proposed work, just as he has done (and is doing) for a large number of past and present projects. By bringing in Chinese colleagues, not the least in the “PREPARE” part of the project, will facilitate transfer of the Chinese experience to the rest of the world.**

Early in the project, we will produce quantitative models to forecast the seasonal conditions in Norway and other countries that favour and hinder the transmission of SARS-CoV-2, improving predictions of epidemic trends. We will continue to improve and iterate on these models throughout the project.

In addition to the quantitative models, we will produce three high-quality novel datasets during **COVID-19 Seasonality**, those being **(1)** a dataset of the timing and spatial extent of various control measures, testing regimes and hospital patient overflows that we will use to assess the role of meteorological factors on the pandemic growth rate, **(2)** a dataset of global hotspots of human-wildlife interactions sourced from grey and published literature, and **(3)** a spatial database with an assessment of the speed and intensity with which future viral spill-overs are expected to arrive. We will share our findings openly at the end of the project, and distribute early versions to our national and international partners, such that international Public Health authorities can improve their preparedness against future diseases.

Our overall aim is to carry out basic research and to apply the obtained insights to one of the biggest challenges of our time. Although we will be focusing on the spatio-temporal dynamics of COVID-19 pandemics in China, Europe and North America, much of the insight will be of profound importance to other parts of the world, not the least Africa (for which we have Dr. John N. Nkengasong as an Advisor).