Building a digital space for Covid-19 research

The rapid progression and tremendous impact of the Covid-19 breakout are prompting a worldwide reaction from researchers of different scientific domains aimed at contrasting this pandemic and characterizing its etiological agent, the SARS-CoV-2 virus. These efforts have highlighted once more, and with unparalleled strength, the necessity for scientists to have unhindered access to advanced and reliable research infrastructures and technologies to manage, share and analyse their data.

As a specific contribution of the Italian Node of ELIXIR (the European Research Infrastructure for Life Sciences) we introduce the Laniakea@ReCaS Cloud platform, which, by hiding the technical complexity of the underlying cloud infrastructure behind a user-friendly web front-end, allows its users to configure and deploy on-demand Galaxy instances with a handful of clicks. The service provides a secure digital workspace ready to be also used for Covid-19 analysis, comprising, for example, the "COVID-19" Galaxy *flavour* that gathers a curated set of tools and reference data for genomics, proteomics, and evolution analysis.

The service provided by Laniakea@ReCaS has also been used as a platform for tools development: we show here as it contributed to the rapid prototyping, test and delivery of CorGAT (Coronavirus Genome Analysis Tool), a collection of novel utilities for the functional annotation of SARS-CoV-2 genomic variants (Chiara et al., in press).

Finally, aiming to ensure alignment with worldwide Galaxy public servers, Covalaxy, a National Galaxy Server for SARS-CoV-2 and Covid-19 research, will be developed and put on-line in the first half of 2021. The project is funded in the context of the H2020 EOSC Secretariat.eu project and will share the same software framework developed for the European Galaxy server (useGalaxy.eu). Covalaxy will constitute an additional and integral part of the COVID response efforts of ELIXIR-IT together with the COVID-19 Italian Data Portal, currently under early development, and we think it would provide a suitable foundation for a national and more general usegalaxy.it service on the line of the usegalaxy.fr, usegalaxy.be and usegalaxy.au ones.

References: Chiara M, Zambelli F, Tangaro MA, Mandreoli P, HornerDS and Pesole G. CorGAT: a tool for the functional annotation of SARS-CoV-2 genomes (Bioinformatics, in press).
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