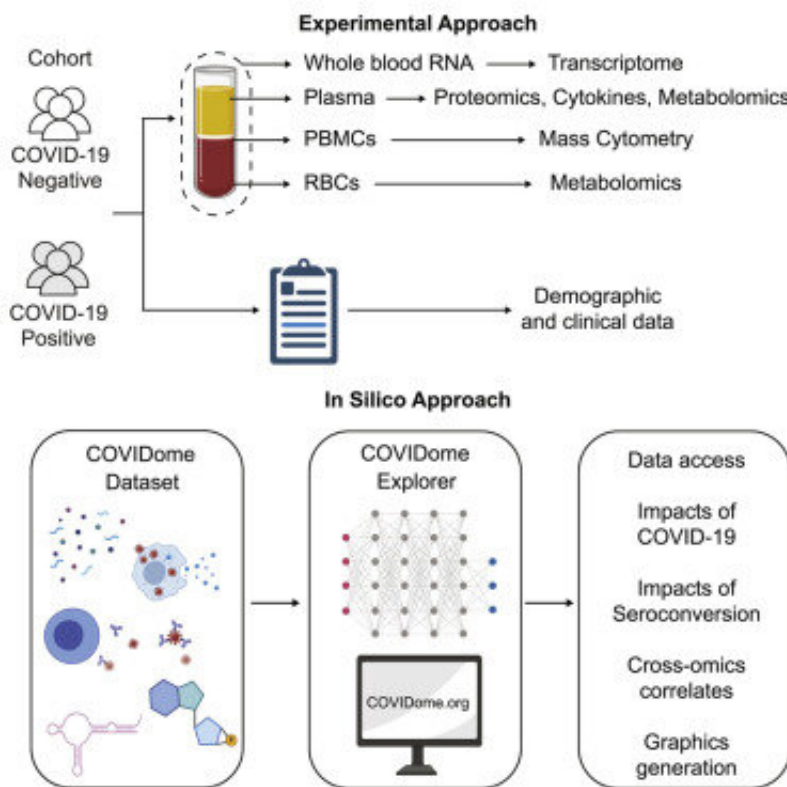


How the COVIDome online portal can rapidly accelerate coronavirus research worldwide

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COVIDome Explorer Graphical Abstract. Credit: CU Anschutz Medical Campus

To further accelerate COVID-19 research on a global scale, investigators from the University of Colorado Anschutz Medical Campus have created a multidimensional dataset, known as the COVIDome dataset,

derived from hospitalized COVID-19 patients versus negative controls. The team has now launched a public online portal called the COVIDome Explorer to share that data in real time.

Today, a new paper published in the journal *Cell Reports* detailing how the datasets were generated while explaining how to use the COVIDome Explorer for rapid hypotheses testing, hypothesis generation and real-time discoveries by experts and non-experts.

"Our mission for the COVIDome Explorer is to enable the development of better prevention, diagnostic and therapeutic tools for the clinical management of COVID-19," said Joaquin Espinosa, Ph.D., professor at the University of Colorado School of Medicine and executive director at the Linda Crnic Institute for Down Syndrome on the CU Anschutz Medical Campus. "Although great progress has been made in all these areas, the speed of research for COVID-19 has been hampered by the lack of widely accessible, public datasets that can be analyzed and reanalyzed in real time by anyone."

He adds that they "expect that this online portal will rapidly accelerate COVID-19 data sharing, hypothesis testing and discoveries worldwide."

To create the COVIDome Explorer, experts in different areas of biomedical research across the CU Anschutz Medical Campus created multidimensional datasets in their labs. Those were collected and combined to be shared through the online portal. The datasets include demographics and clinical data, along with matched analysis of the whole blood transcriptome, analysis of the plasma and red blood cell metabolomes, deep immune phenotyping by mass cytometry and seroconversion assays.

The COVIDome datasets and corresponding Explorer were modeled after similar ongoing efforts in the Linda Crnic Institute for Down

Syndrome, where members of the COVIDome team previously developed the Human Trisome Project and its TrisomExplorer data portal. Leveraging the leading-edge tools and technologies of the TrisomExplorer, the team was able to create the COVIDome Explorer in a matter of weeks and make it available to the public to help advance COVID-19 research.

"The global health crisis imposed by the COVID-19 pandemic further emphasizes the need for rapid collaboration, [open access](#) to manuscripts under review and data sharing," said Thomas Flaig, MD, vice chancellor of research at the CU Anschutz Medical Campus. "Now more than ever, with the rise of the COVID-19 Delta variant and breakthrough infection rates rising, it's critical to have easy and timely access to COVID data to combat the pandemic and advance the best scientific data available."

The paper, which users are encouraged to read, details how to use the online dashboards and links to data files that guide users, such as catalogs of proteins, metabolites, cytokines and immune cells present in each [dataset](#).

For example, to facilitate quick and broad access to the COVIDome dataset, each dataset (after data curation and quality control) is linked at the sample level with a unique identifier, enabling cross-referencing among platforms. Additionally, the COVIDome Explorer hosts six dashboards: Cohort, Transcriptome, Proteome, Cytokines, Metabolome, and Immune Maps. And each dashboard runs within its own isolated and protected environment.

More information: Kelly Daniel Sullivan et al, The COVIDome Explorer researcher portal, *Cell Reports* (2021). [DOI: 10.1016/j.celrep.2021.109527](#)

COVIDome Explorer: covidome.shinyapps.io/Cohort/

Provided by CU Anschutz Medical Campus

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