A. Medicine and Health

February 12, 2021 (Science)
Structure-guided multivalent nanobodies block SARS-CoV-2 infection and suppress mutational escape
Paul Albert Koenig, Hrishikesh Dash, Hejun Liu et al.
https://doi.org/10.1126/science.abe6230

This paper describes the engineering of multivalent nanobodies that neutralizes the SARS-CoV2 virus via binding on viral spike protein, thus inhibiting cellular membrane infiltration, whilst preventing the emergence of viral escape mutants.

February 9, 2021 (International Journal of Imaging Systems and Technology)
Future IoT tools for COVID-19 contact tracing and prediction: A review of the state-of-the-science
Vicnesh Jahmunah, Vidya K. Sudarshan, Shu Lih Oh et al.
https://doi.org/10.1002/ima.22552

This paper reviews the digital tools and devices that have been adopted in multiple countries globally for COVID-19 contact tracing and monitoring. The authors identified potential shortcomings with the previously used methods and proposed adaptations to current technology to improve epidemiological management of the COVID-19 pandemic.

February 2, 2021 (Proceedings of the National Academy of Sciences)
Identification of existing pharmaceuticals and herbal medicines as inhibitors of SARS-CoV-2 infection
Jia-Tsrong Jan, Ting-Jen Rachel Cheng, Yu-Pu Juang et al.
https://doi.org/10.1073/pnas.2021579118

This study describes the process of identifying small molecules that have activity against SARS-CoV2 infection, using a cell-based infection assay to screen a host of agents in humans and animals. The anti-infective properties were confirmed via in vitro enzymatic assays combined with computer models.

February 1, 2021 (JAMA Netw Open)
COVID-19 Outcomes Among Persons Living With or Without Diagnosed HIV Infection in New York State
James M Tesoriero, Carol-Ann E Swain, Jennifer L Pierce et al.
https://doi.org/10.1001/jamanetworkopen.2020.37069
This longitudinal cohort study looked at matched data from HIV surveillance with COVID-19 diagnoses over 3 months to determine population-level COVID-19 outcomes (diagnosis, hospitalization and mortality) of persons living with HIV, when compared to non-HIV diagnosed persons.

January 29, 2021 (Insights Imaging)
The role of CT imaging for the management of COVID-19 in the epidemic area: early experience from a University Hospital
Vikram Rao Bollineni, Koenraad Hans Nieboer, Seema Doring et al.
https://doi.org/10.1186/s13244-020-00957-5

This study assessed the accuracy of low-dose chest Computed Tomography scans for the diagnosis of COVID-19, confirmed via real-time polymerase chain reaction (RT-PCR), in patients presenting with respiratory distress.

January 19, 2021 (Proceedings of the National Academy of Sciences)
In silico dynamics of COVID-19 phenotypes for optimizing clinical management
Chrysovalantis Voutouri, Mohammad Reza Nikmaneshi, C. Corey Hardin et al.
https://doi.org/10.1073/pnas.2021642118

This paper describes the development of a mathematical model to predict clinical outcomes in COVID-19 infection, incorporating clinical data, with elements of the immune response, renin-angiotensin system, rates of viral replication, inflammatory cytokines, and coagulation cascade.

B. Science and Engineering

February 13, 2021 (International Journal of Geo-Information)
Comparative Analysis of Geolocation Information through Mobile-Devices under Different COVID-19 Mobility Restriction Patterns in Spain
Raquel Perez-Arnal, David Conesa, Sergio Alvarez-Napagao et al.
https://doi.org/10.3390/ijgi10020073

The authors studied private mobility sources, gathered from mobile-phones and large technological companies. These data are of special interest because it is focused on individuals rather than on transportation modes. Furthermore, the sample of society they cover is large and representative. They confirmed that mobile-data can be used to evaluate the efficiency of implemented policies, detect changes in mobility trends and provide insights into what new normality means in Spain.
January 26, 2021 (Physics of Fluids)  
On airborne virus transmission in elevators and confined spaces  
Talib Dbouk & Dimitris Drikakis.  
https://doi.org/10.1063/5.0038180

The impact of air ventilation systems on airborne virus transmission (AVT), and aerosols in general, in confined spaces, is not yet understood. The authors consider an elevator as an example of a confined space and show how ventilation designs alone, contribute to AVT. Air circulation effects are investigated through multiphase computational fluid dynamics, and the performance of an air purifier in an elevator for reducing AVT is assessed. Some of the findings include: An air purifier does not eliminate airborne transmission. The conclusion is that the placement and design of the air purifier and ventilation systems significantly affect the droplet dispersion and AVT. They recommended that engineering designs of such systems must consider the flow dynamics.

C. Social Sciences, Humanity and Public Policy

February 9, 2021 (American Behavioral Scientist)  
International Perspectives on COVID-19 Communication Ecologies: Public Health Agencies’ Online Communication in Italy, Sweden, and the United States  
Serena Tagliacozzo, Frederike Albrecht & N. Emel Ganapati.  
https://doi.org/10.1177/0002764221992832

This study examines the online communication of national public health agencies during the COVID-19 pandemic in Italy, Sweden, and the United States. Based on content analysis of Twitter data (n = 856) and agency press releases (n = 95). An important finding is that information tailored for several vulnerable groups (e.g., pregnant women, people with disabilities, immigrants, and homeless populations) was largely absent, which may have contributed to negative consequences for these groups.

February 3, 2021 (Review of Political Economy)  
Infection Is the Cycle: Unemployment, Output and Economic Policies in the COVID-19 Pandemic  
Maria Cristina Barbieri Goes & Ettore Gallo  
https://doi.org/10.1080/09538259.2020.1861817

The authors model the impact of the pandemic-driven unemployment shock on output, showing how the emergence of cyclical downswings could determine an L-shaped recession in the medium run, in absence of adequate stimulus policies. Calibrating the model for the USA, the simulation highlights the effects on unemployment and on overall economic activity produced by recurrent waves of COVID-19, which risk jeopardizing the return to pre-crisis trends in the medium term.
January 27, 2021 (Humanities and Social Sciences Communications)
Toward effective government communication strategies in the era of COVID-19
Bernadette Hyland-Wood, John Gardner, Julie Leask et al.
https://doi.org/10.1057/s41599-020-00701-w

Noting that several countries have successfully reduced their COVID-19 infection rate early, while others have been overwhelmed, this article highlights some fundamental characteristics of effective governmental crisis communication. It presents ten recommendations for effective communication strategies to engender maximum support and participation.

January 7, 2021 (World Development Perspectives)
Success in combating a pandemic: Role of fast policy responses
Le Thanh Tung
https://doi.org/10.1016/j.wdp.2020.100285

The author states that this health disaster once again highlights the importance of public governance in crisis. Since the COVID-19 spread globally, Vietnam has been recognized by international organizations as having one of the best-organized epidemic control programs in the pandemic. The paper introduces the fast policy responses of the Vietnamese government to prevent and control the COVID-19 pandemic. Practical experiences from Vietnam may be useful for policymakers in other countries in finalizing the policy response framework for coping with the on-going pandemic.