

Title of Paper	Journal	Pub. Date	Category	Article highlights	Problem/Background	Design	Groups, for clinical studies	Results
<u>Immune cell profiling of COVID-19 patients in the recovery stage by single-cell sequencing</u>	medRxiv	3/27/20	Biology	Single cell transcriptional profiling revealed a unique immune cell signature in the early recovery stage in COVID-19 patients, with decreased T cells and increased monocytes. Immune dysregulation sustains for >7 days after discharge, highlighting potential need for close observation.	Lymphopenia and inflammatory cytokine elevation have been observed in COVID-19 patients.	Basic science	Peripheral blood mononuclear cells from 10 patients recovered from COVID-19	Compared to healthy controls, blood samples from COVID-19 patients in early recovery are notable for a decrease in T and NK cells, and an increase in monocytes with predominantly inflammatory signatures. Adaptive immune dysregulation is sustained for more than 7 days after discharge, suggesting potential need for longer observation.
<u>Turbulent gas clouds and respiratory pathogen emissions</u>	JAMA	3/26/20	Diagnosis & Prevention	Modelling respiratory pathogen transmission into large and small droplets falsely dichotomizes the spread of viruses. Respiratory droplets are emitted in a turbulent puff cloud that projects large and small droplets up to 7-8m and entraps both droplet sizes in the air for minutes if not hours; policy and PPE testing should conform to this updated model.	Respiratory pathogen transmissibility and containment policy are based upon a model from the 1930s that dichotomize viral particles into large (droplet) or small (aerosol) droplets. This model is outdated and falsely arbitrarily dichotomizes the spread of pathogens in a cough or sneeze.	Ideas, editorials, reviews or opinions		Respiratory droplets emitted during a cough or sneeze are projected in a turbulent puff cloud that travels up to 7-8m and entraps large and small droplets, extending the lifespan of large and small droplets in the air for minutes if not hours. Current guidelines do not take into account the turbulent puff cloud model of respiratory pathogen transmissibility, and PPE such as N95 respirators are not tested for these updated emission parameters.
<u>A special case of COVID-19 with long duration of viral shedding for 49 days</u>	medRxiv	3/27/20	Treatment	One patient with mild infectivity presented 49-day long period of viral shedding. Plasma from recovered COVID-19 patients cleared out the virus infection from this patient.		Case reports/series		From hospital days 6 till the end of record, the overall status of Case 1 remained stable, yet COVID-19 testing on specimens collected from oropharyngeal swabs on illness days 17, 22, 26, 30, 34, 39, 43 and 49 were positive and on illness day 47 was negative. The patient received 400mL plasma on day 49, and test result turned into negative on day 50 and 51.
<u>Characterization of spike glycoprotein of SARS-CoV-2 on virus entry and its immune cross-reactivity with SARS-CoV</u>	Nature Communications	3/27/20	Biology	The primary receptor for SARS-CoV-2 is confirmed to be ACE2; SARS-CoV-2 cell entry into hACE2-expressing HEK293 cells is through endocytosis and is dependent upon PIKfyve and its downstream effector TPC2 as well as the protease Cathepsin L; Previous infection with SARS-CoV may only provide moderate protection against SARS-CoV-2	While past evidence has implicated the SARS-CoV-2 spike (S) protein as critical for viral entry, many questions remain in regards to virus entry, such as the entry pathway and protease priming.	Basic science		A SARS-CoV-2 S pseudovirion efficiently transduced hACE2-expressing 293 cells mainly through endocytosis. This may be dependent upon the PI(3,5)P2 pathway with inhibition of PIKfyve, its downstream effector TPC2, or the protease Cathepsin L significantly blocking viral entry, presenting potential novel drug targets. The anti-SARS S1 antibody T62 and sera from recovered SARS-CoV patients demonstrated only moderate cross-neutralization of SARS-CoV-2, implying only moderate protection being granted from prior SARS-CoV infection.

These summaries were prepared by medical and graduate students at Washington University in St. Louis

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