CLINICAL PEARL

- 9 Potential New COVID-19 Treatments — Including Several That Are Already FDA-Approved:
  - Although great progress has been made in the development of vaccines and treatments for the SARS-CoV-2 coronavirus, there is still much room for improvement. In the United States, the only antiviral COVID-19 treatments that have received FDA Emergency Use Authorization — remdesivir and several anti-SARS-CoV-2 antibody preparations — are expensive and far from 100 percent effective.
  - A team led by scientists in the Perelman School of Medicine at the University of Pennsylvania has identified nine potential new COVID-19 treatments, including three that are already approved by the Food and Drug Administration (FDA) for treating other diseases.
    - The team screened thousands of existing drugs and drug-like molecules for their ability to inhibit the replication of the COVID-19-causing coronavirus, SARS-CoV-2. In contrast to many prior studies, the screens tested the molecules for anti-coronaviral activity in a variety of cell types, including human airway-lining cells that are similar to the ones principally affected in COVID-19.
    - For their screening project, Cherry and colleagues assembled a library of 3,059 compounds, including about 1,000 FDA-approved drugs and more than 2,000 drug-like molecules that have shown activity against defined biological targets. They then tested all compounds for their ability to significantly inhibit SARS-CoV-2 replication in infected cells, without causing much toxicity.
    - They initially performed antiviral screens using cell types they could grow easily in the laboratory and infect with SARS-CoV-2, namely African Green Monkey kidney cells, and a cell line derived from human liver cells. With these screens, they identified and validated several compounds that worked in the monkey kidney cells, and 23 that worked in the human liver cells. Hydroxychloroquine and remdesivir, were effective in both cell types.
    - Since SARS-CoV-2 is mainly a respiratory virus and is thought to initiate infections via airway-lining cells, the researchers sought a respiratory cell type that they could infect experimentally with the virus. They eventually identified a suitable cell line, Calu-3, that is derived from human airway-lining cells. They used these respiratory-derived cells to test the antiviral compounds identified through the human liver cell screen, and found that only nine had activity in the new cells. The nine did not include hydroxychloroquine. Remdesivir worked in the Calu-3 cells but was not included in the list because it is already in use against COVID-19.
    - By identifying different sets of drugs that work in different cell types, the researchers also shed light on the mechanisms SARS-CoV-2 uses to gain entry to cells. The findings suggest that in kidney and liver cells, the virus uses a mechanism that can be disrupted, for example, by hydroxychloroquine; yet the virus appears to use a different mechanism in respiratory cells, thus explaining hydroxychloroquine’s lack of success in those cells — and in COVID-19 clinical trials.
    - The nine antivirals active in respiratory cells included salinomycin, a veterinary antibiotic that is also being investigated as an anticancer drug, the kinase enzyme inhibitor dacomitinib, an anticancer drug, bemcentinib, another kinase inhibitor now being tested against cancers, the antihistamine drug ebastine, and cyclosporine which is commonly used to prevent the immune rejection of transplanted organs.
The study highlighted cyclosporine as particularly promising, as it appears to work against SARS-CoV-2 in respiratory and non-respiratory cells, and via two distinct mechanisms: inhibiting cell enzymes called cyclophilins, which the coronavirus hijacks to support itself, and suppressing the potentially lethal inflammation of severe COVID-19.

PUBLIC HEALTH UPDATES

- WHO Weekly epidemiological update on COVID-19
- WHO Interim statement of the COVID-19 subcommittee of the WHO Global Advisory Committee on Vaccine Safety on AstraZeneca COVID-19 vaccine
- U.S. Department of Health and Human Services Launches Nationwide Network of Trusted Voices to Encourage Vaccination in Next Phase of COVID-19 Public Education Campaign
- CDC and NIH bring COVID-19 self-testing to residents in two locales
- NIH clinical trial evaluating Moderna COVID-19 variant vaccine begins
- NIH begins study of allergic reactions to Moderna, Pfizer-BioNTech COVID-19 vaccines
- CDC media statement: Nearly 80 percent of teachers, school staff, and childcare workers receive at least one shot of COVID-19 vaccine
- FDA Makes Two Revisions to Moderna COVID-19 Vaccine Emergency Use Authorization to Help Increase the Number of Vaccine Doses Available
- State Updates Blueprint to Allow Additional Activities with Modifications to Reduce Risk

GUIDANCE/GUIDELINES

- CDC
  - Science Brief: SARS-CoV-2 and Surface (Fomite) Transmission for Indoor Community Environments
    - Cleaning and Disinfecting Your Facility
  - Science Brief: Background Rationale and Evidence for Public Health Recommendations for Fully Vaccinated People
- FDA SARS-CoV-2 Viral Mutations: Impact on COVID-19 Tests

RESOURCES

- CDC
  - Immunization MMWRs
  - MMWR Podcasts
  - Published SARS-CoV-2 Sequences
  - Global Variants Report
  - COVID-Net: Laboratory-Confirmed COVID-19-Associated Hospitalizations
- IDSA:
  - Podcast: An Update on School Reopening
  - Media: Vaccine Education Roundtable Series
    - Addressing Vaccine Concerns
    - Advice on Addressing COVID-19 Myths
- JAMA Network Learning Coronavirus Variants and Vaccines
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- University of Minnesota Center for Infectious Disease Research and Policy
  - COVID-19 Podcasts and Webinars (Osterholm Update: COVID-19)
- Cleveland Journal of Medicine COVID-19 Curbside Consults

ACADEMIC/RESEARCH PAPERS

- Nature
  - Concerns about SARS-CoV-2 evolution should not hold back efforts to expand vaccination
  - Analysis of SARS-CoV-2 genomic epidemiology reveals disease transmission coupled to variant emergence and allelic variation
  - Frequency and profile of objective cognitive deficits in hospitalized patients recovering from COVID-19
- Cell
  - Simultaneous Detection and Mutation Surveillance of SARS-CoV-2 and co-infections of multiple respiratory viruses by Rapid field-deployable sequencing
  - Adaptive immunity to SARS-CoV-2 and COVID-19
  - Drug repurposing screens reveal cell-type-specific entry pathways and FDA-approved drugs active against SARS-CoV-2
- Cell and Bioscience
  - Characterization of SARS-CoV-2 proteins reveals Orf6 pathogenicity, subcellular localization, host interactions and attenuation by Selinexor
- New England Journal of Medicine
  - Antibody Persistence through 6 Months after the Second Dose of mRNA-1273 Vaccine for Covid-19
- Clinical Infectious Diseases
  - Humoral and cellular immunogenicity of the BNT162b2 mRNA Covid-19 Vaccine in nursing home residents
  - SARS-CoV-2 outbreak in a long-term care facility after vaccination with BNT162b2
  - Efficient maternofetal transplacental transfer of anti-SARS-CoV-2 spike antibodies after antenatal SARS-CoV-2 BNT162b2 mRNA vaccination
  - Racial and Ethnic Differences and Clinical Outcomes of COVID-19 Patients Presenting to the Emergency Department
  - High infection secondary attack rates of SARS-CoV-2 in Dutch households revealed by dense sampling
  - Schools and COVID prevention
- Annals of Internal Medicine
  - Administration of a Second Dose of the Moderna COVID-19 Vaccine After an Immediate Hypersensitivity Reaction With the First Dose: Two Case Reports
- American Journal of Obstetrics and Gynecology
  - COVID-19 vaccine response in pregnant and lactating women: a cohort study
- Lancet
  - Effects of the COVID-19 pandemic on maternal and perinatal outcomes: a systematic review and meta-analysis
  - The relationship of large city out-of-hospital cardiac arrests and the prevalence of COVID-19
  - 6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records
  - A longer look at COVID-19 and neuropsychiatric outcomes
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- **Neurology**
  - Guillain-Barré Syndrome in the Placebo and Active Arms of a COVID-19 Vaccine Clinical Trial: Temporal Associations Do Not Imply Causality
  - Quelling Public Fears about Guillain-Barre Syndrome and COVID-19 Vaccination

- **JAMA**
  - Trends in Geographic and Temporal Distribution of US Children With Multisystem Inflammatory Syndrome During the COVID-19 Pandemic
  - Epidemiology of Multisystem Inflammatory Syndrome in Children
  - Ocular Assessments of a Series of Newborns Gestationally Exposed to Maternal COVID-19 Infection
  - Progression of Myopia in School-Aged Children After COVID-19 Home Confinement
  - Incidence of 30-Day Venous Thromboembolism in Adults Tested for SARS-CoV-2 Infection in an Integrated Health Care System in Northern California
  - Association Between Renin-Angiotensin-Aldosterone System Inhibitors and Clinical Outcomes in Patients With COVID-19
  - Mortality and Readmission Rates Among Patients With COVID-19 After Discharge From Acute Care Setting With Supplemental Oxygen
  - Excess Deaths From COVID-19 and Other Causes in the US, March 1, 2020, to January 2, 2021
  - Estimates and Projections of COVID-19 and Parental Death in the US
  - Assessment of Simulated SARS-CoV-2 Infection and Mortality Risk Associated With Radiation Therapy Among Patients in 8 Randomized Clinical Trials
  - Association of Sociodemographic Factors and Blood Group Type With Risk of COVID-19 in a US Population
  - Association of Human Mobility Restrictions and Race/Ethnicity-Based, Sex-Based, and Income-Based Factors With Inequities in Well-being During the COVID-19 Pandemic in the United States
  - Association Between Risk Factors for Complications From COVID-19, Perceived Chances of Infection and Complications, and Protective Behavior in the US
  - Symptoms and Functional Impairment Assessed 8 Months After Mild COVID-19 Among Health Care Workers
  - Risk Factors Associated With SARS-CoV-2 Infections, Hospitalization, and Mortality Among US Nursing Home Residents
  - Experiences of a Health System’s Faculty, Staff, and Trainees’ Career Development, Work Culture, and Childcare Needs During the COVID-19 Pandemic
  - Dermatologist Perceptions of Teledermatology Implementation and Future Use After COVID-19
  - Reactive Infectious Mucocutaneous Eruption Associated With SARS-CoV-2 Infection
  - Reactogenicity Following Receipt of mRNA-Based COVID-19 Vaccines
  - Mask Mandates, On-Premises Dining, and COVID-19
  - Fair Allocation at COVID-19 Mass Vaccination Sites
  - Digital Health Passes in the Age of COVID-19 - Are “Vaccine Passports” Lawful and Ethical?
  - Simulation-Based Estimation of SARS-CoV-2 Infections Associated With School Closures and Community-Based Nonpharmaceutical Interventions in Ontario, Canada
  - The COVID-GRAM Tool for Patients Hospitalized With COVID-19 in Europe
  - Comparison of Estimated Effectiveness of Case-Based and Population-Based Interventions on COVID-19 Containment in Taiwan
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- **BMJ Journal**
  - Post-covid syndrome in individuals admitted to hospital with covid-19: retrospective cohort study

- **medRxiv**
  - Mapping a Pandemic: SARS-CoV-2 Seropositivity in the United States

- **American Journal of Infection Control**
  - Outbreak of COVID-19 and Interventions in a Large Jail — Cook County, IL, United States, 2020

- **PLOS**
  - Characterizing COVID-19 clinical phenotypes and associated comorbidities and complication profiles
  - Sieve analysis to understand how SARS-CoV-2 diversity can impact vaccine protection
  - Patient access to chronic medications during the Covid-19 pandemic: Evidence from a comprehensive dataset of US insurance claims

- **National Academy of Medicine**
  - Care Systems COVID-19 Impact Assessment: Lessons Learned and Compelling Needs

- **The Journal of Infectious Diseases**
  - The stability of an isolate of the SARS-CoV-2 B.1.1.7 lineage in aerosols is similar to three earlier isolates

- **Emerging Infectious Diseases**
  - Epidemiologic Evidence for Airborne Transmission of SARS-CoV-2 during Church Singing, Australia, 2020
  - Multisystem Inflammatory Syndrome in Adults after Mild SARS-CoV-2 Infection, Japan
  - Genetic Evidence and Host Immune Response in Persons Reinfected with SARS-CoV-2, Brazil

- **International Journal of Audiology**
  - One year on: an updated systematic review of SARS-CoV-2, COVID-19 and audio-vestibular symptoms

- **eLife Science**
  - Early postmortem mapping of SARS-CoV-2 RNA in patients with COVID-19 and the correlation with tissue damage

- **PNAS**
  - Ranking the risk of animal-to-human spillover for newly discovered viruses

**MMWR**

- Community Transmission of SARS-CoV-2 Associated with a Local Bar Opening Event — Illinois, February 2021
- Rapid Spread of SARS-CoV-2 in a State Prison After Introduction by Newly Transferred Incarcerated Persons — Wisconsin, August 14–October 22, 2020
- Willingness to Receive a COVID-19 Vaccination Among Incarcerated or Detained Persons in Correctional and Detention Facilities — Four States, September–December 2020
- Provisional Mortality Data — United States, 2020
- Death Certificate–Based ICD-10 Diagnosis Codes for COVID-19 Mortality Surveillance — United States, January–December 2020
- Factors Associated with Participation in Elementary School–Based SARS-CoV-2 Testing — Salt Lake County, Utah, December 2020–January 2021
- Notes from the Field: COVID-19 Case Investigation and Contact Tracing Program — Spirit Lake Tribe, North Dakota, September–November 2020
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- Use of Stay-at-Home Orders and Mask Mandates to Control COVID-19 Transmission — Blackfeet Tribal Reservation, Montana, June–December 2020

HOT OFF THE (LAY) PRESS

- **US News**
  - Biden Makes All Adults Eligible for a Vaccine on April 19
- **The Hill**
  - Johnson & Johnson expands COVID vaccine trial to include adolescents
  - Biden adviser acknowledges messaging 'problem' surrounding COVID-19 immunity and travel
  - CDC announces next phase of cruise ship guidance
- **New York Times**
  - As Variants Have Spread, Progress Against the Virus in U.S. Has Stalled
  - Most U.S. infections are now caused by a contagious virus variant, the C.D.C. says.
  - With U.S. shots nearing an average of 3 million a day, the country faces another threat: complacency
  - U.S. Bet Big on Covid Vaccine Manufacturer Even as Problems Mounted
  - Top Official Warned That Covid Vaccine Plant Had to Be ‘Monitored Closely’
  - Researchers Are Hatching a Low-Cost Coronavirus Vaccine
  - Likely Legal, ‘Vaccine Passports’ Emerge as the Next Coronavirus Divide
  - The Reality of Vaccine Passports
  - Vaccinated Mothers Are Trying to Give Babies Antibodies via Breast Milk
  - Walgreens Not Following U.S. Guidance on Pfizer Vaccine Spacing
  - The once-battered Navajo Nation has gained control of the virus, for now
  - Is This the Future of Face Masks?
  - Has the Era of Overzealous Cleaning Finally Come to an End?
  - Britain will offer alternatives to the AstraZeneca vaccine to adults under 30, and E.U. officials said it had a “possible link” to rare blood clots.

- **European Medicines Agency**
  - AstraZeneca’s COVID-19 vaccine: EMA finds possible link to very rare cases of unusual blood clots with low blood platelets
- **UK Medicines and Healthcare Products Regulatory Agency**
  - MHRA issues new advice, concluding a possible link between COVID-19 Vaccine AstraZeneca and extremely rare, unlikely to occur blood clots
- **The Wall Street Journal**
- **The Washington Post**
  - Are we entering a ‘fourth wave’ of the pandemic? Experts disagree
  - Biden administration to launch massive funeral assistance program for covid victims
  - Should health-care workers be required to get coronavirus shots? Companies grapple with mandate
  - Texas to ban government-mandated ‘vaccine passports’
  - Canada’s variant-fueled covid-19 surge prompts new restrictions
  - People are losing their taste and smell to covid-19. Now there’s a cookbook to help.
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- **CNBC**
  - CDC director says hospitalizations among seniors are declining as more than half of the age group is fully vaccinated
- **NBC**
  - CDC's messaging problem highlights pandemic's uncertain future
- **STAT News**
  - Former Biden, Trump advisers renew push to delay second Covid vaccine
- **NPR**
  - Study: COVID-19 Vaccine Is Safe During Pregnancy And May Protect Baby, Too
  - Mass Vaccination Site In Colorado Temporarily Closed After 11 Become Sick
  - Johnson & Johnson To Oversee Vaccine Production At Baltimore Facility
  - Inside The CDC's Battle To Defeat The Virus
  - Vaccine Refusal May Put Herd Immunity At Risk, Researchers Warn
  - European Court Backs Mandatory Vaccinations Laws For Children
  - India Breaks Its Single-Day Case Record With More Than 100,000 New Infections
  - World's Biggest Vaccine Maker 'Very Stressed' As India Sees Record Spike In COVID-19
  - Scientists Race To Develop Next Generation Of COVID Vaccines
- **Reuters**
  - U.S. COVID-19 cases rise for third straight week, hospitalizations also up
  - Fauci says U.S. may not need AstraZeneca COVID-19 vaccine
  - Novavax starts allowing participants on placebo to get COVID-19 vaccine in trials
  - Italy makes COVID-19 vaccine mandatory for all health workers
  - Troubling "Eek" variant found in most Tokyo hospital COVID cases - NHK
  - Japan fears COVID-19 variants are behind possible fourth wave
  - Singapore to accept COVID-19 digital travel pass from next month
  - 'A biological Fukushima': Brazil COVID-19 deaths on track to pass worst of U.S. wave
- **National Geographic**
  - Coronavirus in the U.S.: Where cases are growing and declining
  - What we know so far about the effort to vaccinate children
  - Why kids need their own vaccine trials
  - We still don’t know the origins of the coronavirus – here are four scenarios
- **Scientific American**
  - It’s Much More Likely the Coronavirus Came from Wildlife, Not a Lab
  - What’s Next in the Search for COVID’s Origins
- **Medpage Today**
  - Why Redfield Is Wrong on SARS-CoV-2 Origins
- **Science News**
  - 4 takeaways from the WHO’s report on the origins of the coronavirus
- **AP News**
  - New Zealand to open travel bubble with Australia on April 19
  - Australia halts AstraZeneca vaccine for most people under 50
  - Vaccine skepticism runs deep among white evangelicals in US
- **Politico**
  - Pharmacies score customer data in vaccine effort. Some are crying foul.
  - Senior Trump and Biden officials knew for months about problems at vaccine plant
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- **BBC News**
  - Long Covid: More than a million affected in February, survey suggests

- **Popular Science**
  - Vaccines may help alleviate symptoms for people with long-COVID

- **Business Wire**
  - Pfizer and BioNTech Confirm High Efficacy and No Serious Safety Concerns Through Up to Six Months Following Second Dose in Updated Topline Analysis of Landmark COVID-19 Vaccine Study
  - Moderna Provides Storage Update & Announces the U.S. FDA Authorizes Up To 15-Doses Per Vial of its COVID-19 Vaccine
  - CoVig-19 Plasma Alliance Announces Topline Results from NIH-Sponsored Clinical Trial of Investigational COVID-19 Hyperimmune Globulin Medicine
  - Akili Collaborates with Weill Cornell Medicine, NewYork-Presbyterian Hospital and Vanderbilt University Medical Center to Study Digital Therapeutic AKL-T01 as Treatment for Patients with COVID Brain Fog

- **Lilly News Releases**
  - Lilly and Incyte announce results from the Phase 3 COV-BARRIER study of baricitinib in hospitalized COVID-19 patients

- **Salk News**
  - Fast, portable test can diagnose COVID-19 and track variants

- **SciTechDaily**
  - New Decoy Protein Treatment Fools Coronavirus, Rendering It Impotent

- **CNN**
  - Manufacturing moonshot: How Pfizer makes its millions of Covid-19 vaccine doses
  - In the race to vaccinate against Covid-19, willing adults in some states may be waiting all year

- **Boston Globe**
  - Brown University will require students to get COVID-19 vaccine

- **The New Yorker**
  - Sweden’s Pandemic Experiment

- **The Atlantic**
  - The Threat That COVID-19 Poses Now
  - The Pandemic’s Wrongest Man

- **KQED**
  - Finally Some Good News For California Nursing Home Residents
  - California Counties a Hodgepodge of Highs and Lows in Vaccinating Vulnerable Seniors
  - California to Allow Indoor Gatherings as Virus Cases Plummet

- **Los Angeles Times**
  - California aims for a full reopening on June 15, depending on a sufficient vaccine supply and a stable, low hospitalization rate, and masks
  - An apparent fourth wave of COVID-19 is centered in the East. Will it hit California?
  - California nears COVID-19 vaccine target that would ease more reopening rules.
  - COVID-19 vaccines are likely to be protective against a rapidly spreading variant of the SARS-Cov-2 virus that arose in California, a study finds.
  - English learners faltering amid California school closures Without intervention, a million students, mostly Spanish-speaking, could fall permanently behind.
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- **The Mercury News**
  - Costco opens up single-shot Johnson & Johnson COVID vaccine appointments across the Bay Area
  - California expecting nearly 90% drop in J&J vaccines next week, leading to fewer first-shot appointments
- **San Francisco Chronicle**
  - ‘Double mutant’ coronavirus variant surfaces in Bay Area. Here's what we know
  - Coronavirus infections on the rise in the Bay Area, following national trend
  - FEMA rejects county plea to keep Oakland Coliseum vaccination site open past April 11
  - Gov. Newsom vows to keep Coliseum vax site open, says state will match supply
  - California plans to retire color-coded tiers, as more Bay Area counties poised to enter orange
  - These hurdles could block California’s ambitious reopening timeline
  - In California, political leanings predict vaccination rates better than income
  - Yes, you can travel, but please don't: What's going on with the CDC’s mixed messaging

**Epidemiology Updates**

- **CDC COVID Data Tracker**
  - United States COVID-19 Cases and Deaths by State
  - CDC COVID Data Tracker: Vaccinations
  - CDC US COVID-19 Cases Caused by Variants
- **US Leads the World in Confirmed COVID-19 Cases** per Johns Hopkins University Center for Systems Science and Engineering Dashboard Website
- **Johns Hopkins COVID-19 in the USA** – daily summary of key data on COVID-19 in the U.S.
- **California COVID-19 by the numbers** are available on the CDPH Website and the NYT Map and Table (includes data by county)
  - California COVID-19 Statewide Update as of April 9, 2021
- **San Mateo County COVID-19 Dashboard**
- **NEW** San Mateo County Health Data
- **Santa Clara County COVID-19 Dashboard**

**Additional COVID-19 Resources**

- San Mateo County COVID-19 Guidance and Resources for Clinicians and Facilities – COVID-19 Digests
- Palo Alto Online tracking the coronavirus in San Mateo and Santa Clara counties
- California COVID-19 Data and Tools
- CDPH COVID-19 Assessment and Modeling Tool
- California Department of Corrections and Rehabilitations Population COVID-19 Tracking Dashboards
- CDC Interactive Serology Dashboard for Commercial Laboratory Surveys
- Children and COVID-19: State-Level Data Report
- HHS Coronavirus Data Hub
- COVID-19 Nursing Home Data