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ilp.mit.edu

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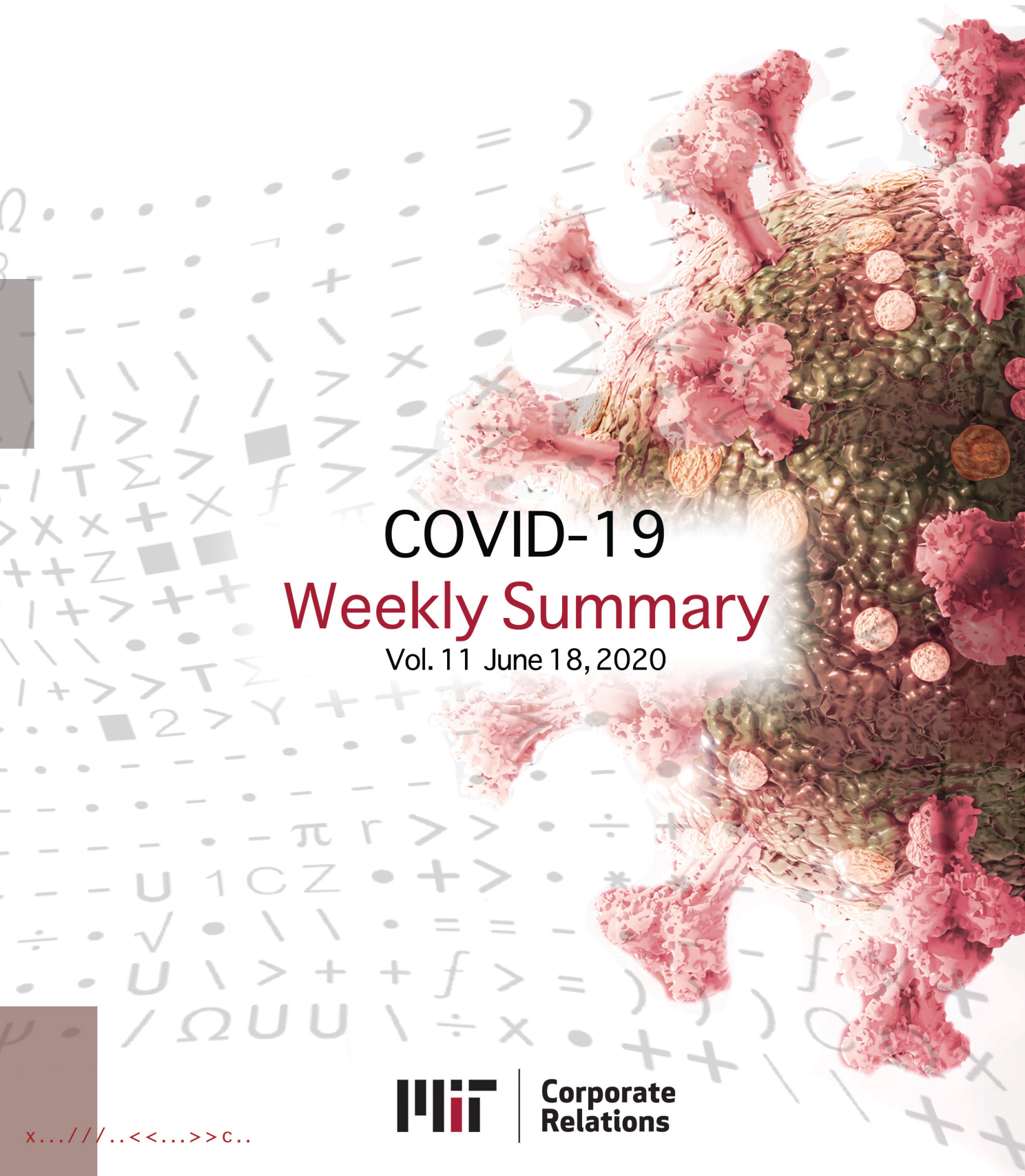

COVID-19 Weekly Summary

Vol. 11 June 18, 2020

MIT Corporate Relations

MIT ILP UPDATES // COVID-19 RELATED

This is a very brief collection of current resources and information from MIT's Industrial Liaison Program covering a range of issues related to COVID-19 and is offered to help us all navigate during this unprecedented and disruptive time.

UPCOMING EVENTS

MIT ILP WEBINARS
https://ilp.mit.edu/attend

23 June – Voting in the Midst of COVID-19
25 June – An Analytics Approach to COVID-19
30 June – Back at Work Post-COVID-19 (1 of 2)
2 July – Back at Work Post-COVID-19 (2 of 2)
7 July – Scaling-up Low-carbon Energy, with MITei
30 July 30 – ESG and Climate Change Series (1 of 8)

TUESDAY, 23 JUNE, 11:00 AM: STARR FORUM: WHEN CULTURE MEETS COVID-19

How does culture impact a country's response to the current crisis? How does this and other political and security factors impact its next steps? This talk will focus on the following regions: Middle East, Europe, Asia, and North America.
Chappell Lawson, Suzanne Berger, Yasheng Huang, Peter Krause
https://calendar.mit.edu/event/CultureMeetsCovid#.Xuet5VB7nCB

WEDNESDAY, 24 JUNE, 10:00 AM: RETURN TO SPORTS: HOW THE INDUSTRY CAN SURVIVE AND ADAPT IN A POST-PANDEMIC WORLD

MIT Sloan Expert Series (3rd episode)
Christina Chase, Managing Director & Co-Founder of the MIT Sports Lab, Lecturer, MIT School of Engineering
On the state of player training and the ways in which teams are using technology to get athletes into game shape.
https://mitsloan.mit.edu/experts/return-to-sports-how-industry-can-survive-and-adapt-a-post-pandemic-world)

MONDAY, 29 JUNE, 11:30 AM -12:45 PM: HOW ARE CANCER RESEARCHERS FIGHTING COVID-19? (PART II)

Koch Institute:
Michael Yaffe, MD, PhD Overcoming respiratory distress;
Angela Koehler, PhD - Novel therapeutic candidates;
Sangeeta Bhatia, MD, PhD - Nanomedicine for monitoring, prevention and therapy;
Robert Langer, PhD - Drug and vaccine delivery;
Moderated by Salil Garg, MD, PhD
https://ki.mit.edu/news/events/withinsight/jun-2020
http://calendar.mit.edu/event/how_are_cancer_researchers_fighting_covid-19_part_ii#.Xuew8lB7nCA

PROJECTS, INITIATIVES, RESEARCH

COVID-19 FAST GRANTS

https://fastgrants.org/
As of May 9th, 127 awards have been made. Not all recipients are currently listed.

Science funding mechanisms are too slow in normal times and may be much too slow during the COVID-19 pandemic. Fast Grants are an effort to correct this.

Fast Grants funders have committed over $22M to funding Fast Grant awardees.

Fast Grants are $10k to $500k and decisions are made in under 48 hours. If we approve the grant, you'll receive payment as quickly as your university can receive it.

Due to receipt of a very large number of qualified submissions, Fast Grant applications are currently paused [info accessed 15 June 2020].

MIT-related Startup: Addgene
http://www.addgene.org/

Grant: For continuing to share critical reagents with researchers at minimal cost during the Covid-19 pandemic.

The global research community is moving quickly to expand the knowledge and understanding of COVID-19 and related coronaviruses. To assist with this effort Addgene will maintain this plasmid collection page, which outlines various plasmids available and those coming soon. Additionally, we have linked to collections of open-access articles, protocols, and other resource collections related to COVID-19 that may be of use to scientists.

Nucleic acid nanotech / Vaccine candidates: Prof. Mark Bathe
Biological Biological Engineering
https://be.mit.edu/directory/mark-bathe
https://twitter.com/bathe_mark
Pubs:
https://scholar.google.com/citations?hl=en&user=ARaURTkAAAAJ&view_op=list_works&sortby=pubdate
Lab: http://bathebionano.org/

Grant: For a collaborative effort with the Lingwood and Schmidt labs **combining vaccine immunology and nanotechnology expertise to rapidly test and characterize** COVID-19 vaccine candidates in high-throughput.

The Laboratory of Prof. Mark Bathe at MIT uses nucleic acids (DNA and RNA) to engineer revolutionary new materials at the nanometer-scale, or nanoscale, where one nanometer is approximately 10,000x smaller than the thickness of an individual human hair.

One goal of these nanoscale materials is to enable the targeted, in vivo delivery of therapeutic nucleic acids such as siRNA, messenger RNA, and CRISPR to organs and tumors that are otherwise impossible to reach. Achieving this goal may help to develop cures for over 7,000 known genetic diseases, and cancer. Another goal of these nanoscale materials is to design new “qubits” that are the equivalent of “transistors” from conventional semi-conductor chips. Achieving this goal would enable highly parallel quantum computing at room temperature to augment conventional silicon computers that have reached the end of Moore’s Law. And a final goal of these nanoscale materials is to be able to write, store, and read massive datasets in a rapid, compact, and energy-efficient manner. Achieving this goal would offer the ability to make a low-cost, zettabyte-scale (1 trillion gigabytes) file system for the archival storage of all of the world’s information.

Recent paper: Controlling wireframe DNA origami nuclease degradation with minor groove binders

Eike-Christian Wamhoff, Hellen Huang, Benjamin J Read, Eric Ginsburg, William R Schief, Nicholas Farrell, Darrell J Irvine, **Mark Bathe**, bioRxiv, 2020
https://doi.org/10.1101/2020.05.24.110783 This article is a preprint and has not been certified by peer review.

Virus-like DNA nanoparticles have emerged as promising vaccine and gene delivery platforms due to their programmable nature that offers independent control over size, shape, and functionalization. However, as biodegradable materials, their utility for specific therapeutic indications depends on their structural integrity during biodistribution to efficiently target cells, tissues, or organs. Here, we explore reversible minor groove binders to control the degradation half-lives of wireframe DNA origami. Bare, two-helix DNA nanoparticles were found to be stable under typical cell culture conditions in presence of bovine serum, yet they remain susceptible to endonucleases, specifically DNAse I. Moreover, they degrade rapidly in mouse serum, suggesting species-specific degradation. Blocking minor groove accessibility with diamidines resulted in substantial protection against endonucleases, specifically DNAse-I. This strategy was found to be compatible with both varying wireframe DNA origami architectures and functionalization with protein antigens. Our stabilization strategy offers distinct physicochemical properties compared with established cationic polymer-based methods, with synergistic therapeutic potential for minor groove binder delivery for infectious diseases and cancer.

Peptides / treatment: Prof. Bradley Pentelute

Chemistry
https://chemistry.mit.edu/profile/bradley-l-pentelute/
https://twitter.com/PenteluteLab
PUBS:
https://scholar.google.com/citations?hl=en&user=uBkIL7YAAAAJ&view_op=list_works&sortby=pubdate
Lab: http://www.pentelutelabmit.com/

Grant: To **develop safe and effective peptides for prophylactic treatment and rapid early therapeutic intervention** against COVID-19 infection.

A main goal of the Pentelute Lab is to invent new chemistry to modify Nature's proteins to enhance their therapeutic properties for human medicine. This goal has posed immense challenges because proteins contain 20 amino acids that present different reactive functional groups and have a 3D shape that is moderately stable. In light of this, the newly developed chemistry needs to be protein compatible, site-selective, quantitative, and carried out in water at reasonable temperatures to maintain protein integrity and function. The Pentelute Lab has met these challenges and has developed a series of highly efficient and selective chemistries that can modify the amino acid cysteine and lysine within peptides and proteins. These newly developed chemistries can be catalyzed by enzymes or even promoted by a motif discovered by Pentelute's group, which is coined a 'pi-clamp'. This extensive protein modification toolkit has enabled the production of some powerful molecules including peptide macrocycles that cross cell membranes to disrupt cancer or antibody drug conjugates to kill breast cancer cells.

The Pentelute group is also focused on the delivery of large biomolecules into the cell cytosol.

The Pentelute group, a protein and peptide focused lab, has also invented a fully automated fast-flow machine to accelerate the chemical manufacture of polypeptides.

Recent paper: Conformational Dynamics in Extended RGD-Containing Peptides
William R. Lindemann, Alexander J. Mijalis, José L. Alonso, Peter P. Borbat, Jack H. Freed, M. Amin Arnaout, **Bradley L. Pentelute**, **and Julia H. Ortony**
Biomacromolecules Article ASAP, Received: 6 April 2020; Revised21 May 2020; Published online 16 June 2020, DOI: https://doi.org/10.1021/acs.biomac.0c00506
https://pubs.acs.org/doi/abs/10.1021/acs.biomac.0c00506

RGD is a prolific example of a tripeptide used in biomaterials for cell adhesion, but the potency of free or surface-bound RGD tripeptide is orders-of-magnitude less than the RGD domain within natural proteins. We designed a set of peptides with varying lengths, composed of fragments of fibronectin protein whose central three residues are RGD, in order to vary their conformational behavior without changing the binding site's chemical environment. With these peptides, we measure the conformational dynamics and transient structure of the active site. Our studies reveal how flanking residues affect conformational behavior and integrin binding. We find that disorder of the binding site is important to the potency of RGD peptides and that transient hydrogen bonding near the RGD site affects both the energy landscape roughness of the peptides and peptide binding.

This phenomenon is independent of longer-range folding interactions and helps explain why short binding sequences, including RGD itself, do not fully replicate the integrin-targeting properties of extracellular matrix proteins. Our studies reinforce that peptide binding is a holistic event and fragments larger than those directly involved in binding should be considered in the design of peptide epitopes for functional biomaterials.

ANALYTICS / SOCIAL DISTANCING: RULES OF THUMB FOR REOPENING PART 4— POD PEOPLE

For further details please contact: Munzer Dahleh, Sarah Fay, Peko Hosoi, Dalton Jones
Institute for Data, Systems, and Society (IDSS)
https://idss.mit.edu/vignette/rules-of-thumb-for-reopening-4/

We are now approximately two and a half months into the lockdown and we have learned at least one undeniable truth: human beings are not cut out for social distancing. The good news is that many of us are not completely socially isolated. We are fortunate to live with a few members of our immediate families where the rules of social distancing are relaxed; within our households we can interact in a "normal" way. As campuses contemplate opening in the Fall, it is tempting to think about whether there could be analogous social structures in campus life. In this week's post we will consider: Who is our "family" on a college campus? And what implications does that have in the spread of the virus?

To address these questions, consider small units of people, a.k.a. "pods." Within each pod, social distancing is diminished much like social distancing is relaxed between immediate family members at home. Unfortunately (and unsurprisingly) there is no free lunch; if we loosen social distancing protocols within the pods, we have to make up for that luxury elsewhere.

At the highest level, there are three types of pod architectures that one might consider. First, there are systems with a large number of pods and a large number of people per pod. In that context, the stability criterion from the eigenvalue analysis presented above is appropriate. Next, there is the limit of a large number of pods each containing a finite (small) number of people (e.g. roommates). In that limit, the relevant "stability" of the system is dictated by spread of the virus between pods….

The third architecture is a small number of pods each containing a large number of people; in this case it is the stability of the internal dynamics that largely determines the stability of the system. In the following we will focus on the pod-centric view (although the results are easily generalizable to the other two cases).

The pod-centric approach also allows us to focus on the limit where the infection spreads relatively rapidly within each pod; under those conditions, there is a high probability that the state of all of the people in a pod is identical (i.e. if I am infected, then it is extremely likely that my roommates are also infected and vice versa).

…Are pods a good idea?

Maybe. The challenge with pods is that if we let the virus spread, the virus will spread. The concept at the heart of the pods is that we are giving license to allow spread in a limited capacity (i.e. within the pod). Any protocol that includes "allowing spread" as part of the design should raise a warning flag during a pandemic. Even if the spread is contained within a pod, the more people there are in an infected pod, the greater the odds of leaking to other pods.

That being said, we can also not forget that pods are comprised of people, which brings us back to the assertion at the beginning of this post: people are not cut out for social distancing. Although pods may increase transmission, the benefits associated with increased happiness in living as a social unit (and the associated increased likelihood of compliance with rules and other guidance) may out-weight the hit we take to Rout. If pods are carefully constructed and paired with appropriate well-designed testing protocols, the increase in spread appears to be manageable and may be worth the trade-off.

CONTACT TRACING:

Apple & Google Work Together as MIT Tests Validity

Developers are building and testing an opt-in automated system to slow the spread of the coronavirus. But will anyone use it?
May 2020, IEEE
Lincoln Labs
https://www.ll.mit.edu/news/covid-19-digital-contact-tracing-apple-and-google-work-together-mit-tests-validity
https://spectrum.ieee.org/the-human-os/biomedical/devices/covid19-digital-contact-tracing-apple-google-mit-tests-validity

In a rare act of cooperation, Google and Apple this month released specifications for software developers to build digital contact tracing apps for Apple and Google mobile operating systems, which jointly encompass the majority of smartphones around the world.

Digital contact tracing, which can automatically notify an individual if they've crossed paths with someone who tested positive for COVID-19, has been proposed as a way to augment manual contact tracing, which requires the painstaking work of thousands of trained workers per state to identify, track, and assist individuals exposed to the virus. As digital contact tracing technologies advance, two questions rise to the surface: Will state health officials and individuals opt to use the technology? And, if so, how well will it work?

States see contact tracing with cellphones as key to reopening economies

Mobile phone apps that have privacy controls could aid greatly in tracking COVID-19 spread.
Lincoln Labs, May 2020
https://www.ll.mit.edu/news/states-see-contact-tracing-cellphones-key-reopening-economies
https://www.rollcall.com/2020/05/12/states-see-contact-tracing-with-cell-phones-as-key-to-reopening-economies/

Contact tracing has traditionally meant methodical, shoe-leather detective work. Tracers and epidemiologists interview people with infectious diseases to find out who they had contact with in the recent past and get those people to quarantine and to report who they in turn had contact with. Eventually tracers can track who actually brought a virus into a community and who might also be infected.

But today, the hope is that the shoe-leather work could be supplemented and made more accurate by the use of mobile phone apps. A few states already have deployed GPS location technology to assist in such tracking while an alternate technology using Bluetooth signals is still in development.

STUDENT / ALUMNI: PROJECTS / INITIATIVES ETC. / COVID-19

Medical Equipment & Supplies: PanFab

https://www.panfab.org/
https://regsci.hms.harvard.edu/about/covid-19-response/
Priority Projects: https://www.panfab.org/priority-projects
Papers: https://www.panfab.org/resources/research-papers

PanFab Coordinating Lead member: Deborah Plana, BS, Harvard-MIT Program in Health Sciences and Technology and Harvard Systems Biology
PanFab Workstream Leads: Marc-Joseph (MJ) Antonini, Avilash Kalpathy Cramer, and Aditi Gupta are fifth year PhD students in HST's Medical Engineering and Medical Physics (MEMP) program; and Malia McAvoy is a 2020 HST MD graduate who is starting her neurosurgery residency at the University of Washington. Also participating is Lyla Atta, an MIT alumna who is a second year MD-PhD student at Johns Hopkins University.

See also: https://hst.mit.edu/news-events/hst-students-share-their-reflections-responding-covid-19

PanFab was established to meet urgent demands for medical supplies and equipment arising from the COVID19 pandemic. Coordination is provided by the Harvard-MIT Center for Regulatory Science at HMS, a not-for-profit 501(c)(3) institution. Our primary mode of real-time communication is Slack.

We are focused initially on the Greater Boston area but anyone is free to join and use our work products. Hospital utilization for COVID19 in Massachusetts (and much of the country) is expected to peak on April 15-18. We aim to get as many products and methods into the hospital supply chain as possible to help patients and caregivers prior to then.

Assessment of the Qualitative Fit Test and Quantitative Single-Pass Filtration Efficiency of Disposable N95 Masks Following Gamma Irradiation

Avilash Cramer; Enze Tian; **Mitchell Galanek**; **Edward Lamere**; **Ju Li**; Rajiv Gupta; **Mike Short**; JAMA Netw Open. 2020;3(5):e209961. doi:10.1001/jamanetworkopen.2020.9961
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2766200

Introduction: The coronavirus disease 2019 pandemic has led to a dramatic shortage of masks and other personal protective equipment in hospitals around the globe.
One component of personal protective equipment, the disposable N95 face mask, is in particular demand.1,2 To alleviate a shortage of N95 masks, many methods to resterilize them have been proposed and studied.3 Any method for resterilizing masks must not degrade the filtration efficiency of the mask.

This quality improvement study examines cobalt-60 gamma irradiation as a method of N95 mask sterilization. Viral inactivation of severe acute respiratory syndrome coronavirus has been reported at radiation doses of 10 kGy at most, with other studies supporting a radiation dose of 5 kGy for many types of viruses.4,5

Gamma irradiation has certain logistical advantages over other sterilization methods but there is a concern that radiation may damage the mask by cross-linking polymers within it and make them brittle. Ionizing radiation can disrupt the electrostatic charge distribution in the electret material of the mask and reduce its filtration efficiency against submicron particles.

Student poems during COVID-19: "Pandemic Spring"
Erica Funkhouser, Lecturer, Comparative Media Studies/Writing
May 2020, https://cmsw.mit.edu/student-poems-pandemic-spring-covid-19/

In the weeks since they had to leave MIT, the students in my Poetry Writing Workshop have done some of the finest work of the semester. Ed Barrett noticed the same thing. It turns out that stress, uncertainty, fear, confinement, isolation and discomfort still, after centuries of human suffering, lead writers to write. As one student noted, "Poetry has the ability to both fix that which is fleeting and collapse our familiar notions of what we thought was stable." Here is a brief sampling of poems from Pandemic Spring. Ed and I are deeply grateful to the students who agreed to share their work.

PAPERS, ARTICLES, PRESENTATIONS, TALKS

VACCINES: ORAL BIOLOGIC DELIVERY: ADVANCES TOWARDS ORAL SUBUNIT, DNA AND MRNA VACCINES AND THE POTENTIAL FOR MASS VACCINATION DURING PANDEMICS

JW Coffey, GD Gaiha, G Traverso, Annual Review of Pharmacology and Toxicology, Vol. 61:- (Volume publication date January 2021); Accepted preprint first posted online on May 28, 2020. (Changes may still occur before final publication.) https://doi.org/10.1146/annurev-pharmtox-030320-092348

Giovanni Traverso, Karl Van Tassel (1925) Career Development Professor, Mechanical Engineering
https://scholar.google.com/citations?hl=en&user=Htybq6sAAAAJ&view_op=list_works&sortby=pubdate

Oral vaccination offers the promise of convenient, pain-free and self-administrable vaccine delivery. This is highly attractive in response to pandemic outbreaks where rapid mass vaccination is critical. Furthermore, oral vaccination produces mucosal, as well as systemic, immune responses, which protect against infection at mucosal surfaces. As the majority of pathogens enter the body through mucosal surfaces this may further enhance protection and minimize the spread of disease. The gastrointestinal (GI) tract presents a number of prospective mucosal inductive sites for targeting orally delivered vaccines, including the oral cavity, stomach and small intestine. Despite this, currently available oral vaccines are effectively limited to either live attenuated and inactivated vaccines against enteric diseases. The GI tract poses a number of challenges to the delivery of subunit and nucleic acid vaccines, including degradative processes that digest biologics and mucosal barriers that limit their absorption. This review summarizes the approaches currently under

development and future opportunities for oral vaccine delivery to established (intestinal) and relatively new (oral cavity, stomach) mucosal targets. Special consideration is given to recent significant advances in oral biologic delivery that offer promise as future platforms for administration of oral vaccines.

PULMONARY FAILURE / THERAPIES: FIBRINOLYTIC THERAPY FOR REFRACTORY COVID-19 ACUTE RESPIRATORY DISTRESS SYNDROME: SCIENTIFIC RATIONALE AND REVIEW

Barrett CD, Moore HB, Moore EE, McIntyre RC, Moore PK, Burke J, Hua F, Apgar J, Talmor DS, Sauaia A, Liptzin DR, Veress LA, **Yaffe MB**. Version 2. Res Pract Thromb Haemost. 2020 Jun 12;4(4):524-531. doi: 10.1002/rth2.12357. eCollection 2020 May. https://pubmed.ncbi.nlm.nih.gov/32542213/

Michael B Yaffe, Director, MIT Center for Precision Cancer Medicine; David H. Koch Professor in Science; Professor of Biological Engineering, https://ki.mit.edu/people/faculty/yaffe

The coronavirus disease 2019 (COVID-19) pandemic has caused respiratory failure and associated mortality in numbers that have overwhelmed global health systems. Thrombotic coagulopathy is present in nearly three quarters of patients with COVID-19 admitted to the intensive care unit, and both the clinical picture and pathologic findings are consistent with microvascular occlusive phenomena being a major contributor to their unique form of respiratory failure. Numerous studies are ongoing focusing on anticytokine therapies, antibiotics, and antiviral agents, but none to date have focused on treating the underlying thrombotic coagulopathy in an effort to improve respiratory failure in COVID-19. There are animal data and a previous human trial demonstrating a survival advantage with fibrinolytic therapy to treat acute respiratory distress syndrome. Here, we review the extant and emerging literature on the relationship between thrombotic coagulopathy and pulmonary failure in the context of COVID-19 and present the scientific rationale for consideration of targeting the coagulation and fibrinolytic systems to improve pulmonary function in these patients.

XENOPHOBIA / HISTORY: ON ANTI-ASIAN PREJUDICE AND THE CORONAVIRUS CRISIS (PODCAST)

Emma J. Teng, T.T. and Wei Fong Chao Professor of Asian Civilizations, History Faculty, and Director of MIT Global Languages
https://masshumanities.org/in-residence-episode-1/ -- April 2020, 21 minutes
see also: https://mitgsl.mit.edu/news/emma-teng-coronavirus-and-xenophobia

Interview by Mass Humanities with Prof. Emma Teng: A conversation between Executive Director Brian Boyles and Mass Humanities board member Dr. Emma Teng. Emma discusses Taiwan and China and how the U.S. needs a better understanding of Asian American history in order to break the patterns of negative stereotypes directed at Asian Americans that have arisen from the coronavirus. She talks about historical patterns of discrimination and how we can learn from other countries in their response to the crises.

4/17/20 - ABC News article "Wuhan's 'wet markets' are back in business"
2/13/2020 - Los Angeles Times "Coronavirus sparks culture clash in the San Gabriel Valley"
2/7/2020 - South China Morning Post: "Coronavirus: outbreak has stoked a rise in xenophobia, Chinese living abroad say."

MIT-RELATED STARTUPS

MIT Startup Exchange: https://startupexchange.mit.edu/

CONQUERX

Boston, MA and Cambridge, UK, https://www.conquerxlab.com/

Our mission is to make molecular diagnostic tests accurate, affordable and available to all. The technology was ideated by Deborah Zanforlin after she made a key discovery that would enable the development of a new type of blood test able to detect cancers in early stages. At the MIT Entrepreneurship Bootcamp, together with Jakub Chudik (MIT), Jorge Sanchez and To-Nhu Huynh, the company was founded (2015).

COV-SenS a portable test for COVID-19
During the past 4 years, ConquerX has been focused on prototyping and development of a poly-analyte diagnostic platform for cancer. However, due to the latest developments in the world, and the COVID-19 outbreak we have decided to shift our first intended of use to virology, namely COVID-19 and the flu. ConquerX's goal is to develop an electrochemical biosensor assay that can be used as a Point-Of-Care diagnostic test for COVID-19.

OPT INDUSTRIES

Cambridge, MA, http://optindustries.com/
http://optindustries.com/covid/

At OPT Industries, we invent and manufacture tunable materials to meet customer needs. We build integrated additive manufacturing systems to 3D print rolls of customizable material with extreme micro-to-macro precision. Our technology provides material solutions to industries such as sports, fashion, interiors, medical, automotive, and beyond.

Due to the global pandemic, the supply chain of conventional nasopharyngeal (NP) swabs is inadequate to meet the urgent demand of COVID-19 testing in the US. Recently, OPT has developed over 20 different swab prototypes and has optimized a "fibril" and a "stent "swab design. These swabs have been tested and have passed the evaluation from clinicians at Beth Israel Deaconess Medical Center related to collection sufficiency, and PCR inhibition. Currently, OPT is producing thousands of testing swabs and are sending them to hospitals across the country.

PATHRAI

Mountain View, CA, https://pathr.ai/
https://www.linkedin.com/company/pathr/

Pathr™ is a Machine Learning (ML) solution that employs Spatial Intelligence to help businesses and operators better understand the way that people and objects move throughout their physical space. Pathr™ has created the first AI-powered, platform of its kind capable of tapping existing anonymous location data and sets of predictive algorithms to deliver actionable business insights, in real time, across an organization's ecosystem.

Social Distance Score™ from Pathr.ai. An AI solution created to help your business safely reopen & protect customers and staff by evaluating foot traffic, layout, and establishing your social distancing options in the wake of a pandemic like Covid 19. Pathr has designed a three-step process for your spaces that, in combination with government and other guidelines can help you reopen, ramp, and react in ways that balance public safety and business needs.
https://socialdistance.ai/