The SARS-CoV-2 pandemic has revealed serious gaps in humanity's capacity to avoid, detect, predict, and control emerging infectious diseases (EIDs). These gaps represent research priorities in disparate disciplines in both the natural and the social sciences. More crucially, the pandemic has highlighted the fundamental need for coordination and collaboration across disciplines and national borders, to deal with the COVID itself but also prepare for future EIDs, of which multiple are discovered every year. When EIDs arise, epidemiological models and evolutionary genomic analyses can predict the likely trajectory of a disease's spread. However, epidemiological projections alone are not enough: optimal containment strategies must incorporate analyses of economic costs, culturally competent care, and benefits of alternative intervention strategies. To implement such optimal strategies, one must then consider a society's legal, political, ethical, and cultural context, and the media channels through which containment strategies must be communicated to the public. Thus, effective strategies to avoid and contain extant and future infectious diseases must merge knowledge from many academic disciplines.

To advance interdisciplinary knowledge and technical capacity to manage infectious disease, we propose the creation of a research cluster of faculty studying emerging infectious disease outbreaks from an integrated interdisciplinary standpoint. The cluster hire will prioritize interdisciplinary research and collaboration that intersects with many University of Connecticut and College of Liberal Arts and Sciences priorities. The cluster can be affiliated with the Center for Biological Risk (www.biorisk.uconn.edu), as EIDs are one, very important, form of biological risk.

This cluster would make core contributions to the University's goal of furthering knowledge and capacity to promote **Human Health**. The faculty hired in this cluster will likely form tight collaborative bonds with UConn Health, and with the Health division of the Center for Biological Risk. But, emerging infectious diseases can also impact human health indirectly by threatening our managed or natural food supplies and ecosystem services (e.g., wheat blight and other crop or livestock diseases). In this regard, the cluster hire could intersect more broadly with multiple divisions of the CBR. The hires can also participate in the upcoming graduate certificate in Global Health that is in preparation under the auspices of Global Affairs.

The cluster can also contribute to the University's goal of research in **Biodiversity** and conservation: understanding the biological diversity of viruses, bacteria, and their natural hosts, provides a platform for predicting risk of zoonotic disease transmission to humans as we encroach on natural habitats and populations of wild animals. Such an orientation can contribute to understanding the role of climate change, land use change, and conservation in the emergence of infectious disease. The Institute of the Environment would be a good partner in this topic.

The current pandemic also highlights the role of **Social Justice** in the study and prevention of current and future infectious diseases. The legacies of racial inequality are revealed in the impact of pre-existing conditions on infection mortality and the persecution of scapegoated populations in the U.S. and globally. The disparate impact of the disease between the poor and wealthy create unequal health burdens and who differ in their ability to engage in social distancing, access

medical care, stress the importance of a social justice emphasis The disease has also underscored the significance of racism, seen with anti-Asian hate speech and violence, in shaping medical opinion and public policy, persecuting a vulnerable population, and spreading myths of racial immunity - all of which decrease our ability to treat and manage infectious disease. The Asian and Asian American Studies Institute is well-positioned to support teaching about and research of domestic and global patterns of pathogen racism.

All of the above themes will address the intersection between basic scientific knowledge, and human attitudes and beliefs that affect how that knowledge is used.

We envision a cluster hire spanning numerous departments, including (as possible examples):

- **Ecology and Evolutionary Biology**: A position in ecology or evolution of infectious disease, including epidemiology and/ or pathogen evolutionary population genetics (see for example https://nextstrain.org/ncov?p=grid)
- Molecular and Cellular Biology: A position in _____
- **Political Science**: A position with expertise in public health and/or national and international crisis response. Preference goes to applicants whose research focuses on any of the following: (1) the consequences of emerging infectious diseases for minority and highly-vulnerable populations; (2) the role and function of the World Health Organization; or (3) state responses to crises and disease outbreaks (contact **david.yalof@uconn.edu)**
- **Economics:** A position in Health Economics with a focus on the effects of the emergence and spatial transmission of infectious diseases. Preference would be given to scholars who study either (1) the impact of mitigation efforts through policy interventions on primary outcomes such as infection, illness and mortality and/or (2) broader impacts in employment, social insurance, provision of health care, and the family. (contact chih-hwa.kao@uconn.edu, kenneth.couch@uconn.edu)
- **Geography**: A position in **Health Geography** with a focus on the spatiality of emerging infectious diseases within the health-environment interface. Preference would be given to scholars who : (1) utilizes spatial and epidemiological techniques to understand the spread and mitigation of infectious diseases, and (2) measures health outcomes to reduce socio-spatial disparities and/or environmental justice, or (3) understands health possibilities and constraints within complex socio-ecological-political systems. **(contact Debs Ghosh at debarchana.ghosh@uconn.edu)**
- **Anthropology:** A position in Medical Anthropology for a scholar who investigates emergent infectious diseases from a critical perspective. Preference would be given to scholars who use interdisciplinary and/or community-based approaches to EID and conceptual frameworks that intersect with human rights, global health, climate change, and health and social inequalities. (contact natalie.munro@uconn.edu; cesar.abadia@uconn.edu>)
- Communication: A position in _____

- **Asian and Asian American Studies Institute**: A jointly-appointed position with another department and the Asian and Asian American Studies Institute with a focus on the role of racism and persecution that accompanies infectious diseases. Preference would be given to scholars who conduct EID research on: (1) comparative international public health and social justice responses, (2) inter-Asian politics and policy, (3) history, culture, politics, and treatment of immigrant healthcare workers (U.S. Asia, and global), (4) history, impact, and prevention of racism and intersecting inequalities in treatment and management of EIDs (U.S., Asia, and global).
- Civil and Environmental Engineering: A position in _____

Example job descriptions are provided below:

EEB Job Description: Ecological Epidemiology of Emerging Infectious Disease
The Department of Ecology and Evolutionary Biology seeks to hire a Full Professor with expertise in epidemiology. The new hire would become the Director of the Emerging Disease Studies Group within the existing Center for Biological Risk, and would be expected to coordinate with relevant faculty from disparate departments. Qualified candidates might, for example, conduct research on the role of biodiversity in emerging diseases, epidemiological modeling, disease dynamics, etc.. They might contribute to teaching in general ecology, quantitative ecology, or develop a new course on epidemiology.

EEB Job Description: Evolution of Emerging Infectious Disease
The Department of Ecology and Evolutionary Biology seeks to hire an Assistant Professor with expertise in the Evolution of Infectious Disease. Candidates might approach this topic using, for example, mathematical modeling, genomic analyses of molecular evolution, population genetics, phylogenetics, experimental evolution. The new hire might teach a general course in evolutionary biology, phylogenetics, population genetics, molecular evolution, or disease evolution.

Other departments, add your descriptions here, discuss (1) intellectual value, (2) teaching needs, and (3) how they would interface with other hires in other departments. Consider the possibility of joint appointments across departments (though these have limitations of course).

ECON Job Description: Health Economics: Emerging Infectious Diseases

The Economics Department seeks to hire an Assistant Professor with a primary specialization in Health Economics who studies the effects of the emergence and transmission of infectious diseases. This new hire would work in conjunction with the Emerging Disease Studies Group in the Center for Biological Risk. Qualified candidates would work on directly related topics. For example, economists who study infectious diseases commonly look at the emergence and spatial spread of infectious diseases and the

impact of mitigation efforts through policy interventions on primary outcomes such as infection, illness and mortality. Health economists also study the impact of disease prevalence on human resource issues such as ability to work and loss of employment and income. Additionally, they study broader social impacts such as the spread of illness or comorbidities within families, the use of social insurance such as publicly provided health insurance and disability benefits, and the capacity of the health care system to meet demand for treatment. This new hire would allow the economics department to provide greater topical variety in course offerings in health economics at the undergraduate and graduate level.

ANTH Job Description: Critical Medical Anthropologist: Emergent Infectious Diseases

he Department of Anthropology at the University of Connecticut invites applications for a tenure-track Assistant Professor of Anthropology as part of the Emergent Infectious Diseases (EID) cluster hire. We are looking for an emerging leader in medical anthropology who investigates emergent infectious diseases from a critical perspective. Preferred qualifications include interdisciplinary and/or community-based approaches to EID and conceptual frameworks that intersect several of the following: critical biotechnologies, multi-species anthropology, syndemics, science and technology studies, biopower, biocapital, empire, migration, human rights, global health, climate change, environmental justice, decoloniality, health and social inequalities, indigenous studies, critical race theories, feminisms, or epistemologies of the global south. The candidate will support medical anthropology training at the undergraduate and graduate levels, including the department's new minor in the Anthropology of Global Health. The candidate should demonstrate the potential to collaborate across departments. Joint appointments will be considered depending on the applicant's trajectory and qualifications.

GEOGRAPHY Job Description: Health Geography - Emerging Infectious Diseases

The Department of Geography at the University of Connecticut invites applications for a tenure-track Assistant Professor of Geography as part of the Emergent Infectious Diseases (EID) cluster hire. We seek a health geographer who investigates the ***spatiality*** of emergent infectious diseases within the health-environment interface. The successful candidate will facilitate new and transformative interdisciplinary collaborations between faculty and students to: enhance and utilize quantitative, spatial, and epidemiological models to understand the spread and mitigation of infectious diseases; emphasize on the impact of infectious diseases on socio-spatial disparities and/or environmental justice; and understands health accessibility, possibilities and constraints within complex socio-ecological-political systems. Any regional specialty is welcome. The candidate will primarily support the 'Spatial Analysis of Social Issues' research cluster of our department with strong ties to other clusters, 'Geographic Information Science and Systems' and 'Human-Environment Dynamics' and contribute to teaching in health geography at both undergraduate and graduate levels, including the department's new major in Geographic Information Science. In addition to being part a cluster hire for EID, this position has unique and exciting opportunities to further develop interdisciplinary connections at the University level with

the Center for Biological Risk, Institute for Collaboration on Health, Intervention, and Policy, Center for Environmental Science and Engineering, and the potential Data Science Institute.

ASIAN and ASIAN AMERICAN STUDIES INSTITUTE job Description - (Jointly Appointed) Social Justice - Emerging Infectious Diseases

The Asian and Asian American Studies Institute seeks applications for a jointly-appointed tenure track Assistant Professor with the Department of _____ as part of the Emerging Infectious Diseases (EID) cluster hire. We seek an interdisciplinary scholar who teaches and researches the role of racism and intersecting oppressions which impact the treatment and management of infectious diseases. The successful candidate will demonstrate a critical engagement in the issues of inequality, discrimination, and persecution in Asia, of Asian Americans, or some comparative diaspora/regional/global configuration. The research profile of the ideal candidate would include critical perspectives on public health and care as they pertain to structures of capitalism, colonialism, and imperialism. The candidate should demonstrate experience with or plans to conduct community engaged research with policy impacts at the state, national, and or international levels.

1. Rationale

Introduction. The rapid development of genomics technologies, paired with the decreasing costs associated with whole-genome sequencing, has provided unprecedented access to genomic data from both living and ancient peoples, affording scientists extraordinary power to tackle questions related to the evolution, health, and ancestry of human populations. Insights gained from analyzing thousands of genomes can inform us about genetic variation within and between populations, the evolution and persistence of ancient DNA elements inherited from ancient humans and their implications for health and disease in present-day populations, and human migrations and the demographic histories of diverse populations around the world. Furthermore, direct-to-consumer genome sequencing is becoming more and more widespread in the US, fueling discussions about privacy and the use of personal data, the impact that interpretations of these data may have on individuals and society, and an array of other ethical, legal, social, and political issues associated with these tests and the resulting datasets. Thus, access to, and the availability of, genome-scale data from individuals will impact nearly all areas of society in profound, significant, and often unintentional or unexpected ways. Accordingly, UConn should simultaneously invest in this rapidly expanding field and develop an enduring commitment to advancing knowledge that informs practices relevant to the use and interpretation of human genomic data.

For this proposal, we envision a cluster hire in the broad area of "**Genomics, Identity and Society**". This group of scholars would explore the intersection of human genomic variation, social constructs such as cultural, racial, and gender identities, and the ethical, legal, and social implications of human population genomic research.

a. Strengths and synergies

This proposal intends to capitalize on the central role that faculty in diverse departments within CLAS and the Institute for Systems Genomics (ISG) play in the field of genomics to build an interdisciplinary cohort of new hires. Possible areas of research include *1) understanding the diversity and dynamics of existing human populations*, *2) the evolution of the human genome and ancient human populations*, *3) studying how genome sequences impact our understanding of species identity and speciation processes*, and *4) the impact of genomic data on the construction and expression of self-identity, race, and gender*. These areas of research are highly interdisciplinary and span expertise in genomics, molecular biology, evolution, anthropology, ethics, philosophy and gender studies. Importantly, the proposed initiative fits into many of the targeted areas of the CLAS Strategic Plan, especially *i)* Big Data: Science, Policy, and Ethics; *ii)* Inequalities, Social Justice, Truth, and Belief; *iii)* Health, Disease, and Well-Being; *iv)* Brain, Mind, Language, and Logic.

b. Teaching needs

Public interest in genetics is surging due to advances in genomic and personalized medicine, genetic ancestry and genealogy, and forensics (*e.g.* the Golden State Killer). At the same time, the field of genetics is advancing rapidly, demanding the incorporation of emerging topics such as the many roles of small RNAs, ancient DNA, and genetic engineering employing CRISPR technology into curricula. It is therefore more critical than

ever that undergraduate biology education provides students with the conceptual background and analytical abilities required to understand and communicate the implications of these discoveries while simultaneously grappling with the ethical and societal issues associated with these scientific advances. To help prepare students for careers in medicine, conservation, science policy, psychology, biomedical research, and to educate the next generation of informed, critical citizens, faculty under the proposed cluster hire would develop an integrated educational program in teaching, research, and outreach. Novel courses developed would complement and expand upon newly developed courses such "Race, Gender, and Science", "Human Evolutionary Genomics", "Paleogenomics: Methods, Applications, and Controversies", and "Anthropological Genetics" (Anthropology) and existing courses such as "Genetic Revolution in Popular Culture" and "Genetic Engineering" (Molecular and Cell Biology), "Introduction to Multicultural Psychology" and "Social Psychology of Multiculturalism" (Psychology), and "Evolution and Human Diversity" (Ecology and Evolutionary Biology), and could form the basis for a new certificate or minor in Human Genome Biology.

c. Benefit to CLAS

Benefits to CLAS include *1)* investing in a field that is transforming our society, enabling us to be at the forefront of the research and training in this area; *2)* the faculty hired under this cluster would synergize with existing researchers in multiple departments and with the Institute for Systems Genomics, enhancing multi-disciplinary research at the university; *3)* high potential to attract significant funding from the National Human Genome Research Institute (NHGRI), which identifies "genomic technology development; genomic variation and its functional consequences; policy development and implementation to enhance data sharing; and the ethical, legal and social implications of genomics" as areas of emphasis in their current strategic planning; *4)* enhancing course offerings and research experience for undergraduate and graduate students in these emerging areas; *5)* since there are a number of scientists and scholars from diverse backgrounds working in this area, this initiative has the potential to expand the diversity of CLAS faculty.

2. Number and level(s) of tenure system, including rationale

To create a faculty cohort with a critical mass while enabling frequent interactions and collaborations within the group, we propose the hiring of six faculty, three working in genomics and three on aspects related to identity studies and ethics. These hires could be identified by two distinct but coordinated search committees made up by UConn faculty from participating departments with expertise in targeted areas. By assembling search committees with diverse interests and employing ads with broad language, we anticipate being able to attract candidate faculty in several different areas, rather than narrowly focused. Only once search committees identify the best candidates, will a home department be identified. Dual affiliations could also be considered. New hires will form close ties with the Institute for Systems Genomics, and, if appropriate, with the Humanities Institute.

3. Campus location:

Storrs

4. Unit(s) in which the individuals may be appointed

Departments and units that have expressed an interest in the hires outlined in this proposal are: Molecular and Cell Biology & Institute for Systems Genomics (faculty contact: Barbara Mellone and Rachel O'Neill), Anthropology (faculty contact: Deborah Bolnick), Ecology and Evolutionary Biology (faculty contact: Pamela Diggle), Women's, Gender, and Sexuality Studies (faculty contact: Sherry Zane), Humanities Institute (faculty contact: Michael Lynch), Philosophy (faculty contact: Don Baxter and Lewis Gordon), and Sociology (faculty contact: Manisha Desai).

5. Anticipated salaries, projected startups and space needs

We anticipate salaries consistent with the rank of Assistant Professor at UConn. Startup funds will largely be dependent on the research needs of individual hires (*E.g.* $600k-1M for the three genomics hires and $50-100k for the three humanities hires).

We will work with CLAS and participating units to identify space as appropriate for the type of research and space allocations available at the time of the search. Faculty to be appointed in the humanities or performing computational work (dry lab) will require graduate assistant/research personnel offices; faculty performing wet lab research will require laboratory space (~800-1000sq ft). It is anticipated that three to four of the faculty will fall in the dry lab category with two to three in the wet lab category.

MCB job description: Molecular and cellular biology of virus-host interactions
The Department of Molecular and Cell Biology seeks to hire an Assistant or Associate (?) Professor with expertise that lies at the interface between viruses and hosts that drive successful infections. The ideal candidate would use molecular, biochemical, and/or cell biological approaches (e.g. molecular genetics, proteomics, advanced fluorescence microscopy, etc., in the context of viral infections of host cells). The new hire would also contribute to our teaching missions in cell biology and/or virology.

MCB job description: Structural biology of virus-host interactions
The Department of Molecular and Cell Biology seeks to hire an Assistant Professor with expertise in determination of the structure of viral capsids, viral proteins, or cellular protein targets important for infection. Understanding structures of viral proteins or host proteins involved in successful infection is critical for drug design. The ideal candidate would have expertise in cryo-electron microscopy structure determination or other structural, biochemical, or biophysical approaches. The new hire would also contribute to our teaching missions in structural biology and/or virology.

DRAFT - Climate and Human Alteration of Earth Systems (CHAES): Forging understandings of impacts, resilience, and consequences.

Department of Marine Sciences

(DMS, EEB, MCB, GEO, GEOG, SOC, POLS)

We are now in the Anthropocene, the era in which the planet has been under human influence. We are both actors and witnesses to major changes to the planet that have the potential for radically affecting human society. Yet we are still ill-equipped to predicting changes and proposing solutions to the myriad potential problems we are creating. CLAS strengths can be combined into an integrative approach to a multifaceted initiative to study how human activities are impacting a range of Earth systems.

Rapid, human-induced environmental change brought about by warming, sea level rise, ocean acidification and deoxygenation, loss of biodiversity, proliferation of harmful and invasive species, eutrophication and pollution (to name a few examples) can fundamentally alter ecosystems and human societies. The pace of environmental change is unprecedented in Earth's history. Thus, we may be faced with loss of ecosystem services and functions that will diminish resources and weaken resilience, and concomitant effects on human coastal populations and nations such as massive, fast migrations and even warfare. As a highly rated R-1 university, UCONN has the potential to contribute to our understanding of these impacts and the resilience of Earth's systems, making well-grounded predictions, and proposing solutions that can help us prepare for the potential consequences humanity will face in the next 100 years.

Marine Sciences

Marine Microbial Ecologist: 'omics based. [**joint appointment with MCB**] We seek a colleague specialized in environmental 'omics for joint appointment in the Department of Marine Sciences (primary) and MCB to build on our interdisciplinary strengths in teaching and research on microbial processes in the ocean. The new faculty member will have a particular research focus on microbes, human impacts, and global change dynamics. Microbes represent the great majority of biomass, diversity, and biogeochemical activity in the ocean. They respond to environmental changes rapidly, and expanding 'omics technologies have led to an unprecedented pace of new understanding on ecology of microbiota and the potential environmental impacts of human activities and climate change. While UCONN has impressive facilities for sequencing and bioinformatics analysis - via the Microbial Analysis, Resources, and Services facility (MARS), the Center for Genome Innovation (CGI), and the Computational Biology Core (CBC) - our human capital must expand in this area to exploit this infrastructure for greater funding and scholarship. Addition of a marine microbial ecologist to a cluster of new hires focused on climate and human impacts will leverage current facilities and research strengths and allow us to expand into this growing area. A faculty hire in any area of 'omics, especially those related to genetic diversity or environmental gene expression, would strengthen the College in these areas, advance research in *Earth Systems* and *Big Data Science*, and build collaborative bridges among DMS, MCB, EEB, the Institute for Systems Genomics (ISG), the Center for Environmental Science and Engineering (CESE), and other University research entities. The position will also bring this synergy to CLAS's teaching and mentoring for both graduate and undergraduate students in DMS, MCB, and EEB.

Molecular and Cell Biology

Microbiologist (metabolomics). [**joint appt with DMS**] We seek a colleague for joint appointment in Molecular and Cell Biology (primary) and DMS to build on our interdisciplinary strengths in microbiology and microbiome research and expand our course offerings in a new area. Microorganisms play important roles in environmental processes that are increasingly impacted by human activity. A better understanding of the functional roles of microorganisms in mediating these dynamics is critically needed. We are particularly interested in candidates using metabolomics to study the ecology and evolution of microbial communities, including free-living, host-associated, and viromes. Metabolomics identifies and quantifies the diverse products of metabolism in the environment and has become a valuable tool to study physiological processes, cell-cell interactions, ecological functions, and natural product formation in microbial communities. Addition of a faculty member in this area would build on current strengths in MCB and DMS while advancing research in *Earth Systems, Big Data Science,* and *Health and Disease*. This position will expand teaching and research for both graduate and undergraduate students within MCB into a new area while strengthening and creating new collaborations between multiple departments in CLAS and research infrastructure such as the COR^2E Proteomics and Metabolomics facility, the Microbial Analysis, Resources, and Services facility (MARS), the Center for Genome Innovation (CGI), and the Computational Biology Core (CBC)