

## What SARS-CoV-2 and COVID-19 Diseases are Telling Us: A Holistic Veterinary and One Health View

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### SYNOPSIS

This emerging disease and others that are likely to become pandemics in the future, call for ever more vaccines and medications, which are not-risk-free, so long as preventive medicine remains human-centered and does not address, under the banner of One Health, wildlife poaching and trafficking, farming, habitat encroachment, our ever-increasing human numbers and consumption of animals wild and domesticated. Giving the public hope in protective, animal-tested vaccinations now being developed around the world and evaluating various drugs to treat infected patients may be to little avail considering how this SARS CoV-2 virus can mutate into a new strain or variant causing a different set of health problems and varying according to age, pre-existing health issues, sex and race. Vaccination limitations are a documented problem with the influenza virus that means some vaccine formulations that are not without intrinsic vaccinosis risks, will not provide adequate protection. Also, some vaccinations can mean increased susceptibility to other viral infections. More effective testing, quarantining where indicated, social distancing and personal hygiene vigilance are the best immediate preventives. At best, all the suffering, death, grieving and economic impact of this latest COVID-19 pandemic will change how we chose to live: Most especially to reduce our collective exploitation and consumption of animals that bring on such pandemics and other zoonotic diseases along with accelerating climate change and loss of biodiversity as well as animal suffering.

Our fear-based attitude toward viruses and bacteria is based on our not appreciating how these and other micro-organisms function and help sustain this living world. Parts of them are in our DNA and vital cellular content and without them in our guts we would die in a few days. They also can play an environmentally beneficial role in regulating population density, in optimizing ecological biodiversity and reducing dysbiosis.

When epidemics and pandemics break out there is always some ecological component and carrier agent coupled with the lack of immunity, for various reasons, of those humans or other species who succumb to infection, Those species and individuals who do not succumb and may show no symptoms can transmit infection to others. Some are killed by the primary infective agent, die from a secondary, often bacterial infection or become easy prey for a predator. Survivors may become infertile or abort if pregnant.

According to the U.S. Centers for Disease Control and Prevention this new Corona virus has been named “SARS-CoV-2” and the disease it causes has been named “coronavirus disease 2019” (abbreviated “COVID-19”) The SARS-CoV-2 virus is a betacoronavirus, like MERS-CoV and SARS-CoV, all three of these viruses having their origins in bats. The sequences from U.S. patients are similar to the one that China initially posted, suggesting a likely single, recent

emergence of this virus from an animal reservoir. Live-caught bats for sale for human consumption in one of China's open animal markets are considered the most likely source. Researchers reported evidence that a small proportion of pangolins, widely sold in China's markets, carry coronaviruses related to the strain responsible for the COVID-19 pandemic, according to a [paper](#) published March 26 in the journal *Nature*. Although international commercial trade of all eight pangolin species is strictly forbidden, pangolins are believed to be the most trafficked mammal in the world.

COVID-19 may be a recombination of two strains of coronavirus, a chimera, one from bats and the other from pangolins, that infected an animal simultaneously wherein this recombination took place.

(<https://www.sciencealert.com/genome-analysis-of-the-coronavirus-suggests-two-viruses-may-have-combined>).

The alternative possibility of accidental or deliberate release from a laboratory has been recently discounted. The authors of a March 17 *Nature Medicine* report evaluating the virus's characteristics—including the sites on the virus that allow it to bind to human cells---and whether the virus was engineered by humans. and present what appears to be convincing evidence it was not. They also considered the possibility that the outbreak could have resulted from an inadvertent lab release of a virus under study but concluded “we do not believe that any type of laboratory-based scenario is plausible.” Others question this conclusion since there have been prior accidental releases of coronaviruses from laboratories and there are two in Wuhan actively involved in coronavirus research.

There are four genera of coronavirus, the SARS-CoV-2 virus being a betacoronavirus in the same genus as the canine respiratory coronavirus CRCoV.

Coronaviruses have exceptional genetic plasticity and can rapidly mutate and recombine. This can lead to the emergence of new strains with increased virulence, affecting different tissues and organ systems and infecting other species. Some are excreted in the feces, notably by those people with an enteric form of the COVID-19 disease complex.

The Feline infectious peritonitis coronavirus (which is in the alphacoronavirus genus and does not infect people) can be expressed as a highly transmissible upper respiratory infection or diarrhea with low mortality or as a fatal infectious peritonitis. This feline coronavirus is very common in the intestinal flora/microbiome of cats but what triggers these mutations is open to speculation beyond general theories of stress and diet.

The high, natural mutation rate with SARS CoV-2 may be misinterpreted as an unnatural creation of genetic engineering biotechnology in vaccine development: or it may not. It also makes the development of effective vaccines extremely challenging, even unlikely.

Either way, Cornell University College of Veterinary Medicine professor of virology Dr. Gary Whittaker ( *JAVMA* 2020, vol 256: p.1081) emphasizes that “When animals are gathered in close proximity and exhibit stress---whether in a market, stable or animal shelter---the viral load builds. Contact with humans during that stress increases the risk a coronavirus will jump species.

Stress management and veterinary care can manage that risk and help prevent future outbreaks. He noted that the farming of cattle during the 19<sup>th</sup> century at higher densities resulted in a bovine coronavirus infecting humans which was regarded as just another “common cold.”

Bats, a sentinel species of ecosystem health and guardian of tropical forests, are one of the main carriers of these kinds of viruses including Ebola to which they themselves are immune. So are most of the indigenous species who have co-evolved and co-inhabited their domains for generations of selection and survival. When people and their farmed animals encroach these last domains of the wild, they succumb to these so-called zoonotic diseases: And, when they capture and take away infective bats and other species into their own crowded and often unsanitary communities.

The classic consequence of such human encroachment is Sleeping Sickness in Africa which affected millions of people and their livestock when they invaded the domain of disease-resistant wildlife who were disease reservoirs. But there was no global spread because a fly was needed to transmit this disease and tsetse flies do not engage in international travel or trade. With COVID-19 there is no such intermediary host-vector, direct human-to-human transmission being confirmed.

Some investigators and researchers have theorized this virus is a new strain that either escaped from a laboratory or was deliberately released into the city population of Wuhan. Deliberate releases have been conducted for U.S. military biowarfare exercises, as with the San Francisco release of thought-to-be harmless bacterium *Serratia marcescens*. This bacterium subsequently colonized several hospitals, infecting and killing people. The military performed similar tests in other cities across the country over the next two decades, until Richard Nixon halted all germ warfare research in 1969.

Science and Society. The mousepox experience (From [EMBO Rep.](#) 2010 Jan; 11(1): 18–24. Published online 2009 Dec 11. doi: [10.1038/embor.2009.270](https://doi.org/10.1038/embor.2009.270)).

“One of the most cited examples of dual-use research is that of Australian researchers who inadvertently developed a lethal mouse virus. In this now-famous study, the researchers used standard genetic engineering techniques to insert the gene for interleukin-4 (IL-4) into the mousepox virus. They hoped that the altered virus would induce infertility in mice—which are a major pest in Australia—and would thus serve as an infectious contraceptive for pest control. To their surprise, they discovered that the altered virus could kill both mice that were naturally resistant to, and mice that had been vaccinated against ordinary mousepox. When they published their findings, along with a description of the materials and methods, in the *Journal of Virology* in 2001 ( [Jackson et al, 2001](#)), critics complained that they had thereby alerted would-be terrorists to new ways of making biological weapons and had provided them with explicit instructions”.

In October 2014 White House officials [said](#) they were halting certain government-funded experiments on three viruses — influenza, SARS and MERS. The Obama administration was

concerned about any research that could make the viruses more dangerous, so they wanted to stop and review studies to see if they could make these germs capable of causing more disease or spreading easily through the air. Officials with the National Institutes of Health said that about 18 grants, contracts and planned research projects fall under the new ban. The government's move came in the wake of some high-profile lab [mishaps](#) at the Centers for Disease Control and Prevention, plus some extremely controversial flu experiments making a deadly bird flu virus H5N1 more contagious between ferrets.

(<https://www.npr.org/sections/health-shots/2014/11/07/361219361/how-a-tilt-toward-safety-stopped-a-scientists-virus-research>)

Some of the genetic alteration of viruses included “gain of function” research that used a process called “accelerated evolution” to create Covid Pandemic superbugs; enhanced bat born coronavirus mutants more lethal and more transmissible than wild strains. Subsequently, one of the key U.S. researchers, Dr. Anthony Fauci, director of the NIH’s National Institute of Allergy and Infectious Diseases gave \$3.7 million to scientists at the Wuhan Lab at the center of Coronavirus leak scrutiny in China.

(<https://www.fort-russ.com/2020/04/breaking-kennedy-exposes-dr-faucis-role-in-creating-highly-infectious-mutant-strain-of-coronavirus/>)

French Nobel prize winning scientist Luc Montagnier has asserted that there’s no possibility of this virus occurring naturally. It has the “insertion points” of 3 different viruses. That means it is a chimera of 3 separate diseases combined into 1 coronavirus. In an interview given to French CNews channel and during a podcast by Pourquoi Docteur, professor Montagnier who co-discovered HIV (Human Immunodeficiency Virus) claimed the presence of elements of HIV in the genome of the coronavirus and even elements of the “germ of malaria” are highly suspect, according to a report in Asia Times. There is purported evidence of “gain of function”. This describes a function where scientists add deadly features to a virus.

While Montagnier’s assertions have been challenged by many, there is increasing evidence that this SARS-CoV-2 virus is actually a genetically engineered organism (GMO) that was developed in a biotechnology laboratory in Wuhan, China, in collaboration with the U.S. including Dr. Anthony Fauci ( at tax payers’ expense).in the quest to develop a coronavirus vaccine. (Vineet D Menachery et al. A SARS-like cluster of circulating bat coronaviruses shows potential for human emergence *Nature Medicine* vol.21 #12, Dec.2015). Through a lapse in biosecurity, or malicious release, this GMO spread into the human population. It would seem that all involved got the cart before the horse, this pandemic emerging before Big Pharm could trot out yet another profitable vaccine and drugs for this dystopic civilization.

Addressing fears of a second surge of this pandemic coinciding with seasonal influenza this coming fall and winter at a press briefing on April 22<sup>nd</sup>, CDC director Dr. Robert Redfield urged Americans to “embrace the flu vaccine with confidence”. Yet there is evidence (cited below) that the influenza vaccine may increase susceptibility to coronavirus infection while acquiring the flu virus naturally can increase resistance to the coronavirus.

Coronaviruses (CoVs), are enveloped positive-sense RNA viruses with club-like spikes that project from their surface, have an unusually large RNA genome, and a unique replication strategy. Coronaviruses cause a variety of diseases in mammals and birds ranging from enteritis in cows and pigs and upper respiratory disease chickens to potentially lethal human respiratory infections. Feline coronavirus is an enveloped single-stranded RNA virus that occurs as two pathotypes: feline enteric coronavirus (FECV), defined as the “ubiquitous enteric biotype,” and feline infectious peritonitis virus (FIPV), the “virulent biotype” that causes FIP in individual cats.

The COVID-19 pandemic is not simply a respiratory disease, the high incidence of lung infection being in part a consequence of prior lung damage from smoking and air pollution. Some people develop serious gut problems instead, indicating that this highly contagious and opportunistic coronavirus attacks what is called the endothelium, often causing minute blood clots that can impair circulation, heart, kidney, brain and other organ functions. Through the ace2 receptors this coronavirus targets multiple organs simultaneously, the immune system/T cells through CD147, inducing a cytokine storm and other significant impacts which may be worse in those patients deficient in vitamin D.

(See A rampage through the body. Meredith Wadman, Jennifer Couzin-Frankel, Jocelyn Kaiser and Catherine Maticic DOI: 10.1126/science.368.6489.356 Science 368 (6489), 356-360. 24 APRIL 2020 • VOL 368 ISSUE 6489 )

There will always be new emerging diseases like COVID-19 and potential pandemics calling for more government funds and mass vaccinations (very profitable for investors and manufacturers) to “protect” the public so long as wildlife poaching, international wildlife trade and illegal trafficking continue, along with ever increasing human population growth and inevitable encroachments. In many countries indigenous peoples’ immune systems are challenged by lack of sanitation, contaminated drinking water, chronic malnutrition, tuberculosis, AIDS and malaria, making them highly susceptible to infection from wildlife and to have adverse reactions when given vaccinations.

Receiving influenza vaccinations may increase risk of coronavirus infection. .A study by Greg W. Wolff published in the peer-reviewed journal Vaccine, ( [Vaccine Volume 38, Issue 2](#), 10 January 2020, Pages 350-354 titled [Influenza vaccination and respiratory virus interference among Department of Defense personnel during the 2017-2018 influenza season](#), reveals that influenza vaccination may increase the risk of infection from other respiratory viruses -- a phenomenon known as virus interference. While influenza vaccination offers protection against influenza, *natural influenza infection* may reduce the risk of non-influenza respiratory viruses by providing temporary, non-specific immunity against these viruses. On the other hand, recently published studies have described the phenomenon of vaccine-associated virus interference; that is, vaccinated individuals may be at increased risk for other respiratory viruses because they do not receive the non-specific immunity associated with natural infection. Examining non-influenza viruses specifically, the odds of both coronavirus and human metapneumovirus in vaccinated individuals were significantly higher when compared to unvaccinated individuals.

Conversely, all other non-influenza respiratory viruses had decreased odds in the vaccinated population, including significantly decreased odds ratios in vaccinated people with parainfluenza, RSV, and non-influenza virus coinfections.

### More Insights About SARS-CoV-2

Excerpts from the review by David Cyranoski ( *Nature* 581, 22-26 (2020)

*doi: 10.1038/d41586-020-01315-7*).

“Of the viruses that attack humans, coronaviruses are big. At 125 nanometres in diameter, they are also relatively large for the viruses that use RNA to replicate, the group that accounts for most newly emerging diseases. But coronaviruses really stand out for their genomes. With 30,000 genetic bases, coronaviruses have the largest genomes of all RNA viruses. Their genomes are more than three times as big as those of HIV and hepatitis C, and more than twice influenza’s.”

“Coronaviruses are also one of the few RNA viruses with a genomic proofreading mechanism — which keeps the virus from accumulating mutations that could weaken it. That ability might be why common antivirals such as ribavirin, which can thwart viruses such as hepatitis C, have failed to subdue SARS-CoV-2. The drugs weaken viruses by inducing mutations. But in the coronaviruses, the proofreader can weed out those changes. Mutations can have their advantages for viruses. Influenza mutates up to three times more often than coronaviruses do, a pace that enables it to evolve quickly and sidestep vaccines. But coronaviruses have a special trick that gives them a deadly dynamism: they frequently recombine, swapping chunks of their RNA with other coronaviruses. Typically, this is a meaningless trading of like parts between like viruses. But when two distant coronavirus relatives end up in the same cell, recombination can lead to formidable versions that infect new cell types and jump to other species, according to Andrew Rambaut from the University of Edinburgh, UK.”

“Scientists are now aware of dozens of coronavirus strains<sup>3</sup>, seven of which infect humans. Among the four that cause common colds, two (OC43 and HKU1) came from rodents, and the other two (229E and NL63) from bats. The three that cause severe disease — SARS-CoV (the cause of SARS), Middle East respiratory syndrome MERS-CoV and SARS-CoV-2 — all came from bats. But scientists think there is usually an intermediary — an animal infected by the bats that carries the virus into humans. With SARS, the intermediary is thought to be civet cats, which are sold in live-animal markets in China.”

“By far the most likely scenario is that the virus will continue to spread and infect most of the world population in a relatively short period of time, meaning one to two years. Afterwards, the virus will continue to spread in the human population, likely forever. Like the four generally mild human coronaviruses, SARS-CoV-2 would then circulate constantly and cause mainly mild upper respiratory tract infections, says WHO’s Klaus Stöhr. For that reason, he adds, vaccines won’t be necessary. The OC43 coronavirus offers a model for where this pandemic might go.

That virus also gives humans common colds, but genetic research from the University of Leuven in Belgium suggests that OC43 might have been a killer in the past<sup>11</sup>. That study indicates that OC43 spilled over to humans in around 1890 from cows, which got it from mice. The scientists suggest that OC43 was responsible for a pandemic that killed more than one million people worldwide in 1889–90 — an outbreak previously blamed on influenza. Today, OC43 continues to circulate widely and it might be that continual exposure to the virus keeps the great majority of people immune to it.”

### **Environmental Factors Increasing Susceptibility**

Since COVID-19 primarily attacks the lungs, millions of people, rich and poor, will be at risk in urban communities with high levels of fine particle air pollution. Some particles serve as carriers for other chemicals that are also toxic, and the combination may worsen the impact. According to the U.S. Environmental Protection Agency this pollution causes early death (both short-term and long-term exposure); cardiovascular harm (e.g., heart attacks, strokes, heart disease, congestive heart failure); respiratory harm (e.g., worsened asthma, worsened COPD, inflammation); may cause cancer and reproductive and developmental harm and cause inflammatory and degenerative changes in brain, pancreatic and other organ functions. (U.S. Environmental Protection Agency, Integrated Science Assessment for Particulate Matter, December 2009. EPA 600/R-08/139F.).

Poor air quality in urban and industrial communities creates ideal conditions for COVID-19. Air pollutants absorb and scatter UV rays, thus reducing the amount of UV radiation that reaches us and helps sterilize surfaces by killing viruses and bacteria. UV radiation from the sun is the primary germicide in the environment. More widespread application of UV light for air purification, as from drones in subways and in all institutions from hospitals and offices to apartments and retirement homes is long overdue. Spraying disinfectants everywhere can kill birds and other wildlife and community animals, especially dogs and cats who contribute, normally, to improving public health in poor communities.

The league of Conservation Voters posted the announcement on April 25th 2020 that the Trump administration had just indefinitely suspended enforcement of environmental laws at the EPA, clean air an being a key public health issue. There is no lack of evidence of linkages between environmental pollutants and immune-related diseases according to Kostoff, R.N., Briggs, M.B., Porter, A.L.et al, The Under-Reported Role of Toxic Substance Exposures in the COVID-19Pandemic, *Food and Chemical Toxicology*, <https://doi.org/10.1016/j.fct.2020.111687>

Polluted cities mean less sunlight and solar-sourced vitamin D for inhabitants which can increase their susceptibility to infection. “Philanthropist” and mass-vaccination advocate Bill Gates is promoting another global solution that may cause far more harm than good by blocking coronavirus-killing UV light. He is now funding research proposing millions of tons of chalk dust be spread in the upper atmosphere (called geoengineering) to shade the Earth from the sun as a solution to climate change.

(<https://www.dailymail.co.uk/sciencetech/article-7350713/Bill-Gates-wants-spray-millions-tonnes-dust-stratosphere-stop-global-warming.html>)

High population densities in confined areas where air is recycled with little fresh-air intake to save energy in heated and air-conditioned apartments and offices are also at risk from airborne infections: Also from exposure to DNA damaging and immunosuppressing electropollution by telecommunication and other devices emitting non-ionizing radiation and electromagnetic fields of varying intensity where they live and work. 5G is of particular concern, close to microwave cooking energy, is documented to kill insects, and is now being installed in U.S. stadiums. Closing them and all crowd-containing events at this time, especially with people being exposed to these forms of electropollution, may be wisely extended.

### **A Brief Time-Line of the COVID-19 Pandemic**

This virus, now causing a global pandemic and named COVID-19 should be renamed COVID-Li-W in honor of the young Chinese doctor Li Wenliang. On 30 December 2019 he warned fellow colleagues about a possible outbreak of an illness that resembled [severe acute respiratory syndrome](#) (SARS), later acknowledged as [COVID-19](#), on [WeChat](#). On 3 January 2020, Wuhan police summoned and admonished him for "making false comments on the Internet". Li, a family man, returned to work, later contracted the virus from an infected patient and died from the disease on 7 February 2020, at age 33.. His death was no doubt due in part to the stress of his being apprehended by the police and silenced by the government for spreading "false rumors."

President Donald Trump described the disease as the Democrats' "[new hoax](#)" at a political rally on Feb. 28, 2020 in South Carolina. As a veterinarian trained in herd health management and control of contagious diseases the first rule that I was taught is containment. If the U.S. had applied this basic principle in early February 2020, giving citizens time to get home and sequester there before a 4-6 week total shutdown of all road, air, sea and rail travel, many lives would surely have been saved as well as the escalating containment and treatment costs, equipment shortages and risk and deaths of health-care givers lacking adequate protective gear.. The lack of effective tests for COVID-19 being rapidly made available for health-care providers and individuals at home who may have contracted the COVID-19 infection along with their exposed family members and for people in high-risk confinement facilities was yet another serious flaw in pandemic prevention. Regardless of political and socio-economic concerns, containment is a basic scientific principle of epidemic and pandemic disease control.

The World Health Organization (WHO) delayed declaring there was a global pandemic until March 11<sup>th</sup>. By March 12, 2020, 1,645 people from 47 States had been infected with the virus and on March 13<sup>th</sup> Trump posted a proclamation that "the COVID-19 outbreak in the United States constitutes a national emergency, beginning March 1, 2020." (Note post-dating of this proclamation!). On April 14<sup>th</sup> 2020 Trump stopped funding the WHO, blaming them for his delayed action against the advice of his own medical and science policy advisors.

China kept the World Health Organization (WHO) in the dark during the crucial early period of the coronavirus outbreak, according to an investigation by *The Associated Press*. The lack of transparency, and the WHO's frustration, are detailed in newly revealed documents. The upshot was [a delay of a week or more in releasing important information, such as the virus's genome sequence and epidemiological data](#) necessary to understand its spread. The information reveals



that the WHO was “urgently trying to solicit more data despite limited authority”, reports *The Associated Press*.

On Feb 24<sup>th</sup> 2020 China officially and permanently banned the trade and consumption of wildlife amid speculation that a novel coronavirus spread from bats to an intermediary species and then to people at a meat market. China's wildlife-farming industry is valued at an estimated \$74 billion, and the wild-meat industry's estimated value is \$7.1 billion, making enforcement of any ban "untenable," said wildlife-policy researcher Zhao-Min Zhou. ( [Business Insider](#) (2/25), [Reuters](#) (2/24)). Such a permanent ban is therefore unlikely to be either effectively enforced for long considering the money power and influence of international cartels involved in wildlife and other illegal trafficking activities. On March 30, the *Jerusalem Post* reported, that, just one month after China's "permanent shutdown" of its illegal wildlife farming industry, prohibiting the trade and consumption of wild animals, "the markets are in operation without strict oversight of illegal wildlife-trading activities."

The Trump administration's eventual response calling in part for accelerated animal-tested vaccine production will certainly profit the government -subsidized and legally protected (from adverse-reaction law suits) vaccine industry which is the antithesis of true preventive medicine from a One Health perspective.

The documented lack of national preparedness in the testimony of Dr. Richard Bright (who was demoted in the Dept. of Health and Human Services for raising his concerns up the government chain of command in February 2020) at Congressional hearings on May 14<sup>th</sup> 2020 gave pause for concern.

In an editorial on May 15<sup>th</sup> 2020 the prestigious medical journal *The Lancet* was highly critical of President Trump's gross mishandling and politicization of the coronavirus pandemic and called for him to be voted out of office in the next election.

The U.S., like the U.K. and most other countries with the notable exception of Taiwan, did not manage this pandemic following the four pillars of disease control. Namely, biosecurity, biocontainment, surveillance and resilience (of exposed individuals who develop natural “herd” immunity). These four pillars must be applied concurrently. (See Sibley, D and Brownlie, J. ‘Vets would not manage Covid-19 this way’. *Vet Record*, 18/25, April 2020, p 462-463.). I would add a fifth pillar of prevention-bio-restoration/bioremediation.

The Trump administration's press conferences down-playing high mortalities in susceptible communities and races and promising accelerated development of vaccines and various drug trials borders on criminal negligence while pandering to the pharmaceutical and vaccine industries. This is the antithesis of preventive medicine and effective pandemic preparedness and control, protocols, essentially profiting a few at the expense of many.

A pandemic is defined as “an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people” in the textbook *A Dictionary of Epidemiology*, 4th edition. New York: Oxford University Press; 2001. edited by

J.M. Last.) So clearly, international cooperation is vital in helping identify, monitor and prevent the spread of highly infectious diseases from country to country.

But now the U.S., in withdrawing on July 8<sup>th</sup> 2020 from the one international organization where many American specialists are employed, namely the World Health Organization (WHO) triggered global-health experts to warn that [the move puts at risk everything from polio eradication to pandemic preparedness](#). Much is uncertain: the WHO's founding constitution has no provision for countries to withdraw. "This is the end of an era of United States global-health leadership," said public-health legal scholar Lawrence Gostin. (Read more: [What a US exit from the WHO means for COVID-19 and global health](#) *Nature* July 8<sup>th</sup>, 2020). Such isolationism is wrong-minded, putting not only American citizens at risk but also people in other countries as well as animals wild and domestic who may become infected or be the reservoirs for pandemic diseases.

The British social critic and seer, George Orwell, in his seminal book *Nineteen Eighty-Four*, coined the term Doublethink as a process of indoctrination whereby the subject is expected to accept as true that which is clearly false, or to simultaneously accept two mutually contradictory beliefs as correct, often in contravention to one's own memories or sense of reality.

One illustration of such doublespeak is President Trump's repeated assertion that if we had fewer tests being done on people for COVID-19 there would be fewer cases. This is true, on paper. But the failure of the U.S. government to stop this pandemic cannot be papered over by obfuscating doublespeak and promises of soon-to come vaccines and various drugs and biologics ( such as serum from cows deliberately infected with this coronavirus which is mutating and becoming more infectious) that will profit manufacturers and investors but not prevent thousands of people, and potentially other species living close to us, notably cats and ferrets, from becoming infected. Trump's assertion that 99% of coronavirus cases are "harmless" ignores the fact that asymptomatic people can infect and kill others, especially those with pre-existing conditions.

### **Earlier Pandemics and Epidemics**

The three major historical plagues were caused by the same bacterium (*Yersinia pestis*):

- The Plague of Justinian (peaking 541-2 CE; recurring until 750), originating from the rat flea from East Asia, is estimated to have killed 40 m. people, half the world's population, as it spread across Asia, North Africa, Arabia, and Europe. It was concentrated on Constantinople with some 5,000 deaths daily there at the peak;
- The Second Plague, deriving from the same source, commenced in 1347 and lasted three centuries. It originated with the Black Death (peaking 1347-51) which killed an estimated 138 m. people (mid-point) in Eurasia, reducing the world population (then 475 m.) by over a quarter. It culminated with the London Plague in 1665-66, which killed 100,000 (a quarter of the city's population).

- The Third Plague, bubonic and pneumonic (originating in Hunan, China in 1855, spreading to India and continuing until 1895 in Hong Kong) killed some tens of millions across Asia.

The Black Death or Great Plague was the first indicator of the potential risks of unmonitored globalization of trade and commerce in the absence of the precautionary principle. It probably originated in Central Asia or East Asia (where it continues to be endemic) from where it travelled along the Silk Road reaching Crimea by 1343. From there, it was most likely carried by fleas living on the black rats that traveled on Genoese merchant ships, spreading throughout the Mediterranean Basin, reaching the rest of Europe via the Italian Peninsula. Human to human transmission was by fleas and lice on humans. In some communities cats were blamed and persecuted and to this day black cats are still shunned by many, considered bad luck and are victimized on Halloween. This bacterial plague is estimated to have killed 30% to 60% of Europe's population and reduced the world population from an estimated 475 million to 350–375 million in the 14th century.

The 1918-1919 “Spanish flu” pandemic which killed at least 50 million people world-wide ( many stressed and malnourished from WW1) was an H1N1 strain with genes of avian origin. The Swine influenza pandemic of 2009, originating in Mexico and killing close to a quarter million people world-wide was a new strain of H1N1, resulted from a previous triple reassortment of bird, swine, and human flu viruses further combined with a Eurasian pig flu virus, leading to the term "swine flu". This is now a regular human flu virus and continues to circulate seasonally worldwide. Avian influenza A (H5N1) viruses are endemic in poultry in parts of the world and are infecting people sporadically, often with deadly results. In February 1957, a new influenza A (H2N2) virus emerged in East Asia, triggering a pandemic (“Asian Flu”). The estimated number of deaths was 1.1 million worldwide and 116,000 in the United States. This virus was a *reassortant* (mixed species) strain, originating from strains of avian and human influenza viruses. In the 1960s the human H2N2 strain underwent a series of minor genetic modifications, a process known as antigenic drift. These slight modifications produced periodic epidemics. After 10 years of evolution, the Asian flu virus disappeared, having been replaced through antigenic shift by a new influenza A subtype, H3N2 which gave rise to the Hong Kong flu pandemic of 1968 that killed an estimated 1 million people world-wide. COVID-19 may cause higher mortalities first time around given a larger world population and worse particulate air pollution and electro-smog. It may, like other animal-derived viral diseases, similarly circulate in the human population in the years to come along with other emerging diseases if preventive measures are ignored and reliance on costly drugs and post-pandemic vaccines, not without potentially harmful side-effects, are rushed to market.

Ebola (1976-present), a hemorrhagic virus originating from bush-meat and transmitted by tree-dwelling fruit-bats, has been confined to Central and West Africa. There have been 24 outbreaks over four decades, with over 31,000 cases and (with a fatality rate of about 50%), over 13,000 deaths. Middle East respiratory syndrome (MERS) is a viral respiratory disease caused by a novel coronavirus (Middle East respiratory syndrome coronavirus, or MERS-CoV) that was first identified in Saudi Arabia in 2012. Most of human cases of MERS-CoV infections have been attributed to human-to-human but current scientific evidence suggests that dromedary camels are a major reservoir host for MERS-CoV

Separate from the above, the HIV-AIDS, a virus derived from non-human primates and originating in Africa, is caused primarily by slaughtering these and other primates for food and subsequent transmission of infected individuals through human sexual contact. Since the early 1980s, it has infected 75 m. people and killed over 32 m. people (mid-points). Currently, some 38 m. are living with HIV (54% in east and southern Africa). In 1999, researchers found a strain of SIV (called SIVcpz) in a chimpanzee that was almost identical to HIV in humans. The researchers who discovered this connection concluded that it proved chimpanzees were the source of HIV-1, and that the virus had at some point crossed species from chimps to humans. The same scientists then conducted more research into how SIV could have developed in the chimps. They discovered that the chimps had hunted and eaten two smaller species of monkeys (red-capped mangabeys and greater spot-nosed monkeys). These smaller monkeys infected the chimps with two different strains of SIV. The two different SIV strains then joined together to form a third virus (SIVcpz) that could be passed on to other chimps. This is the strain that can also infect humans. HIV-2 comes from SIVsmm in sooty mangabey monkeys rather than chimpanzees.

While other primates can be infected by poliovirus strains, virologists have found no evidence of zoonotic transfer to humans. The type 2 poliovirus, an enterovirus in the Picornaviridae family, is human-specific in origin and has been largely eliminated through vaccination.

Australia's 1994 Hendra virus infections, where the contagion jumped from horses to humans, and Malaysia's 1998 Nipah virus outbreak, in which it moved from pigs to people, came from pathogens that originated in fruit-eating bats. Horses and pigs were merely the intermediate hosts.

The coronavirus responsible for SARS ( Sudden Onset Respiratory Syndrome), according to the WHO, has reappeared four times – *three times from laboratory accidents* (Singapore and Chinese Taipei), Researchers from the University of Hong Kong examined 25 animals representing eight species in a live animal market in southern China and found the virus in all six masked palm civets they sampled, as well as in a badger and a raccoon dog. A study from Guangdong province in southern China - where the SARS outbreak first emerged in November 2002 indicated that more than 30 percent of the early SARS cases there were food handlers. This SARS epidemic infected more than 8,000 people in 26 countries and killed at least 689, the vast majority in China and Hong Kong. Chinese authorities subsequently ordered the deaths of some 10,000 civet cats by drowning and electrocution in Jan 2004 when they were identified as the primary source of SARS. The precursor virus is present in wild *Rhinolophus* bats. Civet cats and other small mammals sold as delicacies in wet markets provided a reservoir and amplifier for the virus and the opportunity for adaptation to humans.

### **Farmed Animals and Public Health**

The number of live pigs, goats, cows and sheep transported worldwide in 2017 was 30% higher than in 2007, according to the UN's Food and Agriculture Organization .pandemics of Swine and Avian influenza generally originate from open markets and slaughtering in rural and peri-urban poor communities where centralized processing and cold storage facilities are not available and from workers exposed to infected animals inside factory farms. The overall burden of influenza

in the U.S. for the 2017-2018 season was an estimated 45 million influenza illnesses, 21 million influenza-associated medical visits, 810,000 influenza-related hospitalizations, and 61,000 influenza associated deaths.

Richer communities and countries like the U.S. where pork and poultry products are dietary staples pay the environmental and public health costs of these zoonotic diseases, antibiotic-resistant strains of E. coli, Salmonella and other bacteria being an escalating problem with inhumane factory farming production systems at home and World Bank- supported operations abroad that rely on multiple veterinary vaccinations and feeding animals antibiotics and other drugs to boost productivity and control diseases under the inhumane, stressful and disease-promoting conditions under which they are raised.( Nitrate pollution of drinking water from animal wastes/manure fertilizer is a related, escalating public health issue). According to the Centers for Disease Control and Prevention report *Antibiotic Resistance: Threats in the United States 2019*. more than 2.8 million antibiotic-resistant infections occur in the U.S. each year, and more than 35,000 people die as a result.

## LEUKEMIA IN CATTLE

The bovine leukosis or leukemia virus( BLV) suppresses the cows' immune system, increasing the probability of bacterial infections especially of the udder, leading to high white cell counts in marketed milk and reliance on antibiotics to treat and prevent mastitis-infection of the udder. This is a significant contributing factor in the public health issue of antibiotic-resistant strains of bacteria in our food and environment.

Both beef and dairy cattle are the natural hosts for this virus. In the U.S., the most recent surveys indicate that 89% of dairy operations and 38% of beef operations had cattle seropositive for BLV. Currently, there are no Federal regulations specific to curbing spread of bovine leukemia virus in the U.S. cattle population. “

(<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/cattle-disease-information/bovine-leukemia-disease-info>).

According to one determination of how many dairy cows are infected in the U.S. an average of 40 cows per herd was discovered to be infected. “94.2% of herds had at least one BLV antibody positive cow detected. The average within-herd standardized apparent prevalence (AP) was 46.5%. Lactation-specific AP increased with increasing lactation number, from 29.7% in first lactation cows to 58.9% in 4th and greater lactation cows. Significant differences were not observed based on region, state, breed, or herd size. *Conclusions and Clinical Relevance*. These results are consistent with a historical trend of increasing prevalence of BLV among US dairy cattle. Given the findings of other studies on the negative impacts of BLV infection on milk production and cow longevity, these findings are clinically relevant for veterinarians counseling dairy clients on the risks of BLV to their herds”.( Prevalence of Bovine Leukemia Virus Antibodies in US Dairy Cattle. Rebecca M. LaDronka et al , *Veterinary Medicine International* Volume 2018, Article ID 5831278, 8 pages <https://doi.org/10.1155/2018/5831278>).

So it is no surprise that the bovine leukemia virus has been discovered in human blood. (Bovine leukemia virus discovered in human blood. Gertrude C. Buchring et al [BMC Infectious Diseases](#) volume 19, Article number: 297 (2019)

These authors state: “Bovine leukemia virus (BLV) infection is widespread in cattle globally and is present in *marketed beef and dairy products*. Human infection with BLV has been reported in breast and lung cancer tissues and was significantly associated with breast cancer in 3 case-control studies. The purpose of this current research was to determine if BLV is present in human blood cells and if antibodies to BLV are related to blood cell infection”. Their research confirmed this possibility.

New research from the [Centers for Disease Control and Prevention](#) (CDC), found that Hepatitis E is an “emerging foodborne pathogen,” that is transmitted to humans through raw or undercooked pork. (Hepatitis E Virus in Pigs from Slaughterhouses, United States, Sooryanarain H, Heffron CL, Hill DE, Fredericks J, Rosenthal BM, Werre SR, et al. 2017–2019. *Emerg Infect Dis.* 2020;26(2):354-357. <https://dx.doi.org/10.3201/eid2602.191348>). The CDC states: Zoonotic diseases are very common, both in the United States and around the world. Scientists estimate that more than 6 out of every 10 known infectious diseases in people can be spread from animals, and 3 out of every 4 new or emerging infectious diseases in people come from animals.

Avian Influenza, also known as fowl plague, is caused by Influenzavirus A, which is in the family Orthomyxoviridae. Influenza A viruses are further classified by their surface glycoproteins, hemagglutinin (H or HA) and neuraminidase (N or NA). Sixteen H (H1 to H16) subtypes and nine N (N1 to N9) subtypes of influenza A have been identified. Between 2014 and 2016 more than 50 million birds (egg laying hens, chickens raised for meat, turkeys and others) were killed across more than a dozen states in an effort to contain a bird flu outbreak. This did as much as three billion dollars’ worth of damage to the U.S. economy, and APHIS (Animal & Plant Health Inspection Service) spent over \$900 million cleaning up the mess it [describes](#) as” the most serious animal health disease incident in history.”

APHIS also states: “However, it is worth acknowledging that there are AI viruses circulating in poultry that are of significant concern to public health, such as H5N13, H5N6, and the Asian lineage H7N9. The majority of these infections have been detected in Asia, though there have been human cases identified around the world. While human infections remain relatively uncommon due to an apparently high species-specific transmission barrier, mortality rates can be high.” The method of cutting off ventilation to kill (“depopulate”) the birds via heat-suffocation is neither humane nor acceptable.

Over-fishing for human consumption and to feed farmed animals is one factor in the demise of the oceans. As a One-Health advocating veterinarian I appeal to all consumers and governments to consider the impossibility of preventing such pandemics and other animal-food-borne epidemics and regional outbreaks of disease because of the enormous scale of factory farm animal production systems---billions of poultry and pigs world-wide that are the primary source of various strains of influenza virus and antibiotic-resistant strains of bacteria. This problem is so serious in poultry that their carcasses are washed in bleach, the U.K. refusing to accept

America's chlorine-treated chicken under current trade negotiations (along with America's hormone-treated beef).

The CDC has tabulated below the most common pathogens from factory farmed animal manure that can infect people:

Pathogen	Disease	Symptoms
<i>Bacillus anthracis</i>	Anthrax	Skin sores, headache, fever, chills, nausea, vomiting
<i>Escherichia coli</i>	Colibacillosis, Coliform mastitis-metris	Diarrhea, abdominal gas
<i>Leptospira pomona</i>	Leptospirosis	Abdominal pain, muscle pain, vomiting, fever
<i>Listeria monocytogenes</i>	Listeriosis	Fever, fatigue, nausea, vomiting, diarrhea
<i>Salmonella species</i>	Salmonellosis	Abdominal pain, diarrhea, nausea, chills, fever, headache
<i>Clostridium tetani</i>	Tetanus	Violent muscle spasms, lockjaw, difficulty breathing
<i>Histoplasma capsulatum</i>	Histoplasmosis	Fever, chills, muscle ache, cough rash, joint pain and stiffness
<i>Microsporium and Trichophyton</i>	Ringworm	Itching, rash
<i>Giardia lamblia</i>	Giardiasis	Diarrhea, abdominal pain, abdominal gas, nausea, vomiting, fever
<i>Cryptosporidium species</i>	Cryptosporidiosis	Diarrhea, dehydration, weakness, abdominal cramping

The U.S. has tried to sterilize such produce using radioactive isotopes but this move was temporarily blocked by health-food and safety experts because such radiation produces radiolytic-breakdown products, the safety of which to consumers has been questioned. Such concerns were validated by the death of cats in Australia after being fed imported canned cat food that was, under import-regulations, subjected to irradiation. For details visit <https://truthaboutpetfood.com/was-irradiated-pet-food-the-cause-of-cat-deaths-in-australia/>

As of December 31, 2015, the FDA reportedly received approximately 5,200 complaints of illnesses associated with consumption of chicken, duck, or sweet potato jerky treats, many of which were imported from China. The reports involved more than 6,200 dogs, 26 cats, three people, and include more than 1,140 canine deaths from acquired Fanconi syndrome, a normally

rare kidney disease typically seen primarily in certain breeds as a hereditary condition. Regardless of clear labelling of being subjected to radiation on many such treats, the FDA did not publicly report any connection between food irradiation and this companion animal food-related epidemic.

Even so, meat and poultry producers who use ionized radiation to kill pathogens in product now have expanded options, thanks to two rules published by the U.S. Food and Drug Administration. <https://www.foodsafetynews.com/2012/12/fda-expands-irradiation-uses-for-meat-and-poultry/>

Zoonoses and their incidence reflect the nature of our relationships with other species and it has been my avocation and a challenge as a veterinarian for close to 60 years now to heal the human-non-human animal bond at all levels of exploitation that are culturally condoned as well as those who relate to animals as objects, commodities and trophies, deliberately abuse and even torture for profit and pleasure. Regrettably, organized veterinary medicine in the farm/food animal sector in particular has prioritized human interests of profitability and productivity over animal health and well-being; and in poor countries and communities fails to adequately serve the animal health-needs of small producers where corruption, falsifying vaccination records and inadequate surveillance and prevention of zoonotic diseases have been well documented. (For instance, see D.L. Krantz and M.W. Fox, *India's Animals: Helping the Sacred and the Suffering*, 2016. Amazon.com).

### **Protecting Wildlife from Cruel Exploitation**

There are degrees of inhumanity and cruel treatment of animals for which we unwittingly pay the price. Civet cats are held in small cages in Ethiopia and have their anal glands routinely scraped out to “harvest” musk for the perfume industry while in Indonesia these caged animals are force-fed coffee beans that are collected in their feces and sold as gourmet “fermented” beans called Kopluwak. Such practices reflect the depravity that surfaces where there is no empathy and the lure of money. This is exemplified especially by China’s bear-bile farms where bears, constantly confined in cramped cages, have abdominal cannulas collecting their bile for sale as medicine. One of the alleged cures from traditional Chinese medicine that the government recommends for treating severe and critical cases of COVID-19 is an injection of Tan Re Qing, which contains bear bile, [National Geographic](#) reported.

David Rivard, a member of ISON (INTERPOL’s Special Operations Network on Trafficking, and Airline Ambassadors Counter-Trafficking Director) sent me this statement: “Generally, it would be that many people think of different types of trafficking (threats) as nouns. Human Trafficking, Drug Trafficking, Animal Trafficking etc. But the prime criminals are the *networks* of transnational criminal operations (and even global criminal syndicates). Local smugglers of people, drugs and wildlife do not make much more than subsistence money and many times they are even forced to smuggle. The real profiteers are the transnational criminal syndicates..... They establish “off shore” banking accounts, commonly known as tax havens. They influence politicians and national laws to keep their industry alive, and establish local cultures of criminality where they operate through extortion, kidnapping, forced labor (human trafficking) and murder.... They strip their local areas of all that is of value with an impunity that is



evidenced by the bold atrocities they commit. This “Off Shored” money never makes it back into the national treasuries. Federal governments must then suffer the consequences of not having enough money to pay for even basic infrastructures, and most the infrastructure money is supplied by the U.S. taxpayer through our USAID Program, where it usually goes to law enforcement, and even these monies must go through a national gauntlet of political corruption and local law enforcement criminal capture”.

Millions of mammals, amphibians, birds, insects and reptiles are imported legally into the US every year, potentially bringing with them "a kaleidoscope of pathogens," writes former Fish and Wildlife Service inspector Jonathan Kolby. "With few exceptions, the US has no laws specifically requiring disease surveillance for wildlife entering the country, and the vast majority of wild animal imports are therefore not tested," Kolby writes.

Full Story: [National Geographic \(tiered subscription model\)](#) (5/7)

While this reality may make one despair, all countries should be severely sanctioned economically for engaging in wildlife trafficking and for having open markets selling wild-caught animals. And there must be a redoubling of wild habitat protection from human encroachment with population control through voluntary and ready access to family planning, smaller families and communities needing fewer livestock to sustain their needs.

The still legal traffic and trade in wildlife calls for greater vigilance and health-monitoring as per the April 2020 report that hundreds of horses in Thailand have died as biting midges spread African horse sickness, which some scientists suspect arrived in zebras imported from Africa. Without controls, the virus could even travel via wind-borne midges across seas to herds on island nations, gradually working its way to Australia, which has more than 1 million racing, sport, and feral horses. The nation is “engaging with other countries to develop a regional response to this outbreak,” says Australia’s Chief Veterinary Officer Mark Schipp. ( . [Science \(tiered subscription model\)](#) (4/16)

Two farms in the Netherlands were quarantined in April 2020 after mink that were having trouble breathing tested positive for infection with the novel coronavirus. The animals were thought to have been infected by an employee who had COVID-19, and although experts said it was unlikely the animals themselves could spread the virus, movement of the animals and their manure has been halted, and people must stay away from the properties. : [Reuters](#) (4/26)

The Dutch agricultural minister subsequently reported that a worker at one of the mink farms acquired COVID-19 infection from infected mink, the first indication of animal-to-human cross-infection. Researchers compared the genetic code of the virus found in the [mink](#) to that of the patient, creating a "[family tree](#)" to map its mutation, minister Carola Schouten said.. "It is concluded from this investigation that it is plausible that one employee of an infected mink farm was infected by mink," Schouten said in a letter to parliament. Authorities are also looked at the role of feral [farm](#) cats in spreading the virus between the two infected farms. Three cats on one of the farms were found to have the [virus](#), the government said last week.

<https://medicalxpress.com/news/2020-05-dutch-farm-worker-covid-mink.html>

Reuters reported June 17<sup>th</sup>, 2020 that mink at a farm in Denmark were found to be infected with the new coronavirus and the whole stock would now be culled, said the Danish Veterinary and Food Administration on Wednesday. The outbreak among minks is the first in Denmark, but comes shortly after 10 mink farms in the Netherlands were ordered culled after some animals tested positive for the disease. (Reporting by Stine Jacobsen).

Two of the largest mink farms in Utah were put under quarantine in August 2020 after animals and employees at the farm tested positive for SARS-CoV-2 infections. [The Salt Lake Tribune \(Salt Lake City\)](#) (8/17)

Chinese Dr. Shao-Lun Zhai and associates in a communication published in the British *Veterinary Record* (vol. 186, p. 254, Feb 2020) entitled Where did SARS-CoV-2 come from? state that: “In China, there are several tens of thousands of farms, where hundreds of species are raised, including snakes, civets, bears, deer, turtles, bamboo rats, porcupines, foxes, mink and birds.” This is another aspect of the commoditization of wildlife creating ideal conditions for inter-species transfer of potentially zoonotic diseases, an industry that should be closed down for the common good along with open markets selling various live animal species for human consumption and for uninformed people to keep as pets.

Analysis of 410 species of birds, fish, amphibians, reptiles and mammals found that about 40% of those that are thought to be highly susceptible to SARS-CoV-2 based on the composition of their angiotensin converting enzyme-2 receptors are considered threatened or endangered, including lowland gorillas, chimpanzees and Siberian tigers. Gray whales, bottlenose dolphins, white-tailed deer and Chinese hamsters are at high risk; cats, cows and sheep are at medium risk; dogs, pigs and horses are at low risk. [University of California, Davis](#) (8/21/2020).

## **Conclusions**

International trade in animals, dead and alive, for human consumption should be curtailed as a public health service and for national security and within-nations should be terminated to help reduce a major industry’s contribution to the Climate and Extinction crises (as well as rural poverty), and decline in public health. It may seem racist to say this coronavirus came from China and the last influenza pandemic from Mexico. But it is speciesist to claim that animals were created for our own use and that we can kill and consume them and otherwise exploit them as our needs and wants dictate.

Hopefully this global health crisis is catalyzing international collaboration in prevention and treatment. We may yet see the emergence of a United Environmental Nations that unshackles public health from politics, nationalism, isolationism and prioritizing the economy over the health and security of the people and links public health with environmental and animal health. Above all, humans should keep out of wildlife habitat where such diseases emerge and to which we have no immunity; and for consumers in industrial countries to support producers of organically certified foods to sustain a healthful vegetarian/vegan diet with minimal or zero consumption of eggs, dairy, meat including sea foods.

The American Public Health Association's September 2007, Vol 97, No. 9, p 1546 [editorial](#) by philosopher David Benatar in the *American Journal of Public Health* observed: "It is curious, therefore, that changing the way humans treat animals—most basically, ceasing to eat them or, at the very least, radically limiting the quantity of them that are eaten—is largely off the radar as a significant preventive measure."

The British Veterinary Association's initiative promoting the benefits of sustainable consumption of farmed animal produce to help reduce climate change is also applicable to reducing zoonotic diseases embraces the concept of "less and better" farmed animal produce for animal welfare, One Health and sustainability reasons. "Eating "less and better" sees some citizens reduce consumption of animal derived products, whilst maintaining proportional spend on high animal health and welfare products." ([BVA Position on UK sustainable animal agriculture - British Veterinary ...https://www.bva.co.uk/...policies/Policies/Farm\\_animals/BVA-Position-on-UK-Sustain.](https://www.bva.co.uk/...policies/Policies/Farm_animals/BVA-Position-on-UK-Sustain.))

Continuing to consume animals as a basic food-source, marketing ever more vaccines and having ever more children, the rich and poor alike will be subject to the indiscriminate justice of natural law until we all abide in greater harmony with other species as well as with each other. We will then need fewer guns, chemicals and other and bioweapons when our appetites and numbers are under more effective self-control. Alternatively, with deteriorating natural controls of health-sustaining biodiversity, plagues and pestilences of Biblical proportions will be the legacy of our collective failure in planetary stewardship that surviving generations will inherit.

COVID-19 can be seen as a wake-up call. Richard Horton, the editor-in-chief of *The Lancet*, in declaring the response to the coronavirus "the greatest global science policy failure in a generation", [writes](#), "If COVID-19 eventually imbues human beings with some humility, it's possible that we will, after all, be receptive to the lessons of this lethal pandemic." "But," he warns, "perhaps we will sink back into our culture of complacent exceptionalism and await the next plague that will surely arrive. To go by recent history, that moment will come sooner than we think."

Humans are susceptible to few of the estimated 260,000 to more than 1.6 million animal viruses that exist in nature, but changes in the human-animal interface increase the chances for zoonosis, and experts warn that humans can also transmit viruses to animals. "Any time viruses have the potential to mix and mingle with others, it can cause serious issues, especially when they can jump between animals and people in either direction," said veterinarian Casey Barton Behravesh, director of the CDC's One Health Office. Full Story: [Scientific American online](#) (5/20)

An article by by Professors Josef Settele, Sandra Díaz and Eduardo Brondizio and Dr. Peter Daszak published on 27 April 2020 by [The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services](#) (IPBES), the authors put the responsibility for COVID-19 squarely on our shoulders. "There is a single species that is responsible for the COVID-19 pandemic – us. As with the climate and biodiversity crises, recent pandemics are a direct consequence of human activity – particularly our global financial and economic systems, based on a limited paradigm that prizes economic growth at any cost. We have a small window of

opportunity, in overcoming the challenges of the current crisis, to avoid sowing the seeds of future ones," the authors wrote.

A rise in zoonotic diseases is being driven by environmental degradation, according to a report by the UN Environment Program and the International Livestock Research Institute that cites rising demand for animal protein, intensive farming practices, exploitation of wildlife and climate change among key factors. The authors suggest adopting a One Health approach, which would unite public health, veterinary and environmental experts to respond to and prevent zoonotic disease outbreaks.( <https://news.un.org/en/story/2020/07/1067711>)

Albert Schweitzer, MD, summed it up with prescience decades ago when he opined “We must fight against the spirit of unconscious cruelty with which we treat the animals. Animals suffer as much as we do. True humanity does not allow us to impose such sufferings on them. It is our duty to make the whole world recognize it. Until we extend our circle of compassion to all living things, humanity will not find peace.”

## **POSTSCRIPT**

### **Companion Animal Concerns**

According to a release to veterinarians from the AVMA which I received on Feb 20<sup>th</sup> 2020, “ at this time, experts have not expressed concern about transmission to or from animals. Multiple international health organizations have indicated that pets and other domestic animals are not considered at risk for contracting COVID-19 or transmitting the virus that causes the disease”.

But I would caution that COVID-19 could mutate, and like the Swine flu infecting people that was passed on to their cats, be passed on from infected humans to domestic animals. There were news reports Feb 26/2020 of a Pomeranian dog in Hong Kong testing positive for COVID-19 which he got from his infected owner. The old dog was taken into quarantine for observation and eventually died from unrelated causes, probably the stress of isolation/separation. In March 2020 the Hong Kong government has urged people not to abandon their pets and to stop kissing them after a second dog tested positive for coronavirus, but stressed that the animal had not shown any symptoms of the disease. A German shepherd living was sent for quarantine along with another mixed-breed dog from the same residence on Thursday after their owner was confirmed as being infected, the Agriculture, Fisheries and Conservation Department (AFCD) said in a statement. [Though the shepherd tested positive for the virus, no such result was obtained](#) from the mixed-breed dog, and “neither dog has shown any signs of disease,” the AFCD said, adding it will continue to monitor both dogs and conduct repeated tests on the animals.

Belgium’s Public Health, Food Chain Safety and Environment authority announced March 27,2020 that a domestic cat tested positive for COVID-19.. About a week after its owner got sick with COVID-19, after returning from a trip to Northern Italy the cat developed diarrhea, vomiting and respiratory issues. ( <https://www.livescience.com/cat-infected-covid-19-from-owner.html>).

Cats can be infected with the coronavirus that causes COVID-19 and spread it to other cats, but dogs are not really susceptible to the infection, according to researchers in China. The team, at Harbin Veterinary Research Institute in China, also concludes that chickens, pigs, and ducks are not likely to catch the virus. ( Nature News, April 1.2020 Coronavirus can infect cats-dogs, not so much. <https://www.nature.com/articles/d41586-020-00984-8>). Chinese scientists investigated the susceptibility of ferrets and other species that have close contact with humans to SARS-CoV-2. They found in laboratory exposure tests that SARS-CoV-2 replicates poorly in dogs, pigs, chickens, and ducks, but ferrets and cats are susceptible to infection. Cats are susceptible to airborne infection and can infect each other with extensive lung damage evident in young cats. Ferrets develop milder upper respiratory infections from which they are likely to recover. ( Jianzhong Shi et al Susceptibility of ferrets, cats, dogs, and other domesticated animals to SARS–coronavirus 2 *Science* 08 Apr 2020: eabb7015 DOI: 10.1126/science.abb7015).

On April 22<sup>nd</sup> 2020 the American Veterinary Medical Association posted:

- On April 22, the CDC and the USDA’s National Veterinary Services Laboratories (NVSL) announced the first confirmed cases of SARS-CoV-2 infection in two pet cats in the United States.
- These are the first pets in the United States to test positive for SARS-CoV-2.
- The two pet cats in the United States both had signs of mild respiratory illness and are expected to make a full recovery.
- Currently we have no information that suggests pets might be a source of infection for people with the coronavirus that causes COVID-19.

On April 27<sup>th</sup> it was reported that a Pug dog belonging to a pediatrician participating in a COVID-19 study at Duke University in North Carolina tested positive for infection with SARS-CoV-2 and displayed mild signs of illness for several days. The pediatrician, her husband and their son also tested positive for coronavirus infection, while the couple's daughter, their other dog and a pet cat did not.

In early May 2020 a cat in Spain that died from a common feline respiratory condition tested positive for SARS-CoV-2, according to the results of a necropsy, making the cat one of a handful worldwide to test positive for the coronavirus. The cat belonged to a family that had tested positive for the virus, but its viral level was low, and there is no evidence pets can transmit the virus to people, says Professor Joaquim Segales of the Animal Health Research Center in Catalonia.

15 of 102 cats in Wuhan China tested positive for the coronavirus, 3 cats getting the infection from their owners and the other positive-testing cats were 6 stray cats and 6 from pet hospitals, according to Zhang, Q et al ( SARS-CoV-2 neutralizing serum antibodies in cats; a serological investigation. *BioRev* 2020) i: <https://doi.org/10.1101/2020.04.01.021196>).

In a report in the New England Journal of Medicine May 13, 2020 concerning Transmission of SARS-CoV-2 in Domestic Cats (DOI: 10.1056/NEJMc2013400) authors Peter J. Halfmann, Ph.D. et al state: “With reports of transmission of SARS-CoV-2 from humans to domestic

cats and to tigers and lions at the Bronx Zoo, coupled with our data showing the ease of transmission between domestic cats, there is a public health need to recognize and further investigate the potential chain of human–cat–human transmission. This is of particular importance given the potential for SARS-CoV-2 transmission between family members in households with cats while living under “shelter-in-place” orders. In 2016, an H7N2 influenza outbreak in New York City cat shelters highlighted the public health implications of cat-to-human transmission to workers in animal shelters. Moreover, cats may be a silent intermediate host of SARS-CoV-2, because infected cats may not show any appreciable symptoms that might be recognized by their owners. The Centers for Disease Control and Prevention has issued guidelines for pet owners regarding SARS-CoV-2 ([www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/animals.html](http://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/animals.html), opens in new tab). Given the need to stop the coronavirus disease 2019 pandemic through various mechanisms, including breaking transmission chains, a better understanding of the role cats may play in the transmission of SARS-CoV-2 to humans is needed.”

It was not until April 29<sup>th</sup> that the Centers for Disease Control and Prevention call for social distancing to be applied to pets, dogs being kept on the leash when outdoors and not be petted by people outside the family and cats be kept indoors. For details about how one can help cats who used to going outdoors adapt quickly and enjoy life indoors, go to the American Bird Conservancy’s website for details. ( <https://abchirds.org/program/cats-indoors/> ). I have always deplored this indoor-outdoor cat keeping knowing how many cats get killed and injured by traffic, fights and infections, and as super-predators are decimating song bird and other wildlife populations. The notion of “working cats” around homes, barns and warehouses comes from times more ignorant about zoonotic diseases and sanitation. Cats can transmit more diseases to us, especially when they are indoor-outdoor cats and have close contact with family members than human-avoiding wild rodents. Both the American Veterinary Medical Association and the British Veterinary Association in early April urged people who are self-isolating or have COVID-19 symptoms keep their cats indoors because, it is possible that outdoor cats may carry the virus on their fur, just as the virus can live on other surfaces.

Cats infected experimentally with SARS-CoV-2 transmitted the virus to other cats in a small lab study, researchers reported in *The New England Journal of Medicine*, (Transmission of SARS-CoV-2 in Domestic Cats May 13, 2020 DOI: 10.1056/NEJMc2013400). But the cats did not develop clinical signs of illness. In 2016, an H7N2 influenza outbreak in New York City cat shelters highlighted the public health implications of cat-to-human transmission to workers in animal shelters. Cats may be a silent intermediate host of SARS-CoV-2, because infected cats may not show any appreciable symptoms that might be recognized by their owners.

In June 2020 it was reported that a German shepherd dog in New York that displayed signs of respiratory illness tested positive for SARS-CoV-2 infection, and another dog in the household, where the owner had a COVID-19 infection, tested positive for antibodies to the virus, according to the USDA's Animal and Plant Health Inspection Service.

Also, in that month a cat in Minnesota belonging to someone who tested positive for COVID-19 was found to be infected with SARS-CoV-2, but a dog in the household shows no signs of illness, according to the state Board of Animal Health. A veterinarian tested the cat for the novel

coronavirus when it presented at the clinic with a 105-degree fever and clinical signs of an upper respiratory illness. On July 10<sup>th</sup> 2020 the Dallas Morning news reported a healthy 2-year-old Yorkie dog whose owners had a SARS-CoV-2 infection also tested positive, according to the Texas Animal Health Commission. On July 1<sup>st</sup> 2020 a 6-year-old mixed breed dog with an underlying neurological condition tested positive for a SARS-CoV-2 infection but showed no signs of respiratory disease, [according](#) to the Georgia Department of Public Health. The dog's owners had been diagnosed with COVID-19.

These findings mean that domestic animals should be quarantined and tested if exposed to infected people and precautions taken at this time when animals develop early signs of sickness involving the upper respiratory system. It has not been determined if cats and dogs with COVID-19 can infect people. Cats are sold and killed for food in Chinese markets, a practice which should be prohibited in view of these findings. The Chinese government's declaration in early April 2020 prohibiting the same fate for dogs in these markets because they are "companion animals" is a face-saving public relations action. A similar prohibition should be applied to cats and all live animals wild and domesticated in these widespread markets that are normative in a culture which must change for the common good.

China is not alone in being responsible for animal welfare and the public health consequences of the many diseases transmitted to consumers from the animals they consume. The cruel transportation, handling and slaughter of 500,000 pigs daily in the U.S. is a call to conscience and common sense.

In late March 2020, the Bronx zoo had several tigers become ill after exposure to one keeper who was infected and asymptomatic while attending to the animals. Tests verified COVID-19 in one of the tigers and all made a full recovery.

U.S. veterinary diagnostics firm Idexx has tested more than 3,500 samples from dogs, cats and horses for infection with SARS-CoV-2, the virus that causes COVID-19, and none of the tests have been positive. The findings support experts' assertions that pets are unlikely to catch or transmit the disease, but the virus could become attached to animals' fur, and the CDC says people should avoid kissing pets and should wash their hands after touching pets. Full Story: [Today](#) (3/24)

### [Could pets form coronavirus reservoir chain with people?](#)

The few cases of SARS-CoV-2 infection in pet dogs and cats were likely transmitted by people with COVID-19, and scientific evidence shows pets, livestock and wildlife pose a low infection risk to humans, writes Arjan Stegeman, a professor of veterinary medicine at Utrecht University. However, humans could become part of two-species reservoirs with either wild or domestic cats or with mink or ferrets, passing the virus between and among one another, and researchers are developing models to quantify the risk. [The Conversation](https://theconversation.com/pets-livestock-and-wildlife-can-all-catch-coronavirus-does-that-make-them-dangerous-144440/19) <https://theconversation.com/pets-livestock-and-wildlife-can-all-catch-coronavirus-does-that-make-them-dangerous-144440/19>)

How people respond in the face of an anthropogenic plague will determine the quality of life on Earth for generations to come. The reported public panic and hysteria in some parts of China killing cats and dogs for fear they may be infective and in Peru resulting in the mass killing of bats--- which the government sought to stop, pointing out how bats benefit us in killing insects that can transmit diseases to us,--- is one indicator of how we need to evolve into a more intelligent life form.

## ADDENDUM

### BIOSECURITY CONCERNS

[Biotechnology](#), [Commentaries](#), [Health](#) April 14, 2020

COVID-19: A wake-up call for biosafety (slightly abridged)  
by Jonathan Matthews of [GMWatch](#)

Like many of our readers, we may be sheltering-in-place, but please don't think we're taking our eye off the ball. Although other issues may not seem so important at the moment, the COVID-19 virus will subside one day, yet we will still be facing huge threats such as the so-called "extinction crisis" (the collapse of biodiversity) and the failure to take biosafety seriously. Interestingly, the pandemic is making many people more alert to exactly these kinds of issues.

Take, for instance, biosafety. While some experts have [stated](#) that COVID-19 has not been deliberately genetically engineered and released as a bioweapon, the possibility that it emerged from a research laboratory has not been ruled out. Rutgers University's Prof Richard Ebright, a biosafety expert who has been speaking out on biosafety issues for nearly a biosafety expert who has been speaking out on biosafety issues for nearly 20 years, thinks that the COVID-19 pandemic could have started as an accidental release from a lab, such as one of the two known to have been studying bat coronaviruses in Wuhan, China, where the new coronavirus first emerged.

And Stuart Newman, professor of cell biology and anatomy at New York Medical College in Valhalla, New York, editor-in-chief of the journal [Biological Theory](#), and co-author of [Biotech Juggernaut](#), adds crucial historical context that shows exploring whether COVID-19 could have been genetically engineered should not be dismissed as a subject fit only for conspiracy theorists from a research laboratory has not been ruled out.

He points out that the genetic engineering of coronaviruses has been going on for a long time. According to [Newman](#), "Even most biologists are not aware that virologists have been experimentally recombining and genetically modifying coronaviruses for more than a decade to study their mechanisms of pathogenicity." Newman [points](#) to [papers](#) on [engineering](#) coronaviruses that go back a full 20 years.

Others are flagging up how the proliferation of genetic engineering technologies like CRISPR could [threaten](#) us with pandemics that are even more deadly than COVID-19. The current



pandemic has also fueled interest in the work of Toby Ord, Senior Research Fellow at Oxford's [Future of Humanity Institute](#). In his just published book [The Precipice](#), Ord warns that global pandemics triggered by research on viruses pose one of the two biggest existential threats that humanity faces. He points to the fact that even the highest biosafety level (BSL-4) labs, working on live pathogens that are known to threaten global harm, have a poor track record for biosecurity. This includes research involving strains of these pathogens that are deliberately designed to pose even more danger – for example, through enhanced transmissibility. “With current BSL-4 labs,” Ord [writes](#), “an escape of a pandemic pathogen is only a matter of time.”

In fact, coronaviruses, Prof Ebright points out, are known to have been studied in much lower biosafety level (BSL-2) labs. This includes the bat coronaviruses studied at labs in and around Wuhan. “As a result,” Ebright [says](#), “bat coronaviruses at Wuhan [Center for Disease Control] and Wuhan Institute of Virology routinely were collected and studied at BSL-2, which provides only minimal protections against infection of lab workers.”

SEE ALSO DR. MERCOLA’S ANALYSIS:

[https://articles.mercola.com/sites/articles/archive/2020/04/26/is-coronavirus-a-biological-weapon.aspx?cid\\_source=dnl&cid\\_medium=email&cid\\_content=art1HL&cid=20200426Z1&et\\_cid=DM521257&et\\_rid=859107171](https://articles.mercola.com/sites/articles/archive/2020/04/26/is-coronavirus-a-biological-weapon.aspx?cid_source=dnl&cid_medium=email&cid_content=art1HL&cid=20200426Z1&et_cid=DM521257&et_rid=859107171)

Mercola excerpts:

So, in summary, SARS-CoV-2 appears to be a bioengineered bat coronavirus<sup>13</sup> — which was initially benign and non-transmittable to humans. Zhengli (China, working on this for years) then genetically modified the virus to integrate spike proteins that allows the virus to enter human cells by attaching to ACE-2 receptors. That was the first modification.

The second modification was to integrate an envelope protein from HIV called GP141, which tends to impair the immune system (U of N Carolina w/ Zhengli). A third modification (Wuhan & Harvard Chemistry Dept Head, Dr. Charles Lieber) appears to involve nanotechnology to make the virus light enough to remain airborne for a long time, apparently giving it a range of up to 27 feet.<sup>14</sup>

There are additional reviews ( <https://mailchi.mp/gmwatch.org/summary-of-evidence-that-sars-cov-2-emerged-from-a-laboratory-in-wuhan-china?e=425693fa21>) exploring the origin of this pandemic virus but this not discount the urgent need to stop the poaching, trafficking and trade in any and all wildlife species, vertebrate and invertebrate, warm-blooded and cold. All countries involved should be put under economic sanctions by the U.S. and other responsible governments until they cease and desist since conservation of natural biodiversity is linked with public, environmental and ecosystem health:

See also [The Long History of Accidental Laboratory Releases of Potential Pandemic Pathogens Is Being Ignored In the COVID-19 Media Coverage](#) by Sam Hussein

<https://www.independentsciencenews.org/health/the-long-history-of-accidental-laboratory-releases-of-potential-pandemic-pathogens/>

*Synopsis:* Most of the media is treating the idea that the COVID-19 pandemic might have been the result of a lab escape as a wild and reckless accusation. Yet there is a long and extensive history of Potential Pandemic Pathogens (PPPs) escaping from labs all over the world. H1NI flu, for example, is now considered to have been a lab escape as was the UK's Foot and Mouth disease (FMD) virus outbreak of 2007. Most of these escape events and their consequences are virtually unknown outside of their specialist fields, however. This article provides an overview.

FROM <https://www.washingtontimes.com/news/2020/may/21/australian-researchers-see-virus-design-manipulati/>

The preliminary report of the study, which is now being peer-reviewed, is based on computer modeling of the virus' ability to infect various animals, including humans. It was published May 13 on the Cornell University website arXiv.org, which is used for discussion of pre-publication papers.

[Nikolai Petrovsky](#), the lead researcher, said his team suspects human manipulation in [Wuhan](#) because of the unmatched ability of the virus' protruding spike to infect human cells.

The virus' binding strength for human cells "far exceeds" similar properties for infecting other animals, he said in a statement on the forthcoming report. "This, plus the fact that no corresponding virus has been found to exist in nature, leads to the possibility that COVID-19 is a human-created virus," said Mr. [Petrovsky](#), a professor at the College of Medicine and Public Health at Flinders University in Adelaide, Australia.

\*The author writes the nationally syndicated newspaper column *Animal Doctor* and is a member of the British Veterinary Association, the American Holistic Veterinary Medical Association and an Honor Roll member of the American Veterinary Medical Association. Website [www.drfoxonehealth.com](http://www.drfoxonehealth.com)