CRISPR-CAS9

Dangers of Man Playing God

The Unthinkable is Possible!

There are few modern-day scientific innovations with implications as profound as the gene-editing technology CRISPR, which allows scientists to precisely cut and alter the DNA of any cell.

In 2011, Alex Jones posted an article so troubling about man playing God. It was titled Genetic Armageddon. Pandora's Box has surely been opened. With the unveiling of the "gene" therapy promoted as vaccines, I can't help but believe, humanity has become the guinea pig society for the recent experiments with CRISPR-CAS9 technology.

A dangerous genetic experiment has come out of the shadows, and the human-animal hybrids, chimeras and other transgenic clones has produced now threaten to endanger and irrevocably alter life as we know it.

The controllers of elite-funded science and R&D have wantonly tampered with the genetic code of the planet, ignoring the rather obvious dangers posed by cross-species experimentation and flagrantly jeopardizing the earth's delicately-balanced biodiversity.

Fresh revelations about a "secret lab" program in the UK admittedly ongoing 'for the last three years' developing such bestial-hybrids only serves to reinforce our available data concerning the fact that genetically-modified laboratory creations are fast spinning out of control. Now the biotech industry has unleashed these Franken-breeds into the world

under the auspices of monopolizing some of the most important and dangerous developments in Agra, Pharma and Medical research for the 21st Century.

Their Genetically Modified "solutions" to life's challenges promise lucrative returns, as we reported earlier, due to their patented gene-expressions. What would parents pay for a baby with these desired genetic features?

Transgenic clones, created by deleting-and-replacing DNA sequences to create a cross-species hybrid (xenotransplantation) that is then grown in a host egg, are becoming a pet-project of corporate science that offers 'Pharming's' promise of replacement organs for ailing humans, industrial and pharmaceutical applications of artificial-protein production, and the hope of successful outlets for artificial fertilization in an age of increasing sterility and infertility.

However, it is these man-made creations that pose the greatest risks - including contamination, proven links to sterility in offspring and risks of cancer.

Many clones, including the world's famous first-cloned sheep, Dolly, have had conspicuously short lives and bad health. Arthritis, breathing problems and more has plagued their existence, while hundreds of embryos fail in cultivation for each successful clone. Still others die in the womb after only days, yet these entities are trusted to fulfill humanity's betterment.

In particular, mixing the human genome with that of various 'useful' animals crosses the extremely risky bridge formerly separating many beast-borne diseases from those that typically affect humans, or plant species for that matter.

The contagion of mixing unrelated species like mammals and jellyfish genes gives the opportunity for unforeseen consequences and uncontrollable mutations. Further, many genes which scientists have previously believed to be equivalent have proven to behave differently when transplanted into foreign DNA sequences.

Additionally, lack of recognition or compensation for pleiotropic genes (where a single gene gives expression for multiple traits) makes some of the consequences unforeseeable, yet predictably dangerous.

Grotesque experimentation ironically portrayed for more than a century in globalist H.G. Wells' The Island of Dr. Moreau has now come to life - growing human ears on the backs of mice, harvesting human-marked organs from cows, pigs and other host-species, synthesizing strategic proteins in host-milk production and other seemingly-sci-fi applications pave the way to future biotechnology.

Creations like spider-goats are raised in contradiction to nature's laws, all in the name of reaching industrial production of a stronger-than-steel protein from spider-silk that can create fibers for items like bullet-proof vests, sold directly to the military-prison-industrial complex, further feeding the total domination of mankind.

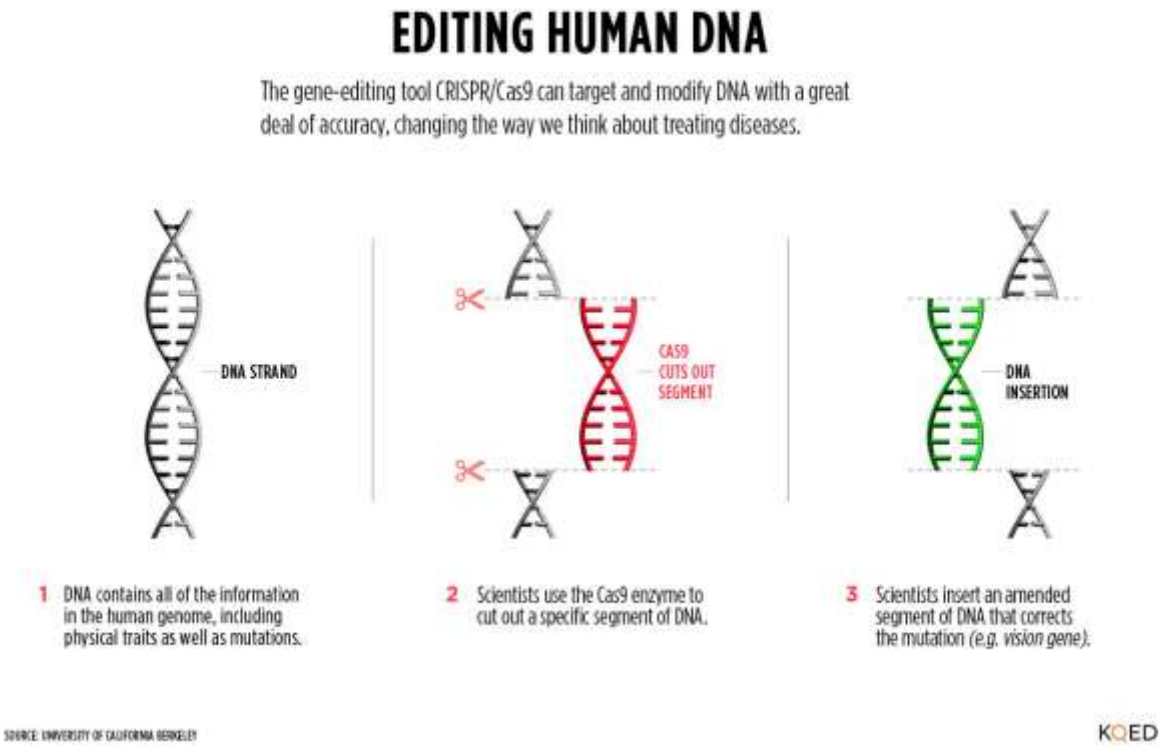
GMO species have become absolutely invasive, and their Doctors Frankenstein has unleashed them intentionally to wreck and destroy the native competing species. Crop contamination of non-GMO plants, combined with the genocidal effects of Terminator seeds is devastating to ordinary farmers. Consumption of GMO crops have proven ties in mice studies to sterility (shown to be delayed until the second or third generation) as well as cancer and other issues.

Powerful globalists have declared themselves God, and seek to limit the complex expression of life with cheap carbon-copy clones that threaten to displace the genuine flora, fauna and other life on this planet.

Not long ago, the world's most prestigious scientists considered some 96% of DNA to be throwaway 'junk' with no genetic value.

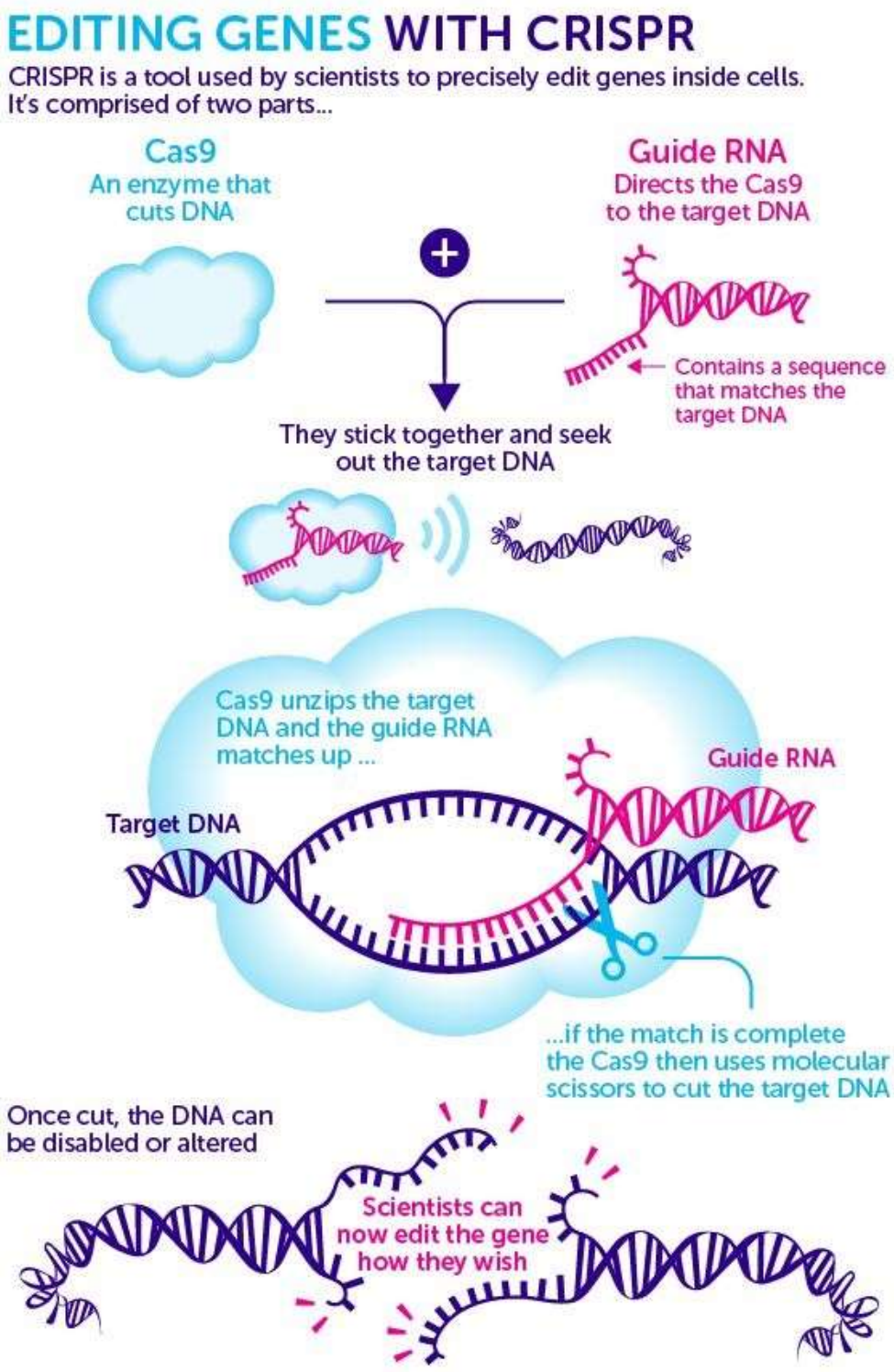
Now, in greater arrogance, they will make far greater mistakes as they pretend to understand the path to 'transhumanism' where man supposedly ascends to godhood and life extension. This is the direction the Technocratic world is moving. The Gates Foundation provides the “deep pockets” to under-write bright minds with amoral values.

Humanity must stand up and say no before it is too late. But with the new Covid-19 shots, it is probably too late from the early results of side effects and even death.



Scientists' use of CRISPR has taken off, in part because it's so much easier to use than earlier iterations of gene editing. Though CRISPR hasn't cured disease or ended world hunger yet, it's already being used in some amazing ways.

Only a few decades ago this entire process of GMOs was somebody’s imagination. But the world of gene or genetic modification has blossomed into a multi-billion dollar business. My interest came when my wife’s neurologists and neurosurgeon said that one day it might be possible to cure Huntingdon’s Disease, a neurological disorder that brings a painful and debilitating disorder over many years. I was a care-giver for 25 years before burning out under the pressure of what all that involved.



Genetic engineering has only been limited by the imagination of the bright minds devoted to its exploration and research.

Here are seven of the wildest examples I could find.

1. Turning pigs into organ donors

For decades, scientists have considered the controversial idea that animals could provide a ready supply of organs to help ease the organ transplant shortage.

More than 114,000 people are currently waiting to receive a transplant in the U.S., alone. Past attempts to implant animal organs into people have failed because the human body's immune system rejects foreign tissue. (The first heart transplant ever performed in a human was in 1964, with a chimpanzee heart. The patient died within two hours.) The issue of the human immune system is very much part of the reason the Covid Vaxx recipients will require and receive multiple or booster shots. Unless the God-given immune system is tricked someway to ignore the "delivery system" and its "package", all efforts to change the person from a human into a Cyborg is likely to fail. Revelation 16:2 gives us a hint to what is occurring during this process of the Vaxx Gene therapy 'package'. ***"And the first went, and poured out his vial upon the earth; and there fell a noisome and grievous sore upon the men which had the mark of the beast, and upon them which worshipped his image."***

Another barrier is the possibility that infections from animal donors could be transmitted to human recipients. This has been one of the dark secrets of the Vaxx industry, SV40 cancer gene discovered in the Polio Vaxx during the 1950s and 1960s; Then more recently the Nagalase protein blocker found in the bloodstream of children with Autism. The children were so young that the conclusion it got there through vaccinations as infants. God only knows what other travesties we don't know about!

Researchers think CRISPR could solve both of these challenges.

One company, eGenesis, spun out of Harvard geneticist George Church's lab, is using CRISPR to make pigs suitable organ donors for humans. Many pig organs, like the heart and lungs, are similar in size to human ones.

Researchers at eGenesis have used CRISPR to snip out a family of viruses found in pig DNA that could be passed on to people during transplantation.

These viruses, known as porcine endogenous retroviruses, or PERVs, could jump from pigs to human cells and randomly integrate into the human genome.

The company has produced dozens of virus-free pigs so far. The company is also using CRISPR-CAS9 to modify genes involved in the immune system and prevent the human body from rejecting the organs.

A clinical trial of human transplants with organs produced in gene-edited pigs is, most likely, still years away.

2. Making new and improved fruit

You're probably not familiar with ground-cherry (physalis), but Joyce Van Eck hopes the fruit will someday become a household name.

About the size of a cherry tomato, the ground-cherry is sweet with notes of pineapple and mango. It can grow in the U.S., but it's currently uncommon because the plants sprawl wildly and are hard to control.

Eck, an associate professor at Cornell University, and her collaborator Zachary Lippman at the Cold Spring Harbor Laboratory, are using CRISPR to make the ground-cherry more appealing to farmers.

"We saw it as a novelty fruit that, with some improvement, could become a more specialty food crop in the U.S. and grow more widely," Eck says.

Eck and Lippman first targeted the ground-cherry's self-pruning gene to make the plant more compact as it grows.

Eck says the change essentially fast-tracked the plant's domestication and made the fruit develop earlier. Next, they used CRISPR to tweak the ground-cherry's genetics to make the fruit 25 percent bigger.

They published their findings (Rapid Improvement of Domestication Traits in an Orphan Crop by Genome Editing) in October 2018, in the journal *'Nature Plants'*.

Eck thinks CRISPR will be an important tool in domesticating new crops, increasing the nutritional value of food, and helping to protect crops from extreme weather and climate change.

"We rely on just a handful of staple food crops, not just within the U.S. but in other countries," she says. *"I think it's really important to find other crops in case of crop failure, but also as a way to diversify diets."*

CRISPR is also being studied as a way to breed cacao trees to be resistant to diseases that are increasingly affecting chocolate production.

And DuPont Pioneer, an agriculture company, has licensed CRISPR technology to breed a new and improved variety of waxy corn, which is used to thicken food products.

3. Changing flowers from violet to white

Japanese scientists are using CRISPR to change the flower color of a traditional garden plant.

Researchers programmed CRISPR to target a specific gene, known as DFR-B gene, in the Japanese morning glory. In the lab, they inserted the CRISPR system into plant embryos.

The gene-editing tool successfully disrupted the DFR-B gene, which is responsible for the color of the plant's stems, leaves, and flowers. By doing so, it changed the plant's characteristic violet color to white.

The researchers say their work (CRISPR/Cas9-mediated mutagenesis of the dihydroflavonol-4-reductase-B locus in the Japanese morning glory Ipomoea -Pharbitis-nil), published last year, reveals the huge potential of CRISPR to the study and manipulation of genes in gardening plants.

4. Modifying human embryos for healthier babies

Last year, a scientist in Oregon made headlines when he reported that his team used CRISPR to snip out a heart disease-causing genetic error in dozens of human embryos.

What parent could resist having this adorable new born in their family?

It was the first time CRISPR had been used in the U.S. to modify human embryos.

Shoukhrat Mitalipov, who directs the Center for Embryonic Cell and Gene Therapy at Oregon Health and Science University, zeroed in on a mutation in a gene called MYBPC3 which is responsible for an inherited heart condition called hypertrophic cardiomyopathy.

The condition occurs in about 1 in 500 people and can cause heart failure and sudden death.

"Every generation on would carry this repair because we've removed the disease-causing gene variant from that family's lineage," Mitalipov said in a university statement.

Editing cells in embryos is known as germline editing, and is controversial because the genetic changes that result can be passed on to subsequent generations.

That's different than somatic genome editing, which only affects the treated individual.

Japan may soon move forward with similar research. The country has issued draft guidelines allowing human embryos to be modified with CRISPR and other genome-editing technologies.

If adopted,

"The guidelines would restrict the manipulation of human embryos for reproduction, although this would not be legally binding," according to an October 2018 report in the journal *'Nature'*.

But science is far from using CRISPR to make designer babies - at least in the U.S.

That's because a congressional rider forbids the U.S. Food and Drug Administration (FDA) from even considering any human trials that would involve modifying human embryos.

5. Halting muscular dystrophy in dogs

In dogs with muscular dystrophy, a CRISPR gene-editing treatment appeared to fix the genetic mutation responsible for disease.

The findings (Gene Editing restores Dystrophin Expression in a canine model of Duchenne Muscular Dystrophy), reported in August 2018, represent a major step forward in developing a treatment for Duchenne muscular dystrophy, a devastating and life-shortening illness most common among young boys.

It's a genetic disease occurring in about 1 in 3,500 boys born, worldwide.

Duchenne is caused by a mutation in the DMD gene, which makes dystrophin, an essential protein found in muscle cells. The mutation means the gene can't make functioning dystrophin, and without it, muscles are weak and don't work properly.

Muscle loss in Duchenne is typically fatal, and men with the disorder usually only reach their early thirties.

In an effort to stop the disease in its tracks, researchers at the University of Texas Southwestern injected CRISPR into one-month-old beagles. Gene editing was able to restore dystrophin in muscle and heart tissue in the dogs by up to 92 percent.

Scientists have estimated that a 15 percent threshold would be needed to significantly help humans.

"It is really impressive how well this works," says Elizabeth McNally, director of the Center for Genetic Medicine at Northwestern University, who studies the genetics of muscular dystrophy.

Elizabeth McNally wasn't involved in the research, but serves on the board of Exonics, the company that funded the study.

"You see this change where a small amount of DNA being corrected can result in a big protein change." McNally says she wouldn't be surprised if the approach moved to human trials in just a few years.

"I think in many ways, Duchenne is really the poster child for doing this," she says of gene editing.

6. Creating new treatments for cancer and blood disorders

Injecting CRISPR directly into the body is risky, so for now, investigators are using CRISPR to edit human cells outside the body and then infusing them back into patients.

The approach is being used in early clinical trials in the U.S., Europe, and China. There is a suggestion that this was part of the alleged Covid-19 Vaxx “Gene” therapy introduced in the current Pfizer and Moderna Vaxx. The implications of this risky attempt to use CRISPR to do something unimaginable are frightening. Even more alarming is the fact that the entire human race might have become the lab experiment test animals.

In the U.S., a trial sponsored by the University of Pennsylvania and a company called Tmunity is recruiting up to 18 people with multiple myeloma, sarcoma, and melanoma who haven't responded to traditional drugs, or have seen their cancer come back.

Investigators will extract human immune cells from the men and women and use CRISPR to genetically alter them to attack cancer cells. The edited cells will then be infused back into the patients.

Another company, CRISPR Therapeutics, is planning to use CRISPR to treat people with beta thalassemia and sickle cell disease, two related blood disorders that are caused by mutations in the same gene.

These mutations affect a person's ability to make hemoglobin, a vital protein in red blood cells that carries oxygen throughout the body. In a statement provided to Medium, the company said it started enrolling people with beta thalassemia into a clinical trial in Germany.

Meanwhile, in the U.S., CRISPR Therapeutics and Vertex Pharmaceuticals were planning to launch a trial for sickle cell by the end of 2018.

Both trials will extract bone marrow stem cells from people in the trial, edit the cells with CRISPR in the lab, and transfer them back into the patients. They hope that the process helps patients produce a type of hemoglobin.

Researchers in China began their first round of similar experiments in people last year, but have yet to report any data from the 11 ongoing trials registered on clinicaltrials.gov.

Eric Kmiec, director of the Gene Editing Institute at Christiana Care Health System in Delaware, says he's not surprised that CRISPR has moved this quickly for very serious diseases.

"I think people wanted this to happen because they realized it was the ultimate medicine," he says. *"Considering the desperation and lack of other treatments for some diseases, it's encouraging."*

7. Eliminating mosquitoes

Mosquito-borne diseases, especially malaria, are a deadly scourge.

Globally, malaria kills more than 400,000 people every year. To cut down on the spread, some scientists propose using a controversial technology called a gene drive.

A gene drive is a genetic engineering tool designed to spread certain genes throughout a species. Though it's not a new idea, gene drives are closer to reality now thanks to CRISPR.

In a paper (A CRISPR–Cas9 Gene Drive targeting Doublesex causes complete Population Suppression in caged Anopheles gambiae Mosquitoes) published in September 2018, researchers at Imperial College London showed that a gene drive made with CRISPR could suppress a population of Anopheles gambiae - the type of mosquito that transmits malaria in Sub-Saharan Africa.

Investigators used CRISPR to target alter a so-called double sex gene, which is responsible for female development.

When female mosquitoes inherited two copies of this modified gene, they couldn't bite or lay eggs. Researchers tested the self-destructive mosquitoes in cages and found

that, after eight generations, no normal females were left to reproduce and the population died out.

Gene drives haven't been released outside of laboratories yet. So we are told! From what I read, I would not wager on this being the case.

There's the possibility that genetic alterations designed to crash populations could mutate and pass on an advantageous trait. But this study showed that the gene drive transmitted the genetic modification nearly 100 percent of the time, avoiding resistance.

Leaders of the African Union earlier last year endorsed gene drive research in an effort to fight malaria in their countries, but it could still be years before the technology is tested in the wild.

Is the human genome sacred? Does editing it violate the idea that we're made in God's image or, perhaps worse, allow us to "play God"? It's hard to imagine weightier questions. And so to address them, Ting Wu is starting small.

Last year, the geneticist was here in a conference room outside Baltimore, its pale green walls lined with mirrors, asking pastors from area black churches to consider helping her.

Wu's research focuses on the nitty-gritty of the genome; her lab at Harvard Medical School studies the positioning and behavior of chromosomes. But she's also interested in improving the public's understanding of genetics. She has gone to classrooms and briefed congressional aides. She has also advised the team behind 'Grey's Anatomy' medical textbook.

At a time of unprecedented access to genetic tests and plummeting costs for genetic sequencing, Wu believes people should know what scientific advances mean for them. The challenge is empowering communities that are skeptical of science because they have been underserved or even mistreated in the past. She faces daunting obstacles in her objective.

Wu is making the case that one of the most visceral scientific debates of our time need not be relegated to academic journals and special summits.

"Is it possible, because you're so organized and there's so much trust between you and your congregations, that faith leaders can help us?" she asked the pastors here, who were joined by genetic counselors, community members, and other scientists.

Wu's outreach to faith groups comes as advances in genetics are forcing scientists to grapple with the power of their newly discovered technology. The issue driving much of the ethical debate these days is genome-editing, which has become much simpler and more efficient with a tool like CRISPR.

Religious leaders and bioethicists have debated genome editing for decades, but it's largely been a theoretical consideration. CRISPR makes once-theoretical notions — say, editing the genomes of embryos — a very real possibility. (Those changes are called "germline" edits and would be passed on to future generations.) It's a revolution that's being driven by scientists like Wu's husband, famed geneticist and her Harvard Medical School colleague George Church.

"That is scary stuff, but this is what's happening with the technology. It is moving forward," said Tshaka Cunningham, a scientist at the Department of Veterans Affairs, who attended the session here and who said that people stand to take advantage of genetic advances. The black churches could help spread that awareness, he said.

As with scientists and secular bioethicists, religious communities have shown varying degrees of comfort with the notion of genome-editing. I had a required course in Christian Ethics when I was a seminary student, and we never were exposed to the issues we face today with gene therapy and genetic modification.

Procedures aimed at curing disease are generally in line with certain religious tenets, even if those procedures require sophisticated technology; the Vatican said in 2002 that *"germline genetic engineering with a therapeutic goal in man would in itself be acceptable"* if it could be done safely and without leading to the loss of embryos.

But genome-editing could, at least in theory, be used to do much more — not just to treat conditions but to "enhance" human beings, as bioethicists put it.

The problem is that the difference is in the eye of the beholder. Would editing a genome to protect people from HIV be considered a treatment? Should scientists eliminate Down syndrome or genetic causes of blindness? Those conditions are viewed by some as disabilities but by others as traits that should in their own ways be respected and embraced.

A Pew Research Center survey found that people who are more devout are less likely to be willing to edit their own child's DNA to protect their health and more likely to view genome-editing as meddling with nature. I can agree with that statement completely.

"The boundary between treatment and enhancement is very, very fuzzy," said Nicanor Austriaco, a theologian and biologist at Providence College in Rhode Island. He said he was not confident that such a difference could be made clear.

As someone who doesn't practice a religion, Wu at first didn't know what issues might come up as she tried to talk genetics with faith communities. So one day, she pulled up a map of churches in the Boston area and started cold-calling them.

A dozen calls ended in voicemails, but she eventually reached pastors at Christ the King, a Presbyterian church with congregations around the area. They invited her to

come talk with some of their congregations about the intersection of genetic technology and faith.

"I can't say we reached agreement," Wu recalled in an interview in her Boston office, *"but I think everyone really enjoyed having things on the table."*

Eventually, Wu met with a few clergy, and arranged for some clergy members to talk with executives at genomics companies.

Her goal, Wu said, was not to promote genetics. Wu is the cofounder and director of a group called the Personal Genetics Education Project, which aims to engage the public about genetics and avoids advocacy. She saw it as an opportunity to understand any tensions that might exist, as well as to answer and ask questions.

"I just don't think it's a legitimate argument that Christian theology shares this worry about 'playing God,'" says Ronald Cole-Turner, of Pittsburgh Theological Seminary.

The pastors and congregation members asked whether genome-editing infringed on the belief that God made people in his image and whether by controlling genes, people were assuming a power that only God should have. Wu didn't have easy answers, and neither did they: Even within congregations, opinions were hardly uniform.

The human genome naturally picks up mutations and genes are turned "on" or "off" by a number of factors, so it's not as if the genome is fixed. But even some leading scientists have expressed the belief that there's something sacred about the human genome. They say it deserves reverence as scientists continue to find ways to manipulate it or, even more radically, consider ways of recreating it synthetically.

"I do believe that humans are in a special way individuals and a species with a special relationship to God," National Institutes of Health Director Dr. Francis Collins told *'BuzzFeed'* in July, 2019. *"And that requires a great deal of humility about whether we are possessed of enough love and intelligence and wisdom to start manipulating our own species."* (Collins has said he would possibly be open to germline editing if it was limited to eliminating disease, but for now, the NIH does not fund research that involves editing embryos' DNA).

Not everyone shares those concerns. Ronald Cole-Turner, a theologian and ethicist at Pittsburgh Theological Seminary, dismissed the "playing God" argument as one used by people who do not understand theology but are wary of germline editing.

"Christian theologians just don't sit around and think that way," Cole-Turner said. *"I just don't think it's a legitimate argument that Christian theology shares this worry about 'playing God.'"*

Cole-Turner also said the idea that the human genome retains sacredness apart from the rest of God's creations didn't square with him. In his view, it's not *"like God had put up a huge 'No trespassing' sign right on the edge of the chromosome."*

"The entire creation is a gracious gift in which human beings are called on to exercise a certain level of responsibility," he said. *"But there's not a privileged zone."*

At the event in Maryland, the attendees addressed the history of prejudice against and exploitation of African-Americans in medicine and the distrust between people of faith and scientists. They also broached how non-black scientists and pastors could try to engage with the black community without being paternalistic and whether underserved communities would even have access to whatever genetic therapies are developed. The event was organized by the Minority Coalition for Precision Medicine and the Health Ministries Network, groups that bring together scientists and faith leaders.

Earl Woodard, the senior pastor at New David Baptist Church of Christ in Baltimore, said his church's members feared that some people would use whatever scientists gleaned from genetic information to try to justify ideas of racial inequality.

"When they hear the word genetics, genetics sounds like experimentation to determine inferiority," he said. *"The church has got to be able to build a bridge of trust between the medical community and the people in the pews."*

To Wu, that was precisely why people needed to understand more about genetic technology — and she hoped that awareness could stave off any attempts to use it maliciously. It's an idealistic goal, but Wu was driven by the dark history of medicine, including the eugenics movement of the early 20th century and the Tuskegee syphilis experiment.

"Why do we leave people out?" Wu told the group. *"And what can we do about the anger and the pain that comes from that?*

The Personal Genetics Education Project has held five congressional briefings about different aspects of personal genetics, and Wu would like to organize the next one around the issues of faith and genetics. But she's also worried that the research community can be too quick to accuse people with religious views of impeding scientific progress.

"Human beings, one of the things they do is judge," she said in the interview. *"It's part of how we hurt each other and it's part of how we get better. And I think it's the being judged and judging based on your traits that makes genetics, which is responsible to a certain extent for your traits, such a touchy piece and such an important piece."*

"Everyone should be aware of those conversations," she added, "and be a part of them."

Why is this happening?

Mass vaccination was supposed to reduce the threat of Covid but– in the short-term– it appears to make it much worse. Why? And why is Covid now "surging in 4 of 5 the most vaccinated countries"? According to *'Forbes'* magazine:

"Countries with the world's highest vaccination rates—including four of the top five most vaccinated—are fighting to contain coronavirus outbreaks that are, on a per-capita basis, higher than the surge devastating India, a trend that has experts questioning the efficacy of some vaccines … and the wisdom of easing restrictions even with most of the population vaccinated." (Covid Surges*…"Here's why the US should Worry", 'Forbes'*)

Worse than India? How can that be? And why have 9 "fully vaccinated" members of the New York Yankees tested positive for Covid? Here's the story from the Associated Press:

"New York Yankees shortstop Gleyber Torres tested positive for Covid-19 despite being fully vaccinated and having previously contracted the coronavirus during the offseason. Torres is among eight so-called breakthrough positives among the Yankees — people who tested positive despite being fully vaccinated." (NBC News) A ninth player was tested positive a few days later.

And if that's not confusing enough, check out what's going on in Cambodia. Cambodia began its vaccination campaign in early February after having compiled zero fatalities. That's right, the country had no Covid deaths until March, a few weeks after it started its vaccination program. And that's when the deaths started piling up.

So, let's see if we can figure this out. There were zero fatalities before the launching of the vaccination campaign, but soon after the injections began, the fatalities started to mount. Do you think there might be a connection here? Do you think that, perhaps, the deaths are linked to the vaccines? The Hard Data now confirms this to be the case.

What the many graphs clearly indicate are two crucial data points about the Covid *Super Vaccination Agenda*.

First, that virtually every country in the world was trending downward — precipitously — as the world community of nations started to approach natural herd immunity for COVID-19 at the end of 2020 and beginning of 2021.

Secondly, that as soon as the various Covid vaccines were rolled out worldwide, virtually every country was saw a sharp spike in SAR-COV-2 cases, and especially in Covid deaths.

In my educated opinion, this is a Genocidal plan of "Depopulation". Furthermore, it is based on decades of how the world would one day deal with the publishing of Paul Ehrlich's book in 1967, *'The Population Bomb'.*

Of course, they are. And, that's why the media is trying to sweep this story under the rug. It doesn't fit with the "official narrative" about the vaccines, so they've decided to "vanish" the story altogether. "Poof" and it's gone! And, actually, it's worse than a cover-up because– shortly after Biden took office– the CDC changed its testing methodology making it harder to test positive. In other words, they rigged the system so it would look like fewer "fully vaccinated" people had contracted Covid after inoculation. Dr. Joseph Mercola explains what's going on behind the scenes:

"Now, the U.S. Centers for Disease Control and Prevention has lowered the CT even further, in what appears to be a clear effort to hide COVID-19 breakthrough cases, meaning cases in which fully vaccinated individuals are being diagnosed with COVID-19." ("CDC embarks on a new Covid Coverup", Mercola. com)

It's all a big confidence shell game. They're gaming the system to make it look like the vaccines are stopping infection when the evidence proves the opposite. And notice the deliberately-misleading moniker the media invented for the people who get Covid after being vaccinated. They call them "Breakthrough cases".

"Breakthrough"? Really? You have to be kidding!

If cases surge in nearly every country that launches a mass vaccination campaign, then there's nothing "breakthrough" about it. It's the predictable result of a failed experiment. Here's more from an article titled: "Covid rates post-vaccination around the world:

"… the government assumed that if 'you vaccinate lots of people and the problem goes away", but the questioners among us did not assume that. Especially having read the FDA Briefing Document for the Pfizer-BioNTech COVID-19 Vaccine for example, many of us had questions after reading it; on Page 42, it states:

"Suspected COVID-19 cases that occurred within 7 days after any vaccination were 409 in the vaccination group vs 287 in the placebo group. It is possible that the imbalance in suspected COVID-19 cases occurring in the 7 days post-vaccination represents vaccine reactogenicity with symptoms that overlap with those of COVID-19. Overall though, these data do not raise a concern that protocol-specified reporting of suspected, but unconfirmed COVID-19 cases could have masked clinically significant adverse events that would not have otherwise been detected." ("Covid rates post-vaccination around the world", Inform Scotland)

So, the FDA KNEW that vaccinated people are more likely to contract Covid than those in the placebo group, but they approved the vaccines anyway?!? Is that criminal negligence or just plain old stupidity?

Please. read the above paragraph again and decide whether you would have given these sketchy injections the “green light” or not? Here’s more from the same article:

“The following show data from around the world from some selected locations. It is, of course, vital to stress that correlation is not causation. And that there are countries where vaccine rollout does not precede or coincide with increased infections. However, I have been unable to find any nation where covid rates have begun to drop after vaccination started, or where a drop coincided with vaccination starting. In Indonesia, for example, the covid rate was falling when vaccination started and seems to have been unaffected in its trajectory by the vaccine being rolled out. The reader can look up these charts for him/herself on the website. Have a look at these and see what you make of them.” (“Covid rates post-vaccination around the world”, Inform Scotland)

Okay, so the author is trying to put the most charitable spin on vaccine performance as possible. He says, *“correlation is not causation”,* which means, *‘Don’t trust your eyes when you look at the charts’ because– if you do– you’ll draw the obvious conclusion that the vaccines greatly increase your chances of getting Covid in the few weeks afterwards.’* The charts will also convince you that Fauci, Biden and the media have been lying through their teeth about the effectiveness of the vaccines.

“What is very clear looking at data world-wide, is that vaccinations are certainly not associated with a reliable fall in covid cases in any predictable timeframe. This, alongside the observations in the trial, surely must be addressed. What is happening here? Is it just that vaccinations are coincidentally being rolled out at the same time as outbreaks are due? In very many places? Or is the vaccine not working immediately? If not, why not? … Or is the vaccine making people more susceptible to infection? If this is the case … is this a temporary effect? What causes it? … How long does it take for any increased susceptibility to diminish?”…We are told that everyone must be vaccinated (but) How can free informed consent be given under these conditions?” (“Covid-rates Post Vaccination around the World”, ‘Inform Scotland’)

These are all good questions, unfortunately, Dr. Fauci and Company don’t plan to answer any of them. Instead, their allies in the media are doing everything they can to disappear the story and deflect attention to the elusive ‘variants’, which is the diversion du jour. Am I being too harsh? It will be long before they blame these “Breakthrough” cases on those who did not get Vaxxd. That I would bet some serious coin on given the marketing program to get you all Vaxxd!

Maybe, but maybe not, harsh enough. Take a look at this clip from a piece at Conservative Woman titled *“Every reason to doubt the vaccine makers’ reassurances”:*

“I have reported previously on an astonishing spike in deaths that occurred alongside an intensive vaccination campaign in Gibraltar, where the small community consequently developed the highest Covid death rate in the world. We also know that thousands of deaths have been seen in the US, EU and UK in the wake of Covid vaccinations, often immediately after the jab has been administered.”

"The manufacturers, leading medical journals and most governments insist these deaths are unrelated to the vaccine. In many instances, the deaths and serious illness have been attributed to coincidental infection with the virus. But evidence is mounting that for some, especially the weak and elderly, the vaccine itself is creating or worsening the very illness against which it is supposed to be protective…."

"…a worrying phenomenon which appears consistently in Covid vaccine studies is a spike in purported 'infections' which occurs precisely during that three-week period, and usually immediately following the jab...The researchers raise the possibility that the jab may trigger 'symptoms likened to Covid-19 symptoms including fever' in those recently exposed to the virus... He suggests the mechanism may be a depression in immunity caused by a loss of white blood cells post-jab, observed in both the Pfizer and AstraZeneca trials, making the vaccinees more vulnerable to the virus in the short term." ("Every reason to doubt the vaccine makers' reassurances", Conservative Woman)

Okay, so the author arrives at the same conclusion as the previous author; maybe the vaccine makes people more susceptible to the virus by lowering their defenses and, thus, inviting infection. That's certainly one possibility, but there are other possibilities that could be infinitely more serious. Take a look:

"It has not been generally acknowledged that the jab is designed to protect us by provoking our cells into producing the very toxin that makes the virus more dangerous than its predecessors in the coronavirus family. This toxin, known as the spike protein, can damage not just the lungs but may also affect organs such the brain, heart and kidneys."

The reasoning behind administering the jab is that temporary exposure to the toxin may provide long-term protection against becoming ill from the virus. Early indications are that this strategy is working, although it is not at all certain yet to what extent the fall-off in infection rates seen in intensely vaccinated populations is seasonal and related to the waves of infection, or if it is a lasting benefit. Keep in mind, what animal tests were conducted, were stopped at the point where all the animals died!

But there is also a very real possibility, supported by animal experiments as well as by the studies cited above, that the vaccine itself may produce symptoms in vulnerable people which are then attributed to Covid-19. The damage to health may be especially severe in an individual who has been recently or is concurrently infected with the actual virus.

"There is therefore every reason to doubt the manufacturers' assurances that the deaths and injuries seen to be accompanying vaccination, and that in some instances look like and are being attributed to Covid-19, are unrelated to the jabs. The situation is serious enough for some doctors and scientists to be calling for a moratorium on further Covid vaccinations until it has been properly investigated." ("Every reason to doubt the vaccine makers' reassurances", Conservative Woman)

So, it could be, that something in the vaccine itself is killing people. That is one distinct possibility. Sure, the drug companies and public health officials dismiss the idea with a wave of the hand, but medical professionals and scientists think the danger is significant enough to demand that the mass-vaccination program be temporarily terminated.

Some readers will recall that the Salk Institute recently released a study which showed that SARS-CoV-2's "distinctive 'spike' protein".. *"damages cells, confirming COVID-19 as a primarily vascular disease."* Here's an excerpt from the article dated April 30, 2021:

"In the new study, the researchers created a "pseudo-virus" that was surrounded by SARS-CoV-2 classic crown of spike proteins, but did not contain any actual virus. Exposure to this pseudo-virus resulted in damage to the lungs and arteries of an animal model—proving that the spike protein alone was enough to cause disease. Tissue samples showed inflammation in endothelial cells lining the pulmonary artery walls." (Note– "Vascular endothelial cells line the entire circulatory system, from the heart to the smallest capillaries.")

The team then replicated this process in the lab, exposing healthy endothelial cells (which line arteries) to the spike protein. They showed that the spike protein damaged the cells by binding ACE2. This binding disrupted ACE2's molecular signaling to mitochondria (organelles that generate energy for cells), causing the mitochondria to become damaged and fragmented.

Previous studies have shown a similar effect when cells were exposed to the SARS-CoV-2 virus, but this is the first study to show that the damage occurs when cells are exposed to the spike protein on its own." *("The novel coronavirus' spike protein plays additional key role in illness,"* Salk.edu)

The significance of this report cannot be overstated. The Salk researchers are confirming that the main damage from Covid is caused by the spike protein not the virus. And, if that's the case, then why are we injecting people with vaccines that teach their cells to make spike proteins?

It makes no sense at all.

And how does this effect our understanding of the phenomenon that we've seen in countries around the world, that is, the sharp rise in cases following mass vaccination?

Allow me to offer a plausible, but as-yet unproven explanation:

The sharp rise in cases and deaths following mass vaccination is NOT related to Covid "the respiratory illness", but Covid "the vascular disease". The vascular component is mainly the result of spike proteins produced by cells in the lining of the blood vessels (Endothilium) that are activating platelets that cause blood clots and bleeding. The other main factor is autoimmune reaction in which the killer lymphocytes attack one's own body triggering widespread inflammation (and potential organ failure.). In short, the

post-injection fatalities are caused by the spike proteins produced by the vaccines and not by Covid. Once again, look at the chart of Cambodia. There were no deaths prior to vaccination. All the deaths came afterwards. That suggests that the fatalities are attributable to the vaccines. So correlation in this case does prove causation!

One final thought: 118 million Americans have now been injected with a clot-generating spike protein. I would like to know if any of the 118 million received placebos. At present, no one seems to know of how long these potentially-lethal proteins remain trapped in the lining of the blood vessels or what damage they might eventually do. Keeping that in mind, wouldn't this be a good time to exercise a bit of caution? Now that cases have dropped sharply across the country, why not ease up on the vaccinations until we have a better grasp of the long-term risks? That would be the sensible approach, right? Just postpone further injections until product safety can be assured.

If there was ever a time for caution, this is it. However, that said, we cannot trust the people in control or who regulate the use of genetic modifications, vaccine, and the health care industry. The American Cancer Society raises $159-billion a year and many cancer researchers have died mysteriously because of their "breakthrough" findings.

As an aside issue, yet requires scrutiny, for CRISPR, the Americans Intelligence Media shared an interesting report on the demonic governor of Michigan.

Gov. Gretchen Whitmer's financial disclosure hides her Pilgrims Society conspiracy.

Gov. Gretchen Whitmer filed under oath on Dec. 31, 2019 that she held $1,877,466.36 in a single investment in Cerity Partners Investment Account. She did nothing to disclose the investments that Cerity held for her. Therefore, she is hiding her beneficial financial holdings behind Cerity.

Whitmer is invested in Crispr Therapuetics in Germany – DNA altering mRNA technology used in the COVID "vaccine" poison.

Corrupt politicians, judges and bureaucrats have resorted to hiding their true financial interests from the public behind mutual funds and investment accounts like Cerity. Federal judges started this trend on Mar. 14, 2001 at a Judicial Conference where they floated a "guideline" that would allow judicial employees to use a "concept" (not a rule, guideline or law) called "safe harbor" where judges could hold stock in, say AT&T, inside a, say Blackrock, mutual fund without having to disclose AT&T. Then, if AT&T came before them in a court case, they could play dumb. They then put for the "diminimus" concept that since AT&T's stock in Blackrock was proportionally small as compared to the whole portfolio, they would not be benefiting enough to be a material amount.

On the other hand, the Canon of Judicial Conduct says "even one share" held in a company by one's spouse is enough to recuse oneself from a matter coming before them, or to at least disclose it so that the parties could decide whether that conflict was acceptable or not.

In Gov. Whitmer's case, her holdings in Cerity are massive conflicts in both the COVID scam and 2020 Election rigging… too many to list in detail. They include:

CRISPR THERAPEUTICS AG,
Astrazeneca PLC (UK),
Eli Lilly,
Johnson & Johnson,
Bristol-Myers Squibb,
Merck,
Pfizer,
Boston Scientific,
Gilead,
Microsoft,
Oracle,
Vanguard,
Citigroup,
Verizon,
Diebold,
Apple,
iShares (Blackrock–CIA),
Google,
Facebook,
Qualcomm,
Broadcom,
Disney,
Baidu (China),
Amazon,
PayPal,
Goldman Sachs,
Schwab…

In other words, Governor Whitmer's beneficial interests in Cerity are major beneficiaries of both the COVID SCAMDEMIC, and the 2020 ELECTION RIGGING.

Do you want to invest like a politicians and make money on the Pandemic and Great Reset? You, too, can invest like the pro-politicians. Call Cerity today and ask them about their **PANDEMIC INVESTMENT FUND**.

If the representative is not sure what that fund is, tell them that Gretchen referred you and that you want a portfolio that looks like hers:
https://www.fbcoverup.com/docs/library/2019-12-31-CERITY-Partners-13F-HR-Edgar-Dec-31-2019.pdf

Michigan Governor and Citizen Enslaver Gretchen Whitmer.

Selected, not elected, by Smartmatic in 2018.

A video from a 2017 Ted Talk is going viral featuring a top executive with pharmaceutical giant Moderna admitting that his corporation's mRNA jabs can edit the genetic code of individuals who are stuck with the experimental shots.

"We've been living this phenomenal digital and scientific revolution, and I'm here to today to tell you that <u>we are actually hacking the software of life</u>," said Tal Zaks, the chief medical officer for Moderna.

"If you could introduce a line of code or change a line of code, it turns out that has profound implications from everything from the flu to cancer," Zaks added, talking up his firm's mad science experiments.

<u>This is when Zaks described how an mRNA vaccine edits the genetic code of individuals who are stuck with the vaccine</u>.

GOVERNORS WHO FORCED COVID-19 PATIENTS INTO NURSING HOMES

SOURCE: THE NATIONAL PULSE

"Now imagine if instead of giving the protein, we would give the instructions on how to make the protein, how the body can make its own vaccine. That's an mRNA vaccine," he said.

"For the last several years, we have shown this actually works in a whole multitude of animal models. Earlier this year, we published the first actual study in people… We took a group of volunteers and injected them with a messenger RNA vaccine," Zaks continued.

"And now we're going to be developing a whole slew of vaccines," he added.

'Big League Politics' has reported on how pharmaceutical giants like Moderna are shielded from liability if their experimental vaccines cause unforeseen negative side-effects:

"The U.S. government has granted Pfizer and Moderna immunity from liability in case people develop severe side effects from their COVID-19 vaccines.

The Public Readiness and Emergency Preparedness (PREP) Act allows the Department of Health and Human Services to provide liability immunity for "certain medical countermeasures," such as vaccines, except in cases of "willful misconduct."

According to CNBC, someone who develops severe side effects from a COVID-19 vaccine can neither sue the FDA for authorizing the vaccine, nor one's employer for mandating it.

And although it is theoretically possible to receive money from the government to cover lost wages and out-of-pocket medical expenses following "irreparable harm" from a vaccine, only 29 claims - 6% of all claims - have received compensation over the past decade. Did you catch that, 29 claims in ten years received compensation.

In short, don't count on compensation for a COVID-19 vaccine gone wrong. And don't count on seeing any of those *"you may be entitled to financial compensation"* commercials for it either…

A significant chunk of the American populace still claims that they're not willing to take the vaccine, so it will be intriguing to see how this situation develops and if the vaccine becomes either mandatory de jure or de facto.

Moderna is one of many firms set to make billions, if not trillions, off of the COVID-19 vaccine regime. Big Pharma does not want the masses to understand the risky and unethical experimentation they are engaging in to produce these vaccines. The larger issue of CRISPR is tainted to say the least with the profit potential and corrupt public health agencies and those who are prepared to risk public health with their ambitious agenda.

Anyone see potential conflicts of interest?
Anyone feel that the CDC may not be an unbiased source of information?
Anyone care?

If this has not been enough proof of the criminal activities, it was revealed yesterday that the State of Connecticut analyzed the ingredients of the Moderna Vaxx and it contains a chemical SM-102. In the OSHA filing, the manufacturer declares SM-102 - "Causes damage to the central nervous system, the kidneys, the liver and the

respiratory system through prolonged or repeated exposure." It is manufactured by Cayman Chemical Company. The SM-102 Material Safety Data Sheet describes this chemical as "NOT FOR HUMAN OR VETERINARY USE". I posted the report Monday evening, May 17th on my web page. There is no way we will ever know the full extent of their efforts to "Depopulate" the U.S. population.

First it was the SV-40 in the Salk polio vaccines in the 1950s and 1960s, which gave the cancer gene to between 65 and 90 million children. Then it was Nagalase, a protein inhibitor blocking synthesis of Vitamin D^3 in the 2000s. Over a hundred-twenty researchers died of mysterious deaths because of their work in Autism and Cancer research. Then it was Mycoplasma Brucellosis (unknown dates because of military secrecy), and now the chemical SM-102 in the Moderna Vaxx, found by the Connecticut Health Service.

The link to this latest revelation is at:
BREAKING NEWS -URGENT -Connecticut Publishes Moderna COVID Vax Ingredients: DEADLY POISON "SM-102 -Not for Human or Veterinary Use"

So much information is outside of the public realm or understanding. The recipients of the Vaxxs are the lab experiment for which the animal tests were terminated because they all died, and animal tests were terminated.

The Covid Vaxxs contains nano-particles and modified RNA. Of that, we know from Pfizer's own admissions.

After injection, the "Programmable Matter" can be produced inside individuals when activated by 5G, or by a substance from the second vaccine and in sequential vaccines, triggered by 5G such as the QuantumDot/Hydrogel ID2020, or a 3D printer system. Individuals can be targeted since their DNA will be known through the PCR tests.

Activating the (wild) growth as Morgellons, long-suggested linked to chemtrail spraying can cause pneumonia, a brain thrombosis or a heart attack. They can also act as an antenna to capture microwaves, or to transmit and eavesdrop on voices and thoughts. I will not go into the open source documents of military experiments and tests since 1970, or even earlier. They require volumes to document.

They can also be used as a personal ID to connect to the outside world via a crypto-block-chain system, as in Microsoft's patent WO 2020/060606 A1, so that individuals can be financially punished or rewarded according to their behavior with respect to the imposed rules.
https://patentimages.storage.googleapis.com/58/f5/bf/bf453d0035610f/WO2020060606A1.pdf

Finally, they can be used as elementary devices connected to brain cells via the patent U.S. 2014/0046891 A1, to lead their own "intelligent" or "trans-human" life, including

language and emotions, completely uncontrollable by the targeted person, via external electromagnetic pulsed 5G waves.
https://patentimages.storage.googleapis.com/9f/ed/bc/ab6674f5d979b5/US20140046891A1.pdf

Anthony Patch revealed in his magazine *'Engtangled'* that these scientists want to add a third strand to our DNA. These demented people have produced synthetic biology that will allow for such re-writing the human DNA genome.

Shelly Xuelai Fan is a neuroscientist-turned-science writer. She completed her PhD in neuroscience at the University of British Columbia, where she developed novel treatments for neuro-degeneration. She has developed a new means of communication for people that are paralyzed.

Texting might not be faster than speech, but for many of us it's a natural way to communicate.

Thanks to a new brain-computer interface (BCI), people with paralysis can now do the same—with a twist. By imagining the motions of writing letters, a man with spinal injury was able to translate thoughts into text, at a speed that rivals thumb typing on a smartphone. At 90 characters per minute and an accuracy of over 90 percent after autocorrect, the system leapfrogs every record previously accomplished using neural implants.

The crux is an algorithm based on a popular and very powerful neural network—recurrent neural network (RNN)—plus a few tricks from the machine learning community. The result is a neural implant that uses AI to convert electrical brain signals, generated as someone imagines handwriting into text that's displayed onto a computer in real time.

"This … could help restore communication in people who are severely paralyzed, or 'locked-in,'" said study author Dr. Frank Willett at Stanford's Neural Prosthetics Translational Laboratory. *"It should help people express themselves and share their thoughts. It's very exciting."*

"Mindtexting" may just be the start. The study suggests that counter-intuitive to common belief, AI seems to be better at decoding brain signals that underlie our more complex behaviors, rather than simple ones—an invitation to reimagine the potential of a brain-computer symbiosis.

"Although much work remains to be done, Willett and co-workers' study is a milestone that broadens the horizon of iBCI [invasive brain-computer interface] applications," said Drs. Pavithra Rajeswaran and Amy Orsborn, at the University of Washington who were not involved in the study. *"Because it uses machine learning methods that are rapidly improving, plugging in the latest models offers a promising path for future improvements."*

Typing Without Hands

The study is part of the legendary BrainGate project, which has led the development of neural interfaces for the past decade to restore communications in people who are paralyzed. To be clear, these "implants" are true to their name: they are microarrays of tiny electrodes on a chip that's surgically inserted into the top layer of the brain.

BrainGate's got many mind-blowing hits. One is an implant that lets people pilot robotic arms with thought. Another success helped paralyzed people move a computer cursor with their minds on an Android tablet, expanding their digital universe to the entire Android app sphere, and of course, email and Google.

This is all possible because the central processor, the motor cortex, is still intact even after paralysis, at least for relatively simple movements such as reaching or grasping. It's like cutting your wireless router cable: you lose online access, but the network itself is still there. Neural implants tap straight into the source—the electrical signals that underlie our every move—decode them into language that computers understand, and use them to control another output: a robotic hand, exoskeleton, or a cursor on the screen.

The problem? Using your mind to control a cursor to hit letters on a digital keyboard is terribly slow. The most successful implant so far averages 40 characters per minute, and requires surgery and training. Even an off-the-shelf eye-tracking keyboard that's non-invasive can let people with paralysis type marginally faster. The new study took a completely different approach: toss the keyboard.

A Spark of Genius

The study participant, dubbed T5, is a long-time BrainGate participant. Back in 2007, T5 suffered from a traumatic incident that damaged his spinal cord and deprived him of movement below his neck. In 2016, Dr. Jaimie Henderson, a neurosurgeon at Stanford, implanted two microarray chips into the "hand area" of T5's left precentral gyrus, a part of the brain that normally helps us plan and control motion. Each chip contained 96 microelectrodes to tap into his electrical brain activity. These neural signals were then sent to a computer through wires for further processing.

Here's where the magic comes in. Neurons are a loud, noisy bunch, and deciphering specific signals—neural codes—that control single movements is incredibly difficult. It's partly why it's currently impossible for someone to imagine a letter and have it "mind-read" by a BCI setup. The brain's electrical signals that encode for different letters are too subtle for any algorithm to accurately decode.

The new study's workaround is outside the box and utterly brilliant. Because the process of *writing* alphabetical letters is quite unique for each letter, the team reasoned, it may trigger neural signals that are different enough for an algorithm to tell apart which imagined movement—and its associated brain signal—corresponds to which letter.

To start, patient T5 first traced an individual letter repeatedly in his mind (in print, not cursive). Although his hand was completely still, the authors said, he "reported feeling as though an imaginary pen in his hand was physically moving and tracing out the letter shapes." T5 next spent hours imagining writing groups of random sentences.

All the while, his implants captured neural signals related to writing each letter, which were "remarkably consistent." The data was then used to train a type of artificial neural network called a recurrent neural network (RNN), which is "especially good at predicting sequential data." Because RNNs tend to be data-hungry, the team used a trick called data augmentation that reshuffled previous neural signals, essentially generating artificial data to beef up the algorithm. They also injected some noise into the data, with hopes that the eventual BCI would be more robust against slight changes in brain activity.

Mind-Texting Dominance

Over time, the RNN was able to decode neural signals and translate them into letters, which were displayed on a computer screen. It's fast: within half a second, the algorithm could guess what letter T5 was attempting to write, with 94.1 percent accuracy. Add in some run-of-the-mill autocorrect function that's in everyone's smartphones, and the accuracy bumped up to over 99 percent.

When asked to copy a given sentence, T5 was able to "mindtext" at about 90 characters per minute (roughly 45 words by one estimate), "the highest typing rate that has yet been reported for any type of BCI," the team wrote, and a twofold improvement over previous setups. His freestyle typing—answering questions—overall matched in performance, and met the average speed of thumb texting of his age group.

"Willett and co-workers' study begins to deliver on the promise of BCI technologies," said Rajeswaran and Orsborn, not just for mind-texting, but also what comes next.

The idea of tapping into machine learning algorithms is smart, yes, because the field is rapidly improving—and illustrating another solid link between neuroscience and AI. But perhaps more importantly, an algorithm's performance relies on good data. Here, the team found that the time difference between writing letters, something rather complex, is what made the algorithm perform so well. In other words, for future BCIs, *"it might be advantageous to decode complex behaviors rather than simple ones, particularly for classification tasks."*

The new system isn't yet ready for the clinics. It'll have to be tested in additional people and have some common typing functions added, such as delete or text editing. The team also wants to add the ability for mindtexting capital letters and symbols.

But the new BCI doesn't have to function alone. Other BCIs that translate neural activities of speech into text already exist, and it's conceivable for a person to potentially shift between the two methods—mental writing and speaking—to communicate with others. "Having those two or three modes and switching between them is something we

naturally do [in daily life]," said Dr. Krishna Shenoy at Stanford University, who supervised the study with Dr. Henderson.

But that's all for the future. The immediate next step, the authors said, is to work with patients who can't speak, such as people who lost the ability due to stroke or neurodegenerative diseases, or those who're conscious but cannot move at all, and restore their ability to interact with the outside world. "*The authors' approach has brought neural interfaces that allow rapid communication much closer to a practical reality,"* said Rajeswaran and Orsborn.

I have read three books on CRISPR and there is great potential good for the world in many ways, some of which I have drawn upon to enable the reader to get an idea of where the world is going boggles the mind. We have seen from what I have studied, there is likewise, no limit to harm that can come from CRISPR gene editing.

Blessings,

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