

Lifetime Learning Institute, 2021



THE DENIAL OF SCIENCE AND THE SCIENCE OF DENIAL

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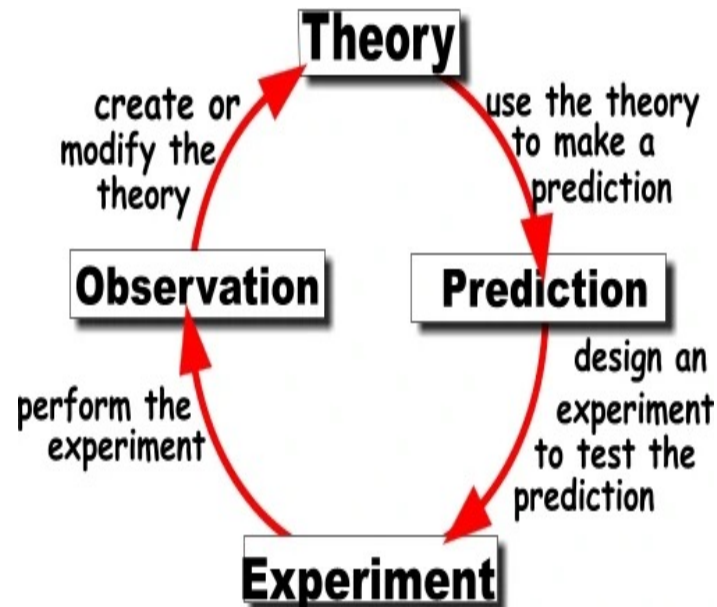
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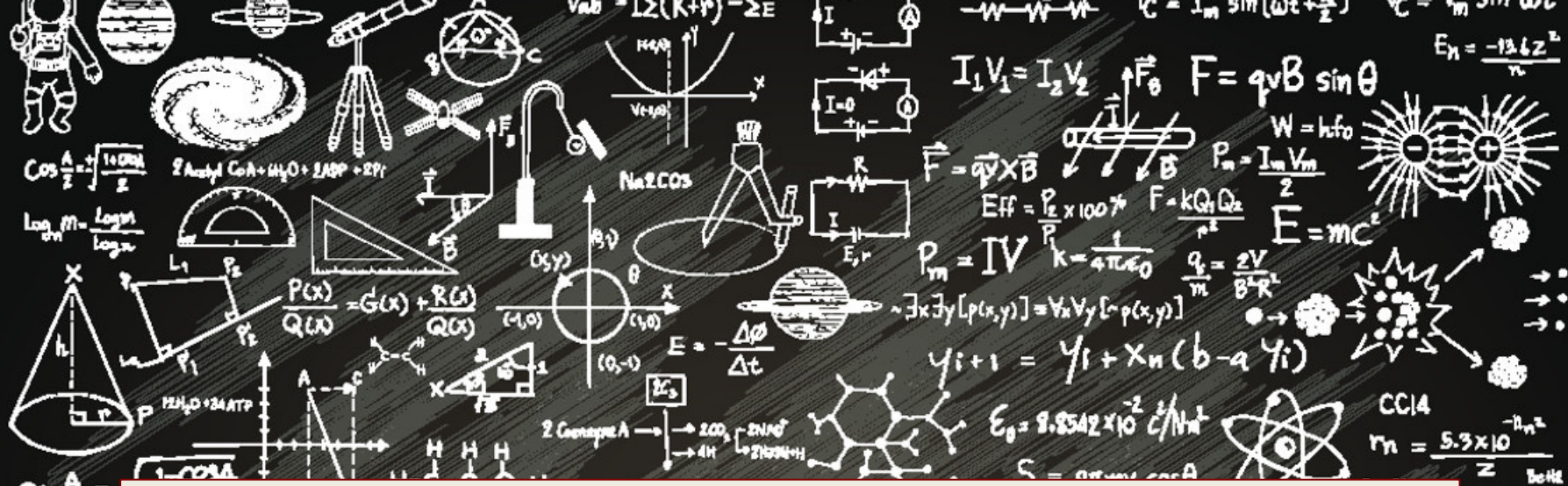


Science

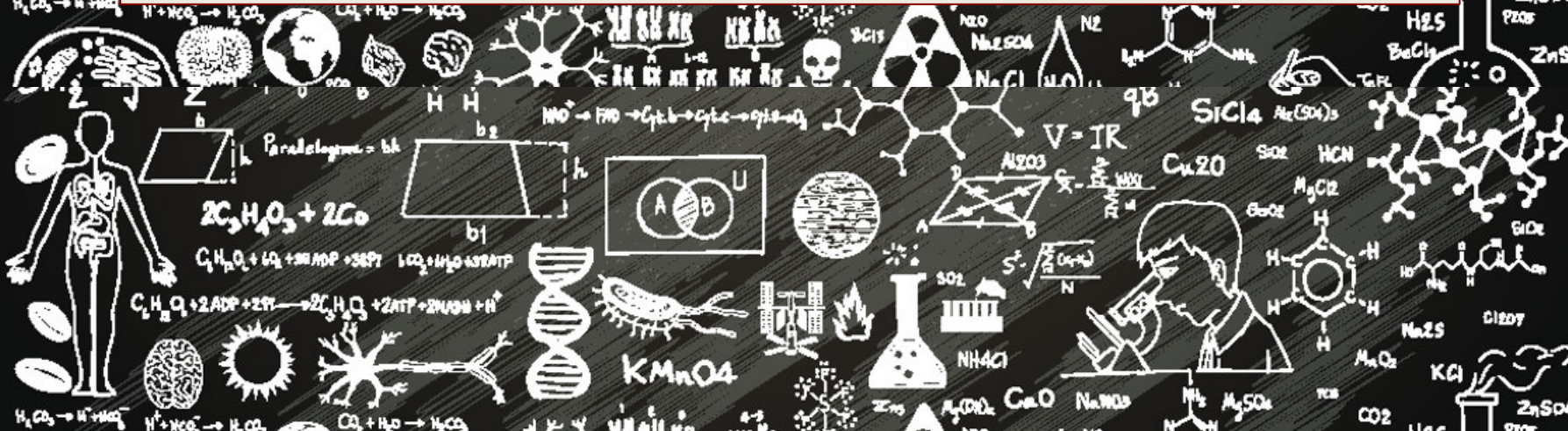
(from the Latin word scientia, meaning "knowledge")

is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions.





Science requires that scientific explanations of phenomena be based on events or mechanisms that can be observed in the natural world. This is how science builds a base of shared observations and ideas to which new knowledge can be added.



- ✓ It's published by a reputable journal
- ✓ Relevant experience and qualifications
- ✓ It's part of a larger body of work (**RESEARCH**)
- ✓ It doesn't promise a panacea or miraculous cure
- ✓ It uses a reasonable, representative sample size
- ✓ The results are statistically significant
- ✓ It is well presented and formatted
- ✓ It uses control groups and double-blinding
- ✓ It doesn't confuse correlation and cause

Google Scholar is a freely accessible **web search engine** that indexes the full text or **metadata** of **scholarly literature** across an array of publishing formats and disciplines.

<https://google.scholar.com>

The **SCImago** Journal Rank (SJR) indicator is a measure of the scientific influence of scholarly journals that accounts for both the number of citations received by a journal and the importance or prestige of the journals where the citations come from.

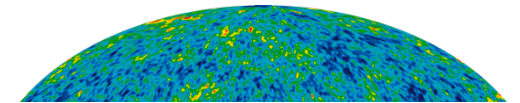
<https://www.scimagojr.com>

nature

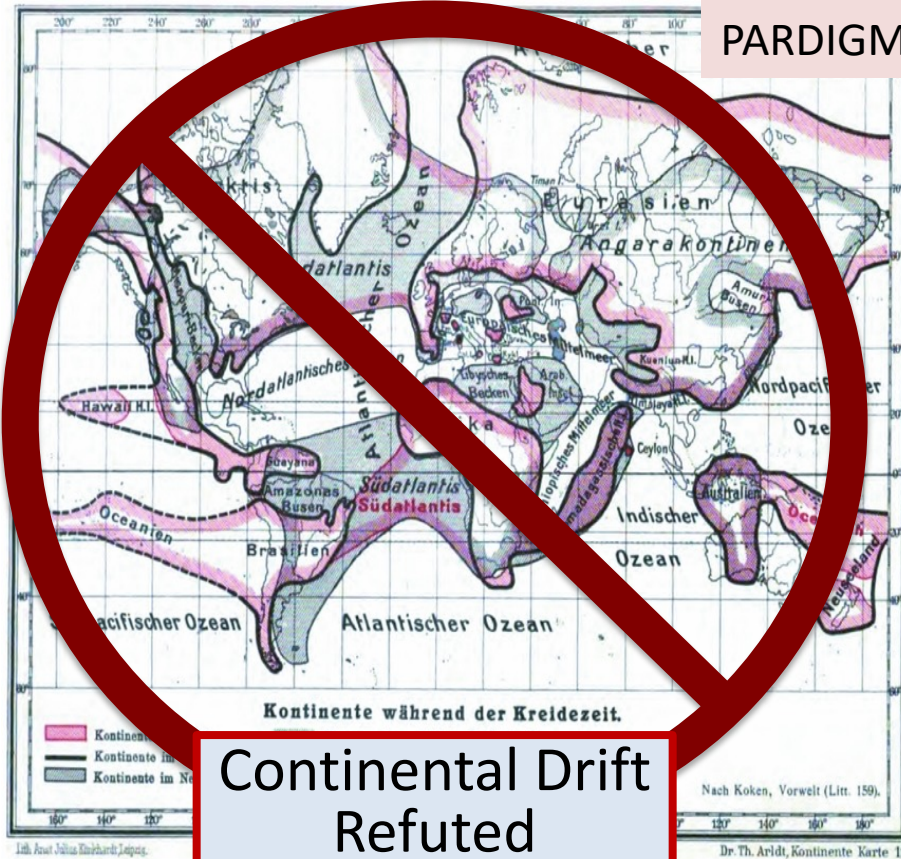
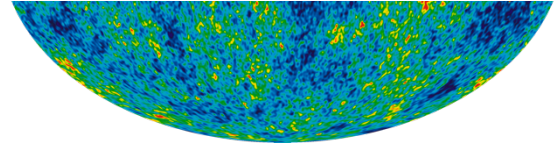
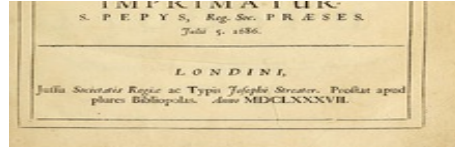
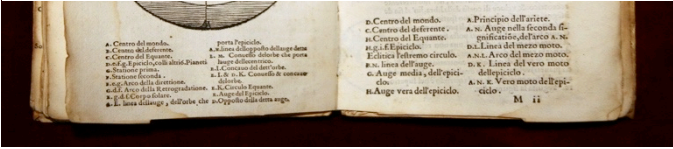
THE INTERNATIONAL WEEKLY JOURNAL OF SCIENCE

Nature has space to publish only 8% of the 200 papers submitted each week. Its selection criteria are rigorous:

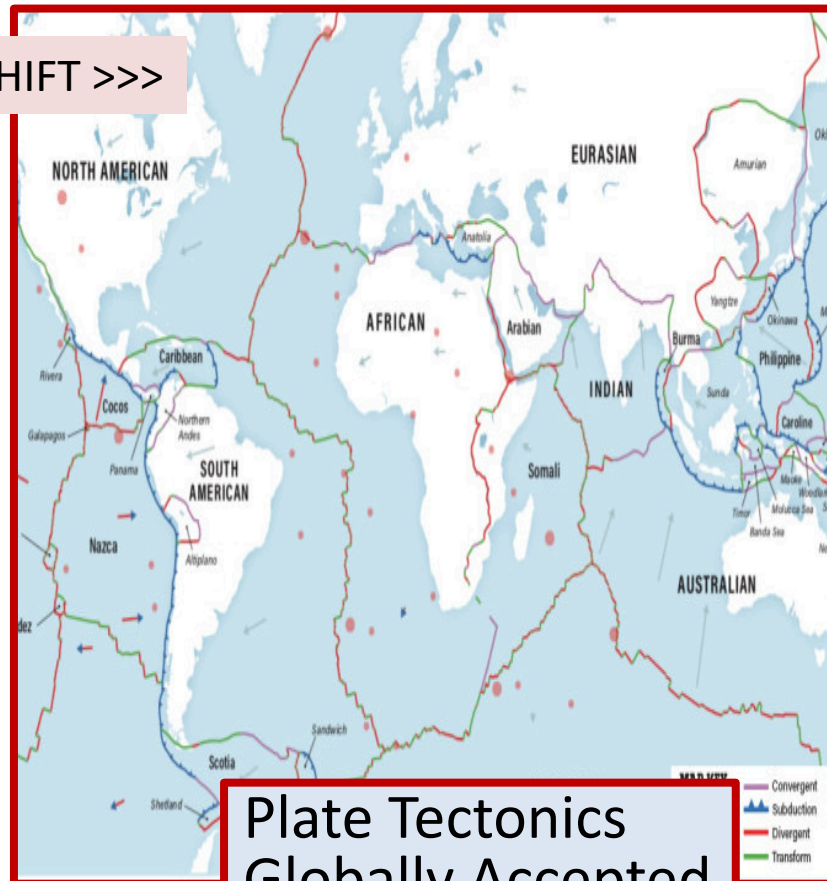
- Report original scientific research (the main results and conclusions must not have been published or submitted elsewhere);
- Are of outstanding scientific importance; and
- Reach a conclusion of interest to an interdisciplinary readership.



SCIENCE IS AN ITERATIVE PROCESS



PARDIGM SHIFT >>>



Continental Drift Refuted

Plate Tectonics Globally Accepted

❑ WASHING HANDS IN HOSPITALS (1847)

Joseph Lister, pioneer of sanitary practices, toured the US in 1876, five years before Garfield's assassination.

GOOD SCIENCE

❑ MMR VACCINE DISCOVERED (1971)

American microbiologist Maurice Hilleman combines the measles, mumps and rubella vaccines to create the first vaccine using live virus strains.

❑ COLD FUSION GOES COLD (1989)

Martin Fleischmann and Stanley Pons' alleged breakthrough on a nuclear reaction at room temperature — and the hopes of cheap, renewable energy — is debunked.

BAD SCIENCE

❑ MMR VACCINE FALSELY LINKED TO AUTISM (1998)

British gastroenterologist Andrew Wakefield publishes a research paper falsely linking MMR to the autism. While his claims were discredited and he's since been banned from the UK medical register, the damage has been irreversible, as some parents still refuse to vaccinate their kids.



Gustav Jirikowski
mRNA injected into
rat brains reverses
diabetes insipidus

1992



Katalin Kariko
Nucleoside modified,
non-immunogenic
mRNA transcript
is designed

2005



1995
Robert M. Conry
Designed first mRNA
vaccine encoding
cancer antigens

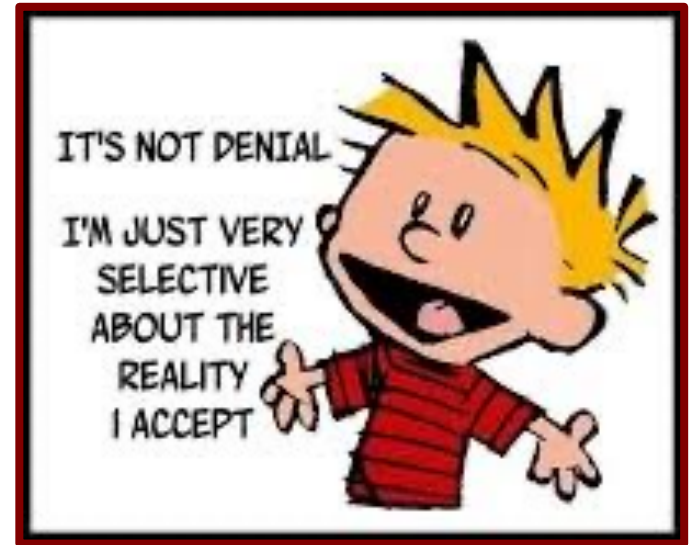
2009

Benjamin Weide
First trial of cancer
immunotherapy using
mRNA based vaccines
in human subjects



Moderna founded in 2010 to manufacture vaccines.
BioNTech 2008 gets into immunotherapies with mRNA.
Pfizer (NY, US) joins in 2018

The Science of Denial



Reasoning is suffused with emotion/affect:

We push threatening info away;
We pull friendly info close.

IT'S
DARK,
THEREFORE,
THERE IS NO
SUN!

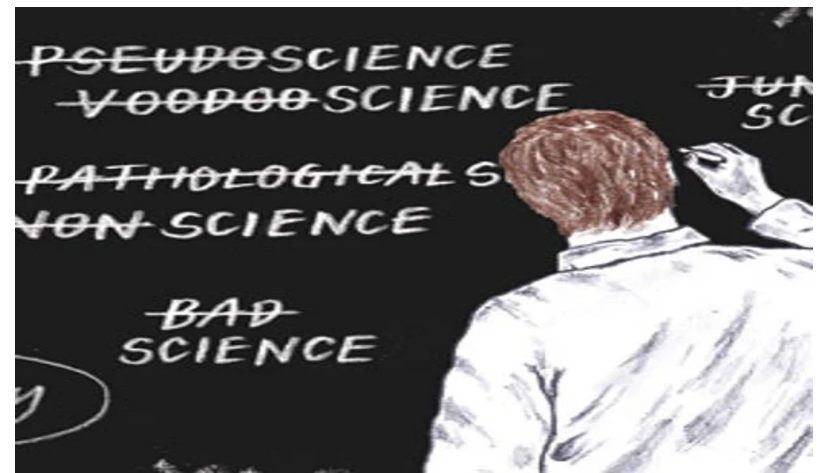
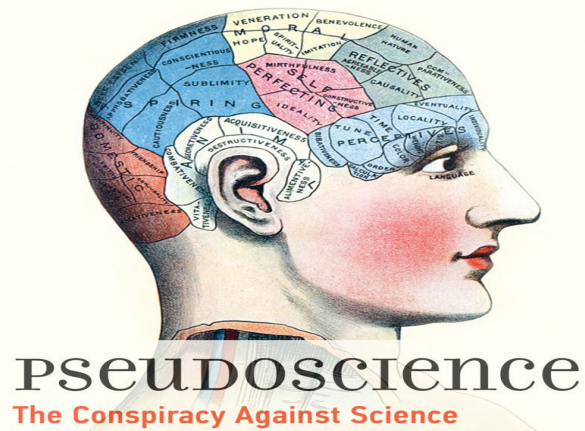


IT'S
COLD,
THEREFORE,
THERE IS NO
GLOBAL
WARMING!



SHENEMAN TRIBUNE CONTENT AGENCY

SCIENCE	SCIENCE'S PRETENDERS	
	Pseudoscience	Science Denial
Follows evidence to a conclusion	Works backwards from desired conclusion	
Minimize biases	Wants to believe	Doesn't want to believe
Objectively evaluates evidence	Very low standard of evidence	Impossibly high standard of evidence
Conclusions based on body of evidence	Cherry picks evidence	
Tentative; Willing to change with evidence	Overly confident; Unwilling to change	
Scientific community provides essential checks and balances	Pretender community rewards biases and views criticism as a conspiracy	



Pseudosciences are driven by their aspirations to advance a theory or a claim of their own.

Science denialists are driven by their enmity towards some specific scientific account or theory.

**When the moon is in the Seventh House
And Jupiter aligns with Mars
Then peace will guide the planets
And love will steer the stars
This is the dawning of the age of
Aquarius
Age of Aquarius
Aquariu
Aquariu**

- ✓ Climate change denialism
- ✓ Holocaust denialism
- ✓ Relativity theory denialism
- ✓ Aids denialism
- ✓ Vaccination denialism
- ✓ Tobacco disease denialism

Science Denial Effects

Benign

- Tooth Fairy
- My Favorite Martian
- Loch Ness Monster
- Santa Claus
- Vampires
- Mermaids

Malevolent

- AI will automate everything
- Nuclear power is unsafe
- The earth is flat
- Hydrochloroquine is safe
- You can prevent cancer by eating healthy, limiting sugar, and exercising

I Just Want to Believe



"Many people quite simply just want to believe," said Brian Cronk, a professor of psychology at Missouri Western State University. "The human brain is always trying to determine why things happen, and when the reason is not clear, we tend to make up some pretty bizarre explanations."

In a 2006 study, researchers found a surprising number of college students believe in psychics, witches, telepathy, channeling and a host of other questionable ideas.

A full 40 percent said they believe houses can be haunted.

(Bryan Farha, Gary Steward, Jr.)

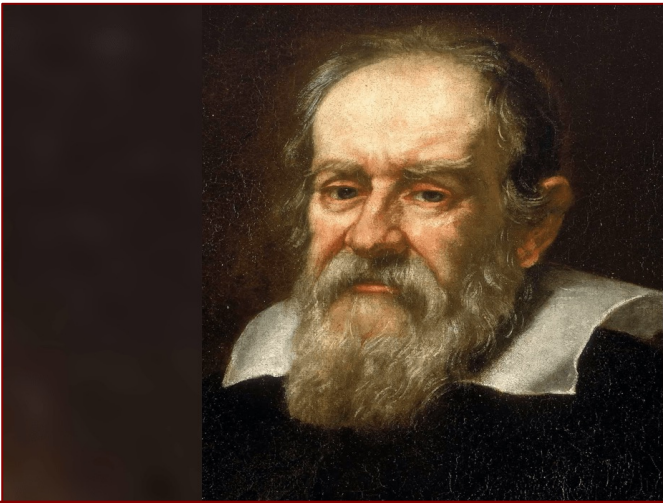
If you wonder why worldwide scientific consensus hasn't yet quashed climate change denial in the United States, a panel at Harvard Kennedy School (Feb. 2014) offered an answer: **It's the politics, stupid.**

Persistent efforts to cast doubt on a scientific certainty have their roots in philosophical opposition to big government and government regulation, expressed in a fierce, expertly managed, well-funded campaign, participants said.



March for Science

<https://news.harvard.edu/gazette/story/2014/02/science-vs-politics/>



- ✓ Galileo Galilei is known as the father of observational astronomy.
- ✓ His theories about the movement of the Earth around the sun and his experiments testing principles of physics are the basis of modern astronomy.
- ✓ But he's just as well known for his battles against science skeptics, having to defend his evidence against the political and religious critics and institutions of his time.
- ✓ There are definitely parallels between Galileo's story and present-day climate change discussions, as well as other public scientific debates today.

The more politicized an issue, the harder it is for people to absorb contradictory evidence.

Science denial is an **expression of identity** – usually in the face of perceived threats to the social and economic status quo – and it typically manifests in response to elite messaging.

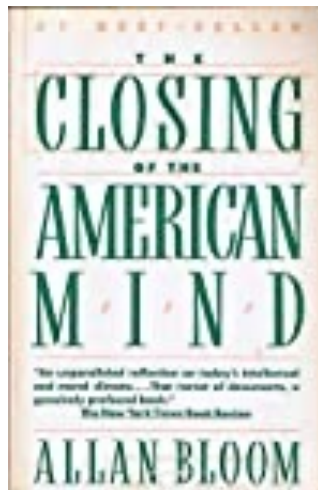
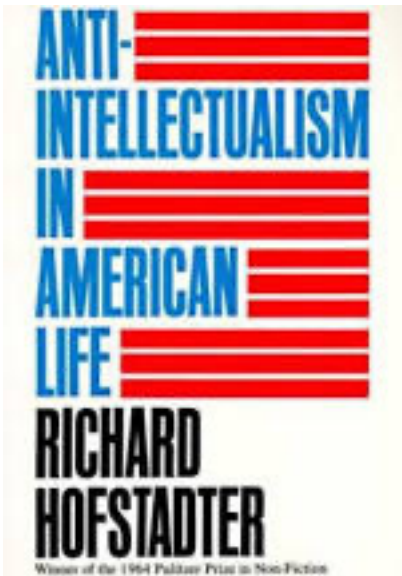
Adrian Bardon, Philosophy, Wake Forest

<https://theconversation.com/coronavirus-responses-highlight-how-humans-are-hardwired-to-dismiss-facts-that-dont-fit-their-worldview-141335>



Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, speaks during a Senate Health, Education, Labor, and Pensions Committee hearing, July 20, 2021.

Stefani Reynolds | Reuters



A CULT OF IGNORANCE

ISAAC ASIMOV/MY TURN

It's hard to quarrel with that ancient justification of the free press: "America's right to know." It seems almost cruel to ask, ingeniously, "America's right to know what, please? Science? Mathematics? Economics? Foreign languages?"

None of those things, of course. In fact,

invented because people who are not members of the intellectual elite don't know what an "elitist" is, or how to pronounce the word. As soon as someone shouts "elitist" it becomes clear that he or she is a closet elitist who is feeling guilty about having gone to school.

car but, not being pointy-headed professors, can't read.

Again, in television commercials, there are frequent printed messages. Well, keep your eyes on them and you'll find out that no advertiser ever believes that anyone but an occasional elitist can read that print. To

The strain of anti-intellectualism has been a constant thread winding its way through our political and cultural life, nurtured by the false notion that democracy means that 'my ignorance is just as good as your knowledge.'

Dr. Isaacs Asimov, 1980
 Professor biochemistry
 Boston University School of Medicine

ed professor," and with what a roar of approval that phrase was always greeted by his pointy-headed audience.

BUZZWORDS: Now we have a new slogan on the part of the obscurantists: "Don't trust the experts!" Ten years ago, it was "Don't trust anyone over 30." But the shouters of that slogan found that the inevitable alchemy of the calendar converted them to the untrustworthiness of the over-30, and, apparently, they determined never to make that mistake again. "Don't trust the experts!" is absolutely safe. Nothing, neither the passing of time nor exposure to information, will convert these shouters to experts in any subject that might conceivably be useful.

We have a new buzzword, too, for anyone who admires competence, knowledge, learning and skill, and who wishes to spread it around. People like that are called "elitists." That's the funniest buzzword ever

that the people will know.

Yes, *provided they can read!*

As it happens, reading is one of those elitist subjects I have been talking about, and the American public, by and large, in their distrust of experts and in their contempt for pointy-headed professors, can't read and don't read.

To be sure, the average American can sign his name more or less legibly, and can make out the sports headlines—but how many nonelitist Americans can, without undue difficulty, read as many as a thousand consecutive words of small print, some of which may be trisyllabic?

Moreover, the situation is growing worse. Reading scores in the schools decline steadily. The highway signs, which used to represent elementary misreading lessons ("Go Slo," "Xroad") are steadily being replaced by little pictures to make them internationally legible and incidentally to help those who know how to drive a

the function of a free press is virtually zero when hardly anyone can read.

What shall we do about it?

We might begin by asking ourselves whether ignorance is so wonderful after all, and whether it makes sense to denounce "elitism."

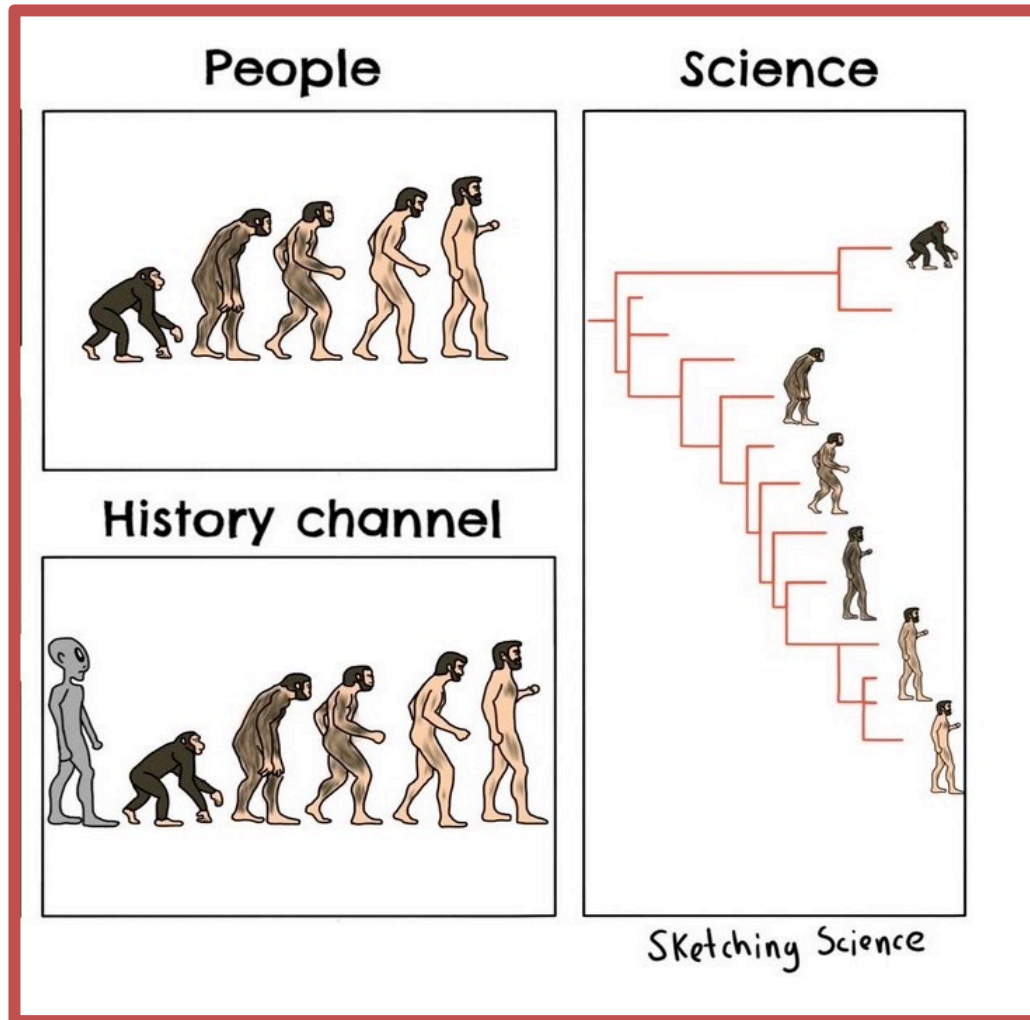
I believe that every human being with a physically normal brain can learn a great deal and can be surprisingly intellectual. I believe that what we badly need is social approval of learning and social rewards for learning.

We can *all* be members of the intellectual elite and then, and only then, will a phrase like "America's right to know" and, indeed, any true concept of democracy, have any meaning.

Asimov, a professor of biochemistry at Boston University School of Medicine, is the author of 212 books, most of them on various scientific subjects for the general public.

DARWIN'S THEORY OF EVOLUTION (1859)

Charles Darwin lays out the basis for all future study of EVOLUTION.





Robert Reich is Professor of Public Policy at the UC Berkeley. He served as Secretary of Labor in the Clinton administration.

People are so desperate for jobs they don't want to rock the boat. **They don't want rules and regulations enforced that might cost them their livelihoods.** For them, a job is precious – sometimes even more precious than a safe workplace or safe drinking water.

This is especially true in poorer regions of the country like West Virginia and through much of the South and rural America – so-called “red” states where the old working class has been voting Republican. **Guns, abortion, and race are part of the explanation. But don't overlook economic anxieties** that translate into a willingness to vote for whatever it is that industry wants.



LEAGUE OF DENIAL

The NFL's Concussion Crisis

FRONTLINE

Tuesday, October 8, 2013

"I grew up playing football... We knew basically what a concussion was, but the thought process in those days was you would never come out of a game or practice because you had **a little head ding**. You would be considered, for lack of a better term, **a sissy**." - Brett Favre, April 2018

System justification theorists like psychologist John Jost (NYU) have shown how situations that represent a perceived threat to established systems trigger **inflexible thinking**.

For example, populations experiencing economic distress or an external threat have often turned to authoritarian leaders who promise security and stability.

I Feygina, JT Jost, RE Goldsmith (2010) System justification, the denial of global warming, and the possibility of “system-sanctioned change”
Personality and social psychology bulletin 36 (3), 326-338

Denial of Facts is Rooted in Identity
and Belonging, not in Ignorance.

Changing minds may require a lot
more than sound reasoning.

Labeling someone a “denier” may lead to their re-entrenchment.

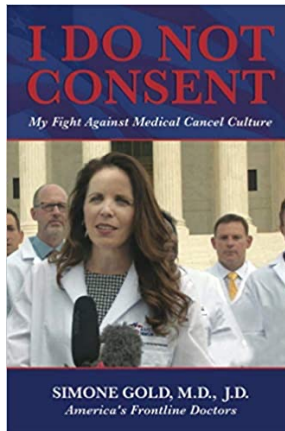


I will NOT be
masked, tested, tracked
poisoned or chipped to
support this orchestrated
LIE! This is NOT
my "new normal"

I DO NOT
CONSENT

Scientists, the normal humans that they are, are just as susceptible to being swept up by the cultural currents of their society as anyone else.

Ubadah Sabbagh, Science Has Always Been Inseparable from Politics, *Scientific American*, April 2017



EN

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ORDER TODAY: Robert F. Kennedy, Jr.'s New Book — 'The Real Anthony Fauci'

05/21/21 • BIG PHARMA • NEWS

Physicians Group Files Motion to Halt Use of COVID Vaccines in Children

Citing well-documented harms and lack of long-term safety testing, America's Frontline Doctors Wednesday filed a motion in the U.S. District Court for the Northern District of Alabama requesting a temporary restraining order against the Emergency Use Authorization of COVID vaccines in teens and children under 16.

By America's Frontline Doctors



31

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Latest News

- Scientists Blast 'Rash' Push for Boosters, Citing 'Weak Evidence' to Support Third Shot
- 13,000 Deaths, Nearly 600,000 Adverse Events Reported After COVID Vaccines, as Debate Heats Up Over Boosters
- CDC Studies Show Vaccine Protection Wanes Over Time, Less Effective Against Delta Variant

Latest Views

- RFK, Jr. to Journalists: Report the Truth About COVID Vaccine Risks, Injuries and Deaths
- 78 Sunscreens, Including 5 J&J Products, Contain Cancer-Causing Ingredients, Testing

The Defender is experiencing censorship on many social channels. Be sure to stay in touch with the news that matters by subscribing to our top news of the day. It's free.

America's Frontline Doctors (AFLDS) Wednesday filed a motion in the U.S. District Court for the Northern District of Alabama requesting a temporary restraining order against the Emergency Use Authorization (EUA) permitting using the COVID-19 vaccines in children under the age of 16, and that



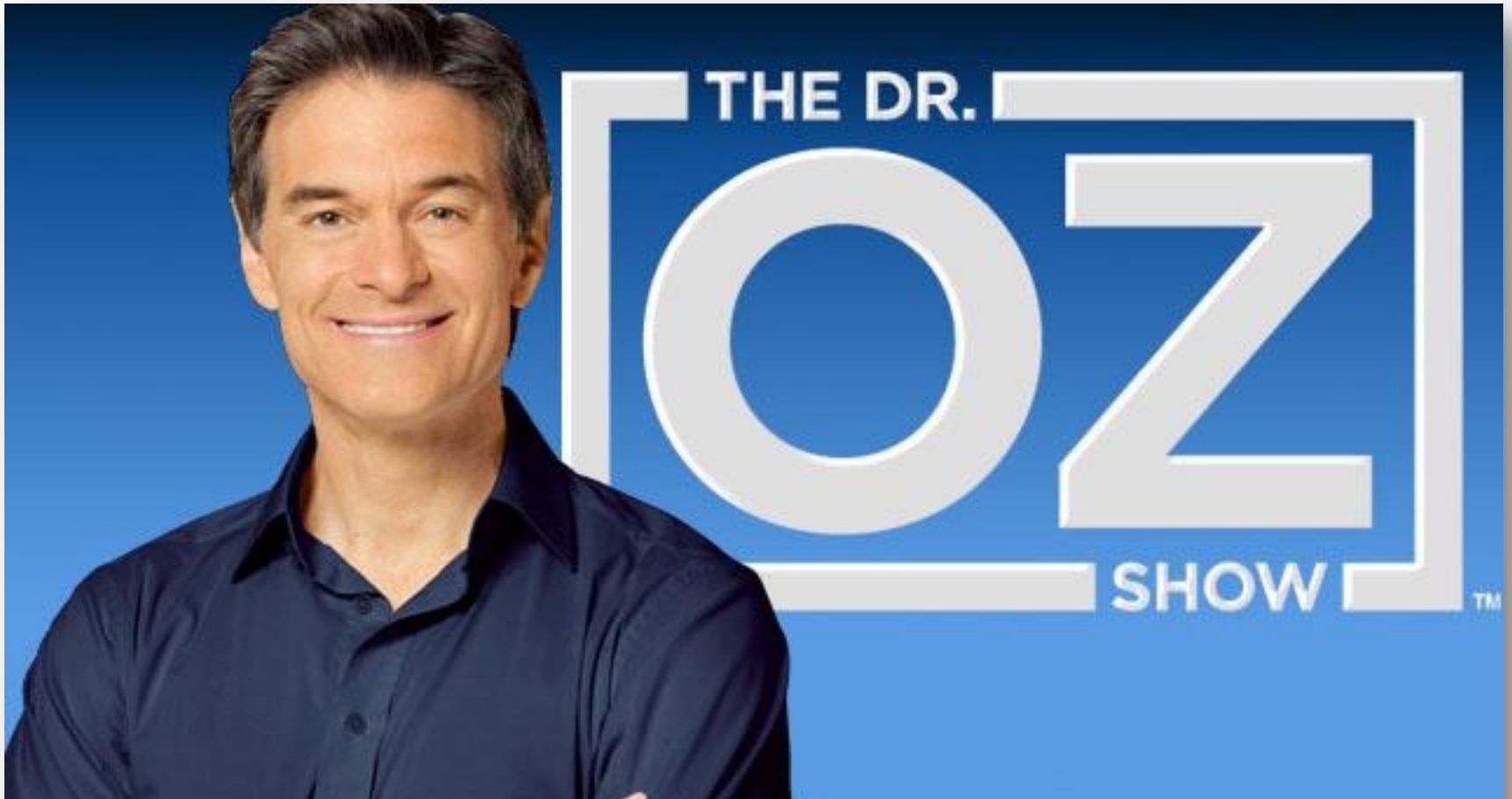
<https://www.medpagetoday.com/infectiousdisease/covid19/87797>



<https://www.reuters.com/article/uk-factcheck-false-covid-claims-doctors/fact-check-tackling-false-covid-19-claims-in-30-minute-doctor-compilation-video-idUSKBN28S2DX>

A 2020 viral video promoting COVID-19 misinformation featured a newly formed group called America's Frontline Doctors. About 10 physicians, dressed in white coats with an embroidered America's Frontline Doctors logo, spoke for 45 minutes in front of the Supreme Court on a range of COVID-19 talking points, from hydroxychloroquine (HCQ) being curative to the mental health effects of lockdown outweighing the toll of the virus itself.

“America’s Doctor”: Syndicated talk-show host Mehmet Oz, cardiothoracic surgeon



He has promoted pseudoscience, and alternative medicine, and has been criticized by physicians, government officials, and publications, including Popular Science and The New Yorker, for endorsing unproven products and non-scientific advice. **The British Medical Journal published a study that found more than half of the recommendations on medical talk series including The Dr. Oz Show had either no evidence or contradicted medical research.**

SERIOUS SCIENCE DENIAL

- ✓ **AIDS** AIDS denialism is the denial that the human immunodeficiency virus (HIV) is the cause of acquired immune deficiency syndrome (AIDS).
- ✓ **COVID-19** Refers those who deny the reality of the COVID-19 pandemic or, at the very least, deny that deaths are happening in the manner or proportions scientifically recognized by WHO.
- ✓ **Climate change** ExxonMobil has contributed to "fake citizens' groups and bogus scientific bodies" that claim that the science of global warming is inconclusive.
- ✓ **Evolution.** Many fundamentalists teach creationism that include the belief in the global flood myth, geocentrism, and that the Earth is 6,000–10,000 years old.
- ✓ **Flat Earth** Modern flat-Earthers dismiss all spaceflights and images from space as hoaxes and accuse organizations and private citizens of conspiring to "hide the truth".



- ❑ In brief, the central conspiracy theory of the antivaccine movement is that not only are vaccines dangerous (and, in many cases, ineffective) but that “they” are hiding the evidence of that harm and ineffectiveness.
- ❑ Who are “they”?
 - ✓ The FDA;
 - ✓ Federal Trade Commission (FTC);
 - ✓ CDC;
 - ✓ Major food and drug companies;
 - ✓ Entire medical profession
- ❑ All done in an effort to protect the profits of these industries and the authority of governmental agencies and the medical profession.

I'M NOT WEARING
A MASK! THE
GOVERNMENT
NEEDS TO STOP
TELLING US WHAT
TO DO AND DO
SOMETHING TO
HELP US!

OKAY!
HERE'S A
VACCINE!



I'M NOT GETTING
A VACCINE!



WHAMAD

- 1. Conspiracy theories:** Propose that a complex and secretive conspiracy accounts for an overwhelming body of scientific evidence and consensus.
- 2. Fake experts:** Highlight views inconsistent with established knowledge, often complemented by denigration of established experts, including questioning credentials, integrity, and motives.
- 3. Cherry-pick data:** Draw on isolated papers that challenge the consensus view and neglect the broader body of research supported by hundreds of papers.
- 4. Impossible expectations** for research: Set unrealistic standards for data that invalidate an entire body of research.
- 5. Misrepresentation of opposition viewpoints:** Employ logical fallacies, including an appeal to personal freedom or other core values.

Covid-19 Myths

- Covid-19 will be no worse than seasonal flu
- Covid-19 will disappear on its own
- It can't be transmitted by asymptomatic carriers
- It changes, but slowly
- Vaccines offer long-lasting protection
- Vaccinated people won't fall ill or die
- We are helpless in the face of new variants

William Haseltine, former professor Harvard Medical, Busting 12 Covid-19 Myths that Could Kill, *Forbes*, August 2021



CENTER
FOR
CLIMATE
CHANGE
DENIAL

WHOSE TURN
IS IT TO
SWIM UP AND
DISPUTE THE
SCIENTIFIC
EVIDENCE?



Decades of Science Denial Related to Climate Change Has Led to Denial of the Coronavirus Pandemic

- After the fossil fuel industry spent hundreds of millions of dollars attacking climate scientists it isn't hard to understand how pandemic denial happened.
- A 2016 survey by the Pew Research Center found that fewer than 30 percent of Americans understood that the vast majority of climate scientists and peer-reviewed studies support the conclusion that climate change is a human created threat.

Confirmation Bias

Tendency to search for, interpret, focus on, and remember information in a way that confirms one's preconceptions.

- **Backfire Effect:** Reaction to disconfirming evidence by strengthening one's previous beliefs.
- **Continued Influence Effect:** Tendency to believe previously learned misinformation even after it has been corrected.

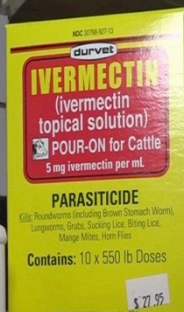
95% of College Graduates

Believe that the seasons are a result of the Earth moving closer to or further from the sun.

The real answer, scientists say, is that as Earth's axis is tilted with respect to its orbit, when on its journey it is angled inward, the sun rises higher in the sky, and that results in more direct sunlight, longer days, and warmer temperatures. Distance plays no role; we are actually closest to the sun in the dead of winter, during the first week of January.

Produced by the Harvard-Smithsonian Center for Astrophysics. 1987.

<https://www.learner.org/series/a-private-universe/>



TSC

IVERMECTIN PRODUCT ADVISORY

Ivermectin is an active ingredient in some of the products we carry, including select dewormers and injectables. Ivermectin **HAS NOT BEEN APPROVED** by the Food and Drug Administration (FDA) for use in treating or preventing COVID-19 in humans and could cause severe personal injury or death. These products are only suitable for animals and are clearly labeled as such.

- ❑ ***Ivermectin*** tablets are approved for use in humans for *the treatment of some parasitic worms* and ivermectin topical formulations are approved for human use by prescription only for the treatment of *external parasites such as headlice and for skin conditions such as rosacea*
- ❑ Ivermectin is FDA-approved for use in animals for prevention of heartworm disease in some small animal species, and for treatment of certain internal and external parasites in various animal species.

In 2001, President Bush imposed a ban on government funding for research on embryonic stem cells – halting the potential development of cure to scores of illnesses. He explained why he did this: “My position on these issues is shaped by deeply held beliefs.”

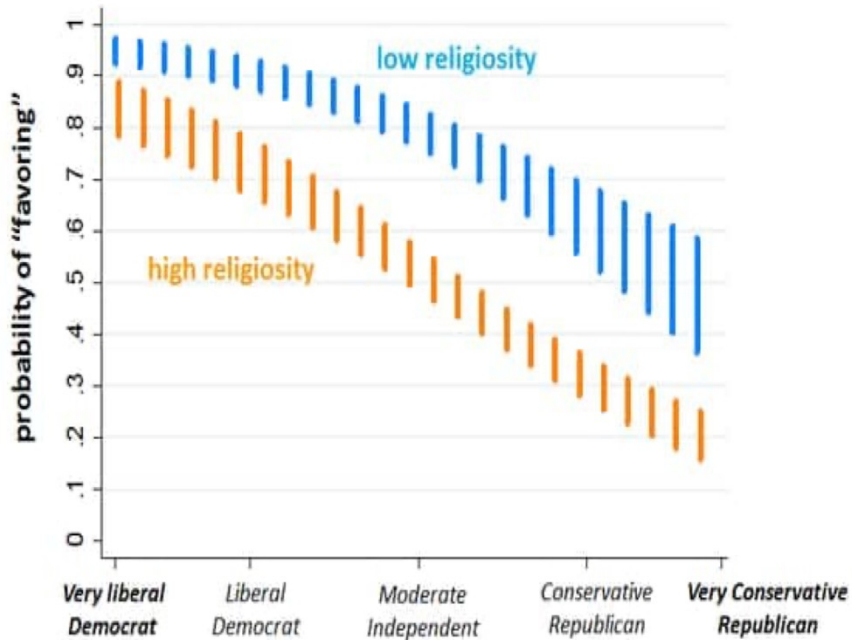


Fetal Cell Lines Were Used to Make the Johnson & Johnson COVID Vaccine—Here’s What That Means

RELIGION AND SCIENCE DENIAL

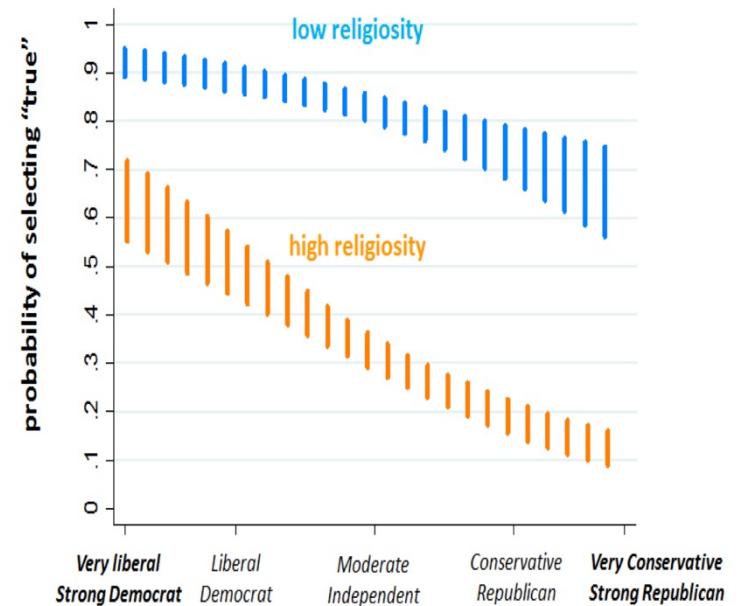
People who are already committed to a denial of science have proved a willing audience for lobbyists and others who seek short-term gain from blocking climate legislation.

"All in all, do you favor or oppose federal funding for embryonic stem cell research?"



Left_right political orientation

"Human beings, as we know them today, developed from earlier species of animals." (True/false)



Left_right political orientation

science vs. religion

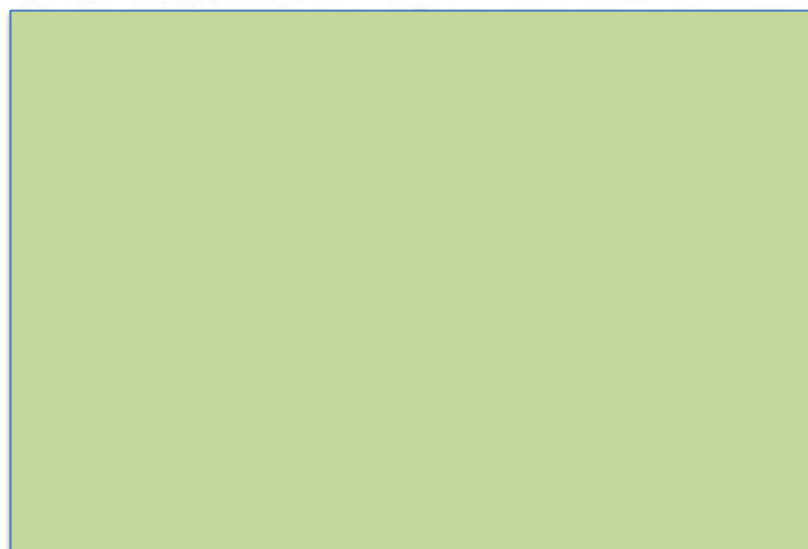
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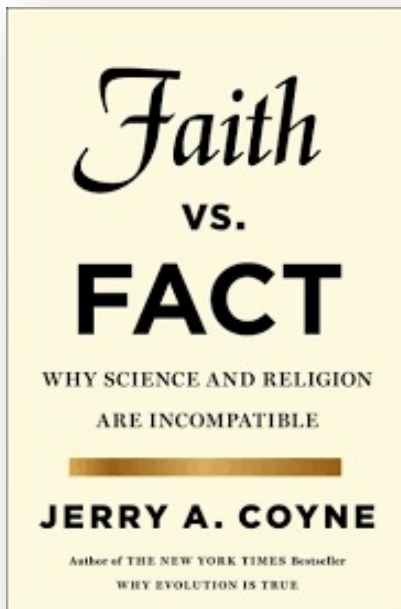


© John Atkinson, Wrong Hands



searches for answers
strict laws and practices
lectures
big heavy books
long coats
blows stuff up
says God is man-made





I DISTRUST THOSE PEOPLE WHO KNOW SO WELL
WHAT GOD WANTS THEM TO DO, BECAUSE I NOTICE IT
ALWAYS COINCIDES WITH THEIR OWN DESIRES.



Some US bishops discourage Catholics from getting Johnson & Johnson vaccine if others are available (3/3/2021)

- ❑ As officials and health experts race to get Americans vaccinated against Covid-19, some Catholic bishops have weighed in to discourage Church members from getting the latest, single-shot vaccine from Johnson & Johnson when alternatives are available.
- ❑ The US Conference of Catholic Bishops, as well as at least 6 other dioceses from across the country have released statements expressing "moral concerns" over the shot due to its use of lab-grown cells that descend from cells taken in the 1980s from the tissue of aborted fetuses.



Riccardo De Luca/Associated Press

“Getting vaccinated is a simple yet profound way to care for one another, especially the most vulnerable.”

— Pope Francis



Explainer

COVID-19 vaccines and aborted fetuses

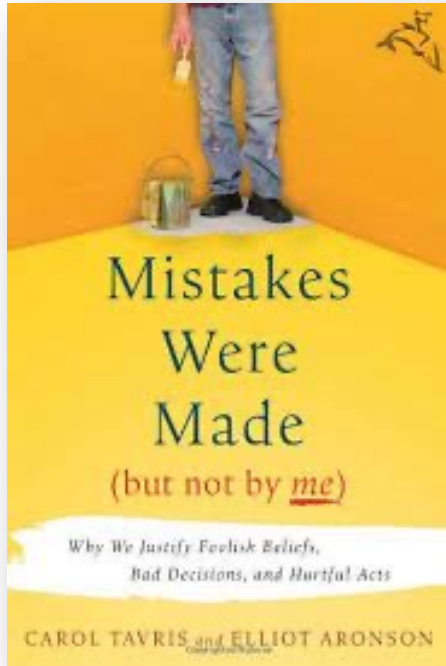
No COVID-19 vaccine contains cells from aborted fetuses.

mRNA vaccines (Pfizer and Moderna) are synthetic vaccines, sequenced on a computer in a lab, and do not use fetal cell lines in their production.

The AstraZeneca/Oxford University vaccine makes use of cell lines replicated from an aborted fetus in 1973, but does not itself contain fetal cells.

Think. Check. Share.

WWW.FACTCHECKNI.ORG



We all self-justify as a way to protect against cognitive dissonance, whether positively or negatively.

Naive realism: the belief that everyone else sees the world as we do.

Our own preference for our culture, nation, religion, etc. has benefits, but we must be careful they are not prejudice, which is impervious to reason, experience and counterexample, as opposed to a stereotype.

Prejudices diminish under less economic competition, when truces are signed, when professions are integrated; basically when we are in a position to realize they aren't that different from us.



The Greenwashing Files

ClientEarth is calling on policymakers to ban all fossil fuel company ads unless they come with tobacco-style health warnings about the risks of global heating to people and the planet.

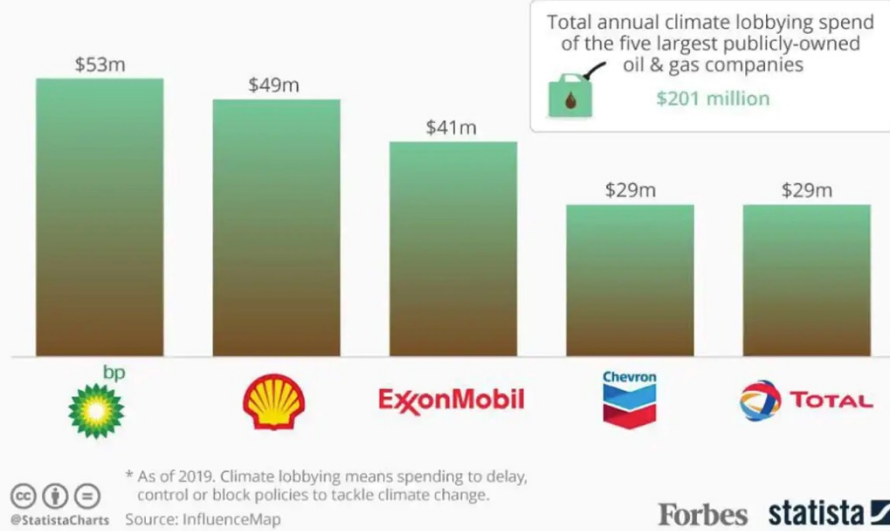
Its lawyers lodged a complaint in 2019 alleging that BP's advertising campaigns had misled the public by focusing on the company's low carbon energy products, when more than 96% of its annual spend was on oil and gas. In February 2020, BP withdrew the ads before the complaint was assessed. ClientEarth said it was now putting other fossil fuel companies on notice over greenwashing adverts.

<https://www.clientearth.org/the-greenwashing-files>

- ❑ Greenwashing is the process of conveying a false impression or providing misleading information about how a company's products are more environmentally sound.
- ❑ Greenwashing isn't new – it's been a practice regularly used by corporations and businesses for decades to make sustainability claims to cover a questionable environmental record.
 - ✓ Chevron has been one of the best.
- ❑ As denying climate change becomes impossible, fossil-fuel interests pivot to 'carbon shaming'
 - ✓ Fossil-fuel interests no longer bother denying that climate change is real.
 - ✓ So they've pivoted to new tactics, including painting climate advocates as hypocrites.
 - ✓ Drawing attention to advocates' non-eco-friendly habits

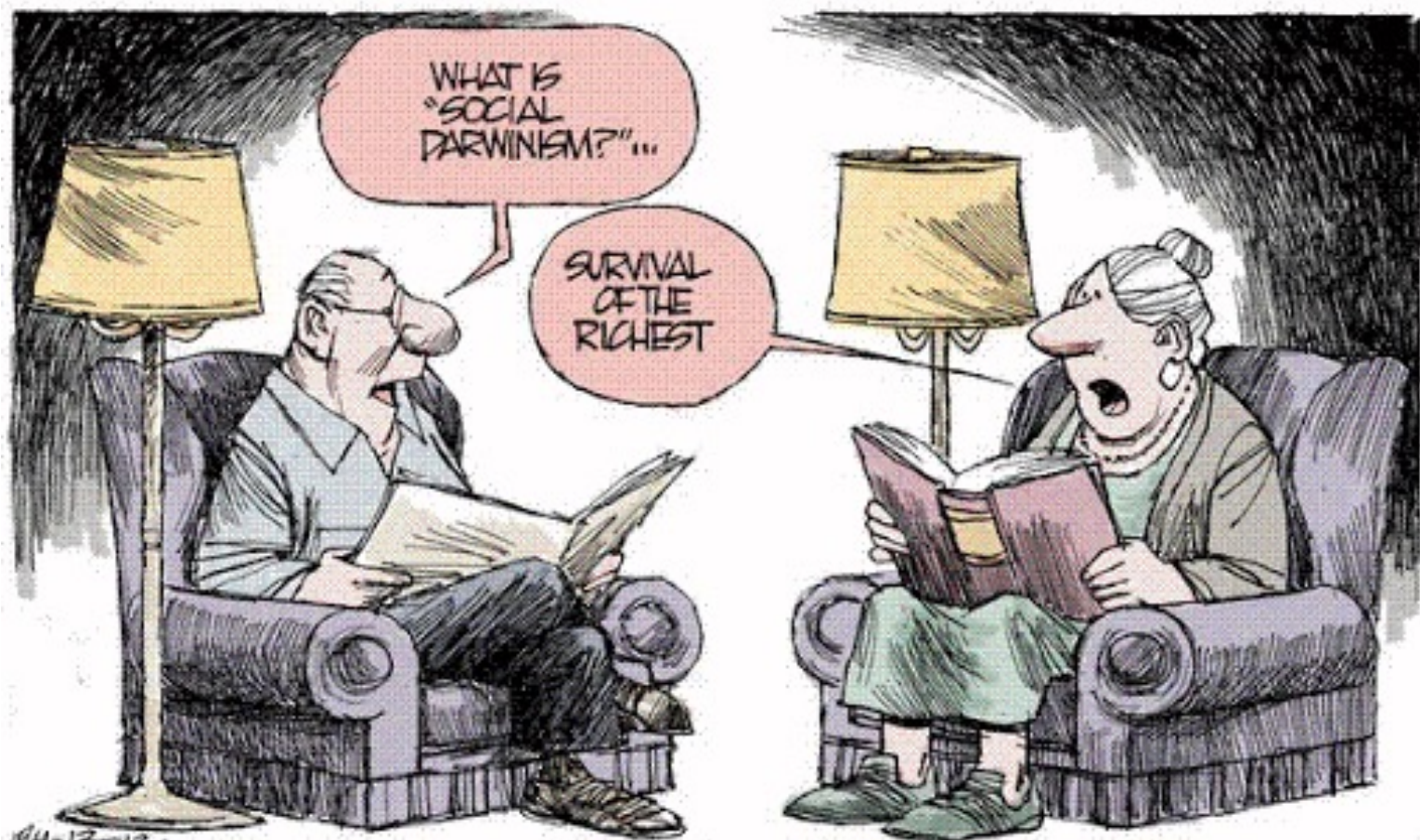
Oil Firms Spend Millions On Climate Lobbying

Annual expenditure on climate lobbying by oil and gas companies*



Anti-climate change lobbying spend by the five largest publicly-owned fossil fuel companies. Statista, CC BY-SA

- ❑ The scale of the oil and gas industry's advertising efforts has historically tracked with politicians' interest in taking action on the climate crisis.
- ❑ Spending shot up around 1997, when countries were considering the Kyoto Protocol, an attempt to set legally binding cuts on greenhouse gas emissions.
- ❑ The peak of oil companies' ad blitz occurred in 2010, when Congress was mulling over a national cap-and-trade program (that ultimately didn't pass).



11-13-12
MORITZ
The Miami Herald

Epoch Times

- ❑ Search for “climate change” on **YouTube** and before long you’ll likely find a video that denies it exists.
- ❑ In fact, when it comes to shaping the online conversation around climate change, a new study suggests that deniers and conspiracy theorists might hold an edge over those believing in science.
- ❑ Researchers found evidence that most YouTube videos relating to climate change oppose the scientific consensus that it’s primarily caused by human activities.
- ❑ The study highlights the key role of **social media** use in the spread of scientific **misinformation**.
- ❑ It suggests scientists and those who support them need to be more active in developing creative and compelling ways to communicate their findings.

Climate Denial Crock of the Week

Facebook and
Big Oil's Two
Faced Ads

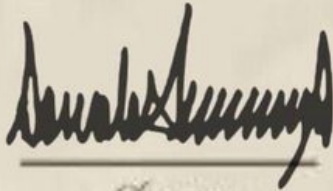
- Fossil-fuel interests no longer bother denying that climate change is real.
- So they've pivoted to new tactics, including painting climate advocates as [hypocrites](#).
- Drawing attention to advocates' non-eco-friendly habits undermines their credibility and distracts from policy changes.
- Big Oil is strategically using Facebook to blitz Americans with a steady stream of messages designed to delay the extinction of fossil fuel use.

You Tube University

THIS CERTIFIES THE BEARER HAS EARNED

Doctorate of Conspiracy Theory in Medical Studies

following completion of 3.25 hours viewing
of COVID19 related conspiracy videos



Signature

prof. Alex Jones

Prof



What We Can Do About It?

Three Main Response Scenarios

Debunk

- Respond to false information where you find it
- Provide science, data, or true information

Inoculate

(Prebunk)

- Equip people with counter-arguments to build resistance to future misinformation
- If people see truth before fiction, they're more likely to believe the truth

Report

- Help hold social platforms accountable
- Help social platforms hold super spreader users accountable

COVID VACCINE AND FERTILITY



- NO IMPACT ON FERTILITY OBSERVED**
- LONG TERM SIDE EFFECTS HIGHLY UNLIKELY**
- PREGNANT WOMEN LIKELY TO TRANSFER ANTIBODIES TO UNBORN CHILD**



NEWS

Roger Stone: Bill Gates may have created coronavirus to microchip people

By Bob Fredericks | April 13, 2020 | 2:49pm



in this shocking interview with Joe Piscopo on 970 AM's "The Answer"

MIS-LEADING

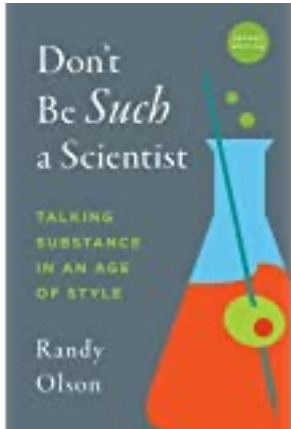
YAHOO! NEWS / YouGov POLL MAY 20-21, 2020

MGE: +7.3 PTS

PEOPLE WHO BELIEVE BILL GATES WANTS TO USE MASS COVID-19 VACCINATION CAMPAIGN TO IMPLANT MICROCHIPS TO TRACK PEOPLE...

REPUBLICANS	44%
DEMOCRATS	19%
INDEPENDENTS	24%

© CBSN



Before you can share your work and its significance, you must build trust and understanding with others. People need to feel that you understand and have compassion for their perspectives. Scientists must be willing to listen and engage in honest conversations before sharing their work.

The Alan Alda Center for Communicating Science programs empower researchers to build an authentic rapport that can help others appreciate the wonder and value of science.

THE BS ASYMMETRY PRINCIPLE

THE AMOUNT OF ENERGY NEEDED TO REFUTE BS IS AN ORDER OF MAGNITUDE BIGGER THAN TO PRODUCE IT



EFFORT



WELL, SPECTROGRAPHIC ANALYSIS AND ORBIT CALCULATIONS SUGGEST NOT. PLUS, WE BUILT A ROCKET, TOOK PEOPLE THERE, AND THEY COULDN'T EAT IT.

EFFORT



AKA BRANDOLINI'S LAW

sketchplanations



**CYBERSECURITY
& INFRASTRUCTURE
SECURITY AGENCY**



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[National Risk Management](#) > [COVID-19 Disinformation Toolkit](#)

National Risk Management

Coronavirus

COVID-19 Disinformation Toolkit

NRMC Initiatives

NRMC Newsroom

COVID-19 DISINFORMATION TOOLKIT

These Toolkit resources are designed to help State, local, tribal and territorial (SLTT) officials bring awareness to misinformation, disinformation, and conspiracy theories appearing online related to COVID-19's origin, scale, government response, prevention and treatment. Each product was designed to be tailored with local government websites and logos.

Download and share these resources—talking points, FAQs, outreach graphics, and posters—to help spread awareness.

- [Countering Disinformation in Social Media](#): Learn about Disinformation Campaigns within social media. What are they? Who's behind them? Find out how you can protect yourself from falling victim to disinformation.
- [COVID-19 Disinformation Toolkit](#)



Cranky Uncle

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Cranky Uncle vs. Climate Change

BOOK AVAILABLE NOW!



CRANKY UNCLE

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DENIALISM** Fighting pseudoscience
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Since its inception in 2010, *Debunking Denialism* has tackled a wide range of topics including creationism, HIV/AIDS denialism, anti-psychiatry, crank claims about physics, vaccine rejectionism, alleged psychics, opposition to genetically modified crops, and climate.



DENIALISM

How Irrational Thinking Hinders
Scientific Progress, Harms
the Planet, and Threatens Our Lives

MICHAEL SPECTER

SkepticalScience.org
EN.UNESCO.ORG
GISAID.ORG
SCIMAGOJR.com

THE DENIAL OF SCIENCE

Analysing climate change scepticism in the UK



Martin Lack

Author of the *Lack of Environment* blog



Around 400 demonstrators participated in a protest over climate change denial by burying their heads in the sand at Sydney's Bondi Beach November 13, 2014, ahead of a G20 summit in Brisbane. Half-truths and the selective use of data are the common currency of political debate over climate change, the author writes.

DAVID GRAY/REUTERS



Drill Baby Drill

October 21, 2021 10:00 AM

- ✓ Water well drilling is the main reason to drill into the earth. Another method, core drilling, is used to collect samples to interpret rock layers at considerable distances under our feet. This class will explain the whys, where, and methods of core drilling.
- ✓ We will also discuss ice core drilling and what it tells us about recent climate history and change.
- ✓ Finally, we look at other methods geologists use to interpret the composition and structure of the interior of the earth from surface to center.

Thinking Is Power

BECAUSE KNOWLEDGE IS NOT ENOUGH!

Learn how to evaluate claims, evidence, and sources
and be empowered to make better decisions.

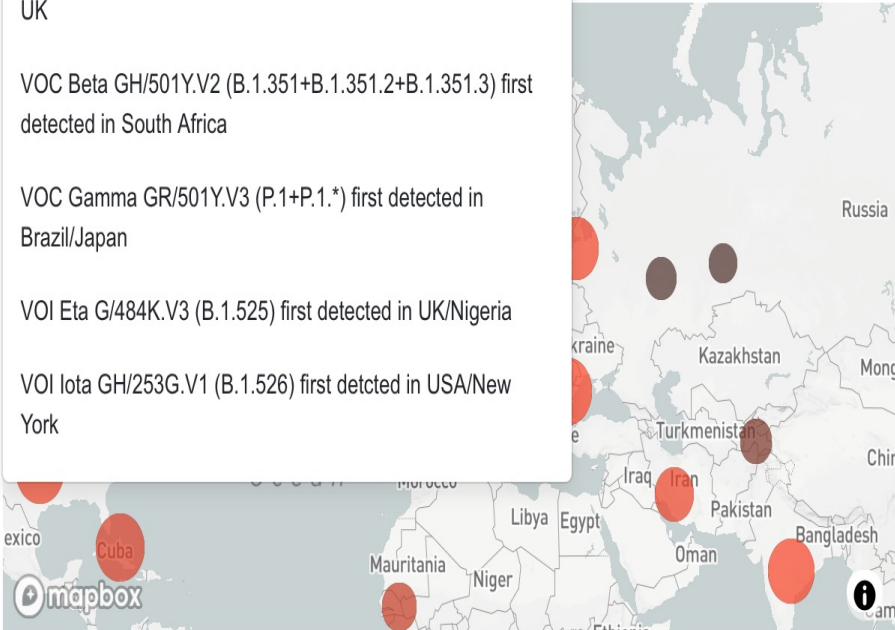
Tracking of Variants

VOC Delta GK (B.1.617.2+AY.*) first detected in India

- VOC Delta GK (B.1.617.2+AY.*) first detected in India
- VOC Alpha 202012/01 GRY (B.1.1.7+Q.*) first detected in the UK
- VOC Beta GH/501Y.V2 (B.1.351+B.1.351.2+B.1.351.3) first detected in South Africa
- VOC Gamma GR/501Y.V3 (P.1+P.1.*) first detected in Brazil/Japan
- VOI Eta G/484K.V3 (B.1.525) first detected in UK/Nigeria
- VOI Iota GH/253G.V1 (B.1.526) first detected in USA/New York

Occurrence

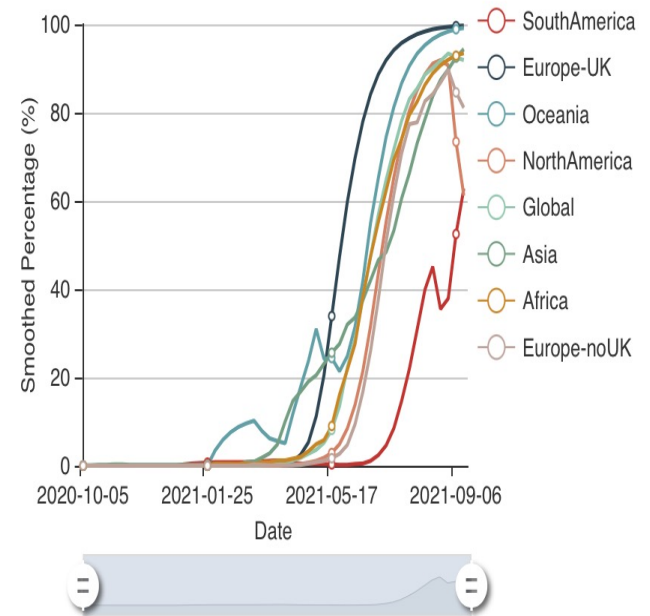
Click on a region for more detail. Color by variant.



Most recent reported occurrences in different countries

Relative Variant Genome Frequency per Region (exponentially smoothed alpha=0.3)

Click Legend to show/hide series



Country Submission Count

- ❑ **Nicki Minaj** sparked a social media storm on Monday night after she tweeted about her cousin's hesitancy to get vaccinated against the coronavirus, setting off a slew of critiques that she was spreading coronavirus misinformation.
- ❑ Minaj **tweeted** that her cousin in Trinidad, where the singer and rapper is from, “won't get the vaccine cuz his friend got it & became impotent. His testicles became swollen.”
- ❑ Medical experts **have said** that claims about infertility linked to vaccinations are unsubstantiated.
- ❑ “There are stories out there on the Internet about how vaccination can lead to infertility. There's absolutely nothing to that,” Francis Collins, director of the National Institutes of Health, **told The Washington Post** earlier this year.