### 1NC – T

#### Reduce means unconditional and permanent

Reynolds 59 – Judge (In the Matter of Doris A. Montesani, Petitioner, v. Arthur Levitt, as Comptroller of the State of New York, et al., Respondents [NO NUMBER IN ORIGINAL] Supreme Court of New York, Appellate Division, Third Department 9 A.D.2d 51; 189 N.Y.S.2d 695; 1959 N.Y. App. Div. LEXIS 7391 August 13, 1959, lexis)

Section 83's counterpart with regard to nondisability pensioners, section 84, prescribes a reduction only if the pensioner should again take a public job. The disability pensioner is penalized if he takes any type of employment. The reason for the difference, of course, is that in one case the only reason pension benefits are available is because the pensioner is considered incapable of gainful employment, while in the other he has fully completed his "tour" and is considered as having earned his reward with almost no strings attached. It would be manifestly unfair to the ordinary retiree to accord the disability retiree the benefits of the System to which they both belong when the latter is otherwise capable of earning a living and had not fulfilled his service obligation. If it were to be held that withholdings under section 83 were payable whenever the pensioner died or stopped his other employment the whole purpose of the provision would be defeated, i.e., the System might just as well have continued payments during the other employment since it must later pay it anyway.  [\*\*\*13]  The section says "reduced", does not say that monthly payments shall be temporarily suspended; it says that the pension itself shall be reduced. The plain dictionary meaning of the word is to diminish, lower or degrade. The word "reduce" seems adequately to indicate permanency.

#### Allowing a subsequent replacement is not a reduction

Robinson 13 – Appellant to Court of Appeals of Texas (Third District in Robinson v. Williams, 2013 TX App. Ct. Briefs)

In fact, prior to this case, in matters involving the less severe action of simply not offering a teacher a new contract for the succeeding school year, the Commissioner embraced the concept that a district cannot even nonrenew a teacher's contract to reduce force when there are open positions for which the teacher is qualified: this based on the premise that merely replacing a teacher with a different person does not result in a reduction of personnel. Maintaining the current level of personnel does not and cannot, mathematically, constitute a reduction. Prior to this case, [\*15] the Commissioner has consistently held that, although a legitimate reduction in force is a valid reason for nonrenewal, it must be a "reason," not merely an excuse: [Reduction in force] certainly constitutes a valid reason if, as on the date on which notice in this case was given Plaintiff, a teacher's assigned position is eliminated and there are no other positions in the district which the teacher is qualified to fill. It does not constitute a reason if, as on the date of hearing in the present case, there is another position for which the teacher is qualified, unless the district has a reason, supported by substantial evidence, for not reassigning the teacher to that position. \* \* \* \* This decision holds only that the validity of the date reasons for a nonrenewal must be evaluated as of the date of the hearing and on the basis of the evidence presented therein. Since the vacancy situation had changed between the date of the notice and that of the hearing, the board should have discontinued the non-renewal process at that time due to the absence of any necessity for a non-renewal based upon a reduction in force. Strauch v. Aquilla ISD, No. 189-R1a-782 [\*16] (Comm'r Education. 1983). This principle makes sense. It requires a reduction in force to be just that: a reduction in the number of employees. It acknowledges that replacing one employee with someone from outside the district does not achieve the goal of reducing the number of employees. This rule against swapping an employee for a non-employee and calling it a reduction of personnel is even more compelling in the present case, which involves the proposed termination of an existing contract, than in Strauch, a nonrenewal case. Ms. Robinson, by virtue of her existing contract, had a vested property right to employment through the 2011-12 school year. As the Commissioner stated cogently and logically: "Since the vacancy situation had changed between the date of the notice and that of the hearing, the board should have discontinued the non-renewal process at that time due to the absence of any necessity for [terminating Ms. Robinson's contract] based upon a reduction in force." In Wasserman v. Nederland ISD, No. 171-R1-784 (Comm'r Education. 1984), the Commissioner reiterated this principle: Reduction in force does not constitute a valid reason for nonrenewal, [\*17] if on the date of nonrenewal, there is another position for which the teacher is qualified, unless the district has a valid reason, supported by substantial evidence at the local hearing for not reassigning the teacher. (Emphasis added.) In the present case, the facts clearly and conclusively established that, on August 1, 2011, the date of the termination, there were other positions open within the district for which Ms. Robinson was qualified, and that this had been the case every day since positions were opened to external candidates on July 1. The district offered no valid reason for failing to assign Ms. Robinson to an open position. The action to terminate Ms. Robinson's employment on August 1 did not, therefore, constitute a valid reduction in force. The reduction in the number of secondary English teachers that was required by the financial exigency had been accomplished by attrition. Terminating her employment at this time did nothing to accomplish the goal of reducing staff. The district had to turn around and hire someone else anyway, resulting in a net reduction of zero. If the financial exigency did not require the district to fire Ms. Robinson, [\*18] why, then, did it do so? No other reason was given. In fact, the district specifically stated that there was no other reason. As noted by the Commissioner in Strauch: What was "required" by the change in programs was an alteration in "assignments." An alteration in "staffing" was not "required" as long as there was a reasonable alternative to discontinuing the employment of one or more of the district's staff members. In the present case there was such an alternative; i.e., reassigning Plaintiff to another position for which she was qualified. It is clear that, prior to this case, the Commissioner construed the word "required" as meaning "no reasonable alternative." In the present case, whether the board liked it or not, whether its administration liked it or not, there was a reasonable alternative: i.e., assigning Ms. Robinson to another position for which she was certified. The Commissioner's analysis was spot-on in his cases prior to the one currently before this court. There is no logical reason for suddenly reversing course and adopting a nonsensical principle just for this case. The question, then, should not be whether the financial exigency "required" Ms. [\*19] Robinson's termination. It didn't. The correct questions are: (a) was the boardallowed to consider the facts that, if considered, conclusively established that her termination was not a matter of necessity, bit a matter of convenience? And, (b) if so, was the board required to acknowledge those facts? 2. Was the board justified in ignoring information within its own records when it acted to terminate Ms. Robinson's employment? A. was the board allowed to consider its own records in addition to the transcript of the preliminary hearing? The first rule of any decision maker is: Get the facts right. As this court understands, no decision is any better than the facts on which it is based. This court, as any court, takes great pains to ensure that its decisions are based on correctly stated facts. Normally, these are in the form of Findings of Fact made by the fact finder and any matter of which judicial notice is properly taken. Although every court is unfazed by a challenge to its decision on legal grounds, no court wants to be chastised on appeal as having based its decision on faulty facts. A difference of opinion as to the law comes with the territory. [\*20] A misstatement of the facts on which a legal conclusion is based is not only embarrassing, but difficult, if not impossible, to justify. In the present case, the board based its decision on bad facts-as in incomplete facts. Or, more specifically, incomplete facts that it knew were incomplete: the board chose to make a decision that was not fully informed when it knew that considering all of the relevant and material facts would have required (there's that word again) a different result. Why would the board be allowed to stick its head in the sand and ignore relevant and material facts, to pretend that reality is not reality? The Commissioner excuses the board's action by claiming that the board "lack[ed] authority to take evidence" because this was a termination proceeding. (See page 7 of his Decision.) He defends this stance on § 21.258 of the Education Code, which reads as follows: The board of trustees or board subcommittee may reject or change a finding of fact made by a hearing examiner only after reviewing the record of the proceedings before the hearing examiner and only if the finding of fact is not supported by substantial evidence. Id. (Emphasis [\*21] the Commissioner's.) He adds that "the hearing to receive an independent hearing examiner's recommendation is not a preliminary hearing." Id. The most serious flaws in the Commissioner's rationale include the following: a. Official notice The board of trustees was not asked to hold a preliminary hearing. The board was asked only to acknowledge information from its own website: i.e., that the district was hiring English teachers at the same time that it was firing an English teacher (Ms. Robinson) to "reduce" personnel. This was not a matter about which the board needed to receive evidence. It was what the district was doing, the district was aware of what it was doing, and no one in the district claimed otherwise. This was not a matter of credibility, it was not something that might or might not be true that required the presentation of evidence, pro and con, in order to make a fact finding. It was a fact, and the board knew to a certainty that it was a fact. In other words, it was information of which "official notice," may ordinarily be taken by an administrative body. Under the Administrative Procedure Act, an administrative agency may take official notice of: (1) [\*22] All facts that are judicially cognizable; and (2) Generally recognized facts within the area of the body's specialized knowledge. Government Code § 2001.090(a)(1) and (2). This court has recognized, pursuant to this very language, that an administrative agency may take official notice of information within its own records: The [Savings and Loan] Commissioner took official notice of the names of all associations holding charters from the State and determined that there were no chartered savings and loan associations having the name "Southwestern Savings and Loan." This was done in accordance with the provisions of Article 6252-13a, Sec. 14(q), V.A.T.S. [now Gov't Code § 2001.090]: ". . . official notice may be taken of all facts judicially cognizable. In addition, notice may be taken of generally recognized facts within the area of the agency's specialized knowledge." Chartering of savings and loan associations is peculiarly within the province of the Commissioner. The Commissioner's official records reflect every such institution doing business in the State. That the records revealed there were no chartered savings and loan associations in Texas having [\*23] the name "Southwestern Savings and Loan" was a fact "generally recognized" to be " . . . within the area of the agency's specialized knowledge," and was officially cognizable by the Commissioner. United Sav. Ass'n of Texas v. Vandygriff, 594 S.W.2d 163, 166-67 (Tex. Civ. App.-Austin 1980, writ ref'd n.r.e.). (Emphasis added.) Although a school district is not technically subject to the APA, there is no logical basis for concluding that, as an administrative body, it is prohibited from taking official notice of facts within its own purview. The United States Supreme Court has reasoned as follows with regard to a local authority that does not rise to the level of being an "administrative agency": The city council members, familiar with commercial downtown Erie, are the individuals who would likely have had firsthand knowledge of what took place at and around nude dancing establishments in Erie, and can make particularized, expert judgments about the resulting harmful secondary effects. Analogizing to the administrative agency context, it is well established that, as long as a party has an opportunity to respond, an administrative agency may take official [\*24] notice of such "legislative facts" within its special knowledge, and is not confined to the evidence in the record in reaching its expert judgment. City of Erie v. Pap's A.M., 529 U.S. 277, 297-98, 120 S. Ct. 1382, 1395, 146 L. Ed. 2d 265 (2000). In other words, a local authority can properly take official notice of what is generally known to be going on in its jurisdiction, let alone what it is on its own website. See also, McLeod v. I.N.S., 802 F.2d 89, 93 (3d Cir. 1986): Official notice, rather than judicial notice, is the proper method by which agency decision makers may apply knowledge not included in the record. The Administrative Procedure Act allows a decision maker to take "official notice" of material not appearing in the evidence in the record. 5 U.S.C. § 556(c). Official notice is a broader concept than judicial notice. See 4 Stein, Administrative Law § 25.01 (1986). Both doctrines allow adjudicators to take notice of commonly acknowledged facts, but official notice also allows an administrative agency to take notice of technical or scientific facts that are within the agency's area of [\*25] expertise. See NLRB v. Seven-Up Bottling Co., 344 U.S. 344, 73 S.Ct. 287, 97 L.Ed. 377 (1953). Also: It is true that ordinarily an administrative agency will act appropriately, in a proceeding of this sort, upon the record presented and such matters as properly may receive its attention through 'official notice.'[16] It is also true that this Court, in appropriate instances, has limited the use of the latter implement in order to assure that the parties will not be deprived of a fair hearing. See United States v. Abilene & S.R. Co., 265 U.S. 274, 286-290, 44 S.Ct. 565, 568-570, 68 L.Ed. 1016;Interstate Commerce Commission v. Louisville & Nashville R. Co., 227 U.S. 88, 93, 94, 33 S.Ct. 185, 187, 188, 57 L.Ed. 431. But in doing so it has not undertaken to make a fetish of sticking squarely within the four corners of the specific record in administrative proceedings or of pinning down such agencies, with reference to fact determinations, even more rigidly than the courts in strictly judicial proceedings. On the contrary, in the one case as in the other, the mere fact that the determining body has looked beyond the record [\*26] proper does not invalidate its action unless substantial prejudice is shown to result. United States v. Pierce Auto Freight Lines, 327 U.S. 515, 529-30, 66 S. Ct. 687, 695, 90 L. Ed. 821 (1946). In the present case, the Commissioner's declaration that the board is not authorized to take official notice of its own website is contrary to the very purpose of official notice, which is that commonly acknowledged facts, or facts within the decision maker's own knowledge may be considered to maximize the likelihood of a reasoned, fully informed decision based on merit, not on procedure. The Commissioner's prohibition against the School board looking beyond the record proper and acknowledging facts within its own sphere of knowledge that no one disputes maximizes the likelihood of an unreasonable result. Indeed, although the legislature did not specifically mention official notice in the termination statute, it would be strange, indeed, for the state's lawmakers to declare that facts within an administrative body's knowledge are off limits for that body's consideration at any time during a contested case. As set forth in the Code Construction Act: In enacting [\*27] a statute, it is presumed that . . . a just and reasonable result is intended; Tex. Gov't Code Ann. § 311.021. b. Facts not in existence at preliminary hearing In fairness to the Commissioner, his decision would have some merit in certain cases. For example, if the information offered at the board hearing could have been introduced at the preliminary hearing before the hearing examiner, it might well be appropriate for the board to restrict its consideration to evidence in the transcript of that hearing. In the present case, this was not possible. The preliminary hearing was on June 20-21, 2011. The positions that could have and should have been offered to Ms. Robinson were opened to outsiders after June 30. Further, if the information offered for official notice at the board hearing were simply cumulative of the evidence already submitted at the preliminary hearing, it might be reasonable to decline that information. Again, that is not the case. The information at issue was not only completely different from what was addressed previously, it was relevant and dispositive. c. Board not a slave to process The board is under no compulsion to make any decision at [\*28] all or any findings of fact. It can always stop the process when it becomes aware of current information that negates the need to proceed to terminate a teacher in an effort to reduce force-such as when it is actually increasing force. There is no provision anywhere in the Education Code that requires a school board to continue with termination proceedings once those proceedings have no further purpose in the real world. That is, unless the Commissioner wants to adopt the proposition that the proceedings must continue even if the teacher submits his or her resignation, and the board is aware of that fact. Once the board knows that the reason for a reduction in force no longer exists, it is the essence of arbitrariness and capriciousness to fire a teacher and then replace that teacher with someone else, because that does not constitute a reduction by anyone's definition. However, just to cite some authority as to what constitutes a "reduction," here is a generally accepted definition of the word: "the act or process of reducing." Merriam-webster.com/dictionary. In case this definition is considered circular, "reduce" is defined as follows: "to diminish in size, amount, extent, [\*29] or number." Id. Firing one of 1,000 teachers and replacing that individual with a different teacher does not diminish the number of teachers to 999. It maintains the number of teachers at 1,000.

#### Violation: A TRIPS waiver would be voluntary

West’s Encyclopedia [waiver. (n.d.) West's Encyclopedia of American Law, edition 2. (2008). Retrieved August 28 2021 from <https://legal-dictionary.thefreedictionary.com/waiver> //gord0]

Waiver The voluntary surrender of a known right; conduct supporting an inference that a particular right has been relinquished. The term waiver is used in many legal contexts. A waiver is essentially a unilateral act of one person that results in the surrender of a legal right. The legal right may be constitutional, statutory, or contractual, but the key issue for a court reviewing a claim of waiver is whether the person voluntarily gave up the right. If voluntarily surrendered, it is considered an express waiver.

#### Vote neg for limits and ground – they can defend affs that are extremely time-limited, which moots core neg ground predicated on the structure of IPR and long term impacts. Allows the aff to no link out of every Disad, and means we have to resort to stale generics

### 1NC - CP

#### The USFG should:

#### Supply multinational pharmaceutical corporations with generous financial inducements to build vaccine production capacity throughout the world

#### Create a network of producers to vaccinate individuals abroad

#### Pass legislation that limits shareholder suits

#### Strip existing patents from companies that do not comply with capacity-building strategies through tech transfer

Kay et. al. 5/13 [Tamara Kay is a sociologist studying trade, global health and globalization at the Keough School of Global Affairs, University of Notre Dame. Adnan Naseemullah is an international relations scholar at King's College London. Susan Ostermann is a political scientist at the Keough School of Global Affairs, Notre Dame and a former attorney at O'Melveny & Myers LLP, specializing in intellectual property law.) “Waiving patents isn't enough — we need technology transfer to defeat COVID” The Hil, Opinion Contributors: Healthcare, 5/13/21, 2:01 PM EDT, <https://thehill.com/opinion/healthcare/553368-waiving-patents-isnt-enough-we-need-technology-transfer-to-defeat-covid?rl=1>] RM

Fortunately, the U.S. government is well-placed to change the incentive structure of the global pharmaceutical industry. First, **it can supply multinationals with generous financial inducements to build capacity for vaccine production throughout the world, creating a network of producers that can vaccinate hundreds of millions, with positive spillover effects moving forward**. This is particularly compelling as it becomes increasingly likely that COVID-19 booster shots and even annual vaccines will be necessary. Such an effort would need to be paired with legislation that limits shareholder suits, because few corporate managers will want to be responsible for moves that, while clearly in the public interest, undermine shareholder value.

And, if necessary, the U.S. government can also use pressure. Companies that won't comply with capacity-building strategies through technology transfer can be stripped of existing patents for lucrative drugs. This is a move that international relations scholars call "issue-linkage." The state provides intellectual property protection as an incentive. It can be taken away in the same way that property owners refusing to pay taxes can lose their property.

Capacity-building for pharmaceutical production in the developing world is crucial given the pandemic and the need for global vaccination, now and in response to future threats. India's path to becoming a world-leading and cost-effective pharmaceutical manufacturer came initially from challenging the global intellectual property regime. In the 1970s, Indira Gandhi's populist government introduced a Patent Act which allowed companies to design alternative processes for popular products, spurring huge investments in production and innovation. Multinational pharma opposed this action, even though the same companies rely on the Indian pharmaceutical industry for production under license now. The reason why many medicines taken in the West are made by Indian firms is because of capacity-building. The fact that few countries have followed India as a global producer of pharmaceuticals is the result of politics just as much as economics — there is no reason why other countries cannot follow in India’s footsteps with the right support.

Reconceiving the structures of production through technology transfer will be difficult, both logistically and politically. But, resolving the COVID-19 crisis requires a much greater supply of vaccines and other medicines, and production in and for wealthy countries is not enough to manage COVID-19, nor is it morally justifiable. To democratize vaccine manufacturing and to ensure that progress made in the developed world is not undercut by new variants, we need to rethink how we might build capacity beyond the West. Why do we allow technology to remain as the exclusive domain of a handful of oligopolistic firms, despite public funding and windfall profits, when coronavirus is a global threat?

#### Tech transfer is a huge alt cause—they don’t have reverse causal evidence that the plan will force or even incentivize companies to release IP

Kay et. al. 5/13 [Tamara Kay is a sociologist studying trade, global health and globalization at the Keough School of Global Affairs, University of Notre Dame. Adnan Naseemullah is an international relations scholar at King's College London. Susan Ostermann is a political scientist at the Keough School of Global Affairs, Notre Dame and a former attorney at O'Melveny & Myers LLP, specializing in intellectual property law.) “Waiving patents isn't enough — we need technology transfer to defeat COVID” The Hil, Opinion Contributors: Healthcare, 5/13/21, 2:01 PM EDT, <https://thehill.com/opinion/healthcare/553368-waiving-patents-isnt-enough-we-need-technology-transfer-to-defeat-covid?rl=1>] RM

On May 5, U.S. Trade Representative Katherine Tai announced that the Biden administration would support a waiver of intellectual property (IP) restrictions for coronavirus vaccines to enable low-income countries to vaccinate their populations. While such a waiver is necessary to stem the global COVID-19 pandemic, it is not sufficient. What is missing from discussions of intellectual property is that **few of the countries with the potential to produce sophisticated pharmaceutical products currently have the technological capacity to manufacture mRNA and adenovirus vaccines to global standards.** This is because of the highly concentrated nature of the global pharmaceutical industry, which has impeded the transfer of production technology beyond a handful of countries.

Even after U.S. support of the IP waiver, significant obstacles to increased vaccine production and distribution remain. Primary among them is continuing resistance by profit-concerned pharmaceutical companies to sharing their technological expertise more broadly with capable partners, and the governments in high-income countries that support these strategies.

Corporations argue that, particularly for the mRNA vaccines, **wider distribution and production are prohibitively difficult due to the complex and relatively new technology involved.**

There is some truth in this. The genetic sequence of the virus is already publicly available. The safe transfer of this sequence to human bodies, via mRNA or an inactivated adenovirus, by contrast, is a complicated and sophisticated operation. Pharmaceutical companies argue this process needs to be kept in capable hands. They argue that they are the only ones with this capacity, and have received and continue to receive tremendous public funding as a result. None are offering up their expertise and, in particular, technology that they deem trade secrets, for wider public use, which would dramatically widen production and distribution capability beyond wealthy countries.

However, in light of the significant public funding already invested, the windfall profits already achieved and the significant public interest at stake, we can and should do more than support an intellectual property waiver to enable capacity building for pharmaceutical manufacturing and distribution in low-income countries. Vaccine producers are essentially realizing their profits as government contractors, and it is in the interest of the U.S. government for the pandemic to end globally, not just in the U.S. This will occur only if low-income countries can make and distribute vaccines.

We already see some examples of production beyond the West. The Serum Institute of India already produces a large proportion of the AstraZeneca vaccine bound for Europe. There is no reason why it and other Indian manufacturers, and those in other countries with emerging scientific and technological capacity, could not produce much more for the developing world over the next year. This was envisioned by the WHO’s C-TAP program. But Pfizer and Moderna, with the backing of the Trump administration, opposed this program.

Yet given the global threat — a threat which will not truly diminish locally until it diminishes globally — we should create incentives for them to lend their expertise and support to manufacturing partners of their own choosing in low-income countries to radically expand production capacity.

### 1NC – DA

#### Biotech is the new frontier; America is ahead but China is dangerously close

Gupta 6/11 [Gaurav Gupta, Biotech Investor, Founder of Ascendant BioCapital, a life science investment firm based in New York. Previously, Gaurav worked at OrbiMed Advisors, and served as a resident in neurological surgery at Columbia University Medical Center. He has co-authored over a dozen articles in peer-reviewed journals, filed a patent on a device for use in spine surgery, and edited a book on the technical and ethical implications of using tissue engineered products in the operating room. Dr. Gupta obtained his M.D. from the Stanford University School of Medicine, where he was a Paul and Daisy Soros Fellow, and B.S. and M.S.E. in biomedical engineering from Johns Hopkins University, where he was a Charles R. Westgate Scholar.) “As Washington Ties Pharma’s Hands, China Is Leaping Ahead” Barron’s Magazine: Commentary, China., 6/11/2021] RM

There should be no doubt that we are living at the dawn of a golden age of biomedical innovation. The American scientific engine that produced Covid-19 vaccines in record time was fueled by a convergence of advances in genomics, biomarkers, data science, and manufacturing years in the making. The first Food and Drug Administration approvals of a host of new product formats—oligonucleotide, bispecific, oncolytic virus, CAR-T, and lentivirus/AAV—all took place within the last decade. These represent an unprecedented expansion of the armamentarium that physicians have at their disposal to treat and cure disease. In the last few years, [47% of all new medicines](https://www.efpia.eu/media/554521/efpia_pharmafigures_2020_web.pdf) were invented by U.S. biopharma companies, with [homegrown startups](https://www.cbo.gov/publication/57126) driving the majority of innovation. The bulk of the remainder were developed by foreign companies specifically for the U.S. market.

An indirect benefit of these trends is that most novel therapeutics undergo clinical development and early commercial launch here in the U.S. The rest of the world understands that the American patient has earlier and broader access to groundbreaking therapies via these mechanisms. Indeed, the past decade is filled with examples of medical “firsts” for American patients: the first cure for Hepatitis C, the first gene therapy for blindness, the first immunotherapy for cancer. Future rewards will be greater still if we preserve our current system of incentivizing and protecting innovation.

The remarkable innovation capacity of our biopharmaceutical industry ought to be a source of national pride. Yet while “Made in America” is the global standard for medicines in development today, misguided policy risks ceding our scientific prowess to other countries in the future. This is particularly true in the case of China, where biotechnology has become a strategic pillar for the health of its people and economy.

From 2016 to 2020, the market capitalization of all Chinese biopharma companies increased exponentially from [$1 billion to over $200 billion](https://www.bloomberg.com/news/articles/2021-03-01/xi-mobilizes-china-for-tech-revolution-to-cut-dependence-on-west). China saw over [$28 billion](https://www.bioworld.com/articles/506978-china-sees-five-year-highs-in-life-sciences-investments-and-partnering) invested in its life sciences sector in 2020, double the previous year’s amount. Returns on China’s investment are already arriving. The FDA approved a drug developed in China for the first time ever in 2019. While China’s innovation capacity currently remains behind America’s, my experiences as a biopharma professional make it clear they are doing everything they can to catch up and catch up fast.

In fact, when I speak to Chinese biotechnology executives, they boast that they can run clinical trials faster than their U.S. counterparts. The danger of misguided policies that disincentivize pharmaceutical innovation in the U.S. is effectively driving that same innovation to China. If we close off the market in the U.S. at the same time that China is opening its market to innovative new products, then we will see companies choose to first launch impactful novel medicines in China, based on clinical trials conducted in China. Because the FDA rarely accepts data generated entirely outside the U.S., this relocation of research capacity will negatively affect Americans’ access to cutting-edge therapies.

The biotechnology field is advancing rapidly. Promising technologies such as targeted protein degradation and gene editing are perhaps not far from being developed into impactful medicines, and the U.S. risks these technologies being mastered by Chinese companies.

It is widely held that allowing China to gain an asymmetric edge in critical technologies such as AI or quantum computing could destabilize the geopolitical balance of power. The same is true of biotechnology. Chinese scientists were the first to edit the genomes of human embryos, in [contravention](https://www.sciencemag.org/news/2019/12/chinese-scientist-who-produced-genetically-altered-babies-sentenced-3-years-jail) of international standards, and the U.S. national security community believes China is [pushing ahead](https://www.nbcnews.com/politics/national-security/china-has-done-human-testing-create-biologically-enhanced-super-soldiers-n1249914) with experimental concepts for biological and cognitive enhancement of soldiers and civilians. American policy should be focused on protecting, rather than undermining, the global dominance of our biotechnology industry.

#### The plan recapitulates IP to China, destroying competitive advantages

WSJ 5/6 [Wall Street Journal Editorial Board, WSJ Opinion Philosophy: “We speak for free markets and free people, the principles, if you will, marked in the watershed year of 1776 by Thomas Jefferson's Declaration of Independence and Adam Smith's “Wealth of Nations.” So over the past century and into the next, the Journal stands for free trade and sound money; against confiscatory taxation and the ukases of kings and other collectivists; and for individual autonomy against dictators, bullies and even the tempers of momentary majorities.” Edited by Paul A. Gigot and Daniel Henninger, “Biden’s Vaccine IP Debacle: His patent heist is a blow to the Covid fight and U.S. biotech.” The WSJ Opinion: Review and Outlook, May 6, 2021] RM

We’ve already criticized President Biden’s bewildering decision Wednesday to endorse a patent waiver for Covid vaccines and therapies. But upon more reflection this may be the single worst presidential economic decision since Nixon’s wage-and-price controls.

In one fell swoop he has destroyed tens of billions of dollars in U.S. intellectual property, set a destructive precedent that will reduce pharmaceutical investment, and surrendered America’s advantage in biotech, a key growth industry of the future. Handed an American triumph of innovation and a great soft-power opportunity, Mr. Biden throws it all away.

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India and South Africa have been pushing to suspend patents at the World Trade Organization for months. They claim that waiving IP protections for Covid vaccines and therapies is necessary to expand global access, but their motivation is patently self-interested.

Both are large producers of generic drugs, though they have less expertise and capacity to make complex biologics like mRNA vaccines. They want to force Western pharmaceutical companies to hand over IP free of charge so they can produce and export vaccines and therapies for profit. Their strategy has been to shame Western leaders into surrendering with the help of Democrats in the U.S.

But suspending IP isn’t necessary to expand supply and will impede safe vaccine production. The global vaccine supply is already increasing rapidly thanks to licensing agreements the vaccine makers have made with manufacturers around the world.

Pfizer and BioNTech this week said they aimed to deliver three billion doses this year, up from last summer’s 1.2 billion estimate. Moderna increased its supply forecast for this year to between 800 million and a billion from 600 million. AstraZeneca says it has built a supply network with 25 manufacturing organizations in 15 countries to produce three billion doses this year.

AstraZeneca and Novavax have leaned heavily on manufacturers in India to produce billions of doses reserved for lower-income countries. But India has restricted vaccine exports to supply its own population. IP simply isn’t restraining vaccine production.

Busting patents also won’t speed up production, since it would take months for these countries to set up new facilities. Competition will increase for scarce ingredients, and less efficient manufacturers with little expertise would make it harder for licensed partners to produce vaccines.

There’s also the problem of safety. Johnson & Johnson has experienced quality problems at an Emergent plant making its vaccines, and that’s in Baltimore. Imagine the potential problems with unlicensed producers in, say, Malaysia or Brazil. If vaccines made there have complications, confidence in licensed vaccines could plummet too. And who would Pfizer and Moderna sue to get their reputations back?

The economic self-damage is also hard to fathom. The U.S. currently has a competitive advantage in biotech and biologics manufacturing, which could be a growing export industry. Waiving IP protections for Covid vaccines and medicines will give away America’s crown pharmaceutical jewels and make the U.S. and world more reliant on India and China for pharmaceuticals.

Moderna has been working on mRNA vaccines for a decade. Covid represents its first success. Ditto for Novavax, which has been at it for three decades. Small biotech companies in the U.S. have been studying how to create vaccines using nasal sprays, pills and patches.

Thanks to Mr. Biden, all this could become the property of foreign governments. Licensing agreements allow developers to share their IP while maintaining quality control. Breaking patents and forcing tech transfers will enable China and low-income countries to manufacture U.S. biotech products on their own.

China’s current crop of vaccines are far less effective than those in the West, but soon Beijing might be able to purvey Pfizer knock-offs. The U.S. has spent years deploring China’s theft of American IP, and now the Biden Administration may voluntarily let China could reap profits from decades of American innovation.

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Instead of handing over American IP to the world, Mr. Biden could negotiate bilateral vaccine agreements and export excess U.S. supply. If Mr. Biden wants to increase global supply safely, the U.S. could spend more to help the companies produce more for export. Then the jobs would go to Americans. We thought this was the point of the production deal Mr. Biden negotiated between J&J and Merck.

Alas, this President seems to be paying more attention these days to Elizabeth Warren, Bernie Sanders, Alexandria Ocasio-Cortez and Nancy Pelosi. They think vaccines and new drugs can be conjured by government as a public good with no incentive for risk-taking or profit. This really is destructive socialism.

Mr. Biden ought to listen to Angela Merkel. Pfizer’s partner BioNTech is a German firm, and the German Chancellor said Thursday that she opposes the WTO heist: “The protection of intellectual property is a source of innovation and it must remain so in the future.”

At least IP is safe in Germany. Mr. Biden has sent a signal around the world that nobody’s intellectual property is safe in America.

#### China will leapfrog the US through biotech primacy

Cumbers 20 [John Cumbers, “I am the founder and CEO of SynBioBeta, the leading community of innovators, investors, engineers, and thinkers who share a passion for using synthetic biology to build a better, more sustainable universe. I publish the weekly SynBioBeta Digest, host the SynBioBeta Podcast, and wrote “What’s Your Biostrategy?”, the first book to anticipate how synthetic biology is going to disrupt virtually every industry in the world. I also founded BetaSpace, a space settlement innovation network and community of visionaries, technologists, and investors accelerating the industries needed to sustain human life here and off-planet. I’ve been involved with multiple startups, I am an operating partner and investor at the hard tech investment fund Data Collective, and I'm a former bioengineer at NASA. I earned my PhD in Molecular Biology, Cell Biology, and Biochemistry from Brown University and am originally from the UK.”) “China’s Plan To Beat The U.S. In The Trillion-Dollar Global Bioeconomy” Forbes, 2/3/2020] RM

The report, entitled “Safeguarding the Bioeconomy,” looks at how research and innovation in the life sciences is driving rapid growth in agriculture, biomedical science, information science and computing, energy, and other sectors of the U.S. economy. This economic activity—collectively referred to as the bioeconomy—presents many opportunities to create jobs, improve the quality of life, and continue to drive the U.S. economy as a whole.

The report says that while the U.S. has been a leader in advancements in the biological sciences, other countries are actively investing in and expanding their capabilities in this area—and the U.S.’s lead is beginning to slip.

Four reasons everyone should care about the U.S. bioeconomy

It might be easy for some to dismiss the report out of hand as a bunch of alarmist professors lobbying for more research money. But when you consider all the ways that biotechnology powers the economy and impacts our daily lives, it becomes clear that this is about something more:

The economy: at $1 trillion in value, the U.S. bioeconomy represents hundreds of thousands of quality, high-paying jobs for Americans.

Health & medicine: innovators in the bioeconomy are making next-generation therapies for cancer and diabetes, tackling emerging diseases like Coronavirus, and even increasing human longevity.

Food & farming: biotechnology is not only making agriculture more sustainable, it’s also bringing to market new and improved crops that are more nutritious, more affordable, and more delicious.

The environment: humanity’s health and well-being depend on our ability to stop and reverse climate change, and we can’t do it without biological solutions that treat carbon not as a waste product, but as the starting point for chemicals and materials that today use petroleum.

Considering all this, it doesn’t seem like an overstatement when the report authors say that U.S. competitiveness in the bioeconomy is key to maintaining the economic health and security of the country.

The very real risks to the U.S. bioeconomy

There are many things that can go wrong, causing the U.S. to lose its current edge in the global bioeconomy. Some of these are economic risks, and others present serious national security risks. All of them are related to a failure of our government to act now. Here’s a sampling of the risks to U.S. leadership at the frontiers of tech and bio:

Insufficient government R&D investment. Money for basic research and development builds the foundations of the bioeconomy. We learn, achieve new results, and create new applications. Investments that help develop enabling tools, technologies, and standards have the potential to maintain the U.S. bioeconomy competitive in a global bioeconomy.

Ineffective or inefficient regulations. Regulatory uncertainty stifles creative new approaches that may have unknown paths, long delays, or that might be prohibited by later changes.

Inadequate workforce. The U.S.’s K-12 education system may not prepare students to study STEM subjects at the university and postgraduate level, hindering the quality of workers. A skilled workforce gives U.S. companies the best talent to choose from, and it also encourages international firms to establish research and production facilities here.

Ineffective or inefficient intellectual property protections. Uncertainty over what is patentable could discourage innovators who are considering whether and how to bring their innovations to market. Patent eligibility is also important to venture capitalists and private equity investors when considering whether to invest in biotechnology companies.

Cybersecurity. As biological engineering depends more and more on massive datasets, the emerging bioeconomy now exists at the intersection of information science and biotechnological science. The bioeconomy’s growing reliance on software, networking, and computer hardware tools yields the same cyber vulnerabilities present in any other sector, including hacking, sabotage, breached privacy, or theft of intellectual property.

Biosafety and biosecurity risks. The tools of today’s bioeconomy are enabling new capabilities that can generate concerns regarding traditional biothreats. These can include the accidental or intentional creation or release of dangerous or lethal pathogens. Such biothreats can harm humans, animals, plants, agriculture, the environment, and materials.

Risks from climate change. Food and feed crops, biofuels crops, and crops used with bio-based fermentation products are susceptible to temperature and water stresses, as well as insects and pathogens that migrate with changing weather patterns.

China: the biotech elephant in the room

I’ve written previously written how the Chinese government is already making substantial investments in its bioeconomy. Here are three scary statistics, courtesy of Greg B. Scott of the ChinaBio Group:

China is out-investing the U.S. China’s private investors poured $14.4 billion into its bioeconomy in 2019. That compares to the United States’ more meager investment of $10.4 billion.

China is building a bigger bioeconomy workforce. China graduates about 8-10 million students each year. In the U.S., that number is closer to 400,000. Many Chinese students graduating from U.S. institutions stay here, but they are increasingly returning home to start highly innovative companies.

China is investing in itself. Historically, China has invested heavily in foreign companies, tech, and debt. Now we’re seeing an uptick in China-to-China investments—the country no longer needs to look abroad to find plenty of good biotech opportunities.

Chinese investments have led to centers of excellence in the regional technology hub of Shenzhen, including the Institute of Synthetic Biology at the Shenzhen Institute of Advanced Sciences (SIAT) and BGI Genomics. Shenzhen will compete for technological and economic leadership with U.S. regional biotech powerhouses such as San Francisco/Silicon Valley and Boston/Cambridge in the years to come.

Many of China’s long-standing challenges—environment, food, water, waste management, and rapid innovation to retain its global manufacturing competitiveness—are areas where synthetic biology is seen as a key technology for the future. In other words, synthetic biology is not just an academic pursuit for China. Rather, its leaders are thinking proactively about how biological engineering can be used to address the country’s strategic national interests—while U.S. leadership stands idly by.

What do we do?

So what can U.S. policymakers do to protect the U.S. bioeconomy and ensure continued technological and economic leadership in biology for the next twenty years?

Straight from the top. China has made clear its ambition to become a global tech superpower, with President Xi Jinping calling science and technology one of the main battlefronts of the economy. The U.S. administration needs to step up its game, too. President Trump recently declared January 2020 to be National Biotechnology Month, citing “boundless possibilities for economic growth, national security, healthcare, manufacturing, and agriculture.” That’s the right sentiment—now we need real action.

New legislation. Late last year, the U.S. House of Representatives passed the Engineering Biology Research and Development Act of 2019, which would direct the Office of Science and Technology Policy (OSTP) to implement a national research strategy for engineering biology. The explicit goal: maintain U.S. science, technology, and economic leadership in synthetic biology. The bill now resides in the Senate and awaits committee action. Legislative leadership is now needed to give this bill the appropriations necessary to give it real teeth, and then put it squarely on the President’s desk.

Investing for returns. The Human Genome Project is said to have returned $141 for every dollar invested by taxpayers. While “Big Science” yields tremendous benefits for everyone, it doesn’t happen without federal funding. In 2019, politically courageous Republicans and Democrats came together to produce a 2020 final spending bill that is kind to science, in essence ignoring President Trump’s proposed cuts and instead giving increases to each of the NIH, NSF, NASA, and DOE’s Office of Science. But the U.S. isn’t even in the top ten for R&D spending as a percentage of GDP, while China continues to close in on the U.S., meaning that the U.S. is no longer the uncontested global leader in science.

Leading the global bioeconomy: Have some courage

There are many things the U.S. could do to protect the American bioeconomy. But above all else, policymakers need to come together and demonstrate the kind of courage and vision needed to be a world leader. Science and technology know no partisan lines. Everybody wants healthy lives, clean water, and good jobs. Federal initiative and assistance are needed to bring these benefits to everyone living in the U.S..

Today, the American synthetic biology industry may be unprepared for the global competition it will face, lacking initiative and leadership at the highest levels of government. But this could change quickly. If a country like the U.S. makes engineering biology a national priority, anything is possible in the new bioeconomy.

#### Heg solves arms races, land grabs, rogue states, and great power war

Brands 18 [Hal, Henry Kissinger Distinguished Professor at Johns Hopkins University's School of Advanced International Studies and a senior fellow at the Center for Strategic and Budgetary Assessments." American Grand Strategy in the Age of Trump." Page 129-133]

Since World War II, the United States has had a military second to none. Since the Cold War, America has committed to having overwhelming military primacy. The idea, as George W. Bush declared in 2002, that America must possess “strengths beyond challenge” has featured in every major U.S. strategy document for a quarter century; it has also been reflected in concrete terms.6

From the early 1990s, for example, the United States consistently accounted for around 35 to 45 percent of world defense spending and maintained peerless global power-projection capabilities.7 Perhaps more important, U.S. primacy was also unrivaled in key overseas strategic regions—Europe, East Asia, the Middle East. From thrashing Saddam Hussein’s million-man Iraqi military during Operation Desert Storm, to deploying—with impunity—two carrier strike groups off Taiwan during the China-Taiwan crisis of 1995– 96, Washington has been able to project military power superior to anything a regional rival could employ even on its own geopolitical doorstep.

This military dominance has constituted the hard-power backbone of an ambitious global strategy. After the Cold War, U.S. policymakers committed to averting a return to the unstable multipolarity of earlier eras, and to perpetuating the more favorable unipolar order. They committed to building on the successes of the postwar era by further advancing liberal political values and an open international economy, and to suppressing international scourges such as rogue states, nuclear proliferation, and catastrophic terrorism. And because they recognized that military force remained the ultima ratio regum, they understood the centrality of military preponderance.

Washington would need the military power necessary to underwrite worldwide alliance commitments. It would have to preserve substantial overmatch versus any potential great-power rival. It must be able to answer the sharpest challenges to the international system, such as Saddam’s invasion of Kuwait in 1990 or jihadist extremism after 9/11. Finally, because prevailing global norms generally reflect hard-power realities, America would need the superiority to assure that its own values remained ascendant. It was impolitic to say that U.S. strategy and the international order required “strengths beyond challenge,” but it was not at all inaccurate.

American primacy, moreover, was eminently affordable. At the height of the Cold War, the United States spent over 12 percent of GDP on defense. Since the mid-1990s, the number has usually been between 3 and 4 percent.8 In a historically favorable international environment, Washington could enjoy primacy—and its geopolitical fruits—on the cheap.

Yet U.S. strategy also heeded, at least until recently, the fact that there was a limit to how cheaply that primacy could be had. The American military did shrink significantly during the 1990s, but U.S. officials understood that if Washington cut back too far, its primacy would erode to a point where it ceased to deliver its geopolitical benefits. Alliances would lose credibility; the stability of key regions would be eroded; rivals would be emboldened; international crises would go unaddressed. American primacy was thus like a reasonably priced insurance policy. It required nontrivial expenditures, but protected against far costlier outcomes.9 Washington paid its insurance premiums for two decades after the Cold War. But more recently American primacy and strategic solvency have been imperiled.

THE DARKENING HORIZON For most of the post–Cold War era, the international system was— by historical standards—remarkably benign. Dangers existed, and as the terrorist attacks of September 11, 2001, demonstrated, they could manifest with horrific effect. But for two decades after the Soviet collapse, the world was characterized by remarkably low levels of great-power competition, high levels of security in key theaters such as Europe and East Asia, and the comparative weakness of those “rogue” actors—Iran, Iraq, North Korea, al-Qaeda—who most aggressively challenged American power. During the 1990s, some observers even spoke of a “strategic pause,” the idea being that the end of the Cold War had afforded the United States a respite from normal levels of geopolitical danger and competition. Now, however, the strategic horizon is darkening, due to four factors.

First, great-power military competition is back. The world’s two leading authoritarian powers—China and Russia—are seeking regional hegemony, contesting global norms such as nonaggression and freedom of navigation, and developing the military punch to underwrite these ambitions. Notwithstanding severe economic and demographic problems, Russia has conducted a major military modernization emphasizing nuclear weapons, high-end conventional capabilities, and rapid-deployment and special operations forces— and utilized many of these capabilities in conflicts in Ukraine and Syria.10 China, meanwhile, has carried out a buildup of historic proportions, with constant-dollar defense outlays rising from US$26 billion in 1995 to US$226 billion in 2016.11 Ominously, these expenditures have funded development of power-projection and antiaccess/area denial (A2/AD) tools necessary to threaten China’s neighbors and complicate U.S. intervention on their behalf. Washington has grown accustomed to having a generational military lead; Russian and Chinese modernization efforts are now creating a far more competitive environment.

#### Independently, China uses biotech offensively—uncertainty means you should err negative

Kania and Vonrndick 19 [Elsa Kania is an Adjunct Senior Fellow with the Technology and National Security Program at the Center for a New American Security. She is also a Ph.D. candidate in Harvard University’s Department of Government. Her views are her own. Wilson VornDick consults on national security, emerging technologies, and China for Duco and Rane.) “Weaponizing Biotech: How China's Military Is Preparing for a 'New Domain of Warfare'” Defense One, Commentary, China, Biowarfare, 8/14/2019] RM

We may be on the verge of a brave new world indeed. Today’s advances in biotechnology and genetic engineering have exciting applications in medicine — yet also alarming implications, including for military affairs. China’s national strategy of military-civil fusion (军民融合) has highlighted biology as a priority, and the People’s Liberation Army could be at the forefront of expanding and exploiting this knowledge.

The PLA’s keen interest is reflected in strategic writings and research that argue that advances in biology are contributing to changing the form or character (形态) of conflict. For example:

In 2010’s War for Biological Dominance (制生权战争), Guo Jiwei (郭继卫), a professor with the Third Military Medical University, emphasizes the impact of biology on future warfare.

In 2015, then-president of the Academy of Military Medical Sciences He Fuchu (贺福初) argued that biotechnology will become the new “strategic commanding heights” of national defense, from biomaterials to "brain control" weapons. Maj. Gen. He has since become the vice president of the Academy of Military Sciences, which leads China’s military science enterprise.

Biology is among seven "new domains of warfare" discussed in a 2017 book by Zhang Shibo (张仕波), a retired general and former president of the National Defense University, who concludes: “Modern biotechnology development is gradually showing strong signs characteristic of an offensive capability,” including the possibility that “specific ethnic genetic attacks” (特定种族基因攻击) could be employed.

The 2017 edition of Science of Military Strategy (战略学), a textbook published by the PLA’s National Defense University that is considered to be relatively authoritative, debuted a section about biology as a domain of military struggle, similarly mentioning the potential for new kinds of biological warfare to include “specific ethnic genetic attacks.”

These are just a few examples of an extensive and evolving literature by Chinese military scholars and scientists who are exploring new directions in military innovation.

Following these lines of thinking, the PLA is pursuing military applications for biology and looking into promising intersections with other disciplines, including brain science, supercomputing, and artificial intelligence. Since 2016, the Central Military Commission has funded projects on military brain science, advanced biomimetic systems, biological and biomimetic materials, human performance enhancement, and “new concept” biotechnology.

Gene Editing

Meanwhile, China has been leading the world in the number of trials of the CRISPR gene-editing technology in humans. Over a dozen clinical trials are known to have been undertaken, and some of these activities have provoked global controversy. It’s not clear whether Chinese scientist He Jiankui, may have received approval or even funding from the government for editing embryos that became the world’s first genetically modified humans. The news provoked serious concerns and backlash around the world and in China, where new legislation has been introduced to increase oversight over such research. However, there are reasons to be skeptical that China will overcome its history and track record of activities that are at best ethically questionable, or at worst cruel and unusual, in healthcare and medical sciences.

But it is striking how many of China’s CRISPR trials are taking place at the PLA General Hospital, including to fight cancer. Indeed, the PLA’s medical institutions have emerged as major centers for research in gene editing and other new frontiers of military medicine and biotechnology. The PLA’s Academy of Military Medical Sciences, or AMMS, which China touts as its “cradle of training for military medical talent,” was recently placed directly under the purview of the Academy of Military Science, which itself has been transformed to concentrate on scientific and technological innovation. This change could indicate a closer integration of medical science with military research.

In 2016, an AMMS doctoral researcher published a dissertation, “Research on the Evaluation of Human Performance Enhancement Technology,” which characterized CRISPR-Cas as one of three primary technologies that might boost troops’ combat effectiveness. The supporting research looked at the effectiveness of the drug Modafinil, which has applications in cognitive enhancement; and at transcranial magnetic stimulation, a type of brain stimulation, while also contending that the “great potential” of CRISPR-Cas as a “military deterrence technology in which China should “grasp the initiative” in development.

AI + Biotech

The intersection of biotechnology and artificial intelligence promises unique synergies. The vastness of the human genome — among the biggest of big data — all but requires AI and machine learning to point the way for CRISPR-related advances in therapeutics or enhancement.

In 2016, the potential strategic value of genetic information led the Chinese government to launch the National Genebank (国家基因库), which intends to become the world’s largest repository of such data. It aims to “develop and utilize China’s valuable genetic resources, safeguard national security in bioinformatics (生物信息学), and enhance China’s capability to seize the strategic commanding heights” in the domain of biotechnology.

The effort is administered by BGI, formerly known as Beijing Genomics Inc., which is Beijing’s de facto national champion in the field. BGI has established an edge in cheap gene sequencing, concentrating on amassing massive amounts of data from a diverse array of sources. The company has a global presence, including laboratories in California and Australia.

U.S. policymakers have been concerned, if not troubled, by the company’s access to the genetic information of Americans. BGI has been pursuing a range of partnerships, including with the University of California and with the Children’s Hospital of Philadelphia on human genome sequencing. BGI’s research and partnerships in Xinjiang also raise questions about its linkage to human rights abuses, including the forced collection of genetic information from Uighurs in Xinjiang.

There also appear to be links between BGI’s research and military research activities, particularly with the PLA’s National University of Defense Technology. BGI’s bioinformatics research has used Tianhe supercomputers to process genetic information for biomedical applications, while BGI and NUDT researchers have collaborated on several publications, including the design of tools for the use of CRISPR.

Biotech’s Expansive Frontier

It will be increasingly important to keep tabs on the Chinese military’s interest in biology as an emerging domain of warfare, guided by strategists who talk about potential “genetic weapons” and the possibility of a “bloodless victory.” Although the use of CRISPR to edit genes remains novel and nascent, these tools and techniques are rapidly advancing, and what is within the realm of the possible for military applications may continue to shift as well. In the process, the lack of transparency and uncertainty of ethical considerations in China’s research initiatives raise the risks of technological surprise.

### 1NC – Advantage

#### Circumvention and they don’t solve – even if they say “durable fiat”, they have not defined the scope of the plan in the 1AC so you don’t know what the plan would materially look like

Mercurio 6/24 [Simon F.S. Li Professor of Law, The Chinese University of Hong Kong, Shatin, Hong Kong. June 24, 2021. “The IP Waiver for COVID-19: Bad Policy, Bad Precedent” <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/> Accessed 8/25 //gord0]

The role of intellectual property rights (IPRs) and access to medicines is contentious. On the one hand, IPRs encourage investment, innovation and the advancement of health science. On the other hand, the limited-term monopoly rights can result in artificially high prices and become a barrier to access to medicines. While the wisdom of the IPRs system has at times been tested, it has proven its value in the current COVID-19 pandemic as IPRs played a large role in the rapid (and unprecedented) development and availability of multiple vaccines. Despite the success, India and South Africa proposed that the World Trade Organization (WTO) waive IPRs under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) in order to increase access to vaccines and other COVID-19-related technologies.[1](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn1) The proposal, tabled at a meeting of the TRIPS Council in October 2020, calls on Members to waive IPRs relating to and having an impact on the “prevention, containment or treatment of COVID-19”.[2](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn2) The proposal attracted support from the majority of developing country Members,[3](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn3) but was opposed by a handful of Members including the United States (US).[4](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn4) Given that consensus could not be reached within the deadline of 90 days as set out in Art. IX:3 of the Agreement Establishing the WTO, Members agreed to keep the waiver proposal on the agenda of the TRIPS Council in 2021.[5](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn5) On 5 May 2021, the US reversed its position and announced that it would support a waiver for COVID-19 vaccines.[6](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn6) To be clear, this does not mean that the US supported the waiver as proposed by India and South Africa. Instead, the US has simply agreed to negotiate the perimeters of a waiver. Others, including the European Union (EU), Canada, Australia, Norway, Switzerland, the United Kingdom (UK) and even leading developing countries such as Brazil, Chile and Mexico remain opposed or lukewarm on the waiver.[7](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn7) The US dropping opposition does not mean the concerns of other Members will simply disappear – one would hope that these nations opposed the waiver for valid reasons and did not simply blindly follow the US. Indeed, many of the above-listed Members remain unconvinced that even such a draconian step as a waiver of IPRs would accomplish the goal of increased vaccine production.[8](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn8) For its part, the EU continues to favour an approach which makes better use of existing flexibilities available in the TRIPS Agreement.[9](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn9) Thus, those expecting quick agreement on the waiver will be disappointed. Negotiations at the WTO are always difficult and lengthy, and US Trade Representative Katherine Tai acknowledged that the “negotiations will take time given the consensus-based nature of the institution and the complexity of the issues involved”.[10](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn10) Issues of negotiation will include the scope of the waiver. Whereas the original proposal and its amended form extend the waiver beyond patents and vaccines to include nearly all forms of IP (i.e. copyright,[11](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn11) industrial designs and trade secrets) as well as to all “health products and technologies including diagnostics, therapeutics, vaccines, medical devices, personal protective equipment, their materials or components, and their methods and means of manufacture for the prevention, treatment or containment of COVID-19”[12](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn12) (with no requirement on how or the extent to which they are related to or useful in combatting COVID-19), the US and others seem to support a waiver limited to patents and vaccines.[13](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn13) The length of the waiver will also be a contentious negotiating issue, with proponents seeking a virtual indefinite waiver lasting until the Membership agrees by consensus that it is no longer required – meaning even a single Member’s objection to ending the waiver would mean the waiver continues to remain in force[14](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn14) – as will the request that any action claimed to be taken under the waiver is outside the scope of the WTO’s dispute settlement mechanism.[15](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn15) These provisions will almost certainly be opposed by other Members, who would perhaps agree to a time-limited waiver which could be extended rather than an unchallengeable indefinite waiver which will be difficult to reverse. The proposal also fails to mention anything in relation to transparency and notification requirements and lacks safeguards against abuse or diversion. These points will likely also prove contentious in the negotiations. With so many initial divergences and as yet undiscussed issues, the negotiations at best could be completed by the time of the next WTO Ministerial Conference, scheduled to begin on 20 November 2021. There is precedent in this regard, as previous TRIPS negotiations involving IP and pharmaceuticals were not fully resolved until the days before the Ministerial Conferences (in 2003 and 2005).[16](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn16) There is also a chance that the negotiations will continue past the calendar year 2021. The chance for a swift negotiation diminished with the release of a revised proposal by India and South Africa on 22 May 2021. As mentioned above, the proposal contains no limit as to product coverage, scope, notification requirements or safeguards and proposes that the waiver will remain in effect for what could be an indefinite period. This was not a proposal designed to engender quick negotiations and a solution. Instead, the proposal perhaps reveals India’s and South Africa’s true intent to use the COVID-19 pandemic as an excuse to roll-back IPRs rather than a good-faith effort to rapidly increase access to lifesaving vaccines and treatments around the world. It is not only the length of time which is an issue but also the ultimate impact of the waiver. A waiver simply means that a WTO Member would not be in violation of its WTO obligations if it does not protect and enforce the COVID-19-related IPRs for the duration of the waiver. The waiver would thus allow Members to deviate from their international obligations but not obligate Members to suspend protection and enforcement of the IPRs. Members like the US who support the waiver may not implement the necessary domestic legislation to waive IPRs within the jurisdiction. It is questionable whether the US could even legally implement the waiver given that IPRs are a matter of constitutional law.[17](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn17) The US announcement remains meaningful, however, for two reasons. First, it signals a departure from the longstanding and bipartisan support for the pharmaceutical industry, which for decades has been instrumental in setting the IP and trade agenda.[18](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn18) Second, it sends a strong signal that the US does not oppose others from waiving patent protection for vaccines. This shift may also be part of a broader and alternative strategy to increase vaccine production and distribution, whereby the US is not viewing or supporting waiver negotiations as a legal tool but more so as a threat to encourage vaccine innovators to increase production. In essence, the desired reaction would be that the IP holders increase efforts to license, transfer technology and expand manufacturing – exactly what the world needs at this time. Alan Beattie, writing in the Financial Times, believes that even the proponents of the waiver desire this outcome: “having talked to the proponents, [the original proposal] was always a tactical position designed to start a debate, identify possible support and flush out opponents rather than a likely outcome. To that end, it seems to have worked rather well.”[19](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn19) India’s negotiator to the TRIPS Agreement and longtime WTO staffer, Jayashree Watal, agrees, stating the proposal is an “indirect attempt to put pressure on the original manufacturers to cooperate [and license production to companies in their countries]”.[20](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn20) This view makes sense, as the proponents (and their supporters) have not even pointed to one credible instance where IPRs have blocked the production of a COVID-19 vaccine. Moreover, it is well known that the leading vaccines using mRNA are difficult to reproduce and having the “blueprints” does not guarantee safe and effective production. Simply stated, if a pastry chef provides instructions on how to bake a cake, the cake they bake is still going to be better than cakes baked by novices using the exact same recipe. The know-how and trade secrets are the key ingredient to the manufacture of quality, safe and effective pharmaceuticals or vaccines, and not only is it not transferred through compulsory licenses but it is hard to imagine how any government would force the transfer of such information even under a waiver. For this reason, instead of encouraging production everywhere – including in locations where safety and efficacy standards are virtually nonexistent – and accepting that there will be a flood of substandard vaccines coming onto the world market (with devastating effects) it is much more sensible to find out where potential manufacturing capabilities exist and find ways to exploit them and scale them up. When asked if a waiver would improve vaccine availability and equity, Watal responded: “No. It won’t. That’s clear.”[21](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn21) I share Watal’s view and do not support a TRIPS waiver for IPRs or even a limited waiver for patents. With evidence mounting that “what the proposal … will definitely not achieve is speeding up the Covid-19 vaccination rate in India or other parts of the Global South”[22](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn22) I refuse to sacrifice academic integrity by supporting a proposal simply because it is gaining traction in some circles.[23](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn23) IPRs played a key role in delivering vaccines within a year of the discovery of a new pathogen; it seems inexplicable that the world would abandon the system without any evidence that IPRs are limiting during the current crisis.[24](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8223179/#Fn24) Moreover, innovators have been generous in licensing technology transfer and production and one would be hard-pressed to find credible reports of qualified generic producers being refused a license. This is not surprising, since multiple competing vaccines are on the market it simply does not make economic sense for innovators to refuse a license – the generic manufacturer would simply obtain a license (and market share) and pay royalties to a competitor. Instead, I support efforts to enable prompt and effective use of existing flexibilities in the TRIPS Agreement and concerted and coordinated efforts involving governments and the private sector to ensure all qualified generic producers willing and capable of manufacturing vaccines are doing so and to create supply by working to bring more facilities up to standard. Cooperation will not only lead us out of this pandemic but also put us in a better position to deal with the next one. Killing the goose that laid the golden egg may seem appealing to some in the short term but will only ensure that no eggs are delivered in the next pandemic.

#### Too many alt causes to COVID – political instability, lack of facilities, Delta variant, ineffective leadership.

#### Helps China and Russia instead, and it causes manufacturing uncertainty, and can never be an advantage in Africa – resources and skills.

Nwuke 19 [Kasirim Nwuke: Economist with more than 25 years of experience at the national and international levels. He works and writes on economics, science, technology and innovation, and society with special focus on the digital economy. May 19, 2020. “Africa should not support suspension of intellectual property rights protection for Covid-19” <https://www.theafricareport.com/89489/africa-should-not-support-suspension-of-intellectual-property-rights-protection-for-covid-19/> Accessed 8/25 //gord0]

In October 2020, South Africa and India, two powerhouses of generic pharmaceuticals manufacturing in the developing world, made a very broad proposal calling on members of the WTO, to suspend, for a limited time, intellectual property protection for patents, copyrights, industrial designs, and undisclosed information in relation to “the prevention, containment, or treatment of Covid-19 until widespread vaccination is in place globally, and the majority of the world’s population has developed immunity.”

The suspension proposal is driven by the fear that **developing countries will bear the brunt of the pandemic** and will be devastated by it if they do not have rapid access to affordable Covid-19 vaccines, diagnostics and treatment.

The proposal, if approved, will allow pharmaceutical manufactures in developing countries to manufacture Covid-19 products and technologies free of any fears of legal challenges for patent infringement.

This could result in greater availability of the technologies and products, better affordability worldwide, higher rates of vaccination and lower fatalities not just in the developed world but also in the developing world.

However, Big Pharma and many business groups argue that approving the proposal will have an **adverse impact on research, development and innovation.** There is also the fear that the waiver, if granted, will give China and Russia unimpeded access to advanced western pharmaceutical technologies, and consequently, **erode the West’s competitive advantage** in this area.

Most African countries support it. President Biden as candidate Biden had said on the campaign trail that he would support the suspension proposal were he elected president. The EU is divided, with **Germany firmly opposed and France now in support.** Russia has come out in support of the proposal. Vaccine nationalism in some countries, the appalling situation in India, the gradually rising headcount in many other developing counties, and low numbers of vaccinated in poor countries have gained the proposal additional supporters.

But a waiver could make things worse for Africa…

First, a waiver will introduce unnecessary uncertainty in the vaccine manufacturing process. Incumbent manufacturers (Pfizer/BioNtech, Moderna, J&J, AstraZeneca) may cut back on planned production of vaccines in response to the waiver because of uncertainty over the quantity that generic manufacturers may produce and the pricing of the new generics.

This will make it more difficult for African countries, until the generics come on the market, to procure vaccines and Covid-19 therapeutics. A waiver will be no victory for African countries as they do not have the capacities (skills, expertise, plants) to take advantage of it. Skills and capacities cannot be developed overnight. African countries should not waste precious resources asking for what they cannot use if granted.

The waiver will have the perverse effect of reinforcing Africa’s humiliating dependence on others to solve her problems. The continent has to deal with the dependency syndrome and begin to take the lead in tackling some of her challenges. The rest of the world must try to wean Africa off long-term dependency.

What African countries should do

Africa, more than any other continent, needs Big Pharma to **continue to invest in research** to develop new vaccines and cures for the many diseases that kill Africans. If Big pharma cuts back on R&D on Africa’s many diseases (and there is at the moment very little of that), many more Africans will die, not from Covid-19 but from other diseases. The situation in India and the gradually rising weekly headcount in a number of African countries is the consequence of the irresponsibility of political leaders and governments, a disease (political irresponsibility) that a waiver will not cure.

**A waiver could lead to lots of counterfeit vaccines** on the African market and given the weak food and drug regulatory capacity of African countries, this could be very dangerous not just for Africa but for the rest of the world. These counterfeit Covid-19 vaccines and treatments could present a greater public health risk to Africans than SARS-CoV-2 itself.

Bottom of Form

African countries should implement the Pharmaceuticals Manufacturing Plan for Africa; they should provide incentives for Big Pharma to set up branches in Africa; they should produce required skills by reforming their higher education sector.

In the long run, it is my view that African countries stand to lose if the South Africa-India proposal is approved by WTO members. For the reasons given above, **it is not in the self-interest of African countries to support it.** This is not the time for the usual herd “solidarity with one of our own.”

The main beneficiaries of any waiver will be China, India, and Russia, not poor African countries. Africa needs Big Pharma to remain innovative. The South Africa-India proposal will not help in this regard; it is an unnecessary distraction and should fail.

#### Vaccine IP is insufficient for imitation; originators will challenge with intense litigation, and nations don’t have necessary ingredients and materials. Independently, the plan will cause companies to disengage from global efforts.

Silverman 3/15 [Rachel Silverman is a policy fellow at the Center for Global Development where she leads policy-oriented research on global health financing and incentive structures. Silverman’s current research focuses on the practical application of results-based financing; global health transitions; efficient global health procurement; innovation models for global health; priority-setting for UHC; alignment and impact in international funding for family planning; and strategies to strengthen evidence and accountability. BA with distinction in international relations and economics from Stanford University.) “Waiving vaccine patents won’t help inoculate poorer nations” Washington Post, PostEverything Perspective, <https://www.washingtonpost.com/outlook/2021/03/15/vaccine-coronavirus-patents-waive-global-equity/>] RM

According to some activists, the solution to this inequity is relatively simple: By suspending protections on covid-19 vaccine patents, the international community “could help break Big Pharma monopolies and increase supplies so there are enough doses for everyone, everywhere,” [claims](https://peoplesvaccine.org/take-action/)the People’s Vaccine Alliance. Indeed, 58 low- and middle-income countries have mobilized in support of a proposed World Trade Organization [waiver](https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/IP/C/W669.pdf&Open=True) that would temporarily exempt [coronavirus](https://www.washingtonpost.com/coronavirus/?itid=lk_inline_manual_4)-related intellectual property from normal international rules and protections. And while the effort to waive IP protections has been a global health hot topic for months, it gained a high-profile endorsement in the United States recently from Sen. Bernie Sanders (I-Vt.). In a March 10 video statement, Sanders [called upon President Biden](https://twitter.com/GlobalJusticeUK/status/1369734275818549252?s=20) to support the IP suspension while slamming “huge, multibillion-dollar pharmaceutical companies [that] continue to prioritize profits by protecting their monopolies.”

The logic of the argument seems clear and intuitive — at first. Without patents, which serve narrow commercial interests, companies all over the world could freely produce the vaccine. Sure, Big Pharma would lose money — but this is a pandemic, and human life comes before private profit, especially when vaccines receive substantial public financing to support research and development. As with HIV drugs in years past, widespread generic production would dramatically increase supply and drive down prices to levels affordable even in the developing world.

Reality is more complicated, however. Because of the technical complexity of manufacturing coronavirus vaccines, waiving intellectual-property rights, by itself, would have little effect**.** **It could even backfire, with companies using the move as an excuse to disengage from global access efforts**. **There are more effective ways to entice — and to pressure — companies to license and share their intellectual property and the associated know-how, without broadly nullifying patents.**

The Moderna vaccine illustrates the limits of freeing up intellectual property. Moderna [announced in October](https://investors.modernatx.com/news-releases/news-release-details/statement-moderna-intellectual-property-matters-during-covid-19) that it would not enforce IP rights on its coronavirus vaccine — and yet it has taken no steps to share information about the vaccine’s design or manufacture, citing commercial interests in the underlying technology. Five months later, production of the Moderna vaccine remains entirely under the company’s direct control within its owned and contracted facilities. Notably, Moderna is also the only manufacturer of a U.S.- or British-approved vaccine [not yet participating in Covax](https://www.washingtonpost.com/world/coronavirus-vaccine-access-poor-countries-moderna/2021/02/12/0586e532-6712-11eb-bf81-c618c88ed605_story.html?itid=lk_inline_manual_9), a global-aid-funded effort (including a [pledged $4 billion from the United States](https://www.npr.org/2021/02/18/969145224/biden-to-announce-4-billion-for-global-covid-19-vaccine-effort)) to purchase vaccines for use in low- and middle-income countries.

It is true, however, that activist pressure — including threats to infringe upon IP rights — can encourage originators to enter into voluntary licensing arrangements. So the global movement to liberate the vaccine patents may be useful, even if some advocates make exaggerated claims about the effects of waivers on their own.

One reason patent waivers are unlikely to help much in this case is that vaccines are harder to make than ordinary drugs. Because most drugs are simple chemical compounds, and because the composition of the compounds is easily analyzable, competent chemists can usually reverse-engineer a production process with relative ease. When a drug patent expires, therefore — or is waived — generic companies can readily enter the market and produce competitive products, [lowering prices dramatically](https://www.fda.gov/about-fda/center-drug-evaluation-and-research-cder/generic-competition-and-drug-prices).

Vaccines, in contrast, are complex biological products. Observing their contents is insufficient to allow for imitation. **Instead, to produce the vaccine, manufacturers need access to the developer’s “soft” IP — the proprietary recipe, cell lines, manufacturing processes and so forth**. While some of this information is confidentially submitted to regulators and might theoretically be released in an extraordinary situation (though not without legal challenge), manufacturers are at an enormous disadvantage without the originator’s cooperation to help them set up their process and kick-start production. Even with the nonconsensual release of the soft IP held by the regulator, the process of trial and error would cause long delays in a best-case scenario. Most likely, the effort would end in expensive failure. Manufacturers also need certain raw ingredients and other materials, like glass vials and filtration equipment; overwhelming demand, paired with disruptive export restrictions, has constricted the global availability of some of these items.

#### Squo disproves – Moderna, J&J, AstroZeneca already in compulsory licensing agreements with South Africa, Brazil, Argentina, etc…

#### Waiving IP enforcement results in rampant increase in counterfeit vaccines – turns case.

Mercurio 21 (Bryan Mercurio is a Professor and Vice-Chancellor's Outstanding Fellow of the Faculty of Law at the Chinese University of Hong Kong, February 21, 2021, <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3789820&download=yes>) CS

6. IP enforcement is of vital importance to maintaining safety standards.

The protection of IP not only provides incentives to innovators to create, but also plays a crucial role in ensuring the safety of vaccines and helping to prevent the importation **of fraudulent and dangerous goods**. Unlike the typical pharmaceutical industry, the vaccine market is not a free and open market.69 Vaccines contain biological products made from living organisms and the risk of failure in vaccine development and production is high. 70 Moreover, the manufacturing process for vaccines is much more complex as it requires the use of facilities and equipment with a high degree of specialization.71 The complexity of vaccine products implies that more time and regulatory requirements are needed in order to make or “copy” the vaccine production process. Therefore, the innovator should be expected to make conscious and meticulous decisions as to when and to whom to issue licences, as this is the most responsible way to bring their technologies to the world and safeguard global health.

In addition, as the COVID-19 pandemic continues there has been a **noticeable increase in the circulation of fake medicines** around the world. According to the International Criminal Police Organization (Interpol), **organized crime groups** have been producing fake drugs and medical products and selling them for **lucrative profits in developing countries**.72 With the development of COVID-19 vaccines on the market, a rapid rise in the illegal sale of fake items is expected, according to the United Nations Office on Drugs and Crime (UNODC).73 Counterfeits of the legitimate products provide false promises of protection and could lead to **disastrous consequences**, including **worsened illness and** **death** for the individual and the retardation of herd immunity for the population at large. Effective and proactive **IP** procurement is **essential** and useful in mitigating the risks of counterfeit and substandard medicines. IP enforcement measures play a significant role in preventing these fake and illicit medicines from circulating in the market. While important during normal times, IP enforcement can take on an enhanced role of safeguarding the public during this critical period of time. Waiving all COVID-19 related IPRs raises the risk of unsafe or fake vaccines circulating in supply channels and being sold to unsuspecting governments, **putting millions of human lives at risk** and reducing trust in vaccines.

#### Disease doesn’t cause extinction

Adalja 16 [Amesh Adalja is an infectious-disease physician at the University of Pittsburgh. Why Hasn't Disease Wiped out the Human Race? June 17, 2016. https://www.theatlantic.com/health/archive/2016/06/infectious-diseases-extinction/487514/]

But when people ask me if I’m worried about infectious diseases, they’re often not asking about the threat to human lives; they’re asking about the threat to human life. With each outbreak of a headline-grabbing emerging infectious disease comes a fear of extinction itself. The fear envisions a large proportion of humans succumbing to infection, leaving no survivors or so few that the species can’t be sustained.

I’m not afraid of this apocalyptic scenario, but I do understand the impulse. Worry about the end is a quintessentially human trait. Thankfully, so is our resilience.

For most of mankind’s history, infectious diseases were the existential threat to humanity—and for good reason. They were quite successful at killing people: The 6th century’s Plague of Justinian knocked out an estimated 17 percent of the world’s population; the 14th century Black Death decimated a third of Europe; the 1918 influenza pandemic killed 5 percent of the world; malaria is estimated to have killed half of all humans who have ever lived.

Any yet, of course, humanity continued to flourish. Our species’ recent explosion in lifespan is almost exclusively the result of the control of infectious diseases through sanitation, vaccination, and antimicrobial therapies. Only in the modern era, in which many infectious diseases have been tamed in the industrial world, do people have the luxury of death from cancer, heart disease, or stroke in the 8th decade of life. Childhoods are free from watching siblings and friends die from outbreaks of typhoid, scarlet fever, smallpox, measles, and the like.

So what would it take for a disease to wipe out humanity now?

In Michael Crichton’s The Andromeda Strain, the canonical book in the disease-outbreak genre, an alien microbe threatens the human race with extinction, and humanity’s best minds are marshaled to combat the enemy organism. Fortunately, outside of fiction, there’s no reason to expect alien pathogens to wage war on the human race any time soon, and my analysis suggests that any real-life domestic microbe reaching an extinction level of threat probably is just as unlikely.

Any apocalyptic pathogen would need to possess a very special combination of two attributes. First, it would have to be so unfamiliar that no existing therapy or vaccine could be applied to it. Second, it would need to have a high and surreptitious transmissibility before symptoms occur. The first is essential because any microbe from a known class of pathogens would, by definition, have family members that could serve as models for containment and countermeasures. The second would allow the hypothetical disease to spread without being detected by even the most astute clinicians.

The three infectious diseases most likely to be considered extinction-level threats in the world today—influenza, HIV, and Ebola—don’t meet these two requirements. Influenza, for instance, despite its well-established ability to kill on a large scale, its contagiousness, and its unrivaled ability to shift and drift away from our vaccines, is still what I would call a “known unknown.” While there are many mysteries about how new flu strains emerge, from at least the time of Hippocrates, humans have been attuned to its risk. And in the modern era, a full-fledged industry of influenza preparedness exists, with effective vaccine strategies and antiviral therapies.

HIV, which has killed 39 million people over several decades, is similarly limited due to several factors. Most importantly, HIV’s dependency on blood and body fluid for transmission (similar to Ebola) requires intimate human-to-human contact, which limits contagion. Highly potent antiviral therapy allows most people to live normally with the disease, and a substantial group of the population has genetic mutations that render them impervious to infection in the first place. Lastly, simple prevention strategies such as needle exchange for injection drug users and barrier contraceptives—when available—can curtail transmission risk.

Ebola, for many of the same reasons as HIV as well as several others, also falls short of the mark. This is especially due to the fact that it spreads almost exclusively through people with easily recognizable symptoms, plus the taming of its once unfathomable 90 percent mortality rate by simple supportive care.

Beyond those three, every other known disease falls short of what seems required to wipe out humans—which is, of course, why we’re still here. And it’s not that diseases are ineffective. On the contrary, diseases’ failure to knock us out is a testament to just how resilient humans are. Part of our evolutionary heritage is our immune system, one of the most complex on the planet, even without the benefit of vaccines or the helping hand of antimicrobial drugs. This system, when viewed at a species level, can adapt to almost any enemy imaginable. Coupled to genetic variations amongst humans—which open up the possibility for a range of advantages, from imperviousness to infection to a tendency for mild symptoms—this adaptability ensures that almost any infectious disease onslaught will leave a large proportion of the population alive to rebuild, in contrast to the fictional Hollywood versions.

#### No US-China War - relations are stabilized by deep interdependence

Hass 8/12 [Ryan Hass is a senior fellow and the Michael H. Armacost Chair in the Foreign Policy program at Brookings, where he holds a joint appointment to the John L. Thornton China Center and the Center for East Asia Policy Studies. He is also the Chen-Fu and Cecilia Yen Koo Chair in Taiwan Studies. He was part of the inaugural class of David M. Rubenstein fellows at Brookings, and is a nonresident affiliated fellow in the Paul Tsai China Center at Yale Law School. Hass focuses his research and analysis on enhancing policy development on the pressing political, economic, and security challenges facing the United States in East Asia. Agust 12, 2021. “The “new normal” in US-China relations: Hardening competition and deep interdependence” <https://www.brookings.edu/blog/order-from-chaos/2021/08/12/the-new-normal-in-us-china-relations-hardening-competition-and-deep-interdependence/> Accessed 8/23 //gord0]

The intensification of U.S.-China competition has captured significant attention in recent years. American [attitudes](https://www.pewresearch.org/global/2021/03/04/most-americans-support-tough-stance-toward-china-on-human-rights-economic-issues/) toward China have become more negative during this period, as anger has built over disruptions resulting from the COVID-19 pandemic, Beijing’s trampling of Hong Kong’s autonomy, human rights violations in Xinjiang, and job losses to China. Amidst this focus on great power competition, two broader trends in the U.S.-China relationship have commanded relatively less attention. The first has been the widening gap in America’s and China’s overall national power relative to every other country in the world. The second has been the continuing thick interdependence between the United States and China, even amidst their growing rivalry. Even on economic issues, where rhetoric and actions around decoupling command the most attention, trade and investment data continue to point stubbornly in the direction of deep interdependence. These trends will impact how competition is conducted between the U.S. and China in the coming years. **Separating from the pack** As America’s unipolarity in the international system has waned, there has been renewed focus on the role of major powers in the international system, including the European Union, Russia, India, and Japan. Each of these powers has a major population and substantial economic weight or military heft, but as my Brookings colleague Bruce Jones has [observed](https://www.brookings.edu/research/china-and-the-return-of-great-power-strategic-competition/), none have all. Only the United States and China possess all these attributes. The U.S. and China are likely to continue amassing disproportionate weight in the international system going forward. Their growing role in the global economy is fueled largely by both countries’ [technology sectors](https://www.brookings.edu/research/us-china-relations-in-the-age-of-artificial-intelligence/). These two countries have unique traits. These include world-class research expertise, deep capital pools, data abundance, and highly competitive innovation ecosystems. Both are benefitting disproportionately from a clustering effect around technology hubs. For example, of the roughly 4,500 artificial intelligence-involved companies in the world, about half operate in the U.S. and one-third operate in China. According to a widely cited study by PricewaterhouseCoopers, the U.S. and China are set to capture [70% of the $15.7 trillion windfall](https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html) that AI is expected to add to the global economy by 2030. The United States and China have been reinvesting their economic gains to varying degrees into research and development for new and emerging technologies that will continue to propel them forward. While it is not foregone that the U.S. and China will remain at the frontier of innovation indefinitely, it also is not clear which other countries might displace them or on what timeline. Overall, [China’s economy](https://www.brookings.edu/book/china-2049/) likely will cool in the coming years relative to its blistering pace of growth in recent decades, but it is not likely to collapse. **Deep interdependence** At the same time, bilateral competition between the United States and China also is intensifying. Even so, rising bilateral friction has not – at least not yet – undone the deep interdependencies that have built up between the two powers over decades. In the economic realm, trade and investment ties remain significant, even as both countries continue to take steps to limit vulnerabilities from the other. For example, Chinese regulators have been asserting greater control over when and where Chinese companies raise capital; Beijing’s recent [probe](https://www.wsj.com/articles/china-s-internet-regulator-reviewing-cybersecurity-of-ride-hailing-business-didi-chuxing-11625231216) of ride-hailing app Didi Chuxing provides but the latest example. China’s top leaders have been emphasizing the need for greater technology “self-sufficiency” and have been pouring billions of dollars of state capital into this drive. Meanwhile, U.S. officials have been seeking to limit American investments from going to Chinese companies linked to the military or surveillance sectors. The Security and Exchange Commission’s [scrutiny](https://www.sec.gov/news/public-statement/gensler-2021-07-30) of initial public offerings for Chinese companies and its focus on ensuring Chinese companies meet American accounting standards could result in some currently listed Chinese companies being [removed](https://www.atlanticcouncil.org/blogs/taking-stocks-off-the-board-the-rising-threat-of-delisting-in-us-china-relations/) from U.S. exchanges. Both countries have sought to disentangle supply chains around sensitive technologies with national security, and in the American case, [human rights](https://www.whitehouse.gov/briefing-room/statements-releases/2021/06/03/fact-sheet-executive-order-addressing-the-threat-from-securities-investments-that-finance-certain-companies-of-the-peoples-republic-of-china/) dimensions. U.S. officials have sought to raise awareness of the risks for American firms of doing business in [Hong Kong](https://www.state.gov/issuance-of-a-hong-kong-business-advisory/) and [Xinjiang](https://www.state.gov/xinjiang-supply-chain-business-advisory/). Even so, U.S.-China trade and investment ties remain robust. In 2020, China was America’s largest goods trading partner, third largest export market, and largest source of imports. Exports to China supported an estimated [1.2 million jobs](https://www.uschina.org/sites/default/files/the_us-china_economic_relationship_-_a_crucial_partnership_at_a_critical_juncture.pdf) in the United States in 2019. Most U.S. companies operating in China report being [committed](https://www.uschina.org/sites/default/files/uscbc_member_survey_2020.pdf) to the China market for the long term. U.S. investment firms have been [increasing their positions](https://www.piie.com/blogs/china-economic-watch/foreign-investments-china-are-accelerating-despite-global-economic) in China, following a [global trend](https://www.reuters.com/article/us-china-economy-fdi/china-was-largest-recipient-of-fdi-in-2020-report-idUSKBN29T0TC). [BlackRock](https://www.pionline.com/money-management/blackrock-sees-joint-venture-conducive-china-wealth-management-success), [J.P. Morgan Chase, Goldman Sachs, and Morgan Stanley](https://www.pymnts.com/news/international/2021/jpmorgan-asks-for-full-stake-in-chinese-securities-venture/) have all increased their exposure in China, matching similar efforts by [UBS](https://www.ubs.com/global/en/media/display-page-ndp/en-20181130-securities-joint-venture.html), [Nomura Holdings](https://www.reuters.com/article/us-nomura-hldg-china/japans-nomura-secures-final-approval-for-china-securities-jv-idUSKBN1XW0O3), [Credit Suisse](https://www.credit-suisse.com/about-us-news/en/articles/media-releases/credit-suisse-becomes-majority-shareholder-in-its-china-securities-joint-venture-202006.html), and [AXA](https://www.cnbc.com/quotes/CS-FR). The Rhodium Group [estimates](https://rhg.com/research/us-china-financial/) that U.S. investors held $1.1 trillion in equities issued by Chinese companies, and that there was as much as $3.3 trillion in U.S.-China two-way equity and bond holdings at the end of 2020. One leg of the U.S.-China economic relationship that has atrophied in recent years has been China’s flow of [investment](https://www.us-china-investment.org/fdi-data) into the United States. This has largely been a product of tightened capital controls in China, growing Chinese government scrutiny of its companies’ offshore investments, and enhanced U.S. screening of Chinese investments for national security concerns. Another area of U.S.-China interdependence has been knowledge production. As U.S.-China technology expert Matt Sheehan has [observed](https://macropolo.org/analysis/silicon-valleys-china-paradox/), “With the rise of Chinese talent and capital, the exchange of technological know-how between the United States and China now takes place among private businesses and between individuals.” Leading technology companies in both countries have been building research centers in the other. [Alibaba](https://damo.alibaba.com/about/), [Baidu](http://research.baidu.com/), and [Tencent](https://www.reuters.com/article/us-tencent-ai/tencent-steps-up-ai-push-with-research-lab-in-seattle-idUSKBN17Y0EU) have all opened research centers in the United States, just as [Apple](https://www.cnbc.com/2017/03/17/apple-china-two-more-research-centers-as-challenges-continue.html), [Microsoft](https://www.microsoft.com/en-us/research/lab/microsoft-research-asia/), [Tesla](http://www.chinadaily.com.cn/a/202108/10/WS611231cca310efa1bd667eff.html), and other major American technology companies rely upon engineering talent in China. In science collaboration, The Nature Index [ranks](https://www.ft.com/content/6241474b-4081-4c3f-a30c-81294f44d7e4) the joint research between the two countries as the world’s most academically fertile. U.S.-China scientific collaboration grew by more than 10% each year on average between 2015 and 2019. Even following the global spread of COVID-19, American and Chinese experts collaborated more during the past year than over the previous [five years combined](https://www.tandfonline.com/doi/full/10.1080/00221546.2020.1827924). This has led to over [100 co-authored articles](https://www.the-scientist.com/news-opinion/opinion-scientists-in-the-us-and-china-collaborating-on-covid-19-67651) in leading scientific journals and frequent joint appearances in science-focused workshops and webinars. China also is the largest source of international students in the United States. In the 2019-20 year, there were over [370,000 Chinese students](https://opendoorsdata.org/annual-release/?utm_campaign=latitudeper%20cent28sper%20cent29&utm_medium=email&utm_source=Revueper%20cent20newsletter) in the U.S., representing 34% of international students in colleges and universities. Up until now, many of the top Chinese students have [stayed](https://www.nsf.gov/statistics/srvydoctoratework/) in the United States following graduation and contributed to America’s scientific, technological, and economic development. It remains to be seen whether this trend will continue.

#### Impact non-UQ – Delta caused econ shutdown

Pittis 8/19 [Don Pittis was a forest firefighter, and a ranger in Canada's High Arctic islands. After moving into journalism, he was principal business reporter for Radio Television Hong Kong before the handover to China. He has produced and reported for the CBC in Saskatchewan and Toronto and the BBC in London. He is currently senior producer at CBC's business unit. August 19, 2021. “Delta variant threat to the global economy means fiscal prudence may take an election back seat” [https://www.cbc.ca/news/business/delta-economy-election-column-don-pittis-1.6142736 Accessed 8/26/21](https://www.cbc.ca/news/business/delta-economy-election-column-don-pittis-1.6142736%20Accessed%208/26/21) //gord0]

This week, the world's most influential central banker, U.S. Fed Chair Jerome Powell, called the delta variant a "wild card" for the global economy. While there are [warning signs](https://www.cbc.ca/news/politics/stephane-perrault-pandemic-election-briefing-1.6144882) that the growing impact of this new, more contagious strain may play a role in the upcoming Canadian election, economic observers say that by itself, a slowdown during the campaign may not have the effect it might have had in the past. As the health of Canadians takes centre stage in the minds of voters, and as parties take turns proposing their own stimulus measures, some say fiscal conservatives may have more trouble rousing voters this time around. That is not to say economic issues related to the pandemic — such as [the cost of housing](https://www.cbc.ca/news/business/housing-realtor-canada-1.6142201), a [10-year high for inflation](https://www.cbc.ca/news/business/inflation-canada-1.6144667), business shutdowns and the effect of school closings on working parents — won't also become election issues. Same goals, different methods A lot of the difference between the federal parties is less in their economic goals — for each, that includes long-term pandemic recovery — than in the details of how they get there, said Michael Smart, a University of Toronto economist and founder of the think-tank [Finances of the Nation](https://financesofthenation.ca/). "It's a great time to be a policy nerd," he quipped. Voters don't always read the policy fine print. And in a global pandemic, it's not only the virus and its variants coming from outside Canada — so too do many of its economic impacts. A surge in Canadian inflation, caused by the kind of stimulus all the parties are supporting, is hard to separate from the [even-higher inflation](https://www.cbc.ca/news/business/powell-bottleneck-column-don-pittis-1.6120628) seen in the U.S., our southern neighbour and biggest trading partner. The Bank of Canada always insists it sets rates independently, based on the needs of the Canadian economy. But a sudden jump in rates to quell inflation would inevitably affect the loonie, leading to a potentially devastating effect on Canadian exports. While Canada's high vaccination rate may be helping the country [avoid the worst of a delta-driven fourth wave](http://www.cbc.ca/news/health/covid19-coronavirus-vaccinated-1.6143572), there are already signs the variant's spread in places such as the U.S. and China is affecting markets and supply lines. Reports from the U.S. [blamed a sharp fall in retail sales](https://www.cnbc.com/2021/08/16/retail-sales-likely-dipped-in-july-as-consumers-held-off-on-purchases.html) on the spreading delta variant there. And the International Energy Agency has warned that [a global slowdown caused by the contagious variant](https://twitter.com/ftenergy/status/1425776301999284225) will lead to a decline in oil demand — a crucial measure for Canadian exporters. Productions lags The Wall Street Journal reported this week that "[repercussions from the delta variant of COVID-19 are starting to ripple across companies](https://www.wsj.com/articles/-delta-variant--business-economy-11629049694)," from higher staff costs, to lower potato chip production and lower profits. And production and transportation bottlenecks are showing few signs of easing, leading to higher producer prices and thus higher consumer inflation. "Public health shocks come from abroad. So do economic shocks," said Smart. "Should Canadians hold politicians responsible for how the economy is performing [right now]? Probably not, to be honest. But will they? I don't know." One COVID-19-related economic issue that commentators say could well have an impact on how people vote is business shutdowns. While many small businesses have lobbied against some public health measures that they saw as preventing them from earning a living, a number of small business owners are particularly anxious to avoid new shutdowns at all costs, said Shadi McIsaac, CEO of RBC subsidiary Ownr, which helps new companies register and incorporate. That may be why [a growing number of businesses](https://www.cbc.ca/news/business/porter-airlines-vaccine-1.6144797) are now welcoming vaccine mandates and vaccination passports. "Almost every entrepreneur who lost a customer — and that was upwards of 90 per cent — was still worried about further lockdowns and economic uncertainty that was looming ahead for them," said McIsaac. Rather than worrying about how the federal government will pay for all the bailouts so far, businesses are still focused on the danger of a fourth wave and whether they can survive it, she said. "What we heard from business owners is that they are going to be listening very closely on each party's policy and perspective, both from a financial standpoint — so what are the funding and grants that are coming forward to support entrepreneurship and small business community; and what's the sentiment [of each] around further lockdowns." As Smart explained, there are broadly two considerations for the economy during this election — and both involve more stimulus. One is having a response ready in case the economic recovery falters, whether due to a new variant or some other cause; the other is to recharge the economy once the threat from the virus finally passes. Sales tax holiday Whether the stimulus is in new spending, or as the Conservatives have proposed, a sales tax holiday to drive immediate consumer spending, that stimulus will likely end up circulating in the Canadian economy and will pay for itself in higher future tax revenues, said Smart. David Macdonald, senior economist at the Canadian Centre for Policy Alternatives, agrees that balancing the budget will be a very theoretical consideration in this election. "I think no matter which party you are, there's no realistic way you're going to get to a zero deficit, probably, in the next three years," said Macdonald. Beyond retail closures, Macdonald pointed to what could be an even more politically contentious kind of lockdown: Schools, which will open well before voting day on Sept. 20. Another round of school closures would not just annoy long-suffering parents, he said, but would have an important economic impact, as workers are forced to stay home to supervise kids, many of whom are unvaccinated. If that happens, he said, the question is where the blame will land for voters. "I think really the biggest economic issue right now is how we get through the fourth wave," said Macdonald. "How do we support workers and businesses, just the way we've been doing for a year-and-a-half?"

#### Your models are wrong – trade doesn’t solve war

Miller 14 – Charles Miller, Lecturer at ANU’s Strategic and Defence Studies Centre, “Globalisation and war,” April 2014) <http://www.aspistrategist.org.au/globalisation-and-war/>

John O’Neal and Bruce Russett’s work is perhaps the best known in this regard—and Steven Pinker cites them approvingly in his book The Better Angels of Our Nature. Analysing trade and conflict data from the nineteenth to the twenty-first centuries, they found that trade flows do have a significant impact in reducing the chances of conflict, even when taking a variety of other factors into account. But their conclusions have in turn been questioned by other scholars. For one thing, their model failed to take three things into account. First, it’s quite possible that peace causes trade rather than the other way around—no company wants to start an export business to another country if it anticipates that business linkages will be cut off by war further down the line. Second, conflict behaviour exhibits what’s called ‘network effects’— if France and Germany are at peace, chances are Belgium and Germany will be too. And third, both the likelihood of conflict and the level of trade are influenced by the number of years a pair of countries has already been at peace—because prolonged periods of peace increase mutual trust. Take any of these factors into account, and studies have shown (here and here) that the apparent relationship between trade flows and peace disappears. Perhaps, though, conceiving of globalisation solely in terms of trade flows is mistaken. Alternative indicators of globalisation include foreign direct investment, financial openness and the levels of government intervention in economic relations with the rest of the world. Data on those variables is less extensive than on trade flows, usually dating back only to the post World War II period. But some analysts, such as Patrick McDonald and Erik Gartzke, have argued that a significant correlation can be found between them and a reduction in the probability of conflict. Those findings, newer than O’Neal and Russett’s, haven’t yet been subjected to the same intense scrutiny, so may in turn be qualified by future research. What does all that mean for the policy-maker? The statistical evidence certainly doesn’t tell us that globalisation has made war in East Asia impossible. ‘Cromwell’s law’ counsels us that a logically conceivable event should never be assigned a probability of zero. The most we could conclude is that globalisation has made such an occurrence much less likely. There’s some hopeful numerical evidence that globalisation does indeed have that effect, but the evidence isn’t so compelling that we can substitute an economic engagement policy for a security policy. By all means, let’s continue to promote trade in the Asia-Pacific. But we should also continue to be prepared for scenarios which are unlikely but would be hugely damaging if they were to occur.