No. 21A599

In the
Supreme Court of the United States

LT. COL. JONATHAN DUNN
Petitioner,
v.

LLOYD J. AUSTIN, III, in his official capacity as United States Secretary of Defense; FRANK KENDALL, in his official capacity as United States Secretary of the Air Force; COL. GREGORY HAYNES, in his official capacity; MAJ. GEN. JEFFREY PENNINGTON, in his official capacity; UNITED STATES DEPARTMENT OF DEFENSE
Respondents.

On Emergency Application for Injunction Pending Appeal To the Honorable Elena Kagan, Associate Justice of the United States and Circuit Justice for the Ninth Circuit

MOTION FOR LEAVE TO FILE BRIEF AND BRIEF FOR AMICI CURIAE PROFESSOR TODD ZYWICKI AND JEFFREY SINGER, M.D., IN SUPPORT OF APPLICANT

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MOTION FOR LEAVE TO FILE BRIEF AS *AMICI CURIAE* IN SUPPORT OF APPLICANT

Amici curiae Todd Zywicki and Jeffrey A. Singer, M.D., respectfully move for leave to file a brief explaining why this Court should grant applicant Lt. Col. Jonathan Dunn's Emergency Application for Injunction Pending Appeal and Certiorari or, in the Alternative, for Certiorari before Judgment. *Amici* notified counsel of record for both parties promptly before Lt. Col. Dunn filed his emergency application that they intended to submit the attached brief. Lt. Col. Dunn has consented to the filing of the brief. Counsel for respondent "takes no position" regarding this filing, though they consented to the filing of a substantively similar brief below. Out of an abundance of caution, *amici* submit this motion for leave to file pursuant to this Court's Rule 37.2(b).

A divided panel of the Ninth Circuit denied Lt. Col. Dunn's request for injunctive relief after the Air Force refused to grant him a religious exemption to its COVD-19 vaccine mandate despite his sincerely held religious objection to vaccination. Lt. Col. Dunn, however, previously contracted COVID-19 and thus developed natural immunity to the virus that causes infection. The most up-to-date scientific literature confirms that natural immunity is just as effective at combatting infection and transmission as vaccination, if not more so. Accordingly, the Air Force cannot demonstrate that applying its vaccine mandate to naturally immune service members serves a compelling government interest, as required to survive Lt. Col. Dunn's Religious Freedom Restoration Act and First Amendment challenges.

Amici contributed to the submission of a Comment on the Occupational Health & Safety Administration's proposed vaccine mandate prior to the regulation's withdrawal. In developing that comment, *amici* thoroughly studied the scientific data and scholarly literature on the effectiveness of natural immunity and vaccination in preventing infection and transmission of the COVID-19 virus. Their detailed understanding of this literature enables them to provide well-informed and important guidance to the Court on these complex scientific issues.

Amici respectfully submit that their brief should be accepted in connection with this Court's consideration of Lt. Col. Dunn's emergency application for injunctive relief. This case presents an issue of considerable practical and constitutional importance: whether the government may compel, on threat of discharge from service, naturally immune service members to vaccinate over their sincerely held religious objections. The Court should resolve this question with the benefit of expert input and a reasoned analysis of the scientific literature on natural immunity. Accordingly, the motion to file the brief of *amici curiae* should be granted.

Respectfully submitted,

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INTEREST OF *AMICI CURIAE*[1]

Todd Zywicki is the George Mason University Foundation Professor of Law at George Mason University's Antonin Scalia Law School. Jeffrey A. Singer, M.D., is president emeritus/founder of Valley Surgical Clinics, Ltd., the largest and oldest group private surgical practice in Arizona.

Professor Zywicki and Dr. Singer each contributed to the submission of a Comment on the Occupational Health & Safety Administration's proposed vaccine mandate prior to its withdrawal. The comment addressed the overwhelming scientific evidence showing that natural immunity is at least as effective as any of the available vaccines at preventing infection, transmission, and sickness from SARS-CoV-2, the virus that causes COVID-19, and highlighted the irrationality of OSHA's decision not to consider previous infection on par with vaccination. *See* App'x A. *Amici* submit this brief to explain why the Air Force's application of its vaccine mandate to service members with natural immunity from COVID-19 does not further a compelling government interest.

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[1] Applicant consents to the filing of this brief. Respondents' position on the filing of this brief is unclear. In response to a request for Respondents' position, counsel for Respondents replied, "the federal government takes no position." Respondents did, however, consent to the filing of a substantively similar brief before the Ninth Circuit. Accordingly, in an abundance of caution, Amici have submitted a motion for leave to file this brief. No party or person other than amici and their counsel authored this brief in whole or in part or contributed money for its preparation or submission.

SUMMARY OF ARGUMENT

Amici do not dispute that vaccines are an effective and vital tool in addressing the ongoing COVID-19 pandemic. To withstand scrutiny under the First Amendment and the Religious Freedom Restoration Act ("RFRA"), however, the government must base any policy to address the pandemic on the best available evidence and scientific findings.

Here, that means it must account for natural immunity. The most up-to-date, scientific literature confirms that, once people contract COVID-19, they develop natural immunity to the disease that protects against infection and transmission at least as effectively as vaccination. In light of these benefits and the limited efficacy of vaccines, there is no scientific basis to discharge from military service those with natural immunity, simply because they have not received a vaccine.

Nevertheless, the Air Force claims for itself the broad power to force all airmen—including those with natural immunity like Lt. Col. Dunn—to undergo forced vaccination or face discharge despite their religious objections and honorable past service. The government claims this sweeping mandate is necessary to further its interests in (1) preventing the spread of disease among the armed forces and (2) ensuring all service members are maximally ready to serve.

As applied to naturally immune airmen, the Air Force's vaccine mandate serves neither interest. It does not further prevent the spread of the disease because naturally immunity is just as effective at preventing infection and transmission as vaccination,

if not more so. Similarly, mandatory vaccination does not enhance naturally immune airmen's readiness to deploy because they are no more likely to contract the virus than vaccinated airmen. If anything, vaccination of naturally immune airmen *decreases* their combat readiness, as the vaccines' adverse effects are more severe for previously infected people.

ARGUMENT

I. The Air Force Must Prove that Its Vaccine Mandate Is the "Least Restrictive Means" of "Furthering" a "Compelling Governmental Interest."

In 1993, Congress enacted RFRA "to provide very broad protection for religious liberty." *Burwell v. Hobby Lobby Stores, Inc.*, 573 U.S. 682, 693 (2014). Under this statute, the "Government shall not substantially burden a person's exercise of religion even if the burden results from a rule of general applicability" unless it demonstrates that the application of the burden on the individual: "(1) is in furtherance of a compelling government interest; and (2) is the least restrictive means of furthering that compelling governmental interest." 42 U.S.C. § 2000bb-1(b).

Under the First Amendment, moreover, where "the challenged restrictions are not 'neutral' and of 'general applicability,' they must satisfy 'strict scrutiny,' and this means that they must be 'narrowly tailored' to serve a 'compelling' state interest." *Roman Cath. Diocese of Brooklyn v. Cuomo*, 141 S. Ct. 63, 67 (2020). A regulation satisfies this test if it "is the least restrictive means of achieving some compelling state interest." *Thomas v. Rev. Bd. of Indiana Emp. Sec.*

Div., 450 U.S. 707, 718 (1981); *accord, e.g.*, *S. Bay United Pentecostal Church v. Newsom*, 985 F.3d 1128, 1142 (9th Cir. 2021).

Amici do not dispute that preventing the spread of the virus and ensuring military readiness are compelling interests. But in seeking to advance those interests, it is also undisputed that the government has substantially burdened Lt. Col. Dunn's religious exercise by failing to grant him a religious exemption to its vaccine mandate. *See* Emerg. Appl. for Inj. Pending Appeal at 13. Indeed, while the Air Force routinely exempts service members for administrative and medical reasons—even when such exemptions are not medically necessary—it ***never*** grants COVID-19 vaccination exemptions for religious reasons.

Because of this discriminatory practice, the government must demonstrate that its system of exemptions for the mandate "(1) is in furtherance of a compelling governmental interest; and (2) is the least restrictive means of furthering that compelling governmental interest." 42 U.S.C. § 2000bb-1; *see also Cuomo*, 141 S. Ct. at 67. The government bears the burden of proof on both elements.

II. Applying the Vaccine Mandate to People with Natural Immunity Does Not Further a Compelling Government Interest.

To justify the burden the vaccine mandate imposes on Lt. Col. Dunn's religious exercise, the government first must "demonstrate that the compelling interest test is satisfied through application of the challenged law to the . . . particular claimant whose sincere exercise of religion is being substantially burdened." *Burwell*, 573 U.S. at 726.

The government has identified two interests here: (1) "preventing the spread of COVID-19 among the forces," and (2) "ensuring *all* service members, including [Lt. Col. Dunn], are maximally ready to serve." Govt. Resp. to Emerg. Mot. for Inj. Pending Appeal, *Dunn v. Austin et al.*, No. 22-15286, Dkt. No. 13 at 2 (9th Cir. March 16, 2022) ("Govt. Resp.").

Although *amici* do not dispute that these interests qualify as compelling, it is not enough for the government to identify such interests; it must also prove that the challenged measure "is in furtherance of" them. 42 U.S.C. § 2000bb-1; *see also Cuomo*, 141 S. Ct. at 67 (laws that target religious exercise "must be 'narrowly tailored' *to serve* a 'compelling' state interest") (emphasis added). Because its vaccine exemption policy ignores the effectiveness of natural immunity, the government cannot satisfy this test here.

A. Accepted biological principles indicate that natural immunity is more effective than vaccination.

Like any respiratory virus, the virus responsible for the COVID-19 pandemic—SARS-CoV-2—enters the body through a mucus-lined surface like the nose, mouth, or eyes.[2] It then "latches its spiky surface proteins [i.e., the "spike protein"] to receptors on

[2] Melinda Ratini, *Coronavirus: What Happens When You Get Infected?* WEBMD MEDICAL REFERENCE (Jan. 21, 2022), https://wb.md/38eZSJT; U.S. Centers for Disease Control and Prevention ("CDC"), *How COVID-19 Spreads* (July 14, 2021), https://bit.ly/3iQ7vZb.

healthy cells."[3] Once attached, the virus replicates its genome and uses the host cell to make structural proteins critical to form new copies of itself that will soon escape the host cell and infect the rest of the body.[4]

In response to infection, the body produces "IgA antibodies," which are specific to the mucosal surfaces where the virus first enters the body.[5] These antibodies recognize a broad array of proteins carried by the virus.[6] As a result, even if the virus's proteins mutate so as to partially escape vaccine protection, natural immunity can still recognize the virus to a substantial degree.[7]

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[3] Ratini, *supra* n.2; *see also* Megan Scudellari, *How the coronavirus infects cells — and why Delta is so dangerous*, NATURE (July 28, 2021), https://go.nature.com/3Do2pNa ("SARS-CoV-2 spike proteins attach to a familiar protein . . . which adorns the outside of most human throat and lung cells.").

[4] Johns Hopkins Medicine, *How Coronaviruses Work*, https://bit.ly/3JX5XIH (July 22, 2020).

[5] *See* Claude Matuchansky, *Mucosal immunity to SARS-CoV-2: a clinically relevant key to deciphering natural and vaccine-induced defences*, 27(12) CLIN. MICROBIL. INFECT. 1724, 1724 (2021), https://bit.ly/3JVzlzc ("Natural SARS-CoV-2 infection does induce mucosal . . . S-IgA as well as systemic IgG antibody responses.").

[6] *See* Ian Martiszus, *SARS-CoV-2 Vaccines*, *Breakthrough Infections and Lasting Natural Immunity*, CURE-HUB (Aug. 22, 2021), https://bit.ly/3q9iWQl (observing "the broad antibody repertoire generated after a natural infection").

[7] *Id.* ("Antibodies against [the virus's N protein] offer an additional layer of protection for naturally immune individuals. The N protein is reported to have a slower mutation rate than S, which further reduces susceptibility to SARS-CoV-2 variants.").

The IgA antibodies also reduce transmission, neutralizing the virus more than other antibodies during the time when an infected person is most infectious.[8] Finally, these antibodies evolve over time, developing greater "potency and breadth" and greater capacity to respond to future variants and mutations.[9]

Current COVID-19 vaccines, by contrast, target only the spike protein, are administered through the muscles rather than mucosal surfaces, and thus do "not generate [the] mucosal IgA" antibodies necessary to provide robust protection.[10] As such, vaccination does not prevent "the nasal cavity [from becoming] a reservoir for [SARS-CoV-2] . . . placing patients at risk for reinfection or spread of disease."[11]

From a conceptual standpoint, therefore, those who recover from the disease should be *at least* equally

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[8] Delphine Sterlin, *et al.*, *IgA dominates the early neutralizing antibody response to SARS-CoV-2*, SCI. TRANSL. MED., Jan. 2021, at 1, https://bit.ly/3JWyGgO ("IgA contributed to virus neutralization to a greater extent compared with [other antibodies].").

[9] Alice Cho, *et al.*, *Anti-SARS-CoV-2 receptor binding domain antibody evolution after mRNA vaccination*, 600 NATURE 517, 521 (2021), https://go.nature.com/3iNnPdc.

[10] Eva Piano Mortari, *et al.*, *Highly-specific memory B cells generation after the 2nd dose of BNT162b2 vaccine compensate for the decline of serum antibodies and absence of mucosal IgA*, MEDRXIV [preprint] (June. 09, 2021) https://bit.ly/3JT2T0H; *see also* CDC, *mRNA Vaccines* (Jan. 4, 2022), https://bit.ly/3uFpd79.

[11] Uday S. Kumar, *et al.*, *Gold-Nanostar-Chitosan-Mediated Delivery of SARS-CoV-2 DNA Vaccine for Respiratory Mucosal Immunization: Development and Proof-of-Principle*, 15 ACS NANO 17582 (2021), https://bit.ly/3K00fG7.

resistant to reinfection and transmission as those who receive the vaccine, and likely more so.

B. The scientific evidence overwhelmingly confirms what biological principles suggest: natural immunity is at least as effective as vaccination when it comes to SARS-CoV-2.

Scientific testing bears out these expectations. The most recent studies establish that natural immunity provides an efficacy equal or superior to vaccination, against both the original virus and variants.

1. Natural immunity exhibits rates of infection comparable to or lower than vaccination over longer periods.

First, natural immunity produces protection against infection comparable to or greater than vaccines. As of October 2021, at least 150 studies affirmed the presence of robust, naturally acquired immunity to COVID-19.[12] Meta-analyses of these studies have shown that natural immunity reduces the risk of infection by 90% or more for upwards of ten months after the original infection, reflecting the full time periods for which data was available.[13]

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[12] *See* Paul Elias Alexander, *150 Research Studies Affirm Naturally Acquired Immunity to Covid-19: Documented, Linked, and Quoted*, BROWNSTONE.ORG (Oct. 17, 2021), https://bit.ly/3qPwpwy (collecting studies).

[13] CDC, *Science Brief: SARS-CoV-2 Infection-induced and Vaccine-induced Immunity* (Oct. 29, 2021),

Another study, completed before the Delta variant became dominant, found that the odds of *any* SARS-CoV-2 infection were 13 times higher for vaccinated individuals than for those with natural immunity.[14] The same study found that vaccinated individuals were 27 times more likely to have a *symptomatic* infection and eight times more likely to be hospitalized than those with natural immunity.[15]

In terms of the duration of the protections, studies have shown that the relative protection against reinfection for the naturally immune stood at 85% at

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https://bit.ly/3wQ0Zdb ("SARS-CoV-2 infection decreased risk of subsequent infection by 80-93% for at least 6-9 months."); N. Kojima, N. K. Shrestha, J. D. Klausner, *A Systematic Review of the Protective Effect of Prior SARS-CoV-2 Infection on Repeat Infection*, 44(4) EVALUATION AND THE HEALTH PROFESSIONS 327, 327 (2021), https://bit.ly/3NzXD48 (finding 90.4% reduction in risk against reinfection); Tawanda Chivese, *et al.*, *The prevalence of adaptive immunity to COVID-19 and reinfection after recovery—a comprehensive systematic review and meta-analysis*, MEDRXIV [preprint] (Dec. 11, 2021), https://bit.ly/3qXFpyQ (finding that "around 90% of people previously infected with SARS-CoV-2 had evidence of immunological memory . . . which was sustained for at least 6-8 months after recovery" and a prevalence of reinfection of 0.2%); Eamon O. Murchu, *et al.*, *Quantifying the risk of SARS-CoV-2 reinfection over time*, 2021 REV. MED. VIROL., May 2021, at 1, https://bit.ly/3iT0tmB (finding that "reinfection was an uncommon event (absolute rate 0%-1.1%) with no study reporting an increase in the risk of reinfection over time" and that "naturally acquired SARS-CoV-2 immunity does not wane for at least 10 months post-infection").

[14] Sivan Gazit, *et al.*, *Comparing SARS-CoV-2 natural immunity to vaccine-induced immunity: reinfections versus breakthrough infections*, MEDRXIV [preprint] (Aug. 25, 2021), https://bit.ly/3q9isK1.

[15] *Id.*

3–15 months and remained 73% effective after 15 months.[16] Other studies have shown that natural immunity provides robust protection from 6–11 months after initial infection, some showing reduced risk of infection by 80–93% for at least 6 to 9 months.[17] Still other studies have shown that the protection from natural immunity *increases* over time.[18]

By contrast, it is well-understood that the efficacy of protection from current vaccines wanes substantially in a relatively short period of time

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[16] Victoria Hall, *et al.*, *Effectiveness and durability of protection against future SARS-CoV-2 infection conferred by COVID-19 vaccination and previous infection; findings from the UK SIREN prospective cohort study of healthcare workers March 2020 to September 2021*, MEDRXIV [preprint] at 24 (Dec. 01, 2021), https://bit.ly/3zAz9B7 ("Adjusted Absolute protection against infection" column of Table 3).

[17] CDC, *supra* n.13; Dana Wollins, *COVID-19 Clinician Call*, IDSA (July 17, 2021), https://bit.ly/3f8Lov2 ("Immune responses to SARSCoV2 following natural infection can persist for months (maximum follow-time is ~11 months."); World Health Organization, *COVID-19 natural immunity*, WORLD HEALTH ORG. SCIENTIFIC BRIEF (May 10, 2021), https://bit.ly/3n8AmdU (finding that "in most people, immune responses remain robust and protective against reinfection for at least 6-8 months after infection"—8 months being the longest follow up study at that point—and that "robust immunity [persisted] at 6 months post-infection in 95% of subjects under study").

[18] Megan M. Sheehan, *et al.*, *Reinfection Rates among Patients who Previously Tested Positive for COVID-19: A Retrospective Cohort Study*, CLIN. INFECT. DIS. (Mar. 15, 2021), https://bit.ly/3fkb5cx ("Protection offered from prior infection was 81.8% . . . and against symptomatic infection was 84.5%. *This protection increased over time*.") (emphasis added).

compared to natural immunity.[19] One study, for example, showed that the Pfizer vaccine's protection dropped from a peak of 81% at days 14–73 after vaccination to just 65% for days 74 to 144 and a mere 43% after 193 days.[20] This study thus demonstrates that natural immunity provides better protection against infection at the 3–9 month marks than vaccination does at the 2-week to 2.5-month marks. Natural immunity even provides better protection after 15 months than the Pfizer vaccine does from months 2.5 to 4.5. Additional studies reveal similar results.[21]

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[19] *See, e.g.*, Hiam Chemaitelly, *et al.*, *Waning of BNT162b2 Vaccine Protection against SARS-CoV-2 Infection in Qatar*, N. ENGL. J. MED., Dec. 2021, at e83(5), https://bit.ly/3NxTiy9 ("[Vaccine]-induced protection against infection builds rapidly after the first dose, peaks in the first month after the second dose, and then gradually wanes in subsequent months."); Peter Nordström, Marcel Ballin, Anna Nordström, *Effectiveness of Covid-19 Vaccination Against Risk of Symptomatic Infection, Hospitalization, and Death Up to 9 Months: A Swedish Total-Population Cohort Study*, SSRN [preprint] (Oct. 25, 2021), https://bit.ly/3f2IR5F ("Vaccine effectiveness of BNT162b2 against infection waned progressively from 92% . . . at day 15-30 to 47% . . . at day 121-180, and from day 211 and onwards no effectiveness could be detected. . . . The effectiveness waned slightly slower for mRNA-1273, being estimated to 59% . . . from day 181 and onwards.").

[20] Hall, *supra* n.16, at 22 ("aVE (1-HR)" column of Table 2, "Vaccinated 2 doses" section, rows for days 14–73, 74–133, and >193).

[21] *See, e.g.*, Yair Goldberg, *et al.*, *Protection and waning of natural and hybrid COVID-19 immunity*, MEDRXIV [preprint] (Dec. 05, 2021), https://bit.ly/34lHflp ("Protection from reinfection decreases with time since previous infection, but is,

2. Natural immunity more effectively combats variants than vaccination.

Second, natural immunity more effectively guards against COVID-19 variants than vaccination. Recent research into the Omicron variant indicates that full vaccination—one dose of the Johnson & Johnson vaccine or two doses of Pfizer or Moderna—provides minimal protection against infection.[22]

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nevertheless, higher than that conferred by vaccination with two doses at a similar time since the last immunity-conferring event."); Ariel Israel *et al.*, *Large-scale study of antibody titer decay following BNT162b2 mRNA vaccine or SARS-CoV-2 infection*, MEDRXIV [preprint] (Aug. 22, 2021), https://bit.ly/3G8pJix ("In vaccinated subjects, antibody titers decreased by up to 40% each subsequent month while in [COVID-recovered individuals] they decreased by less than 5% per month.").

[22] *See* Heba N. Altarawneh *et al.*, *Effect of prior infection, vaccination, and hybrid immunity against symptomatic BA.1 and BA.2 Omicron infections and severe COVID-19 in Qatar*, MEDRXIV (March 22, 2022), https://bit.ly/3rdDmYf (finding that "[e]ffectiveness of only prior infection" was 50.2% "against symptomatic BA.1 [Omicron] infection" and 46.1% "against symptomatic BA.2 [Omicron] infection," compared to -4.9% "[e]ffectiveness of only two-dose (primary series) [Pfizer] vaccination" against BA.1 and -1.1% effectiveness against BA.2, with "no discernable differences in the effects of . . . [Moderna] vaccination"); Sandile Cele, *et al.*, *SARS-CoV-2 omicron has extensive but incomplete escape of Pfizer BNT162b2 elicited neutralization and requires ACE2 for infection*, MEDRXIV [preprint] (Dec. 09, 2021), https://bit.ly/3qZBFNl ("[B]ased on the large number of mutations in the spike protein and elsewhere on the virus . . . [the Omicron] variant will have considerable escape from vaccine elicited immunity. . . . The results we present here with Omicron show much more extensive escape."); *see also* Nicola Davis, Hannah Devlin, and Ian Sample, *Two jabs offer*

As such, vaccine efficacy has waned as Omicron became the dominant strand. In fact, one study shows that the Pfizer and Moderna vaccines prove only 6% effective at preventing infection against Omicron for the first two months, their efficacy dropping to -13% for months 2–4, -39% at 4 months, and -42% at 6 months.[23] Another study put those numbers as low as -76.5% for Pfizer and -39.3% for Moderna.[24] These negative efficacies mean vaccination makes people more susceptible to Omicron infection. In other words, vaccinated people are *more likely* to be infected than unvaccinated people.

Once infected, moreover, vaccinated people "seem to have the same transmission capacity [as] non-vaccinated people."[25] In this way, vaccination provides no reduction in transmission versus Omicron.

The findings on the ineffectiveness of the vaccines in preventing both infection and transmission of

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little protection against Omicron infection, UK data shows, THE GUARDIAN (Dec. 20, 2021), https://bit.ly/3zEOUqB ("Having two doses of a Covid vaccine offers less defence against symptomatic infection from the Omicron variant than with Delta.").

[23] Sarah A. Buchan, *et al.*, *Effectiveness of COVID-19 vaccines against Omicron or Delta infection*, MEDRXIV [preprint] (Jan. 1, 2022), https://bit.ly/3GvDpUZ (Table 2).

[24] Christian Holm Hansen, *et al.*, *Vaccine effectiveness against SARS-CoV-2 infection with the Omicron or Delta variants following a two-dose or booster BNT 162b2 or mRNA-1273 vaccination series: a Danish cohort study*, MEDRXIV [preprint] (Dec. 23, 2021), https://bit.ly/3Kom4jo (Table).

[25] Javier Del Aguila-Mejia *et al.*, *Secondary Attack Rates, Transmission, Incubation and Serial Interval Periods of first SARS-CoV-2 Omicron variant cases in a northern region of Spain*, RESEARCH SQUARE (Jan. 20, 2022), https://bit.ly/3tQqk4T.

Omicron are consistent with the public statements of the Pfizer and Moderna CEOs. Both executives have publicly conceded that two doses of their vaccines do not provide protection against Omicron infection.[26]

By contrast, the protection provided from a previous infection remains robust against Omicron. One study found that the protection for those with natural immunity remained at 61.9% despite the rise in that variant.[27] The same research also showed that protection fell for naturally immune persons who were subsequently vaccinated.[28] This research indicates that vaccination increases the risk of infection for people who have recovered from COVID-19.

Natural immunity has proven more effective than vaccinations against the Delta variant as well. The CDC, for example, has found that "after emergence of the Delta variant and over the course of time, incidence increased sharply in [vaccinated persons without a previous COVID-19 diagnosis], but only slightly among both vaccinated and unvaccinated

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[26] Spencer Kimball, *Pfizer CEO says two Covid vaccine doses aren't 'enough for Omicron'*, CNBC: Health & Science (Jan. 10, 2022), https://www.cnbc.com/2022/01/10/pfizer-ceo-says-two-covid-vaccine-doses-arent-enough-for-omicron.html; Tom Westbrook & Kim Coghill, *Moderna CEO says vaccines likely less effective against Omicron – FT*, Reuters: Healthcare & Pharmaceuticals (Nov. 30, 2021), https://reut.rs/3ITsepH.

[27] Heba Altarawneh, *et al.*, *Protection afforded by prior infection against SARS-CoV-2 reinfection with the Omicron variant*, MEDRXIV [preprint] (Jan. 6, 2022), https://bit.ly/3GvDA2B (Table 3).

[28] *Id.* (Table 3).

persons with previously diagnosed COVID-19."[29] This finding is consistent with "early declining of vaccine-induced immunity in many persons."[30] It is also consistent with "recent international studies," which "have also demonstrated increased protection in persons with previous infection, with or without vaccination, relative to vaccination alone."[31]

3. Natural immunity more effectively combats transmission on reinfection.

Finally, vaccinated individuals who nevertheless experience a "breakthrough infection" of COVID-19 are more likely to contract the disease again in the future and transmit it to others than naturally immune people who suffer reinfection. Multiple studies have confirmed, for example, that when a vaccinated person contracts COVID-19, the infectiousness of his disease is comparable to that of an unvaccinated individual who has never contracted the disease.[32]

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[29] Tomás M. León *et al.*, *COVID-19 Cases and Hospitalizations by COVID-19 Vaccination Status and Previous COVID-19 Diagnosis — California and New York, May–November 2021*, CDC, 71 Morbidity and Mortality Weekly Report 4 at 126–27, 130 (Jan. 28, 2022), https://bit.ly/3iWp5ut.

[30] *Id.* at 130.

[31] *Id.*

[32] *See, e.g.*, Karen K. Riemersma, *et al.*, *Vaccinated and unvaccinated individuals have similar viral loads in communities with a high prevalence of the SARS-CoV-2-Delta variant*, MEDRXIV [preprint] (Nov. 06, 2021), https://bit.ly/3JVsndK ("[I]nfectious SARS-CoV-2 is found at

In addition, vaccinated people who suffer breakthrough infections are more likely to be infected with and transmit variants than unvaccinated people who have never contracted COVID-19.[33] This increased vulnerability from the vaccines may explain the Delta variant's rise to dominance in the summer of 2021 following widespread vaccinations.

In short, vaccinated people are both more likely to contract COVID-19 and to transmit it to others than

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similar titers in vaccinated and unvaccinated persons when specimen Ct values are low.") (full text); Charlotte B. Acharya, *et al.*, *No Significant Difference in Viral Load Between Vaccinated and Unvaccinated, Asymptomatic and Symptomatic Groups When Infected with SARS-CoV-2 Delta Variant*, MEDRXIV [preprint] (Oct. 05, 2021), https://bit.ly/3K4dear ("In our study, mean viral loads [a proxy for infectiousness] as measured by Ct-value were similar for large numbers of asymptomatic and symptomatic individuals infected with SARS-Cov-2 during the Delta surge, regardless of vaccine status, age, or gender.").

[33] Venice Servellita, *et al.*, *Predominance of antibody-resistant SARS-CoV-2 variants in vaccine breakthrough cases from the San Francisco Bay Area, Calif.*, NATURE MICROBIOLOGY (Jan. 10, 2022), https://bit.ly/3nsdupZ ("[V]accine breakthrough infections are overrepresented by immunity-evading variants as compared with unvaccinated infections."); Rui Wang, Jiahui Chen, Guo-Wei Wei, *Mechanisms of SARS-CoV-2 Evolution Revealing Vaccine-Resistant Mutations in Europe and America*, 12(49) J. PHYS. CHEM. LETT. 11850, 11854-55 (2021), https://bit.ly/3tRR1WK ("[V]accine-resistant mutations correlate strongly with the vaccination rates in Europe and America."); Debra Van Egeren *et al.*, *Risk of rapid evolutionary escape from biomedical interventions targeting SARS-CoV-2 spike protein*, PLOS ONE (April 28, 2021), https://bit.ly/3F6WwDA ("SARS-CoV-2 mutants . . . are expected to exist in high numbers due to neutral genetic variation, and consequently resistance to vaccines or other prophylactics that rely on one or two antibodies for protection can develop quickly.").

naturally immune people. Indeed, one study showed that naturally immune people are as much as *four times* less likely to transmit the disease than vaccinated people who contract the disease.[34] And as of January 2022, the CDC did not have a single documented case of reinfection of a naturally immune person transmitting SARS-CoV-2 to another person.[35]

Where reinfections do occur, moreover, they are overwhelmingly asymptomatic, and any symptoms that do manifest are rarely severe.[36] The CDC recently released data to this effect:[37]

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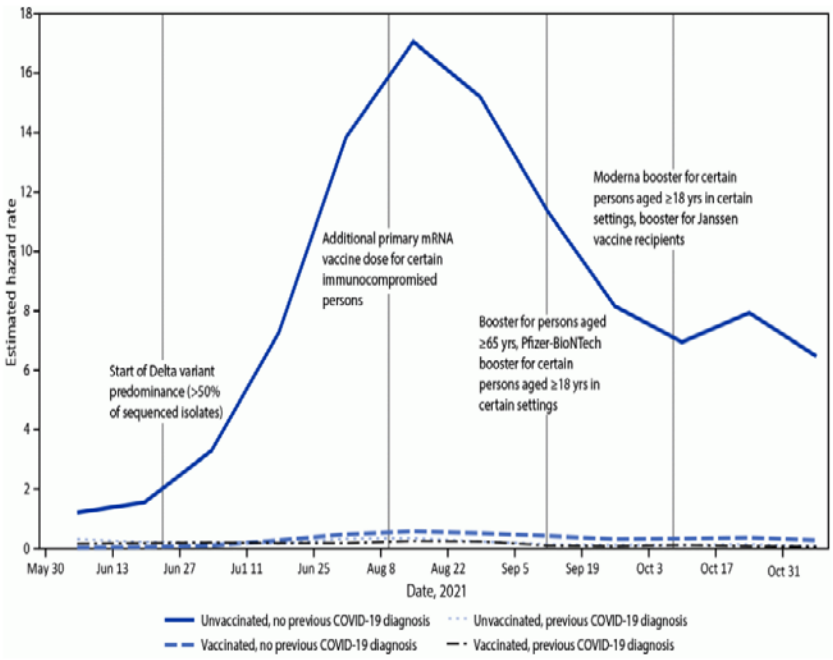
[34] Laith J. Abu-Raddad, *et al.*, *Effect of vaccination and of prior infection on infectiousness of vaccine breakthrough infections and reinfections*, MEDRXIV [preprint] (July 30, 2021), https://bit.ly/33grFXD ("The Ct value was 1.3 . . . cycles higher for [Pfizer] breakthrough infections, 3.2 . . . cycles higher for [Moderna] breakthrough infections, and 4.0 . . . cycles higher for reinfections in unvaccinated individuals.")

[35] Letter of Department of Health and Human Services to Elizabeth Brehm (Nov. 5, 2021), https://bit.ly/3qfHwPD.

[36] CDC, *Science Brief: SARS-CoV-2 Infection-induced and Vaccine-induced Immunity* (Oct. 29, 2021), https://bit.ly/3Gojis5 ("[A] large proportion of the reinfections reported across the studies were asymptomatic infections"); Megan M. Sheehan, *supra* n.18, at 1883, https://bit.ly/3LyHcDn ("Prior infection in patients with COVID-19 was highly protective against reinfection and symptomatic disease.").

[37] León *et al.*, supra n.29, at 129 (link to "Figure").

FIGURE. Incident laboratory-confirmed COVID-19-associated hospitalizations among immunologic cohorts defined by vaccination and previous diagnosis histories — California, May 30–November 13, 2021*,†



C. Given his natural immunity, forcing Lt. Col. Dunn to vaccinate will not further the government's interests and in fact disserves those interests.

The Air Force argues its refusal to grant Lt. Col. Dunn a religious exemption to mandatory vaccination will serve both its compelling interests. It predicates this inflexible application of its mandate on two assumptions: (1) all unvaccinated individuals are equally likely to contract and spread the disease, regardless of prior infection; and (2) "[a]n unvaccinated service member [with natural immunity] is substantially more likely to become seriously ill and infect others" than a vaccinated

service member who has never contracted COVID-19. Govt. Resp. at 17.

As outlined above, these assumptions are incorrect. *See supra* §§ II.A–B. Natural immunity reduces the risk of infection, transmission, and severe disease to at least the same extent as vaccination, and studies have shown the vaccine does not provide any significant additional benefits to the naturally immune.[38] Thus, mandatory vaccination of naturally immune service members does not further the government's stated interests.

Quite the opposite, mandatory vaccination of such individuals *undermines* the government's interest in military readiness. The scientific literature demonstrates that vaccines pose greater risks of adverse side effects to people who have already contracted COVID-19 than those who have not. One study, for example, found that 6.8% of naturally immune individuals who received a dose of mRNA vaccine suffered "severe symptoms that required medical attention," compared to only 0.6% of people who had never contracted COVID-19 after the first

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[38] *See* Mahesh B. Shenai, *et al.*, *Equivalency of Protection From Natural Immunity in COVID-19 Recovered Versus Fully Vaccinated Persons: A Systematic Review and Pooled Analysis*, CUREUS J. OF MED. SCI., Oct. 2021, https://bit.ly/3KaveQ5 ("[W]hile there may be some incremental protection to vaccination in COVID-recovered individuals, the absolute magnitude of that protection is dramatically lower compared to that experienced by COVID-naïve individuals.") (finding that it would require injection of 218 individuals with natural immunity to prevent one SARS-CoV-2 infection of any type compared to 6.5 COVID-naïve individuals, a 33.5-fold difference) (full text).

shot and zero after the second shot.[39] Another reported a 4.59-fold higher risk of adverse effects associated with the first shot for naturally immune individuals compared to the COVID-naïve population and an additional 0.60-fold increased risk from the second shot.[40] Still another found a 1.56-fold increased risk of side effects that required hospital care.[41]

This is but a small sample of the studies evidencing a higher risk of adverse effects from vaccination of naturally immune individuals compared to those without prior infection.[42]

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[39] Shai Efrat, *et al.*, *Safety and humoral responses to BNT162b2 mRNA vaccination for SARS-CoV-2 previously infected and naïve populations*, NATURE SCIENTIFIC REPORTS, Aug. 2021, https://go.nature.com/3Lk4Vaa.

[40] Amanda K. Debes, *et al.*, *Association of Vaccine Type and Prior SARS-CoV-2 Infection With Symptoms and Antibody Measurements Following Vaccination Among Health Care Workers*, 181(12) JAMA INTERNAL MED. 1660, 1661 (2021), https://bit.ly/3uKa44w (Table).

[41] Alexander G. Mathioudakis, *et al.*, *Self-Reported Real-World Safety and Reactogenicity of COVID-19 Vaccines: A Vaccine Recipient Survey*, LIFE, March 2021, at 3, https://bit.ly/3ISGMGa ("[A] prior COVID-19 infection was associated with an increased severity of any side effect, local side effects or fatigue ($p < 0.001$). More importantly, a prior COVID-19 infection was associated with the risk of experiencing a severe side effect requiring hospital care (1.56 (1.14–2.12)).").

[42] *See also, e.g.*, Rajneesh K. Joshi, *Higher incidence of reported adverse events following immunisation (AEFI) after first dose of COVID-19 vaccine among previously infected health care workers*, 77 MED. J. ARMED FORCES INDIA S505, S505–07 (2021), https://bit.ly/3wQZhs3; Florian Krammer, *et al.*, *Antibody Responses in Seropositive Persons after a Single Dose of SARS-CoV-2 mRNA Vaccine*, 384(14) N. ENGL J. MED. 1372, 1372–74

The literature also shows that far from preventing infection, at a certain point, vaccine efficacy in those without prior infection turns negative, particularly for the Omicron variant, making them more likely to suffer infection. *See supra* § II.B.2. Forcing people like Lt. Col. Dunn to receive a vaccine thus decreases their readiness to deploy.

The Air Force previously argued that Lt. Col. Dunn's natural immunity did not entitle him to an exemption because it "determined, relying on guidance from the [CDC], that there is insufficient data about the extent to which prior infection protects against future infection." Govt. Resp. at 16. But the only studies it cited confirm that the risk of infection is *higher* for vaccinated individuals and that vaccination of naturally immune individuals is *more likely* to produce adverse side effects.[43]

(2021), https://bit.ly/38jC73v; Rachael Kathleen Raw, *et al.*, *Previous COVID-19 infection, but not Long-COVID, is associated with increased adverse events following BNT162b2/Pfizer vaccination*, 83 J. INFECT. 401, 401–03 (2021), https://bit.ly/370KYq7; Marie Tré-Hardy, *et al.*, *Reactogenicity, safety and antibody response, after one and two doses of mRNA-1273 in seronegative and seropositive healthcare workers*, 83(2) J. INFECT. 254, 254 (2021), https://bit.ly/3tSpJj5; Cristina Menni, *et al.*, *vaccine side-effects and SARS-CoV-2 infection after vaccination in users of the COVID symptom study app in the UK: a prospective observational study*, 21(7) LANCET INFECT. DIS. 939, 943–46 (2021), https://bit.ly/373brmA.

[43] *See* Decl. of Colonel Tonya Rans, Dist. Ct. ECF No. 13-10 ¶ 29 (citing studies that showed (1) "the rates of SARS-CoV-2 breakthrough infections in vaccinated individuals . . . were 13 times higher than the rates of reinfection and hospitalization in previously infected individuals" and (2) "the risk of myocarditis

Furthermore, the CDC claims only that there is some slight increase in protection for those with natural immunity *who also vaccinate* over those with natural immunity alone—not, as the Air Force suggests, that anyone vaccinated has greater resistance to disease than those with natural immunity.[44] And in all events, the Air Force's argument is outdated and inconsistent with the scientific consensus that natural immunity *is* as effective at combatting COVID-19 as vaccines. *See supra* § I.B.

The Air Force has also argued that only vaccinated individuals may enter some countries, so Lt. Col. Dunn's unvaccinated status may prevent his deployment to those areas. Govt. Resp. at 12. Many countries provide exceptions for naturally immune travelers, however. *See, e.g.*, *Halgren v. City of Naperville*, No. 21-CV-05039, 2021 WL 5998583, at *30 (N.D. Ill. Dec. 19, 2021) ("[T]he European Union (among other authorities) considers proof of recovery from infection as the functional equivalent to

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[a side effect of vaccination] was substantially higher in those who had COVID-19 disease" than in those who had never had it).

[44] *See* CDC, *Frequently Asked Questions about COVID-19 Vaccination* (updated Feb. 28, 2022), https://go.usa.gov/xzUSk ("People who already had COVID-19 and do not get vaccinated after their recovery are more likely to get COVID-19 again than those who get vaccinated after their recovery.") (response to "If I already had COVID-19 and recovered, do I still need to get a COVID-19 vaccine?").

vaccination.").[45] These requirements are also changing rapidly, so the Air Force's claim is speculative.

CONCLUSION

For these reasons, Petitioner's application for a writ of injunction should be granted.

Respectfully submitted,

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[45] *See also* Page McClanahan, *I'm a U.S. Citizen. Where in the World Can I Go?* The New York Times, March 21, 2022, https://nyti.ms/3JOicY9 (chronicling requirements for entry into every country, many of which treat recent infection the same as vaccination).