Testimony of Dr. Jordan Vaughn
Submitted to the Senate Subcommittee on Investigations

Chairman Johnson, Ranking Member Blumenthal, and members of the subcommittee, thank you for the opportunity to testify. My name is Dr. Jordan Vaughn. I am an internist based in Birmingham, Alabama, a fellow in microvascular disease with Independent Medical Alliance, and founder of the Foundation for Microvascular Research, focused on long COVID and vaccine injury.

As a practicing clinician and employer of over 200 staff with roughly 150,000 annual patient visits, 2020 demanded intense research and rapid adaptation. Each day, I spent hours reviewing emerging literature from PubMed and preprint servers and collaborating with peers worldwide. This effort gave me a real-time understanding of COVID-19's evolving pathophysiology, especially regarding the spike protein.

The Spike Protein: A Pathogenic Culprit

The SARS-CoV-2 spike protein, specifically its S1 subunit, is not a benign protein. It triggers inflammation, disrupts endothelial barriers, induces fibrin resistant to breakdown, and promotes amyloid-like aggregates [2, 4, 6, 10, 20]. These effects impair oxygen delivery, damage blood vessels, and contribute to clotting pathologies that manifest as persistent symptoms of heart racing, brain fog, shortness of breath, and post-exertional malaise [30-33]. In my clinic, I use immunofluorescent microscopy to detect amyloid fibrin microclots in patients—some as young as teenagers unable to stand, others are previously active adults suffering small strokes without identifiable cause. These are not abstract theories; they are the lived realities of my patients in Alabama and beyond.

The mRNA vaccines, heralded as the solution, introduced a novel mechanism: lipid nanoparticles (LNPs) delivering modified mRNA that instructs cells to produce a stabilized Spike Protein [13, 14]. Unlike traditional vaccines, this approach results in uncontrolled production of the spike protein for an unknown duration and distributes it widely across organs, including the heart, brain, and vasculature [15, 16, 37]. The European Medicines Agency's assessment of Comirnaty noted biodistribution beyond the injection site, contradicting claims that the vaccine "stays in the arm" [39]. A recent groundbreaking study using Single Cell Precision Nanocarrier Identification (SCP-Nano) revealed LNP accumulation in heart tissue of mice, with adverse proteomic changes in immune and vascular proteins, raising concerns about cardiac complications [37]. These findings align with clinical reports of myocarditis and pericarditis, particularly in young males, following mRNA vaccination [29, 34, 35].

A Clinical Awakening:

My first encounter with vaccine injury came in winter 2021. A 69-year-old man from Alabama presented with unexplained shortness of breath two days after his second Pfizer dose. Imaging ruled out pulmonary embolism, but empirical anticoagulant and antiplatelet therapy brought rapid improvement. This case prompted deeper investigation. The spike protein's ability to induce fibrin resistant to fibrinolysis [20], activate platelets irreversibly [21], and damage the endothelium [22] explained his symptoms—and those of thousands more I've since treated.

Since then, I have treated over 4,000 patients suffering long COVID, vaccine injury, or both. Many were young and previously healthy. For those with vaccine injury, trust in public health institutions has been shattered. Many were coerced under the August 2021 federal mandates despite legitimate hesitations due to prior infection or personal health risks. Now disabled, they are dismissed or ignored by the systems that mandated their compliance [28].

The Myocarditis Signal and Institutional Failure

By spring 2021, a clear safety signal emerged: myocarditis in young males linked to mRNA vaccines [29]. The Department of Defense confirmed cases of rare heart inflammation [29], and peer-reviewed studies later detected circulating spike protein in post-vaccine myocarditis cases [35]. Autopsy findings have confirmed fatal vaccine-induced myocarditis [34]. Yet, federal authorities accelerated licensing and mandates, sidelining concerns. The CDC's hesitation to issue a health alert on myocarditis and the FDA's former CBER director promoting vaccines on social media crossed a line from oversight to advocacy [36]. This was not regulation; it was endorsement.

Informed consent is the foundation of the patient-physician relationship and absent the regulators providing the information that relationship is irreparably harmed, and the practice of medicine will continue to suffer

In closing, I urge you stop blindly "following the science." Science does not lead anywhere, it is an observer, measurer, and descriptor. It must inform leadership—not replace it. When leaders hide behind "the science" to justify policy, they abdicate responsibility. We need leadership that humbly engages with data, listens to patients, and acts with courage.

In closing, I think of my patients—those fighting to reclaim their lives, those who never got the chance, and those still suffering in silence. They are why I'm here. They are why we must right this wrong.

Thank you. I welcome your questions.

Reference List

1. Akhtar, M., et al., *Appearance of tolerance-induction and non-inflammatory SARS-CoV-2 spike-specific IgG4 antibodies after COVID-19 booster vaccinations.* Front Immunol, 2023. 14: p. 1309997.

2. Patra, T. and R. Ray, *Bystander effect of SARS-CoV-2 spike protein on human monocytic THP-1 cell activation and initiation of prothrombogenic stimulus representing severe COVID-19.* J Inflamm (Lond), 2022. 19(1): p. 28.

3. Wu, Z., et al., *SARS-CoV-2 Proteins Interact with Alpha Synuclein and Induce Lewy Body-like Pathology In Vitro.* Int J Mol Sci, 2022. 23(6).

4. Villacampa, A., et al., *SARS-CoV-2 S protein activates NLRP3 inflammasome and deregulates coagulation factors in endothelial and immune cells.* Cell Commun Signal, 2024. 22(1): p. 38.

5. Montezano, A.C., et al., *SARS-CoV-2 spike protein induces endothelial inflammation via ACE2 independently of viral replication.* Sci Rep, 2023. 13(1): p. 14086.

6. Perico, L., et al., *SARS-CoV-2 spike protein induces lung endothelial cell dysfunction and thrombo-inflammation depending on the C3a/C3a receptor signalling.* Sci Rep, 2023. 13(1): p. 11392.

7. Forsyth, C.B., et al., *The SARS-CoV-2 S1 Spike Protein Promotes MAPK and NF-kB Activation in Human Lung Cells and Inflammatory Cytokine Production in Human Lung and Intestinal Epithelial Cells.* Microorganisms, 2022. 10(10).

8. Wu, M.L., et al., *Mast cell activation triggered by SARS-CoV-2 causes inflammation in brain microvascular endothelial cells and microglia.* Front Cell Infect Microbiol, 2024. 14: p. 1358873.

9. Theoharides, T.C. and D. Kempuraj, *Role of SARS-CoV-2 Spike-Protein-Induced Activation of Microglia and Mast Cells in the Pathogenesis of Neuro-COVID.* Cells, 2023. 12(5).

10. Onnis, A., et al., *SARS-CoV-2 Spike protein suppresses CTL-mediated killing by inhibiting immune synapse assembly.* J Exp Med, 2023. 220(2).

11. Biering, S.B., et al., *SARS-CoV-2 Spike triggers barrier dysfunction and vascular leak via integrins and TGF-beta signaling.* Nat Commun, 2022. 13(1): p. 7630.

12. Chesney, A.D., B. Maiti, and U.H.E. Hansmann, *SARS-COV-2 spike protein fragment eases amyloidogenesis of alpha-synuclein.* J Chem Phys, 2023. 159(1).

13. Nance, K.D. and J.L. Meier, *Modifications in an Emergency: The Role of N1-Methylpseudouridine in COVID-19 Vaccines.* ACS Cent Sci, 2021. 7(5): p. 748-756.

14. Hsieh CL, G.J., Schaub JM, DiVenere AM, Kuo HC, Javanmardi K, Le KC, Wrapp D, Lee AG, Liu Y, Chou CW, Byrne PO, Hjorth CK, Johnson NV, Ludes-Meyers J, Nguyen AW, Park J, Wang N, Amengor D, Lavinder JJ, Ippolito GC, Maynard JA, Finkelstein IJ, McLellan JS., *Structure-based design of prefusion-stabilized SARS-CoV-2 spikes.* Science, 2020. Sep 18;369(6510):1501-1505.

15. Krauson, A.J., et al., *Duration of SARS-CoV-2 mRNA vaccine persistence and factors associated with cardiac involvement in recently vaccinated patients.* NPJ Vaccines, 2023. 8(1): p. 141.

16. Pardi, N., et al., *mRNA vaccines - a new era in vaccinology.* Nat Rev Drug Discov, 2018. 17(4): p. 261-279.

17. Trougakos, I.P., et al., *Adverse effects of COVID-19 mRNA vaccines: the spike hypothesis.* Trends Mol Med, 2022. 28(7): p. 542-554.

18. Brogna, C., et al., *Detection of recombinant Spike protein in the blood of individuals vaccinated against SARS-CoV-2: Possible molecular mechanisms.* Proteomics Clin Appl, 2023. 17(6): p. e2300048.

19. Cohen, K.W., et al., *Longitudinal analysis shows durable and broad immune memory after SARS-CoV-2 infection with persisting antibody responses and memory B and T cells.* Cell Rep Med, 2021. 2(7): p. 100354.

20. Grobbelaar, L.M., et al., *SARS-CoV-2 spike protein S1 induces fibrin(ogen) resistant to fibrinolysis: implications for microclot formation in COVID-19.* Biosci Rep, 2021. 41(8).

21. Kuhn, C.C., et al., *Direct Cryo-ET observation of platelet deformation induced by SARS-CoV-2 spike protein.* Nat Commun, 2023. 14(1): p. 620.

22. Xu, S.W., I. Ilyas, and J.P. Weng, *Endothelial dysfunction in COVID-19: an overview of evidence, biomarkers, mechanisms and potential therapies.* Acta Pharmacol Sin, 2023. 44(4): p. 695-709.

23. Raman, B., et al., *Long COVID: post-acute sequelae of COVID-19 with a cardiovascular focus.* Eur Heart J, 2022. 43(11): p. 1157-1172.

24. Constantinescu-Bercu, A., et al., *Long COVID: Molecular Mechanisms and Detection Techniques.* Int J Mol Sci, 2023. 25(1).

25. Astin, R., et al., *Long COVID: mechanisms, risk factors and recovery.* Exp Physiol, 2023. 108(1): p. 12-27.

26. Davis, H.E., et al., *Long COVID: major findings, mechanisms and recommendations.* Nat Rev Microbiol, 2023. 21(3): p. 133-146.

27. Puntmann, V.O., et al., *Long-term cardiac pathology in individuals with mild initial COVID-19 illness.* Nat Med, 2022. 28(10): p. 2117-2123.

28. Fraiman, J., et al., *Serious adverse events of special interest following mRNA COVID-19 vaccination in randomized trials in adults.* Vaccine, 2022. 40(40): p. 5798-5805.

29. Kime, P. *DoD Confirms: Rare Heart Inflammation Cases Linked to COVID-19 Vaccines*. 06/2021.

30. Kell, D.B., G.J. Laubscher, and E. Pretorius, *A central role for amyloid fibrin microclots in long COVID/PASC: origins and therapeutic implications.* Biochem J, 2022. 479(4): p. 537-559.

31. Malahfji, M., et al., *Coronary microvascular dysfunction and COVID-19: implications for long COVID patients.* J Nucl Cardiol, 2023. 30(5): p. 2204-2206.

32. Wu, X., et al., *Damage to endothelial barriers and its contribution to long COVID.* Angiogenesis, 2024. 27(1): p. 5-22.

33. Oliveira, R.K.F., et al., *Cardiopulmonary disease as sequelae of long-term COVID-19: Current perspectives and challenges.* Front Med (Lausanne), 2022. 9: p. 1041236.

34. Hulscher, N., et al., *Autopsy findings in cases of fatal COVID-19 vaccine-induced myocarditis.* ESC Heart Fail, 2024.

35. Yonker, L.M., et al., *Circulating Spike Protein Detected in Post-COVID-19 mRNA Vaccine Myocarditis.* Circulation, 2023. 147(11): p. 867-876.

36. FDA, *Why Should I Get a COVID-19 Booster? – Just a Minute! with Dr. Peter Marks*. 12/2021.

37. Luo, J., Molbay, M., Chen, Y. *et al.* Nanocarrier imaging at single-cell resolution across entire mouse bodies with deep learning. *Nat Biotechnol* (2025). https://doi.org/10.1038/s41587-024-02528-1

38. https://www.ucsf.edu/news/2021/01/419691/covid-19-vaccine-fact-vs-fiction-expert-weighs-common-fears

39. European Medicines Agency. (2021). *Assessment Report: Comirnaty, COVID-19 mRNA Vaccine (Nucleoside-Modified). Procedure No. EMEA/H/C/005735/0000*. Netherlands: EMA, **https://www.ema.europa.eu/en/documents/assessment-report/comirnaty-epar-public-assessment-report_en.pdf**.