Supplemental Figure 1: DNA Vaccine Construction. Commercially synthesized DNA sequences were subcloned into pcDNA3.1 (+) using KpnI and NotI restriction sites. DNA vaccines were sequenced validated before bulk preparation.
Supplemental Figure 2: Spike Western Blot Images. SARS-CoV-2 (2019-nCoV) Spike Antibody, Rabbit PAb, Antigen Affinity Purified (Cat: 40591-T62, Sino Biologics). SARS-CoV-2 (2019-nCoV) Spike S1+S2 ECD-His recombinant protein (Sino Biological) used as a positive control. Chemiluminescence image of entire membrane.
Supplemental Figure 3: B-actin Western Blot Image. β-Actin Antibody (Cat: 4967, Cell Signaling). Chemiluminescence image of entire membrane.
Supplemental Table 1. DNA Vaccines against SARS-CoV-2 in clinical trials. S – Spike. N – Nucleoprotein. ID – Intradermal. IM – Intramuscular. EP- Electroporation. [https://clinicaltrials.gov/](https://clinicaltrials.gov/) accessed November 16 2021.

| Vaccine Name       | Vaccine Antigen | Administration Route (Doses) | Administration Device | Clinical Trial Phase | Clinical Trial Identifier |
|--------------------|-----------------|------------------------------|-----------------------|----------------------|--------------------------|
| INO-4800           | S               | ID (2)                       | EP                    | II/III               | NCT04642638              |
| AG0302-COVID19     | S               | IM (2)                       | N/A                   | II/III               | NCT04655625              |
| GX-19N             | S and N         | IM (2)                       | EP                    | II/III               | NCT05067946              |
| VB10.2129 (C1) and VB10.2210 | S or multi-antigen | IM (1 or 2)                  | N/A                   | I/II                 | NCT05069623              |
| Covigenix VAX-001  | S               | IM (2)                       | N/A                   | I/II                 | NCT04591184              |
| GLS-5310           | S               | ID (2)                       | N/A                   | I/II                 | NCT04673149              |
| GX-19              | S               | IM (2)                       | EP or needle-free injection | I/II           | NCT04445389              |
| COVID-eVax         | S               | IM (1 or 2)                  | EP                    | I/II                 | NCT04788459              |
| AG0301-COVID19     | S               | IM (or 2)                    | N/A                   | I/II                 | NCT04463472              |
| CORVAX-12          | S               | IM (1)                       | EP                    | I                    | NCT04627675              |
| COVIGEN            | S               | IM/ID (2)                    | needle-free injection | I                    | NCT04742842              |
| COVIDITY           | S and N         | IM/ID (2)                    | needle-free injection | I                    | NCT05047445              |