

## Covid-19 Vaccines and Treatments in Development Updated March 18, 2022

Product	Manufacturer	Info and Links
AAV Covid Adenovirus vector	MA. Eye and Ear	Using HEK-293 <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsearch-bool.html&amp;r=12&amp;f=G&amp;l=50&amp;co1=AND&amp;d=PTXT&amp;s1=Vandenberghe&amp;OS=Vandenberghe&amp;RS=Vandenberghe">http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsearch-bool.html&amp;r=12&amp;f=G&amp;l=50&amp;co1=AND&amp;d=PTXT&amp;s1=Vandenberghe&amp;OS=Vandenberghe&amp;RS=Vandenberghe</a>
Ad5-nCoV/Convidecia	Cansino Biologics	Uses HEK-293 aborted fetal cells <a href="http://www.jshealth.com/jgzn/zzjg/ymlcpjs/ymlcpjs_gzdt/201612/W020161214426550507006.pdf">http://www.jshealth.com/jgzn/zzjg/ymlcpjs/ymlcpjs_gzdt/201612/W020161214426550507006.pdf</a>
Ad-Vac	Janssen (Johnson & Johnson)  And Johnson & Johnson/Emergent Biosolutions	Uses PER-C6 Aborted fetal cells <a href="https://www.jnj.com/johnson-johnson-announces-a-lead-vaccine-candidate-for-covid-19-landmark-new-partnership-with-u-s-department-of-health-human-services-and-commitment-to-supply-one-billion-vaccines-worldwide-for-emergency-pandemic-use">https://www.jnj.com/johnson-johnson-announces-a-lead-vaccine-candidate-for-covid-19-landmark-new-partnership-with-u-s-department-of-health-human-services-and-commitment-to-supply-one-billion-vaccines-worldwide-for-emergency-pandemic-use</a>  And: <a href="https://www.janssen.com/infectious-diseases-and-vaccines/patented-technologies">https://www.janssen.com/infectious-diseases-and-vaccines/patented-technologies</a> And : <a href="https://investors.emergentbiosolutions.com/news-releases/news-release-details/emergent-biosolutions-signs-agreement-be-us-manufacturing?field_nir_news_date_value[min]=">https://investors.emergentbiosolutions.com/news-releases/news-release-details/emergent-biosolutions-signs-agreement-be-us-manufacturing?field_nir_news_date_value[min]=</a> And Package Insert – page 20 <a href="https://www.fda.gov/media/146304/download">https://www.fda.gov/media/146304/download</a>
bacTRL-SpikeVaccine	Symvivo	Uses e-Coli and Bifido bacteria <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsearch-bool.html&amp;r=2&amp;f=G&amp;l=50&amp;co1=AND&amp;d=PTXT&amp;s1=symvivo&amp;OS=symvivo&amp;RS=symvivo">http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsearch-bool.html&amp;r=2&amp;f=G&amp;l=50&amp;co1=AND&amp;d=PTXT&amp;s1=symvivo&amp;OS=symvivo&amp;RS=symvivo</a>
Bamlanivimab w/Etesevimab	Eli Lilly	Uses Aborted Fetal 293T cells in research, development and testing <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8238662/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8238662/</a>
CDX-CoV/COVI-VAC/CoviLiv	Codagenix & Serum Institute	Uses Vero (monkey kidney) Cells <a href="https://patents.google.com/patent/US20190233476A1/en?assignee=codagenix&amp;oq=codagenix">https://patents.google.com/patent/US20190233476A1/en?assignee=codagenix&amp;oq=codagenix</a>
ChAdOx1 and AZD1222/ Vaxcevia	Astra Zeneca and University of Oxford)	Vaccine candidate: Uses HEK-293 and MRC-5 aborted fetal cells <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5516308/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5516308/</a> And <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3396660/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3396660/</a>
Comirnaty	BioNTech and Pfizer	Uses K562 cells in protein expression; Tested on HEK-293 aborted fetal cells Patent No. 10,669,322 And <a href="https://www.biorxiv.org/content/10.1101/2020.09.08.280818v1.full.pdf">https://www.biorxiv.org/content/10.1101/2020.09.08.280818v1.full.pdf</a>
Covaxin	Ocugen & Bharat (India)	Uses Vero (monkey kidney Cells) <a href="https://www.rediff.com/news/report/pix-bharat-biotech-ships-covaxin-across-india/20210113.htm">https://www.rediff.com/news/report/pix-bharat-biotech-ships-covaxin-across-india/20210113.htm</a>

(CoVLP)	Medicago/GSK/ Dynavax	<b>Produced in plant cells</b> <a href="https://www.ctvnews.ca/health/coronavirus/the-hunt-for-a-vaccine-canadian-company-begins-human-testing-of-covid-19-candidate-1.5022960">https://www.ctvnews.ca/health/coronavirus/the-hunt-for-a-vaccine-canadian-company-begins-human-testing-of-covid-19-candidate-1.5022960</a> And with GSK adjuvant <a href="https://www.medicago.com/en/newsroom/gsk-and-medicago-announce-collaboration-to-develop-a-novel-adjuvanted-covid-19-candidate-vaccine/">https://www.medicago.com/en/newsroom/gsk-and-medicago-announce-collaboration-to-develop-a-novel-adjuvanted-covid-19-candidate-vaccine/</a>
INO-4800/INO-4802	Inovio Pharm	<b>Uses HEK-293 cells</b> <a href="https://www.fda.gov/oc/ohrt/INO-4800-4802-2020-0001">Patent no. 10,548,971 Feb 4, 2020</a>
KBP-201	British American Tobacco (BAT)	<b>Tobacco company in Australia – morally produced using tobacco leaves.</b> <a href="https://www.telegraph.co.uk/business/2020/04/01/cigarette-maker-claims-coronavirus-vaccine-breakthrough/">https://www.telegraph.co.uk/business/2020/04/01/cigarette-maker-claims-coronavirus-vaccine-breakthrough/</a>
Molnupiravir EIDD-280/MK 4482	Merck/Ridgeback Biotherapeutic	<b>Treatment for Covid - morally produced with Vero Cells</b> <a href="https://www.nature.com/articles/s41564-020-00835-2.pdf">https://www.nature.com/articles/s41564-020-00835-2.pdf</a>
MNA SARS CoV-2 S1	University of Pittsburgh	<b>Uses HEK-293 aborted fetal cells</b> <a href="https://pittsburgh.cbslocal.com/2020/04/02/university-of-pittsburgh-medical-school-coronavirus-potential-vaccine-unveiled/">https://pittsburgh.cbslocal.com/2020/04/02/university-of-pittsburgh-medical-school-coronavirus-potential-vaccine-unveiled/</a> And <a href="https://www.thelancet.com/pdfs/journals/ebiom/PIIS2352-3964(20)30118-3.pdf">https://www.thelancet.com/pdfs/journals/ebiom/PIIS2352-3964(20)30118-3.pdf</a>
SpikeVax/mRNA-1273	Moderna And NIAID  Moderna And NIAID	<b>Uses HEK 293 aborted fetal cells in design, development, spike protein and testing</b> <a href="https://www.nejm.org/doi/full/10.1056/NEJMoa2022483">https://www.nejm.org/doi/full/10.1056/NEJMoa2022483</a> And <a href="https://www.nature.com/articles/s41586-020-2622-0">https://www.nature.com/articles/s41586-020-2622-0</a> And - <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fnetacgi%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=10,583,203.PN.&amp;OS=PN/10,583,203&amp;RS=PN/10,583,203">http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fnetacgi%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=10,583,203.PN.&amp;OS=PN/10,583,203&amp;RS=PN/10,583,203</a> And <a href="https://www.biocentury.com/article/304254/moderna-novavax-among-biotechs-working-on-novel-virus-but-vaccine-at-least-a-year-out">https://www.biocentury.com/article/304254/moderna-novavax-among-biotechs-working-on-novel-virus-but-vaccine-at-least-a-year-out</a> And <a href="https://science.sciencemag.org/content/367/6483/1260.full">https://science.sciencemag.org/content/367/6483/1260.full</a> And <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fnetacgi%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=10,583,203.PN.&amp;OS=PN/10,583,203&amp;RS=PN/10,583,203">http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fnetacgi%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=10,583,203.PN.&amp;OS=PN/10,583,203&amp;RS=PN/10,583,203</a>
NVX-CoV 2373/Covax	Novavax	<b>Uses Insect cells in Production</b> <a href="https://www.novavax.com/page/8/vaccine-technology">https://www.novavax.com/page/8/vaccine-technology</a> <b>Tested on HEK aborted fetal cells:</b> <a href="https://www.biorxiv.org/content/10.1101/2020.08.06.234674v1.full">https://www.biorxiv.org/content/10.1101/2020.08.06.234674v1.full</a>

RBD-Dimer	Inst Microbio, China Acad Sciences	Uses Chinese Hamster Ovary cells <a href="https://theprint.in/health/cansino-moderna-novavax-a-list-of-covid-vaccines-under-clinical-trials-across-the-world/454051/">https://theprint.in/health/cansino-moderna-novavax-a-list-of-covid-vaccines-under-clinical-trials-across-the-world/454051/</a>
REGN-CoV2 REGEN-COV (Casirivimab and Imdevimab)	Regeneron	Uses Blood donor and Chinese Hamster Ovary (CHO) in the product and Used HEK-293 aborted fetal cells to develop Spike Protein and testing <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=10,787,501.PN.&amp;OS=PN/10,787,501&amp;RS=PN/10,787,501">http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO1&amp;Sect2=HITOFF&amp;d=PALL&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsrchnum.htm&amp;r=1&amp;f=G&amp;l=50&amp;s1=10,787,501.PN.&amp;OS=PN/10,787,501&amp;RS=PN/10,787,501</a> And <a href="https://science.sciencemag.org/content/sci/suppl/2020/06/15/science.abd0831.DC1/abd0831_Baum_SM.pdf">https://science.sciencemag.org/content/sci/suppl/2020/06/15/science.abd0831.DC1/abd0831_Baum_SM.pdf</a> And <a href="https://www.nejm.org/doi/full/10.1056/NEJMoa2109682">https://www.nejm.org/doi/full/10.1056/NEJMoa2109682</a> “REGEN-COV (previously known as REGN-COV2) <b>Combination of the monoclonal antibodies casirivimab and imdevimab</b> ”
Sars-CoV/ Sars- CoV-2	Sanofi Pasteur	Uses insect cells;– tested on HEK-293 aborted fetal cells <a href="https://www.hhs.gov/about/news/2020/02/18/hhs-engages-sanofis-recombinant-technology-for-2019-novel-coronavirus-vaccine.html">https://www.hhs.gov/about/news/2020/02/18/hhs-engages-sanofis-recombinant-technology-for-2019-novel-coronavirus-vaccine.html</a> And <a href="https://www.wsj.com/articles/glaxosmithkline-sanofi-team-up-for-coronavirus-vaccine-11586875480?mod=lead_feature_below_a_pos1">https://www.wsj.com/articles/glaxosmithkline-sanofi-team-up-for-coronavirus-vaccine-11586875480?mod=lead_feature_below_a_pos1</a> And Testing: <a href="https://www.biorxiv.org/content/10.1101/2021.03.02.433390v1.full.pdf">https://www.biorxiv.org/content/10.1101/2021.03.02.433390v1.full.pdf</a>
STI-6991/STI- mRNA	Sorrento Therapeutics	Uses K562 cells from adult cancer patient <a href="https://finance.yahoo.com/news/sorrento-launches-novel-cell-covid-140059499.html">https://finance.yahoo.com/news/sorrento-launches-novel-cell-covid-140059499.html</a> And <a href="https://www.sciencedirect.com/science/article/pii/S2590098620300130?via%3Dihub">https://www.sciencedirect.com/science/article/pii/S2590098620300130?via%3Dihub</a>
Unnamed	Lindsley F. Kimball	Uses HEK-293 cells <a href="https://www.nature.com/articles/s41423-020-0400-4#Sec1">https://www.nature.com/articles/s41423-020-0400-4#Sec1</a>
VLA2001	Valneva	Uses Vero (monkey kidney) cells <a href="https://www.precisionvaccinations.com/vaccines/vla2001-covid-19-vaccine">https://www.precisionvaccinations.com/vaccines/vla2001-covid-19-vaccine</a>
V201 Covid vaccine	Kentucky Bioprocessing	Uses plant cells <a href="https://kentuckybioprocessing.com/technologies/#kbps-process">https://kentuckybioprocessing.com/technologies/#kbps-process</a>
VXA-CoV2-1	Vaxart	Uses HEK-293 aborted fetal cells in the AD5 vector <a href="http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsearch-bool.html&amp;r=9&amp;f=G&amp;l=50&amp;co1=AND&amp;d=PTXT&amp;s1=vaxart&amp;OS=vaxart&amp;RS=vaxart">http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&amp;Sect2=HITOFF&amp;p=1&amp;u=%2Fmetahtml%2FPTO%2Fsearch-bool.html&amp;r=9&amp;f=G&amp;l=50&amp;co1=AND&amp;d=PTXT&amp;s1=vaxart&amp;OS=vaxart&amp;RS=vaxart</a>

Multistem	Athersys –	Uses Bone Marrow Adult Stem Cells <a href="https://seekingalpha.com/article/4332788-athersys-now-in-play-for-covidminus-19-fda-fast-tracked-therapy-for-ards">https://seekingalpha.com/article/4332788-athersys-now-in-play-for-covidminus-19-fda-fast-tracked-therapy-for-ards</a>
Treatment AVM-0703	AVM Biotech	Steroid supercharges immune system, targeting T-cells, NKT cells which attack Covid-19 virus. <a href="http://www.avmbiotech.com">www.avmbiotech.com</a>
Treatment Actemra (Tocolizumab)	Genentech	Treatment uses Chinese Hamster Ovary <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5612212/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5612212/</a>
Treatment Ivermectin	Merck	Tablet – morally produced since early 1970's <a href="https://www.accessdata.fda.gov/drugsatfda_docs/label/2009/050742s0261bl.pdf">https://www.accessdata.fda.gov/drugsatfda_docs/label/2009/050742s0261bl.pdf</a>
Treatment Kevzara	Regeneron – Sanofi	Uses Blood donor and Chinese Hamster Ovary CHO cells Package insert: <a href="http://products.sanofi.us/Kevzara/Kevzara.pdf">http://products.sanofi.us/Kevzara/Kevzara.pdf</a> And Patent: <a href="https://patents.google.com/patent/US8080248B2/en">https://patents.google.com/patent/US8080248B2/en</a>
Treatment Sotrovimab	GSK	Uses Aborted Fetal HEK-293/Lenti-X293T cells <a href="https://www.nature.com/articles/s41586-021-03807-6.pdf">https://www.nature.com/articles/s41586-021-03807-6.pdf</a>
Treatment Unnamed	Israel Pluristem	Uses donated placenta - newborn babies <a href="https://www.pluristem.com/the-placenta-difference/">https://www.pluristem.com/the-placenta-difference/</a> And <a href="https://www.jpost.com/health-science/israeli-cell-therapy-to-treat-acute-covid-19-patients-prevent-ards-621016">https://www.jpost.com/health-science/israeli-cell-therapy-to-treat-acute-covid-19-patients-prevent-ards-621016</a>
Treatment Unnamed	JPII Med Inst and CET	Uses stem cell from postnatal placental tissue <a href="https://www.jp2mri.org/">https://www.jp2mri.org/</a>
LY-CoV1404 (Bebtelovimab)	AbCellera Bio; Eli Lilly	Uses aborted Fetal Cell Line HEK-293 cells <a href="https://www.biorxiv.org/content/10.1101/2021.04.30.442182v5.full.pdf">https://www.biorxiv.org/content/10.1101/2021.04.30.442182v5.full.pdf</a>