



# COVID-19 Treatment and Vaccine Tracker

This document contains an aggregation of publicly available information from validated sources. It is not an endorsement of one approach or treatment over another but simply a list of all treatments and vaccines currently in development.

## TREATMENTS

Number	Type of Product - Treatment	FDA-Approved Indications	Clinical Trials for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
<b>ANTIBODIES</b>										
1	Polyclonal hyperimmune globulin (H-IG), formerly known at TAK-888	N/A		Alliance among Takeda, CSL Behring, Biotest AG, Bio Products Laboratory, LFB, and Octapharma	Pre-clinical			Begin Phase 1 trials in late spring. To patients between December 2020 and December 2021		<a href="#">PhRMA</a> <a href="#">Wall Street Journal</a> <a href="#">Pink Sheet</a> <a href="#">Press release from the alliance</a>
2	Antibodies from mice, REGN3048-3051, against the spike protein	N/A		Regeneron	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)		Start Phase 1 June 2020		<a href="#">Stat News</a> <a href="#">MarketWatch</a> <a href="#">Reuters</a> <a href="#">Bloomberg News</a> <a href="#">FierceBiotech</a> <a href="#">FiercePharma</a>
3	Antibodies from recovered COVID-19 patients	N/A		Celltrion	Pre-clinical			Start Phase 1 in July 2020		<a href="#">Korea Herald</a> <a href="#">UPI</a> <a href="#">Celltrion press release</a>
4	Super-antibody or antibody cocktail to target potential mutations of SARS-CoV-2	N/A		Celltrion	Pre-clinical					<a href="#">Celltrion press release</a>
5	Antibodies from recovered COVID-19 patients	N/A		Kamada	Pre-clinical					<a href="#">BioSpace</a> <a href="#">AbbVie</a>
6	Antibodies from recovered COVID-19 patients	N/A		Vir Biotech/WuXi Biologics/Biogen	Pre-clinical			Start Phase 1 ~ July 2020		<a href="#">Stat News</a> <a href="#">Vir Biotech</a> <a href="#">Vir Biotech</a>

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7	VIR-7831 and VIR-7832, antibodies from recovered COVID-19 patients	N/A		Vir Biotech/GSK/Samsung	Pre-clinical			Start Phase 2 ~ July-September 2020		<a href="#">Vir Biotech Samsung and Vir press release</a>
8	Antibodies from recovered COVID-19 patients	N/A		Eli Lilly/Ab-Cellera (NIH Vaccines Research Center)	Pre-clinical	Defense Advanced Research Projects Agency		Start Phase 1 in late July 2020		<a href="#">Endpoints News AbCellera</a>
9	Avastin (bevacizumab), vascular endothelial growth factor inhibitor	FDA-approved since 2004, approved to treat certain types of cancer		Numerous trials with Chinese research sponsors; Roche	Clinical		<a href="#">NCT04275414 (Qilu Hospital of Shandong University) pilot study</a> <a href="#">NCT04305106 (Qilu Hospital of Shandong University) investigational study</a>			<a href="#">BioCentury</a>
10	PD-1 blocking antibody; Thymosin	Unknown		Numerous trials with Chinese research sponsors	Clinical		<a href="#">NCT04268537</a> <a href="#">ChiCTR2000030028</a>	Phase 2 primary trial ends April 30, 2020		<a href="#">BioCentury</a>
11	leronlimab (PRO 140), a CCR5 antagonist	N/A	Treatment of HIV/AIDS, Graft versus Host Disease, Non-Alcoholic Steatohepatitis, and numerous cancers	CytoDyn	Clinical/Compassionate Use		<a href="#">NCT04343651 (CytoDyn, Inc.)</a> <a href="#">NCT04347239 (CytoDyn, Inc.)</a>	Phase 2 trial started in April 2020; Phase 2b/3 trial starts April 2020	<a href="#">CytoDyn</a>	<a href="#">Clinical Trials Arena</a> <a href="#">CytoDyn</a> <a href="#">CytoDyn</a> <a href="#">CytoDyn</a> <a href="#">CytoDyn</a> <a href="#">CytoDyn</a>
12	AiRuiKa (camrelizumab), anti-programmed cell death protein (PD-1) antibody	N/A	Treatment of certain cancers	Wuhan Jinyintan Hospital	Clinical		<a href="#">ChiCTR2000029806</a>			<a href="#">Hengrui Medicine</a>

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13	Kevzara (sarilumab), interleukin-6 receptor antagonist	FDA-approved since 2017, approved to treat rheumatoid arthritis		Sanofi/Regeneron; Feinstein Institutes; REMAP-CAP global trial*	Clinical	Biomedical Advanced Research and Development Authority (BARDA)	<a href="#">NCT04315298</a>  <a href="#">NCT04321993 (Lisa Barrett, Nova Scotia Health Authority) (lopinavir/ritonavir; hydroxychloroquine; baricitinib; sarilumab)</a>  <a href="#">NCT04341870 (Assistance Publique - Hôpitaux de Paris) (sarilumab, azithromycin, hydroxychloroquine; CORIMUNO-VIRO trial)*</a>  <a href="#">NCT04324073 (Assistance Publique - Hôpitaux de Paris) (CORIMUNO-SARI trail)*</a>  <a href="#">NCT04327388 (Sanofi/Regeneron)*</a>  <a href="#">NCT04322773 (Marius Henriksen, Frederiksberg University Hospital) (Kevzara, Actemra)*</a>  <a href="#">NCT04345289 (Thomas Benfield, Hvidovre University Hospital) (convalescent anti-SARS-CoV-2 plasma; sarilumab; baricitinib; hydroxychloroquine)*</a>  <a href="#">NCT02735707 (MJM Bonten, UMC Utrecht) (REMAP-CAP trial)*</a>	Started Phase 2/3 in March 2020; initial data expected April 2020		<a href="#">FiercePharma</a> <a href="#">Wall Street Journal</a> <a href="#">Seeking Alpha</a> <a href="#">Regeneron</a> <a href="#">Reuters</a> <a href="#">MedicalCountermeasures.gov</a> <a href="#">Feinstein Institutes press release*</a>

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14	Actemra (tocilizumab), interleukin-6 receptor antagonist	FDA-approved since 2010, approved to treat various type of arthritis, including rheumatoid arthritis, and cytokine release syndrome		Numerous trials with global research sponsors; Roche	Clinical	Biomedical Advanced Research and Development Authority (BARDA)	<a href="#">NCT04317092 (National Cancer Institute, Naples)</a> <a href="#">NCT04320615 (Roche)</a> <a href="#">NCT04310228 (Peking University First Hospital) (also tocilizumab + favipiravir); ChiCTR2000030894</a> <a href="#">NCT04306705 (Tongji Hospital) (Cytokine Release Syndrome)</a> <a href="#">ChiCTR2000030442 (The Second Affiliated Hospital of Xi'an Jiaotong University) (combination of Tocilizumab, IVIG and CRRT)</a> <a href="#">ChiCTR2000029765 (The First Affiliated Hospital of University of Science and Technology of China [Anhui Provincial Hospital])</a> <a href="#">NCT04322773 (Marius Henriksen, Frederiksberg University Hospital) (Kevzara, Actemra)*</a>	Roche studies begin April 2020	<a href="#">ChinaXiv</a>	<a href="#">Wall Street Journal</a> <a href="#">FiercePharma</a> <a href="#">Genentech</a> <a href="#">FiercePharma</a>
15	Gimsilumab, anti-granulocyte-macrophage colony stimulating factor monoclonal	N/A		Roivant Sciences	Clinical			Phase 2 study started in April 2020		<a href="#">Roivant</a> <a href="#">Roivant</a>
16	TJM2 (TJ003234), anti-granulocyte-macrophage colony stimulating factor antibody	N/A		I-Mab Biopharma	Clinical					<a href="#">i-Mab Biopharma</a>

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17	lenzilumab, anti-granulocyte-macrophage colony stimulating factor antibody	N/A	Prevent cytokine storm with CAR-T cancer therapy; prevention/treatment of acute graft versus host disease; chronic myelomonocytic leukemia; eosinophilic asthma	Humanigen Inc.	Clinical / Compassionate Use					<a href="#">BioWorld</a> <a href="#">Humanigen</a> <a href="#">Humanigen</a> <a href="#">Humanigen</a>
18	Sylvant (siltuximab), interleukin-6 targeted monoclonal	FDA-approved since 2014, approved to treat multicentric Castleman disease		EUSA Pharma/The Papa Giovanni XXII Hospital	Clinical		<a href="#">NCT04322188 (A.O. Ospedale Papa Giovanni XXIII)</a>	Interim data shared April 2020	<a href="#">EUSA Pharma</a> <a href="#">medRxiv</a>	<a href="#">EUSA Pharma</a>
19	Soliris (eculizumab), complement inhibitor	FDA-approved since 2007, approved to treat Paroxysmal Nocturnal Hemoglobinuria, Atypical Hemolytic Uremic Syndrome, Generalized Myasthenia Gravis, and Neuromyelitis Optica Spectrum Disorder		Alexion	Clinical/Expanded access		<a href="#">NCT04288713 (Hudson Medical) (expanded access trial)</a>	Phase 2 to start in April 2020		<a href="#">Alexion</a> <a href="#">GlobalData</a>
20	Ilaris (canakinumab), interleukin-1beta blocker	FDA approved since 2009, approved to treat periodic fever syndromes and systemic juvenile idiopathic arthritis		Novartis	Clinical					<a href="#">Reuters</a>
21	Gamifant (emapalumab), anti-interferon gamma antibody	FDA-approved since 2018, approved to treat primary hemophagocytic lymphohistiocytosis		Swedish Orphan Biovitrum	Clinical		<a href="#">NCT04324021 (Swedish Orphan Biovitrum), (Emapalumab; Anakinra)</a>			
22	meplazumab, anti-CD147 antibody	N/A		Tang-Du Hospital	Clinical		<a href="#">NCT04275245 (Tang-Du Hospital)</a>		<a href="#">medRxiv</a>	

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23	LY3127804, anti-Angiopoietin 2 (Ang2) antibody	N/A		Eli Lilly	Clinical			Phase 2 to start in April 2020		<a href="#">Eli Lilly</a>
24	Antibody	N/A		Erasmus MC/Utrecht University	Pre-clinical					<a href="#">Erasmus Magazine</a> <a href="#">bioRxiv</a>
25	Antibodies	Unknown		ImmunoPrecise Antibodies	Pre-clinical					<a href="#">Clinical Trials Arena</a>
26	Antibody	N/A		Harbour BioMed/Mount Sinai Health System	Pre-clinical					<a href="#">Mount Sinai and Harbour BioMed press release</a>
27	Antibodies targeting the S protein from convalescent serum, humanized mice, and phage display	N/A		AstraZeneca/US Army Medical Research Institute of Infectious Diseases (USAMRIID)/University of Maryland School of Medicine	Pre-clinical			Phase 1 trials begin in summer 2020		<a href="#">PhRMA</a> <a href="#">AstraZeneca</a>
28	Antibody	Unknown		Distributed Bio	Pre-clinical					<a href="#">Distributed Bio</a>
29	Antibodies	Unknown		Chelsea and Westminster Hospital, Imperial College London	Pre-clinical	UK Government				<a href="#">UK Government</a>
30	Antibody	N/A		Vanderbilt Vaccine Center	Pre-clinical	Defense Advanced Research Projects Agency		Phase 1 trial begins in summer 2020		<a href="#">Nashville Post</a>
31	Antibodies	N/A		Medicago/ Laval University's Infectious Disease Research Centre	Pre-clinical	Canadian Institutes for Health Research (CIHR)				<a href="#">Medicago press release</a>
32	Polyclonal hyperimmune globulin (H-IG)	N/A	Same human hyperimmune platform as FDA-approved anthrax treatment (Anthraxil) and smallpox vaccine complications (VIGIV) were developed	Emergent BioSolutions/ National Institute of Allergy and Infectious Diseases (NIAID)	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)		Phase 2 trials begin ~ August 2020		<a href="#">TechCrunch</a> <a href="#">Emergent Biosolutions</a> <a href="#">Pink Sheet</a> <a href="#">Emergent BioSolutions</a>
33	Horse plasma product (COVID-EIG)	N/A	Same equine hyperimmune platform as FDA-approved botulism anti-toxin (BAT) is produced	Emergent BioSolutions	Pre-clinical			Phase 2 trials begin ~ August 2020		<a href="#">TechCrunch</a> <a href="#">Emergent Biosolutions</a> <a href="#">Pink Sheet</a> <a href="#">Emergent BioSolutions</a>

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34	Convalescent plasma (blood plasma from recovered patients)	N/A		Multiple global research sponsors, including New York State Department of Health, Johns Hopkins University, the Feinstein Institutes*	Clinical/Expanded Access	Bloomberg Philanthropies and the State of Maryland (to Johns Hopkins University)	<a href="#">NCT04321421 (Foundation IRCCS San Matteo Hospital)</a> <a href="#">NCT04292340 (Shanghai Public Health Clinical Center)</a> <a href="#">NCT04316728 (Centro Studi Internazionali, Italy)</a> <a href="#">NCT04338360 (Mayo Clinic) (Expanded Access)</a> <a href="#">NCT04345289 (Thomas Benfield, Hvidovre University Hospital) (convalescent anti-SARS-CoV-2 plasma; sarilumab; baricitinib; hydroxychloroquine)*</a>	New York State Department of Health trial begins March 2020	<a href="#">medRxiv</a> <a href="#">JAMA Network</a> <a href="#">medRxiv</a> <a href="#">JAMA Network</a>	<a href="#">Politico</a> <a href="#">Johns Hopkins University</a> <a href="#">Feinstein Institutes press release*</a>
35	Antibodies from recovered COVID-19 patients	N/A		Tsinghua University/Third People's Hospital of Shenzhen/Brii Biosciences	Pre-clinical			Phase 1 trial begins Q3 2020		<a href="#">Tsinghua University press release</a> <a href="#">End Points News</a>
36	Polyclonal hyperimmune globulin (H-IG)	N/A		Grifols	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)				<a href="#">MedicalCountermeasures.gov</a>
37	Antibodies from recovered COVID-19 patients	N/A		Grifols	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)				<a href="#">Grifols</a> <a href="#">MedicalCountermeasures.gov</a>



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38	Antibodies from recovered COVID-19 patients	N/A		Amgen/Adaptive Biotechnologies	Pre-clinical					<a href="#">Amgen</a>
39	Antibodies from recovered COVID-19 patients	N/A		Innovent Biologics	Pre-clinical					<a href="#">Endpoints News</a>
40	Antibodies from recovered COVID-19 patients	N/A		Xbiotech/BioBridge Global	Pre-clinical					<a href="#">Xbiotech and BioBridge press release</a>
41	Antibodies from recovered COVID-19 patients	N/A		Costa Rican Social Security Fund (CCSS)/The University of Costa Rica (UCR)/Clodomiro Picado Institute	Pre-clinical					<a href="#">MENAFN</a>
42	SAB-185, Polyclonal hyperimmune globulin (H-IG)	N/A		CSL Behring/SAb Biotherapeutics	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)		Phase 1 starts early summer 2020		<a href="#">CSL Behring SAB Biotherapeutics</a>
43	Non-viral gene therapy to produce monoclonal antibodies	N/A		Generation Bio/Vir Biotechnology	Pre-clinical					<a href="#">Generation Bio</a>
44	rCIG (recombinant anti-coronavirus 19 hyperimmune gammaglobulin), polyclonal antibodies	N/A		GigaGen	Pre-clinical					<a href="#">FierceBiotech</a>
45	IC14, recombinant chimeric anti-CD14 monoclonal antibody	N/A	Acute Respiratory Distress Syndrome	Implicit Bioscience	Expanded access		<a href="#">NCT04346277 (Implicit Bioscience) (Expanded Access)</a>			



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<b>ANTIVIRALS</b>										
46	Favilavir/Favipiravir/T-705/ Avigan, licensed in Japan to treat influenza	N/A		Fujifilm Toyama Chemical/Zhejiang Hisun Pharmaceuticals/numerous trials with global research sponsors/ Brigham and Women's Hospital, Massachusetts General Hospital, and the University of Massachusetts Medical School	Clinical		<a href="#">NCT04303299 (Rajavithi Hospital) (Various Combination of Protease Inhibitors, Oseltamivir, Favipiravir, and Hydroxychloroquine)</a> <a href="#">NCT04310228 (Peking University First Hospital) (also tocilizumab + favipiravir)</a> <a href="#">ChiCTR2000029548 (The First Affiliated Hospital, Zhejiang University School of Medicine) (Baloxavir Marboxil, Favipiravir, and Lopinavir-Ritonavir)</a> <a href="#">ChiCTR2000029496 (Hu'nan Haiyao hongxingtang Pharmaceutical Co., Ltd) (Novaferon, Kaletra, Novaferon+Kaletra)</a> <a href="#">ChiCTR2000029544 (The First Hospital Affiliated to Zhejiang University's Medical School) (Baloxavir Marboxil, Favipiravir)</a> <a href="#">ChiCTR2000030254 (Zhongnan Hospital of Wuhan University)</a>	Phase 3 trial in Japan started in March 2020; Phase 2 trial in US started April 2020	<a href="#">medRxiv</a>	<a href="#">World Health Organization</a> <a href="#">Clinical Trials Arena</a> <a href="#">Pharmaceutical Technology</a> <a href="#">BioCentury</a> <a href="#">Guardian</a> <a href="#">Fujifilm</a>

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46 (cont.)	Favilavir/Favipiravir/T-705/ Avigan, licensed in Japan to treat influenza						<a href="#">NCT04336904 (Giuliano Rizzardini, ASST Fatebenefratelli Sacco)</a>  <a href="#">NCT04333589 (Peking University First Hospital)</a>  <a href="#">NCT04345419 (Tanta University) (chloroquine; favipiravir; nitazoxanide; ivermectin; niclosamide)</a>			

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47	Kaletra/Aluvia (lopinavir/ritonavir), HIV-1 protease inhibitor	FDA-approved since 2000, approved to treat HIV-1 infection		Global hospital testing (AbbVie); World Health Organization SOLIDARITY trial (studying lopinavir/ritonavir with and without interferon beta); University of Oxford RECOVERY trial; REMAP-CAP global trial	Clinical	UK Government (University of Oxford RECOVERY trial)	<a href="#">NCT04303299 (Rajavithi Hospital) (Various Combination of Protease Inhibitors, Oseltamivir, Favipiravir, and Hydroxychloroquine)</a> <a href="#">NCT04255017 (Tongji Hospital) (Abidol Hydrochloride, Oseltamivir and Lopinavir/Ritonavir)</a> <a href="#">ChiCTR2000029548 (The First Affiliated Hospital, Zhejiang University School of Medicine) (Baloxavir Marboxil, Favipiravir, and Lopinavir-Ritonavir)</a> <a href="#">ChiCTR2000029539 (Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology)</a> <a href="#">EudraCT 2020-000936-23, INSERM study (lopinavir/ritonavir; Rebif; remdesivir)</a> <a href="#">NCT04307693 (Asan Medical Center) (Lopinavir/Ritonavir or Hydroxychloroquine)</a> <a href="#">NCT04315948 (Institut National de la Santé Et de la Recherche Médicale, France) (remdesivir, lopinavir/ritonavir, interferon beta-1a, hydroxychloroquine)</a>		<a href="#">New England Journal of Medicine</a> <a href="#">medRxiv</a> <a href="#">Chinese Journal of Infectious Diseases</a> <a href="#">medRxiv</a>	<a href="#">PhRMA</a> <a href="#">Wall Street Journal</a> <a href="#">Wall Street Journal</a> <a href="#">Wall Street Journal</a> <a href="#">Stat News</a> <a href="#">UK Government</a> <a href="#">REMAP-CAP</a> <a href="#">RECOVERY Trial</a>

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47 (cont.)	Kaletra/Aluvia (lopinavir/ritonavir), HIV-1 protease inhibitor						<a href="#">NCT04252885 (Guangzhou Eighth People's Hospital) (Lopinavir Plus Ritonavir; Arbidol)</a> <a href="#">NCT04276688 (The University of Hong Kong) (Lopinavir/ritonavir; ribavirin; interferon beta-1B)</a> <a href="#">NCT02735707 (MJM Bonten) (REMAP-CAP global trial)</a> <a href="#">NCT04321993 (Lisa Barrett, Nova Scotia Health Authority) (lopinavir/ritonavir; hydroxychloroquine; baricitinib; sarilumab)</a> <a href="#">2020-001113-21 (RECOVERY Trial) (lopinavir-ritonavir; low-dose dexamethasone, hydroxychloroquine, azithromycin)</a>			

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48	remdesivir, nucleotide analog	N/A	Treatment of Ebola	Gilead; World Health Organization SOLIDARITY trial; National Institute of Allergy and Infectious Disease (NIAID)'s Adaptive COVID-19 Treatment Trial; Feinstein Institutes*	Clinical/Expanded Access		<a href="#">NCT04257656 (Capital Medical University), China study in patients with severe disease</a> <a href="#">NCT04252664 (Capital Medical University), China study in patient with mild/moderate disease</a> <a href="#">NCT04292730, Gilead study in patients with moderate disease</a> <a href="#">NCT04292899, Gilead study in patients with severe disease</a> <a href="#">NCT04280705, NIAID study</a> <a href="#">EudraCT 2020-000936-23, INSERM study</a> <a href="#">NCT04315948 (Institut National de la Santé Et de la Recherche Médicale, France) (remdesivir, lopinavir/ritonavir, interferon beta-1a, hydroxychloroquine)</a> <a href="#">NCT04302766 (Intermediate-size population Expanded Access)</a> <a href="#">NCT04323761 (Gilead Sciences) (Expanded Access)</a>	Gilead Phase 3 trial results expected April 2020 (severe disease) and May 2020 (moderate disease); NIAID trial results expected in May 2020	<a href="#">New England Journal of Medicine</a> <a href="#">New England Journal of Medicine</a>	<a href="#">PhRMA</a> <a href="#">Wall Street Journal</a> <a href="#">PhRMA post on LinkedIn</a> <a href="#">Stat News</a> <a href="#">Seeking Alpha</a> <a href="#">Gilead</a> <a href="#">Endpoints News</a> <a href="#">FierceBiotech</a> <a href="#">Gilead press release</a> <a href="#">Feinstein Institutes press release*</a>

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49	Prezcobix (darunavir, HIV-1 protease inhibitor/cobicistat, CYP3A inhibitor)	FDA-approved since 2015, approved to treat HIV-1 infection		Chinese hospital testing (Janssen)	Clinical		<a href="#">ChiCTR2000029541 (Zhongnan Hospital of Wuhan University) (darunavir/cobicistat; lopinavir/ritonavir + thymosin a1)</a> <a href="#">NCT04252274 (Shanghai Public Health Clinical Center)</a> <a href="#">NCT04303299 (Rajavithi Hospital) (Various combination of protease inhibitors, Oseltamivir, Favipiravir, and Hydroxychloroquine)</a> <a href="#">NCT04304053 (Fundacio Lluita Contra la SIDA) (prevention, darunavir/cobicistat or hydroxychloroquine)</a>	Primary study ends August 2020		<a href="#">World Health Organization</a> <a href="#">Wall Street Journal</a>
50	galidesivir	N/A	Treatment of yellow fever	BioCryst Pharmaceuticals	Clinical	National Institute of Allergy and Infectious Diseases (NIAID)	<a href="#">NCT03891420 (BioCryst Pharmaceuticals)</a>	Phase 1b to start April 2020		<a href="#">Reuters</a> <a href="#">BioCryst</a> <a href="#">BioCryst</a>
51	Combination of ebastine, lopinavir, and interferon alpha	N/A		Mianyang Central Hospital	Clinical		<a href="#">ChiCTR2000030535 (Mianyang Central Hospital)</a>	Primary trial ends March 31, 2020		<a href="#">BioCentury</a>
52	Ganovo (danoprevir), hepatitis C virus NS3 protease inhibitor; ritonavir; interferon, approved in China to treat Hepatitis C	N/A		Ascletris/Numerous trials with Chinese research sponsors	Clinical		<a href="#">NCT04291729 (The Ninth Hospital of Nanchang)</a>		<a href="#">medRxiv</a>	<a href="#">BioCentury</a> <a href="#">ClinicalTrials.gov</a>

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53	ASC09, HIV protease inhibitor	N/A	Treatment of HIV/AIDS	Asclepis Pharma	Clinical		<a href="#">NCT04261907 (The First Affiliated Hospital of Zhejiang University) (ASC09/Ritonavir and Lopinavir/Ritonavir)</a>  <a href="#">NCT04261270 (Tongji Hospital) (ASC09F+Oseltamivir; Ritonavir+Oseltamivir; Oseltamivir)</a>	Primary trial ends May 2020		<a href="#">Nature Biotechnology</a> <a href="#">Asclepis Pharma</a>
54	Truvada (emtricitabine and tenofovir, both HIV-1 nucleoside analog reverse transcriptase inhibitors)	FDA-approved since 2004, approved to treat and prevent HIV-1 infection		Gilead/Sichuan Academy of Medical Sciences & Sichuan Provincial People's Hospital	Clinical		<a href="#">ChiCTR2000029468 (Sichuan Academy of Medical Sciences &amp; Sichuan Provincial People's Hospital)</a>			<a href="#">World Health Organization</a>
55	Arbidol (umifenovir), licensed in Russia and China for treatment of respiratory viral infections	N/A		Pharmstandard/numerous trials with Chinese research sponsors	Clinical		<a href="#">NCT04252885 (Guangzhou Eighth People's Hospital) (Lopinavir Plus Ritonavir; Arbidol)</a>		<a href="#">medRxiv</a> <a href="#">Chinese Journal of Infectious Diseases</a> <a href="#">medRxiv</a> <a href="#">medRxiv</a> <a href="#">medRxiv</a>	<a href="#">World Health Organization</a> <a href="#">BioCentury</a>
56	Xofluza (baloxavir marboxil), polymerase acidic endonuclease inhibitor	FDA-approved since 2018, approved to treat influenza		Roche/The First Affiliated Hospital of Zhejiang University Medical School	Clinical		<a href="#">ChiCTR2000029544 (The First Hospital Affiliated to Zhejiang University's Medical School) (Baloxavir Marboxil, Favipiravir)</a>  <a href="#">ChiCTR2000029548 (The First Affiliated Hospital, Zhejiang University School of Medicine) (Baloxavir Marboxil, Favipiravir, and Lopinavir-Ritonavir)</a>			<a href="#">World Health Organization</a>



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57	azvudine, reverse transcriptase inhibitor	N/A		Numerous trials with Chinese research sponsors	Clinical		<a href="#">ChiCTR2000030487 (He'nan Sincere Biotechnology Co., Ltd)</a> <a href="#">ChiCTR2000030424 (He'nan Sincere Biotechnology Co., Ltd)</a> <a href="#">ChiCTR2000029853 (People's Hospital of Guangshan County)</a>			<a href="#">World Health Organization</a>
58	Vicromax, broad spectrum antiviral			ViralClear Pharmaceuticals	Pre-clinical					<a href="#">AP</a>
59	ISR-50	N/A		ISR Immune System Regulation	Pre-clinical					<a href="#">ISR Immune System Regulation</a>
60	Tamiflu (oseltamivir), neuraminidase inhibitor	FDA-approved since 1999, approved to treat and prevent influenza		Roche; REMAP-CAP global trial*	Clinical		<a href="#">NCT04303299 (Rajavithi Hospital) (Various Combination of Protease Inhibitors, Oseltamivir, Favipiravir, and Hydroxychloroquine)</a> <a href="#">NCT04255017 (Tongji Hospital) (Abidol Hydrochloride, Oseltamivir and Lopinavir/Ritonavir)</a> <a href="#">NCT04261270 (Tongji Hospital) (ASC09F+Oseltamivir; Ritonavir+Oseltamivir; Oseltamivir)</a> <a href="#">NCT02735707 (MJM Bonten, UMC Utrecht) (REMAP-CAP trial)*</a>			
61	antiviral Fc conjugates	N/A		Cidara Therapeutics	Pre-clinical					<a href="#">Cidara Therapeutics</a>
62	Antiviral compounds	N/A		Cocrystal Pharma	Pre-clinical					<a href="#">Cocrystal Pharma</a>

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63	EIDD-2801, oral ribonucleoside analog	N/A		Ridgeback Biotherapeutics/Drug Innovation Ventures at Emory (DRIVE)	Clinical			Phase 1 started April 2020		<a href="#">Ridgeback Biotherapeutics press release</a> <a href="#">Ridgeback Biotherapeutics press release</a> <a href="#">Ridgeback Biotherapeutics press release</a>
64	Virazole (ribavirin for inhalation solution)	FDA-approved since 1985, approved to treat lower respiratory tract infections due to RSV		Bausch Health	Clinical/ Compassionate Use					<a href="#">Bausch Health</a>
65	Antiviral drug combinations	Unknown		SCORE consortium (universities of Aix-Marseille, Leuven, Utrecht, Bern, and Lubeck), the Helmholtz Centre for Infection Research, and Janssen Pharmaceutica NV	Pre-clinical	EU Commission (Horizon 2020 Program)				<a href="#">Leiden University Medical Center</a>
<b>CELL-BASED THERAPIES</b>										
66	PLX cell product, placenta-based cell therapy	Unknown		Pluristem Therapeutics/BIH Center for Regenerative Therapy/Berlin Center for Advanced Therapies	Pre-clinical					<a href="#">Pharmaceutical Technology Pluristem Therapeutics</a>

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67	Mesenchymal stem cells	Unknown		Numerous trials with global research sponsors	Clinical		<a href="#">ChiCTR2000029990 (Institute of Basic Medicine, Chinese Academy of Medical Sciences)</a> <a href="#">NCT04315987 (Azidus Brasil) (NestCell®)</a> <a href="#">NCT04302519 (CAR-T [Shanghai] Biotechnology Co., Ltd.) (Dental Pulp Mesenchymal Stem Cells)</a> <a href="#">NCT04288102 (Beijing 302 Hospital/VCANBIO CELL &amp; GENE ENGINEERING CORP.,LTD, China)</a> <a href="#">NCT04313322 (Stem Cells Arabia) (Wharton's Jelly-Mesenchymal Stem Cells)</a> <a href="#">NCT04273646 (Wuhan Union Hospital, China/Wuhan Hamilton Bio-technology Co., Ltd, China) (Human Umbilical Cord Mesenchymal Stem Cells)</a>		<a href="#">Aging and Disease</a> <a href="#">ChinaXiv</a>	<a href="#">BioCentury</a>
68	Autologous Adipose-Tissue Derived Mesenchymal Stem Cells (ADMSCs)	Unknown	Injuries, Pain, and Autoimmune, Vascular and Other Disease, including Inflammatory lung conditions, pneumonia, and chronic obstructive pulmonary disease (COPD)	Celltex	Expanded access					<a href="#">Celltex press release</a> <a href="#">Celltex</a>

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69	Ryonicil (remestemcel-L), allogeneic mesenchymal stem cells	N/A		Mesoblast	Pre-clinical					<a href="#">FierceBiotech</a>
70	MultiStem, bone marrow stem cells		Acute Respiratory Distress Syndrome; Stroke	Athersys	Clinical			Phase 2/3 trial to start 2Q 2020*		<a href="#">BioSpace</a> <a href="#">Athersys press release*</a>
71	Allogeneic T-cell therapies	N/A		AlloVir/Baylor College of Medicine	Pre-clinical					<a href="#">AlloVir</a> <a href="#">FierceBiotech</a>
72	Natural killer cell-based therapy	N/A		GC LabCell/KLEO Pharmaceuticals	Pre-clinical			Begin Phase 1 by end of 2020		<a href="#">UPI</a> <a href="#">Korea Biomedical Review</a>
73	CYNK-001, allogeneic, natural killer cell therapy	N/A	Various hematologic cancers and solid tumors	Celularity	Clinical			Phase 1/2 study to start in April 2020		<a href="#">Celularity press release</a>
74	CAP-1002, allogeneic cardiosphere-derived cells	N/A	Duchenne muscular dystrophy	Capricor Inc.	Expanded access		<a href="#">NCT04338347 (Capricor Inc.) (expanded access)</a>			<a href="#">Capricor Therapeutics press release</a>
75*	haNK, natural killer cells*	N/A*		ImmunityBio/NantKwest*	Pre-clinical*					<a href="#">NantKwest and ImmunityBio press release*</a>
76*	Bone marrow-derived allogeneic mesenchymal stem cells (BM-Allo-MSC)*	N/A*		ImmunityBio/NantKwest*	Pre-clinical*					<a href="#">NantKwest and ImmunityBio press release*</a>
77*	Allogeneic, adipose-derived mesenchymal stem cells (HB-adMSCs)*	N/A*	Rheumatoid arthritis*	Hope Biosciences*	Clinical*	Hope Biosciences Stem Cell Research Foundation*	<a href="#">NCT04348435 (Hope Biosciences) (prevention)*</a> <a href="#">NCT04349631 (Hope Biosciences) (prevention)*</a>			<a href="#">Hope Biosciences press release*</a>
<b>RNA-BASED TREATMENTS</b>										
78*	RNAi - testing 150 RNAs	N/A		Sirnaomics	Pre-clinical					<a href="#">NPR</a>
79*	siRNA candidates	N/A		Vir Biotech/Alnylam Pharmaceuticals	Pre-clinical					<a href="#">Clinical Trials Arena</a> <a href="#">Celularity press release</a> <a href="#">Vir and Alnylam press release</a>
80*	Ampligen; (rintatolimod)	N/A		AIM ImmunoTech/National Institute of Infectious Diseases in Japan	Pre-clinical					<a href="#">AIM Immunotech press release</a>

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81*	OT-101, a TGF-Beta antisense drug candidate	N/A	Various cancers	Mateon Therapeutics	Clinical					<a href="#">Clinical Trials Arena</a> <a href="#">Mateon Therapeutics</a>
82*	Inhaled mRNA	N/A		Neurimmune/Ethris	Pre-clinical			Phase 1 to start Q4 2020		<a href="#">Neurimmune</a>
<b>SCANNING COMPOUNDS TO REPURPOSE</b>										
83*	Scanning library of antiviral compounds	N/A	N/A	Janssen Pharmaceutical Companies	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)				<a href="#">Johnson &amp; Johnson</a> <a href="#">PhRMA</a>
84*	Scanning compounds to repurpose	N/A	N/A	Novartis	Pre-clinical					<a href="#">PhRMA</a>
85*	Scanning antiviral compounds previously in development	N/A	N/A	Pfizer	Pre-clinical			Lead candidate (protease inhibitor) to start Phase 1 trial in Q3 2020		<a href="#">Pfizer</a> <a href="#">PhRMA</a> <a href="#">Pfizer</a>
86*	Scanning compounds to repurpose	N/A	N/A	Merck	Pre-clinical					<a href="#">Wall Street Journal</a>
87*	Repurposing antiviral drug candidates	N/A	N/A	Materia Medica/Cyclica	Pre-clinical					<a href="#">Cyclica press release</a>
88*	Screening new drugs + library of antiviral compounds	N/A	N/A	Enanta Pharmaceuticals	Pre-clinical					<a href="#">FierceBiotech</a> <a href="#">Enanta Pharmaceuticals</a>
89*	Screening drug compounds	N/A	N/A	Southwest Research Institute	Pre-clinical					<a href="#">Clinical Trials Arena</a>
90*	Scanning compounds to repurpose	N/A	N/A	Takeda	Pre-clinical					<a href="#">PhRMA</a>
91*	Scanning compounds to repurpose	N/A	N/A	Queens University Belfast	Pre-clinical	UK Government				<a href="#">UK Government</a>

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92*	Scanning compound libraries	N/A	N/A	COVID-19 Therapeutics Accelerator (15 companies shared their compound libraries including BD, bioMérieux, Boehringer Ingelheim, Bristol-Myers Squibb, Eisai, Eli Lilly, Gilead, GSK, Johnson & Johnson, Merck [known as MSD outside the US and Canada], Merck KGaA, Novartis, Pfizer, and Sanofi)	Pre-clinical	Gates Foundation/ Wellcome/ Mastercard Impact Fund				<a href="#">Novartis press release</a> <a href="#">Gates Foundation</a>
93*	Artificial intelligence-based screening to identify repurposed drug combinations		N/A	Healx	Pre-clinical			Combinations will be ready for preclinical testing in May 2020		<a href="#">Healx press releas</a>
94*	Identifying drugs to repurpose			The Castleman Disease Collaborative Network and the Center for Study & Treatment of Inflammatory Lymphadenopathies	Pre-clinical					<a href="#">Castleman Disease Collaborative Network</a>

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<b>OTHERS</b>										
95*	Methylprednisolone / ciclesonide/ hydrocortisone/ corticosteroids	FDA-approved since at least the 1950s, approved to treat many diseases, including anti-inflammatory conditions and some cancers		Numerous trials with research sponsors globally; University of Oxford RECOVERY trial; REMAP-CAP global trial	Clinical	UK Government (University of Oxford RECOVERY trial)	<a href="#">NCT04244591 (Peking Union Medical College Hospital) (methylprednisolone)</a> <a href="#">NCT04263402 (Tongji Hospital) (Methylprednisolone)</a> <a href="#">NCT04273321 (Beijing Chao Yang Hospital) (Methylprednisolone)</a> <a href="#">ChiCTR2000029656 (Wuhan Pulmonary Hospital) (methylprednisolone)</a> <a href="#">ChiCTR2000029386 (Chongqing Public Health Medical Center) (Methylprednisolone)</a> <a href="#">NCT02735707 (MJM Bonten) (REMAP-CAP global trial; hydrocortisone)</a> <a href="#">NCT04330586 (Korea University Guro Hospital) (ciclesonide)</a> <a href="#">2020-001113-21 (RECOVERY Trial) (lopinavir-ritonavir; low-dose dexamethasone, hydroxychloroquine, azithromycin)</a>	Primary study ends April 2020 (Peking) / June 2020 (Tongji)	<a href="#">medRxiv</a> <a href="#">medRxiv</a>	<a href="#">World Health Organization</a> <a href="#">UK Government</a> <a href="#">REMAP-CAP</a> <a href="#">REMAP-CAP</a> <a href="#">RECOVERY Trial</a>



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96*	Chloroquine/ Hydroxychloroquine, antimalarial	FDA-approved since 1949, approved to treat malaria (chloroquine), FDA-approved since at least 1955, approved to treat malaria, rheumatoid arthritis, and lupus (hydroxychloroquine)		Numerous trials with global research sponsors; University of Minnesota; University of Washington/New York University (hydroxychloroquine); University of Oxford; IHU-Méditerranée Infection and others; World Health Organization SOLIDARITY trial (chloroquine); New York State Department of Health (hydroxychloroquine with zithromax); Mahidol Oxford Tropical Medicine Research Unit (hydroxychloroquine and chloroquine); ORCHID Trial with National Heart, Lung, and Blood Institute (NHLBI); REMAP-CAP global trial*	Clinical / FDA issued an Emergency Use Authorization on March 28, 2020 (oral formulations of chloroquine phosphate and hdoxychloroquinine sulfate donated to the Strategic National Stockpile to treat adolescent and adult hospitalized patients with COVID-19 when a clinical trial is not available or feasible)	COVID-19 Treatment Accelerator (University of Washington/ New York University trial and Mahidol Oxford Tropical Medicine Research Unit trial); UK Government (University of Oxford RECOVERY trial)	<a href="#">NCT04261517 (Shanghai Public Health Clinical Center) (Hydroxychloroquine)</a> <a href="#">NCT04303507 (University of Oxford) (chloroquine prevention study)</a> <a href="#">NCT04303299 (Rajavithi Hospital) (Various combination of protease inhibitors, Oseltamivir, Favipiravir, and Hydroxychloroquine)</a> <a href="#">NCT04304053 (Fundacio Lluita Contra la SIDA) (prevention, darunavir/cobicistat or hydroxychloroquine)</a> <a href="#">NCT04307693 (Asan Medical Center) (Lopinavir/Ritonavir or Hydroxychloroquine)</a> <a href="#">NCT04316377 (University Hospital, Akershus) (Hydroxychloroquine)</a> <a href="#">NCT04315948 (Institut National de la Santé Et de la Recherche Médicale, France) (remdesivir, lopinavir/ritonavir, interferon beta-1a, hydroxychloroquine)</a> <a href="#">NCT04321993 (Lisa Barrett, Nova Scotia Health Authority) (lopinavir/ritonavir; hydroxychloroquine; baricitinib; sarilumab)</a>	Results from the University of Washington/NYU trial expected in summer 2020	<a href="#">NCT04261517 (Shanghai Public Health Clinical Center) (Hydroxychloroquine)</a> <a href="#">IHU-Méditerranée Infection</a> <a href="#">Journal of ZheJiang University (Medical Sciences)</a> <a href="#">medRxiv</a> <a href="#">medRxiv</a> <a href="#">medRxiv (ChiCTR2000029559)</a> <a href="#">medRxiv</a> <a href="#">medRxiv (NCT04323527)</a> <a href="#">medRxiv</a> <a href="#">medRxiv</a> <a href="#">medRxiv</a> <a href="#">medRxiv</a> <a href="#">medRxiv</a> <a href="#">ScienceDirect</a> <a href="#">ISAC</a>	<a href="#">World Health Organization</a> <a href="#">BioCentury</a> <a href="#">Endpoints News</a> <a href="#">Stat News</a> <a href="#">Politico</a> <a href="#">Sandoz</a> <a href="#">University of Washington</a> <a href="#">Mastercard press release</a> <a href="#">FDA</a> <a href="#">RECOVERY Trial</a>

Number	Type of Product - Treatment	FDA-Approved Indications (Treatments)	Clinical Trials Ongoing for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
96 (cont.)*	Chloroquine/ Hydroxychloroquine, antimalarial						<p><a href="#">2020-001113-21 (RECOVERY Trial) (lopinavir-ritonavir; low-dose dexamethasone, hydroxychloroquine, azithromycin)</a></p> <p><a href="#">NCT04323527 (Fundação de Medicina Tropical Dr. Heitor Vieira Dourado)</a></p> <p><a href="#">NCT04333732 (Washington University School of Medicine)</a></p> <p><a href="#">NCT04332991 (Massachusetts General Hospital) (ORCHID trial, National Heart, Lung, and Blood Institute [NHLBI])</a></p> <p><a href="#">NCT04345419 (Tanta University) (chloroquine; favipiravir; nitazoxanide; ivermectin; niclosamide)</a></p> <p><a href="#">NCT04341870 (Assistance Publique - Hôpitaux de Paris) (sarilumab, azithromycin, hydroxychloroquine; CORIMUNO-VIRO trial)*</a></p> <p><a href="#">NCT04345289 (Thomas Benfield, Hvidovre University Hospital) (convalescent anti-SARS-CoV-2 plasma; sarilumab; baricitinib; hydroxychloroquine)*</a></p> <p><a href="#">NCT02735707 (MJM Bonten, UMC Utrecht) (REMAP-CAP trial)*</a></p> <p><a href="#">Over 22 trials registered in China</a></p>		<p><a href="#">ScienceDirect</a></p> <p><a href="#">medRxiv</a></p> <p><a href="#">medRxiv (ChiCTR2000029868)*</a></p>	

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97*	Camostat mesylate, transmembrane protease serine 2 (TMPRSS2) inhibitor, approved in Japan to treat multiple conditions including pancreatitis	N/A		Leibniz Institute for Primate Research/University Göttingen and others	Clinical		<a href="#">NCT04321096 (University of Aarhus)</a>			<a href="#">Nature Biotechnology</a> <a href="#">bioRxiv</a> <a href="#">Thailand Medical News Cell</a>
98*	Jakafi/jakavi (ruxolitinib)	FDA-approved since 2011, approved to treat myelofibrosis, polycythemia vera, and acute graft-versus-host disease		Novartis /Incyte, Department of Hematology, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology/Incyte Corp	Clinical / Expanded Acces		<a href="#">ChiCTR2000029580 (Department of Hematology, Tongji Medical College, Huazhong University of Science and Technology) (ruxolitinib in combination with mesenchymal stem cells)</a> <a href="#">NCT04334044 (Grupo Cooperativo de Hemopatías Malignas)</a> <a href="#">NCT04331665 (University Health Network, Toronto)</a> <a href="#">NCT04337359 (Novartis Pharmaceuticals) (Expanded Access)</a>			<a href="#">World Health Organization</a> <a href="#">Novartis</a> <a href="#">Incyte press release</a>

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99*	PegIntron, Sylatron, IntronA (peginterferon alfa-2b)	PegIntron - FDA-approved since 2001, approved to treat Hepatitis C; Sylatron - FDA-approved since 2001, approved for the adjuvant treatment of melanoma; Intron A - FDA-approved since 1986, approved to treat Hepatitis C and certain cancers		Wuhan Jinyintan Hospital (Wuhan Infectious Diseases Hospital) (Schering)	Clinical					<a href="#">World Health Organization</a>
100*	Novaferon, Nova, interferon, licensed in China for Hepatitis B	N/A		The First Affiliated Hospital of Zhejiang University Medical School	Clinical		<a href="#">ChiCTR2000029573 (The First Affiliated Hospital of Medical College of Zhejiang University) (antiviral therapy, Chinese medicine treatment, and Novaferon atomization)</a> <a href="#">ChiCTR2000029496 (Hu'nan Haiyao hongxingtang Pharmaceutical Co., Ltd) (Novaferon, Kaletra, Novaferon+Kaletra)</a>			<a href="#">World Health Organization</a>
101*	Traumakine (interferon beta 1-a)	N/A		Faron Pharmaceuticals/REMAP-CAP global trial	Clinical		<a href="#">NCT02735707 (MJM Bonten) (REMAP-CAP global trial)</a>	Added to REMAP-CAP trial		<a href="#">Faron Pharmaceuticals press release</a>
102*	SNG001, inhaled formulation of interferon beta-1a	N/A	Asthma patients with cold or flu infection; COPD patients with viral infections	Synairgen / University of Southampton	Clinical			Phase 2 began in March 2020		<a href="#">pharmaphorum</a>
103*	Peginterferon lambda		Hepatitis Delta	Eiger BioPharmaceuticals, Inc.	Clinical		<a href="#">NCT04331899 (Stanford University)</a>	Phase 2 began in April 2020		<a href="#">Eiger BioPharmaceuticals press release</a> <a href="#">Eiger BioPharmaceuticals</a>

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104*	Cerocal (ifenprodil), NP-120, an NDMA receptor glutamate receptor antagonist targeting Glu2NB	N/A	Idiopathic Pulmonary Fibrosis	Algernon Pharmaceuticals	Pre-clinical					<a href="#">Clinical Trials Arena</a> <a href="#">Algernon Pharmaceuticals</a>
105*	APN01; recombinant soluble human Angiotensin Converting Enzyme 2	N/A	Acute lung injury, Acute respiratory distress syndrome, Pulmonary arterial hypertension	University of British Columbia/ Apeiron Biologics	Clinical	Austrian Government		Phase 2 began in April 2020		<a href="#">Clinical Trials Arena</a> <a href="#">Apeiron Biologics</a> <a href="#">Apeiron Biologics press release</a>
106*	Brilacidin, a defensin mimetic	N/A	Oral Mucositis; Ulcerative Proctitis/Ulcerative Proctosigmoiditis; Acute Bacterial Skin and Skin Structure Infection	Innovation Pharmaceuticals	Clinical					<a href="#">Clinical Trials Arena</a> <a href="#">Innovation Pharmaceuticals</a> <a href="#">Innovation Pharmaceuticals</a>
107*	BXT-25; glycoprotein	N/A		Bioxytran	Pre-clinical					<a href="#">Clinical Trials Arena</a>
108*	Peptides targeting the NP protein	Unknown		CEL-SCI/University of Georgia Center for Vaccines and Immunology	Pre-clinical					<a href="#">Clinical Trials Arena</a> <a href="#">CEL-SCI Corporation</a> <a href="#">press release</a> <a href="#">FierceBiotech</a> <a href="#">BioSpace</a>
109*	BIO-11006, inhaled peptide	N/A	Acute Respiratory Distress Syndrome; Non-Small Cell Lung Cancer; Chronic Obstructive Pulmonary Disease (COPD)	Biomarck Pharmaceuticals	Clinical					<a href="#">Biomarck Pharmaceuticals</a>
110*	Gilenya (fingolimod), sphingosine 1-phosphate receptor modulator	FDA-approved since 2010, approved to treat multiple sclerosis		The First Affiliated Hospital of Fujian Medical University/Novartis	Clinical		<a href="#">NCT04280588 (First Affiliated Hospital of Fujian Medical University)</a>	Primary trial ends July 2020		
111*	WP1122, glucose decoy prodrug (and related drug candidates)	N/A		Moleculin Biotech/University of Texas Medical Branch	Pre-clinical					<a href="#">FierceBiotech</a> <a href="#">Moleculin</a>

\* Indicates updated or new field

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112*	Rebif (interferon beta-1a)	FDA-approved since 2002, approved to treat multiple sclerosis		Institut National de la Sante et de la Recherche Medicale (Merck KGaA)	Clinical		<a href="#">EudraCT 2020-000936-23, INSERM study (lopinavir/ritonavir; Rebif; remdesivir)</a>  <a href="#">NCT04315948 (Institut National de la Santé Et de la Recherche Médicale, France) (remdesivir, lopinavir/ritonavir, interferon beta-1a, hydroxychloroquine)</a>			<a href="#">Merck KGaA press release</a>
113*	nafamostat, approved in Japan to treat pancreatitis and other diseases	N/A		University of Tokyo/National Center for Global Health and Medicine/ Ensysce Biosciences*	Clinical			University of Tokyo trial (IV formulation) starts April 2020; Ensysce trial will be with oral formulation*		<a href="#">Bloomberg News</a> <a href="#">Ensysce press release*</a>
114*	A number of synthesized nanoviricide drug candidates	N/A		NanoViricides	Pre-clinical					<a href="#">Clinical Trials Arena</a> <a href="#">NanoViricides Inc.</a>
115*	losartan	FDA-approved since 1995, approved to treat hypertension and diabetic nephropathy		University of Minnesota	Clinical		<a href="#">NCT04312009 (University of Minnesota) (Losartan for Patients With COVID-19 Requiring Hospitalization)</a>  <a href="#">NCT04311177 (University of Minnesota) (Losartan for Patients With COVID-19 Not Requiring Hospitalization)</a>			<a href="#">KARE TV</a>
116*	Activase (alteplase), tissue plasminogen activator (tPA)	FDA-approved since 1987, approved to treat stroke, myocardial infarction, and pulmonary embolism		Beth Israel Deaconess, the University of Colorado Anschutz Medical Campus, and Denver Health (Genentech)	Compassionate Use					<a href="#">MIT News</a>

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117*	Leukine (sargramostim, rhu-Granulocyte macrophage colony stimulating factor )	FDA-approved since 1991, approved to shorten the time to neutrophil recovery and reduce the incidence of infections following chemotherapy, mobilize hematopoietic progenitor cells, accelerate myeloid reconstitution following bone marrow or cell transplantation, treat delayed neutrophil recovery or graft failure after bone marrow transplantation, and increase survival of radiation	Pulmonary conditions that affect alveolar macrophages (nebulized leukine); ARDS (IV leukine)	Partner Therapeutics	Clinical		<a href="#">NCT04326920 (University Hospital, Ghent)</a>			<a href="#">Partner Therapeutics</a>
118*	Kineret (anakinra), interleukin-1 receptor antagonist	FDA-approved since 2001, approved to treat rheumatoid arthritis and cryopyrin-associated periodic syndromes		Swedish Orphan Biovitrum/REMAP-CAP global trial	Clinical		<a href="#">NCT04324021 (Swedish Orphan Biovitrum) (Emapalumab; Anakinra)</a> <a href="#">NCT02735707 (MJM Bonten) (REMAP-CAP global trial)</a>			<a href="#">REMAP-CAP</a>
119*	AT-001, aldose reductase inhibitor	N/A	Diabetic cardiomyopathy	Applied Therapeutics / numerous New York City hospitals	Clinical / Compassionate Use					<a href="#">Applied Therapeutics</a>
120*	Aplidin (plitidepsin), approved in Australia to treat multiple myeloma			PharmaMar	Clinical					<a href="#">PharmaMar</a>
121*	dipyridamole (Persantine), anticoagulant	FDA-approved since 1961, approved to prevent postoperative thromboembolic complications of cardiac valve replacement		Numerous Chinese hospitals	Clinical				<a href="#">medRxiv</a>	



Number	Type of Product - Treatment	FDA-Approved Indications (Treatments)	Clinical Trials Ongoing for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
122*	recombinant human plasma gelsolin (rhu-pGSN)	N/A	Community-acquired pneumonia	BioAegis Therapeutics Inc.	Clinical					<a href="#">GlobeNewswire</a>
123*	solnatide (synthetic molecule with a structure based on the lectin-like domain of human Tumour Necrosis Factor alpha)	N/A	Pneumonia, sepsis, ARDS, Primary Graft Dysfunction, and pulmonary dysfunctions	Apeptico	Clinical	EU Commission (Horizon 2020 Program)				<a href="#">APEPTICO</a>
124*	Nitric oxide	FDA-approved since 1999, approved to improve oxygenation in neonates		Massachusetts General Hospital; University of British Columbia	Clinical		<a href="#">NCT04305457 (Massachusetts General Hospital)</a> <a href="#">NCT04312243 (Massachusetts General Hospital) (prevention)</a> <a href="#">NCT04306393 (Massachusetts General Hospital)</a> <a href="#">NCT03331445 (University of British Columbia)</a>			<a href="#">Newsweek</a>
125*	PP-001	N/A	Severe eye diseases	Panoptes Pharma GmbH	Clinical					<a href="#">LISAvienna</a>
126*	ARMS-1	N/A	Influenza prophylaxis	ARMS Pharmaceutical/UH Cleveland Medical Center/Case Western Reserve University	Clinical	Cleveland Foundation		Trial starts April 2020		<a href="#">University Hospitals press release</a>
127*	PUL-042 inhalation solution	N/A	Prevent and treat respiratory complications in immunosuppressed cancer patients	Pulmotect	Clinical		<a href="#">NCT04312997 (Pulmotect, Inc.)</a>			<a href="#">Pulmotect</a>

Number	Type of Product - Treatment	FDA-Approved Indications (Treatments)	Clinical Trials Ongoing for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
128*	Olumiant (baricitinib), Janus kinase (JAK) inhibitor	FDA-approved since 2018, approved to treat rheumatoid arthritis		National Institute of Allergy and Infectious Disease (NIAID)'s Adaptive COVID-19 Treatment Trial; Nova Scotia Health Authority; Hospital of Prato; University of Colorado (Eli Lilly)	Clinical		<a href="#">NCT04321993 (Lisa Barrett, Nova Scotia Health Authority) (lopinavir/ritonavir; hydroxychloroquine; baricitinib; sarilumab)</a> <a href="#">NCT04320277 (Hospital of Prato)</a> <a href="#">NCT04340232 (University of Colorado, Denver)</a> <a href="#">NCT04280705 (National Institute of Allergy and Infectious Diseases [NIAID]) (Adaptive COVID-19 Treatment Trial [ACTT])</a> <a href="#">NCT04345289 (Thomas Benfield, Hvidovre University Hospital) (convalescent anti-SARS-CoV-2 plasma; sarilumab; baricitinib; hydroxychloroquine)*</a>			<a href="#">Eli Lilly</a>
129*	Xeljanz (tofacitinib), Janus kinase (JAK) inhibitor	FDA-approved since 2012, approved to treat rheumatoid arthritis, psoriatic arthritis, and ulcerative colitis		Pfizer	Clinical		<a href="#">NCT04332042 (Università Politecnica delle Marche)</a>			<a href="#">Pfizer</a>

Number	Type of Product - Treatment	FDA-Approved Indications (Treatments)	Clinical Trials Ongoing for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
130*	colchicine	N/A (but has been used in the US since the early 1800s, and FDA-approved in combination with probenecid, approved to treat gout)		Numerous research sponsors globally	Clinical		<a href="#">NCT04326790 (National and Kapodistrian University of Athens)</a> <a href="#">NCT04328480 (Estudios Clínicos Latino América)</a> <a href="#">NCT04322565 (Lucio Manenti, Azienda Ospedaliero-Universitaria di Parma)</a> <a href="#">NCT04322682 (Montreal Heart Institute)</a>			<a href="#">National Post</a>
131*	low molecular weight heparin, anticoagulant	FDA-approved since at least 1993, approved to prevent blood clots and prevent/treat venous thromboembolism and myocardial infarction		Union Hospital, Tongji Medical College, Huazhong University of Science and Technology	Clinical					<a href="#">medRxiv</a>
132*	LAU-7b (fenretinide)	N/A	Treat exaggerated inflammatory response in adult cystic fibrosis patients	Laurent Pharmaceuticals	Clinical			Phase 2 to start May 2020		<a href="#">Laurent Pharmaceuticals press release</a>
133*	Xpovio (selinexor), oral, selective inhibitor of nuclear export (SINE) compound	FDA-approved since 2019, approved to treat multiple myeloma	Treat various cancers	Karyopharm Therapeutics	Clinical					<a href="#">Karyopharm Therapeutics Komodo Health press release*</a>
134*	BLD-2660, synthetic small molecule inhibitor of calpain (CAPN) 1, 2, and 9	N/A		Blade Therapeutics	Clinical		<a href="#">NCT04334460 (Blade Therapeutics)</a>			
135*	Calquence (acalabrutinib), Bruton's tyrosine kinase (BTK) inhibitor	FDA-approved since 2017, approved to treat mantle cell lymphoma and chronic lymphocytic leukemia		AstraZeneca	Clinical					<a href="#">AstraZeneca</a>

Number	Type of Product - Treatment	FDA-Approved Indications (Treatments)	Clinical Trials Ongoing for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
136*	CD24Fc, biological immunomodulator (nonpolymorphic regions of CD24 attached to the Fc region of human IgG1)	N/A	Graft versus Host Disease	Oncolmmune	Clinical			Phase 3 trial to start in April*		<a href="#">Oncolmmune press release*</a>
137*	Aviptadil, synthetic form of Vasoactive Intestinal Polypeptide	N/A	Sarcoid, Pulmonary Fibrosis, Bronchospasm, Erectile Dysfunction, and Acute Respiratory Distress Syndrome (ARDS)	NeuroRx/Relief Therapeutics/Thomas Jefferson University Hospital*	Clinical			Phase 2 trial started in April 2020*		<a href="#">NeuroRx Relief Therapeutics press release*</a>
138*	vazegepant, CGRP receptor antagonist		Acute migraine	Biohaven/Thomas Jefferson University	Clinical			Phase 2 to start April 2020		<a href="#">Biohaven Pharmaceuticals Endpoints News</a>
139*	CM4620-IE, calcium release-activated calcium (CRAC) channel inhibitor		Pancreatitis	CalciMedica	Clinical			Phase 2 started in April 2020		<a href="#">Endpoints News CalciMedica</a>
140*	ivermectin	FDA-approved since 1996, approved to treat intestinal parasites and head lice infestations		University of Utah/Surgisphere Corp; University of Baghdad; Tanta University	Clinical		<a href="#">NCT04343092 (University of Baghdad)</a> <a href="#">NCT04345419 (Tanta University) (chloroquine; favipiravir; nitazoxanide; ivermectin; niclosamide)</a>			<a href="#">SSRN</a>
141*	EPAAspire, oral formulation of highly purified eicosapentaenoic acid free fatty acid (EPA-FFA) in gastro-resistant capsules	N/A	Familial adenomatous polyposis	KD Pharma/SLA Pharma	Clinical					<a href="#">KD Pharma Group and SLA Pharma press release</a>
142*	niclosamide*	N/A*	Atopic Dermatitis*	Union Therapeutics/Institut Pasteur Korea*	Clinical*		<a href="#">NCT04345419 (Tanta University) (chloroquine; favipiravir; nitazoxanide; ivermectin; niclosamide)*</a>			<a href="#">UNION Therapeutics press release*</a>
143*	ADX-629, orally available reactive aldehyde species (RASP) inhibitor*	N/A*	Systemic immune-mediated diseases*	Aldeyra Therapeutics*	Clinical*					<a href="#">Aldeyra press release*</a>

Number	Type of Product - Treatment	FDA-Approved Indications (Treatments)	Clinical Trials Ongoing for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
144*	N-803, IL-15 "superagonist"	N/A*	Bladder Carcinoma In Situ*	ImmunityBio/NantKwest*	Clinical*					<a href="#">NantKwest and ImmunityBio press release*</a>
145*	piclidenoson, A3 adenosine receptor agonist*	N/A*	Rheumatoid arthritis; psoriasis*	Can-Fite BioPharma*	Clinical*		<a href="#">NCT04333472 (Can-Fite BioPharma)*</a>			<a href="#">Can-Fite BioPharma press release*</a>
<b>DEVICES</b>										
146*	CytoSorb (blood purification device, extracorporeal cytokine adsorber)	N/A		CytoSorbents Corporation	FDA issued an Emergency Use Authorization on April 10, 2020/Clinical/Compassionate Use		<a href="#">NCT04324528 (Dr. Alexander Supady)</a> <a href="#">ChiCTR2000030475 (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College)</a>		<a href="#">NCT04344080 (Universitätsklinikum Hamburg-Eppendorf)</a>	<a href="#">CytoSorbents Corporation press release</a> <a href="#">FDA</a>
147*	Extracorporeal blood purification (EBP) devices			Terumo BCT Inc/Marker Therapeutics AG	FDA issued an Emergency Use Authorization on April 9, 2020					<a href="#">FDA</a>
148*	Seraph100MicrobindAffinity Blood Filter (Seraphy 100), approved in the EU for pathogen reduction*	N/A*		ExThera Medical*	Clinical*					<a href="#">ExThera press release*</a>
149*	INOpulse			Bellerophon	Compassionate Use					<a href="#">Bellerophon Therapeutics</a>
<b>DORMANT/DISCONTINUED</b>										
1	Washed microbiota transplantation	Unknown		The Second Hospital of Nanjing Medical University	Clinical		<a href="#">NCT04251767 (The Second Hospital of Nanjing Medical University) (Washed Microbiota Transplantation for Patients With 2019-nCoV Infection)</a>		Study stopped before recruitment	<a href="#">BioCentury</a>

Number	Type of Product - Treatment	FDA-Approved Indications (Treatments)	Clinical Trials Ongoing for Other Diseases	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
2	Recombinant ACE2 (angiotensin-converting enzyme 2)	Unknown		The First Affiliated Hospital of Guangzhou Medical University	Clinical		<a href="#">NCT04287686 (The First Affiliated Hospital of Guangzhou Medical University) (Recombinant Human Angiotensin-converting Enzyme 2 [rhACE2] as a Treatment for Patients With COVID-19)</a>		Study stopped before recruitment	<a href="#">BioCentury Applied DNA press release*</a>

# COVID-19 Treatment and Vaccine Tracker

This document contains an aggregation of publicly available information from validated sources. It is not an endorsement of one approach or treatment over another, but simply a list of all treatments and vaccines currently in development.

## VACCINES

Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
1	DNA plasmid; INO-4800	Same platform as vaccine candidates for Lassa, Nipah, HIV, Filovirus, HPV, cancer indications, Zika, and Hepatitis B	Inovio Pharmaceuticals/Beijing Advaccine Biotechnology	Clinical	Coalition for Epidemic Preparedness (CEPI)/Gates Foundation	<a href="#">NCT04336410 (Inovio Pharmaceuticals)</a>	Started Phase 1 April 2020; initial data expected late summer 2020		<a href="#">World Health Organization</a> <a href="#">MarketWatch</a> <a href="#">BioAegis Therapeutics</a> <a href="#">INOVIO</a>
2	DNA		Takis/Applied DNA Sciences/Evvivax	Pre-clinical			Preclinical results expected in April 2020; Phase 1 to start in fall 2020		<a href="#">World Health Organization</a> <a href="#">Takis</a> <a href="#">Applied DNA press release*</a>
3	DNA plasmid		OPENCORONA - Cobra Biologics/Karolinska Institute	Pre-clinical	European Commission (Horizon 2020 Program)		Phase 1 to start in 2020		<a href="#">BioSpace</a>
4	DNA plasmid		Osaka University/AnGes/Takara Bio	Pre-clinical					<a href="#">World Health Organization</a>
5	DNA plasmid		Zydus Cadila	Pre-clinical					<a href="#">World Health Organization</a>
6	DNA plasmid, needle-free delivery	Same platform as vaccine candidates for SARS	Immunomic Therapeutics/EpiVax/PharmaJet	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">Immunomic Therapeutics press release*</a>
7	Inactivated (formaldehyde-inactivated + alum)	Same platform as vaccine candidates for SARS	Sinovac/Dynavax*	Pre-clinical			Phase 1 to start in April 2020*		<a href="#">World Health Organization</a> <a href="#">Sinovac press release*</a> <a href="#">Dynavax and Sinovac press release*</a>

### LEGEND

CCHF = Crimean-Congo Haemorrhagic Fever	HIV = Human Immunodeficiency Virus	NIPV = Nipah Virus	TB = Tuberculosis
CHIKV = Chikungunya Virus	HPV = Human Papilloma Virus	NORV = Norovirus	VEE = Venezuelan Equine Encephalitis Virus
DengV = Dengue Virus	Inf = Influenza	RABV = Rabies Virus	VZV = Varicella Vaccine (Chickenpox)
FMD = Foot and Mouth Disease	LASV = Lassa Fever Virus	RSV = Respiratory Syncytial Virus	YFV = Yellow Fever Virus
EBOV = Ebola Virus	MARV = Marburg Virus	RVF = Rift Valley Fever	ZIKV = Zika Virus
HAV = Hepatitis A Virus	MenB = Meningitis B	SARS = Severe Acute Respiratory Syndrome	
HBV = Hepatitis B Virus	MERS = Middle East Respiratory Syndrome	SIV = Simian Immunodeficiency Virus	



Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
8	Inactivated		Beijing Institute of Biological Products/Wuhan Institute of Biological Products	Pre-clinical					<a href="#">World Health Organization</a>
9	Inactivated		Osaka University/BIKEN/NIBIOHN	Pre-clinical					<a href="#">World Health Organization</a>
10	Deoptimized live attenuated virus	Same platform as vaccine candidates for HAV, InfA, ZIKV, FMD, SIV, RSV, DENV	Codagenix/Serum Institute of India	Pre-clinical			Animal data in summer 2020		<a href="#">World Health Organization</a> <a href="#">Indian Express</a>
11	Replicating viral vector, influenza vector expressing RBD	Same platform as vaccine candidates for MERS	The University of Hong Kong	Pre-clinical	Coalition for Epidemic Preparedness (CEPI)				<a href="#">World Health Organization</a> <a href="#">Coalition for Epidemic Preparedness</a> <a href="#">World Health Organization</a>
12	CoroFlu, self-limiting influenza virus	Same platform as vaccine candidates for influenza	University of Wisconsin-Madison / FluGen/ Bharat Biotech	Pre-clinical			Start Phase 1 trial in fall 2020		<a href="#">Press release from the collaboration</a>
13	Non-replicating viral vector; MVA encoded VLP	Same platform as vaccine candidates for LASV, EBOV, MARV, HIV	GeoVax/BravoVax	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">GeoVax</a> <a href="#">GeoVax</a>
14	Non-replicating viral vector; Ad26 (alone or with MVA boost)	Same platform as vaccine candidates for Ebola, HIV, RSV	Janssen Pharmaceutical Companies/ Beth Israel Deaconess Medical Center	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)		Start Phase 1 in September 2020		<a href="#">World Health Organization</a> <a href="#">Johnson &amp; Johnson</a> <a href="#">Johnson &amp; Johnson</a> <a href="#">FierceBiotech</a> <a href="#">Johnson &amp; Johnson press release</a>
15*	Non-replicating viral vector; Ad5*		ImmunityBio/NantKwest*	Pre-clinical*					<a href="#">NantKwest and ImmunityBio press release*</a>
16*	Non-replicating viral vector; ChAdOx1	Same platform as vaccine candidates for influenza, TB, Chikungunya, Zika, MenB, plague	Consortium of the Jenner Institute, Oxford Biomedica, University of Oxford, Vaccines Manufacturing and Innovation Centre, Pall Life Sciences, Cobra Biologics, and HalixBV	Clinical	Coalition for Epidemic Preparedness (CEPI)/UK Government	<a href="#">NCT04324606 (University of Oxford)</a>	Animal trials begin March 2020, Phase 1 begins April 2020		<a href="#">World Health Organization</a> <a href="#">Guardian</a> <a href="#">Fierce Biotech</a> <a href="#">World Health Organization</a> <a href="#">PharmaTimes</a>
17*	Non-replicating viral vector	Same platform as vaccine candidates for many pathogens	DZIF - German Center for Infection Research	Pre-clinical					<a href="#">World Health Organization</a>

\* Indicates updated or new field

Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
18*	AdCOVID; single-dose, intranasal vaccine; non replicating viral vector; adenovirus-based NasoVAX expressing spike protein	Same platform as vaccine candidates for influenza	Altimune/University of Alabama at Birmingham	Pre-clinical			Phase 1 trial to begin Q3 2020		<a href="#">World Health Organization</a> <a href="#">Altimune press release</a> <a href="#">Altimune</a>
19*	Non-replicating viral vector; Ad5 S (GREVAX™ platform)	Same platform as vaccine candidates for MERS	Greffex	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">Greffex</a>
20*	Non-replicating viral vector; Oral Vaccine platform	Same platform as vaccine candidates for InfA, CHIKV, LASV, NORV, EBOV, RVF, HBV, VEE	Vaxart/Emergent BioSolutions	Pre-clinical			Phase 1 trial to begin in the second half of 2020		<a href="#">World Health Organization</a> <a href="#">Vaxart press release</a> <a href="#">Emergent BioSolutions</a>
21*	Non-replicating viral vector, MVA expressing structural proteins	Same platform as vaccine candidates for HIV, HCV, CHIKV, EBOV, Zika, Malaria, Leishmania	Centro Nacional Biotecnologia (CNB-CSIC), Spain	Pre-clinical					<a href="#">World Health Organization</a>
22*	Non-replicating viral vector; Adenovirus Type 5 vector (Ad5-nCoV)	Same platform as vaccine candidates for EBOV	CanSino Biologics/Beijing Institute of Biotechnology	Clinical		<a href="#">NCT04313127 (CanSino Biologics Inc.)</a>	Phase 2 started April 2020	<a href="#">ChiCTR2000030906 (Insitute of Biotechnology, Academy of Military Medical Sciences, PLA of China) (Phase 1)</a> <a href="#">ChiCTR2000031781 (Insitute of Biotechnology, Academy of Military Medical Sciences, PLA of China) (Phase 2)</a>	<a href="#">World Health Organization</a> <a href="#">FiercePharma</a> <a href="#">CanSino Biologics announcement</a> <a href="#">Xinhua</a>

Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
23*	Protein subunit, capsid-like particle (CLP)	Same platform as vaccine candidates for HPV	PREVENT-nCoV consortium (AdaptVac, Institute for Tropical Medicine at University of Tubingen, Leiden University Medical Center, University of Copenhagen, ExpreS2ion Biotechnologies, Wageningen University)	Pre-clinical	European Commission (Horizon 2020 Program)		Phase 1 to begin by February 2021		<a href="#">AdaptVac</a> <a href="#">World Health Organization</a> <a href="#">ExpreS2ion press release</a>
24*	Protein subunit, drosophila S2 insect cell expression system VLPs		ExpreS2ion	Pre-clinical					<a href="#">World Health Organization</a>
25*	Protein subunit; S protein		WRAIR/USAMRIID	Pre-clinical					<a href="#">World Health Organization</a>
26*	Protein subunit, S protein + adjuvant	Same platform as vaccine candidates for Influenza	National Institute of Infectious Disease, Japan	Pre-clinical					<a href="#">World Health Organization</a>
27*	Protein subunit, VLP-recombinant protein + adjuvant		Osaka University/BIKEN/National Institutes of Biomedical Innovation, Japan	Pre-clinical					<a href="#">World Health Organization</a>
28*	Protein subunit, native like trimeric subunit spike protein	Same platform as vaccine candidates for HIV, RSV, Influenza	Clover Biopharmaceuticals Inc./GSK/Dynavax	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">World Health Organization</a>
29*	Protein subunit; peptide		Vaxil Bio	Pre-clinical					<a href="#">World Health Organization</a>
30*	Protein subunit; adjuvanted protein subunit (RBD)		Biological E Ltd	Pre-clinical					<a href="#">World Health Organization</a>
31*	Protein subunit; S protein		AJ Vaccines	Pre-clinical					<a href="#">World Health Organization</a>
32*	Protein subunit; S protein		Vaxine Pty Ltd/ Flinders University / Oracle	Pre-clinical					<a href="#">Flinders University press release</a>
33*	Protein subunit; li-Key peptide	Same platform as vaccine candidates for HIV, SARS-CoV, Influenza	Generex/EpiVax	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">Generex press release</a> <a href="#">EpiVax</a>
34*	Protein subunit; S protein	Same platform as vaccine candidates for Inf H7N9	EpiVax/University of Georgia	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">EpiVax</a>

\* Indicates updated or new field

Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
35*	PittCoVacc, Protein subunit, microneedle arrays S1 subunit	Same platform as vaccine candidates for MERS	University of Pittsburgh	Pre-clinical			Phase 1 to start as early as June 2020		<a href="#">University of Pittsburgh press release</a> <a href="#">EBioMedicine</a> <a href="#">World Health Organization</a>
36*	Protein subunit; S protein	Influenza, Ebola	University of Cambridge/DIOSynVax	Pre-clinical			Phase 1 to start as early as June 2020		<a href="#">University of Cambridge</a>
37*	Protein subunit; COVID-19 XWG-03 truncated Spike proteins	Same platform as vaccine candidates for HPV	Innovax/Xiamen University/GSK	Pre-clinical					<a href="#">FierceBiotech</a> <a href="#">World Health Organization</a>
38*	Protein subunit; S protein, baculovirus production	Same platform as vaccine candidates for Influenza, SARS-CoV (FDA-approved vaccine)	Sanofi Pasteur/GSK	Pre-clinical	Biomedical Advanced Research and Development Authority (BARDA)		Start Phase 1 in second half of 2020		<a href="#">World Health Organization</a> <a href="#">Sanofi</a> <a href="#">Stat News</a> <a href="#">MarketWatch</a> <a href="#">Sanofi</a>
39*	NVX-CoV2373; Protein subunit; Full length S trimers/nanoparticle + Matrix M	Same platform as vaccine candidates for RSV, CCHF, HPV, VZV, EBOV	Novavax/Emergent BioSolutions	Pre-clinical	Coalition for Epidemic Preparedness (CEPI)		Start Phase 1 in May 2020		<a href="#">World Health Organization</a> <a href="#">Emergent BioSolutions</a> <a href="#">Endpoints News</a>
40*	Protein subunit (gp-96 backbone)	Same platform as vaccine candidates for cancer (NSCLC), HIV, malaria, Zika	Heat Biologics (Zolovax) /University of Miami	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">Clinical Trials Arena</a> <a href="#">Heat Biologics</a>
41*	Protein subunit; molecular clamp stabilized Spike protein	Same platform as vaccine candidates for Nipah, influenza, Ebola, Lassa	University of Queensland/GSK/ Dynavax	Pre-clinical	Coalition for Epidemic Preparedness (CEPI)/ Queensland Government/ Federal Government (Australia)/Paul Ramsay Foundation				<a href="#">World Health Organization</a> <a href="#">ABC News Australia</a> <a href="#">Dynavax</a> <a href="#">World Health Organization</a>
42*	Protein subunit; S1 or RBD protein	Same platform as vaccine candidates for SARS	Baylor College of Medicine	Pre-clinical					<a href="#">World Health Organization</a>
43*	Protein subunit; Subunit protein, plant produced		iBio/CC-Pharming	Pre-clinical					<a href="#">World Health Organization</a>
44*	Protein subunit, recombinant protein, nanoparticles (based on S-protein and other epitopes)		St. Petersburg Scientific Research Institute of Vaccines and Serums	Pre-clinical					<a href="#">World Health Organization</a>

\* Indicates updated or new field

Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
45*	Protein subunit, adjuvanted microsphere peptide		VIDO-InterVac, University of Saskatchewan	Pre-clinical	The Government of Saskatchewan and the Canadian Federal Government		Animal testing results expected in April 2020		<a href="#">World Health Organization</a> <a href="#">World Health Organization</a> <a href="#">Government of Saskatchewan</a>
46*	Protein subunit, peptide	Same platform as vaccine candidates for Ebola, Marburg, HIV, Zika, Influenza, HPV therapeutic vaccine, Breast Cancer	Flow Pharma	Pre-clinical					<a href="#">World Health Organization</a>
47*	Protein subunit, synthetic long peptide vaccine candidate for S and M proteins		OncoGen	Pre-clinical					<a href="#">World Health Organization</a>
48*	DPX-COVID-19, protein subunit, lipid-based delivery platform	Same platform as vaccine candidates for cancer and infectious diseases, including malaria and anthrax	IMV, Inc. / Canadian Center for Vaccinology at Dalhousie University/ Izaak Walton Killam Health Center/ Nova Scotia Health Authority; Canadian Immunization Research Network / University of Laval / Global Urgent and Advanced Research and Development in Canada	Pre-clinical			Start Phase 1 testing by summer 2020		<a href="#">IMV, Inc.</a> <a href="#">IMV, Inc.</a>
49*	Pan-coronavirus vaccine candidate, targeting COVID-19, SARS, and MERS, spike protein		VBI Vaccines / National Research Council of Canada	Pre-clinical			Start Phase 1 testing by end of 2020		<a href="#">VBI Vaccines press release</a>
50*	Replicating viral vector; measles vector		Zydus Cadila	Pre-clinical					<a href="#">World Health Organization</a>
51*	Replicating viral vector; measles vector	Same platform as vaccine candidates for West Nile, CHIKV, Ebola, Lassa, Zika, MERS	Institut Pasteur/Themis/University of Pittsburgh	Pre-clinical	Coalition for Epidemic Preparedness (CEPI)		Start animal testing in April 2020		<a href="#">World Health Organization</a> <a href="#">University of Pittsburgh Medical Center</a> <a href="#">Coalition for Epidemic Preparedness</a>
52*	Live attenuated virus, measles virus	Same platform as vaccine candidates for Zika, H7N9, CHIKV	DZIF - German Center for Infection Research	Pre-clinical					<a href="#">World Health Organization</a>

\* Indicates updated or new field

Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
53*	Replicating viral vector; horsepox vector; TNX-1800	Same platform as vaccine candidates for smallpox, monkeypox	Tonix Pharma/Southern Research	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">Tonix Pharmaceuticals press release</a>
54*	Replicating viral vector, live viral vectored vaccine based on attenuated influenza virus backbone (intranasal)		BIOCAD/IEM	Pre-clinical					<a href="#">World Health Organization</a>
55*	Replicating viral vector, VSV vector expressing S protein	Same platform as vaccine candidates for Ebola, Marburg, Lassa	IAVI/ Batavia	Pre-clinical					<a href="#">World Health Organization</a>
56*	RNA; LNP-encapsulated mRNA cocktail encoding VLP		Fudan University/Shanghai JiaoTong University/RNACure Biopharma	Pre-clinical					<a href="#">World Health Organization</a>
57*	RNA; LNP-encapsulated mRNA cocktail encoding RBD		Fudan University/Shanghai JiaoTong University/RNACure Biopharma	Pre-clinical					<a href="#">World Health Organization</a>
58*	RNA; Replicating defective SARS-CoV-2 derived RNAs		Centro Nacional Biotecnologia (CNB-CSIC), Spain	Pre-clinical					<a href="#">World Health Organization</a>
59*	RNA; LNP-encapsulated mRNA	Same platform as vaccine candidates for MERS	University of Tokyo/ Daiichi-Sankyo	Pre-clinical					<a href="#">World Health Organization</a>
60*	RNA; mRNA		China CDC/Tongji University/Stermina	Pre-clinical					<a href="#">World Health Organization</a>
61*	RNA; LNP-encapsulated mRNA (mRNA 1273)	Same platform as vaccine candidates for multiple candidates	Moderna/NIAID	Clinical	Coalition for Epidemic Preparedness (CEPI)/ Biomedical Advanced Research and Development Authority (BARDA)	<a href="#">NCT04283461 (National Institute of Allergy and Infectious Diseases)</a>	Phase 1 started March 2020, study ends June 2021		<a href="#">World Health Organization</a> <a href="#">Wall Street Journal</a> <a href="#">MarketWatch</a> <a href="#">ClinicalTrials.gov</a>
62*	LUNAR-COV19; RNA; mRNA	Same platform as vaccine candidates for multiple candidates	Arcturus/Duke-NUS	Pre-clinical			Start Phase 1 in summer 2020		<a href="#">World Health Organization</a> <a href="#">Arcturus Therapeutics</a> <a href="#">Arcturus Therapeutics</a>
63*	RNA; saRNA	Same platform as vaccine candidates for EBOV, LASV, MARV, Inf (H7N9), RABV	Imperial College London	Pre-clinical			Start Phase 1 in summer 2020		<a href="#">World Health Organization</a> <a href="#">Imperial College London</a>
64*	RNA; mRNA	Same platform as vaccine candidates for RABV, LASV, YFV, MERS, InfA, ZIKV, DengV, NIPV	CureVac	Pre-clinical	Coalition for Epidemic Preparedness (CEPI); European Commission		Start Phase 1 in June 2020		<a href="#">World Health Organization</a> <a href="#">Labiotech.eu</a>

\* Indicates updated or new field



Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
65*	RNA; BNT162		BioNTech/Fosun Pharma/Pfizer	Pre-clinical			Start Phase 1 late April 2020		<a href="#">FierceBiotech</a> <a href="#">Endpoints News</a> <a href="#">World Health Organization</a> <a href="#">Pfizer and BioNTech press release*</a>
66*	RNA; liposome-encapsulated mRNA	Same platform as vaccine candidates for cancer	BIOCAD	Pre-clinical			Animal studies begin in April 2020		<a href="#">BIOCAD</a>
67*	RNA; mRNA		Sanofi Pasteur/ Translate Bio	Pre-clinical					<a href="#">Translate Bio</a>
68*	RNA; mRNA (cross-strain protective COV-2 mRNA) vaccine for high-risk populations		eTheRNA Immunotherapies/EpiVax/ Nexelis/REPROCELL/Centre for the Evaluation of Vaccination of the University of Antwerp	Pre-clinical			Start Phase 1 early 2021		<a href="#">EpiVax</a>
69*	RNA		GeneOne Life Science/Houston Methodist	Pre-clinical					<a href="#">Houston Methodist</a>
70*	VLP; virus-like particle, based on RBD displayed on virus-like particle		Saiba GmbH	Pre-clinical					<a href="#">World Health Organization</a>
71*	VLP; plant-derived VLP	Same platform as vaccine candidates for flu, rotavirus, norovirus, West Nile virus, and cancer	Medicago Inc.	Pre-clinical			Start Phase 1 in July/ August 2020		<a href="#">World Health Organization</a> <a href="#">Medicago press release</a>
72*	VLP; ADDomer™ multiepitope display		Imophoron Ltd/Bristol University's Max Planck Centre	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">University of Bristol</a>
73*	Gene-encoded antibody vaccine, non-viral nanoparticle delivery		SmartPharm Therapeutics/Sorrento Therapeutics	Pre-clinical					<a href="#">SmartPharm Therapeutics</a>
74*	Self-assembling vaccine (fusion protein of a heat shock protein and Avidin, with biotinylated immunogenic peptides)		HaloVax (Voltron Therapeutics)/The Vaccine & Immunotherapy Center at the Massachusetts General Hospital	Pre-clinical			Animal study results by October 2020		<a href="#">Voltron Therapeutics press release</a>

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Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
75*	LV-SMENP-DC Dendritic cells modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins; administered with antigen-specific cytotoxic T lymphocytes		Shenzhen Geno-Immune Medical Institute	Clinical		<a href="#">NCT04276896 (Shenzhen Geno-Immune Medical Institute)</a>			<a href="#">Nature</a>
76*	Artificial antigen-presenting cells modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins		Shenzhen Geno-Immune Medical Institute	Clinical		<a href="#">NCT04299724 (Shenzhen Geno-Immune Medical Institute)</a>			<a href="#">Nature</a>
77*	ISR-50		ISR Immune System Regulation	Pre-clinical			Animal study results expected in Q2 2020, Phase 1 begins Q4 2020		<a href="#">ISR Immune System Regulation</a>
78*	Unknown		ImmunoPrecise	Pre-clinical					<a href="#">World Health Organization</a>
79*	Unknown		MIGAL Galilee Research Institute	Pre-clinical					<a href="#">World Health Organization</a>
80*	Unknown		Doherty Institute	Pre-clinical					<a href="#">World Health Organization</a>
81*	Unknown		Tulane University	Pre-clinical					<a href="#">World Health Organization</a> <a href="#">Clinical Trials Arena</a>
82*	Unknown		SK Biosciences	Pre-clinical			Phase 1 begins as early as September 2020		<a href="#">UPI</a>
83*	Unknown		Vir Biotechnology/GSK	Pre-clinical					<a href="#">Vir Biotechnology</a>
84*	Unknown		Precision Vaccines Program at Boston Children's Hospital	Pre-clinical					<a href="#">Scientific American</a>
85*	Unknown, tobacco plant technology		Kentucky BioProcessing (British American Tobacco)	Pre-clinical					<a href="#">BAT</a>

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Number	Type of Vaccine	Related Use/Platform	Developer/Researcher	Current Stage of Development	Funding Sources	Clinical Trials for COVID-19	Anticipated Next Steps Timing	Published Results	Sources
86*	Unknown		ReiThera	Pre-clinical					<a href="#">World Health Organization</a>
87*	Unknown		BioNet Asia	Pre-clinical					<a href="#">World Health Organization</a>