Table S1: Current drugs and therapies in development for COVID-19

Drug/treatment	Description/mode of action	Clinical trial stage	Manufacturer	Comments	Reference
Chloroquine / Hydroxychloroquine	Inhibits SARS-CoV-2 replication and prevent the onset of acute respiratory distress syndrome (ARDS) as it stimulates an anti-inflammatory response.	US FDA has revoked its approval for use in COVID-19 due to no significant benefit in early clinical trials	Novartis, Mylan, Teva	No significant association between the use of hydroxychloroquine and recovery. Both drugs have been associated with negative side-effects.	[1] [2] [3] [4]
Lopinavir / Ritonavir	Lopinavir is a viral protease inhibitor, helps in suppressing viral replication. Ritonavir is also a viral protease inhibitor but mainly serve to enhance the concentration of lopinavir	Clinical trial	Abbott Laboratories (FDA approved in 2000)	Lopinavir and ritonavir is currently used in combination to treat Human immunodeficiency virus (HIV) and have been identified to be effective in treating MERS-CoV infections in animal models.	[5] [6] [7]
Remdesivir	Block viral replication by acting as a competitive inhibitor to RNA-dependent RNA polymerase	Phase 3; US FDA Emergency use authorisation for severe COVID-19	Gilead Sciences	Broad spectrum antiviral drug tested on MERS-CoV and SARS-CoV but not on SARS-CoV-2. US FDA has issued Emergency use authorisation for severe COVID-19.	[8] [9] [10]
Gimsilumab	Monoclonal antibody against GM-CSF protein, helps reduce inflammation to treat and/or prevent the onset of ARDS	Phase 3	Roivant Sciences	Blocking GM-CSF inhibits downstream signalling pathways, preventing the onset of cytokine storm	[11] [12]

MultiStem	Stem-cell therapy used to treat ARDS by harvesting stem cell from adult bone marrow	Phase 2	Athersys	Stem cell therapy facilitates in clearing the virus through apoptosis and phagocytosis. Steam cell therapy also releases mediators such as anti-inflammatory cytokines, antimicrobial peptides and restore protein permeability of endothelial cells, preventing secondary microbial infection and treating lung damage	[13] [14] [15] [16] [17]
Danoprevir and Ritonavir	Danoprevir is a protease inhibitor which has high affinity binding to SARS-CoV-2 protease, preventing the cleavage of polyprotein that forms the replicase-transcriptase complex. Ritaonavir is also a protease inhibitor, but mainly serves to enhance the concentration of danoprevir	Phase 1	Ascletis Pharma	Antiviral combination therapy, danoprevir used to treat Hepatitis C and Ritonavir used to treat HIV. Protease function in both Hepatitis C and HIV have proteases similar to SARS-CoV-2 protease, hypothesised that these drugs will inhibit SARS-CoV-2 protease function.	[18] [19]
CYNK-001	Generate natural killer cells through steam cells differentiation	Phase 1	Celularity	Natural killer cells are essential in killing virally infected cell, facilitating in viral elimination	[20] [21]
TJM2	Formation of antibody against GM-CSF to reduce inflammation and sequential ARDS onset	Phase 1	I-Mab		[22]
EIDD-2801	Block viral replication by acting as a ribonucleaside analogue	Phase 1	Ridgeback Biotherapeutics	Administered orally	[23]

SAB-185	Polyclonal antibodies allowing more than one viral protein target	Preclinical	SAB Biotherapeutics and CSL Behring	Treatment using humanised polyclonal antibodies, without the need for serum therapy from COVID-19 survivors	[24]
	In-vitro CoV activated T cells to transplant into patients to facilitate in eliminating active CoV infection	Preclinical	Allovir	Harvesting T cells from healthy donors and activating them by incubating it with harmless fragments of CoV	[25]
	Antibody-based treatment	Preclinical	Amgen	Isolate neutralising CoV antibodies from survivors and screen them to identify the most effective ones to use for the develop potential treatment	[26] [27]
	Antibody-based treatment	Preclinical	AstraZeneca and Vanderbilit University Medical Center	Isolating B cells from the serum of COVID-19 survivors to clone and use it for potential treatments. Neutralising antibodies are also being analysed for clinical treatment	[28] [27]
	Antibody-based treatment	Preclinical	Celltrion	Consolidated a library of antibodies obtained from recovered patients and determine which is the most effective in neutralising SARS-CoV-2. Trying to also develop a super antibody that is protective against all viruses that falls within the CoV family	[29] [27]
LY3127804	Monoclonal antibody against angiopoietin 2 (Ang2), to prevent the onset of ARDS and the need for medical ventilators	Preclinical	Eli Lily	Blocking Ang2 reduces lung injury	[30] [31]

	Antibody-based treatment	Preclinical	Grifols	Obtaining plasma sample from COVID-19 survivor and using it for potential COVID-19 treatment	[32] [27]
	Drug that generates antibodies (through mRNA sequencing) with these antibodies localising within the lungs	Preclinical	Neurimmune and Ethris	Ethris working on getting anti-CoV antibodies directly into the lungs of infected individuals via inhaler and Neurimmune trying to identify neutralising antibodies from COVID-19 survivors.	[33] [27]
	Block viral replication by targeting viral replication enzyme	Preclinical	Pfizer	Similar compounds Pfizer used previously to develop SARS-CoV antiviral medication	[34]
	Antibody-based treatment	Preclinical	Regeneron Pharmaceuticals	Formation of SARS-CoV-2 antibodies through infecting mice with harmless analogs of SARS-CoV-2	[35]
CoVIg-19	Antibody-based treatment	Preclinical	Takeda, CSL Behring, Biotest, BPL, LFB and Octapharma	Obtaining plasma sample from COVID-19 survivors and isolating protective antibodies.	[36] [27]
	Block viral replication	Preclinical	Vir Biotechnology and GlaxoSmithKline (GSK)		[37]

Table S2: Current vaccines in development for COVID-19

Vaccine	Description/mode of action	Clinical trial stage	Manufacturer	Comments	Reference
Ad5-nCoV	Obtaining genetic fragments of SARS-CoV-2 and encoding it within adenovirus type -5 (Ad5) vector	Phase 2	CanSino Biologics	Stimulates the adaptive immune response resulting in the formation of SARS-CoV-2 protective antibodies	[38]
mRNA-1273	Synthetic mRNA that transcribes for the spike of SARS-CoV-2	Phase 2	Moderna Therapeutics		[39]
BNT162	Uses specific genomic sequence of SARS-CoV-2 mRNA	Phase 2	BioNTech and Pfizer		[40] [41]
LV-SMENP-DC	Uses lentiviral vector to modify dendritic cells to express specific viral proteins which is sequentially used to activate antigen specific CD8 T cells	Phase 2	Shenzhen Geno-Immune Medical Institute	Lentiviral dendritic cell and CD8 T cell vaccine	[42]
ChAdOx1 nCoV-19	Integrating the genomic sequence of SARS-CoV-2 spike protein into an adenovirus vaccine vector	Phase 1/2	University of Oxford		[43]
	Uses lentiviral vector to express specific viral proteins on artificial antigen presenting cells	Phase 1	Shenzhen Geno-Immune Medical Institute	Artificial antigen presenting cell vaccine	[44]
INO-4800	Delivering plasmids encoding for the DNA into cells, allowing the generation of SARS-CoV-2 protective antibodies	Phase 1	Inovio Pharmaceuticals	DNA vaccine	[45] [46]
	Identifying the genomic sequence of SARS-CoV-2 that gives rise to immunity and integrating the genomic	Preclinical	Johnson & Johnson		[47]

	sequence into the genome of a harmless virus				
LUNAR-COV19	Identify the genomic sequence of SARS-CoV-2 that gives rise to immunity and integrate the genomic sequence into an RNA virus before delivering it using nanoparticle	Preclinical	Arcturus Therapeutics and Duke-NUS	Nanoparticle stimulates the expression of viral antigen on both MHC class I and class II as it has the ability to enter antigen-presenting cells through different pathways, this allows good immune response with low doses.	[48] [21]
COVID-19 S-Trimer	Formulating vaccine consisting of SARS-CoV-2 surface proteins and adjuvants	Preclinical	Clover Biopharmaceuticals and GSK	Protein-based vaccine	[49]
	Man-made mRNA sequence that translates into viral proteins	Preclinical	CureVac	mRNA-based vaccines	[50]
NVX-CoV2373	Formulating vaccine consisting of SARS-CoV-2 and Matrix-M adjuvants	Preclinical	Novavax	Animal models identified high levels of neutralising antibodies towards SARS-CoV-2 spike proteins	[51]
	Adjuvant vaccine for SARS-CoV-2	Preclinical	Sanofi and GSK	Used recombinant DNA technology to produce identical spike proteins expressed on SARS-CoV-2	[52]
	Protein vaccine that contains SARS-CoV-2 key protein	Preclinical	University of Queensland and GSK	Used molecular clamp technique that locks the natural shape of SARS-CoV-2 spike protein	[53]

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