# DRAFT landscape of COVID-19 candidate vaccines – 2 July 2020

#### 18 candidate vaccines in clinical evaluation

Platform	Type of candidate vaccine	Developer	Coronavirus target	Current stage of clinical evaluation/regulatory status- Coronavirus candidate	Same platform for non-Coronavirus candidates
Non- Replicating Viral Vector	ChAdOx1-S	University of Oxford/AstraZeneca	SARS-CoV2	Phase 3  ISRCTN89951424  Phase2b/3  2020-001228-32  Phase 1/2  PACTR202006922165132  2020-001072-15	MERS, influenza, TB, Chikungunya, Zika, MenB, plague
Non- Replicating Viral Vector	Adenovirus Type 5 Vector	CanSino Biological Inc./Beijing Institute of Biotechnology	SARS-CoV2	Phase 2 <u>ChiCTR2000031781</u> Phase 1 <u>ChiCTR2000030906</u>	Ebola
RNA	LNP- encapsulated mRNA	Moderna/NIAID	SARS-CoV2	Phase 2 NCT04405076 Phase 1 NCT04283461	multiple candidates
DNA	DNA plasmid vaccine with electroporation	Inovio Pharmaceuticals/ International Vaccine Institute	SARS-CoV2	Phase 1/2 NCT04447781 NCT04336410	multiple candidates
Inactivated	Inactivated	Wuhan Institute of Biological Products/Sinopharm	SARS-CoV2	Phase 1/2 ChiCTR2000031809	
Inactivated	Inactivated	Beijing Institute of Biological Products/Sinopharm	SARS-CoV2	Phase 1/2 ChiCTR2000032459	
Inactivated	Inactivated + alum	Sinovac	SARS-CoV2	Phase 1/2 NCT04383574 NCT04352608	SARS
Protein Subunit	Full length recombinant SARS CoV-2 glycoprotein nanoparticle vaccine adjuvanted with Matrix M	Novavax	SARS-CoV2	Phase 1/2 NCT04368988	RSV; CCHF, HPV, VZV, EBOV
RNA	3 LNP-mRNAs	BioNTech/Fosun Pharma/Pfizer	SARS-CoV2	Phase 1/2 2020-001038-36 NCT04368728	
Inactivated	Inactivated	Institute of Medical Biology , Chinese Academy of Medical Sciences	SARS-CoV2	Phase 1 NCT04412538	
DNA	DNA Vaccine (GX-19)	Genexine Consortium	SARS-CoV2	Phase 1 NCT04445389	
Non- Replicating Viral Vector	Adeno-based	Gamaleya Research Institute	SARS-CoV2	Phase 1 NCT04436471 NCT04437875	
Protein Subunit	Native like Trimeric subunit Spike Protein vaccine	Clover Biopharmaceuticals Inc./GSK/Dynavax	SARS-CoV2	Phase 1 NCT04405908	HIV, REV Influenza

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Protein Subunit	Adjuvanted recombinant protein (RBD-Dimer)	Anhui Zhifei Longcom Biopharmaceutical/ Institute of Microbiology, Chinese Academy of Sciences	SARS-CoV2	Phase 1 NCT04445194	MERS
Protein Subunit	Recombinant spike protein with Advax™ adjuvant	Vaxine Pty Ltd/Medytox	SARS-CoV2	Phase 1 NCT04453852	
RNA	LNP-nCoVsaRNA	Imperial College London	SARS-CoV2	Phase 1 ISRCTN17072692	EBOV; LASV, MARV, Inf (H7N9), RABV
RNA	mRNA	Curevac	SARS-CoV2	Phase 1 NCT04449276	RABV, LASV, YFV; MERS, InfA, ZIKV, DENV, NIPV
RNA	mRNA	People's Liberation Army (PLA) Academy of Military Sciences/Walvax Biotech.	SARS-CoV2	Phase 1 ChiCTR2000034112	

#### 129 candidate vaccines in preclinical evaluation

Platform	Type of candidate vaccine	Developer	Coronavirus target	Current stage of clinical evaluation/regulatory status- Coronavirus candidate	Same platform for non- Coronavirus candidates
DNA	DNA plasmid vaccine S,S1,S2,RBD &N	National Research Centre, Egypt	SARS-CoV2	Pre-Clinical	
DNA	DNA with electroporation	Karolinska Institute / Cobra Biologics (OPENCORONA Project)	SARS-CoV2	Pre-Clinical	
DNA	DNA with electroporation	Chula Vaccine Research Center	SARS-CoV2	Pre-Clinical	
DNA	DNA plasmid vaccine	Osaka University/ AnGes/ Takara Bio	SARS-CoV2	Pre-Clinical	
DNA	DNA	Takis/Applied DNA Sciences/Evvivax	SARS-CoV2	Pre-Clinical	
DNA	Plasmid DNA, Needle- Free Delivery	Immunomic Therapeutics, Inc./EpiVax, Inc./PharmaJet	SARS-CoV2	Pre-Clinical	SARS
DNA	DNA plasmid vaccine	Zydus Cadila	SARS-CoV2	Pre-Clinical	
DNA	DNA vaccine	BioNet Asia	SARS-CoV2	Pre-Clinical	
DNA	DNA vaccine	University of Waterloo	SARS-CoV2	Pre-Clinical	
DNA	DNA vaccine	Entos Pharmaceuticals	SARS-CoV2	Pre-Clinical	
DNA	bacTRL-Spike	Symvivo	SARS-CoV2	Pre-Clinical	
Inactivated	Inactivated whole virus	National Research Centre, Egypt	SARS-CoV2	Pre-Clinical	
Inactivated	Inactivated	Beijing Minhai Biotechnology Co., Ltd.	SARS-CoV2	Pre-Clinical	
Inactivated	TBD	Osaka University/ BIKEN/ NIBIOHN	SARS-CoV2	Pre-Clinical	
Inactivated	Inactivated + CpG 1018	Sinovac/Dynavax	SARS-CoV2	Pre-Clinical	
Inactivated	Inactivated + CpG 1018	Valneva/Dynavax	SARS-CoV2	Pre-Clinical	
Inactivated	Inactivated	Research Institute for Biological Safety Problems, Rep of Kazakhstan	SARS-CoV2	Pre-Clinical	
Live Attenuated Virus	Codon deoptimized live attenuated vaccines	Codagenix/Serum Institute of India	SARS-CoV2	Pre-Clinical	HAV, InfA, ZIKV, FMD, SIV, RSV, DENV
Live Attenuated Virus	Codon deoptimized live attenuated vaccines	Indian Immunologicals Ltd/Griffith University	SARS-CoV2	Pre-Clinical	
Non- Replicating Viral Vector	Adeno-associated virus vector (AAVCOVID)	Massachusetts Eye and Ear/Massachusetts General Hospital/AveXis	SARS-CoV2	Pre-Clinical	

## DISCLAIMER:

Non- Replicating Viral Vector	MVA encoded VLP	GeoVax/BravoVax	SARS-CoV2	Pre-Clinical	LASV, EBOV, MARV, HIV
Non- Replicating Viral Vector	Ad26	Janssen Pharmaceutical Companies	SARS-CoV2	Pre-Clinical	Ebola, HIV, RSV
Non- Replicating Viral Vector	Replication defective Simian Adenovirus (GRAd) encoding SARS-CoV-2 S	ReiThera/LEUKOCARE/Univercells	SARS-CoV2	Pre-Clinical	
Non- replicating viral vector	MVA-S encoded	DZIF – German Center for Infection Research/IDT Biologika GmbH	SARS-CoV2	Pre-clinical	Many
Non- replicating viral vector	MVA-S	IDIBAPS-Hospital Clinic, Spain	SARS-CoV2	Pre-clinical	
Non- Replicating Viral Vector	adenovirus-based NasoVAX expressing SARS2-CoV spike protein	Altimmune	SARS-CoV2	Pre-Clinical	influenza
Non- Replicating Viral Vector	[E1-, E2b-, E3-] hAd5- COVID19- Spike/Nucleocapsid	ImmunityBio, Inc. & NantKwest, Inc.	SARS-CoV2	Pre-Clinical	flu, Chik, Zika, EBOV, LASV, HIV/SIV,Cancer
Non- Replicating Viral Vector	Ad5 S (GREVAX™ platform)	Greffex	SARS-CoV2	Pre-Clinical	MERS
Non- Replicating Viral Vector	Oral Ad5 S	Stabilitech Biopharma Ltd	SARS-CoV2	Pre-Clinical	Zika, VZV, HSV-2 and Norovirus
Non- Replicating Viral Vector	adenovirus-based + HLA-matched peptides	Valo Therapeutics Ltd	Pan-Corona	Pre-Clinical	
Non- Replicating Viral Vector	Oral Vaccine platform	Vaxart	SARS-CoV2	Pre-Clinical	InfA, CHIKV, LASV, NORV; EBOV, RVF, HBV, VEE
Non- Replicating Viral Vector	MVA expressing structural proteins	Centro Nacional Biotecnología (CNB-CSIC), Spain	SARS-CoV2	Pre-Clinical	Multiple candidates
Non- Replicating Viral Vector	Dendritic cell-based vaccine	University of Manitoba	SARS-CoV2	Pre-Clinical	
Non- Replicating Viral Vector	parainfluenza virus 5 (PIV5)-based vaccine expressing the spike protein	University of Georgia/University of Iowa	SARS-CoV2	Pre-Clinical	MERS
Non- Replicating Viral Vector	Recombinant deactivated rabies virus containing S1	Bharat Biotech/Thomas Jefferson University	SARS-CoV2	Pre-Clinical	HeV, NiV, EBOV, LASSA, CCHFV, MERS
Non- Replicating Viral Vector	Influenza A H1N1 vector	National Research Centre, Egypt	SARS-CoV2	Pre-Clinical	
Non- Replicating Viral Vector	Inactivated Flu-based SARS-CoV2 vaccine + Adjuvant	National Center for Genetic Engineering and Biotechnology (BIOTEC) /GPO, Thailand	SARS-CoV2	Pre-Clinical	
Protein Subunit	Subunit	Helix Biogen Consult, Ogbomoso & Trinity Immonoefficient Laboratory, Ogbomoso, Oyo State, Nigeria.	SARS-CoV2	Pre-Clinical	
Protein Subunit	Protein Subunit S,N,M&S1 protein	National Research Centre, Egypt	SARS-CoV2	Pre-Clinical	
Protein Subunit	Protein Subunit	University of San Martin and CONICET, Argentina	SARS-CoV2	Pre-Clinical	
Protein Subunit	RBD protein fused with Fc of IgG + Adj.	Chulalongkorn University/GPO, Thailand	SARS-CoV2	Pre-Clinical	
Protein Subunit	Capsid-like Particle	AdaptVac (PREVENT-nCoV consortium)	SARS-CoV2	Pre-Clinical	

Protein Subunit Protein Subuni						
Subunit   Formulated in LNP		cell expression system	ExpreS2ion	SARS-CoV2	Pre-Clinical	
Protein Subunit Protein Subunit Subuni			IMV Inc	SARS-CoV2	Pre-Clinical	
Subunit   Disease_Japan   Osaba University (BIKEN/ National SARS-COV2   Pre-Clinical   Sarks University (BIKEN/ National SARS-COV2   Pre-Clinical   Subunit Protein	Protein		WRAIR/USAMRIID	SARS-CoV2	Pre-Clinical	
Protein Subunit Protein Adjuvant Protein Prote		S protein +Adjuvant		SARS-CoV2	Pre-Clinical	Influenza
Protein   Subunit   Protein   Adjuvant   Institutes of Biomedical Innovation, Japan   SARS-COV2   Pre-Clinical   MERS   Subunit   Subu		VID recombinant	<del>-</del>	CARC CoV2	Dro Clinical	
Subunit Protein Adjuvanted protein Subunit Protein Adjuvanted protein Subunit (RBD)  Protein Adjuvanted protein Subunit (RBD)  Protein Peptide Peptide Flow Pharma Inc SARS-CoV2 Pre-Clinical Ebola, Marbh Infl. (RBD)  Protein Subunit Subunit Protein Subunit (RBD)  Protein Subunit			Institutes of Biomedical Innovation,	JANS-COVZ	Fre-Cillical	
Subunit   Subunit   Subunit (RBD)   Silological E Ltd   SARS-COV2   Pre-Clinical   Subunit (RBD)   Subunit (RBD)   Protein   Subunit (RBD)   Protein   Peptide   Flow Pharma Inc   SARS-COV2   Pre-Clinical   Ebola, Marbin HIV, Zika, Influenza, Hi therapeutic vaccine, BreastCA   Pre-Clinical   Subunit   Protein   Subunit   Sars-CoV2   Pre-Clinical   Influenza, Hi therapeutic vaccine, BreastCA   Pre-Clinical   Influenza, Mi therapeutic vaccine, BreastCA   Pre-Clinical   Influenza, Mi therapeutic vaccine, BreastCA   Pre-Clinical   Influenza, Sars-Cov2   Pre-Clinical   Influenza, Sars-Cov2   Pre-Clinical   Influenza, Sars-Cov3   Pre-Clinical   Influenza, Sars-Cov4   Pre-Clinical   Influenza, Missola   Influenz		•	Univ. of Pittsburgh	SARS-CoV2	Pre-Clinical	MERS
Subunit   Subunit   Adjuvanted protein   Subunit (RBD)   Shortein   Subunit   Shortein   Subunit   Shortein   Subunit   Shortein   Subunit   Shortein   Subunit   Shortein   Subunit   Shortein   Shor	Protein	Peptide	Vaxil Bio	SARS-CoV2	Pre-Clinical	
Subunit subunit (RBD)  Protein Protein Subunit  Protein Adjuvanted microsphere peptide vaccine Protein Subunit  Protein Adjuvanted microsphere peptide Sakatchewan  Protein Subunit  Protein Adjuvanted microsphere peptide Sakatchewan  Protein Subunit  Protein Subunit  Protein Adjuvanted microsphere peptide Sakatchewan  Protein Subunit  Protein Subunit  Protein Adjuvanted microsphere peptide Sakatchewan  Protein Subunit  Protein Subunit  Protein Subunit  Protein Adjuvanted microsphere peptide Sakatchewan  Protein Subunit  Protein Subunit  Protein Subunit Protein Subunit Protein Subunit  Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Subunit Protein Subunit Protein Subunit Prot	Subunit					
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Protein Subunit   Sprotein Subunit   Subunit   Sprotein Subunit   Subunit Subunit   Sprotein Subunit   Subunit Subunit   Sprotein Subunit   Spro						
Subunit Protein Subunit Subunit Protein Subunit Subunit Subunit Subunit Protein Subunit Subunit Subunit Protein Subunit Subunit Subunit Subunit Protein Subunit Subunit Protein Reparation Subunit Protein Subunit Protein, plant Subunit Protein Subunit Protein Recombinant protein, nanoparticel subard on S-protein and other epitopes) Protein Recombinant protein, nanoparticel Subard on S-protein and other epitopes) Protein Subunit Subunit Protein Subunit Protein Subunit Protein Subunit Subunit Protein Subunit Subunit Protein Subunit Protein, plant produced Protein Subunit Protein Subunit Protein, plant produced Protein Subunit Subunit Subunit Subunit Protein Subunit		· · ·	Flow Pharma Inc	SARS-CoV2	Pre-Clinical	Fhola Marhurg
Subunit   Subu		repute		571113 60 12	Tre climed	HIV, Zika, Influenza, HPV therapeutic vaccine, BreastCA
Protein Subunit   Protein Subunit		S protein	AJ Vaccines	SARS-CoV2	Pre-Clinical	
Protein Subunit   Protein Subunit EPV-   Protein Subunit EPV-   Protein   Subunit   Protein   Protein   Protein   Subunit   Protein   Protein   Protein   Protein   Subunit   Protein   Protein   Subunit   Protein   Subunit   Protein   Protein   Subunit   Protein   Protein   Subunit   Protein   Subunit   Protein   Protein   Subunit   Protein   Protein   Subunit   Protein   Subunit   Protein   Protein   Subunit   Protein   Protein   Protein   Protein   Protein   Subunit   Protein	Protein	li-Key peptide	Generex/EpiVax	SARS-CoV2	Pre-Clinical	Influenza, HIV, SARS-CoV
Protein Subunit COV-19		S protein	EpiVax/Univ. of Georgia	SARS-CoV2	Pre-Clinical	
Subunit   CoV-19   Sanofi Pasteur/GSK   SARS-CoV2   Pre-Clinical   Influenza, SARS-CoV2   Pre-Clinical   Influenza, SARS-CoV2   Pre-Clinical   Influenza, SARS-CoV2   Pre-Clinical   NSCLC, HIV, malaria, Zika   Protein   Subunit   Sanofi Pasteur/GSK   SARS-CoV2   Pre-Clinical   NSCLC, HIV, malaria, Zika   Protein   Subunit   Sanofi Pasteur   Sa	Subunit					
Protein Subunit Protein   Sprotein (baculovirus production)   Sanofi Pasteur/GSK   SARS-Cov2   Pre-Clinical   Influenza, SA CoV   Protein   Sp-96 backbone   Heat Biologics/Univ. Of Miami   SARS-Cov2   Pre-Clinical   NSCLC, HIV, malaria, Zika   Protein   Subunit   Stabilized Spike protein   Protein   Peptide vaccine   FBRI SRC VB VECTOR, Rospotrebnadzor, Koltsovo   SARS-Cov2   Pre-Clinical   Ebola   Subunit   Subunit   Protein   Subunit   Subunit   Subunit   Protein   Synthetic Long   Peptide Vaccine   Protein   Synthetic Long   Protein   Protein   Protein   Protein   Synthetic Long   Protein   Protein   Synthetic Long   Protein   Protein   Protein   Protein   Protein   Protein   Synthetic Long   Protein   Prot			EpiVax	SARS-CoV2	Pre-Clinical	
Protein Subunit   Protein Su	Protein	S protein (baculovirus	Sanofi Pasteur/GSK	SARS-CoV2	Pre-Clinical	Influenza, SARS-
Protein Subunit         Molecular clamp stabilized Spike protein         University of Queensland/GSK/Dynavax         SARS-CoV2         Pre-Clinical         Nipah, influe Ebola, Lassa           Protein Subunit         Peptide vaccine         FBRI SRC VB VECTOR, Rospotrebnadzor, Koltsovo         SARS-CoV2         Pre-Clinical         Ebola           Protein Subunit         Subunit vaccine         FBRI SRC VB VECTOR, Rospotrebnadzor, Koltsovo         SARS-CoV2         Pre-Clinical         SARS-CoV2           Protein Subunit         S1 or RBD protein         Baylor College of Medicine         SARS-CoV2         Pre-Clinical         SARS           Protein Subunit         Subunit protein, plant produced         Isio/CC-Pharming         SARS-CoV2         Pre-Clinical         SARS-CoV2           Protein Subunit         Recombinant protein, nanoparticles (based on S-protein and other epitopes)         Saint-Petersburg scientific research institute of vaccines and serums         SARS-CoV2         Pre-Clinical         HPV           Protein Subunit         Adjuvanted microsphere petide         VIDO-InterVac, University of Saskatchewan         SARS-CoV2         Pre-Clinical         HPV           Protein Subunit         Synthetic Long Candidate for S and M proteins         Peptide Vaccine candidate for S and M protein expression system of S and N proteins         MIGAL Galilee Research Institute         SARS-CoV2         Pre-Clinical         Pre-Clinical	Protein	+ ' '	Heat Biologics/Univ. Of Miami	SARS-CoV2	Pre-Clinical	NSCLC, HIV,
Subunitstabilized Spike proteinQueensland/GSK/Dynavax proteinEbola, LassaProtein SubunitPeptide vaccineFBRI SRC VB VECTOR, Rospotrebnadzor, KoltsovoSARS-CoV2Pre-ClinicalEbolaProtein SubunitSubunit vaccineFBRI SRC VB VECTOR, Rospotrebnadzor, KoltsovoSARS-CoV2Pre-ClinicalSARS-CoV2Protein SubunitS1 or RBD proteinBaylor College of MedicineSARS-CoV2Pre-ClinicalSARSProtein Subunit protein, plant producedBaylor College of MedicineSARS-CoV2Pre-ClinicalSARSProtein Subunit protein, plant protein, an anoparticles (based on S-protein and other epitopes)Saint-Petersburg scientific research institute of vaccines and serums on truncated S(spike) proteinsSARS-CoV2Pre-ClinicalHPVProtein Subunit proteinsCOVID-19 XWG-03 truncated S(spike) proteinsInnovax/Xiamen Univ./GSKSARS-CoV2Pre-ClinicalHPVProtein Subunit proteinsAdjuvanted microsphere peptideVIDO-InterVac, University of SaksatchewanSARS-CoV2Pre-ClinicalHPVProtein Subunit proteinsSynthetic Long Peptide Vaccine candidate for S and M proteinsOncoGenSARS-CoV2Pre-ClinicalPre-ClinicalProtein Subunit protein expression system of S and N proteinsMIGAL Galilee Research Institute proteinsSARS-CoV2Pre-ClinicalPre-Clinical	Subunit					
Protein Subunit         Peptide vaccine         FBRI SRC VB VECTOR, Rospotrebnadzor, Koltsovo         SARS-CoV2         Pre-Clinical         Ebola           Protein Subunit         Subunit vaccine         FBRI SRC VB VECTOR, Rospotrebnadzor, Koltsovo         SARS-CoV2         Pre-Clinical         Pre-Clinical           Protein Subunit         S1 or RBD protein Subunit protein, plant produced         Baylor College of Medicine         SARS-CoV2         Pre-Clinical         SARS           Protein Subunit         Secombinant protein, nanoparticles (based on S-protein and other epitopes)         Saint-Petersburg scientific research institute of vaccines and serums         SARS-CoV2         Pre-Clinical         Pre-Clinical           Protein Subunit         COVID-19 XWG-03 truncated S (spike) proteins         Innovax/Xiamen Univ./GSK         SARS-CoV2         Pre-Clinical         HPV           Protein Subunit         Adjuvanted microsphere peptide         VIDO-InterVac, University of Saskatchewan         SARS-CoV2         Pre-Clinical           Protein Subunit         Synthetic Long Peptide Vaccine candidate for S and M protein         OncoGen         SARS-CoV2         Pre-Clinical           Protein Subunit         Oral E. coli-based protein expression system of S and N proteins         MIGAL Galilee Research Institute         SARS-CoV2         Pre-Clinical		stabilized Spike	•	SARS-CoV2	Pre-Clinical	Nipah, influenza, Ebola, Lassa
Protein Subunit         Subunit vaccine         FBRI SRC VB VECTOR, Rospotrebnadzor, Koltsovo         SARS-CoV2         Pre-Clinical           Protein Subunit         \$1 or RBD protein         Baylor College of Medicine         \$ARS-CoV2         Pre-Clinical         \$ARS           Protein Subunit         Subunit protein, plant produced         iBio/CC-Pharming         \$ARS-CoV2         Pre-Clinical           Protein Subunit         Recombinant protein, nanoparticles (based on S-protein and other epitopes)         \$Saint-Petersburg scientific research institute of vaccines and serums         \$ARS-CoV2         Pre-Clinical           Protein Subunit         COVID-19 XWG-03 truncated S (spike) proteins         Innovax/Xiamen Univ./GSK         \$ARS-CoV2         Pre-Clinical         HPV           Protein Subunit         Adjuvanted microsphere peptide         VIDO-InterVac, University of Saskatchewan         \$ARS-CoV2         Pre-Clinical           Protein Subunit         Synthetic Long Peptide Vaccine candidate for S and M proteins         OncoGen         \$ARS-CoV2         Pre-Clinical           Protein Subunit         Oral E. coli-based protein expression system of S and N proteins         MIGAL Galilee Research Institute         \$ARS-CoV2         Pre-Clinical		<u>'</u>		SARS-CoV2	Pre-Clinical	Ebola
Protein Subunit       S1 or RBD protein       Baylor College of Medicine       SARS-CoV2       Pre-Clinical       SARS         Protein Subunit       Subunit protein, plant produced       iBio/CC-Pharming       SARS-CoV2       Pre-Clinical       Pre-Clinical         Protein Subunit       Recombinant protein, anoparticles (based on S-protein and other epitopes)       Saint-Petersburg scientific research institute of vaccines and serums       SARS-CoV2       Pre-Clinical         Protein COVID-19 XWG-03 Subunit       Innovax/Xiamen Univ./GSK       SARS-CoV2       Pre-Clinical       HPV         Protein Subunit       Adjuvanted microsphere peptide       VIDO-InterVac, University of Saskatchewan       SARS-CoV2       Pre-Clinical         Protein Subunit       Peptide Vaccine candidate for S and M proteins       OncoGen       SARS-CoV2       Pre-Clinical         Protein candidate for S and M proteins       MIGAL Galilee Research Institute       SARS-CoV2       Pre-Clinical         Subunit       Protein expression system of S and N proteins       MIGAL Galilee Research Institute       SARS-CoV2       Pre-Clinical		Subunit vaccine	•	SARS-CoV2	Pre-Clinical	
Subunit Protein Subunit protein, plant produced Protein Recombinant protein, saint-Petersburg scientific research institute of vaccines and serums on S-protein and other epitopes) Protein COVID-19 XWG-03 Subunit truncated S (spike) proteins Protein Adjuvanted microsphere peptide Protein Subunit Protein Subunit Protein Synthetic Long Subunit Peptide Vaccine candidate for S and M proteins Protein Subunit Proteins Oral E. coli-based Subunit Subunit Protein Subunit Protein Subunit Protein Subunit Protein Subunit Proteins Protein Subunit Proteins Protein Subunit Proteins Oral E. coli-based Subunit Subunit Subunit Protein Subunit Protein Synthetic Long Subunit Proteins Protein Subunit Proteins Protein Subunit Prote	Subunit		Rospotrebnadzor, Koltsovo			
Protein Subunit protein, plant produced  Protein Recombinant protein, nanoparticles (based on S-protein and other epitopes)  Protein COVID-19 XWG-03 truncated S (spike) proteins  Protein Adjuvanted Subunit microsphere peptide  Protein Synthetic Long Peptide Vaccine candidate for S and M proteins  Protein Oral E. coli-based Subunit Subunit Proteins  Protein Subunit Protein Subunit Proteins  Protein System of S and N proteins  Protein Oral E. coli-based Subunit Subunit Proteins  Protein Subunit Protein Subunit Proteins  Protein Oral E. coli-based Sand N proteins  Protein System of S and N proteins  Protein System of S and N proteins		S1 or RBD protein	Baylor College of Medicine	SARS-CoV2	Pre-Clinical	SARS
Subunit produced  Protein Recombinant protein, nanoparticles (based on S-protein and other epitopes)  Protein COVID-19 XWG-03 Subunit truncated S (spike) proteins  Protein Adjuvanted Subunit microsphere peptide  Protein Synthetic Long Subunit Proteins  Protein Oral E. coli-based Subunit proteins  Protein Oral E. coli-based Subunit proteins  Protein Oral E. coli-based Subunit proteins  Protein System of S and N proteins  Protein Oral E. coli-based Subunit proteins  Protein System of S and N proteins			in: /00 pl	64.56.6.149	<b>D</b> Oli i I	
Protein Recombinant protein, nanoparticles (based on S-protein and other epitopes)  Protein COVID-19 XWG-03 truncated S (spike) proteins  Protein Adjuvanted microsphere peptide  Protein Synthetic Long Peptide Vaccine candidate for S and M proteins  Protein Oral E. coli-based proteins  MIGAL Galilee Research Institute  Protein Subunit Protein Subunit Protein Subunit Proteins  Protein Oral E. coli-based proteins  MIGAL Galilee Research Institute SARS-CoV2 Pre-Clinical SARS-CoV2 P		• • • • • • • • • • • • • • • • • • • •	IBIO/CC-Pharming	SARS-CoV2	Pre-Clinical	
Protein COVID-19 XWG-03 truncated S (spike) proteins  Protein Adjuvanted Microsphere peptide Saskatchewan  Protein Synthetic Long Peptide Vaccine candidate for S and M proteins  Protein Oral E. coli-based Subunit Protein System of S and N proteins  Protein System of S and N proteins  Protein Subunit Subunit Sand N proteins Sand N protein Subunit Sand N protein Sand N Sand Sand N Sand Sand N Sand Sand Sand Sand Sand Sand Sand Sand		nanoparticles (based on S-protein and		SARS-CoV2	Pre-Clinical	
Protein Subunit Microsphere peptide Saskatchewan SARS-CoV2 Pre-Clinical Saskatchewan SARS-CoV2 Pre-Clinical Saskatchewan SARS-CoV2 Pre-Clinical Subunit Peptide Vaccine candidate for S and M proteins Protein Oral E. coli-based Subunit Protein expression system of S and N proteins Sakatchewan Sakatchewan Sakatchewan SARS-CoV2 Pre-Clinical Pre-Clinical Pre-Clinical SARS-CoV2 Pre-Clinical SARS-CoV2 Pre-Clinical SARS-CoV2 Pre-Clinical SARS-CoV2 Pre-Clinical SARS-CoV2 Pre-Clinical Sakatchewan SARS-CoV2 Pre-Clinical SARS-CoV2 Pre		COVID-19 XWG-03 truncated S (spike)	Innovax/Xiamen Univ./GSK	SARS-CoV2	Pre-Clinical	HPV
Protein Synthetic Long Peptide Vaccine candidate for S and M proteins  Protein Oral E. coli-based Subunit Protein expression system of S and N proteins  OncoGen SARS-CoV2 Pre-Clinical Pre-Clinical SARS-CoV2 Pre-Clinical SARS-CoV2 Pre-Clinical Protein expression system of S and N proteins		Adjuvanted		SARS-CoV2	Pre-Clinical	
Subunit Peptide Vaccine candidate for S and M proteins  Protein Oral E. coli-based protein expression system of S and N proteins  MIGAL Galilee Research Institute SARS-CoV2 Pre-Clinical Protein expression system of S and N proteins		<u> </u>		SARS-CoV2	Pre-Clinical	
Subunit protein expression system of S and N proteins		Peptide Vaccine candidate for S and M		5.41.5 60 42	c cinical	
Subunit protein expression system of S and N proteins	Protein	•	MIGAL Galilee Research Institute	SARS-CoV2	Pre-Clinical	
		protein expression system of S and N			2 3	
p	Protein	Nanoparticle vaccine	LakePharma, Inc.	SARS-CoV2	Pre-Clinical	
Subunit Subunit		1,1 1113 1113	,			

Protein Subunit	Plant-based subunit (RBD-Fc + Adjuvant)	Baiya Phytopharm/ Chula Vaccine Research Center	SARS-CoV2	Pre-Clinical	
Protein Subunit	OMV-based vaccine	Quadram Institute Biosciences	SARS-CoV2	Pre-Clinical	Flu A, plague
Protein	OMV-based vaccine	BiOMViS Srl/Univ. of Trento	SARS-CoV2	Pre-Clinical	
Subunit		·			
Protein	structurally modified	Lomonosov Moscow State	SARS-CoV2	Pre-Clinical	rubella,
subunit	spherical particles of	University			rotavirus
	the tobacco mosaic	·			
	virus (TMV)				
Protein	Spike-based	University of Alberta	SARS-CoV2	Pre-Clinical	Hepatitis C
Subunit		·			
Protein	Recombinant S1-Fc	AnyGo Technology	SARS-CoV2	Pre-Clinical	
Subunit	fusion protein				
Protein	Recombinant protein	Yisheng Biopharma	SARS-CoV2	Pre-Clinical	
Subunit	,				
Protein	Recombinant S	Vabiotech	SARS-CoV2	Pre-Clinical	
Subunit	protein in IC-BEVS				
Protein	Orally delivered, heat	Applied Biotechnology Institute,	SARS-CoV2	Pre-Clinical	
Subunit	stable subunit	Inc.			
Protein	S-2P protein + CpG	Medigen Vaccine Biologics	SARS-CoV2	Pre-Clinical	
Subunit	1018	Corporation/NIAID/Dynavax			
Protein	Peptides derived from	Axon Neuroscience SE	SARS-CoV2	Pre-Clinical	
Subunit	Spike protein				
Protein	Protein Subunit	MOGAM Institute for Biomedical	SARS-CoV2	Pre-Clinical	
Subunit		Research, GC Pharma			
Protein	RBD-based	Neovii/Tel Aviv University	SARS-CoV2	Pre-Clinical	
Subunit		,			
Protein	RBD-based	Kentucky Bioprocessing, Inc	SARS-CoV2	Pre-Clinical	
Subunit		The meaning of the second of t			
Protein	Outer Membrane	Intravacc/Epivax	SARS-CoV2	Pre-Clinical	
Subunit	Vesicle (OMV)-			The emilian	
	subunit				
Protein	Outer Membrane	Intravacc/Epivax	SARS-CoV2	Pre-Clinical	
Subunit	Vesicle(OMV)-peptide			The emmodi	
Protein	Spike-based (epitope	ImmunoPrecise/LiteVax BV	SARS-CoV2	Pre-Clinical	
Subunit	screening)	The state of the s		The emmodi	
Replicating	YF17D Vector	KU Leuven	SARS-CoV2	Pre-Clinical	
Viral Vector					
Replicating	Measles Vector	Zydus Cadila	SARS-CoV2	Pre-Clinical	
Viral Vector	Tricusies vester	Lyaas caana	071110 0012	The emilian	
Replicating	Measles Vector	Institute Pasteur/Themis/Univ. of	SARS-CoV2	Pre-Clinical	West nile, chik,
Viral Vector	Tricusies vester	Pittsburg Center for Vaccine	3, 11.5 66 72	The emilian	Ebola, Lassa,
viidi veetoi		Research/Merck			Zika
Replicating	Measles Vector	FBRI SRC VB VECTOR,	SARS-CoV2	Pre-Clinical	
Viral Vector	TVICUSICS V COLOT	Rospotrebnadzor, Koltsovo	371113 66 72	Tre enricei	
Replicating	Measles Virus (S, N	DZIF – German Center for Infection	SARS-CoV2	Pre-clinical	Zika, H7N9,
Viral Vector	targets)	Research/CanVirex AG	3, 11.3 20 7 2	7 TC Offinion	CHIKV
Replicating	Horsepox vector	Tonix Pharma/Southern Research	SARS-CoV2	Pre-Clinical	Smallpox,
Viral Vector	expressing S protein	Toma i narma/ Southern Nesearth	3/113-CUVZ	TTC Cillical	monkeypox
Replicating	Live viral vectored	BiOCAD and IEM	SARS-CoV2	Pre-Clinical	Influenza
Viral Vector	vaccine based on	BIOCAD GIIG ILIVI	JAN3-CUVZ	i ic-cinnical	HIHUCHZa
viiai vectui	attenuated influenza				
	virus backbone				
	(intranasal)				
Replicating	Recombinant vaccine	FBRI SRC VB VECTOR,	SARS-CoV2	Pre-Clinical	Influenza
Viral Vector	based on Influenza A	Rospotrebnadzor, Koltsovo	3AN3-CUVZ	r i e-ciii iicai	IIIIUCIIZA
viiai VECLUI	virus, for the	Nospotiebilauzui, kultsuvu			
	prevention of COVID-				
	19 (intranasal)				
Poplication	Attenuated Influenza	Fundação Oswaldo Cruz and	SARS-CoV2	Pre-Clinical	Influenza
Replicating		Fundação Oswaldo Cruz and Instituto Buntantan	SARS-COVZ	rie-Cillical	IIIIIueliza
Viral Vector	expressing	ווואנונענט שעוונמוונמוו			
	an antigenic portion				
Donling!!	of the Spike protein	I Injurgity of Land Kara	CADC C-V2	Dro Clinical	
Replicating Viral Vector	Influenza vector	University of Hong Kong	SARS-CoV2	Pre-Clinical	
VITAL VACTOR	expressing RBD		İ	Í	1

Replicating Viral Vector	Replication- competent VSV chimeric virus technology (VSVΔG) delivering the SARS- CoV-2 Spike (S)	IAVI/Merck	SARS-CoV2	Pre-Clinical	Ebola, Marburg, Lassa
Replicating	glycoprotein. VSV-S	University of Western Ontario	SARS-CoV2	Pre-Clinical	HIV, MERS
Viral Vector Replicating	VSV vector	FBRI SRC VB VECTOR,	SARS-CoV2	Pre-Clinical	
Viral Vector Replicating	VSV-S	Rospotrebnadzor, Koltsovo Israel Institute for Biological	SARS-CoV2	Pre-Clinical	
Viral Vector	V3V-3	Research/Weizmann Institute of Science	SANS-COV2	Pre-Cillical	
Replicating Viral Vector	M2-deficient single replication (M2SR) influenza vector	UW-Madison/FluGen/Bharat Biotech	SARS-CoV2	Pre-Clinical	influenza
Replicating Viral Vector	Newcastle disease virus vector (NDV- SARS-CoV-2/Spike)	Intravacc/ Wageningen Bioveterinary Research/Utrecht Univ.	SARS-CoV2	Pre-Clinical	
Replicating Viral Vector	Avian paramyxovirus	The Lancaster University, UK	SARS-CoV2	Pre-Clinical	
RNA	vector (APMV) LNP-mRNA	Translate Bio/Sanofi Pasteur	SARS-CoV2	Pre-Clinical	
RNA	LNP-mRNA	CanSino Biologics/Precision NanoSystems	SARS-CoV2	Pre-Clinical	
RNA	LNP-encapsulated mRNA cocktail encoding VLP	Fudan University/ Shanghai JiaoTong University/RNACure Biopharma	SARS-CoV2	Pre-Clinical	
RNA	LNP-encapsulated mRNA encoding RBD	Fudan University/ Shanghai JiaoTong University/RNACure Biopharma	SARS-CoV2	Pre-Clinical	
RNA	Replicating Defective SARS-CoV-2 derived RNAs	Centro Nacional Biotecnología (CNB-CSIC), Spain	SARS-CoV2	Pre-Clinical	
RNA	LNP-encapsulated mRNA	University of Tokyo/ Daiichi-Sankyo	SARS-CoV2	Pre-Clinical	MERS
RNA	Liposome- encapsulated mRNA	BIOCAD	SARS-CoV2	Pre-Clinical	
RNA	Several mRNA candidates	RNAimmune, Inc.	SARS-CoV2	Pre-Clinical	
RNA	mRNA	FBRI SRC VB VECTOR, Rospotrebnadzor, Koltsovo	SARS-CoV2	Pre-Clinical	
RNA	mRNA	China CDC/Tongji University/Stermina	SARS-CoV2	Pre-Clinical	
RNA	mRNA	Arcturus/Duke-NUS	SARS-CoV2	Pre-Clinical	multiple candidates
RNA	LNP-mRNA	Chula Vaccine Research Center/University of Pennsylvania	SARS-CoV2	Pre-Clinical	
RNA	mRNA in an intranasal delivery system	eTheRNA	SARS-CoV2	Pre-Clinical	
RNA	mRNA	Greenlight Biosciences	SARS-CoV2	Pre-Clinical	
RNA	mRNA	IDIBAPS-Hospital Clinic, Spain	SARS-CoV2	Pre-Clinical	
VLP	Enveloped Virus-Like Particle (eVLP)	VBI Vaccines Inc.	SARS-CoV2	Pre-Clinical	
VLP	S protein integrated in HIV VLPs	IrsiCaixa AIDS Research/IRTA- CReSA/Barcelona Supercomputing Centre/Grifols	SARS-CoV2	Pre-Clinical	
VLP	VLP + Adjuvant	Mahidol University/ The Government Pharmaceutical Organization (GPO)/Siriraj Hospital	SARS-CoV2	Pre-Clinical	
VLP	Virus-like particles, lentivirus and baculovirus vehicles	Navarrabiomed, Oncoimmunology group	SARS-CoV2	Pre-Clinical	
VLP	Virus-like particle, based on RBD	Saiba GmbH	SARS-CoV2	Pre-Clinical	

	displayed on virus-like particles				
VLP	Plant-derived VLP	Medicago Inc./ Université Laval	SARS-CoV2	Pre-Clinical	Flu, Rotavirus, Norovirus, West Nile virus, Cancer
VLP	ADDomerTM multiepitope display	Imophoron Ltd and Bristol University's Max Planck Centre	SARS-CoV2	Pre-Clinical	
VLP	Unknown	Doherty Institute	SARS-CoV2	Pre-Clinical	
VLP	VLP	OSIVAX	SARS-CoV1 SARS-CoV2	Pre-Clinical	
VLP	eVLP	ARTES Biotechnology	SARS-CoV2	Pre-Clinical	malaria
VLP	VLPs peptides/whole virus	Univ. of Sao Paulo	SARS-CoV2	Pre-Clinical	
Unknown	Unknown	Tulane University	SARS-CoV2	Pre-Clinical	