List of candidate vaccines developed against SARS-CoV

Platform	Type of candidate vaccine	Developer	Coronavirus target	Current stage of clinical evaluation/regulatory status- Coronavirus candidate	Non-coronavirus candidates	Current stage of clinical evaluation/regulatory status - other products
Non-Replicating Viral Vector	recombinant adenovirus expressing Trunctuated S protein (rADV-S) [106]	International Vaccine Institute (IVI)	SARS	Pre-Clinical	N/A	
Replicating Viral Vector	Recombinant measles virus Spike protein [50]	University Health Network, Canada; Center for Disease Control and Prevention (CDC)	SARS	Pre-Clinical		
Replicating Viral Vector	MV-SARS recombinant measles virus vaccine expressing SARS CoV antigen [45]	Institut Pasteur	SARS	Pre-Clinical	West nile, chik, Eobla, Lassa, Zika	Phase III
Protein Subunit	receptor binding domain (RBD) of the SARS- CoV spike (S) protein [48, 105]	Baylor College Medicine; Sabin; New York Blood Center (NYBC); University of Texas Medical Branch (UTMB); Walter Reed Army Institute of Research (WRAIR); National Institute of Allergy and Infectious Diseases (NIAID)	SARS	Pre-Clinical	N/A	
Protein Subunit	SARS recombinant spike protein plus delta inulin [49]	Vaxine Pty Ltd, Australia	SARS	Pre-Clinical	Ebola, Zika, Influenza, HepB	Phase I
Virus-like Particle	SARS VLPs S protein and influenza M1 protein [47]	Novavax	SARS	Pre-Clinical	RSV, Flu	Phase III
Inactivated Virus	rSARSCoV-E* [46]	CNB-CSIC; University of Iowa	SARS	Pre-Clinical	N/A	

DNA	DNA prime–protein S437–459 and M1–20 [51]	Institute of ImmunoBiology, Shanghai Medical College of Fudan University, China	SARS	Pre-Clinical		
DNA	SARS S DNA prime and HLA-A*0201 restricted peptides boost vaccine [52,53]	Sun Yat-sen University, China	SARS	Pre-Clinical		
DNA	3a DNA vaccine [54]	State Key Laboratory of Virology; Graduate University of Chinese Academy of Sciences	SARS	Pre-Clinical		
DNA	DNA vaccine VRC-SRSDNA015-00-VP ; Biojector used [71]	National Institute of Allergy and Infectious Diseases (NIAID)	SARS	Phase I	Ebola, HIV	Phase I
DNA	DNA S protein + DNA IL2 [72]	State Key Laboratory of Virology, University of Chinese Academy of Sciences	SARS	Pre-Clinical		
DNA	DNA vaccine pIRES-ISS-S1 [73]	Jilin University; Academy of Military Medical Sciences	SARS	Pre-Clinical		
DNA	M and N DNA vaccine [74]	National Hospital Organization Kinki-Chuo Chest Medical Center; Osaka Prefectural Institute of Public Health; Jichi Medical School; The University of Hong Kong; National Taiwan University College of Medicine; National Institute of Infectious Diseases; Central Institute for Experimental Animals; Pharmaceutical Frontier Laboratory	SARS	Pre-Clinical		

Non-Replicating Viral Vector	MVA S alone, or MVA-S prime and Ad5-S boost [107, 108]	The Rockefeller University	SARS	Pre-Clinical		
Non-Replicating Viral Vector	NC protein add-mixed with MALP-2 by intranasal route and boosting with MVA–NC by intramuscular route[62]	Helmholtz Centre for Infection Research; Technical University Munich; German Center for Environmental Health	SARS	Pre-Clinical		
Non-Replicating Viral Vector	Heterologous Adenoviral prime boost AdHu5 s AdC7-nS [63]	University of Manitoba; University of Pennsylvania School of Medicine; Southern Research Institute; Fox Chase Cancer Institute	SARS	Pre-Clinical		
Non-Replicating Viral Vector	VEEV replicon particles expressing the SARS-CoV S [28]	University of North Carolina at Chapel Hill, USA	SARS	Pre-Clinical		
Non-Replicating Viral Vector	Recombinant DI expressing S protein [66]	National Institute of Infectious Diseases, Japan	SARS	Pre-Clinical		
Protein Subunit	Recombinant trunctuated S-N fusion protein [60]	Beijing Institute of Genomics, China	SARS	Pre-Clinical		
Protein Subunit	Recombinant peptide N223 on liposomes [61]	Saitama Medical University; Josai University; Nippon Oil and Fat Corporation; National Institute of Infectious Diseases, Japan	SARS	Pre-Clinical		
Protein Subunit	Recombinant TM-truncated S protein [64]	Chinese Center for Disease Control and Prevention; Canadian Science Centre for Human and Animal Health	SARS	Pre-Clinical		
Protein Subunit	Trimeric Spike protein [65]	HKU-Pasteur Research Centre; The University of Hong Kong; National Institutes of Health; Centers for Disease	SARS	Pre-Clinical	N/A	

		Control and Prevention; CombinatorX				
Virus-like Particle	Chimeric VLP (S protein SARS plus E, M and N proteins of mouse hepatitis virus)[55]	University of Texas Medical Branch (UTMB)	SARS	Pre-Clinical	N/A	
Virus-like Particle	Recombinant trimeric S protein [56]	The John Hopkins University School of Medicine, USA	SARS	Pre-Clinical	N/A	
Inactivated Virus	purified inactivated Vero-cell SARS vaccine [57]	Institute of Microbiology and Epidemiology, National Vaccine and Serum Institute; Beijing Genomics Institute (BGI); Harbin Institute of Veterinary Medicine	SARS	Pre-Clinical	N/a	
Inactivated Virus	Formalin- and UV inactivated virus vaccine [58]	Baxter Vaccines, Austria	SARS	Pre-Clinical	N/A	
Inactivated Virus	β-propiolactone inactivated virus vaccine [59]	National Institute of Allergy and Infectious Diseases (NIAID); University of Virginia	SARS	Pre-Clinical	NA	
Live Attenuated Virus	Live attenuated vaccine Nsp16 mutant lacking 2'-OMTase [75]	University of North Carolina	SARS	Pre-Clinical	N/A	
Live Attenuated Virus	Live attenuated SARS-CoV MA-ΔExoN [76]	University of North Carolina	SARS	Pre-Clinical	N/A	
Inactivated Virus	ISCV [81]	Sinovac Biotech Ltd (/Beijing Kexing Bio-product), Chinese Centre for Disease Control and Prevention; Chinese Academy of Medical Sciences	SARS	Phase I	N/A	
Inactivated Viral Vector	RABV-SARS [148]	Thomas Jefferson University	SARS	Pre-Clinical	Filoviruses, Hendra	Pre-Clinical
Inactivated Virus	whole virus [132]	Sanofi	SARS	Pre-Clinical	Influenza and others	Licensed Product