

Approved and effective vaccine against COVID-19 may not be available until 2021 summer: IHS Markit

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Five vaccine candidates are currently being developed in China



Ten COVID-19 vaccine candidates are currently in clinical trials (as of 4 June). These are listed in the below, in approximate descending order of advancement, taking into account scale of development and expected reporting dates. So far, one has entered Phase II/III development, two are in Phase II, and several more are in Phase I/II and Phase I.

In addition, some selected high-profile preclinical-stage projects have also been listed. The success of any of these will depend on safety, level of immunogenicity, and duration of protection.

Five vaccine candidates are currently being developed in China, including those from CanSino and Sinovac. China itself has a chequered history in biopharmaceutical clinical development, but this is a unique and watershed opportunity to prove itself on the world stage.

While data on its candidates remain relatively scant at this stage, China may indeed succeed in becoming first-to-market in this space, or at least provide a critical option on the global stage for vaccines against COVID-19 in 2021.

“Although there is still considerable uncertainty about the duration of protective immunity developed in the population after COVID-19 infection, and even the feasibility of generating an effective vaccine with any long-term effect, a large number of researchers and companies have initiated a diverse selection of vaccine projects, using a broad mix of established and innovative technologies. Development for COVID-19 has been accelerated considerably by acquired knowledge developed during the generation of candidate vaccines for related SARS and MERS coronaviruses, as well as recent research into Ebola vaccines.” – Gustav Ando, head of life sciences and industry services, IHS Markit

High-profile COVID-19 vaccine candidates in development

Vaccine name	Vaccine type
AZD1222 (ChAdOx1-S)	Non-replicating adenoviral vector displaying spike protein
Ad5-nCoV	Non-replicating adenoviral vector displaying spike protein
mRNA-1273	Lipid nanoparticle (LNP)-encapsulated mRNA vaccine encoding pre-fusion stabilised form of viral spike (S) protein
BNT162	Three candidates based on LNP-delivered modified mRNA vaccines, encoding viral spike protein sequence or smaller binding domain
COVID-19 vaccine, Sinovac	Inactivated virus vaccine, alum adjuvant
NVX-CoV2373	Full-length recombinant spike glycoprotein nanoparticle vaccine, Matrix-M adjuvant
COVID-19 vaccine, Sinopharm – Wuhan	Inactivated virus vaccine
COVID-19 vaccine, Sinopharm – Beijing	Inactivated virus vaccine
INO-4800	DNA plasmid vaccine encoding spike protein, delivered via Collectra 3PSP electroporation device
COVID-19 vaccine, CAMS	Inactivated virus vaccine
COVID-19 vaccine, Janssen	Non-replicating AdVac adenoviral vector displaying spike protein
COVID-19 vaccine, GSK/Sanofi	Recombinant subunit vaccine (baculovirus expression system), adjuvanted

AAVCOVID

Adeno-associated virus (AAV) vector delivering spike protein gene

COVID-19 vaccine, Merck/IAVI

Replication-competent chimaeric vesicular stomatitis virus (VSV) vector expressing spike protein antigen