COVID-19 Drug Development Trends

Lead compounds

Several drugs such as **chloroquine**, **arbidol**, **remdesivir**, and **favipiravir** are currently undergoing clinical studies to test their efficacy and safety in the treatment of coronavirus disease 2019 (COVID-19) in China
https://www.ncbi.nlm.nih.gov/pubmed/32147628

Remdesivir

4/17/2020
Remdesivir, a nucleoside analog that functions as an RNA chain terminator, was subsequently found to inhibit replication of other RNA viruses, including coronaviruses. The drug, made by Gilead Sciences, is the focus of multiple trials worldwide and is closely watched by the public health and financial communities.
Earlier this week, The New England Journal of Medicine published a paper on remdesivir. At this writing, the market is moving in part as a result of a news report based on fragmentary information from the University of Chicago cohort in two Gilead phase III studies.
https://cancerletter.com/articles/20200417_1/

tocilizumab (Actimra)

4/17/2020
a "compassionate use" protocol for the drug tocilizumab (Actimra) in cancer patients with COVID-19 who have severe respiratory complications thought to be caused by a hyperactive immune response known as cytokine release syndrome.
The protocol—which will make the drug available to up to 200 patients who are not able to enroll in an ongoing phase III clinical trial of the drug being run by the drug's manufacturer, Genentech—was written in 4 days by NCI investigators.
https://www.cancer.gov/news-events/cancer-currents-blog/2020/covid-19-cancer-nci-response?cid=eb_govdel

favipiravir (Avigan)

4/16/2020
Favipiravir, which **Fujifilm** sells under the brand name Avigan, has been approved in Japan since 2014 to treat influenza and other viral strains that don't respond to other drugs. "Avigan tablets are

expected to have efficacy against infection with the new coronavirus in view of its characteristic mechanism of action," says a Fujifilm spokesperson
https://cen.acs.org/pharmaceuticals/drug-development/Fujifilm-tests-favipiravir-COVID-19/98/i15

The following are fom the drug development landscale Nature paper
https://www.nature.com/articles/d41573-020-00073-5

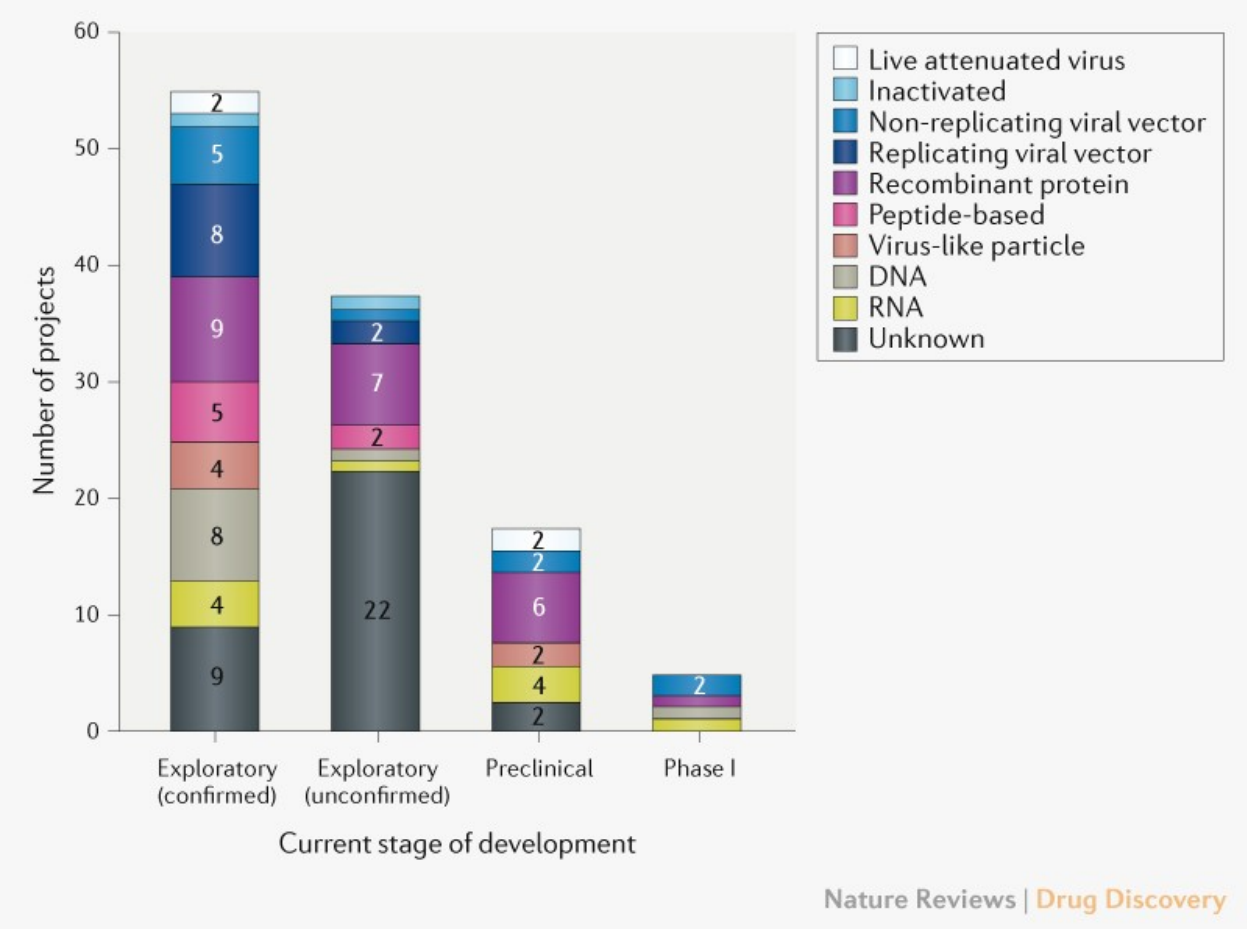
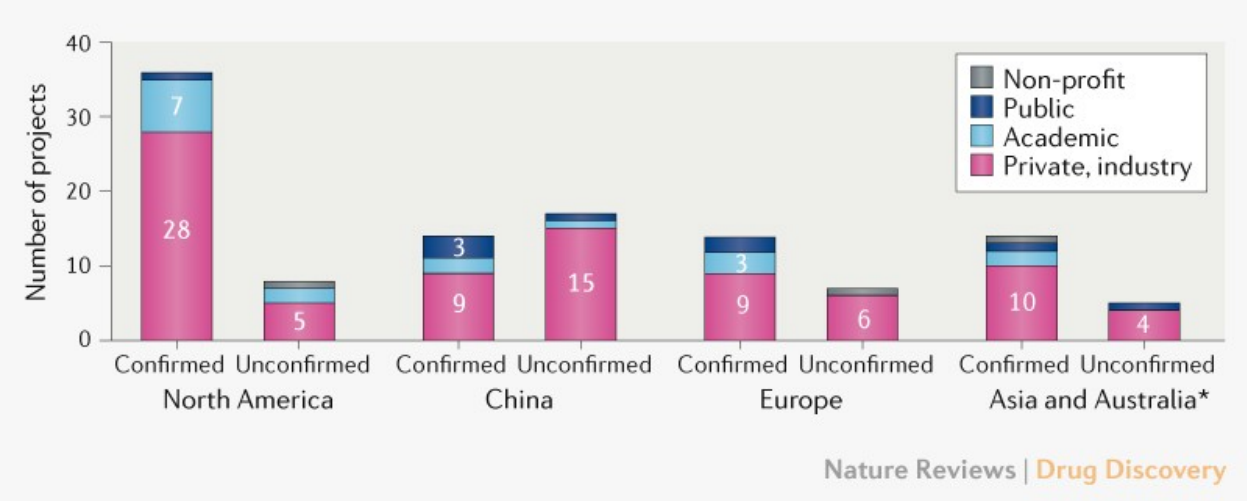


TABLE 1 | CLINICAL-PHASE VACCINE CANDIDATES FOR COVID-19

Candidate	Vaccine characteristics	Lead developer	Status
mRNA-1273	LNP-encapsulated mRNA vaccine encoding S protein	Moderna	Phase I (NCT04283461)
Ad5-nCoV	Adenovirus type 5 vector that expresses S protein	CanSino Biologicals	Phase I (NCT04313127)
INO-4800	DNA plasmid encoding S protein delivered by electroporation	Inovio Pharmaceuticals	Phase I (NCT04336410)
LV-SMENP-DC	DCs modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins; administered with antigen-specific CTLs	Shenzhen Geno-Immune Medical Institute	Phase I (NCT04276896)
Pathogen-specific aAPC	aAPCs modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins	Shenzhen Geno-Immune Medical Institute	Phase I (NCT04299724)

aAPC, artificial antigen-presenting cell; CTL, cytotoxic T lymphocyte; DC, dendritic cell; LNP, lipid nanoparticle; S protein, SARS-CoV-2 spike protein. Source: ClinicalTrials.gov website; WHO.


Number of projects
40
30
20
10
0
Non-profit
Public
Academic
Private, industry
7
28
5
3
9
15
3
9
6
10
4
Confirmed
Unconfirmed
North America
China
Europe
Asia and Australia*
Nature Reviews | Drug Discovery