



Harnessing a Legacy of Scientific Innovation to Combat COVID-19

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 Confidential



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About MSD

For more than a century, we have been inventing to solve some of the greatest challenges to people's health and well-being around the world

Businesses

Prescription medicines, vaccines, biologic therapies, animal health products

2019 Revenues

\$ 5.1.2b ; 57% of sales come from outside the 5.1.2a

2019 R&D Expenses

\$ 5.1.2b

Headquarters

5.1.2a

Employees

Employees: 5.1.1c (as of 12/31/19)

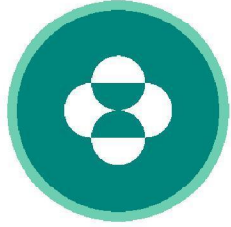
As a leader in vaccines & infectious disease, we embrace our responsibility to engage in SARS-CoV-2/COVID-19 research efforts

Select MSD Vaccines and Infectious Diseases Milestones



MSD developed **4 of the 7 vaccines** introduced over the last 25 years that were directed against previously unaddressed human pathogens, most recently **Ebola Zaire**

We are focusing our COVID-19 response efforts on four areas



Our People

Protecting employees and their families



Our Patients & Customers

Ensuring our existing medicines and vaccines reach our patients and customers



Our Research

Applying our scientific expertise and rigor to accelerate the development of vaccines and medicines to address the pandemic.



Our Communities

Supporting health care providers and our communities

MSD's Approach Aims to Add Unique Value to COVID-19 Fight

Supporting Technology for Selected COVID-19 Vaccine Programs



moderna™
messenger therapeutics

mRNA

AstraZeneca
Johnson & Johnson

Adenovirus



NOVAVAX
Creating Tomorrow's Vaccines Today

Protein
Subunit



Live Viral
Vector



Live replicating viral vector approach has potential to deliver:

- High efficacy
- Durable Efficacy
- 1 dose profile
- IM or Oral Administration

We are pursuing **two** SARS-CoV-2 vaccine programs

	Our vaccine candidates	
	V590 IAVI Collaboration	V591 Themis Acquisition
Vaccine type	Replicating viral vector	Replicating viral vector
Platform Technology	Vesicular stomatitis virus (VSV)	Measles-based vector
Precedent	MSD's EMA approved Ebola Zaire vaccine ERVEBO®	Themis chikungunya vaccine Ph3 ready
Potential Administration	Intramuscular & oral mucosal	Intramuscular
Dosing Regimen to be studied	5.1.1c dose	5.1.1c doses
Expected Storage	Initially studying frozen formulation, working towards refrigerated	Initially studying frozen formulation, working towards refrigerated



V590 (rVSV Δ G-SARS-CoV-2) Background

JOINT DEVELOPMENT

V590 is being codeveloped with IAVI (International AIDS Vaccine Initiative)

IAVI is a nonprofit scientific research organization dedicated to addressing urgent, unmet global health challenges

SPEED AND EXPERIENCE

Leverages the VSV platform used for the approval Ebola Zaire vaccine, ERVEBO®, to accelerate the development and scale quickly

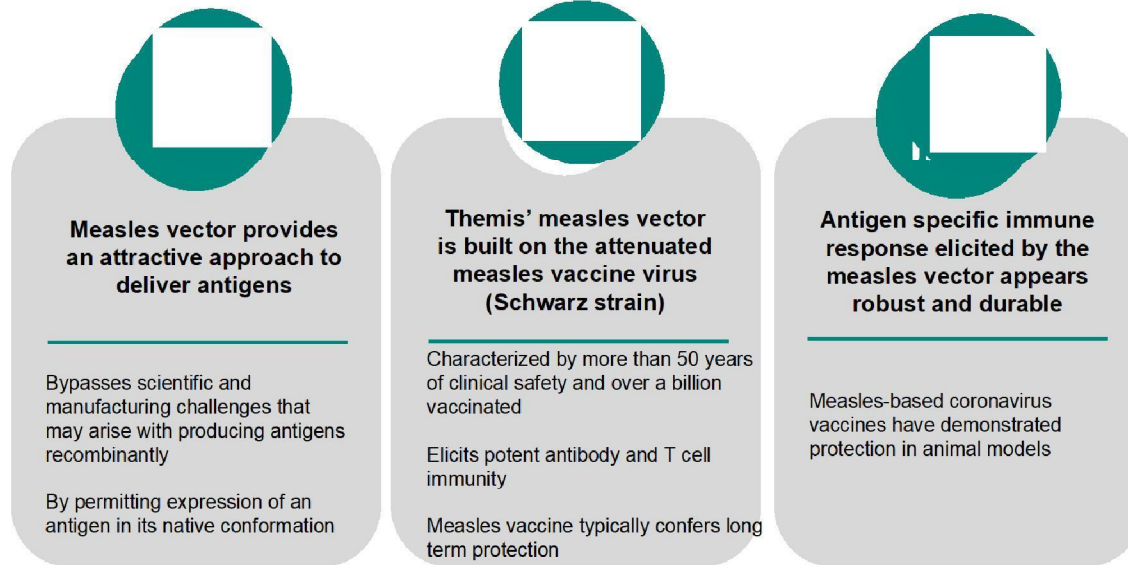
The platform is an attenuated strain of VSV, a common animal virus, that has been modified to express protein that stimulate an immune response

BROAD ACCESSIBILITY via TWO ROUTES

Administration via both intramuscular (IM) and oral mucosal (OM) routes to be evaluated using the same vaccine formulation



V591 (Themis MV-SARS-CoV-2) Background



Overview of Clinical Program Timelines

- V590 is in preclinical development and will enter Phase 1 later this year.
- V591 is in Phase 1 development, and larger Phase 3 clinical trials expected to start late 2020/early 2021.



Approach to Manufacturing

- We are proceeding with urgency and investing aggressively at-risk in our programs and our manufacturing scale-up with the primary goal of having a positive impact on the course of the pandemic as quickly as possible.
- The fastest path to scaling up manufacturing and minimizing the window between demand and supply is to refit or repurpose facilities within our global network, which includes technology appropriate manufacturing sites in the US and Europe.
- We plan to utilize European manufacturing footprint to supply doses to Europe and contribute to meeting broader global demand, including supply to LIC/LMICs.
- The sites will be flexible across V590 and V591
- Manufacturing capacity expansion activities from construction through operational qualification are underway

Potential Arrangement

- MSD is interested in establishing a partnership with European Commission (EC) for both of our vaccine candidates to address our shared goal of bringing safe and effective vaccines and treatments to the European population as quickly as possible.
- The EC has been making significant investments across a portfolio of candidates including significant investment to secure doses. We believe our portfolio of vaccine candidates offers compelling options to further diversify and help de-risk the EC's portfolio.
- Given this unique and unprecedented pandemic, the urgency of vaccine development and massive manufacturing scale up required, and in line with agreements EC has entered with other companies, MSD is seeking financial support to help expedite these programs for the benefit of the European population.
- We believe that an advance purchase agreement ("APA") may be the best way to meet the shared interests of the European population, European Union Member States, and MSD.
- We are seeking feedback from the European Union Member States and the European Commission on this proposal.



Thank
You

