Janssen Ad26/PER.C6® based COVID-19 (SARS- CoV-2) vaccine candidate

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Pictured: a representation of a coronavirus

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Janssen Vaccines – our ambition

Establish a leadership position in transformational vaccines that are first and/or best in class in areas of high unmet medical need

Halt HIV

Prevent RSV

Respond to global pathogens

Prevent MDR bacterial infections

Johnson & Johnson

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SARS-CoV-2 virus

- A Beta coronavirus, like MERS and SARS
- 75% genetic homology with SARS
  - Use of human ACE2 receptor, like SARS
- 95% genetic homology with bat-coronaviruses

Insights in SARS

- The SARS-CoV-2 enters cells through binding its spike protein to the ACE2 receptor on cells
- Experimental SARS vaccines which induce neutralizing antibodies targeting the spike protein (present on the envelope of the virus) can protect animals from lethal challenge
- Several candidate vaccines predisposed for 'enhanced respiratory disease' (ERD) in vaccinated animals with breakthrough infections
  - Very similar to what was observed historically for a 'whole virus inactivated – alum adjuvanted' RSV vaccine in children where it was shown to be linked to a Th2-skewed immune response; not seen for vaccines driving Th1 pathways
  - Similar association between SARS vaccine associated ERD and vaccine elicited Th2 skewed immune response

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Proprietary AdVac® and PER.C6® technology platforms are at the core of the Janssen COVID-19 vaccine candidate

PER.C6® cell line

- Human Immortalized cell line, which can be grown at high cell density, serum free
- High yields (# vaccine doses) with small footprint – resulting in lower capex and lower COGs
- Formulation know-how has resulted in competitive thermostability profile
- Market authorization for PER.C6® derived product Rekovelle® (Ferring)

AdVac®

- Induction of robust, durable immune responses
  - Humoral and cellular
- Characterization of humoral immune responses reveals unique features (ADCC, ADCP, ADCD…) in addition to neutralization
- Extensive clinical experience with Janssen Ad26-based vaccines (>60,000 subjects vaccinated) show these to be safe and well-tolerated

- Platform concept:
  - Plug and Play
  - Fast from concept to First-in-Human (FIH)
  - Fast 'high output delivery' leveraging established platform process

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Key attributes of Janssen vaccine platform

- ☑ AdVac® vector technology: potent, long-lasting cellular and humoral immunity
- ☑ Low or no risk of "Enhanced Respiratory Disease"
- ☑ Well-tolerated safety profile >67,000 people, and absence of any safety signal
- ☑ PER.C6® cell line: high yields, scalable, fully industrialized
- ☑ Favorable thermostability profile (>2 years at 2-8°C)
- ☑ Distribution using existing infrastructure

Critical platform attributes (Geneva – Feb 2020)

Key attributes of Prioritization WHO	Vectored	DNA	RNA	J&J Vaccine
1 dose regimen	✓	✓	✓	✓
Neutralizing antibodies	✓			✓
Proven strategy	✓	✓	✓	✓
Cytokine CMI response	✓	✓	✓	✓
Risk of enhancement ↓	✓	✓	✓	✓
Speed of development	✓	✓		☑*
Capability to scale up	✓			✓
Duration of immunity				✓
Vaccine stability				✓
Costdose				✓

✓ Fulfilled according to WHO ✓ Fulfilled based on Janssen data Either unfulfilled (WHO) or unavailability of relevant data

✓* Speed up to large scale production

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Clinical Experience with Janssen Ad26-based vaccines >67,000 subjects vaccinated (as of 27 March 2020)

46 completed and ongoing studies

RSV, HIV, Ebola, Malaria, RSV, Filovirus, Zika, HPV

- Adults
- Elderly
- HIV+ adults
- Pregnant and breastfeeding women
- Children (1-17 years of age)
- Infants (4-11 months of age)
- $1x10^{9}$ to $1x10^{11}$ vp per dose

Countries:

Australia, Brazil, Belgium, Burkina Faso, Canada, Côte d'Ivoire, DRC, Finland, France, Guinea, Kenya, Liberia, Malawi, Mali, Mozambique, Nigeria, Poland, Rwanda, Senegal, Sierra Leone, South Africa, Spain, Sweden, Tanzania, Thailand, Uganda, UK, USA, Zambia, Zimbabwe

- Ad26-based vaccines are well tolerated
- Mostly mild to moderate AEs of rapid onset and short duration. Fever is not a prominent AE
- No significant safety issues have been identified and no safety signals have been detected

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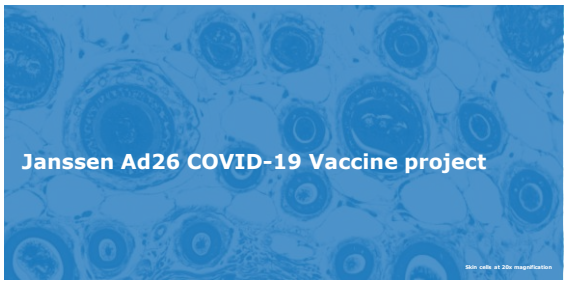

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Johnson & Johnson Announces a Lead Vaccine Candidate for COVID-19; Landmark New Partnership with U.S. Department of Health & Human Services; and Commitment to Supply One Billion Vaccines Worldwide for Emergency Pandemic Use

Johnson & Johnson and BARDA Together Commit More than $1 Billion to Novel Coronavirus Vaccine Research and Development; Company Expects to Initiate Phase 1 Human Clinical Studies of Vaccine Candidate at Latest by September 2020

Johnson & Johnson Will Establish New U.S. Vaccine Manufacturing Capabilities and Additional Production Capacity Outside the U.S. to Begin Production at Risk to Help Ensure Global Vaccine Supply

NEW BRUNSWICK, N.J., March 30, 2020 – Johnson & Johnson

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COVID-19 Discovery Vaccine Strategy

- Aim is to induce Nabs and CMI targeting the Spike Protein of SARS-2-CoV
- Plasmid DNA vaccines for rapid comparison of several candidate transgenes
- Ad26 vectors containing these transgenes for preclinical and clinical development
- Vaccines are tested for immunogenicity and protective efficacy in animal models
- Animal data and manufacturability data will inform selection of vaccine candidate for clinical development

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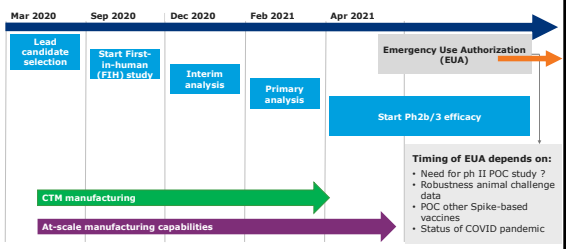
Our Accelerated Path Towards FIH & EUA



The information show on this slide is tentative for planning purposes only and is subject to change

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Vaccine Ad26 Manufacturing Facility – Leiden, the Netherlands

- 2 x 1000L Bioreactors (disposable) with max. working volume of 900L
- Dedicated downstream processing line scaled to Bioreactor volumes
- Tech Transfer to other manufacturing sites planned

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Janssen is well positioned to respond to the COVID outbreak, leveraging its platforms and capabilities

- Collaborations with academic networks have been established to access the **best science and capabilities**, complementing our internal expertise
- We are engaged in intensified dialogue with Regulatory Agencies globally
- Leveraging our experience with our platforms we are optimistic that we will be able to **start a FIH COVID-2019 vaccine trial by Sept 2020**, with potential for rapid scale up
- Several at risk investments are made in parallel to enable the **fastest path forward**
- We are committed to expand **manufacturing capacity** in support of **worldwide deployment**

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