



Country Needs and availability of resources for strengthening healthcare biotechnology facilities

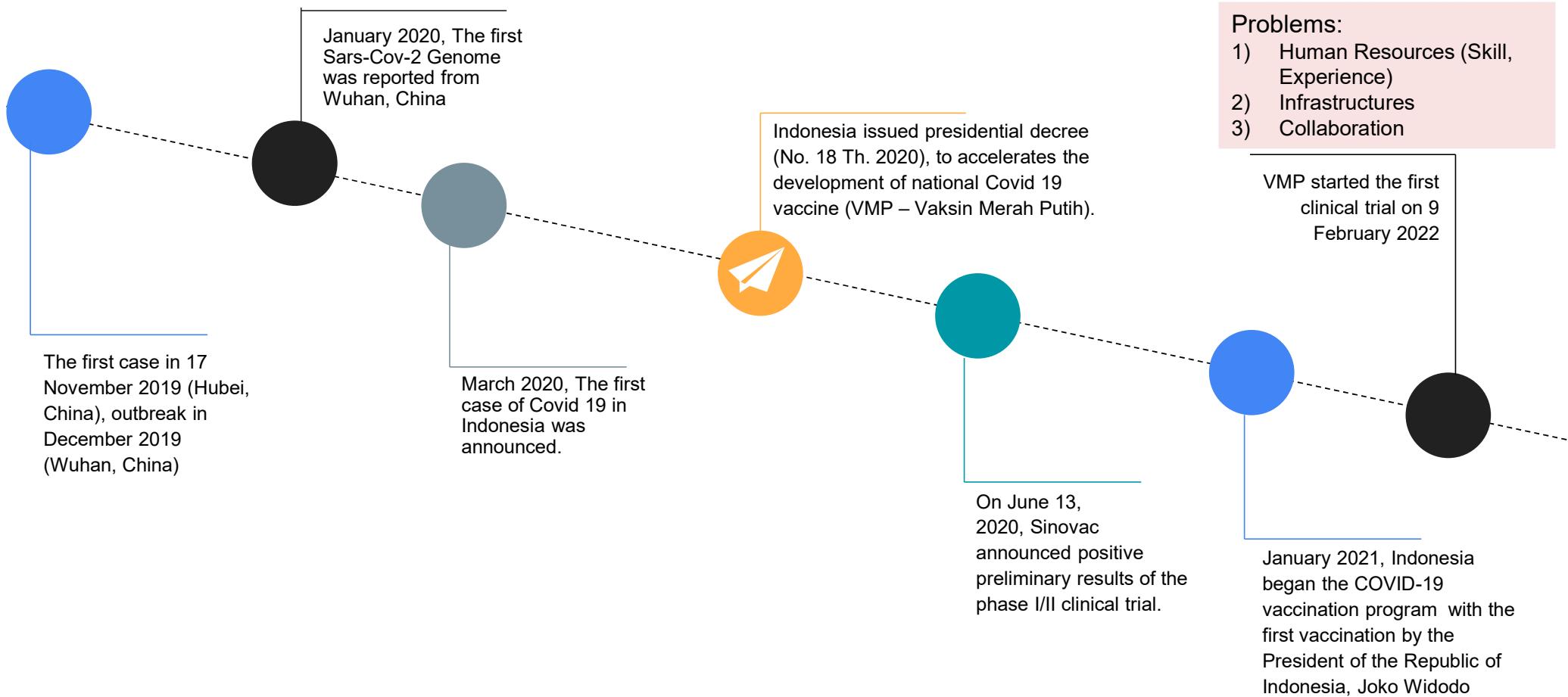
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National Research and Innovation Agency
Indonesia

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INDONESIA CASE IN COVID 19 VACCINE DEVELOPMENT

- VAKSIN MERAH PUTIH -



7 CONSORTIUM TEAM OF VMP DEVELOPMENT



Viral Vector

Vektor viral seperti adenovirus manusia atau simpanse membawa DNA SARS-CoV-2 DNA ke dalam sel inang.

Contoh:

- Oxford/Astra Zeneca
- Johnson & Johnson
- Sputnik V



DNA/mRNA

Vaksin genetik membawa gen patogen (DNA/ messengerRNA) ke dalam sel inang.

Contoh:

- Pfizer/BioNTech (mRNA)
- Moderna (mRNA)
- Inovio (DNA)



Virus-Like Particle

Vaksin berbasis nanopartikel: DNA/protein patogen ditempelkan pada partikel nano (misal dalam bentuk *virus-like particle*).

Contoh:

- Novavax (mengandung protein Spike SARS-CoV-2)



Rekombinan Protein

Keseluruhan protein/fragmen protein dari patogen digunakan untuk membuat vaksin, umumnya *spike protein* SARS-CoV-2.

Contoh:

- Flinders University/Vaxine



Inactivated Virus

Vaksin dari virus yang dimatikan/di-inaktivasi.

Contoh:

- Coronavac (Sinovac)
- Sinopharm

Pendekatan vaksin yang lebih baru

Pendekatan tradisional

ITB

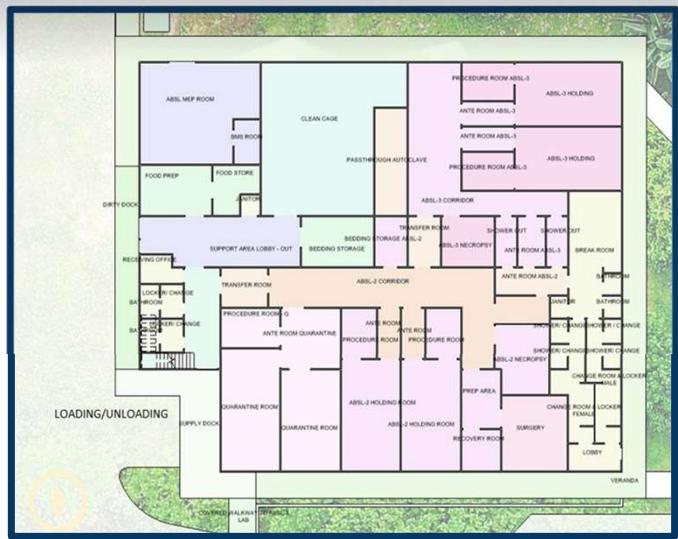
UI + PT Etama

UI + PT Etama

UNAIR + PT Biotis

Constrains/Problems:

- 1) Human Resources (Skill, Experience)
- 2) Infrastructures
- 3) Collaboration



Animal BSL-3 Facilities

**Indonesia Established Research Infrastructures to Accelerates Research and Innovation in Health & Biotechnology since 2020
(But, this effort is not enough...)**

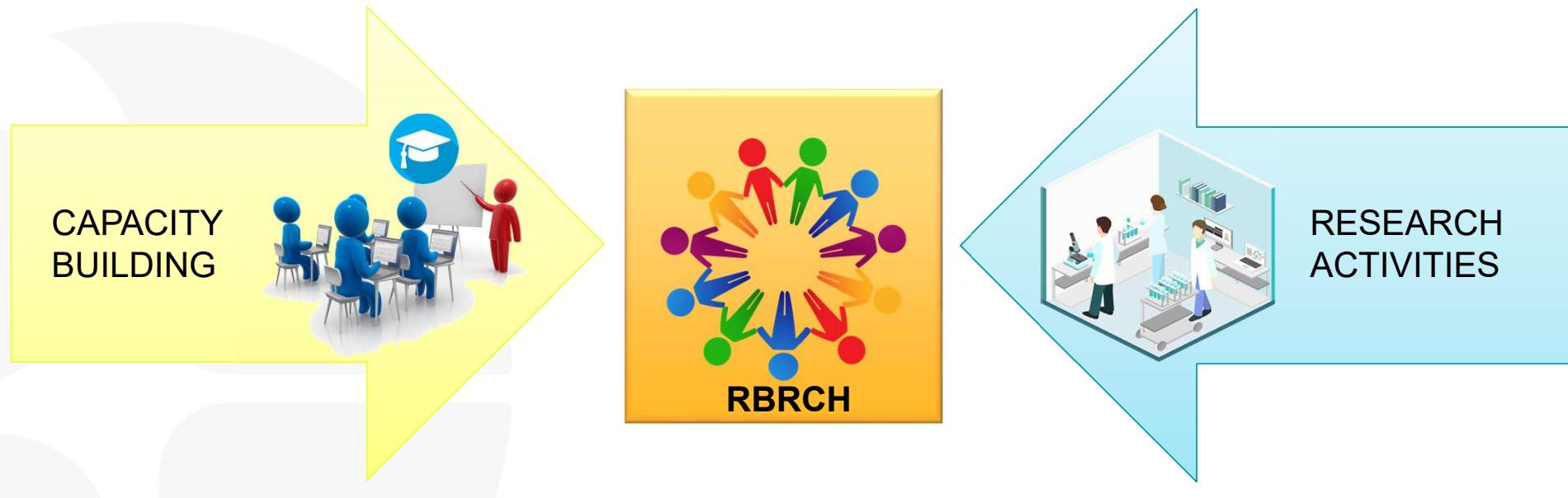


BSL-3, GENOMIC RESEARCH FACILITIES, cGMP, HTC, INTEGRATED BIOPRODUCT LABORATORY

- PROPOSAL -

REGIONAL BIOMEDICAL RESEARCH COLLABORATION HUB

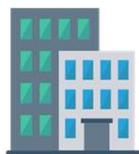
RBRCH will work based on sharing facilities, infrastructure and funding. As well as sharing on the benefit generated from those activities.



This collaboration framework will enable all parties to reach shared goals of strengthening all parties national health resilience through transfer knowledge, transfer technology, collaboration research works, and infrastructures development*



THANK YOU



ORGANISASI RISET HAYATI DAN LINGKUNGAN
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