QUA VADIS mRNA?
Innovation for sustainability.

Prof Petro Terblanche
Afrigen
mRNA Companies and Locations: Evolving at speed.

<table>
<thead>
<tr>
<th>Country</th>
<th>Companies</th>
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<td>Netherlands</td>
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<td>France</td>
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www.beacon-intelligence.com
mRNA Disease Landscape – What’s Next?

- Solid Tumours
- Infectious Diseases
- Blood Cancers
- Metabolic Diseases
- Genetic Disorders

57%

www.beacon-intelligence.com
The mRNA Disease Vaccines in Descending order of Sponsors (global data)

- There are currently 39 Sponsors working on the development of various mRNA vaccines for 32 disclosed diseases.
- The COVID-19 Vaccine processes 34 sponsors.
- The RSV disease vaccine development has 5 sponsors.

Source: mRNA Candidate Database - Public Citizen
Regional Vaccine Development Priorities for Sustainability and Public Health Impact: Partnership Driven

Afrigen
Biovac
BioVax Kenya
Bio-Manguinhos
Biofarma
BiologicalE
BioGeneric Pharma
Biovaccines Nigeria
Darnitsa
Incepta Vaccine
Institut Pasteur de Dakar
Institut Pasteur de Tunis
Institut Torlak
National Institute of Health (Pakistan)
Polyvac
Sinergium Biotech

Flaviruses
Leishmaniasis
YF

Dengue
Nipah
Rota

CCHF
Chikungunya
Disease X
Ebola
Gonorrhea
HepB

Flu
Malaria
RSV
COVID-19

HIV
HSV
Lassa
Measles
RVF
Varicella

Europe
Asia
Africa
South America

Courtesy Pierre Gsell. WHO/MPP mRNA Technology Transfer Programme Meeting. Cape Town. April 2023
mRNA Technology Innovation Strategy

01 Manufacturing Technology

These would assist in streamlining the process and looking at cost-effective approaches.

02 Formulation Research

This focuses on optimizing vaccine stability, reactogenicity and potency.

03 DNA & RNA Development

The sharing of expertise, access to complementary resources and accelerate progression.

04 Additional Disease Targets

Expanding preventative measures for unmet medical needs and improving patient outcomes.

05 Alternative Delivery Methods

These methods have the capability of expanding vaccine accessibility, enhance immunization coverage and improve patient acceptance to name a few aspects.
RECOGNITION AND APPRECIATION

WHO.
Medicines Patent Pool (MPP).
Funders: France, Belgium, Germany, Norway, Canada, Switzerland, Alma Foundation, South Africa, EC/EU. SA Government DSI.
SAMRC and SAMVAC consortium.
Biovac.
Civil Society Groups.
mRNA Hub Steering Committee.
mRNA Hub Scientific Advisory Committee.
PATH.
NIH/VRC.
Curapath.
Equipment and technology suppliers.
University of the Witwatersrand, NICD, CeBER-UCT, PCDDP NWU, and other SA Universities.
Afrigen Team and Supporting Stakeholders and Shareholders.