



# Introduction of World 1<sup>st</sup> Inhalation Vaccine

# 11<sup>th</sup> COVID-19 Vaccine Approved as WHO EUL

**World Health Organization**  
WHO - Prequalification of Medical Products (IVDs, Medicines, Vaccines and Immunization Devices, Vector Control)

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**V** **Vaccines**

+ About Vaccines Prequalification

+ What We Do

Documents A-Z

+ List of Prequalified Vaccines

+ Vaccines Eligible for WHO Prequalification

+ Prequalification Procedures & Fees

+ Post-prequalification Procedures

### COVID-19 Vaccines with WHO Emergency Use Listing

Vaccine	WHO EUL Holder	NRA of record	Date of EUL Recommendation
<b>COMIRNATY®</b> COVID-19 mRNA Vaccine (nucleoside modified)	BioNTech Manufacturing GmbH	<a href="#">European Medicines Agency</a>	31 December 2020
		<a href="#">Food and Drug Administration</a>	16 July 2021
<b>CONVIDECIA</b> COVID-19 Vaccine (Ad5-nCoV-S [Recombinant])	CanSino Biologics Inc.	<a href="#">National Medical Products Administration (NMPA)</a>	19 May 2022

Information for

[Manufacturers](#)

[Regulatory agencies](#)

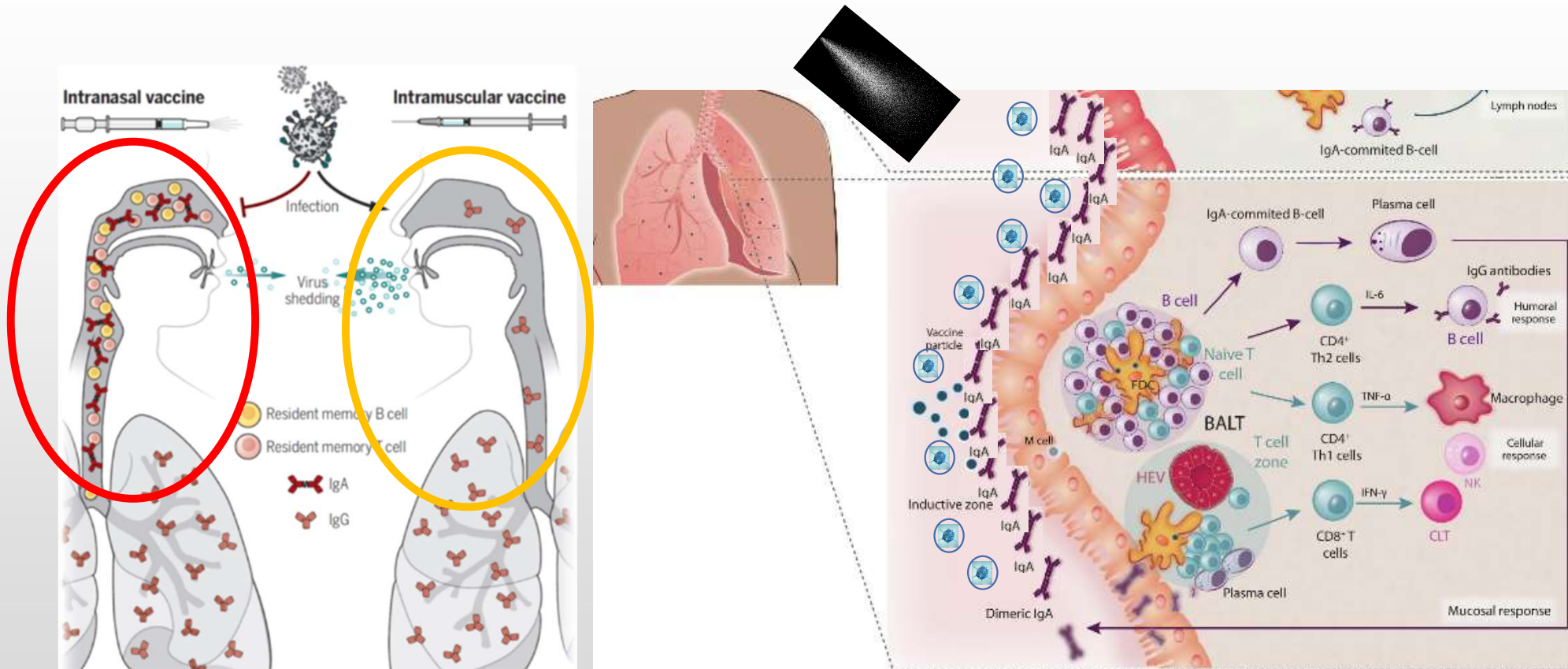
[National control laboratories](#)

[Procurement agencies](#)

<https://extranet.who.int/pqweb/vaccines/vaccinescovid-19-vaccine-eul-issued>

\*changed to F486I in BF.12

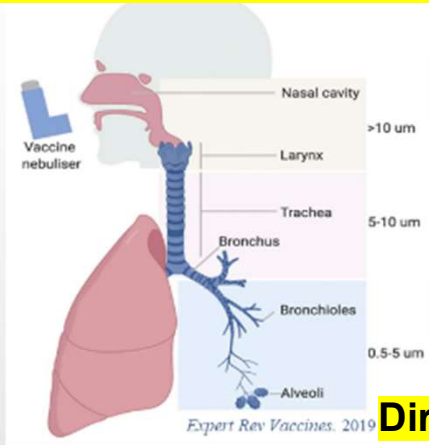
# Fight Virus in Local Lung Area: IgA-Invisible MASK!





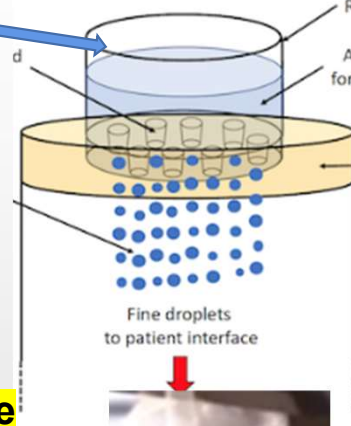
# Turning the liquid injectable vaccine to small droplet

**Vaccine mist size under 5um**



**Directly use 0.1ml IM vaccine**

**Aerosolizer(Aerogen®)**



**Droplet Vaccine**

**1 cup=7 billion droplets**



**Inhale—美zzzzz**

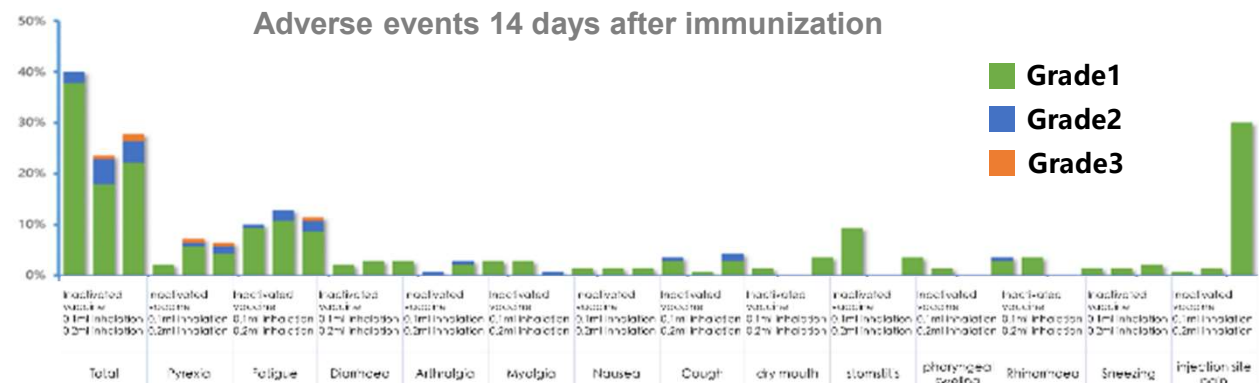
**Lung Covered!**



# Heterologous booster Safety and Cellular immunity

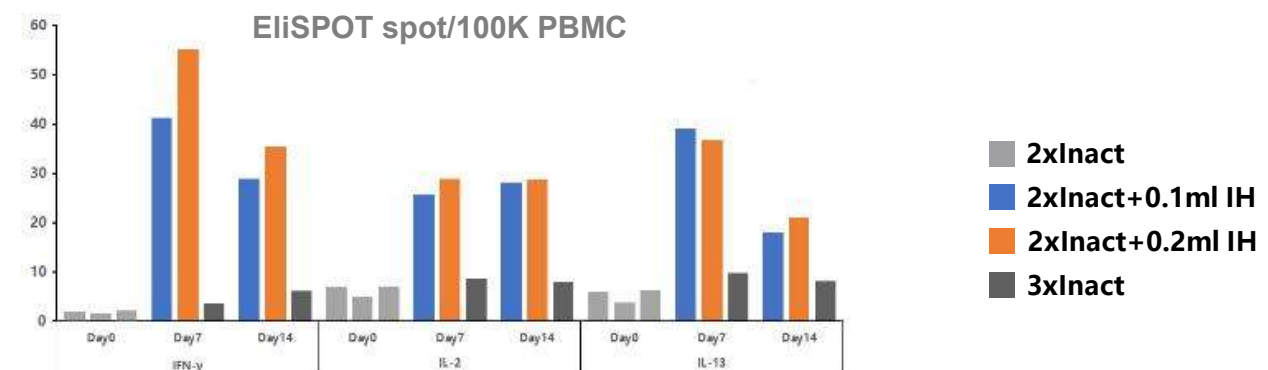
## Safety

The total incidents of adverse effects lower than Inactivated vaccine



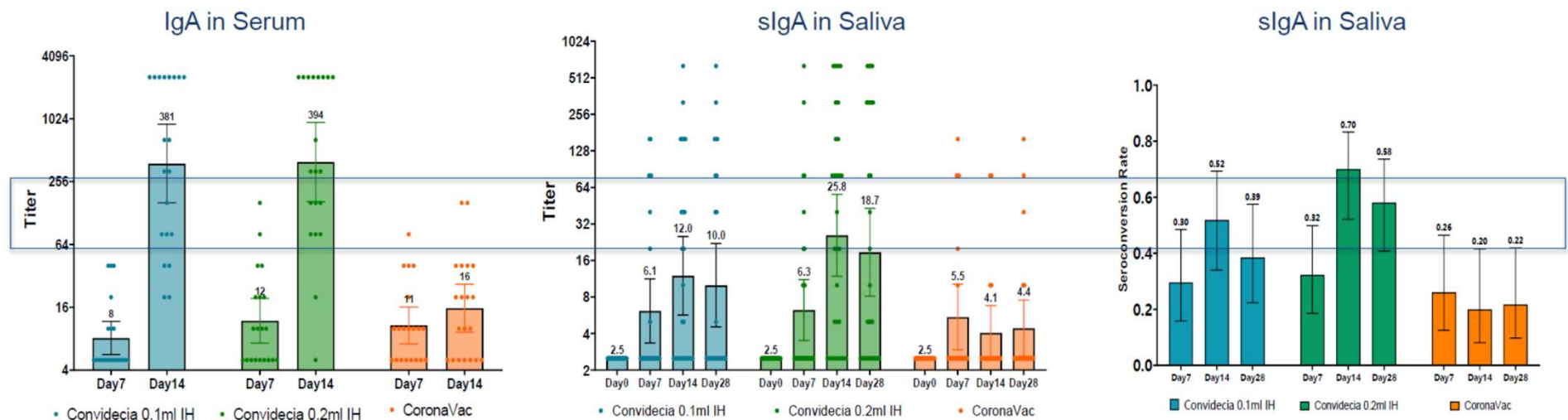
## Cellular immunity

Induce a high level of cellular immunity than inactivated vaccine



# Heterologous booster (NCT05043259) – S-RBD IgA Antibody

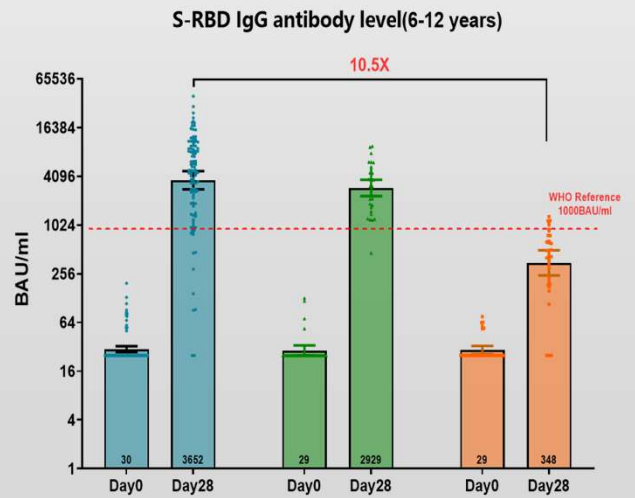
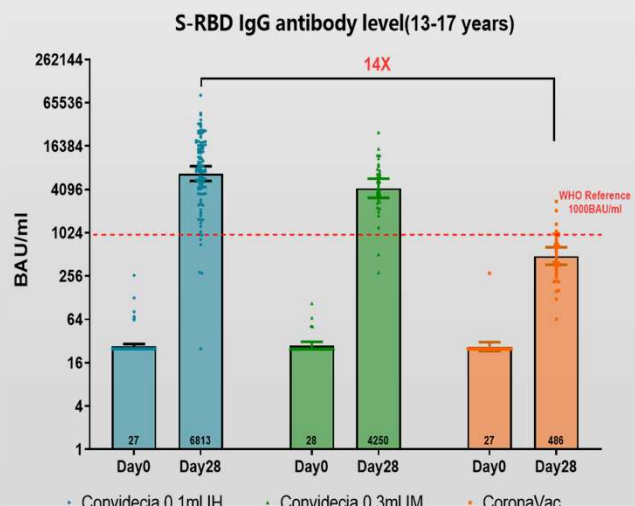
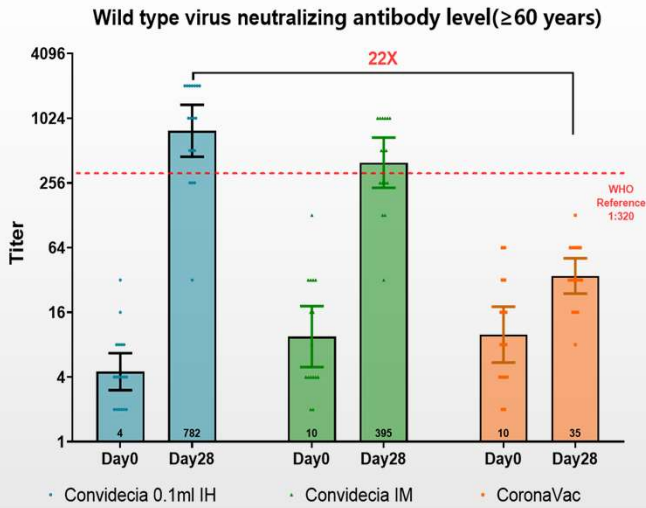
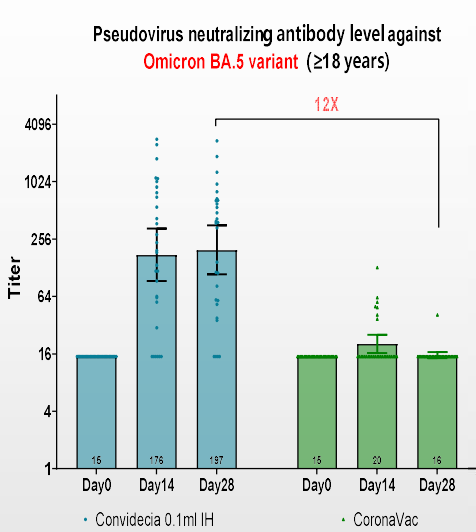
IH  
route



**CoronaVac: inactivated COVID-19 vaccine**

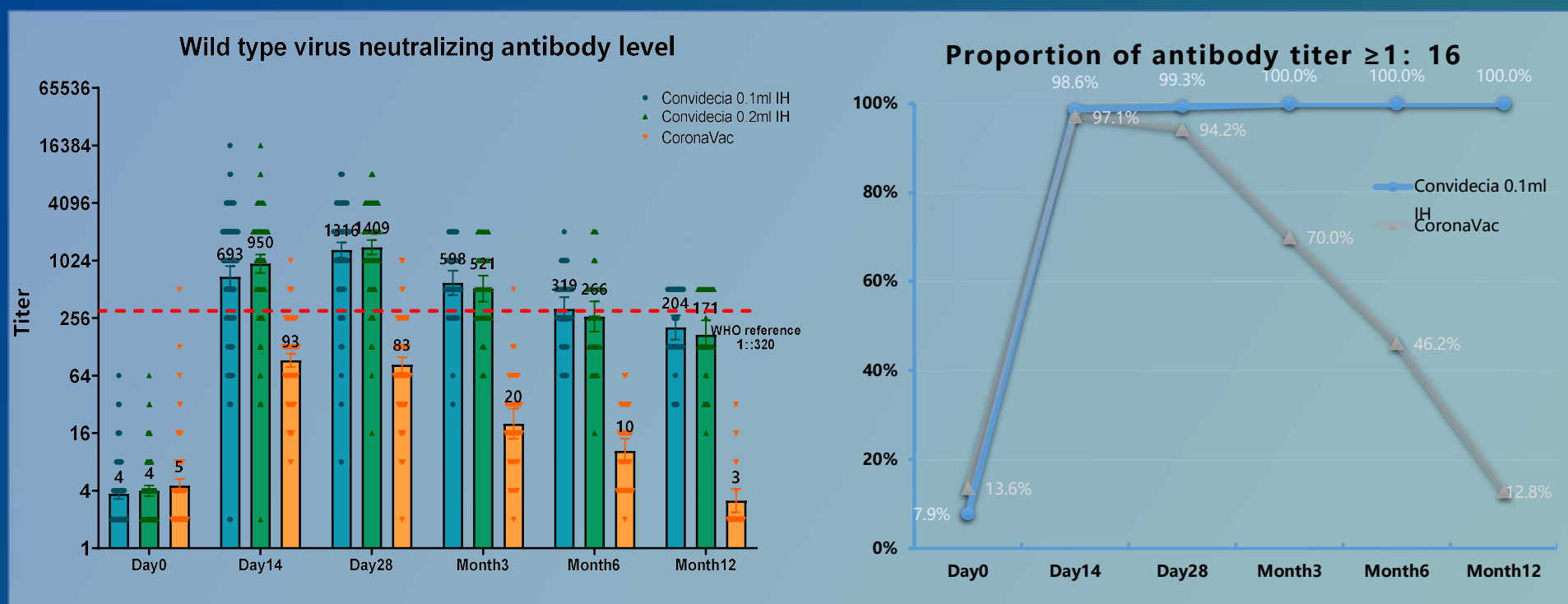
0.1 or 0.2ml IH booster dose can stimulate high levels of serum and secretory IgA (sIgA) antibody, much higher than the level of Inactivated vaccine as homologous booster.

# Heterologous booster Humoral Immune response IgG and Neutralizing Antibody





# Prolonged NAb Level (1 year) Against Original Strain (Boost Schedule)



# Summary

- Vaccination in Lung Area by Inhalation is safety and effective
- Break down the Vaccine to microdroplet by Nebulizer can reduce the dose
- Inhalation Vaccination can induce sIgA, which potentially Stop the Virus entry
- Inhalation Vaccination can induce the better system immune response then muscle injection
- The prove of concept can be applied to all other respiratory related infection virus vaccine development
- Everybody Love No-Needle World!