

Center for Genetic Engineering and Biotechnology



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Online Forum: "Cuba and Germany: Cooperation Opportunities in the Biotechnology and Biopharmaceutical Sector"

Personnel: 1 600
Facilities: 70 000 m²



Main Products:

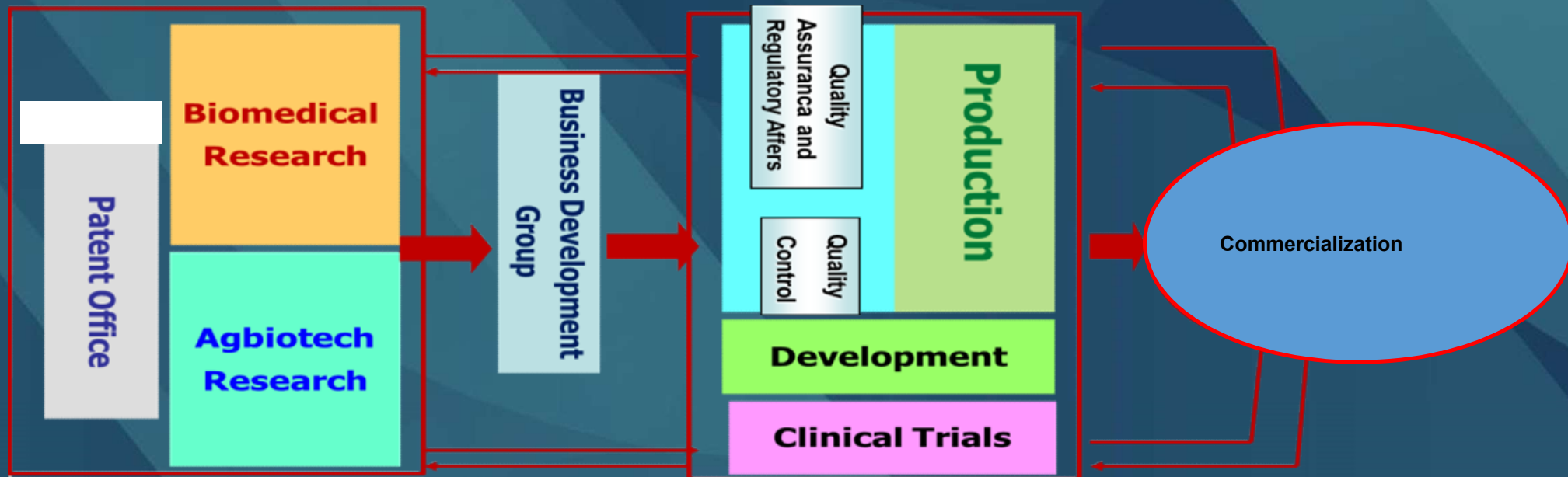
Pentavalent vaccine
Rec. Hepatitis B vaccine
Rec. IFN Alpha-2b, PEG-Heberon
Rec. GCSF (Hebervital)
HeberNasvac
Rec. tick vaccine (GAVAC)
Bionematicide

Heberferon (IFN α and γ)
Heberprot P
Conjugated Hib vaccine
Rec. IFN gamma
Rec. Streptokinase
Acuabio
Diagnostic kits
Proctokinase
Heberon
Jusvinza

Online Forum: “Cuba and Germany: Cooperation Opportunities in the Biotechnology and Biopharmaceutical Sector”



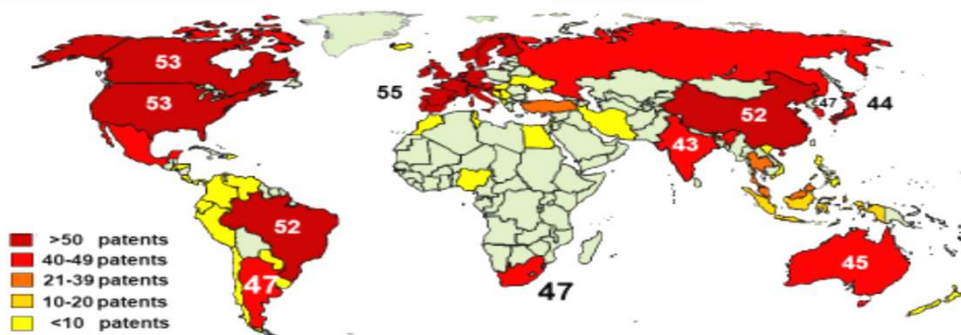
CLOSED CYCLE



Online Forum: "Cuba and Germany: Cooperation Opportunities in the Biotechnology and Biopharmaceutical Sector"

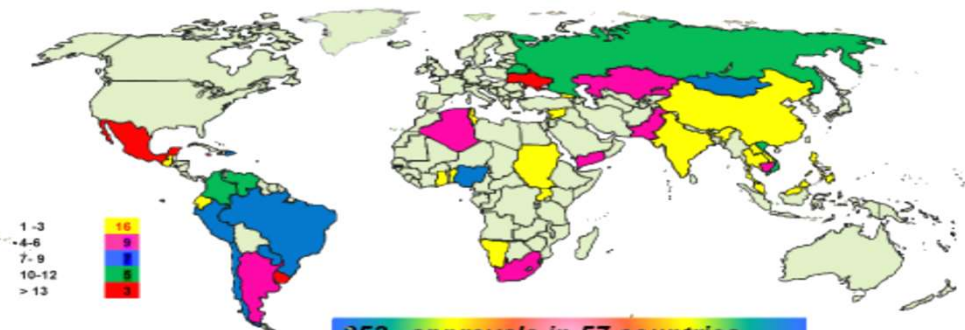


IP & MARKETING



63 Inventions
 1275 Patent applications and granted patents
 69.5% Granted patents

Product Marketing Authorizations abroad



252 approvals in 57 countries

Product	No. Reg	Product	No. Reg	Product	No. Reg
Heberbiovac HB	67	Hebervital	11	Heberprot-P	24
Heberon Alfa R	61	Heberitro	7	Trivac HB	4
Heberkinasa	22	Quimi-Hib	16	Acuabio 1	1
Hebermin	14	Gavac	4	Heberpenta-L	4

Online Forum: "Cuba and Germany: Cooperation Opportunities in the Biotechnology and Biopharmaceutical Sector"



Products commercialized by CIGB





Range of Products Developed

**Me too
(BioSimilarars)**

Innovative

Products

Projects

INNOVATIVE PRODUCTS



HEBERPROT-P

Worldwide unique product for the treatment of patients with advanced diabetic foot ulcers with high risk of amputation



Time 0

5 weeks

3 months follow up

Patents Granted: United States, European Union, Australia, Hong Kong, Singapore, South Korea, South Africa, Russia, China, India, Indonesia, Ukraine, Mexico, Malaysia and Cuba.

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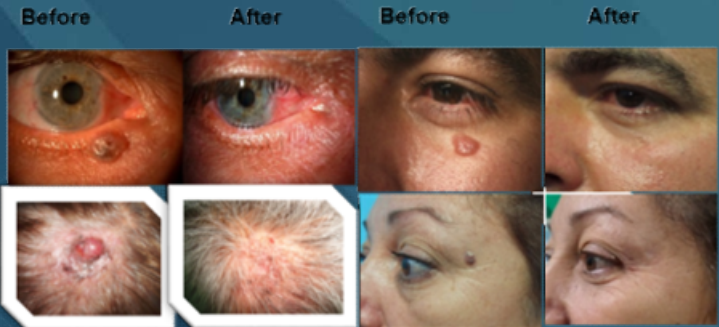
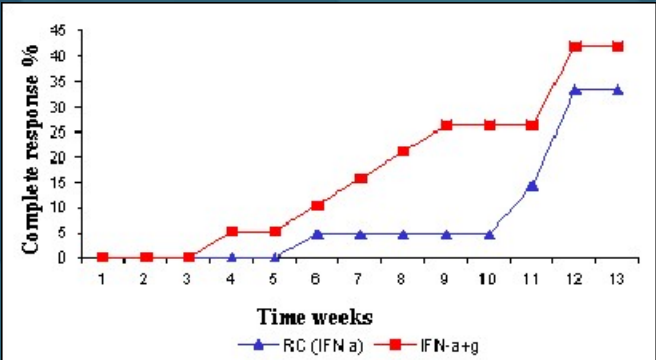




INNOVATIVE PRODUCTS

HEBERFERON: Treatment for non-melanoma skin cancer

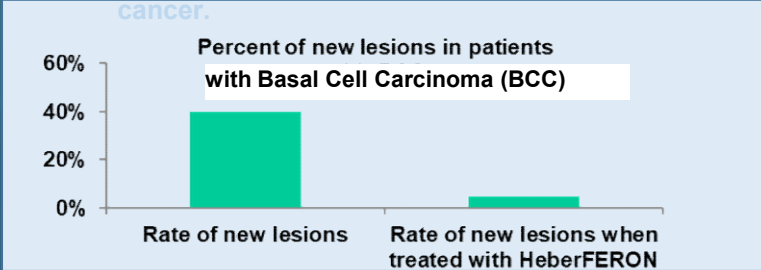
HEBERFERON produces more rapid and higher number of CR .



HEBERFERON induces complete responses in advanced BCC and SCC

Advanced BCC		SCC	
Before	After +ChT	Before	After

HEBERFERON decreases the rate of appearance of new lesions in patients with non-melanoma skin cancer.

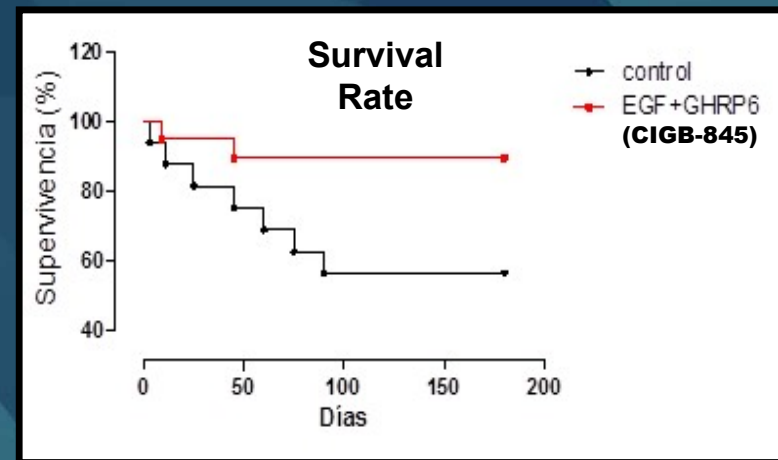
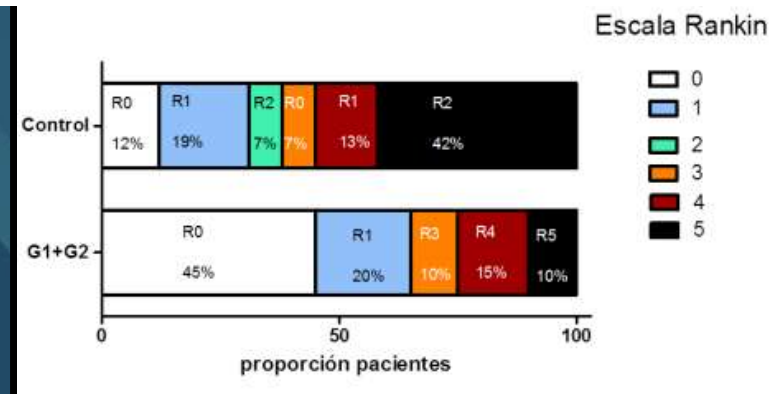


INNOVATIVE PROJECTS

CIGB-845: Neuro-protecting combination, current status: Clinical Trial Phase III



Neurological evaluation according to the Rankin scale in all patients with cerebral infarction

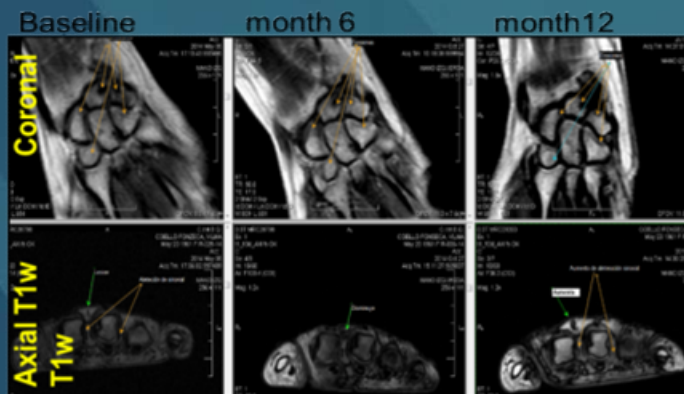


INNOVATIVE PROJECTS



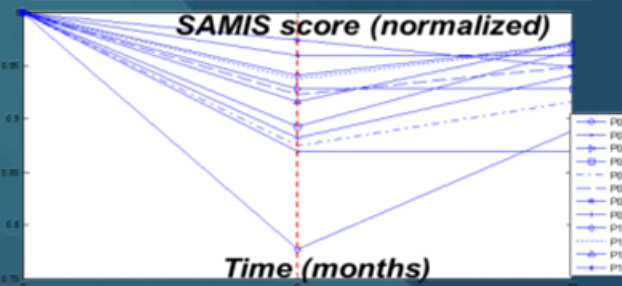
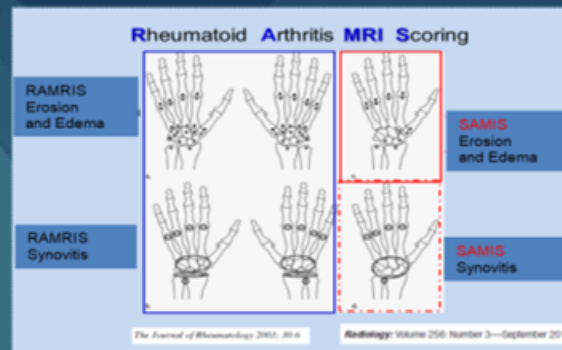
CIGB-814: For Rheumatoid Arthritis treatment, current status: Clinical trial phase II

Clinical Trial assisted by Magnetic resonance imaging



Finding	T_0	%	T_f	%
Edema	10	58.8	5	29.4

13 patients out of 18 improve their score



6



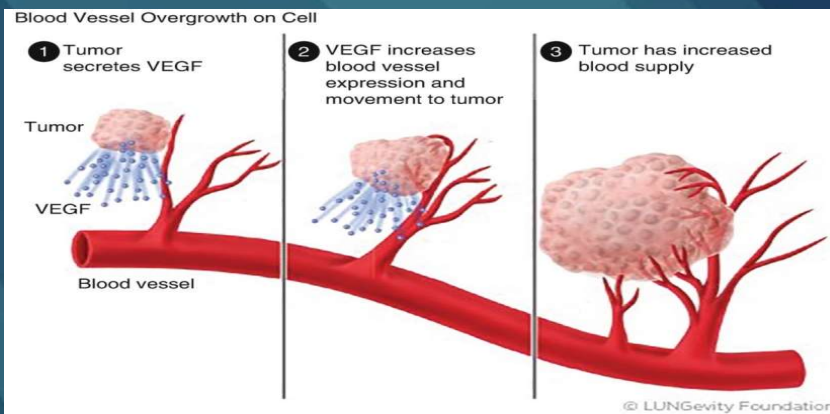
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CIGB

INNOVATIVE PROJECTS

HeberSaVax mediates humoral and cellular responses in cancer indications

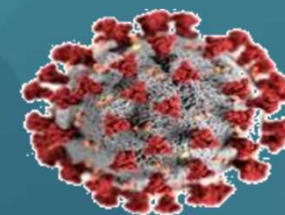
Current status: Clinical trial phase II



VEGF is overexpressed through the whole tumor “life cycle” and metastasis appearance and with bad patient prognosis.

1. HEBERSaVax induces anti-VEGF antibodies that block VEGF-VEGFR2 interaction and inhibit the pro-angiogenic and immune suppressive effects of this growth factor.
2. Activates cytotoxic T cells that kill tumor and other tumor stromal cells that produce VEGF. The effector CD8+ T cells recognize major histocompatibility complex (MHC) class I binding VEGF-peptides expressed in tumor cells.

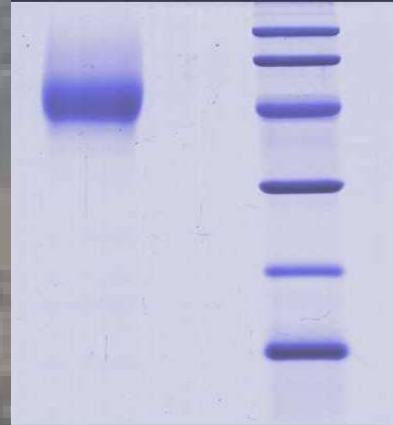
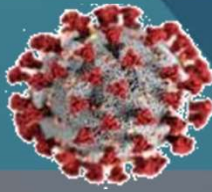
<https://doi.org/10.1053/j.seminoncol.2018.03.004>



CIGB – Covid–19 products pipeline

Project	Description	Status	Medical use
Nasalferon	Nasal formulation of rec h-IFN α	Clinical evaluation	Preventive in high risk medical personnel and vulnerable groups
Heberferon	Pharmaceutical combination of IFN α and IFN γ	Expanded Access Authorization	Antiviral treatment except in serious and critical patients
Jusvinza	Anti-inflammatory peptide	Emergency Use Authorization	To control cytokine storm in serious and critical patients

CIGB Covid-19 Vaccines



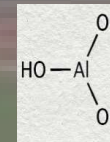
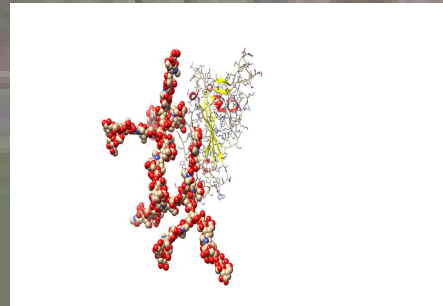
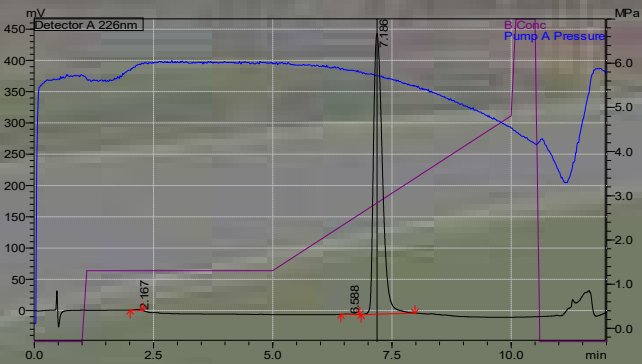
KDa
97
66
45
30
20,1
14,4

RBD-API

MW



Datafile Name: EluBut 21006 1_5_1302021_001.lcd
Sample Name: EluBut 21006 1_5
Sample ID: 1en5



Patent Number: CU 2020-0081 "PROTEINA QUIMERICA QUE COMPRENDE EL DOMINIO DE UNION AL RECEPTOR DE LA PROTEINA DE LA ESPIGA DE CORONAVIRUS Y COMPOSICIONES QUE LA COMPRENDE", Submission Date: 4.11.2020



Phase I/II

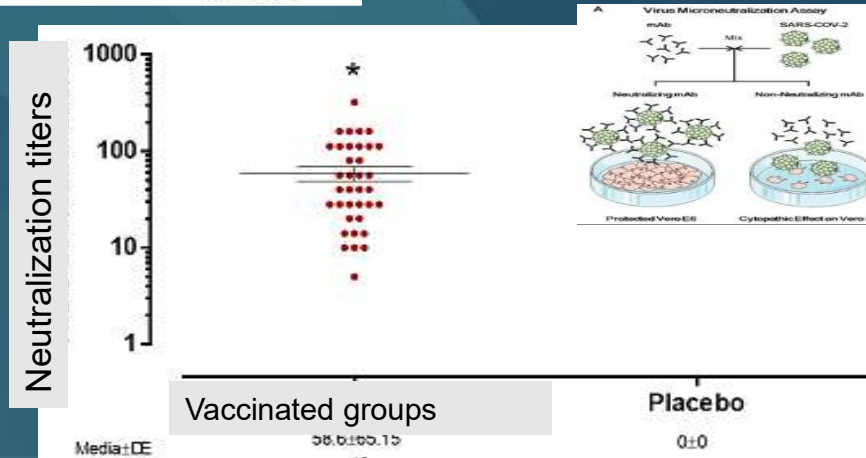
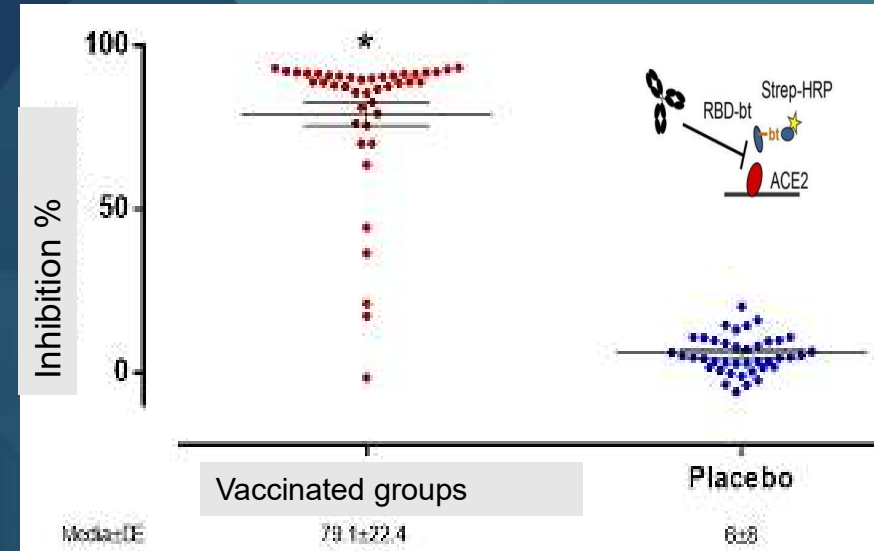
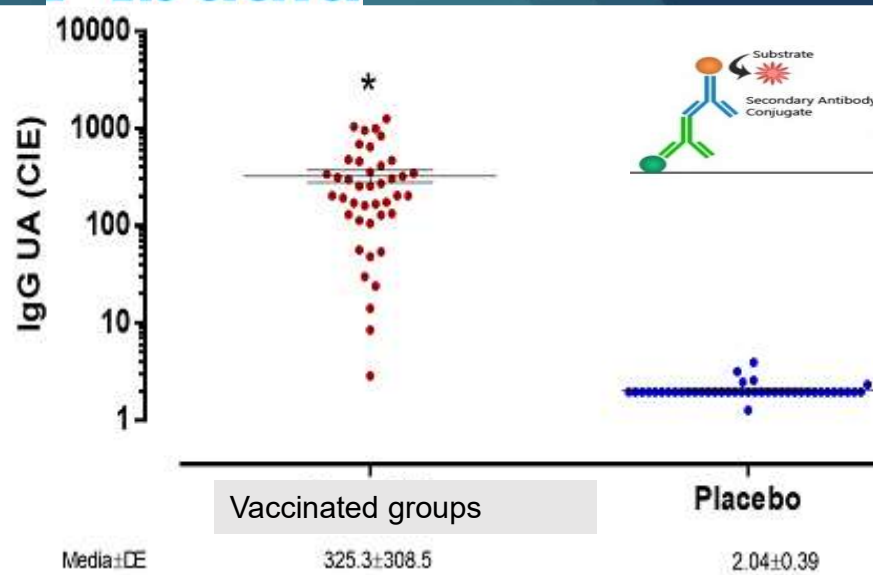
- ✓ Safety
- ✓ Immunogenicity

- ✓ Phase I: Immunization completed, safety and immunogenicity demonstrated (132 individuals). December 2020-March 2021
- ✓ Phase II: 660 individuals were enrolled, immunized with 50 ug dose using a short schedule 0, 14 and 28 days. Safety and immunogenicity were demonstrated. March 2021



Phase I/II
December 2020 / March
2021
132 + 660 subjects

✓ Immunogenicity



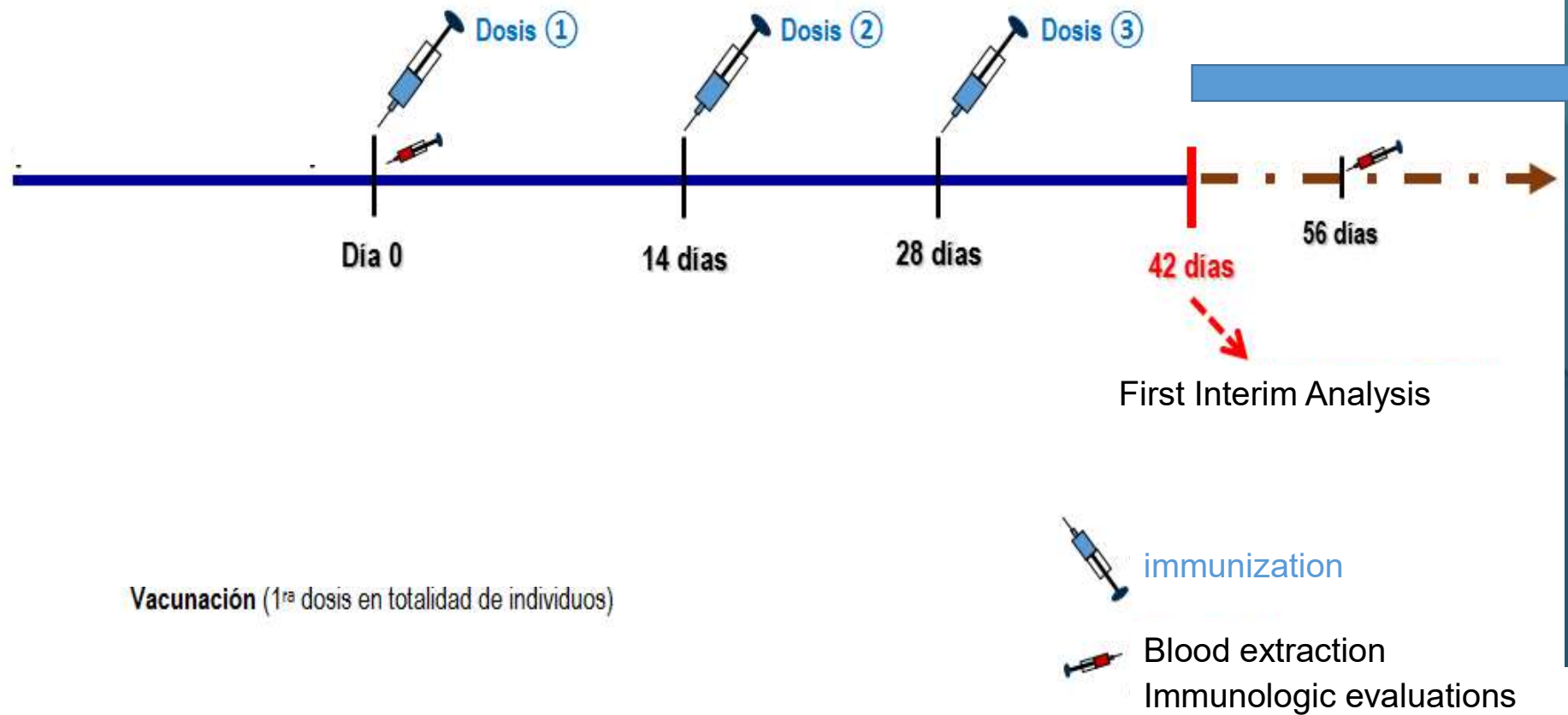


Phase III

- ✓ Safety
- ✓ Immunogenicity
- ✓ Efficacy

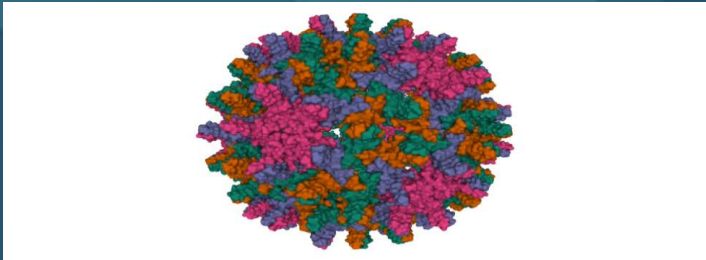
- ✓ Phase III clinical trial, multicenter, placebo-controlled, randomized and double-blind in order to evaluate the efficacy
- ✓ More than 48000 subjects enrolled.
- ✓ Second dose ongoing.

Immunization schedule

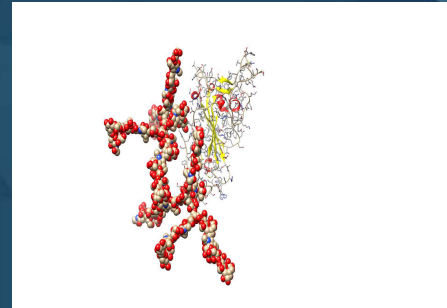




Vaccine candidate for nasal administration



+



- Induce immunological response both at mucosal and systemic level
- Booster for convalescent subjects with only one dose.
- Booster dose for other vaccines.
- IMPD is already submitted to the NRA

Business Opportunities

A blurred background image showing a business meeting. Several people are seated around a large conference table. On the table, there are documents, a small South Korean flag, and a small Australian flag. The setting appears to be a formal office or meeting room.

- 1- Supply and distribution Agreements.
- 2- Transfer technology Agreements.
- 3- Co-development Agreements.
- 4- Investment Agreements.

THANKS



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