

# ICGEB

An International Organisation in  
the United Nations System



80+ Signatory States, 60+ Member States, 3 Components:  
Trieste (Italy) - New Delhi (India) - CapeTown (South Africa)  
and a network of 40+ Affiliated Centres

**Science for Development**



# The ICGEB mandate



1987-1995  
a special  
project of  
UNIDO



1995-today  
An independent  
international  
organisation

To provide a Centre of  
Excellence for research  
and training in molecular  
biology and biotechnology,  
addressed to the needs of  
our Member Countries

Science for Development

# *ICGEB - 360° Approach*



## **The Role of Science and Biotechnology**

# The ICGEB 6 instruments of action

1. Cutting-edge scientific research in the laboratories in Trieste, New Delhi and Cape Town
2. Advanced education supported by long- and short-term fellowships for PhD students and post-docs
3. Organise Meetings, Courses and Workshops
4. Provide research grants for scientists in Member Countries
5. Technology transfer to industry for the production of biotherapeutics and diagnostics
6. Scientific Services and advice - Biosafety





# SUSTAINABLE DEVELOPMENT GOALS



**Where does ICGEB contribute.....?**

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# ICGEB Trieste COVID-19 Activity

- Disease surveillance, diagnostic support, sequencing of isolates, and patient genomics.
- Screening for novel antivirals - with local companies and beyond, including New Delhi.
- Using neutralisation assays for monitoring recovery characteristics.
- Working with Health Authorities on testing platforms and pathological analyses.
- Web resources and assistance:

<https://www.icgeb.org/covid19-resources/>



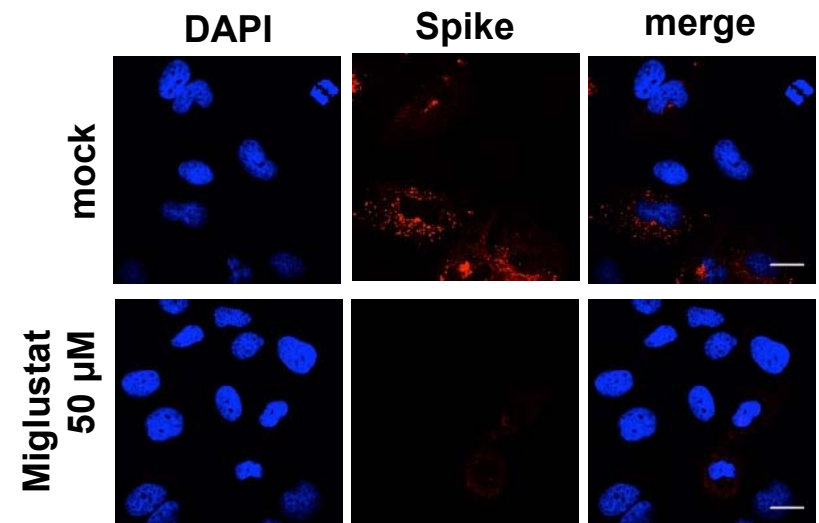
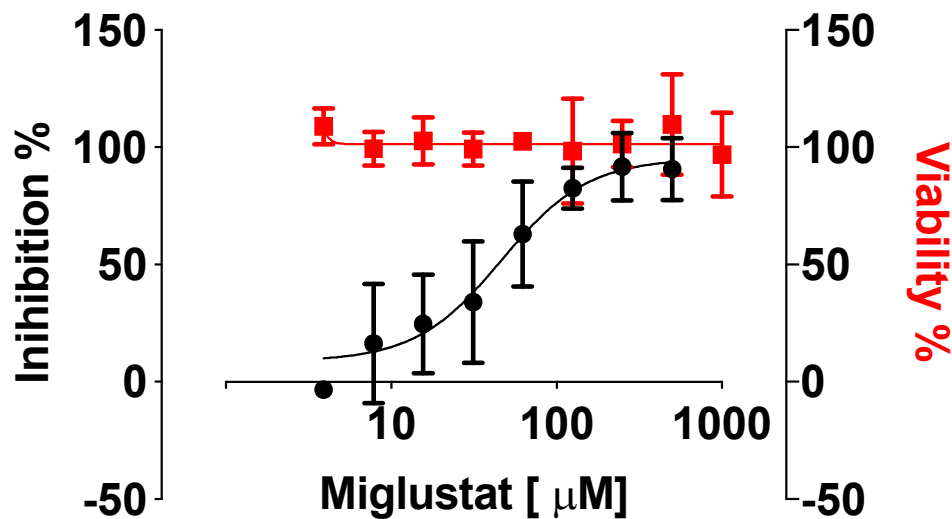
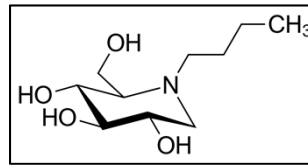
# Antivirals: repurposing Miglustat

(Zavesca; N-butyl-1-deoxynojirimycin, NB-DNJ)



**Miglustat** is an iminosugar identified initially as inhibitor of HIV-1;

- an inhibitor of  $\alpha$ -glucosidases I/II and of glucosyltransferase activity;
- used to treat genetic disorders such as Gaucher and Niemann-Pick type C;
- inhibits SARS-CoV-2;





# ICGEB New Delhi COVID-19 activity

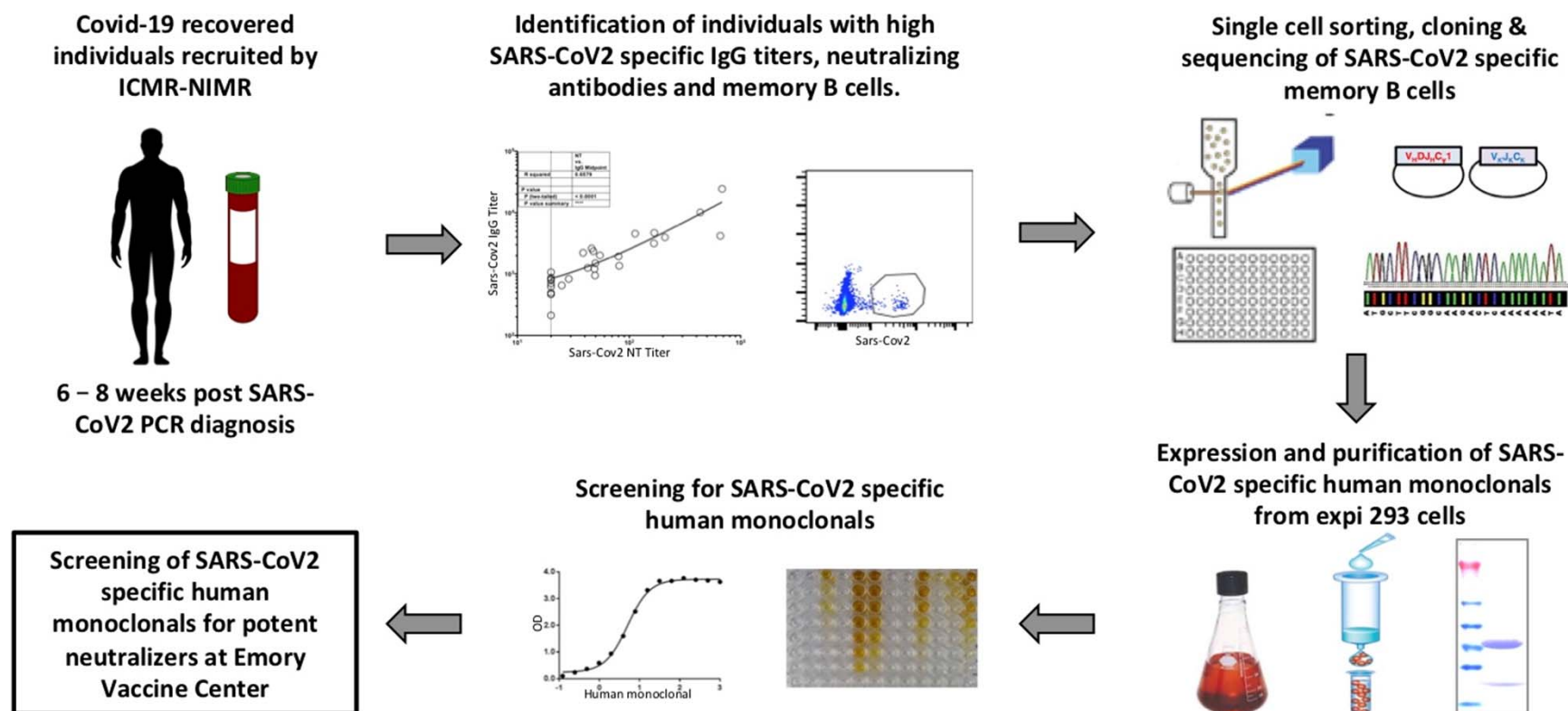
- Structure-based novel therapeutics targeting SARS-CoV-2 RNA dependent RNA polymerase and proteases Mpro and PLpro
- Exploring Indian traditional medicines for COVID-19 therapy
- Generation of human monoclonal antibodies against COVID-19
- Serology based point-of-care diagnostics for COVID-19
- Recombinant subunit SARS-CoV-2 vaccine candidate



# Human Monoclonals to COVID-19

Anmol Chandele & Murali Kaja, ICGEB-Emory Vaccine Program, ICGEB, New Delhi

- Monoclonal antibodies offer an attractive strategy for tackling the COVID-19 pandemic
- ICGEB, in partnership with Emory Vaccine Center and Govt of India (ICMR, DBT), have successfully generated panels of human monoclonal antibodies from memory B-cells derived from COVID-19-recovered individuals from India.
- Work is ongoing on further characterizing these antibodies to identify potent candidates for therapeutic applications.



# ICGEB Cape Town COVID-19 activity

- ICGEB laboratories in Cape Town are offering their facilities and services to directly assist in the country's diagnostic efforts
- a hub for sharing information about ICGEB's activities across the African continent, in close collaboration with the Government of South Africa, Department of Science and Innovation
- Metabolomics studies to stratify SARS-CoV-2 patients and assessment of mTb/HIV upon SARS-CoV-2 infections

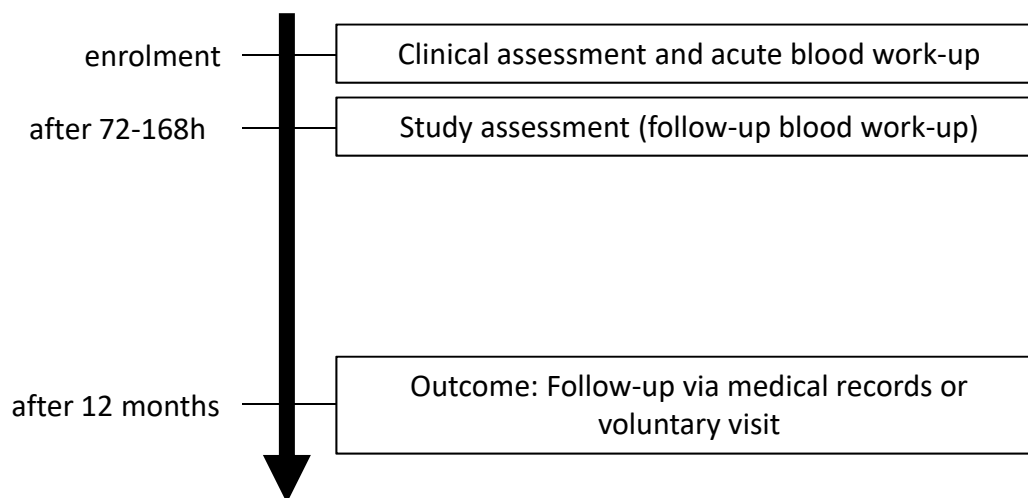




## Planned research activities

Interaction and overlap between SARS-CoV2, HIV-1, *Mycobacterium tuberculosis* (Mtb) and Kaposi's Sarcoma Herpes Virus (KSHV) infections

Observational and cohort studies:  
Groote Schuur Hospital and Khayelitsha Site B,  
Cape Town, South Africa



### Specific aims

1. To describe the impact of HIV-1, Mtb and/or KSHV co-infection on COVID-19 outcome
2. To assess the interaction between HIV viral load and CD4 count, KSHV viral load and presence of Mtb infection on SARS-CoV2 viral load
3. To determine the effect of incident SARS-CoV2 infection on the progression of KSHV infection within 12 months.

# Special Call for COVID-19 related CRP Grants

1. Call was issued mid April and deadline extended until 15<sup>th</sup> May.
2. We expect to be able to fund 8-10 extra research proposals.
3. Over 160 COVID-19 related applications have been submitted.







## ICGEB COVID-19/SARS-CoV-2 Resource Page

From this page, the ICGEB offers Resources, Tools and Know-how to fight the SARS-CoV-2 virus that causes COVID-19, to its Member States, free of charge.

Tools  
Resources & Procedures

Technical Assistance &  
Training

Recent updates

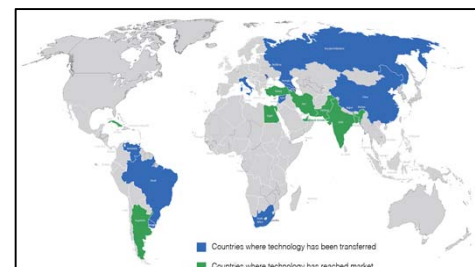
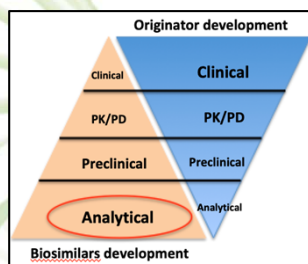
Contacts and Useful  
links





# ICGEB offers its protocols for production of Interferons

At ICGEB Trieste, the Biotechnology Development Unit (BDU) develops technologies for the production of Biopharmaceuticals, aiming to increase the capabilities of the pharmaceutical industries in ICGEB Member States by transferring lab and pilot-scale technologies for the production and quality control of off-patent recombinant proteins.



Following recent reports about the possible beneficial effect of interferon alpha and beta in COVID-19 infections, ICGEB is offering its protocols for production of interferon alpha and beta, developed in the BDU to Member States upon request, free of charge.

Molecule Name	Expression system	Production Mode (Batch size)	Pure product per batch	Total Doses per batch (dose in mg)	Cost in €/dose (cost originator in €/dose)
IFNalpha2A	E. Coli	Batch (30L)	5g	160,000 (0.03)	0.015 (30)
PEGIFNalpha2a	E. Coli	Batch (30L)	Pure Reagent 8g Final product 1g	5500 (0.18)	0.71 (321)
IFNalpha2b	E. Coli	Batch (30L)	3g	100,000 (0.03)	0.015 (30)





# Science for Development





An aerial photograph of a coastal city, likely Istanbul, taken from a high vantage point. The foreground shows a dense urban area with many buildings and some greenery. In the middle ground, a large harbor is visible with several yellow cranes and ships. The background features a wide expanse of water leading to distant hills under a clear, light blue sky. The lighting suggests it is either early morning or late afternoon.

Thank you

Lawrence Banks: [banks@icgeb.org](mailto:banks@icgeb.org)

