

TRAIN: synergies with other projects

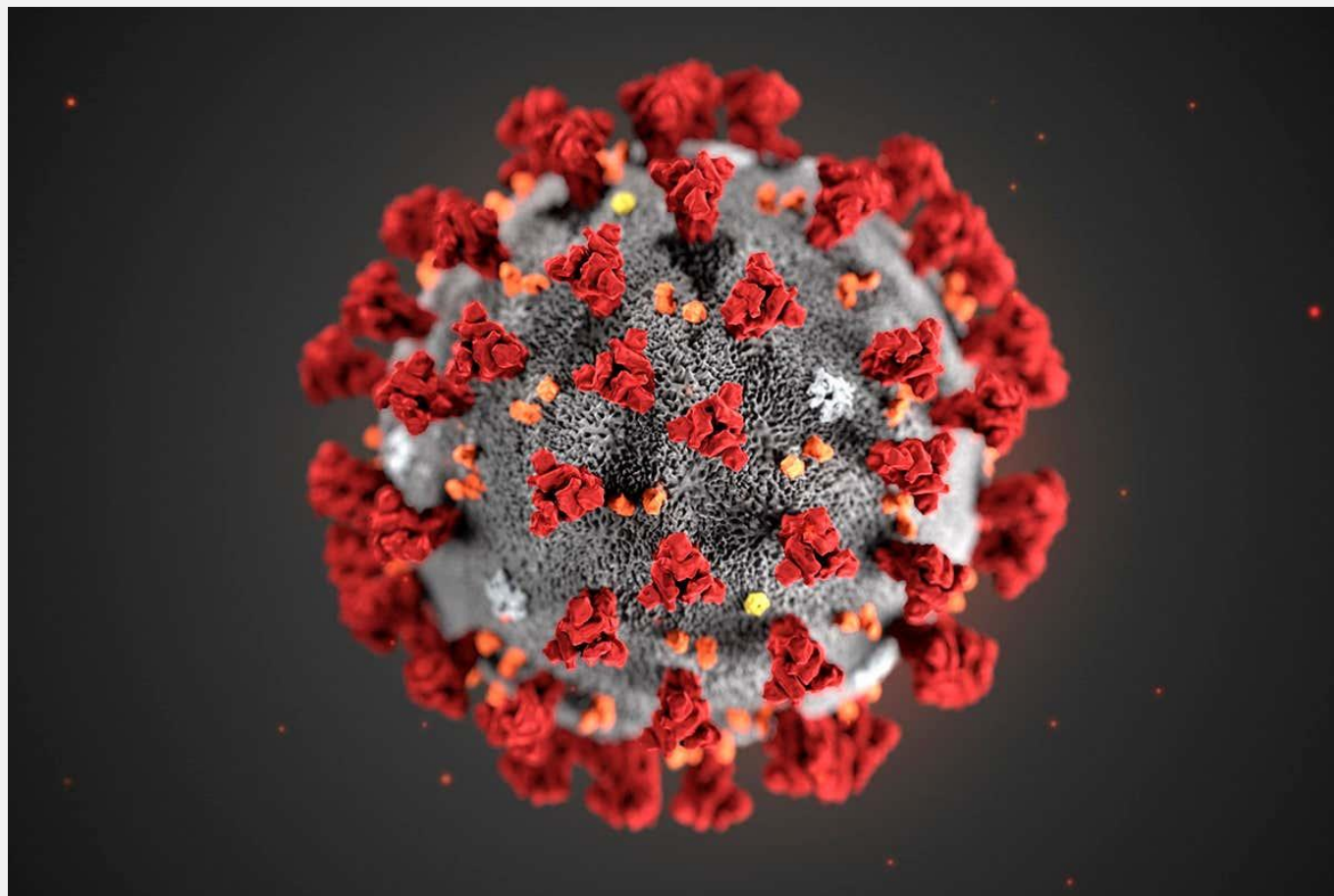
- *Dott. Ing. Francesco Menegoni, PhD*

Aim of TRAIN project

[...] increase cooperation between key biomedical subjects such as research institutes, universities and companies [...]

[...] for increasing the innovation and competitiveness in the biomedical research sector

COVID-19



Macro-Trends in biotech



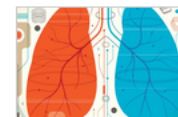
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AI and digital health

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How Artificial Intelligence Will Change Medicine

Claudia Wallis



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Hunting for New Drugs with AI

The pharmaceutical industry is in a drug-discovery slump. How much can AI help?

David H. Freedman



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Rise of Robot Radiologists

Deep-learning algorithms are peering into MRIs and x-rays with unmatched vision, but who is to blame when they make a mistake?

Sara Reardon



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Can AI Fix Medical Records?

Digitized patient charts were supposed to revolutionize medical practice. Artificial intelligence could help unlock their potential.

Cassandra Willyard



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Wiring Minds

Successfully applying AI to biomedicine requires innovators trained in contrasting cultures.

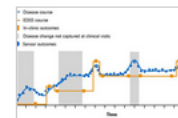
Amit Kaushal & Russ B. Altman



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Digital health: Smartphone-based monitoring of multiple sclerosis using Floodlight

Mike Baker, Johan van Beek & Christian Gossens



How TRAIN accelerated other projects on COVID-19

Case 1: rapid serological tests for COVID-19

Research: ICGEB

Companies: Biovalley Investments Partner (BIP) and worldwide providers



Case 1: rapid serological tests for COVID-19

Research: ICGEB

Companies: Biovalley Investments Partner (BIP) and worldwide providers

- **2020-03-13:** ICGEB isolated COVID-19 virus and built a bio-bank
- **2020-03-21:** BIP analysed rapid tests suggested by Sheridan (Nature, March 23th, 2020) and those suggested by Foundation for Innovative New Diagnostics (FIND).
- **2020-03-30:** BIP compared the performance form 8 producers.
- **2020-04-05:** BIP bought 200 tests from 2 top EU producers.
- **2020-04-14:** ICGEB Validated those rapid tests

Case 1: rapid serological tests for COVID-19

Research: ICGEB + Regional University Health Authority

Companies: Biovalley Investments Partner (BIP) and worldwide providers

kit	KHB		
Note	Dati produttore	T>7	T0
True Positive	25	25	8
False Positive	2	1	1
True Negative	52	29	29
False Negative	2	0	4
Sensitivity	93%	100%	67%
Specificity	96%	97%	97%
Positive predictive value	93%	96%	89%
Negative predictive value	96%	100%	88%

- **2020-06-09:** We are validating the rapid tests on 500 hospital workers

Case 2: antiviral drug for COVID-19

Research: ICGEB

Companies: Biovalley Investments Partner (BIP)

- **Biovalley provided an anti-viral drug and ICGEB tested it on COVID-19 in vitro**
- 2020-03-18: the idea of using the anti-viral was born
- 2020-03-24: the drug was in ICGEB
- 2020-05-18: the paper was in preview on BioRxiv:
<https://www.biorxiv.org/content/10.1101/2020.05.18.101691v1>

Case 2: antiviral drug for COVID-19

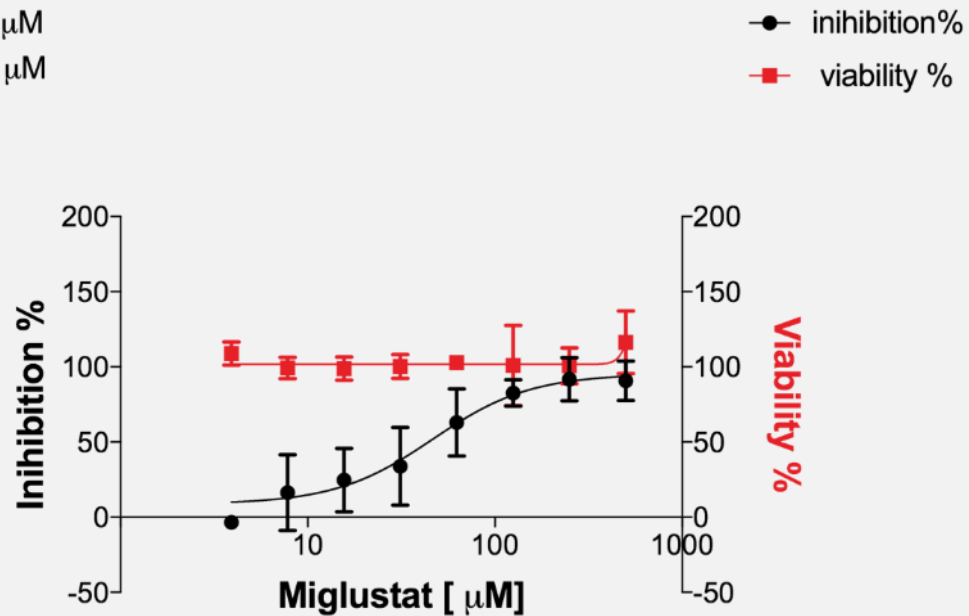
Research: ICGEB

Companies: Biovalley Investments Partner (BIP)

EC_{50} : 44.1 μ M

CC_{50} > 500 μ M

SI > 11



- We are going to test it in clinical environment

How TRAIN inspired a new project on HPC

Europe Strategy on Digital 2020-2030

- Definition of the “Data Act” in 2020 and launch in 2021
- Plan to invest 1.000 M€ for data
- Plan to invest 600 M€ for “Connecting Europe Facility Program»
- Investments in cloud services competing with U.S. and China (German Gaia-X)
- White paper on Artificial Intelligence



Europe Strategy on Digital 2020-2030

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- **White paper on Artificial Intelligence**

Establishing a world-leading artificial intelligence computing and data infrastructure in Europe: a comprehensive data and computing infrastructure using as a basis High Performance Computing (HPC) centres and edge computing capacities, through the EuroHPC Joint Undertaking. The deployment of a next generation high performance computing infrastructure will be complemented by a European federation of interoperable, flexible and scalable cloud and computing infrastructures and targeted cloud-based artificial intelligence services (to be funded through Horizon Europe and the Digital Europe Programme). Supporting the deployment of common European data spaces to facilitate pooling and sharing of data from across Europe is also crucial and will be addressed in a specific initiative.

Case 3: HPC

Research: SISSA + ICTP

Industrialization: Trieste Valley, Eurotech

Trieste Valley:
the first step toward an HPC based on European hardware technology (Eurotech) available for AI/biotech development

Case 3: HPC

Research: SISSA + ICTP

Industrialization and funding: Trieste Valley, Eurotech

- 2020-01-10: the idea of having an HPC for private companies was born
- 2020-01-24: preliminary location was identified
- 2020-03-06: the first node of HPC has been ordered
- 2020-07-01: the HPC will be operative and running

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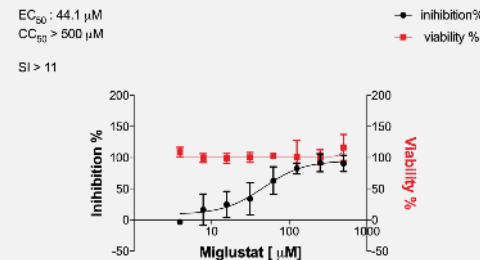
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Rapid Test on Covid-19

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Anti-Viral drug for Covid-19



Private HPC for AI in health



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