

Learning from interdisciplinary research on coronavirus for poxvirus epidemic

Margarita Del Val

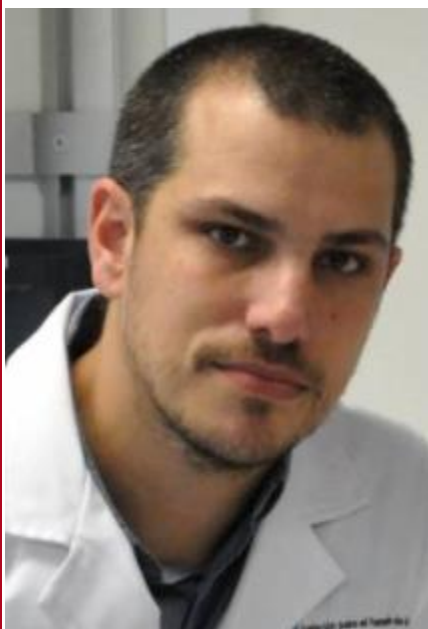
Centro de Biología Molecular Severo Ochoa (CSIC-UAM), Madrid, Spain

Interdisciplinary Research Platform on Global Health

An integral approach to pandemics from R+D+I

<https://pti-saludglobal-covid19.corp.csic.es/>

CSIC, Spanish National Research Council



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(Coordinators)



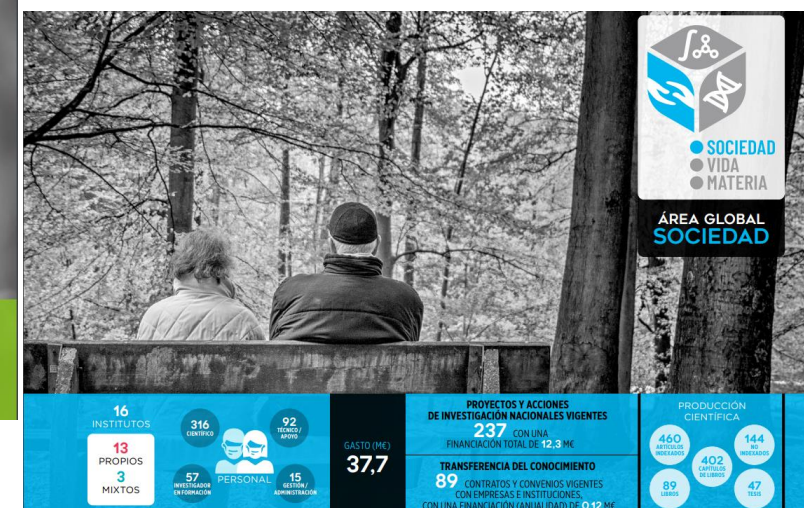


125 Research Institutes
Multidisciplinary
Materials
Life
Social

11 March 2020

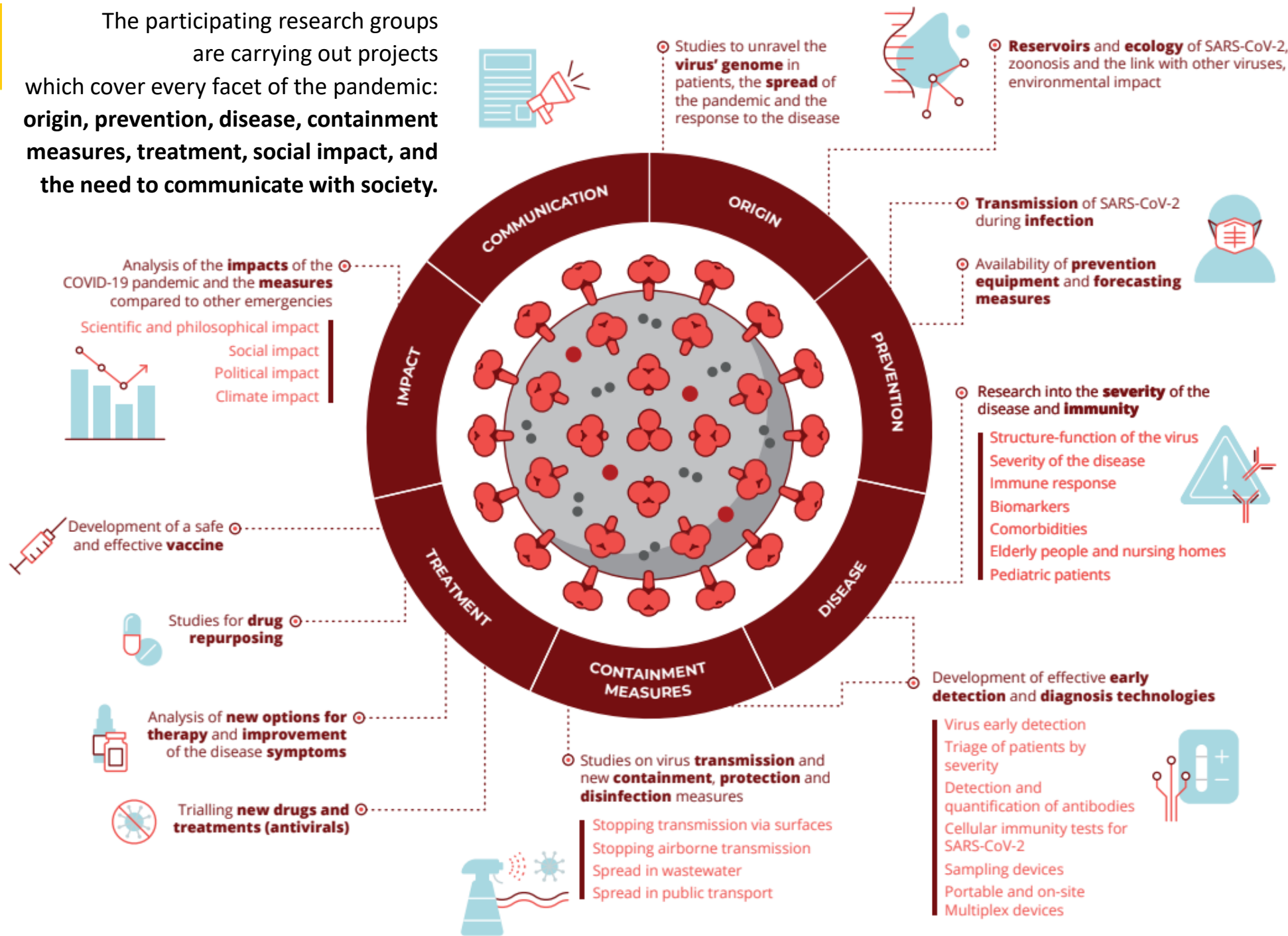
Scientific disciplines join forces to fight COVID-19

The Spanish National Research Council (CSIC), the largest research institution in Spain, has created Salud Global/Global Health. An Interdisciplinary Thematic Platform (PTI) to provide answers and solutions to every facet of the pandemic. This initiative includes many of the most innovative research projects happening right now and is backed financially by a range of organisations and companies.



The participating research groups are carrying out projects which cover every facet of the pandemic: **origin, prevention, disease, containment measures, treatment, social impact, and the need to communicate with society.**

A 360° approach to contain the virus



MAIN ACHIEVEMENTS IN TECHNOLOGY TRANSFER (I)

CONTENTION, PROTECTION AND DISINFECTION MEASURES

- ✓ **Masks of nanofiber filters**, fully developed and produced in Spain.
 - **CSIC & Bioinicia** (spin-off from CSIC) for marketing.



DIAGNOSTIC TECHNOLOGIES

- ✓ **Serological tests to detect antibodies to SARS-CoV-2**
 - **CSIC & Immunostep** for marketing.
 - Agreement with the Medicines Patent Pool (MPP) of the **WHO Accelerator ACT** → Production in South Africa.
- ✓ **Direct detection of viral RNA (*PCR-free*).**



**The Access to COVID-19
Tools (ACT) Accelerator**



MAIN ACHIEVEMENTS IN TECHNOLOGY TRANSFER (II)

THERAPIES: DRUG REPURPOSING AND NEW FAMILIES OF ANTIVIRALS

- ✓ **Drug repurposing** : 2 phase-3 clinical trials
- ✓ **Recombinant antibodies (*nanobodies*) to SARS-CoV-2** for therapy and diagnostics
- ✓ **Oral antiviral spray for SARS-CoV-2**
- ✓ **New families of antivirals: the CSIC Chemical Library**
- ✓ **Antiviral screening platforms**



COVID-19 VACCINES UNDER DEVELOPMENT

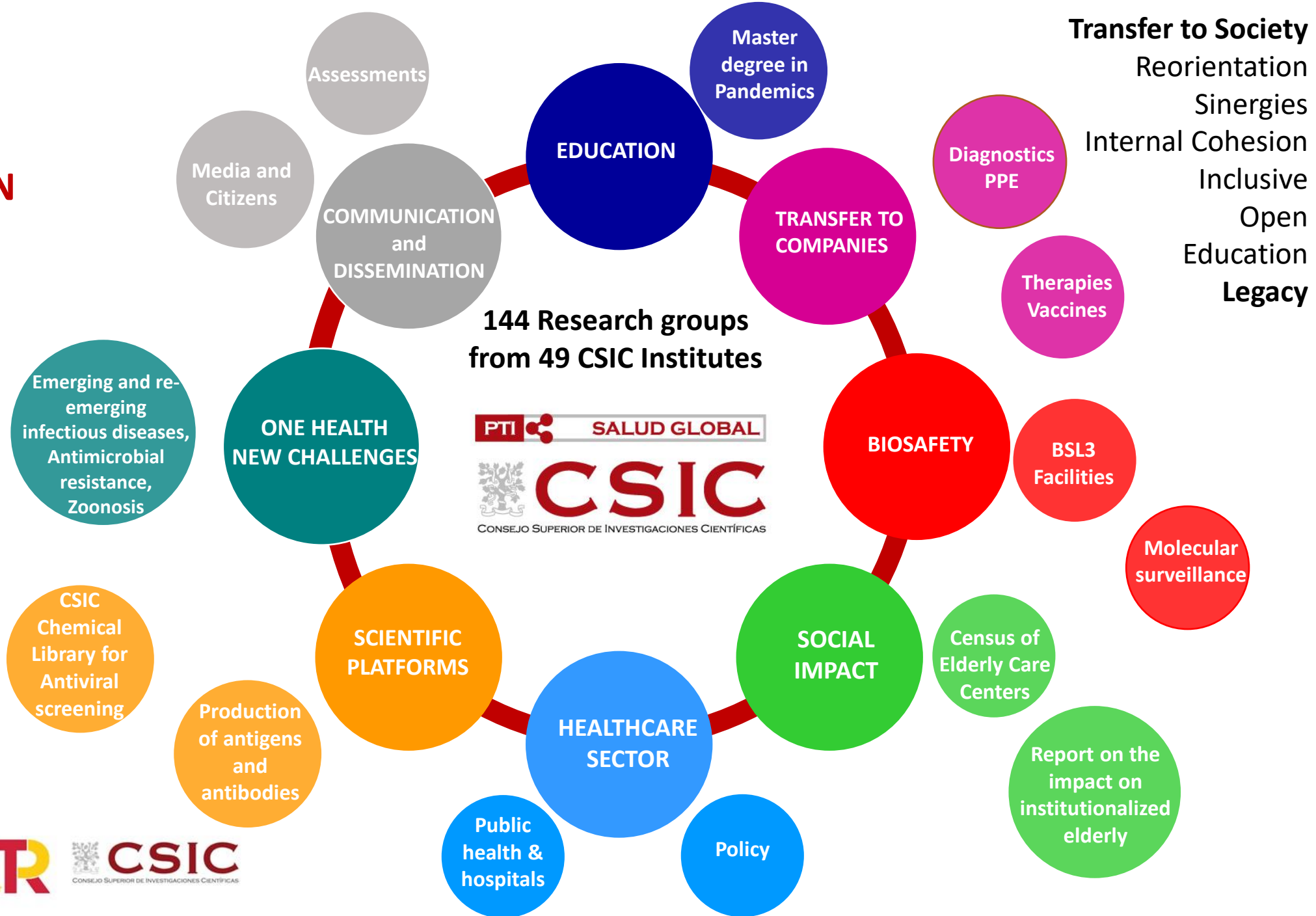
Needed:

- ✓ Prevent infection
- ✓ Mucosal immunization
- ✓ Lasting immune memory
- ✓ Cheap
- ✓ Stable at room temperature



- ✓ **5 vaccine candidates**, using different approaches:
MVA, RNA, DNA, protein.
- ✓ Preclinical phases accomplished.

TRANSFER TO SOCIETY AND TO STAKEHOLDERS IN GLOBAL HEALTH



MINISTERIO
DE CIENCIA
E INNOVACIÓN



FINANCIADO POR LA
UNIÓN EUROPEA
Next Generation EU



CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

*EACH OUTBREAK
AND PANDEMIC
WILL BE
DIFFERENT*

RAPID AND TAILORED RESPONSE TO NEW THREATS

West Nile Virus Encephalitis outbreaks

in swamps and rice fields

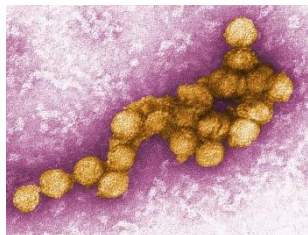
close to Doñana National Park

(Taskforce, spring 2021)

stopped by R+D & agreement with

Junta de Andalucía Government

for yearly controls



Monkeypox Virus outbreak

(Taskforce, 20 May 2022)

Reference virus isolate

Wastewater Diagnostic

Serologic tests

Population immunity

Transmission

Antiviral resistance

Vaccines



