

	Institution	Country	SARS-CoV-2 Activities and Services
1	University Medical Center Utrecht	NL	<ul style="list-style-type: none"> <li>- Sampling of COVID-19 suspected patients in the emergency response unit and in the ICU (medium/high).</li> <li>- Plasma and cell isolation and Olink technology for ongoing mechanisms determination.</li> <li>- Service provider for the Olink technology and capacity to run assays for external groups.</li> <li>- Lumindex assay for ~150 markers available for quantification.</li> <li>- ARCADIA and UDAIR available to process blood/plasma/serum, urine and liquor (CSF).</li> </ul>
2	Istituto Nazionale Tumori- IRCCS G. Pascale	IT	<ul style="list-style-type: none"> <li>- Coordination of a Phase 2 clinical trial with Tocilizumab (monoclonal anti-IL-6) for COVID-19 infected patients. (academic nationwide study approved by the Italian Drug Regulatory Agency with 300 patients in addition to an observational study on open label participants).</li> </ul>
3	Biomedical Primate Research Centre	NL	<ul style="list-style-type: none"> <li>- Macaque model for SARS-CoV-2 in development.</li> <li>- Ongoing vaccine study from a third party to study vaccine safety and efficacy in a rhesus macaque model.</li> <li>- COVID-19 Macaque models (Cyno and Rhesus) for vaccine and drug studies with license in place.</li> <li>- COVID-19 Marmoset models available (license under approval)</li> <li>- Capacity to analyse viral load (PCR, culture), immunological and clinical parameters (including CT scans) in addition to providing pathology reports (gross pathology and histopathology).</li> <li>- Lung lesions can be followed real-time using in house (pet)-CT in addition to telemetry (home cage activity and body temperature) and virological and immunological assays.</li> </ul>
			<p>Support for the COVID-19 effort with reagents and equipment. Including:</p> <p><b>Bioprocess Development</b>                      Upstream Process Development                      Molecular Biology                      Cell Line Development                      Bioprocess optimization and scale-up:                      Expression &amp; Culture System                      Bioreactor systems (e.g. stirred-tank, wave bioreactors)                      Bioreactor types (glass; stainless-steel; single-use)                      Operation modes (batch, fed-batch, perfusion and continuous)                      Downstream Process Development – DSP                      Purification of secreted and intracellular viral particles                      Ultracentrifugation                      Membrane technology: ÄKTA Crossflow – scalable, ultrafiltration systems                      Chromatography: ÄKTA Platform Technology (Explorer, Avant, Pure and Pilot)</p> <p><b>Analytical Services (GMP)</b>                      Development, Optimization and Implementation of Analytical Methods                      Post development and analytical method transfer for QC                      Analysis of cell and viral banks                      Batch certification                      Quality Control Testing                      Evaluation of chemical, biological, microbial, viral and endotoxin contamination                      Techniques and equipment available:                      Common Molecular Biology (SDS-PAGE, qPCR, Western Blot, ELISA...)                      Restriction enzyme analysis</p>

4	IBET - Instituto de Biología Experimental e Tecnológica	PT	<p>Aggregation and refolding (SEC and RP chromatography)  Genomic integrity  Physical/total particles Titer (Spectrophotometry, qPCR)  Cell based assays for Functional and Potency determination:  TCID50  plaque assay  reporter gene assays  cell viability and proliferation  apoptosis and cell death,  antibody dependent cell mediated cytotoxicity (ADCC)  signaling and secretion.  Detection of adventitious agents  Process related impurities and bioburden (Residual/Host Cell protein and DNA; Benzonase, Triton, BSA...)</p> <p><b>Mass Spectrometry Services</b>  Protein/peptide identification, including Intact Mass Determination  Antibody Characterization/MAM</p> <p>High-throughput Quantitative Proteomics – SWATH analysis, MRM-HR and label-based quantification (e.g. iTRAQ)</p> <p>Fragmentation Profile  Intact Protein Measurement  Small Molecule Mass Measurement  Small Molecule Identification &amp; Quantification  MALDI Imaging (under development)</p> <p><b>Advanced 3D cell Models (for Drug Development studies)</b>  Neural  Hepatic  Cardiac  Cancer (Breast, Lung)  Immuno-oncology cell models (including immune component)</p> <p><b>cGMP Manufacturing of Biopharmaceuticals (at Genibet):</b>  Process Development (together with iBET)  Biopharmaceutical Production (Drug Substance and Drug Product)  Production of Master and Working Cell Bank / Virus Seed Stock Production  Fill and Finish  Quality Control and Quality Assurance Services  cGMP Manufacturing portfolio includes:  Polysaccharides  Recombinant Proteins  Plasmid DNA  In vitro transcribed RNA  Virus and Virus Like Particles – including viral banks  Cell Banks  Live Microbial Products</p>
5	Testa Center	SE	<ul style="list-style-type: none"> <li>- Availability of production equipment for protein production in pilot scale.</li> <li>- Scale up expertise for both upstream and downstream processes.</li> <li>- Cell culture capabilities from up to 500L (pilot scale) single-use bioreactors for mammalian cells and 50L (single-use) for microbial cultures. In analogy, the harvest and protein purification capabilities range from lab bench scale instrumentation to full production scale chromatography instrumentation. The facility is non-GMP, enabling technical runs for scalability or generation of larger amounts of material for research.</li> </ul>
			<ul style="list-style-type: none"> <li>- Human antibody development using phage display technology from large combinatorial in-house synthetic antibody libraries.</li> </ul>

6	Lund University	SE	<ul style="list-style-type: none"> <li>- Extensive experience in development of antibodies from patient derived antibody libraries using phage display technology.</li> <li>- Characterization of antibody binding kinetics and affinity using Surface Plasmon Resonance Technology. High throughput capabilities are available (Bruker MASS-16).</li> <li>Characterization of antibody binding capabilities to cells using high throughput flow cytometry (iQue Plus).</li> <li>- Mass spectrometry analysis with a particular focus on post-translational modifications (e.g. Thermo Q Exactive HF-X mass spectrometer with uHPLC).</li> <li>- Spatial omics analysis using Digital Spatial Profiler technology (nanostring GeoMx).</li> <li>- Multiplexed (up to 800-plex) analysis of RNA, DNA and protein (nanostring nCounter technology).</li> </ul>
7	SCILIFE Labs	SE	<ul style="list-style-type: none"> <li>- New rapid color detection method for SARS-CoV-2 (iLACO).</li> <li>- Array based serologic identification of COVID-19 recovered individuals.</li> <li>- Developing inhibitors of the main protease of SARS CoV2 and raising antibodies against the spike protein.</li> <li>- <b>COVID-19 Action Plan in place:</b> 1) SciLifeLab/KAW Program for SARS-CoV-2 virus testing, and 2) SciLifeLab Open Call for Proposals, to battle the epidemic.</li> </ul>
8	Mario Negri	IT	<ul style="list-style-type: none"> <li>- Ongoing study on the inhibition of SARS-CoV-2 replication through the inhibition of Cyclophilin A.</li> <li>- Study exploring Cyclophilin A as a possible biomarker of patients at high risk of developing severe pneumonia.</li> <li>- Design, synthesis and characterization of peptides aimed at inhibiting SARS-CoV-2 entry into the host cells.</li> <li>- Establishment of a biochemical platform to evaluate binding to ACE2 of potential new drugs.</li> <li>- Participation to the Regione Lombardia Crisis Unit for the support of the Emergency Rooms and Intensive Care Units.</li> <li>- Study on the pharmacological supportive therapy in patients under ventilatory treatment.</li> <li>- Evaluation of the effect of early CPAP treatment on subsequent need for invasive ventilation.</li> <li>- Creation of a registry and a network of hospital centers to monitor clinical and epidemiological characteristics of patients not requiring intensive care.</li> </ul>
9	Rīga Stradiņš University, Institute of Microbiology and Virology (MVI)	LV	<ul style="list-style-type: none"> <li>- Study of the biological properties of SARS-CoV-2 by detecting the presence of virus genomic sequence in different COVID-19 patients' biological material in time of disease progression and 10 days after, as well as by determining cytokine and chemokine level; anti-human immunoglobulin class antibodies against different recombinant SARS-CoV, MERS-CoV and SARS-CoV-2 antigens using SMIA; patients' immunological status by measuring immunocompetent cells population and by analysing research and clinical data to predict the spread of SARS-CoV-2 worldwide.</li> </ul>
10	Latvian Biomedical Research and Study Centre (BMC)	LV	<ul style="list-style-type: none"> <li>- Vaccine study against SARS-CoV-2 development and whole genome sequencing of the virus.</li> </ul>
11	Latvian Institute of Organic Synthesis (IOS)	LV	<ul style="list-style-type: none"> <li>- Integrated research platform to perform discovery and pre-clinical development of new therapeutics as well as to support development of new strategies to reduce risks of COVID-19 associated complications and shortening of rehabilitation period. This includes medicinal chemistry, structural biology and pre-clinical pharmacology research as well as ADME tests.</li> <li>- Biological samples and clinical data from COVID-19 cases available for Latvian population. <ul style="list-style-type: none"> <li>• Sequencing of SARS-CoV-2 virus samples from infected cases in Latvian population to follow virus variability associated with clinical disease outcomes.</li> <li>• Development of vaccine against SARS-CoV-2 based on virus epitope presentation on virus-like particles.</li> </ul> </li> </ul>
12	San Raffaele University Hospital	IT	<ul style="list-style-type: none"> <li>- Key elements of Preparedness for Pandemic Coronavirus Disease 2019 (COVID-19) in Nuclear Medicine Units.</li> </ul>
13	Alternative Energies and Atomic Energy Commission (CEA)	FR	<ul style="list-style-type: none"> <li>- non-human primate COVID-19 Challenge Model.</li> </ul>
14	Institute of Biomedicine of Seville (IBIS)	ES	<ul style="list-style-type: none"> <li>- Expertise in influenza vaccines</li> <li>- Ongoing multicenter study of coronavirus disease 2019 (COVID-19) in Solid Organ Transplant Recipients, led by Dr. Elisa Cordero, with the support of the Spanish Network for the Research in Infectious Diseases (REIPI, ISCIII). This Project has also been sent to the Immunocompromised Hosts Group (ESGICH) of the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) to integrate other European research groups.</li> </ul>

			- SARS-CoV-2 viral load in respiratory airways and blood as factor associated to the clinical outcomes in COVID-19 adult patients, led by Dr. Javier Sánchez Céspedes, with the support of the Spanish Network for the Research in Infectious Diseases (REIPI, ISCIII).
15	Vall d'Hebron Research Institute (VHIR)	ES	- Expertise in fast diagnosis of COVID-19.
16	Hospital La Paz Institute for Health Research (IdiPAZ)	ES	- High level isolation unit; expert in pathogenic emergencies.
17	Fundacion Jimenez Diaz Institute for Medical Research (IIS-FJD)	ES	- BALMYS-19 project (BATTLE against COVID-19 using Mesenchymal Stromal cells) - Support and advice protocol for urgent care of SUMMA 112 to epileptic seizures at home during the pandemic COVID-19 - Statins after admission for positive COVID-19. - Epidemiological study of respiratory infections due to the new Coronavirus (SARS-CoV-2) in the pediatric population. - Investigating Prognostic factors that condition cardiovascular events after a viral respiratory infection. - Adendum Patients COVID-19 positive, and in the follow-up the need for oxygen, non-invasive mechanical ventilation, ICU admission or orotracheal intubation. - Smartphone-based monitoring of mental health and psychosocial repercussions of the COVID-19. - STOP-Coronavirus: clinical, immunological, genomic, virological and bioethical factors of COVID-19. - Morphological and molecular characterization of lung in COVID-19 disease. Correlate with immune response.
18	Wageningen University and Wageningen Bioveterinary Research (WBVR)	NL	- BSL 3 animal facilities, able to perform pre-clinical studies with laboratory species (mouse, hamster) and other species (ferret, pig). - BSL 3 laboratory facilities for virological analysis, COVID-19 related diagnostic procedures available, immunology and pathology facilities for various species.
19	University of Ljubljana	SI	- <b>New antiviral compounds development strategy against SARS-CoV-2:</b> Serine protease inhibitors Cysteine protease inhibitors - Investigations of molecular interactions between proteins and other molecules: Development of a methodology that is also applicable to other molecular systems, such as COVID-19. Design and construct of recombinant proteins useful for analytical or diagnostic applications. Development of innovative ways to prevent interactions by using small protein domains that can bind lipid molecules. In addition, model systems of lipid membranes are being developed and used. Exploration of protein structure by introducing new methods, e.g. cryo-electron microscopy.  - Characterization of pharmaceutical drugs known to affect COVID-19: study the effect of ibuprofen and other NSAIDs in the exacerbation the COVID-19 disease course ? - Immunological studies of SARS-CoV-2. - Development of innovative innate immune agonists as vaccine adjuvants.
			- Severe COVID-19 infection: prevalence, clinical characteristics and outcomes. - Extracorporeal membrane oxygenation for COVID-19 Acute Respiratory Disease. - Biomarkers identification to stratify severity in COVID-19 patients (Corona-BIO). - A Phase 3 Randomized Study to evaluate the Safety and Antiviral Activity of Remdesivir (GS-5734TM) in Participants with Severe COVID-19. - A Phase 3 Randomized Study to Evaluate the Safety and Antiviral Activity of Remdesivir (GS-5734TM) in Participants with Moderate COVID-19 Compared to Standard of Care Treatment. - Comparative study of the incidence, presentation, clinical evolution and prognostic factors of SARS-Cov-2 infection in people with or without HIV infection: case and control studies. - Identification and isolation of IgG Anti COVID-19 to produce antibodies as a treatment. - International registry of COVID-19 treatments and malignant arrhythmias. - Seroprevalence study of SARS-CoV-2 in the hospital context: immunological dynamics in one year follow-up. - Determination of the Infectivity of SARS-CoV-2 in renals cells. - MIT Open Voice COVID-19 AI Dataset. - Outcomes of surgery in COVID-19 infection: international cohort study (CovidSurg). - Pre-exposure profilaxis with hydroxychloroquine in high risk medical people durin the COVID-19 pandemy.

20	August Pi i Sunyer Biomedical Research institute (IDIBAPS)	ES	<ul style="list-style-type: none"> <li>- Creation of a digital tool to optimise the management of COVID-19 patients.</li> <li>- Associated behaviour to a less emotional uncomfort during COVID-19 pandemy confinement.</li> <li>- SARS-CoV-2 and Influenzavirus co-infection. Do we have to screen for COVID-19 in an Influenza virus infection case?</li> <li>- Severe respiratory morbidity in COVID-19: susceptibility from early life? A prospective case-control study among severe vs. mild cases.</li> <li>- Randomised, double blind, controlled by placebo and multicentric study to evaluate the safety and efficacy of Tocilizumab in patients with severe pneumonia and COVID-19 disease.</li> <li>- Post exposure prophylaxis with hydroxychloroquine for household contacts of COVID-19 cases.</li> <li>- Immune response gene variability and severe infection by SARS-CoV-2 prediction.</li> <li>- Adaptative study Phase 2/3, randomised, double blind, controled as placebo to evaluate the efficacy and safety of Sarilumab in COVID-19 patients in hospitals</li> <li>- Risk factors, personalised pronostic and follow-up of COVID-19 patients in the Spanish Intensive Care units: CIBERESUCICOVID.</li> <li>- Predictive Value of ROTEM Analysis in severe COVID-19 infection.</li> <li>- Timing of intubation in ARDS COVID-19 patients.</li> <li>- Randomised pilot study to use convalescent plasma in COVID-19 patients.</li> <li>- Darunavir/cobicistat/TAF/FTC post-exposure prophylaxis measure for close contacts of patients with COVID-19.</li> <li>- Pre-clinical development of innovative mRNA/MVA vaccines strategies against SARS-CoV-2</li> <li>- Echocardiograph follow up of pregnant women with COVID-19 infection. Associated risks with severe infection and pregnancy trimester.</li> <li>- Short, mid and long-term effect of COVID-19 disease in the cardiovascular system.</li> </ul>
21	IRCCS ISMETT and Fondazione Ri.MED	IT	<ul style="list-style-type: none"> <li>- ECMOCARD: international multicenter retroprospective observational clinical study. Principal Investigator: University of Queensland-Australia. Study to evaluate the treatment with ECMO (extracorporeal membrane oxygenation) in patients with COVID-19.</li> <li>- Multicenter study on the efficacy and tolerability of tocilizumab in the treatment of patients with COVID-19. This a national multicenter prospective observational clinical study. Principal Investigator: Istituto Nazionale dei Tumori di Napoli.</li> <li>- COVID-19 and SOTR: international multicenter prospective observational clinical study. Principal Investigator: University Hospital Virgen del Rocío Spain. Study to evaluate the effect of COVID-19 in transplanted patients.</li> <li>- CARDIO-COVID RISK: national multicenter prospective observational clinical study. Principal Investigator: IRCCS, ISTITUTO AUXOLOGICO ITALIANO, Università Milano Bicocca e Rete Cardiologica IRCCS. Study to evaluate the cardiovascular risk in COVID-19 patients.</li> <li>- 20 ICU beds to treat severe COVID-19 patients.</li> <li>- ECMO for patients with severe COVID 19-pneumonia.</li> <li>- Additional services available: <ul style="list-style-type: none"> <li>Bioinformatics</li> <li>Bioengineering</li> <li>Biophysics and Structural Biology</li> <li>Computer Aided Drug Design</li> <li>High Throughput screening</li> <li>Genomics</li> <li>Proteomics</li> <li>Magnetic Resonance Imaging</li> <li>GMP production</li> </ul> </li> </ul>
22	Istituto Superiore di Sanità	IT	<ul style="list-style-type: none"> <li>- Coordinates a surveillance system integrating microbiological and epidemiological data from Italian regions and from the ISS national reference laboratory for SARS-CoV-2 that confirm COVID-19 diagnosis and perform genomic analysis.</li> <li>- Working groups on different topics have been created (information and communication, education and training, medical devices, infection control, drugs, immunology, epidemiology.</li> <li>- External triage structure to screen all patients entering the institution; design specific procedures to manage people flow in and out the hospital.</li> </ul>

			<ul style="list-style-type: none"> <li>- Design of different clinical protocols to assist patients with special needs and in general ensuring all the necessary clinical assistance; evaluate the epidemiology of the infection by performing rapid tests to both clinicians and cancer patients.</li> <li>- Study genetic variability of SARS-CoV-2 in development.</li> </ul>
<b>23</b>	<b>National Center for Infectious and Parasitic Diseases</b>	<b>BG</b>	<ul style="list-style-type: none"> <li>- Genetic virology tests</li> <li>- National reference services in the diagnostics of the infected persons.</li> </ul>
<b>24</b>	<b>Ramon &amp; Cajal Health Research Institute (IRYCIS)</b>	<b>ES</b>	<ul style="list-style-type: none"> <li>- Clinical trial to assess corticosteroid efficacy in the treatment of COVID-19 subgroup of patients.</li> <li>- Study of clinical, genetic and metabolic factors of patients aimed at giving personalized treatment.</li> <li>- Computational models applied to the epidemiological study of the COVID-19 disease and as a predictive tool to design COVID-19 patient management.</li> <li>- Development of aptamers for therapeutic purposes of COVID-19.</li> <li>- Multi-approach epidemiology, diagnosis and therapy by drug repositioning.</li> <li>- Building of a RedCap data base for COVID-19 patients, including clinical and molecular data.</li> </ul>