

# COST Actions against **COVID-19**

An interdisciplinary network



## Introduction

Since March 2020, multiple COST Actions have approached the COST programme wanting to collaborate with other Actions on COVID-19 research. In response to these requests and to make the networking process smoother, COST has gathered together in this booklet details of all of the Actions wishing to connect and collaborate. As the full consequences of the current pandemic are yet unknown and the threat of a future pandemic is always present, this network offers considerable potential in mobilising experts and tackling challenges as they arise.

Any Actions wishing to be added to the list can still do so by contacting the Science Officer coordinating this initiative, [Dominique Vandekerchove](#).

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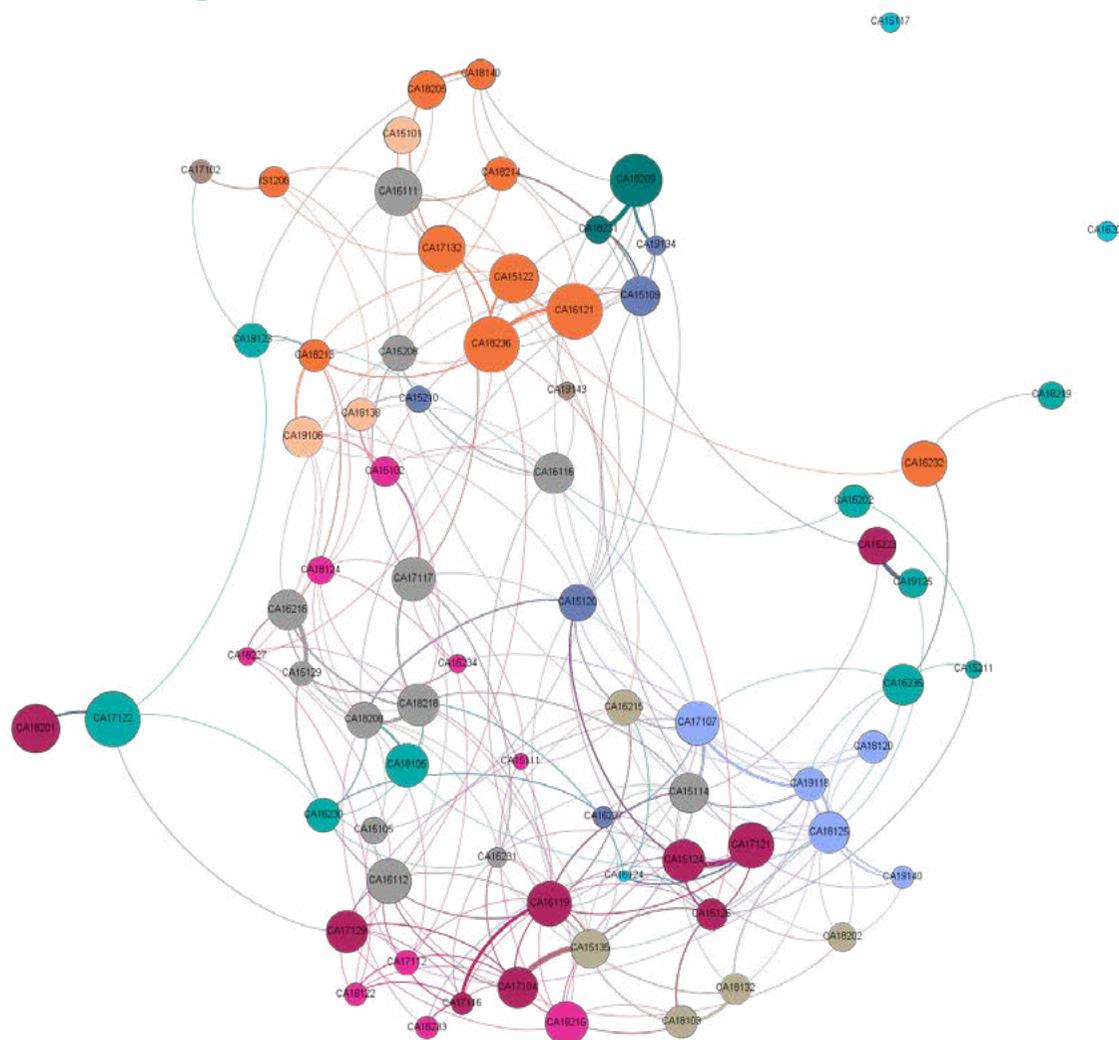
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## Actions collaborating on COVID-19



Health sciences	16.22%
Sociology	13.51%
Biological sciences	12.16%
Agriculture and environment	12.16%
Clinical medicine	12.16%
Mathematics and computing	6.76%
Chemical sciences	6.76%
Materials engineering	6.76%
Psychology	4.05%
Physical sciences	4.05%
Law	2.7%
Linguistics	2.7%

Colours legend: Percentage shows relative representation in the network, i.e. 20% of the participating Actions have the core scientific field of Health Sciences.

Links between the Actions represent MC members or substitutes being in those Actions. The thicker the lines the higher the number of shared MC members or substitutes.

The size of the bubble is proportionate to the size of the Management Committee.



## Overarching fields

**CA15105** European Medicines Shortages Research Network - addressing supply problems to patients (Medicines Shortages)

**CA18218** European Burden of Disease Network

**CA18208** Novel tools for test evaluation and disease prevalence estimation

**CA17117** Towards an International Network for Evidence-based Research in Clinical Health Research (EVBRES)

**CA16231** European Network on Vaccine Adjuvants (ENOVA)

**CA16216** Network on the Coordination and Harmonisation of European Occupational Cohorts (OMEGA-NET)

**CA16116** Wearable Robots for Augmentation, Assistance or Substitution of Human Motor Functions

**CA15114** Anti-Microbial Coating Innovations to prevent infectious diseases (AMICI)

**CA15129** Diagnosis, Monitoring and Prevention of Exposure-Related Noncommunicable Diseases (DiMoPEX)

**CA15208** Rationing - Missed Nursing care: An international and multidimensional problem (RANCARE)

**CA16112** Personalized Nutrition in aging society: redox control of major age-related diseases

**IS1206** Femicide across Europe

**CA18236** Multi-disciplinary innovation for social change

**CA18214** The Geography of New Working Spaces and the Impact on the Periphery

**CA18213** Rural NEET Youth Network: Modeling the risks underlying rural NEETs social exclusion

**CA18205** Worlds of Related Coercions in Work (WORCK)

**CA18140** People in Motion: Entangled Histories of Displacement across the Mediterranean (1492-1923) (PIMo)

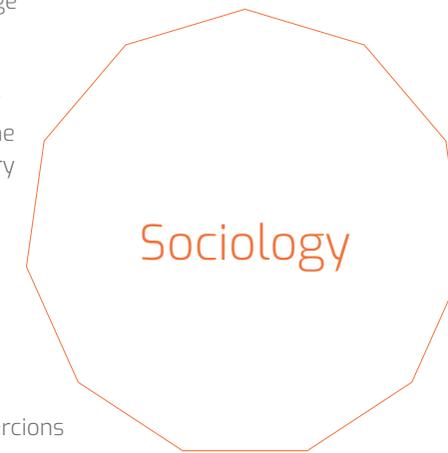
**CA15122** Reducing Old-Age Social Exclusion: Collaborations in Research and Policy (ROSEnet)

**CA16111** International Ethnic and Immigrant Minorities' Survey Data Network

**CA16121** From Sharing to Caring: Examining Socio-Technical Aspects of the Collaborative Economy

**CA16232** European Energy Poverty: Agenda Co-Creation and Knowledge Innovation (ENGAGER)

**CA17132** European network for argumentation and public policy analysis (APPLY)





**CA17129** Catalysing transcriptomics research in cardiovascular disease (CardioRNA)

**CA15124** A new Network of European BioImage Analysts to advance life science imaging (NEUBIAS)

**CA19125** EPIgenetic mechanisms of Crop Adaptation To Climate cChange (EPI-CATCH)CATCH)

**CA15211** Atmospheric Electricity Network: coupling with the Earth System, climate and biological systems (ELECTRONET)

**CA17121** Correlated Multimodal Imaging in Life Sciences (COMULIS)

**CA15126** Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare (MOBIEU)

**CA19123** Protection, Resilience, Rehabilitation of damaged environment (PHOENIX)

**CA16202** International Network to Encourage the Use of Monitoring and Forecasting Dust Products (inDust)

**CA17116** International Network for Translating Research on Perinatal Derivatives into Therapeutic Approaches (SPRINT)

**CA15223** Modifying plants to produce interfering RNA (iPLANTA)

**CA18219** Research network for including geothermal technologies into decarbonized heating and cooling grids

## Agriculture and environment

**CA16230** Combatting anthelmintic resistance in ruminants (COMBAR)

**CA17104** New diagnostic and therapeutic tools against multidrug resistant tumors (STRATAGEM)

**CA16119** In vitro 3-D total cell guidance and fitness (CellFit)

**CA18201** An integrated approach to conservation of threatened plants for the 21<sup>st</sup> Century (Conserveplants)

**CA16235** Performance and Reliability of Photovoltaic Systems: Evaluations of Large-Scale Monitoring Data (PEARL PV)

**CA18105** Risk-based meat inspection and integrated meat safety assurance (RIBMINS)

**CA17122** Increasing understanding of alien species through citizen science (ALIEN-CSI)

## Biological sciences



**CA18233** European Network for Innovative Diagnosis and Treatment of Chronic Neutropenias

**CA15111** European Network on Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (EUROMENE)

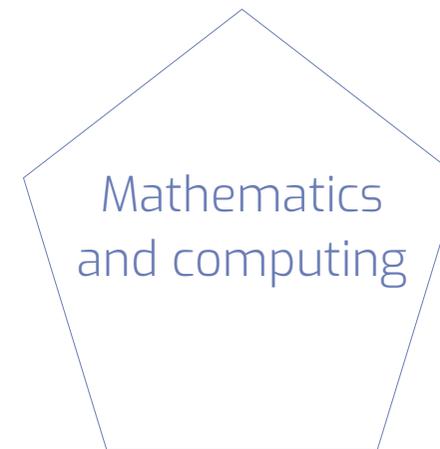
**CA15109** European Cooperation for Statistics of Network Data Science (COSTNET)

**CA18227** The Core Outcome Measures for Food Allergy (COMFA)

**CA16102** European Network on Individualized Psychotherapy Treatment of Young People with Mental Disorders (TREATme)

**CA19134** Distributed Knowledge Graphs

**CA15120** Open Multiscale Systems Medicine (OpenMultiMed)



**CA18216** Network for Research in Vascular Ageing (VascAgeNet)

**CA17112** Prospective European Drug-Induced Liver Injury Network (DILI)

**CA18124** European Sexual Medicine Network

**CA18122** European Cholangiocarcinoma Network

**CA16227** Investigation and Mathematical Analysis of Avant-garde Disease Control via Mosquito Nano-Tech-Repellents (IMAAC)

**CA15210** European Network for Collaboration on Kidney Exchange Programmes (ENCKEP)



**CA15135** Multi-target paradigm for innovative ligand identification in the drug discovery process (MuTaLig)

**CA17107** European Network to connect research and innovation efforts on advanced Smart Textiles (CONTEXT)

**CA18202** Network for Equilibria and Chemical Thermodynamics Advanced Research (NECTAR)

## Chemical sciences

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**CA19140** Focused Ion Technology for Nanomaterials (FIT4NANO)

## Materials engineering

**CA18120** Reliable roadmap for certification of bonded primary structures

**CA18132** Functional Glyconanomaterials for the Development of Diagnostics and Targeted Therapeutic Probes (GlycoNanoProbes)

**CA18103** Innovation with Glycans: new frontiers from synthesis to new biological targets (INNOGLY)

**CA19118** High-performance Carbon-based composites with Smart properties for Advanced Sensing Applications (EsSENce)

**CA18125** Advanced Engineering and Research of aeroGels for Environment and Life Sciences (AERoGELS)



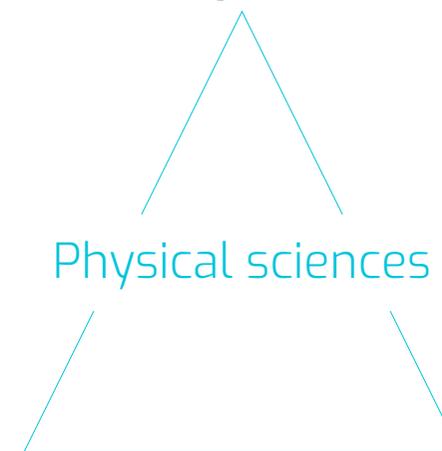
**CA15101** Comparative Analysis of Conspiracy Theories (COMPACT)



**CA19106** Multi-Sectoral Responses to Child Abuse and Neglect in Europe: Incidence and Trends (Euro-CAN)

**CA18138** Research Innovation and Sustainable Pan-European Network in Peripartum Depression Disorder

**CA15117** Cosmology and Astrophysics Network for Theoretical Advances and Training Actions (CANTATA)



**CA16201** Unraveling new physics at the LHC through the precision frontier (ParticleFace)

**CA16124** Brillouin Light Scattering Microspectroscopy for Biological and Biomedical Research and Applications (BioBrillouin)



CA17102 POLICE STOPS

Law

CA19143 Global Digital Human Rights Network (GDHRNet)

CA18209 European network for Web-centred linguistic data science (NexusLinguarum)

Linguistics

CA18231 Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation



IS1206

## Femicide across Europe

### Summary

Femicide is a leading cause of premature death for women globally, distinct from homicide and other forms of gender violence. Femicide research is abundant in the United States. In Europe, agencies have funded initiatives on gender and violence but not specifically on femicide. Research is in its infancy and uncoordinated. It requires an interdisciplinary approach, focusing on victim and perpetrator, upon cultural (e.g. "honour killings") and psychological causes, and on societal issues. The Action will establish the first pan-European coalition on femicide with researchers who are already studying the phenomenon nationally,

in order to advance research clarity, agree on definitions, improve the efficacy of policies for femicide prevention, and publish guidelines for the use of national policy-makers. Different forms of publications will emerge from the Action, such as articles, books, newsletters and an Action internet site for the use of researchers, practitioners and policy-makers. Workshops will be held annually, adding advocates and researchers each year, and an Action Conference will be held to attract stakeholders until the Action will organise a pan-European conference to launch the idea of a European Observatory on femicide.

### Offered expertise to the COVID-19 network

COST Action IS1206 has ended on April 8th, 2017, but is available to provide expertise on femicide.

It is interested in the impact of COVID-19 on domestic violence.

The Action Chair is author of two articles on COVID-19 and femicide : ["For Women, Lockdown Can Be More Dangerous Than the Coronavirus"](#) and ["Two Global Pandemics: Femicide and COVID-19"](#).

**Contacts:** Prof. Shalva Weil ✉

CA15101

## Comparative Analysis of Conspiracy Theories (COMPACT)

### Summary

Conspiracy theories play an increasingly visible role in the political life in Europe, not least because the EU itself is often viewed as a vast conspiracy. Although sometimes seen as harmless entertainment, conspiracy theories can contribute to extremism within particular regions, as well as fuelling tensions between nations. They can erode trust in democratic institutions and the media. Despite the increasing prominence of conspiracy theories in the age of the internet, there has been little systematic research on where they

come from, how they work and what can be done about them. The aim of this Action is to develop an interdisciplinary and international network to provide a comprehensive understanding of conspiracy theories.

The propagation of conspiracy theories can harm the public response towards pandemics and lower trust in public health authorities and/or scientific approaches. This Action helps in better understanding the nature and dissemination of these theories.

### Offered expertise to the COVID-19 network

COMPACT would be happy to provide expertise on conspiracy theories, misinformation and fake news in the pandemic.

This Action on Conspiracy Theories also deals with conspiracy theories in health. The Action is finishing on September 30th, 2020, but has requested an

extension to be able to organise the stakeholders meeting they could not hold in March. COMPACT would be able to offer an interesting insight on the viral spread of fake news related to COVID. A peripheral topic, but relevant as it also has a concrete impact on the way people choose to behave and therefore on public health.

**Contacts:** Prof. Peter Knight ✉

CA15105

## European Medicines Shortages Research Network - addressing supply problems to patients (Medicines Shortages)

### Summary

The problems created by supply shortages of medicines have been widely reported by healthcare professionals and patients over recent years, and acknowledged at the European level by the European Medicines Agency and European Commission. The cited causes are multifaceted ranging from production disruptions, natural disasters, discontinuations as well as difficulties created by various legal, trade and pricing frameworks.

Healthcare professionals require access to reliable and up-to-date information about the unavailability of a medicine in order that they can

treat the patient in the best way possible. The significant patient impact because of the lack of medication, in terms of safety and management of their condition, will be researched. In addition the forced substitution to an alternative product or requirement to produce a medicine may increase the risk of error, stress and overall cost to the healthcare system.

According to the largest pan-European survey of healthcare professionals yet conducted on the topic, the products mainly affected in the European hospital sector are antimicrobials and oncology products used for large populations.

### Offered expertise to the COVID-19 network

COST Action CA15105 encourages systematic sharing of information and research about past, ongoing and future shortages of medicines and nutritional products. It aims to respond to clinical, financial and quality of life interests, to achieve analytical clarity on disruption causes, to simulate decision making in medicines production and trade, to highlight restrictive legal and economic frameworks, to disclose disincentives in the supply chain such as conflicts of interest or problematic

cost-benefit ratios, and to reflect on best coping practices.

In light of the ongoing COVID pandemic, CA15105 seeks to cooperate in finding multidisciplinary solutions to mitigate and prevent problems caused by disrupted global supply chains, higher demand, economic hardships and new epidemiological challenges which can affect supplies of medicines and pose threat of medicines' shortages - now

and in the "new normal" economies and health care systems.

Multiple forms of cooperation with other COST Actions are possible, including e.g. the following aspects:

- Finding effective ways to communicate on drug shortages and create early warning systems - on the level of governmental agencies, pharmacies and health care facilities, citizens and patients;

- Exploring the possibility of building mathematical models which could help to predict and assess probability of shortages of medicines;

- In-depth studies of economic and legislative factors, including pandemic-stimulated crises, parallel trade issues, national and EU legislation, foreseen changes in functioning of health care units of various types, etc;

- Joint applications for research grants;

- Joint publications of results of studies.

**Contacts:** Prof. Isabelle Huys ✉  
Dr Roberto Frontini ✉

Prof. Claude Farrugia ✉  
Dr Tomasz Bochenek ✉

CA15109

## European Cooperation for Statistics of Network Data Science (COSTNET)

### Summary

- Statistical inference (on networks)
- Probabilistic modelling (of network)
- Epidemiology (of infectious diseases)

### Offered expertise to the COVID-19 network

COSTNET is involved in Network Data Science and some participants are involved in governmental bodies advising their governments on the outbreak:

- Statistical Modelling: [Prof. Goeran Kauermann](#) (LMU, Munich) would like to work on Nowcasting deadly infections and surveillance System to detect regional outbreaks. He is looking for Epidemiology/public health management expertise;
- Modelling and inference of infectious disease: [Prof. Ernst C. Wit](#) Action Chair (USI, Lugano, Switzerland) is working on estimation of infection fatality Rate in the early stages of an epidemic and biostatistical modelling and analysis;
- Prof. Mirjam Kretzschmar is working on modelling to assess the effectiveness of contact tracing for COVID-19 and on individual based modelling or

social networks and spread of COVID-19 in the context of social distancing measures;

- [Prof. Lasse Leskelä](#) and Prof. Mikko Kivelä are working on COVID-19 modelling in Finland are already sharing ideas on these matters with several international research groups via direct informal channels, but perhaps a COST-coordinated central effort could bring added value:
  - Incorporating population movement data (from telecom operators, road traffic sensors, statistics offices) to compartmental and agent-based SEIR-type epidemic models, to derive more accurate, e.g. municipality-level, predictions of epidemic spread within a country, and to analyze effects of movement restrictions. Combining such traffic data

from multiple sources requires new types of statistical models and methods;

- Developing new multipartite epidemic models where schools, workplaces, households are explicitly modelled. The challenge is to develop models with suitable spatial and temporal granularity, so that the model parameters can be inferred with reasonable confidence, and the input data needed to fit such models do not compromise the privacy of individuals;

- [Prof. Remco van der Hofstad](#) and [Prof. Nelly Litvak](#) (University of Eindhoven) are looking into the use of mobility data from cell phones to investigate the effect of restriction measures on the spread of infections, as well as on how to design the optimal lock-down regions that minimize the spread of a disease given a certain number of

infections throughout the country.

They only have Dutch data (and only up to 2019), yet this is still very interesting, and they're collaborating with Mezero, a company that has the data, as well as Ilionix, a data science company that is creating a dashboard to monitor the spread of disease. Also, Hans Heesterbeek, one of the best epidemiologists in the Netherlands, has been closely involved. They are in touch with Michele Vespe from Eurostat to compare the activities;

- [Prof. Nuno Pombo](#) (University of the Beira Interior, Portugal) is offering his expertise in software engineering, mHealth, and predictive algorithms;
- [Prof. Gesine Reinert](#), Action vice chair (Oxford University) is looking into the spread of epidemics on networks and the effect of contact tracing in collaboration with Frank Ball, Thomas House and others.

**Contacts:** [Prof. Tom Britton](#)   
[Prof. Fredrik Liljeros](#) 

[Prof. Ernst Wit](#)   
[Prof. Mirjam Kretzschmar](#) 



CA15111

## European Network on Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (EUROMENE)

### Summary

Myalgic Encephalomyelitis/Chronic Fatigue Syndrome - ME/CFS - is a disabling condition of unknown aetiology that affects individuals of all ages. Disease is causing significant social and economic burden.

### Offered expertise to the COVID-19 network

EUROMENE has a Clinical Group active on the SARS-CoV-2 and COVID-19 in association with ME/CFS – post-SARS-CoV-2 fatigue. Contacts for this Group are [Prof. Jerome Auther](#) and [Prof. Jose Alegre-Martin](#).

CA15114

## Anti-Microbial Coating Innovations to prevent infectious diseases (AMICI)

### Summary

This Action got awarded a COST Innvoators' Grant, and works on innovative material coatings which kill bacteria and viruses like

### Offered expertise to the COVID-19 network

AMICI develops materials for surfaces that "kill" bacteria and viruses (including coronavirus). Contacts for this Action are [Pete Askew](#) (commercial lab) or [Prof. Bill Keevil](#) (University of Southampton).

A COST Innovators Grant (CIG) was granted to this Action.



CA15117

## Cosmology and Astrophysics Network for Theoretical Advances and Training Actions (CANTATA)

### Summary

"CANTATA" gathers a team of European leading experts in gravitational physics and cosmology around the timely goal of investigating the extension of Einstein's theory of General Relativity. A program including complementary aspects of theoretical physics, cosmology and astrophysics

is put forward which is set to consider, in a coordinated and multidisciplinary way, the build up self-consistent models at the various scales and, in principle, to find out some "crucial feature" capable of confirming or ruling out Extended Theories of Gravity with respect to General Relativity.

### Offered expertise to the COVID-19 network

CANTATA consists of a group of top theoretical physicists. Anything to do with data treatment can fit their expertise (or at least that of WG3).

They have a lot of experience in the statistical treatment of data, and graphics & plotting, as well

as simulations and forecasts, and consider working in other fields of expertise as an opportunity to make themselves useful in the pandemic context and broaden their horizons.

Contacts: Dr Ruth Lazkoz Saez [✉](#)

CA15120

## Open Multiscale Systems Medicine (OpenMultiMed)

### Summary

Multiscale systems medicine assumes that the growing amounts of highly diverse (multiscale) data relevant to human health and disease are the key to address current and future medical

challenges. Transforming these data into effective and economical medical solutions requires appropriate means for multiscale data modelling, integration and analysis.

### Offered expertise to the COVID-19 network

Many groups within OpenMultiMed are working on COVID-19 research: the Chair, Harald Schmidt, WG leader Jan Baumbach, Italian member, Paolo

Tieri. One goal is to generate hybrid virus host networks to identify targets for drug repurposing and possible pathomechanisms.

Contacts: Prof. Harald Schmidt [✉](#)



CA15122

## Reducing Old-Age Social Exclusion: Collaborations in Research and Policy (ROSEnet)

### Summary

Social exclusion can be a particularly damaging consequence of methods of pandemic management. This Action studies the nature of social exclusion and ways to alleviate exclusion.

### Offered expertise to the COVID-19 network

Social exclusion can be a particularly damaging consequence for older people in methods of pandemic management. CA15122 ROSEnet studies the nature of social exclusion and the ways to alleviate it. This Action has been engaged in conducting a preliminary analysis of policy/practice responses to the pandemic and the multi-level interplay between policy and exclusionary experiences in older age. Action members are engaged in drafting policy messages (for example see "[Combating exclusions and ageism for older people during the COVID-19 pandemic](#)"),

international guidelines and funding applications that address multifaceted forms of exclusion as a result of, or intensified by, COVID-19. This includes topics such as digital exclusion, social isolation and loneliness, service exclusion and ageism and other forms of symbolic exclusion. In addition, ROSEnet members are engaged in a 7-country study of exclusion from social relations. This activity, which commenced prior to the pandemic and is due to collect qualitative data on this topic in the coming months, will directly explore the impact of COVID-19 on older people's social relations.

**Contacts:** Dr Kieran Walsh ✉

CA15124

## A new Network of European BioImage Analysts to advance life science imaging (NEUBIAS)

### Summary

This Action is a programme for establishing a network of BioImage Analysts (BIAlysts), in order to maximize the impact of advances in imaging technology on the Life-Sciences (LSc), and to boost the productivity of bioimaging-based research projects in Europe. BIAlysts have recently emerged in various research institutions but these experts are still not well recognised in the LSc community. They are specialised in customising image analysis (IA) workflows by assembling and automating multiple computational tools, and by interacting with Software developers and Life Scientists to facilitate IA. The Action aims to provide a stronger identity to BIAlysts by organising a new type of meeting fostering interactions between all stakeholders including: Life scientists, BIAlysts, microscopists, developers and private sector. It will collaborate with European Imaging research

infrastructures to set up best practice guidelines for IA. The Action plans to create an interactive database for BioImage analysis tools and workflows with annotated image sample datasets, to help matching practical needs in biological problems with software solutions. It will also implement a benchmarking platform for these tools. To increase the overall level of IA expertise in the LSc, the Action proposes a novel training programme with three levels of courses, releasing of open textbooks, and offering of a short term scientific missions programme to foster collaborations, IA-technology access, and knowledge transfer for scientists and specialists lacking these means. This Action will support the long-term scientific goals of European science and industry by bridging essential fields of scientific excellence.

### Offered expertise to the COVID-19 network

NEUBIAS can potentially contribute to helping researchers with their COVID research projects by providing consultancy in image analysis. Please

contact the Action Chair, [Mr Julien Colombelli](#), for further details.

**Contacts:** Mr Julien Colombelli ✉

CA15126

## Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare (MOBIEU)

### Summary

Molecular-scale biophysics is a dynamic and ever-expanding interdisciplinary field that aims to study biological macromolecules and assemblies as a whole, at an intermediate level between atomic-resolution structural descriptions and cellular-level observations ("Between Atom and Cell"), with significant applications in biomedicine and drug discovery. The MOBIEU Action aims to seed a large-scale pan-European interdisciplinary synergistic clustering, allowing to ally and synergize the power of spectroscopic, hydrodynamic, real-

time microfluidic, thermodynamic and single-molecule approaches.

This novel open network will create an optimal environment for the development of innovative integrative biophysical approaches, at the level of data acquisition, analysis and modeling, as well as for the design of unprecedented and ambitious combinations of methodologies, to decipher more efficiently crucial biological phenomena and to overcome significant biomedical challenges.

### Offered expertise to the COVID-19 network

MOBIEU offers expertise on characterization of potential drug targets (virus proteins or RNAs), of host target receptors or co-receptors, identification and characterization of potential inhibitors (antibodies or chemical compounds), and characterization of potential antigenic molecules (to help fine-tuning an anti-COVID-19 vaccine).

The current SARS-CoV2 epidemic challenge clearly highlights the necessity of a strong and coordinated molecular biophysics community, notably to understand the viral physiology and pathogenicity, to develop and implement rapid diagnostic methods, and to discover efficient prophylactic and therapeutic strategies.

Contacts: Dr Patrick England ✉

CA15129

## Diagnosis, Monitoring and Prevention of Exposure-Related Noncommunicable Diseases (DiMoPEX)

### Summary

Studying adverse health outcomes related to the environmental exposures (in the living and working environment) is a major societal challenge today. According to estimates made by the WHO, worldwide about 55 million people died in 2011 from non-communicable diseases (NCDs), including cancer, diabetes, chronic cardiovascular, neurological and lung diseases. Although epidemiological and toxicological studies provide evidence for a significant role of environmental exposure in initiation and progression of degenerative diseases and cancer, there is still the challenge of identifying determinants of prevalence and morbidity of NCDs. After spending much time and resources to identify the contribution of genetic factors in the onset of NCDs, it is time to look closer at the evidence for a role of environment factors in the prevalence and morbidity of NCDs, DiMoPEX will develop an interdisciplinary collaborative

network, providing insight into emerging issues of morbidity and mortality from exposure-related health outcomes. The action will offer interdisciplinary opportunities for cooperation between scientists and physicians/clinicians. In addition, DiMoPEX aims to attract the interest of next generation early career investigators to the emerging issues of exposure-related disease burden and various aspects of exposure sciences. DiMoPEX will foster the capacity building in Europe from the bottom up to advance ongoing long term studies and to promote new research projects in this field. DiMoPEX will meet current public health challenges in joint research and training to understand the health-environment interactions in NCD etiology. The action will contribute to the development of successful preventive strategies in European countries.



### Offered expertise to the COVID-19 network

CA15129 DiMoPEX offers expertise on human environmental exposure, air pollution (chemical, biological), and detection of noncommunicable diseases (especially respiratory diseases).

The Action consists of interdisciplinary partners focusing on detection, diagnosis and prevention of noncommunicable diseases. The Action partners plan to focus mainly on two aspects of the SARS\_COVID-19 epidemic:

1. There could be a possibility to collaborate on air pollution and increased risks related to CORONA virus infections;
2. Noncommunicable diseases in patients after exposure to CORONA virus and SARS\_COVID-19 infection disease (project already initiated).

CA15135

## Multi-target paradigm for innovative ligand identification in the drug discovery process (MuTaLig)

### Summary

This Action works on bringing together researchers and professionals from diverse backgrounds design novel or identify existing bioactive compounds

for drugs targeting particular biological agents, like viruses.

### Offered expertise to the COVID-19 network

- MuTaLig would like to work on the following topic: drug discovery of novel ligands against COVID-19 targets by means of in silico or other rational approaches.
- It offers: medicinal chemistry facilities applied to drug discovery: in silico simulations (molecular modelling, docking, ADME prediction), chemical

synthesis and physico-chemical characterization of bioactive compounds.

- The Action is looking for expertise on: biophysical and biological tests, with specific reference to targets involved in COVID-19 infection and progression.



CA15208

## Rationing - Missed Nursing care: An international and multidimensional problem (RANCARE)

### Summary

In times of high healthcare demand, not all patients might get sufficient nursing care. This Action studies the nature and effects of missed care.

### Offered expertise to the COVID-19 network

RANCARE has organised an STSM on COVID-19: the purpose of the STSM was to explore the frequency of missed care related to infection control and to identify the factors that contribute to missed nursing care related to infection control.

Many factors in dealing with missed care in crisis times have been documented. A book and useful recommendations on this topic are planned.

See also "Research stay puts spotlight on Coronavirus care".

CA15210

## European Network for Collaboration on Kidney Exchange Programmes (ENCKEP)

### Summary

The COST Action ENCKEP brings together policy makers, clinicians and optimisation experts in Europe to:

1. Exchange best practices and scientific state of the art with respect to national KEPs;

2. Develop a jointly-used, common framework for data and optimisation;

3. Develop and test a prototype for transnational KEPs; and

4. Stimulate European policy dialogue.

### Offered expertise to the COVID-19 network

ENCKEP's network is investigating the challenges of COVID-19 in transplantation at knowledge, policy and practice levels. A survey has been circulated within the Action and inputs from different

countries are being collected. The Action Chair will put any interested parties in contact with the person coordinating this activity.

CA15211

## Atmospheric Electricity Network: coupling with the Earth System, climate and biological systems (ELECTRONET)

### Summary

An atmospheric electric field (AEF) of 100 V/m to several kV/m exists in the atmosphere, resulting from a global electric circuit extending from the surface to the lower ionospheric layers. The study of many environmental processes can benefit substantially by the inclusion of atmospheric electricity. Such processes include, but are not limited to, earthquakes, aerosols/clouds and climate, sun-earth interactions, air pollution, lightning etc. Further, there is emerging evidence that AEF variations may interfere with biological processes, including human brain function. To

overcome the lack of coordination of different research efforts in these fields, the proposed Action aims to involve and integrate existing resources in the field of atmospheric electricity, create a network, enhance interaction and create the necessary critical mass of researchers and facilities to advance knowledge, introduce new techniques, transfer know-how. By these means the Action will also improve the understanding of a number of processes that lie at the interface of solid earth, environmental, biological, climatic and solar/terrestrial sciences.

### Offered expertise to the COVID-19 network

ELECTRONET is planning to work on the topic of simulation of COVID-19 epidemic spread and data analysis.

The Action offers expertise on Data Analysis and Modeling.

It is also looking for expertise on Data Analysis and Modeling.

**Contacts:** Prof. Konstantinos Kourtidis [✉](#)

CA15223

## Modifying plants to produce interfering RNA (iPLANTA)

### Summary

Activities include:

1. Evaluation of the efficacy of the RNA molecules for the induction of disease and pest resistance and metabolic changes;
2. Examination of the specificity of the selected miRNAs and siRNAs and their impacts on both target and non-target/off-target systems;
3. Developing specific risk assessment and risk management guidelines which relate specific

effects of the miRNAs and siRNAs on food, feed and the environment;

4. Understanding the modes of transmission, uptake, systemic spread and degradation of dsRNAs, mi- and siRNAs;
5. Determining the environmental and socio-economic impacts of plantRNAi technology and products.

### Offered expertise to the COVID-19 network

iPLANTA offers expertise on plant disease and pest resistance, interfering RNA, and silencing genes of virus replication.

RNAi technology can be applied to silence genes of virus replication and infection so to control them. The efficiency of this technology has been demonstrated to control different pests and diseases, including virus in plants.

Results have also been obtained with a view to control viruses in humans, but the application of this technology remains limited as the

development and application of vaccines is considered much more efficient. In the case of COVID-19 it has not yet been possible to develop a vaccine and this will probably still take a long time. It may therefore be important to also consider the RNAi technique to develop new products that can allow disease control at least in the early stages of development.

It is with this objective that, thanks to the skills developed within the CA15223 - iPlanta, an interdisciplinary collaboration has been activated with the aim to test the effectiveness of RNAi-



based sequences and formulations in controlling COVID-19 infection on in vitro cultured human cell lines.

Prof. Tiziana Pandolfini, from the Department of Biotechnology - Verona University (IT), has designed 4 short (30bp) dsRNA sequences targeting the genome sequence of the COVID-19 strain published last January in Nature by a Chinese group. With the bioinformatic approach, the absence of risk of off-target effects on human genome has also been verified.

The dsRNA sequences have been synthesized and delivered to the human virology laboratory lead by Prof. Stefano Menzo, Faculty of Medicine - Marche Polytechnic University (IT).

Preliminary experiments have been carried out by applying the dsRNA sequences prepared with different transfecting formulations, at different concentrations, on human cell lines after being infected with COVID-19 virus.

The preliminary results were not significant. Research is continuing to try and understand if response efficiency can be improved by better promoting the penetration of dsRNA into cells. To this end, Dr. Giovanna Mobbili of the Department of Biology of the Polytechnic University of Marche (IT), is proposing new materials for new formulations that can improve the penetration capacity of dsRNA in the human cell. Furthermore, Prof. Pandolfini is studying new dsRNA sequences targeting other structural genes of COVID-19.

CA16102

## European Network on Individualized Psychotherapy Treatment of Young People with Mental Disorders (TREATme)

### Summary

The main aim of the Action TREATME is to establish a sustainable European multidisciplinary researcher network focusing on individualized psychotherapy for young people with mental disorders.

50% of lifetime mental health disorders start by the age of 14, and the number increases to 75% by the age of 24. Mental disorders in youth are associated with direct and indirect costs including personal distress, costs to family and friends, high healthcare costs, barriers to employment and job performance, poverty and economic deprivation and social exclusion.

The "Roadmap for Mental Health Research in Europe" concludes on the need for coordinated and multidisciplinary efforts to improve knowledge on individualized psychological treatment for young people. Psychotherapy works for the most frequent mental disorders such as anxiety and depression. Different psychotherapy modalities work on average equally well. However, little is known about how different treatment modalities work (the mechanisms of change/mediators) and for whom (specific markers/moderators). Thus, empirically informed individualized treatment cannot be delivered.

### Offered expertise to the COVID-19 network

TREATme members are mental health professionals with high expertise on assessing and treating mental health problems from different approaches. During the pandemic situation TREATme is building competence on dissemination of the results from the Action, and encouraging members to continue sharing knowledge on youth mental health through video productions and

webinars. This will give Action members channels to publish and share research and compensate for the fact that network members are not able to meet each other during the pandemic. Also, four special issues in reputable open access journals are edited by members of the Action. Therefore members of the Action can offer their expertise on evaluating the psychological consequences of the

pandemic or actions taken in other fields to cope with it, but also have experience to share on how to establish publication arenas. Video productions,

webinars, and special issues help reaching out to citizens, clinicians, researchers, stakeholders and policymakers.

CA16111

## International Ethnic and Immigrant Minorities' Survey Data Network

### Summary

The main goal of this network is to bring together researchers, policy makers, and survey data producers to join efforts to improve the access, usability, dissemination and standards of the multiple and scattered survey data that exist on the economic, social and political integration of ethnic and migrant minorities (EMMs).

An important challenge in managing pandemics is to be able to reach out to all communities – also those which are less connected to the discursive mainstream. This Action organises surveys amongst immigrants and ethnic minorities, one of these target groups.

### Offered expertise to the COVID-19 network

The substantive focus of CA16111 is removed from COVID-19 but as a result of contacts created within the COST Action, the Chair is currently collaborating with the main research infrastructure project of H2020 for the Social Sciences and Humanities (SSHOC). In the context of SSHOC they are discussing the possibility of creating an online portal for COVID-19 related research and resources within EOSC as well. The Chair is also collaborating with the Research Data Alliance (RDA) in the drafting of a report on recommendations on how to share data on COVID-19 in the domain of the social sciences and the humanities. In the context of the Action itself we could use our EMM Survey Register to record all surveys that are being

undertaken on the impact of COVID-19 on ethnic and migrant minorities across Europe.

Hence the interest to be included in any initiative or critical mass opportunities within the context of COST:

- **Topic:** methodologically, open data, data sharing and FAIR data in the context of the social sciences; substantively, on migration and political dynamics, but more widely on comparative politics and on how governments respond to "unexpected shocks" and to public opinion.
- **Expertise offered:** in relation to social science data and methods, to political dynamics/political



responses to the crisis, and comparative public policy approaches to the crisis.

- **Expertise looked for:** in the context of the discussions within SSHOC, very interested in

getting computer science expertise that could contribute to the rapid creation of a portal; but also voluntary collaborations to compile a wide range of social science data that are being generated with common standards.

CA16112

## Personalized Nutrition in aging society: redox control of major age-related diseases

### Summary

The importance of a healthy ageing process becomes apparent when considering that (a) the Generation 50+ (G50+) already has a share in population of around one third across Europe, with obvious regional variations, (b) this share is likely to increase further in the future, and (c) vitality at older age is not only an important measure of quality of life but also key to participation and

productivity. The theme "nutrition and ageing" has many different aspects and poses numerous challenges, which provide a fertile ground for many research themes and networks. Among them, the "NutRedOx" network will focus on the impact of redox active compounds in food on healthy ageing, chemoprevention and redox control in the context of major age-related diseases.

### Offered expertise to the COVID-19 network

The CA16112 Action is a broadly multidisciplinary network with epidemiological, biological, biochemical, chemical, clinical, medicinal and therapeutical aspects. It thus has a clear interest in the ability of natural compounds to positively modulate age-related diseases with a particular focus on polyphenolic-type compounds with redox activity. Some of them have already shown to display broad antiviral properties (entry inhibitor, anti-inflammatory...) and a few compounds are currently being analysed on COV-SARS-2 by some of the Action's participants. For example, some natural compounds are currently under spotlights such as quercetin in Canada.

Potential inputs of the Action into the COVID network would be:

#### *Antivirals*

- Search for some natural compounds that can block host entry of COVID-19 (CovidS-Ace2 receptor interaction...);
- Evaluation of polyphenols metabolites that can block host entry of COVID-19 (CovidS-Ace2 receptor interaction);
- Building a natural compound library within COST Nutredox to start a Nutredox-based screening (Virtual in silico modelling [who?] and experimental assays [who?]);



- Investigate in depth polyphenols known for their antiviral activities in particular with respect to enveloped pathogens, synthesize these compounds in bulk for testing, and synthesize analogues with increased activities;
- Ladanein or quercetin have proven in vitro to display anti-SARS-cov-2 activities;
- Drug delivery systems to improve drug oral bioavailability as well as drug targeting to tissues.

#### *Epidemiology (nutrition & COVID-19)*

- Interrelationships between usual dietary and lifestyle habits (questionnaires, dietary assessment focused to antioxidant intake) and presence /absence of illness and antibodies (via ELISA and PCR);
- Epidemiological and biochemical assessment (elderly, children, adolescents and middle aged people) to see if overweight middle aged people

display high sensibility to the COVID-19;

- Discuss the potential protective role of nutrition in elderly people against their chronic diseases and COVID-19 infection;
- Regulation by natural compounds of the innate /acquired antiviral immunity.

#### *Biology*

- Expertise on vascular and cerebrovascular renin angiotensin system including ACE enzymatic activity study (specifically ACE1 but models can be derived to ACE2);
- Drug Screening on ACE2 activity from cell model, ex vivo models to in vivo experimentation (vascular and intestinal levels);
- Modification of ACE2 activity under inflammation and oxidative stress;
- Test peptides from Whey's digestat against SARS-Cov-2.

CA16116

## Wearable Robots for Augmentation, Assistance or Substitution of Human Motor Functions

### Summary

Superconductivity is a fascinating state of matter characterised by the absence of electrical resistivity that certain materials exhibit when cooled below a certain critical, cryogenic temperature. Together

with other unique properties, like the ability to carry huge currents and trap extremely large magnetic fields, superconductors pave the way for accelerating the Energy Transition.

### Offered expertise to the COVID-19 network

A part of the CA16116 network is involved in rehabilitation robotics/functional movement therapy devices; under the current COVID-19 situation there seem to be certain related needs, especially for:

- Solutions for COVID-19/ICU patients to prevent muscle loss due to inactivity, or to provide suitable rehabilitation practice post ICU;
- Solutions to maintain (neuro-)rehabilitation services while facing certain restrictions in the clinical environment: tele-rehabilitation or robot-mediated rehabilitation.

Several of these solutions are in place in different degrees of development, up to certified product status.

Often, diverse barriers (traditional clinical ways of working, reimbursement models, ...) hinder a fast adoption of such innovations. Considering the current urgent situation and the pressure on the healthcare systems, this may be a good time to faster adopt new solutions, in order to relieve such pressures.

Inside the CA16116 network there are different technical stakeholders relevant to this perspective, but not for example healthcare authorities or insurers. If other COST networks could somehow contribute to this more organizational side of the problem, a communication might be fruitful.

The network is also exploring similar activities in the H2020 context, such as AI-Robotics COVID initiative, and DIH-HERO special COVID project call (not as COST Action, but with certain participants inside the COST Action network).



CA16119

## In vitro 3-D total cell guidance and fitness (CellFit)

### Summary

The present Action is aimed at refining our understanding of the in vivo microenvironment, reducing the differences when translating it in

vitro, to create 3D total guidance ex vivo culture systems for the replacement of animal use.

### Offered expertise to the COVID-19 network

CellFit is interested in collaborative interactions related to COVID-19.

The Action is setting up 3D platforms with respiratory tract cells, VERO cells and MSC in order to create more physiological models of infection substrates. These cultures are used to explore how they interact with nanoparticles (selected for the same size of COVID-19). The idea is to have an in

vitro model to investigate how the virus is taken up by cells, mimicking the mechanisms that may be active at early stages prior to viral replication and how this can be prevented, using a nanomedicine supported approach.

CellFit would like to collaborate with nanoparticle experts, virologists, toxicologists and pharmacologists.

**Contacts:** Prof. Tiziana Brevini

CA16121

## From Sharing to Caring: Examining Socio-Technical Aspects of the Collaborative Economy

### Summary

The terms "Sharing Economy" or "Collaborative Economy" have been commonly used in recent years to refer to a proliferation of initiatives, business models and forms of work.

European network of actors (including scholars, practitioners, communities and policy makers) focusing on the development of collaborative economy models and platforms and on social and technological implications of the collaborative economy through a practice-focused approach.

The main objective of this action is to develop a

### Offered expertise to the COVID-19 network

CA16121 Sharing and Caring is collecting collaborative economy initiatives related to the COVID-19 crisis from the participating countries, that will be published on its website as part of the [Short Stories repository](#).

The Action is also open to collaboration with any other COST Actions.

**Contacts:** Dr Gabriela Avram



CA16124

## Brillouin Light Scattering Microspectroscopy for Biological and Biomedical Research and Applications (BioBrillouin)

### Summary

Brillouin Light Scattering Spectroscopy (BLSS) uses visible or infrared light from a laser source to probe the mechanics of a material through light scattering from thermally induced acoustic modes. It can give access to the viscoelasticity and structure of matter in a non-destructive contactless way, and when coupled to optical (confocal) microscopy, has proven to be particularly well suited for biomedical applications. Though an established

tool in condensed matter physics, only more recently has BLSS seen promising applications in the life sciences and medical diagnostics. This can largely be attributed to advances in instrument (spectrometer) design coupled with increasing interest in the biomechanics of cells and tissues and their relation to disease, underlying genetics and biochemistry.

### Offered expertise to the COVID-19 network

Brillouin Light Scattering Spectroscopy (BLSS) uses visible or infrared light from a laser source to probe the mechanics of a material through light scattering from thermally induced acoustic modes. It can give access to the viscoelasticity and

structure of matter in a non-destructive contactless way, and when coupled to optical (confocal) microscopy, has proven to be particularly well suited for biomedical applications.

**Contacts:** Dr Kareem Elsayad [✉](#)

CA16201

## Unraveling new physics at the LHC through the precision frontier (ParticleFace)

### Summary

Elementary particle physics is currently described by the Quantum Field Theory (QFT) called the Standard Model (SM). The SM, being an apparent success, is well known to be theoretically incomplete. Fundamental questions underlying the quantum structure of Yang-Mills theories are still unanswered. The SM does neither account for mass hierarchies nor for dark matter or dark energy. Most importantly it cannot remain valid to arbitrarily high energies and does not include gravity. After the confirmation of the Higgs boson's existence, entirely new questions come into the focus in the field.

The key to address those questions is to confront experimental data to theoretical predictions with the highest possible precision. The current LHC data do not show a clear signal of new physics.

### Offered expertise to the COVID-19 network

ParticleFace is active in the field of particle physics, both theoretically and experimentally, and its goal is to provide the most accurate theory predictions possible to describe the data collected

Therefore, any evidence is expected to appear as a gentle deviation from the SM. Precision phenomenology is the necessary prerequisite for theory and collider physics in the coming years and it will be the driving element in the development of new and innovative tools and algorithms to perform a meaningful comparison between theory and data.

The aim of this Action is to shift the precision frontier to a new level of accuracy and to create new resources of networking and innovation, with the quest for discovery as the main motivation. It is designed to work through long-standing challenges on the basis of the most encouraging advances in QFT and related areas of pure mathematics and computer science by uniting the leaders of the field in a coherent effort.

at experiments in high-energy colliders. Machine Learning techniques have been used in particle physics since long, and are now playing an even more prominent role.



ParticleFace offers experience in theoretical modelling and data analysis.

It needs some counterpart in the field of epidemiology, biology, or even sociology to tackle specific problems.

CA16202

## International Network to Encourage the Use of Monitoring and Forecasting Dust Products (inDust)

### Summary

inDust is interested to contribute to this collaborative effort related to the COVID-19 impacts.

inDust (COST Action CA16202) is an interdisciplinary group of researchers from atmospheric and health

to socio-economic areas, that we are looking for desert dust services. Our main goal is to create the communication channels between different communities (from data providers to users) that facilitate the co-design of these services.

### Offered expertise to the COVID-19 network

Some ongoing studies of inDust participants search to correlate the air quality levels with the incidence of the coronavirus. At the moment, the inDust network is not leading any specific activity. However, it can offer its network of experts that

includes epidemiologists, atmospheric and social researchers. Because of inDust's background, the Action is looking to contribute to any study that tries to understand the atmospheric factors that can contribute to the spread of the virus.

CA16215

## European network for the promotion of portable, affordable and simple analytical platforms

### Summary

Research in separation science is a thriving field with dedicated journals and conferences. This research area is dominated by the so-called "big scientific instruments", which allowed multiple breakthroughs in health, forensics, pollution or agri/food. However, the high cost of such instruments and the need for skilled professionals to operate them are limiting their use to a few social and economic spheres of society. Modern separation techniques are no longer limited to large instrumentation, with numerous studies demonstrating the possibility of achieving fast

and efficient analysis using low-cost devices. Such tools would be highly beneficial to SMEs and small organisations that do not have the financial and human resources to afford big and expensive instruments. It is therefore of economic and societal interest to facilitate and promote a wider use of such analytical platforms. Having low budget organisations in mind, such instruments should be affordable and simple to use, allowing their utilisation by inexpert staff. Ideally, they should also be portable allowing their use on site/in the field and be easily carried around.

### Offered expertise to the COVID-19 network

Modern separation techniques are no longer limited to large instrumentation, with numerous studies demonstrating the possibility of achieving fast and efficient analysis using low-cost devices. CA16215 facilitates and promotes a wider use of such analytical platforms.

Several of the Action's participants have come forward offering their expertise in view of a collaboration in the COVID-19 context.

### Further information

*Ege University Faculty of Science, Turkey*

Contact: Ozan Unsalan

We are currently focusing on some docking studies of various types of ligands (around 1500) over various COVID-19 PDB (Protein Data Bank) files. We need really good processors in order to speed up our computations. Normally with PC-supported 16 GB processors with 4 CPUs, it takes a very long time. If there is some opportunity for us, I am sure we can save enough time to proceed to good results. If there are some facilities for us to access such computational resources and time we would very much appreciate it. The main plan is increasing the number of ligands up to 300.000 or 400.000 for virtual screening purposes with high performance computation resources. This means, the more power, the less time, the better results!

*National University of Ireland Maynooth, Ireland*

Contact: Eithne Dempsey

Interested in development of a lateral flow electrochemical antibody screen for SARS CoV 2 antibodies.

*Dublin City University, Ireland*

Contact: David Kinahan

Primary area of research is centrifugal microfluidics, automating solid-phase DNA purification and on-disc DNA amplification (using LAMP). This technology and approach is closely related to molecular testing for COVID-19.

*Altadeva, France*

Contact: Daniel Parzy & Yves Bordet

I'm working with my colleagues in Kinshasa to develop the diagnosis of SARS-CoV-2 in the mobile laboratory we have developed. Our goal is to make the product even more efficient.

*Cranfield University, United Kingdom*

Contact: Zhugen Yang

Example - published paper "Can a Paper-Based Device Trace COVID-19 Sources with Wastewater-Based Epidemiology?".



*International Iberian Nanotechnology Laboratory, Portugal*

Contact: Lorena Diéguez

We are working on developing various strategies for diagnosis based on molecular, immune and physical detection. Proposals have been submitted to the European IMI call, as well as to national calls in Spain and Portugal.

*Nanosolar Plasmonics Ltd, Turkey*

Contact: Hasan Kurt

Current studies (submitted projects):

- Developing synthetic affinity agents (ssDNA aptamer) against SARS-CoV-2 spike protein;
- Lateral flow biosensors for anti-SARS-CoV-2 IgG/IgM immunoresponse proteins;
- Lateral flow biosensors for SARS-CoV-2 spike protein.

Topics we can help with:

- Surface resonance plasmon (SPR) based affinity analysis of aptamers, antibodies, proteins and recombinant proteins;
- UPLC-MS/MS analysis of aptamers, antibodies, proteins and recombinant proteins.

*Sabancı University Nanotechnology Research and Application Center, Turkey*

Contact: Meral Yuçe

Topics I can help with:

Affinity/function analysis of oligonucleotides, antibodies, proteins related to the COVID-19 diagnosis, and their testing in various platforms for kit development. Primary/secondary structure analysis of the developed biotechnological products testing/DNA/RNA vaccine/drug). All in BSL2.

*International University of Sarajevo, Bosnia and Herzegovina*

Contact: Emir Karamehmedovic

The objective of my project is to provide an economical point-of-care device for rapid and selective virus detection. I have a microfluidic platform that uses isotachopheresis (ITP) for sample focusing and fluorescence in situ hybridization for specific detection of very low concentrations of DNA/RNA. The device has the potential to perform non-target dependent diagnostic tests of pathogens in less than 15 min. Sample preparation, compared to PCR, does not involve polymerizing oligonucleotides, making it less complex, faster, cheaper and more feasible to conduct on site.

The platform has already been tested on bacterial 16s rRNA as well as synthetic DNA. Detection of viral RNA is plausible. I would like to have a

collaboration with a biomolecular laboratory that would perform tests and optimize viral RNA extraction and detection.

Development of the device is done together with the Canadian company Doric Lenses.

*University of Genoa, Italy*

Contact: Claudio Larosa

I'm interested to participate in this expert task due to my activities and background in material science. I have a degree in pharmacy and pharmaceutical technologies with a PhD in biophysical science. I'm interested to make in-house small prototypes in particular biosensor devices. It will be interesting for our group of researchers to develop a portable low-cost device to detect virus or its biomarkers in human exudate as a possible device to detect contamination agents. In particular adapting free software and USB cards in our prevision will make available a device destined for use by citizens with an intuitive approach.

*University of Veterinary and Pharmaceutical Sciences Brno, Czech Republic*

Contact: Rene Kizek

**Contacts:** Dr Guillaume Erny ✉  
Dr Hasan Kurt hasan ✉  
Prof. Ozan Unsalan ✉  
Dr David Kinahan ✉

Dr Zhugen Yang ✉  
Dr Lorena Diéguez ✉  
Dr Emir Karamehmedovic ✉  
Dr Claudio Larosa ✉

Prof. Rene Kizek ✉  
Dr Saverio de Vito ✉  
Dr Eithne Dempsey ✉  
Dr Meral Yuçe ✉

I am interested to start a collaboration on portable detection of SARS. My experiences are nanomedicine and nanoparticles as detection surface with electrochemical detection.

*ENEA, Italy*

Contact: Saverio de Vito

Our activities regard the development of distributed and portable particulate matter sensing systems.

As per now, multiple evidence is accumulating about the possibility of particulate matter acting as a carrier, and in fact there is (it has been recorded) a significant correlation of COVID speed of spread among the population and particulate matter pollution. Portable AQ analyzer may play a role in determining local environmental susceptibility to infection (both outdoor and indoor e.g. schools and hospitals) in so called phase II.

Alongside we can put at work:

- Our expertise in GIS air pollution data analysis and data driven forecasting;
- Our pattern recognition on IoT systems expertise for improving low-cost diagnostic tool precision/accuracy/usability for the elderly.



CA16216

## Network on the Coordination and Harmonisation of European Occupational Cohorts (OMEGA-NET)

### Summary

The Network on the Coordination and Harmonization of European Occupational Cohorts (OMEGA-NET) aims at creating a network to optimize the use of occupational, industrial, and population cohorts at the European level. OMEGA-NET will advance:

1. Collaboration of existing cohorts, with extensive contemporary information on employment and occupational exposures;

2. Coordination and harmonization of occupational exposure assessment efforts; and

3. Facilitation of an integrated research strategy for occupational health in Europe. The work will provide a foundation for an enhanced evidence base for the identification of health risks and gains related to occupation and employment to foster safe and healthy preventive strategies and policies.

### Offered expertise to the COVID-19 network

OMEGA-NET has expertise available on:

#### *Exposure Science*

· Assessment of occupational exposures;

· Other work-related issues such as precarious work, working hours etc;

· Exposure control (including virus), based on principles using the control hierarchy (elimination, engineering controls, administrative controls, in addition to personal protective equipment).

#### *Occupational epidemiology*

· Risk modelling.

**Contacts:** Dr Ingrid Sivesind Mehlum

CA16227

## Investigation and Mathematical Analysis of Avant-garde Disease Control via Mosquito Nano-Tech-Repellents (IMAAC)

### Summary

This Action, while working on mosquito-borne diseases, has already created a [simulator for the spread and eventual control of COVID-19](#).

The Action is also participating to the [Hackathon organised by the EC](#).

### Offered expertise to the COVID-19 network

IMAAC, while working on mosquito-borne diseases, has modified a pandemics simulator created a few

years ago for the spread and possible control of COVID-19: [covidsim.eu](#).

**Contacts:** Prof. Martin Eichner   
Dr Peyman Ghaffari

Dr Markus Schwehm   
Prof. Ana Marija Grancaric

Ms Virginia Sanz Sánchez

CA16230

## Combatting anthelmintic resistance in ruminants (COMBAR)

### Summary

Helminth parasitic pathogens cause severe disease and are amongst the most important production-limiting diseases of grazing ruminants. Frequent anthelmintic use to control these infections has resulted in the selection of drug resistant helminth populations. Anthelmintic resistance (AR) is today found in all major helminth species across Europe and globally. COMBAR will advance research on the prevention of anthelmintic resistance in helminth parasites of ruminants in Europe and disseminate current knowledge among all relevant stakeholders.

### Offered expertise to the COVID-19 network

COMBAR focuses on anthelmintic resistance in parasitic worm infections in animals. The Action's experts are using social and economic sciences to allow better decision making on disease control, taking into account multiple diseases and epidemiologic, economic and social factors. They can contribute to interdisciplinary approaches to tackle epidemics while also considering the endemic diseases that continue to cause a great health and economic burden. They can also look at the role of co-infections (viruses, bacteria and parasites) infecting animals at the same time and affecting disease evolution, spread and development of immunity.

**Contacts:** Dr Johannes Charlier ✉

CA16231

## European Network on Vaccine Adjuvants (ENOVA)

### Summary

Adjuvants are chemical compounds which stimulate the immune system of a vaccinated person to optimally respond to the vaccine.

### Offered expertise to the COVID-19 network

- CA16231 ENOVA would like to work on the following topics:
  - Development of COVID-19 vaccines using different adjuvant systems;
  - Development of different versions of the S protein from SARS-CoV-2 virus produced by recombinant baculovirus vectors in the insects CrisBio© technology platform;
  - Development of COVID-19 vaccines using different adjuvant systems;
  - Testing of immune response of the different single or multimeric recombinant S protein versions generated in the insects CrisBio© platform using different adjuvants;
  - Testing of prime-boost immunization regimes using adenovirus vectors and recombinant proteins in animal models;
  - How to secure fast development of novel vaccine technologies including supply of adjuvants and production of vaccine antigens;
  - Formulation for an mRNA and DNA vaccine;
  - COVID or other virus infections or virus vaccine projects;
  - Drug Discovery and development (antivirals);
  - SARS-CoV-2 virulence;
  - Protein nanoparticle-based vaccine;
  - Biological effect of pyrrole-based macrocycles on virus replication;
  - Contribution on every effort related to animal coronaviruses.

## 2. Expertise offered:

- Scale-up production of subunit vaccines with TopBac improved baculovirus vectors and CrisBio© technology. CrisBio© is based on high yield vaccine production using insect pupae as natural bioreactors;
- Molecular virology, design of animal vaccine efficacy in animal model assays;
- Provisioning of different adjuvants on an open-access basis:
  - a) SWE (oil-in-water emulsion) available at GMP grade;
  - b) LQ (liposome/QS21 saponin combination) available as GMP-grade;
- Optimization/characterization of vaccine formulations;
- Vaccine research and development expertise;
- Supply of adjuvants;
- Expression of antigens;
- Evaluation in animal models;
- Formulation, characterization and in vitro testing of lipid and polymeric carrier systems for RNA and DNA vaccines;
- Virological and immunological assays (in an official COVID testing lab);
- Animal models (mice, hamsters, ferrets, pigs);
- Virus bioinformatics;

- Candidate molecules (one of which has already been tested in humans);
- Experience in structure-based drug design;
- Recombinant production, structural biology, protein engineering;
- Immunization of mice using different routes (i.m., s.c., i.d., i.p., i.v., intranasal);
- Neutralization assays using SARS-CoV-2 in a BSL 3 lab to test vaccine efficacy;
- Experience with protein and vector-based vaccines;
- Organic synthesis (mostly of macrocycles and cyclophanes, heterocalixarenes and other 'supramolecules');
- Expertise with all the classical diagnostic assays related to viruses, such as ELISA and PCR.

## 3. Expertise the Action is looking for:

- Advice on selection, and sourcing of adjuvants;
- COVID-19 target antigens;
- Animal models for challenge studies;
- Expertise in human cell models for expression of proteins, expertise in mRNA expression;
- Experts that can test the biological activity of organic compounds on virus, as well as suggest chemical modification of proposed structures;
- Experts who have the facilities for experiments with cultured viruses.

## 4. The contact point within the Action:

- Ana Falcon, MC Member, Spain. Algenex S.L.

**Contacts:** Ms Ana Falcon ✉

CA16232

## European Energy Poverty: Agenda Co-Creation and Knowledge Innovation (ENGAGER)

### Summary

Energy poverty (EP) - commonly understood as a household's inability to secure socially- and materially-necessitated levels of energy services in the home - is prevalent across Europe. More than 50 million households in the European Union are struggling to attain adequate warmth, pay their utility bills on time, and live in homes free of damp and mould. These conditions adversely affect people's health and well-being. Recognition

of EP is growing across Europe, and the issue has been identified as a policy priority by a number of EU institutions, including the Energy Union Framework. Yet there has been a chronic lack of integrated discussion and interpretation of the problem within relevant scientific and policy communities. This has prevented the development of systematic understandings and effective policy responses.

### Offered expertise to the COVID-19 network

ENGAGER started a global mapping project and issued a [call for action](#).

The Action explored global responses to the pandemic in the sphere of household energy services. The data collection exercise, led by several ENGAGER researchers, has resulted in a map with over 250 measures from nearly 100 countries, showing the emergency measures that

have been taken to ensure that households enjoy continuous and affordable energy supplies during the COVID-19 crisis ([www.engager-energy.net/covid19/](http://www.engager-energy.net/covid19/)).

An STSM call will be issued, taking into account COVID-19 restrictions on research and associated ethical/inclusiveness issues, which will try to address the situation through novel work as well.

**Contacts:** Prof. Stefan Bouzarovski ✉  
Dr Harriet Thomson ✉

Jelena Lukic ✉  
M.M.E. Hesselman ✉

Dr Rachel Guyet ✉  
Anaïs Varo ✉

CA16234

## European Cleft and Craniofacial Initiative for Equality in Care (ECCE)

### Summary

The main aim of ECCE is to ensure that children born with orofacial clefts and other craniofacial conditions receive optimum multidisciplinary care enabling them to grow up like any other child and attain equal status within their societies. Estimates indicate that there are over 1,000 000 individuals with clefts in Europe - a significant figure, especially when one considers that not only the patients but also their families are affected in terms of psychosocial adjustment and having to endure the burden of a long treatment pathway.

ECCE, in particular, will work with COST Inclusiveness Target Countries where limited or no national protocols exist in cleft and craniofacial

### Offered expertise to the COVID-19 network

#### *Offered expertise to the COVID-19 network*

ECCE has already conducted a study upon how surgical care for cleft lip and palate congenital anomalies has been affected by COVID-19 pandemic, more info about the study can be found [here](#).

The Action is planning to conduct further studies

care and will, via healthcare research, develop health-integrated networks which will manage and oversee the development of cleft and craniofacial services. Europe currently lacks a harmonised approach to evaluate the current provision of care, the impacts on key areas of the affected families and society at large.

ECCE will coordinate and increase research across Europe and will forge crucial links between researchers, practitioners and policy-makers, offering the potential for significant benefits to the families affected by orofacial clefts and other craniofacial conditions in Europe.

with healthcare professionals about the impact of COVID-19 at the following levels;

- The primary level; the patient as the beneficiary;
- The level of the organisational context; the multidisciplinary team;
- The level of funding and policies; administration and resources.



The Action consists of interdisciplinary partners that can provide theoretical and methodological expertise and is open to more extensive collaborations in the healthcare sector.

CA16235

## Performance and Reliability of Photovoltaic Systems: Evaluations of Large-Scale Monitoring Data (PEARL PV)

### Summary

The aim of this COST Action is to improve the energy performance and reliability of photovoltaic (PV) solar energy systems in Europe leading to lower costs of electricity produced by PV systems by a

higher energy yield, a longer life time eventually beyond the guaranteed 20 years as specified by manufacturers, and a reduction in the perceived risk in investments in PV projects.

### Offered expertise to the COVID-19 network

PEARL PV could offer support by its new internationally accessible CKAN data repository, which can be used in a secure manner for

uploads, sharing and processing of data. It could create a special environment for this COVID-based collaboration.



CA17102

## POLICE STOPS

### Summary

the Action aims to exchange and deepen our knowledge and understanding of "police stops" practises in Europe as it affects the wider society

### Offered expertise to the COVID-19 network

POLICE STOPS is interested in collaborating on the COVID-19 situation. It is working on police stops and it seems that police powers have expanded in quite a lot of European states. In response to the current COVID-19 public health crisis, European states have introduced measures to close workplaces, to limit the movement of people and to require or encourage social distancing. The ways in which these measures have been formulated and enforced vary from one country to the next

in order to inform the oversight and effectiveness of the practice.

and, in many cases, from one town to another. The Action is seeking responses to questions that are rising on the use of their (sometimes special) powers, accountability, etc. and the effect this will have on policing, social capital, human rights and communities within the EU (foremost in the 29 countries of our network). It aims to better understand some of these variations as part of the COST Action on Police Stops.

**Contacts:** Prof. Sofie De Kimpe

CA17104

## New diagnostic and therapeutic tools against multidrug resistant tumors (STRATAGEM)

### Summary

Identifying treatments for COVID-19 patients with either novel antiviral drugs or by repurposing FDA approved drugs

### Offered expertise to the COVID-19 network

In the COVID-19 context, STRATAGEM would benefit from expertise in virology (particularly for this type of virus) in institutions with Biosafety Level 2 labs, to test the antiviral effect of novel compounds.

STRATAGEM is already in contact with other Actions with a view to collaborate.

It is focusing on SARS-CoV-2 research in the area of therapy, using the different protein components as targets:

- Hit identification;
- Drug and clinical trial compound's repurposing;
- PROTAC development;

• Activity optimization for known drugs (not yet started). The idea behind this part concerns the fine tuning of the molecular structure of known drugs by applying small modifications able to improve the compound's activity;

• All these points are carried out by applying computational techniques (mainly 3D receptor-based approaches) and organic synthesis;

• Organoid culture to test the drugs in static and dynamic conditions.

This activity is performed through a well-developed collaboration via the COST Action, as there are other groups in STRATAGEM that are focusing on the therapeutic area of COVID-19.

**Contacts:** Prof. Chiara Riganti   
Prof. Helena Vasconcelos

Mr Dale James Matthew Lawson   
Dr Thomas Mohr

CA17107

## European Network to connect research and innovation efforts on advanced Smart Textiles (CONTEXT)

### Summary

CONTEXT COST Action objective is to create a network of European researchers and main relevant stakeholders in order to develop joint

ideas and initiatives which can be turned into advanced smart textile products.

### Offered expertise to the COVID-19 network

#### CONTEXT members are working on:

- Textile materials for personal protection;
- Production of the COVID-19 protection products – those which can be produced by sewing;
- Combining the people & technologies. Connection between companies, R&D institutes and end-users with different skills;
- Sharing novelties inside the group of experts;
- Development of solutions for protective equipment based on fiber-based materials;
- Looking for new fabrics/combinations for masks and solutions to reuse disposable masks;
- Establishment of requirements for protective equipment development;
- Synthesis of biological active compounds with antibacterial and anticancer activity;
- Development of nanoparticles.

#### CONTEXT members offer expertise on:

- Processes for functional and smart textiles;
- Sewing; having the network & contacts to garment (protection products against COVID-19) producers in different EU countries;
- Knowledge on fiber-based materials and composites;
- Fibrenamics digital Platform to link R&D institutes, companies and end-users;
- Standards and fabrication for PPEs;
- Expertise of creating polymer solutions and mixed with nanoparticles;
- Expertise in 3D printing and R2R ultrasonic welding;
- Application of textile chemistry in functionalization of different textile materials with antimicrobial compounds;
- New bioactive compounds.

#### CONTEXT is looking for:

- Database of producers of protection materials – nonwovens; according to EN149 and EN14683; including prices, delivery time; technical parameters;
- Industrial partners;
- Consortiums for the development of the next generation of PPEs;
- Labs with certification capabilities. Fast responsive Institutes for testing & certification are needed;
- Specialists in the field of microbiology and biomedicine for the study of new biologically active substances deposited on textile materials.

**Contacts:** Dr Ariadna Detrell [✉](#)



CA17112

## Prospective European Drug-Induced Liver Injury Network (DILI)

### Summary

There is a clear unmet need for a deeper understanding of idiosyncratic drug-induced liver injury (DILI), a multi-layered challenge that spans the life of the drug from pre-clinical development to clinical trials and post-marketing.

### Offered expertise to the COVID-19 network

DILI advances knowledge on the diagnosis and management of drug-induced liver injury (DILI) in patients with COVID-19 with and without preexisting liver conditions.

Contacts: Prof. Raul Andrade

CA17116

## International Network for Translating Research on Perinatal Derivatives into Therapeutic Approaches (SPRINT)

### Summary

The main aim and objective of the Action is to implement an integrated scientific, medical and industrial global network to comprehensively investigate and exploit the therapeutic potential of Perinatal Derivatives.

### Offered expertise to the COVID-19 network

SPRINT is focused on perinatal derivatives which have been shown (in particular perinatal mesenchymal stromal cells-MSK) to have strong anti-inflammatory, immune-modulatory, and anti-microbial properties. Members of this Action have expertise in a wide variety of topics in regenerative medicine, that include (but are not limited to) cell therapy and inflammatory disorders, including lung fibrosis. The application of Perinatal MSC or MSC-derived extracellular vesicles, in COVID-19 constitutes an interest of the Action because, due to their potent immunomodulatory properties, these cells and their derivatives are currently being proposed as a potential therapeutic application to fight the deleterious inflammatory reaction observed after COVID-19 infection. As a matter of fact, several Action members are already working on COVID-19 (clinical and research activities).

Contacts: Prof. Ornella Parolini

CA17117

## Towards an International Network for Evidence-based Research in Clinical Health Research (EVBRES)

### Summary

Redundant clinical research has been published due to the absent use of systematic reviews (SR) when new research is planned. It is unethical, limits the available funding for important and relevant research, and diminishes the public's trust in research. In order to raise awareness of this inappropriate practice, the EVBRES-consortium define "Evidence-Based Research" (EBR) as the use of prior research in a systematic and transparent way to inform a new study so that it answers the questions that matter in a valid, efficient and accessible manner. New studies should be informed by SRs as to the most appropriate design and methods. EVBRES will establish an international European-based network aiming to raise awareness of the need to use of SRs when planning new studies and when placing

new results in context. PhD students and senior clinical researchers' needs to learn how to find, critically appraise and update a SR, answering the same clinical question the new study plans to answer. Closely related to this is the involvement and awareness of related stakeholders, including patients, ethics committees, funding agencies and scientific journals, to require SRs before approval of new clinical studies. By acknowledging and implementing an EBR approach these stakeholders can improve their own practice and can increase the incentives for clinical researchers to use an EBR approach. Further, EVBRES will catalyse more efficient updating and production of SRs, and monitor the implementation of an EBR approach both in clinical research and among related stakeholders.

### Offered expertise to the COVID-19 network

EVBRES recently published the paper "Novel Coronavirus (2019-nCoV) Infection in Humans: A Scoping Review and Meta-Analysis" in *The Lancet*.

Two more published manuscripts are:

1. Wolkewitz and Puljak, "Methodological challenges of analysing COVID-19 data during the pandemic";
2. Ruano et al., "What evidence-based medicine researchers can do to help clinicians fighting COVID-2019?";

Additionally, the following study has been published on a preprint server (currently under review):

Fidahic M, Nujic D, et al., "Research methodology and characteristics of journal articles with original data", preprint articles and registered clinical trial protocols about COVID-19.

**Contacts:** Prof. Hans Lund ✉  
Prof. Ana Marusic ✉

Dr Tina Poklepović Peričić ✉ Prof. Livia Puljak ✉  
Dr Irena Prodan Žitnik ✉

CA17121

## Correlated Multimodal Imaging in Life Sciences (COMULIS)

### Summary

COMULIS aims at fueling urgently needed collaborations in the field of correlated multimodal imaging (CMI), promoting and disseminating its benefits through showcase pipelines, and paving the way for its technological advancement and implementation as a versatile tool in biological and preclinical research. CMI combines two or more imaging modalities to gather information about the same specimen. It creates a composite view of the sample with multidimensional information about its macro-, meso- and microscopic

structure, dynamics, function and chemical composition. Since no single imaging technique can reveal all these details, CMI is the only way to understand biomedical processes and diseases mechanistically and holistically. CMI relies on the joint multidisciplinary expertise from biologists, physicists, chemists, clinicians and computer scientists, and depends on coordinated activities and knowledge transfer between academia and industry, and instrument developers and users.

### Offered expertise to the COVID-19 network

Imaging will be a critical and versatile tool to gain functional and structural insights about COVID-19 and its mechanisms. Importantly, this requires a holistic and multiscale approach that is best realized using correlated multimodality imaging in the life sciences (COMULIS). COMULIS has substantial expertise in tackling novel biomedical

research questions across scales and combining insights from diverse and complementary imaging modalities from small animals down to single molecules. COMULIS can provide access to multimodality imaging infrastructure and image analysis solutions.

**Contacts:** Dr Perrine Paul-Gilloteaux Dr Martina Marchetti-Deschmann Prof. Paula Sampaio

CA17122

## Increasing understanding of alien species through citizen science (ALIEN-CSI)

### Summary

There is no sign of saturation in accumulation of alien species (AS) introductions worldwide, additionally the rate of spread for some species has also been shown to be increasing. However, the challenges of gathering information on AS are recognized. Recent developments in citizen science (CS) provide an opportunity to improve data flow and knowledge on AS while ensuring effective and high quality societal engagement with the issue of IAS. Advances in technology, particularly on-line recording and smartphone apps, along with the development of social media, have revolutionized CS and increased connectivity while new and

innovative analysis techniques are emerging to ensure appropriate management, visualization, interpretation and use and sharing of the data .

The Action will address multidisciplinary research questions in relation to developing and implementing CS, advancing scientific understanding of AS dynamics while informing decision-making specifically implementation of technical requirements of relevant legislation such as the EU Regulation 1143/2014 on IAS, support of the EU biodiversity goals and embedding science within society.

### Offered expertise to the COVID-19 network

Several members of ALIEN-CSI are preparing a project proposal with aims related to the COVID-19 pandemic, especially focusing on the effects of wildlife trade on biological invasions, and how consequences of pandemics (e.g. trade bans) might influence the global commerce of wildlife.

· **A topic we are planning to work on:** effects of wildlife trade on pandemics; consequences of outbreaks on wildlife trade; predicting how

future outbreaks might affect the emergence of biological invasions;

· **Expertise ALIEN-CSI can offer:** considerable experience in several topics in ecological science; research in biological invasions, dealing with different aspects of global change issues, including the environmental and socioeconomic impacts posed by biological invasions; assessing expert knowledge through online surveys;



- **Expertise the Action is looking for:** experience in administrating surveys/social sciences; experience in illegal wildlife trade.

CA17129

## Catalysing transcriptomics research in cardiovascular disease (CardioRNA)

### Summary

This Action aims to create an interdisciplinary network to accelerate the understanding of transcriptomics in cardiovascular disease (CVD) and further the translation of experimental data into usable applications to improve personalized medicine in this field. CVD remains the leading cause of death worldwide and, despite continuous advances, better diagnostic and prognostic

tools, as well as therapy, are needed. The human transcriptome, which is the set of all RNA produced in a cell, is much more complex than previously thought and the lack of dialogue between researchers and industrials and consensus on guidelines to generate data make it harder to compare and reproduce results.

### Offered expertise to the COVID-19 network

Several CardioRNA members are working on COVID-19 (clinical and research activities). The Action aims to build a large international multicenter study on cardiovascular RNA biomarkers and treatments of SARS-CoV-2 infection. The Action

has already a task force of 40 research groups and is happy to consider any collaboration outside their network. Should you be interested to join, please contact [Yvan Devaux](#). See also [this paper](#).



CA17132

## European network for argumentation and public policy analysis (APPLY)

### Summary

Providing and criticising reasons is indispensable to achieve sound public policy that commands the support of both citizens and stakeholders. This need is now widely acknowledged in the recent literature and key EU documents, which highlight the perils of populist discourse and policies. The European network for Argumentation and Public PoLicY analysis (APPLY) improves the way European citizens understand, evaluate

and contribute to public decision-making on such matters of common concern as climate change or energy policies. Addressing this need from a multidisciplinary perspective on argumentation, the APPLY Action identifies gaps between the citizens', policymakers' and scholarly experts' argumentation, and explores ways of treating them.

### Offered expertise to the COVID-19 network

APPLY, the European network for Argumentation and Public PoLicY analysis (APPLY) is uniquely placed to investigate some of the challenges of public discourse and communication related to the COVID-19 pandemic. As of April 2020 the Action has started developing an internal COVID-19 initiative. As many of the members have stressed, APPLY is an Action almost made for the pandemic challenge, from a communication and public discourse perspective: think of the new communication initiative of António Guterres, the Secretary General of the UN. APPLY's Work and Budget plan for GP3 includes a Lisbon COVID-19 Workshop (3-4 Dec 2020) dedicated to the

analysis of public debates over COVID-19. Some of the members are already working on a simple poster on how to understand what's going on in public discourse on COVID-19 (e.g., in the CG there are scholars who have published a lot on arguments from authority/from expert opinion, on how to understand and evaluate them; this kind of "argumentative literacy" is now a crucial skill, when so many experts pronounce conflicting views affecting public policies.) APPLY has scholars working on fake news, on scientific arguments, on conspiracy theories, etc. It's a unique combination of expertise in a unique moment.

Given the objectives and, already, results of the APPLY Action, the basic idea is to look into what argumentation analysis can tell us about the quality of public discourse regarding the pandemic, esp. in three areas:

a) Science communication (think of the often confusing WHO communiqués and statements);

b) Conspiracy theories (China virus lab, Bill Gates, many others); and

c) Public intellectuals' and philosophers' communication (many of whom have also been COVID-19 sceptics!).

**Contacts:** Dr Marcin Lewinski ✉



CA18103

## Innovation with Glycans: new frontiers from synthesis to new biological targets (INNOGLY)

### Summary

The aim of INNOGLY COST action is to build up a multidisciplinary group of researchers to address the same pioneering goal: Gaining new insight into the biological function of glycans in different biological contexts. INNOGLY will address two main topics:

1) Glycan profiling in health and disease, where studies will be more specifically focused on glycan-based correlations in developmental and cancer biology, and glycan dependent

modulation of autophagy in cancer, lysosomal disorders and neurodegenerative diseases;

2) Glycan-based diagnostics and therapeutics, where INNOGLY investigators will focus on glycan dependent fine tuning of immunity, and the exploration of the multifaceted roles of glycosaminoglycans.

Within these topics, INNOGLY will foster the development of new glycan-based tools for diagnosis and treatment of diseases.

### Offered expertise to the COVID-19 network

Members of INNOGLY would be able to provide expertise in the chemistry, biochemistry, cell biology and immunology of glycans and glycoconjugates, ranging from protein glycosylation to glycolipids, glycan binding proteins and glucosaminoglycans. Glycans play an important role in modulating viral infections – important topics are: glycosylation of spike protein and ACE2I binding of the spike protein to sugars (sialic acids and glucosaminoglycans). Investigators can help with analysis and glycan profiling and with development of glycan-based diagnostics and therapeutics.

The aim of INNOGLY is to build up a multidisciplinary group of researchers to address the same pioneering goal: gaining new insight into the biological function of glycans in different biological contexts. INNOGLY will address two main topics relevant to COVID research:

1) Glycan profiling in health and disease, where studies can be more specifically focused on glycan-based correlations in viral infections;

2) Glycan-based diagnostics and therapeutics, where INNOGLY investigators will focus on glycan-dependent fine tuning of immunity, and the exploration of the multifaceted roles of glycosaminoglycans.

Within these topics, INNOGLY will foster the development of new glycan-based tools for diagnosis and treatment of diseases, including that of viral infections.

**Contacts:** Prof. Sabine Flitsch ✉



CA18105

## Risk-based meat inspection and integrated meat safety assurance (RIBMINS)

### Summary

The European Food Safety Authority has recently proposed a generic framework for a modern, flexible and dynamic risk-based meat safety assurance system. Implementation of such a system is expected to be a slow and careful process that would involve its thorough development, fine-tuning and testing its practical feasibility and

general impacts. There are many research groups in Europe that currently perform studies, mostly at national level, to fill the knowledge gaps related to such a new system. The main aim of the RIBMINS network is to combine and strengthen European-wide research efforts on modern meat safety control systems.

### Offered expertise to the COVID-19 network

RIBMINS is about risk-based meat safety systems. As COVID-19 disease isn't considered meat-borne the Action is only investigating its side effects such as current obstacles to perform official meat controls and public health impact of creating food supplies and prolonged food/meat storage.

The RIBMINS network is mainly comprised of vets dealing with food safety and epidemiology and also supports joint activities on this topic (perhaps to assess overall impact of the disease on public health?).

**Contacts:** Dr Bojan Blagojevic [✉](#)

CA18120

## Reliable roadmap for certification of bonded primary structures

### Summary

With the increasing pressure to meet unprecedented levels of eco-efficiency, aircraft industry aims for superlight structures and towards this aim, composites are replacing the conventional Aluminium. The same trend is being followed by civil, automotive, wind energy, naval and offshore industry, in which the combination (or replacement) of steel with composites can increase the strength-to-weight ratio. However, the joining design is not following this transition. Currently, composites are being assembled using fasteners. This represents a huge weight penalty for composites, since holes cut through the load carrying fibres and destroy the load path. Adhesive bonding is the most promising joining technology in terms of weight and performance. However, its lack of acceptance is limiting its application to secondary structures, whose failure is not detrimental for the structural safety. In primary

(critical-load-bearing) structures, fasteners are always included along bondlines, as "back-up" in case the bond fails. The main reasons for this lack of acceptance are the limited knowledge of their key manufacturing parameters, non-destructive inspection techniques, damage tolerance methodology and reliable diagnosis and prognosis of their structural integrity. The Action aims to deliver a reliable roadmap for enabling certification of primary bonded composite structures. Despite the motivation being aircraft structures, which is believed to have the most demanding certification, it will directly involve other application fields in which similar needs are required. This Action will tackle the scientific challenges in the different stages of the life-cycle of a bonded structure through the synergy of multi-disciplinary fields and knowledge transfer.

### Offered expertise to the COVID-19 network

1. Members of CA18120 have expertise on nanoparticles and thin films with antibacterial properties, and materials with anti-virus/bacterial properties for implementation

in aircraft and building structures. The idea is to offer this expertise in order to collaborate with other groups that can provide sufficient experience in e.g., biosensors (sensors that can



detect RNA changes) for virus detection (early?) in order to protect workers in manufacturing plants, but also in public transportation;

a) **Offer:** technology to create films and nanoparticles that can impregnate materials and provide antibacterial properties and multisensor systems for surface contamination analysis;

b) **Request:** technology in biosensors, microbiology, virology, biochemistry;

2. Offer of lab facilities – most of the participants of CA18120 have access to significant experimental facilities and infrastructure. They can offer these facilities to other groups that are interested to use them in the frame of any collaboration;

a) **Offer:** extensive network of laboratory facilities, able to perform testing at different scales from micro to full structural scale, at different environmental conditions;

b) **Request:** collaboration with COST Actions that need experimental facilities for proof of concept or experimental validation and implementation of ideas;

3. Several of our group members have expertise with methods that allow the improvement of the adhesion in e.g., 3D manufacturing by

implementing mechanical interlocking systems (at different scales). This expertise can assist groups that work with rapid 3D manufacturing of medical devices and protective equipment;

a) **Offer:** expertise in mechanical methods to improve adhesion;

b) **Request:** collaboration with groups working on adhesion of materials in 3D additive manufacturing/collagen systems, chemical methods etc;

4. CA18120 group members can offer expertise in feasibility of internal aircraft structures and space modifications to achieve the necessary requirements for social distancing.

a) **Offer:** expertise in internal aircraft space design

b) **Request:** /

5. Many of the CA18120 group members are giving online courses during this semester due to the COVID-19. Most of them record the classes. It could be a good idea if some of the courses provided would be selected (after the permission of the owner) to create an online course portfolio with relevant material for CA18120. This can be open access for anyone interested. To be discussed internally during the next MC meeting.

## European Cholangiocarcinoma Network

### Summary

Cholangiocarcinomas (CCAs) are a heterogeneous group of cancers of the biliary tree. CCA is considered one of the deadliest cancers and its incidence is increasing constantly and dramatically in Europe. Notably, CCA is the most frequent cause of cancer metastases of unknown origin, suggesting underestimation of the CCA problem. CCA heterogeneity has limited the discovery of biomarkers and novel therapeutic options, hampering the development of tools for early diagnosis and effective treatment. CCA

constitutes a major challenge for researchers, clinicians, national health systems and society. Still, coordinated multidisciplinary pan-European studies are lacking.

The main aim and objective of the Action is to face cholangiocarcinoma burden and heterogeneity through the creation of a cooperative, interdisciplinary pan-European network harmonising clinical investigators, basic scientists, charities, European RTD Organizations, SMEs, and National and European Institutions.

### Offered expertise to the COVID-19 network

The multidisciplinary group of CA18122 could study the influence of the new SARS-CoV2 coronavirus on different models and/or cell lines using novel methodologies and/or an analysis model. Above all, and due to the nature of this COST action, one could study the effects of this new pathogen on the liver, its functions and

attached or directly connected organs. In addition, the new drugs, synthesized by this consortium, can also be studied, or replacement drugs, through theoretical calculations and their interaction with the drug regions of the virus, as well as their way of acting on its different functions. More detailed information can be found [here](#).



CA18124

## European Sexual Medicine Network

### Summary

Sexual medicine is an immense field that deals with disorders of sexual health of individuals throughout the course of life. Due to its broad scope, a comprehensive approach to the subject is largely non-existent: research is in short supply and few medical educators are qualified to teach the subject. Different clinical, biological and psychosocial disciplines deal with the treatment of sexual disorders, but they often do this only partially due to the particular discipline. Clinical, technological and socioeconomic progress, along with societal changes, have caused general interest in sexual health to increase and change.

Sexual medicine also has to pay more attention to modern-day developments. Incidents of mass sexual violence amplify the need for novel research on sexually deviant behaviour. Mass media, including social media, have an immense impact on contemporary viewpoints on sexuality by younger generations. Research on prevalence, pathophysiology, and optimal treatment of sexual dysfunction associated with chronic illness, including cancer, becomes more important. Importantly, too, the aging population compels medical and psychosocial sciences to deal increasingly with sexual health of older people.

### Offered expertise to the COVID-19 network

CA18124 will study the impact of COVID 19 on sexual health.

**Contacts:** Dr Marianne Greil-Soyka [✉](#)

CA18125

## Advanced Engineering and Research of aeroGels for Environment and Life Sciences (AERoGELS)

### Summary

AERoGELS COST Action intends to bring together the knowledge on research and technology of aerogels at the European level from academia, industry and regulatory experts. Aerogels are a special class of mesoporous materials with very high porosity and tunable physicochemical properties. Although some types of aerogels have already reached the market in construction

materials and aerospace engineering, the full potential of aerogels are still to be assessed for other sectors. In this Action, the use of aerogels specifically for environmental and life sciences applications will be explored in a multidisciplinary approach to tackle two of the current main European challenges: circular economy and active ageing.

### Offered expertise to the COVID-19 network

AERoGELS Action members would be glad to collaborate and join research efforts regarding the COVID-19 situation.

· **The topic on which AERoGELS would like to work:** development of carriers for antiviral drugs;

· **Expertise offered:** expertise in nanostructured materials for biomedical applications (pharmaceutical technology and regenerative medicine);

· **Expertise looked for:** antiviral drug candidates and intended administration route(s).

**Contacts:** Dr Carlos Garcia Gonzalez [✉](#)



CA18132

## Functional Glyconanomaterials for the Development of Diagnostics and Targeted Therapeutic Probes (GlycoNanoProbes)

### Summary

Carbohydrates, proteins, lipids and nucleic acids are the biomacromolecules that constitute the fundamental building blocks of life. Among those, carbohydrates are key players involved in a myriad of molecular recognition events from protein folding, cell-cell communication, bacterial and viral infections to fertilization. Cell-surface

carbohydrates can differ considerably between cell lines and also between healthy and disease states. These differences can be exploited for the development of early diagnostic tools, prevention and/or treatment of diseases via for example molecules/probes that target the interactions between key glycans and their receptors.

### Offered expertise to the COVID-19 network

GlycoNanoProbes has members covering different aspects from synthesis of epitopes and materials to evaluation of diagnostic tools and therapeutics and is interested in collaborating within the COVID-19 context.

[Priyanka Sahariah](#) the Action's coordinator for this initiative.

**Contacts:** [Dr Priyanka Sahariah](#) ✉

CA18138

## Research Innovation and Sustainable Pan-European Network in Peripartum Depression Disorder

### Summary

The main goal of Riseup-PPD COST Action is to establish a Pan-European multidisciplinary network of researchers dedicated to the understanding of

Peripartum Depression Disorder (PPD), from its prevention and assessment to its treatment and global impact.

### Offered expertise to the COVID-19 network

COST Action CA18138:

- Is already collaborating with another COST Action to gather information/guidelines/reports/publications concerning perinatal mental health;

- Has established a Task Force on perinatal mental health and COVID-19;
- The above mentioned Task Force is, among other things, translating the [COPE survey](#).

**Contacts:** [Dr André Silva](#) ✉



CA18140

## People in Motion: Entangled Histories of Displacement across the Mediterranean (1492-1923) (PIMo)

### Summary

PIMo is a four-year global research project undertaken by scholars from the humanities and social sciences, including historians, scholars of literary, visual, and material culture, philosophers, mathematicians, and maritime, biological, and bio-behavioral sciences. It addresses the entangled histories of displacement of human subjects within and from the Mediterranean from the fifteenth to twentieth centuries. The project provides a critical historical context and understanding for the current migration crisis in Europe in terms of the intensity of emotional responses of displaced peoples and the communities they orbit and join. It investigates multiple historical case studies of the movement of people through religious persecution, slavery and indentured labour, trade, exploration, and imperialism, curiosity, and environmental and social catastrophe. Within

the deeply entangled or intertwined history and cultures of the Mediterranean, the project introduces the term 'displacement' as a way to reconceptualise the movement of people with awareness, historical acuity, and compassion. Attending to the phenomenon of displacement as a connective tissue of human experience does not presume (or judge) the conditions of movement (voluntary or involuntary), but seeks to recover and understand individuals and communities in light of their particular experiences of re/location. By tracing the entangled movement of people—and the objects, writing, and ideas that accompany them—this project understands displacement and dislocation as shared human experience, while remaining attentive to its geographical, political, and historical specificities.

### Offered expertise to the COVID-19 network

"Contagion" is a podcast series on circulation and pandemic threats throughout history, jointly promoted by PIMo and the history journal *Cromohs*. Contagion asks how individuals, groups,

societies and states reacted to pandemics. The first three podcasts have been released and are accessible [here](#) & [here](#).

More podcasts have been commissioned and will be published within the upcoming weeks. Further suitable proposals are welcome.

**Contacts:** Prof. Giovanni Tarantino [✉](#)



CA18201

## An integrated approach to conservation of threatened plants for the 21<sup>st</sup> Century (Conserveplants)

### Summary

Even though plants represent an essential part of our lives offering exploitational, supporting and cultural services, we know very little about the biology of the rarest and most threatened plant species, and even less about their conservation status. Rapid changes in the environment and climate, today more pronounced than ever, affect their fitness and distribution causing rapid species declines, sometimes even before they had been discovered. Despite the high goals set by conservationists to protect native plants from further degradation and extinction, the initiatives

for the conservation of threatened species in Europe are scattered and have not yielded the desired results. The main aim of this Action is to improve plant conservation in Europe through the establishment of a network of scientists and other stakeholders who deal with different aspects of plant conservation, from plant taxonomy, ecology, conservation genetics, conservation physiology and reproductive biology to protected area's managers, not forgetting social scientists, who are crucial when dealing with the general public.

### Offered expertise to the COVID-19 network

Conserveplants members have written an inspiring and thought provoking essay on 'The COST of COVID-19' which has been uploaded on the [action website](#).

**Contacts:** Dr Ziva Fiser [✉](#)

CA18202

## Network for Equilibria and Chemical Thermodynamics Advanced Research (NECTAR)

### Summary

We are a community (bringing together 25 member states and Ukraine, with almost 200 participants), with expertise in many aspects of chemistry, though with some "excursions" to biology and chemical engineering.

But NECTAR's core business is, of course, CHEMISTRY, with particular emphasis on chemical thermodynamics.

### Offered expertise to the COVID-19 network

NECTAR participants are keen to offer their unconditional help to support other scientists fighting all over Europe and the world, against COVID-19.

As for its structure and expertise, the participants cannot say at this moment that they would like to work in any particular field, but they can offer their expertise in many chemical (and chemically oriented) disciplines to support other studies.

NECTAR's network is mainly composed by Analytical, Physical, Inorganic, Organic and Medicinal Chemists, including some Chemical Engineers and Biologists.

They have expertise on:

- Solution chemistry, chemical equilibria and speciation analysis (drugs in biological fluids);

- Thermodynamics of chemical interactions (including peptides, protein and XNA-interactions with drugs);

- Use, development and optimisation of analytical techniques (spectrometric techniques including NMR, X-Ray, etc. electrochemistry, MS spectrometry, thermal analysis and calorimetry, sensors including immunosensors);

- Design, synthesis, purification and characterisation of organic and organometallic compounds (drugs, metallodrugs, peptides and proteins);

- Use of chemometrical tools for big data analysis;

- Theoretical chemical calculations, including Drug design and QSAR.



The Action does not work directly on COVID-19 research, but it can offer support and laboratories for chemically investigating drugs and metallodrugs and COVID-related molecules to verify interactions with designed ligands and complexes, to specifically target the disease. If needed, some medicinal chemists of our network can collect a library of compounds already developed in their laboratories for other purposes, for eventual testing against COVID-19.

CA18205

## Worlds of Related Coercions in Work (WORCK)

### Summary

It seeks to overcome the classic divides of labour history discourse (productive/unproductive, free/unfree, capitalist/pre-capitalist) by linking the stories of work and production with those of violence, expropriation and marginalisation.

### Offered expertise to the COVID-19 network

WORCK offers expertise on history, sociology, and law. The Action is currently collecting debate on "COVID-19 and the Workers of the World". Debate now online [here](#).

CA18208

## Novel tools for test evaluation and disease prevalence estimation

### Summary

Currently, there are no definite standards in the measurement of disease prevalence – a crucial tool in understanding and eventually managing pandemics. This Action works on unifying mathematical approaches to estimating disease prevalence.

### Offered expertise to the COVID-19 network

CA18208 is interested in collaborating/working on a model for COVID-19 diagnostics.

Expertise it is offering: evaluation of diagnostics, estimation of true disease prevalence, and proof of disease freedom.

A topic on which the Action would like to work is epidemiology.

Expertise it is looking for: microbiology, epidemiology, clinical medicine.

**Contacts:** Dr Polychronis Kostoulas ✉

CA18209

## European network for Web-centred linguistic data science (NexusLinguarum)

### Summary

The main aim of CA18209, also called "NexusLinguarum" is to promote synergies across Europe between linguists, computer scientists, terminologists, and other stakeholders in industry and society, in order to investigate and extend the area of linguistic data science. We understand linguistic data science as a subfield of the "data science" field, which focuses on the systematic analysis and study of the structure and properties of data at a large scale, along with methods and techniques to extract new knowledge and insights from it. Linguistic data science is a specific case, which is concerned with providing a formal basis to the analysis, representation, integration and exploitation of language data (syntax, morphology, lexicon, etc.). In fact, the specificities of linguistic data are an aspect largely unexplored so far in a big data context. In order to support the study of linguistic data science in the most efficient and productive way, the construction of a mature

holistic ecosystem of multilingual and semantically interoperable linguistic data is required at Web scale. Such an ecosystem, unavailable today, is needed to foster the systematic cross-lingual discovery, exploration, exploitation, extension, curation and quality control of linguistic data. We argue that linked data (LD) technologies, in combination with natural language processing (NLP) techniques and multilingual language resources (LRs) (bilingual dictionaries, multilingual corpora, terminologies, etc.), have the potential to enable such an ecosystem that will allow for transparent information flow across linguistic data sources in multiple languages, by addressing the semantic interoperability problem.

We aim thus at developing a common understanding, standards, and best practices in the field of linguistic data science for supporting the Digital Single Market, cross-border commerce, cultural exchange, and communication in Europe.

### Offered expertise to the COVID-19 network

NexusLinguarum is interested in formally encoding all language data that are directly relevant to the COST COVID-19 Network, as those

can be appearing in bio-medical, but also legal and societal contexts. This can concern, among others, taxonomies, terminologies, law texts



and general guidelines on how to deal with the pandemic. The contribution can help building a bridge between language expressions that are used in those different contexts and ease the integration of different types of knowledge related to COVID-19, in a multilingual way. Cooperation with CA18231 (Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation) can lead to an extension of the interoperable representation of

formal language data in the COVID-19 complex to the generation of "narratives" that can be easily understood by the non-expert citizen. NexusLinguarum can cooperate with any CA that is deploying a knowledge base for describing their COVID-19 related content and which needs to be equipped with a multilingual labelling of their concepts.

CA18213

## Rural NEET Youth Network: Modeling the risks underlying rural NEETs social exclusion

### Summary

Societal changes due to threats of pandemic can have particularly severe consequences for relatively isolated and rural communities. This

Action works with policy makers on better mapping and understanding pre-existing social exclusion amongst youngsters in rural areas.

### Offered expertise to the COVID-19 network

CA18213 offers expertise on psychology, economics, sociology, agriculture, and political science.

Education or Training - NEET), and to surveying stakeholders' (public services and NGOs) intervention needs regarding NEETs, at the national/regional levels, developing webinars and short-briefs to deliver results.

The Action participants are interested to look at the effect of the pandemic on social exclusion, especially of the youths that are not employed nor in training nor studying (Not in Employment,

See also the Action's webpage.

CA18214

## The Geography of New Working Spaces and the Impact on the Periphery

### Summary

The Action aims:

1. To share the first outcomes of some funded international research projects on the phenomenon of new workplaces, such as Coworking Spaces and Maker Spaces, in order to:
  - a) Identify the typologies of such emerging workplaces; and
  - b) Reveal their spatial distribution, and to explain their location patterns;
2. At identifying, measuring and evaluating the (direct and indirect) effects of these new working spaces in order to understand whether and how they have promoted – with or without the help of public subsidies and planning measures:
  - a) Regional competitiveness, economic performance and resilience;
  - b) Entrepreneurial milieu;
  - c) Knowledge creation within regional innovation system, retaining knowledge workers and the creative class;
  - d) Social inclusion and spatial regeneration of peripheral areas.
3. To collect, discuss and develop guidelines for tailored policy and planning measures to foster the positive effects of new workplaces through the promotion of agreements and cooperation with local, regional and/or national public administrations /stakeholders, as well as to try to mitigate their negative effects on the neighbourhoods (i.e. parking shortages, noise, or increasing land rent).

### Offered expertise to the COVID-19 network

CA18214 has expertise available on:

- **Social and economic geography:**
  - Social, cultural and economic geography, international trade;
  - Spatial development, land use, regional planning;
- **Economics and business:**
  - Development, economic growth, competitiveness;
  - Econometrics, statistical methods applied to economics;

The Action has started various activities to investigate the impact of the Corona virus crisis on co-working spaces and their users (freelancers etc.), also with regard to employment.

It has created a facebook group entitled: "Coworkers in emergenza COVID-19" (in Italian) which addresses the coworkers in Italy to understand the problems they are facing since the majority of coworking spaces is closed, and the policy measures they would like to be put in place by the government. More information is available [here](#).

The Action participants have organised a series of webinars on this issue where academics, policy makers, coworking managers and coworkers are interviewed. The webinars are published on the [facebook page of CA18214](#). Moreover, they are launching a survey addressed to coworking managers in phase 1, phase 2 and phase 3 of the pandemic in order to measure the effects in the short, medium and long run. The survey will be sent to the coworking managers worldwide.

**Contacts:** Prof. Ilaria Mariotti ✉

CA18216

## Network for Research in Vascular Ageing (VascAgeNet)

### Summary

Cardiovascular disease (CVD) is the leading cause of morbidity and mortality worldwide, regardless of gender, ethnicity or income. The concept that vascular age, as opposed to chronological age, is better related to the prognosis of CVD is rapidly evolving. Arterial stiffness is an important component of vascular ageing and a potent CVD risk predictor, and as such is emerging as an appealing therapeutic target. Despite recent technological advances for the measurement of vascular ageing in clinical practice, unmet needs remain including: complexity of use and heterogeneity

of approaches, insufficient validation in clinical settings, fragmentation of expertise, and lack of research driven studies regarding treatment and head-to-head comparisons between different techniques.

Therefore, the aim of the COST action is:

To establish a network which will work to refine, harmonise and promote the use of vascular ageing measures, in order to improve clinical practice and to reduce the burden of CVD globally.

### Offered expertise to the COVID-19 network

VascAgeNet would like to work on the following topic: the Action is launching a collaborative, multicentre research project in order to explore medium- and long-term vascular consequences of COVID-19 with the [Artery Society](#). The study will be called CARTESIAN (COVID-19 ARTERial Stiffness and vascular AgiNg). The primary goal of the project is to study the medium- and long-term effects (3-6 months and 1 year) of SARS-CoV-2 infection

on arterial stiffness and central haemodynamics, and thus vascular aging (which is the core topic of VascAgeNet).

#### Expertise available in the Action:

- Clinical centres and medical doctors, medical engineering, mathematicians and clinical statistics, industry;

- An extensive network of clinicians either frontline or indirectly in contact with COVID-19 patients;
- Expertise from clinicians in the medical domain, i.e. engineers related to modelling the cardiovascular system, basic researchers about the physiological background and companies translating knowledge to device;
- New insights and data from our study.

#### Expertise the Action is looking for:

- Additional clinical centres participating in the study;
- Upfront insights from related studies and other research dealing with COVID-19;
- Exchange of information on topics related to our study.

**Contacts:** Dr Christopher Mayer ✉



CA18218

## European Burden of Disease Network

### Summary

This Action works on methodologies which allow to better understand the relation between diseases and quality of life, and how the occurrence of different diseases effects life at-large?

### Offered expertise to the COVID-19 network

CA18218 works on methodologies which allow to quantify the population health impact of diseases and risk factors.

CA18219

## Research network for including geothermal technologies into decarbonized heating and cooling grids

### Summary

CA18219 addresses the inclusion of geothermal technologies into district heating and cooling systems in Europe to foster the de-carbonization of the heating & cooling market. With regard to technological solutions, the ACTION follows a strong bottom – up approach. Shallow-, intermediate as well as deep geothermal

technologies are considered in monovalent or multivalent grids. Geothermal may act as a heating source, sink or storage and may be combined with other renewables (e.g. solar thermal), waste heat and other technologies like carbon capture and utilization.

### Offered expertise to the COVID-19 network

CA18219 is addressing the geoscientific, technical and socio-economic boundary conditions for replacing fossil fuels and electricity/air chiller driven in heating and cooling grids.

by replacing air chillers by environmental friendly geo-cooling solutions; recent studies are indicating a correlation between increased shares of severe COVID-19 cases and low air quality in urban areas.

The Action would like to address the topic of improving living conditions in urban areas by reducing air pollutants due to the replacement of fossil fuels by geothermal energy. In addition, the Action addresses reducing urban heat islands

The Action is looking for expertise on city planning, energy planning, environmental research, epidemiology for impact assessment and joint awareness raising campaigns.

CA18227

## The Core Outcome Measures for Food Allergy (COMFA)

### Summary

Food allergy is a major societal challenge in Europe. The disease affects 6%-8% of children under the age of 3 years, and 2-3% of adults and has a quality of life impact similar to other major chronic conditions. Food allergy is a major financial burden, with significant impact on healthcare, education, food and catering industries. New treatments for food allergy are in development. There is however no agreed set of Core Outcomes

for evaluating these new treatments. This may prevent the development of effective treatments with marketing approvals from regulatory authorities, for food allergic Europeans.

Core Outcome sets ensure that trial outcomes are relevant to patients, clinicians, healthcare providers and regulators; and they allow trial outcomes to be combined in meta-analysis, so that new findings are capitalized on as soon as possible.

### Offered expertise to the COVID-19 network

In the COVID-19 context COMFA aims to:

- 1) Assess the attitudes towards and understanding of the risks of COVID-19/SARS-CoV-2 and preventative strategies among the general population, including healthcare providers;
- 2) Determine the levels of stress, anxiety, and coping mechanisms employed related to COVID-19/SARS-CoV-2 and social distancing/forced isolation policies to help deter infection spread;

- 3) Determine how COVID-19/SARS-CoV-2 impacts health utility as measured by a standardized generic health utility index.

The Action Chair is also leading a clinical research team in Moscow, which is aiming to collect data from the COVID patients.

As a consortium, COMFA has experts in various fields, including immunology, psychology, epidemiology and COS development. It is open to any collaborations.

**Contacts:** Dr Daniel Munblit

CA18231

## Multi3Generation: Multi-task, Multilingual, Multi-modal Language Generation

### Summary

The Action aim is to foster an interdisciplinary network of research groups working on different aspects of language generation (LG), focussing on 4 themes: grounded multi-modal reasoning and

generation; efficient machine learning algorithms, methods, and applications to LG; dialogue, interaction and conversational LG applications; and exploiting large knowledge bases and graphs.

### Offered expertise to the COVID-19 network

Multi3Generation has identified the following topics of interest:

- 1) Automatic conversion of language used by professionals (e.g., doctors) into common language that is better understood by a non-expert in the terminology of the technical and scientific field, such as doctor-to-patient communication. This implies transforming formal into informal language and deciphering of technical or complex texts (or speech) into texts (or speech) that use regular language easier to understand by regular language users/speakers. Collaboration could involve other COST Actions such as and CA19102;

- 2) Pragmatic linguistic approach to address a real and current need dramatically highlighted by the COVID-19 pandemic and stay-at-home policy effect on education. As a long-term effect of this crisis, it is expected that the levels of telework will increase, and so will distance and self-learning, which can bring new learning paradigms that are beneficial to students who have been excluded from that privilege due to poverty or discriminatory social conditions. Improvement of different levels of literacy, reaching in particular children who are at a competitive disadvantage due to lack of access to human language technology.

**Contacts:** Dr Anabela Barreiro

CA18233

## European Network for Innovative Diagnosis and Treatment of Chronic Neutropenias

### Summary

Chronic neutropenias (CNP) represent a wide spectrum of disorders ranging from mild to life-threatening, acquired or congenital diseases. The pathophysiological mechanisms underlying CNPs are diverse whereas the prognosis of patients with CNP is related to the underlying pathogenesis, the degree of neutropenia and the propensity for leukaemic transformation. The principal challenge of EuNet-INNOCHRON is to establish a wide network of researchers with special interest in CNPs and facilitate interactions and collaborations among top-level European experts and young investigators from different scientific areas.

The main aims of the Action are:

a) To promote science, training and education on advanced biochemical, immunological, genetic

and molecular biology techniques for the accurate diagnosis and treatment of patients with different types of CNP, early recognition of Myelodysplastic Syndromes/Acute Myeloid Leukaemia evolution and appropriate intervention;

b) To link and further expand existing neutropenia networks for a more multidisciplinary approach of CNP that will result in a better characterization of the underlying diseases and development of individualized and precision medicine therapeutic approaches for selected patients;

c) To organize and expand CNP patient Registries and Biobanks using homogenized protocols in line with the ethical standards of the European Legal Framework and the relevant national regulations.

### Offered expertise to the COVID-19 network

EuNet-INNOCHRON has generated an electronic questionnaire to define the frequency and severity of SARS-CoV-2 infection among patients with CNP. The genetic susceptibility in complement activation and its association with SARS-CoV-2

severity features as well as the role of neutrophil extracellular traps (NETs) in SARS-CoV-2-induced immunothrombosis, are also areas of the Action's research interest.

**Contacts:** 1) Questionnaire:

Prof. Jan Palmblad ✉

Dr Daniela Guardo ✉

Prof. Constantine Tsiotis ✉

2) Genetic susceptibility in

complement activation:

Dr Eleni Gavrilaki ✉

3) Role of NETs:

Prof. Pangiotis Skendros ✉

CA18236

## Multi-disciplinary innovation for social change

### Summary

The Action aims to demonstrate how we can respond to social problems with a problem-oriented ethos approach, supporting positive social

change and the development of international public policy discourse.

### Offered expertise to the COVID-19 network

Some examples of ongoing activities amongst the members of CA18236 related to COVID-19:

- Rural resilience during COVID-19;
- Social entrepreneurship for local change;
- Tourism in post COVID-19;
- Festival culture – history and perspectives beyond Corona;
- Liberty as a concept in community video by a grassroots FREEkey Group as part of Disability/Studies/and Social/Innovation Lab;
- Help and support to micro and small companies and entrepreneurs;
- A book project to forecast future socio-economic consequences of COVID-19 pandemics;

- A study examining publications and patents on COVID-19 by using data mining techniques with infection chain classification of WHO;
- Students' behavior, as well as their readiness to use E-learning during the COVID-19 pandemic;
- A study analysing the experience of ex-offenders in lockdown compared to the imprisonment;
- A webinar "Multi-disciplinary innovation in a pandemic" on the 5<sup>th</sup> of June, to register, see [here](#). This online webinar organised by CA18236, free and open to anyone, could be of interest to other COST Action members and especially to those who are interested in the social economy dimension. The webinar will have a COVID-19 axis.

Contacts: Dr Katri-Liis Lepik ✉

CA19106

## Multi-Sectoral Responses to Child Abuse and Neglect in Europe: Incidence and Trends (Euro-CAN)

### Summary

In Europe, millions of children experience abuse or neglect at the hands of those who should care for them. Yet, how many of these children get help, which services they receive by which agency remains largely unknown. Moreover, countries are hardly aware which maltreatment turns fatal. This constitutes a major knowledge gap that is

likely due to inconsistent ways of surveying and reporting on child maltreatment services across Europe. Without this information, we cannot know how the systems work, what additional preventive efforts are required, if the interventions fit the victims' needs or if the most vulnerable groups are properly identified.

### Offered expertise to the COVID-19 network

Euro-CAN will start in autumn 2020. The Action will set up a dedicated working group looking at how the lockdown due to the COVID-19 pandemic impacts child abuse.

Contacts: Prof. Andreas Jud ✉

CA19118

## High-performance Carbon-based composites with Smart properties for Advanced Sensing Applications (EsSENce)

### Summary

The goal of EsSENce is to develop an innovation scientific hub at European and International level, focusing on advanced composite materials reinforced with Carbon based (nano)materials (CNMs). The sharing of ideas and results will boost the development of high-performance

composites with sensing properties. Special focus will be given in the utilisation of these materials for the introduction of smart properties to the final composites and their application in the field of sensors development.

### Offered expertise to the COVID-19 network

In EsSENce's activities it is foreseen to use nanomaterials for sensing devices that can be applied in the medical sector, as well as the fabrication of advanced composites that can be used as consumables for the healthcare system.

The Action's activities can be complementary to those of the other Actions involved in the Network of Actions against COVID-19.

### Further information

#### NTUA

In our activities we have foreseen the use of nanomaterials for sensing devices that can be applied in the medical sector, as well as the fabrication of advanced composites that can be used as consumables for the healthcare system.

According to the above, our activities can be complementary to the Actions that have already been involved in the inter-COST Network against COVID-19, thus I would like to join also the Network and contribute to COVID-19 research.

#### University of Ghent

Support via design and development of components via 3DPrinting, including also testing possibilities. Focus is on connection tubes and masks but we also got requests for possible support about respirator units.

#### INEGI

Individual Protection Equipment and Collective Protection Equipment (face-shields supports, 3D-printed and Injection Moulded; Hands-Free door knobs; ventilator accessories design); Non-Invasive Ventilators Equipment: Helmet-CPAP (Continuous Positive Air Pressure), in particular, in the design, materials selection and manufacturing and integration strategies for the Helmet of the CPAP module;

Cleaning-Disinfection Tunnels; Other medical parts (nasopharyngeal swabs).

#### CTAG

Manufacturing visors with our 3D printing services (around 30 per day)/created a 3D model of visors able to be manufactured by injection moulding process and Plascies purchased the mould/We are now able to manufacture around one thousand units per day/Homologation is in process. Trials to manufacture by 3D printing other small parts for respirators and filtered masks, but this is not as evolved as the visors/develop a new low-cost model of respirators using components from the automotive industry. This department is also

manufacturing electronic plaques for sanitary equipment. Further info [here](#).

#### University of Luxembourg and Cardiff University

Spin-off, [www.ariana-tech.com](http://www.ariana-tech.com) collaborating with the Weizmann institute in Israel on agent-based modelling and parameter estimation for epidemiological models.

#### ICMA-CSIC / University of Zaragoza & CIBER-BBN

Working on a sensor for COVID based on LFIA and plasmic nanoparticles. We are adapting some technology developed under a previous ERC-POC project. This COVID project is funded by CSIC, and involves 4 CSIC institutes and 2 hospitals with a global budget of 700 K during 1 year.

#### Institut Català de Nanociència i Nanotecnologia (ICN2)

Working on COVID-19 diagnostics with financial support from our institute. Organised a dedicated event on Biosensors for Pandemics with the focus to COVID-19 diagnostics.

#### University of Malta

Online COVID-19 Risk Assessment Tool, available at [covid19check.gov.mt](http://covid19check.gov.mt). This tool prompts the user with a few questions related to age, type and onset of symptoms, exposure to diagnosed people, chronic conditions, and determines the risk of being infected, as well as offers guidance based on the user's specific situation. UM academics from the Faculty of Dental Surgery have developed digital



methodology to design 3D printed masks based on the face scans of healthcare professionals. Set-up a makeshift production line to keep up with the rising demand for hardware to disinfect and reuse Personal Protective Equipment (PPE) used by front line health care workers. The device harnesses Ultraviolet Germicidal Irradiation (UVGI), which is emerging as a powerful weapon in the arsenal against the novel coronavirus, and is being deployed widely to disinfect respirators.

#### [University of Tunis El Manar Tunis](#)

Develop lateral flow immunochromatography strips (IgG, IgM), electrochemical biosensors (proteins S and N), electrochemical RNA biosensors for COVID-19.

#### [Chemistry Department, University of Pristina](#)

Electrochemical sensors based on nanostructured carbon materials for analysis of organic compounds. An Ignite project for pharmaceutical product analysis in collaboration with Nano - Alb unit in Tirana. We are keen to engage with the International network and expand our research profile such as COVID-19.

#### [École Polytechnique Fédérale de Lausanne, AlpesLaser](#)

Helping out the Swiss task force on the topic of masks, testing, properties, how long can we use them, various decontamination treatments, etc, mostly on the polymer/textile side of the matter of course.

#### [Avanzare](#)

Testing some masterbatch (in an accredited/certified laboratory) using a standard and a modification of the standard using Human Coronavirus 229E. We also have a patent application.

#### [Dallara](#)

Dallara was involved and in the design of valves to convert sporting good masks (i.e. Decathlon) in C-Pap ones. Dallara has decided to release for free the CAD so that everyone could print with DDM technique the valve thus contributing to the solution of this crisis. Now Dallara is in contact with medical associations to produce these valves to help them in the treatment of COVID in poor countries.

#### [Itainnova](#)

Materials & Components group at ITAINNOVA is collaborating in initiatives related to mechanical and performance testing of emergency ventilators and disposable masks, tissue disinfection and rapid prototyping of parts. Big Data group at ITAINNOVA has developed an AI Chatbot for responding to the doubts on the virus and EMC group is testing compatibility on emergency ventilators.

#### [Damascus University, Physics Department](#)

Fabrication of Nanofilter face masks (by electrospinning method) anti filtration and effective against bacteria and viruses whose sizes are under 100nm; Synthesis of metal/metal oxide nanoparticles (Ag, ZnO, CuO, TiO<sub>2</sub>, MgO,

etc.) antibacterial and antiviral applications; Synthesis of Carbon quantum dots for medical diagnostic applications.

#### [Institute of Metals and Technology](#)

Proposal of two main points:

1. Surface nanostructuring via laser texturing and composite polymer coatings (i. e. TiO<sub>2</sub> nanoparticle/biocompatible polymer) to tailor wettability and roughness;
2. Additive Manufacturing Selective Laser Melting of Stainless Steel with Silver or Copper.

#### [Politehnica University of Bucharest](#)

Two projects in the COVID-19 context: further info [here](#).

#### [Vinca Nuclear Institute](#)

Performing sterilization of the workspace and vehicles using ozone, contributing to prevention and suppression of the COVID-19 pandemic effects: [www.ozonecare.org](http://www.ozonecare.org).



CA19123

## Protection, Resilience, Rehabilitation of damaged environment (PHOENIX)

### Summary

Humanity faces unprecedented challenges: global warming, overuse of fossil fuel energy and rapidly growing urbanisation. While the development, validation and cost-efficiency improvement of energy-aware and limited-complexity solutions are becoming increasingly time-consuming, microorganisms represent one realistic hope. For millennia microbes have tirelessly been shaping the Earth's ecosystems and with the right approach, they can help re-introduce environmental equilibrium. PHOENIX aims to demonstrate the effectiveness of Bio-electrochemical systems (BESs); BESs are low environmental impact systems that exploit the biological activity of live organisms for pollutant reduction, recycling of

useful elements, synthesis of new products and production of electricity, in the case of microbial fuel cells (MFC). Recent advances in the field of low power electronics enable the exploitation of these sustainable and environmentally-friendly technologies. The activities of PHOENIX will be related to the characterization of BESs technologies and their implementation as bio-remediator, bio-sensors, and bio-reactors connected to sustainable urban planning, educational and socio-economic aspects. The integration of bio-technologies in the urban context is a key priority for appropriate rational urban planning and minimum environmental impact.

### Offered expertise to the COVID-19 network

In terms of the potential input of PHOENIX into the network in terms of planned activities, we (as in UWE, Bristol) are working with one lab in Europe to test the fate of the SARS-CoV-2 virus when exposed to our Bioelectrochemical Systems/Microbial Fuel Cell systems and also with one commercial facility in the UK to test the efficacy of the liquid by-product produced inside our Bioelectrochemical

Systems/Microbial Fuel Cells (we call "catholyte") in killing SARS-CoV-2. Although these are activities led by us in Bristol, I'm happy to have these included under our COST Action planned activities. Our expertise (again based on our Bristol work) is in testing the ability of live microbial electroactive communities, to kill pathogenic species both bacterial and viral, whilst generating electricity. Also Claudio Avignone-Rossa

is an expert environmental microbiologist and has also been looking into the fate of pathogenic bacteria inside bioelectrochemical systems. We would certainly like to engage in ongoing COVID-19 research

activities, especially where there is synergy, like for example epidemiology to understand mutation, modes of survival and how these may be combated.

**Contacts:** Prof. Ioannis Ieropoulos [✉](#)

CA19125

## EPIgenetic mechanisms of Crop Adaptation To Climate cHange (EPI-CATCH)

### Summary

The ultimate objective of EPI-CATCH is to define, develop, generate and share new breakthrough knowledge and methodologies for the investigation of epigenetic mechanisms modulating plant adaptation in response to environmental stresses driven by climate change. So far, no international network has been created with the aim of standardizing methodology in plant epigenetics/epigenomics and better integrate these data with other "omic" approaches. EPI-CATCH will create a pan-European framework for networking in this under-investigated research field. EPI-CATCH will use a unique cross-disciplinary approach that brings together industrial developers, molecular geneticists, molecular biologists, crop breeders, agronomists, plant pathologists, and bioinformaticians. EPI-CATCH will explore new frontiers on both innovative and translational research targeting the new challenges in plant epigenetics.

Four main specific objectives will be addressed by four working groups:

- 1) Update of the most recent findings in crop epigenomics related to climate change;
- 2) Development of new concepts and approaches in crop epigenetics and epigenomics that can be transferable in other living organisms;
- 3) Establishment of common standardized pipelines, methods and workflows for generation, analysis and interpretation of epigenetic/epigenomic data;
- 4) An intense output dissemination and training for early-career scientists. The methodologies, concepts and ideas developed by EPI-CATCH will assist stakeholders to develop future innovative technologies to enhance environmental sustainability of agriculture in a rapid climate change scenario.

### Offered expertise to the COVID-19 network

EPI-CATCH offers expertise in epigenetics, transcriptional control of gene expression and protein regulation in response to environmental

stresses. Furthermore, our team has experience in cellular and subcellular imaging as well as transgenic plant generation, transient expression

of genes and proteins in plants to study their mechanism of action at the epigenetic and transcriptional level and optimising their commercialization. Coronaviruses are known to hijack the host's transcriptional machinery for proliferation and spread and therefore interfere with the cell's transcription. Such mechanisms are highly conserved among species, therefore, the knowledge and findings on epigenetic regulation of gene expression stemming from EPI-CATCH will be widely disseminated in order to be utilised to design novel technologies that aim to target

COVID-19 proliferation. Furthermore, our team will seek opportunities through collaborations to perform trial experiments for the study of COVID-19 viral spread within cells and the production of anti-COVID-19 "plantibodies" leading to plant-based vaccines. The latter will be achieved by inviting speakers that are currently performing plant-based COVID-19 research at one of our scientific conferences or/and training workshops. EPI-CATCH has just launched, therefore, detailed information on specific COVID-19-related activities will be provided in due course.

**Contacts:** Prof. Federico Martinelli

Dr Eirini Kaiserli

Michall



CA19134

## Distributed Knowledge Graphs

### Summary

Knowledge Graphs are a flexible way to represent interlinked information about virtually anything. People from a variety of application domains including biomedical research, public and open data, linguistics, journalism, and manufacturing

publish, use, and investigate knowledge graphs. As the publication is done in a decentralised fashion across the web, the knowledge graphs form a distributed system.

### Offered expertise to the COVID-19 network

CA19134 "Distributed Knowledge Graphs" is interested in connecting to other efforts around COVID-19. CA19134 deals with technologies that allow for the integration of data from different sources, and for data analytics. This is useful for data like those on COVID-19, which originate from different sources and need to be linked, integrated, put into context, and finally analysed.

Although the technologies in the Action are domain-independent, some people in the network have specific experience with working with data from the biomedical domain. It may be worthwhile

to investigate how teams that have the actual interesting data available (hospitals with patient records, biomedical researchers with treatment data, public bodies with case information, ...) can work with our technologies. In the MoU, hackathons and datathons are described, which could investigate exactly that. Based on the connection to people with data, it could also be interesting to involve people with questions (epidemiologists, public bodies, journalists, ...), but first of all we need access to data to apply the methods we are working on.

**Contacts:** Dr Tobias Käfer

CA19140

## Focused Ion Technology for Nanomaterials (FIT4NANO)

### Summary

The aim of the Action is to create a coordinated effort in the field of ion beam based nanoengineering that will put European researchers and commercial businesses at the forefront of the quickly moving field of functional nanostructured materials. The Action will unite developers and practitioners of focused ion beam technology to enable them to

build the most efficient tool sets and application techniques for the identification, fabrication and characterization of next generation functional nanomaterials. The Action will develop ion sources and instrumentation for the sub 10 nm fabrication and materials analysis.

### Offered expertise to the COVID-19 network

FIT4NANO can provide expertise and instruments for bio sample preparation and new analysis methods based on FIB technology. A mixture of groups is involved that either develop new FIB instrumentation, working directly with biological samples, or apply FIB techniques for the investigation of new analysis methods for biological research.

FIT4NANO is focusing on the development of new tools and applications in the field of Focused Ion Beams. In this context it can provide expertise for the preparation of biological samples for subsequent SEM, TEM or other analyses. In particular the Action would be interested in input on the requirements

that such a sample preparation would set. A strong group within the Action has a bio background that includes but is not limited to the preparation and imaging of tissue, individual cells, bacteria, phages and viruses. New instrumental demands set by the delicate preparation and analysis conditions required for a successful study of viruses and Corona viruses in particular will be solved by the instrument development part of the Action.

Several groups are already cooperating with other Actions (e.g. CA17121) and/or have expressed an interest in receiving COVID-19 related samples (inactivated).

**Contacts:** Dr Gregor Hlawacek



CA19143

## Global Digital Human Rights Network (GDHRNet)

### Summary

The GDHRNet - Global Digital Human Rights Network will systematically explore the theoretical and practical challenges posed by digitality to the protection of human rights. The Network will address the matter of whether international human rights law is sufficiently detailed to enable governments and private online companies to understand their respective and differentiated obligations. It will evaluate

how national governments have responded to the task of providing a regulatory framework for online companies and how these companies have transposed the obligation to protect human rights and combat hate speech online into their community standards. The Network will conduct empirical studies of the terms of service and practices of online companies and identify best practice models for human rights protection.

### Offered expertise to the COVID-19 network

GDHRNet has started work on a 25+ country survey of which states deal with COVID-19-related disinformation. The survey will provide insights as to the use of communication channels by public authorities and the measures taken by platforms to fight the spread of disinformation. The study will offer best practices and recommendations for a human rights-sensitive approach to curbing online disinformation. We can further provide best practice examples of governments to explain and justify measures related to COVID-19 through social (and other forms of) media. We are interested in examples of how social media platforms have amplified or otherwise governed COVID-19-related information related to other Actions' research

outputs or primary research areas. We suggest creating a COST Action on COVID-19 Guidebook showcasing key insights from within Actions. GDHRNet would contribute as its key insight that platforms have become a central space and actor in the fight against COVID-19-related disinformation, but that they have to increase the legitimacy of their information governance by better explaining their policies and basing content takedowns and de-amplifications on terms-of-service-based, legitimate and proportional measures, as their key role within the communicative figuration of digital modernity legitimizes the application of fundamental rights guarantees between them and their users.

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