



International Centre for Genetic
Engineering and Biotechnology

International Conference

Pandemic preparedness

Achievements, current challenges, and new frontiers

11-13 November 2024, Trieste
Savoia Excelsior Palace Hotel

EXTENDED SCIENTIFIC PROGRAM

With the patronage of



Finanziato
dall'Unione europea
NextGenerationEU



Ministero
dell'Università
e della Ricerca



Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA

DAY 1 - NOVEMBER 11, 8.45-19.00

| | |
|------------------|--|
| 8.45 | Registration (open all days) |
| 9.15-10.00 | Welcome session <i>Institutional greetings, 9.15-9.35</i> Caterina Petrillo , President of Area Science Park Lawrence Banks , Director-General of the International Centre for Genetic Engineering and Biotechnology – ICGEB Andrew Harrison , Executive Director of CERIC-ERIC |
| | <i>Introductions, 9.35-10.00</i> Federica Mantovani , Infrastructure Manager of the PRP@CERIC, RI project funded by PNRR, at Area Science Park <i>The PRP@CERIC project and Conference purposes</i> Giuditta De Lorenzo , Researcher and virologist at Area Science Park, <i>Introduction to the Conference and keynote speakers</i> |
| SESSION 1 | Emerging and re-emerging viruses with pandemic potential |
| 10.00-10.45 | Yoshihiro Kawaoka - University of Tokyo and National Center for Global Health and Medicine, Japan; University of Wisconsin-Madison, USA <i>Addressing the ongoing threat of emerging viral infections</i> |
| 10.45-11.15 | <i>Welcome coffee</i> |
| 11.15-11.45 | Rino Rappuoli - Biotechnopolo di Siena Foundation, Italy <i>Preparing the world for climate-driven amplifications of infections</i> |
| 11.45-12.30 | Vicenzi E. (IRCCS San Raffaele Scientific Institute, Milan, Italy) <i>Modulation of Zika Virus Replication in Human Monocytes and Monocyte-Derived Macrophages (MDM) Through Pro-Inflammatory (M1) Polarization</i> Furnon W. (MRC-University of Glasgow Centre for Virus Research, Glasgow, UK) <i>Phenotypic evolution of SARS-CoV-2 spike throughout the COVID-19 pandemic</i> Martinez-Orellana P. (International Centre for Genetic Engineering and Biotechnology - ICGEB, Trieste, Italy) <i>SARS-CoV-2 damage to neuronal networks is mediated by the pro-inflammatory activation of the cGAS STING pathway in the glia</i> |
| 12.30-13.00 | Tatjana Avšič-Županc - University of Ljubljana, Slovenia <i>Outbreak preparedness at the Institute of Microbiology and Immunology in Ljubljana</i> |
| 13.00-14.00 | <i>Light lunch</i> |



| | |
|---|--|
| 14.00-14.30 | <p>Maria Josè Ruiz Alvarez - Research Coordination and Promotion Service (CORI) and Italian National Institute of Health (ISS) <i>Advancing European Research: The role of National Health Institutions in European Partnerships linked to One Health Anti-Microbial Resistance, Pandemic Preparedness and through the collaboration with ECRIN/ItaCRIN</i></p> |
| <p>SESSION 2 Diagnostics and Surveillance</p> | |
| 14.30-15.00 | <p>Marta Giovanetti (University Campus Bio-Medico of Rome, Italy) <i>Using genomics to understand climate amplified diseases and epidemics</i></p> |
| 15.00-16.00 | <p>Ulinici M. (International Centre for Genetic Engineering and Biotechnology - ICGEB, Trieste, Italy) <i>Expanding Access to Sustainable Diagnosis in Africa-EXPANDIA</i> Prezelj N. (National Institute of Biology, Ljubljana, Slovenia) <i>Establishing robust and efficient system for surveillance of microorganisms in environmental waters</i> Armas F. (European Commission, Joint Research Centre, Varese, Italy) <i>Near-Real-Time Detection and Identification of Airborne Viral Threats</i> Baldini F. (University of Glasgow, Glasgow, UK & Ifakara Health Institute, Tanzania) <i>Infrared spectroscopy - a stop shop technology for vector-borne disease surveillance?</i></p> |
| 16.00-16.30 | <p><i>Coffee break</i></p> |
| 16.30-17.15 | <p>Emma Thomson - MRC-University of Glasgow Centre for Virus Research and London School of Hygiene and Tropical Medicine, UK <i>Next generation sequencing approaches to enhance surveillance capacity for emerging viruses</i></p> |
| 17.15-18.00 | <p>Annibaldis G. (Bernhard Nocht Institute of Tropical Medicine & German Center for Infection Research, Hamburg, Germany) <i>Enhancing Diagnostic Capacity for Viral Hemorrhagic Fevers in Guinea: Lessons Learned and Future Directions</i> Silvestri A. (Ca' Foscari University of Venice, Venice, Italy) <i>ACE2-modified graphene field-effect transistors, a new class of sensors for pandemic preparedness</i> Tilston-Lunel N. L. (Indiana University School of Medicine, Indianapolis, Indiana, USA) <i>Oropouche virus: An emerging orthobunyavirus</i></p> |
| 18.00-19.00 | <p><i>Drinks and poster session</i></p> |
| 19.00 | <p><i>Welcome reception</i></p> |
| <p>DAY 2 - NOVEMBER 12, 8.30-18.00</p> | |
| <p>SESSION 3 Drug discovery: stocking the shelves for the next pandemic</p> | |



| | |
|------------------|--|
| 08.30-10.00 | <p>Dattola F. (International Centre for Genetic Engineering and Biotechnology - ICGEB, Trieste, Italy) <i>Host-directed therapy targeting proteostasis for Tick-borne Encephalitis Virus (TBEV) drug discovery</i></p> <p>Laporte M. (KU Leuven, Leuven, Belgium) <i>An orally efficacious coronavirus assembly inhibitor that targets the viral M protein</i></p> <p>Pagani I. (IRCCS San Raffaele Scientific Institute, Milan, Italy) <i>Repurposing Heparin Derivatives: A Promising Strategy for Antiviral Treatment of Zika Virus Infection</i></p> <p>Narayan R. (Indian Institute of Science, Bengaluru, India) <i>Picolinic acid a broad-spectrum inhibitor of enveloped virus entry</i></p> <p>Shanbhag A. (University of Bern, Bern, Switzerland) <i>Cross-neutralization of Morbillivirus by single-domain antibodies</i></p> <p>White K. (Icahn School of Medicine at Mount Sinai, New York, USA) <i>The Democratization of Antiviral Drug Discovery for Pandemic Preparedness</i></p> |
| 10.00-10.45 | <p>Johan Neyts - University of Leuven, Belgium <i>Broader-acting antivirals for epidemic and pandemic preparedness</i></p> |
| 10.45-11.15 | <i>Coffee break</i> |
| SESSION 4 | Artificial Intelligence (AI) and Machine Learning: tools for pathogen studies |
| 11:15-11:45 | <p>Martin Weigt – Sorbonne Université, Paris, France <i>"Forecasting" protein evolution using data-driven sequence landscapes</i></p> |
| 11.45-12.30 | <p>Cutarello F. (Area Science Park, Trieste, Italy) <i>Enhancing predictions of protein stability changes induced by single mutations using MSA-based language models</i></p> <p>Lytras S. (University of Tokyo, Tokyo, Japan) <i>Adapting broad protein language models to viruses with pandemic potential</i></p> <p>Algaissi A. (Jazan University, Jazan, Saudi Arabia) <i>Discovery and characterization of Novel Pan-Coronavirus Inhibitors Using Artificial Intelligence</i></p> |
| SESSION 5 | Multidisciplinary approaches to pandemic preparedness |
| 12.30-13.00 | <p>Lucia Banci, University of Florence and Instruct-ERIC, Italy <i>The NMR contribution to Cellular Structural Biology: from protein structures and their interactions to functional processes</i></p> |
| 13.00-14.00 | <i>Light lunch</i> |
| 14.00-14.30 | <p>Daniel Hurdiss, Utrecht University, Netherlands <i>Coronavirus pandemic preparedness through the lens of a structural biologist</i></p> |



-
- 14.30-15.30 **Piccirilli F.** (Area Science Park, Trieste, Italy)
New IR approaches to study sars-coV2 mPro conformations
- Rajnovic D.** (Elettra Sincrotrone Trieste S.C.p.A., International Centre for Genetic Engineering and Biotechnology - ICGEB & Area Science Park, Trieste, Italy)
Label-free biochemical characterization and antiviral susceptibility of enveloped mammalian RNA virus in physiological-like conditions. A Road to Fast Response in Pandemic Preparedness and Countermeasure program
- Waugh C.** (Nord University, Steinkjer, Norway)
Real-time surveillance and pandemic prediction using GPS-nanobiosensor technologies in an interdisciplinary framework - Prediction2Response
- Morasso S.** (Elettra Sincrotrone Trieste S.C.p.A., Trieste, Italy)
Revision of a repurposing screen led to a new invalidation pipeline and identified a true novel inhibitor against papain-like protease from SARS-CoV-2
-

15.30-16.00 *Coffee break*

SESSION 6 Vaccine development - design

- 16.00-17.00 **McFadden E.** (University of Texas at Austin, Austin, Texas, USA)
Engineering, structure, and immunogenicity of a Crimean–Congo hemorrhagic fever virus pre-fusion heterotrimeric glycoprotein complex
- De Lorenzo G.** (Area Science Park, Trieste, Italy)
Preclinical efficacy of an engineered VLP-based vaccine candidate against Zika virus
- Mammano F.** (Université de Tours, Tours, France)
Comparison of the humoral immune responses induced by vaccination or natural infection by SARS-CoV-2
- Marchesin F.** (Medicines and Healthcare products Regulatory Agency, Blanche Lane, South Mimms & University College London, London, UK)
A plug-and-play method to produce pseudotyped Bunyaviruses and their application in neutralisation assay
-

SESSION 7 Vaccine development - strategy & approach

- 17.00-18.00 **Campa C.** (GlaxoSmithKline – GSK, Siena, Italy)
How to ensure rapid supply of safe and efficacious vaccines in pandemic scenarios? A company perspective
- Askary H.** (Coalition for Epidemic Preparedness Innovations – CEPI, London, UK)
CMC Platform Best Practices for Comparability Assessments and Manufacturing Process Validation - Simultaneous submission to multiple Health Authorities using Accumulus Synergy platform
- McGoldrick M.** (Merck & Co., Inc., Kenilworth, New Jersey, USA)
How to accelerate the supply of vaccines to all populations worldwide? Part III: Reflections after the Pandemic
-



Särnefält A. (Coalition for Epidemic Preparedness Innovations – CEPI, Oslo, Norway)
Developing a manufacturing and supply chain strategy to support the 100 Days Mission

20.30 *Social dinner*

DAY 3 - NOVEMBER 13, 09.00-16.45

SESSION 8 Risk and mitigation of viral zoonoses

09.00-09.45 **Marion Koopmans** - Erasmus University Medical Center, Netherlands
Pandemic preparedness with a focus on prevention

09.45-10.45 **Gallo G.** (The Pirbright Institute, Pirbright, Surrey, UK)
Insight into the scope of alphacoronavirus receptor usage
Lyons K. (University of Edinburgh, Edinburgh, UK)
Assessing Stakeholder Collaboration within Highly Pathogenic Avian Influenza Risk Governance Strategies in the UK and USA
Gracias S. (Institut Pasteur, Paris, France)
Investigating the replication of BANAL-236 and related viruses in bat cells
Seppola A. (Nord University, Bodø, Norway)
Attitudes and Practices of Humans to Flying Foxes and Viral Threats in Battambang Province, Cambodia: a Pilot Study

10.45-11.15 *Coffee break*

11.15-11.45 **Tom Peacock** - The Pirbright Institute and Imperial College London, UK
Investigating the origins and mammalian spillover potential of the ongoing H5N1 panzootic

SESSION 9 Global health

11.45-12.15 **Fabrizio Maggi** - National Institute for Infectious Diseases Lazzaro Spallanzani IRCCS, Rome, and University of Insubria, Varese, Italy
The comprehensive response to autochthonous outbreaks of dengue virus: the approach of the National Institute for Infectious Diseases "L. Spallanzani" in Rome

12.15-12.45 **Menegale F.** (Fondazione Bruno Kessler & University of Trento, Trento, Italy)
Impact of routine prophylaxis with monoclonal antibodies and maternal immunisation on respiratory syncytial virus burden in the Lombardy region, Italy
Pezzella A. (University of Naples Federico II, Naples, Italy)
Diagnostic contribution of a medicine laboratory in the recent pandemics



| | |
|---|--|
| 12.45-13.00 | Sponsored slot |
| 13.00-14.00 | <i>Light lunch</i> |
| SESSION 10 Biosecurity, infrastructure and cooperation | |
| 14.00-14.30 | <p>Alessandro Marcello – International Centre for Genetic Engineering and Biotechnology - ICGEB, Trieste, Italy <i>The challenges of pandemic preparedness and biosecurity – act locally to protect globally</i></p> |
| 14.30-15.00 | <p>Jonathan Ewbank - European Research Infrastructure on Highly Pathogenic Agents - ERINHA, Belgium <i>Fostering pandemic preparedness and response research: the case of European Research Infrastructure on Highly Pathogenic Agents (ERINHA)</i></p> |
| 15.00-16.15 | <p>Steinke S. (Karolinska Institutet, Stockholm, Sweden) <i>Centralised Diagnostic and Surveillance Laboratory Capacity for Public Health Emergency Preparedness and Response - A Case Study Analysis of the National Pandemic Center at Karolinska Institutet, Sweden</i></p> <p>Mattiuzzo G. (Medicines and Healthcare products Regulatory Agency, Blanche Lane, South Mimms, UK) <i>The role of reference materials for outbreak preparedness</i></p> <p>Mikaty G. (Institut Pasteur, Paris, France) <i>Suit-case mobile laboratory for international response to outbreak and epidemics</i></p> <p>Smith M. (US Agency for International Development, Washington D.C., USA) <i>Establishing a Biorisk Management Committee in an International Aid Agency</i></p> <p>Moronta-Barrios F. (International Centre for Genetic Engineering and Biotechnology - ICGEB, Trieste, Italy) <i>Planetary Health at Risk: Emerging Threats and Future Preparedness</i></p> |
| 16.15-16.45 | <p>Closing session: Best poster awards, conclusions and final remarks Alessandro Marcello, ICGEB Giuditta De Lorenzo, Area Science Park</p> |

