



Network in Physical Virology:

Bridging biomedical and nanotechnology applications

November 13-15 2019
CIC bioGUNE

Organizer: Nicola G.A. Abrescia (CIC bioGUNE)
Coordinator: Pedro J. de Pablo (UAM)

CIC bioGUNE  EXCELENCIA SEVERO OCHOA
CENTER FOR COOPERATIVE RESEARCH IN BIOSCIENCES

UAM
UNIVERSIDAD AUTÓNOMA
DE MADRID



13th – 15th November 2019

CIC bioGUNE

(Atrium – Building 800)

Derio – Bilbao (Spain)

PROGRAM

Wednesday, November 13th

8:30–8:45 Registration/Opening

8:45-09:00 **Welcome from the CIC bioGUNE Scientific Director: Jesús Jiménez-Barbero**

Morning Session-1 Chair: N.G. Abrescia & P. de Pablo

09:00-10:00 **PLENARY: Cristian Smerdou** (CIMA, Pamplona)
"Alphavirus engineering for cancer therapy"

10:00 - 10:30 **Daniel Luque** (Centro Nacional de Microbiología/ISCIII, Madrid)
"Structural characterization of viral membrane penetration mechanisms"

10:30 - 11:00 **Diego Ferrero** (IBMB-CSIC, Barcelona) - *"Supramolecular Arrangement of the Zika Virus NS5 Protein and Its role in vivo: beyond the RdRP activity"*

11:00-11:30 *Coffee break*

Morning Session-2 Chair: J. Hernandez-Rojas

11:30 - 12:00 **Sergi Padilla** (BioCruces, Bilbao & University of Oxford, Oxford)
"Multi-parameter Single Molecule Spectroscopy Imaging Reveals Intra- and Inter-Molecular Conformations of HIV-1 Envelope on Native Viruses"

12:00 - 12:20 **Idoia Busnadiego** (Institute of Medical Virology, Universität Zürich. Zürich. Switzerland) – *"Studying the diversity of the human interferome"*

12:20 - 12:40 **Cristina Risueño** (CIC biomaGUNE – San Sebastian / CIC bioGUNE - Bilbao)
"Conformational plasticity of human tetraspanin CD81 large extracellular loop and its implication in cellular and viral processes"

12:40-14:45 *LUNCH AND FREE TIME*

Afternoon Session-1 Chair: J. R. Castón

14:45 - 15:45 **PLENARY: Miklos Kellermeyer** (University of Pécs, Hungary)
"Mechanically-driven structural transitions and DNA ejection in the T7 bacteriophage"

15:45 - 16:15 **Mikel Valle** (CIC bioGUNE, Bilbao)
"From cryo-EM to drug discovery in plant viruses"

16:15 - 16:45 **Iain A. McGeoch** (abg – Intellectual Property, Bilbao) - *"Patenting virus discoveries"*

16:45-17:15 *Coffee break*

Afternoon Session-2 Chair: A. Bittner

17:15 - 17:35 **Gabriela Condezo** (Centro Nacional de Biotecnología/CNB, Madrid)
“Structure of a polinton-like virus, the missing link between bacteriophage and eukaryotic viruses of the PRD1-like lineage”

17:35 - 18:05 **Nicola G.A. Abrescia** (CIC bioGUNE, Bilbao)
“Evolution steered by structure: from lipid-containing bacteriophage PRD1 to African Swine fever virus”

18:45 BUS to BILBAO

Thursday, November 14th

Morning Session-1 Chair: C. Wege

9:00-10:00 **PLENARY: Trevor Douglas** (Indiana University, US)

"Virus based materials: Assembly across multiple length scales"

10:00 - 10:30 **Pedro de Pablo** (UAM, Madrid) - *"Unravelling the interplay between mechanics, structure and function of protein shells"*

10:30 - 11:00 **Ruben Pérez** (UAM, Madrid)

"Tuning structure and dynamics of blue copper Azurin junctions via single amino-acid mutations"

11:00-11:30 *Coffee break*

Morning Session-2 Chair: P. de Pablo

11:30 - 12:00 **Javier Hernandez-Rojas** (ULL, La Laguna)

"Energy landscapes of small non-icosahedral virus capsids"

12:00 - 12:20 **Alejandro Valbuena** (CBMSO, Madrid)

"RNA uncoating of Human Rhinovirus characterized by single particle force ramp atomic force microscopy"

12:20 - 12:50 **David Reguera** (University of Barcelona, Barcelona)

"Assembly and misassembly of empty viral shells"

12:50 - 14:45 *LUNCH AND FREE TIME*

Afternoon Session-1 Chair: D. Reguera

14:45 - 15:45 **PLENARY: Christine Wege** (University of Stuttgart, Germany)

"Synthetic plant virology: Repurposing tobacco mosaic virus in new biohybrid layouts"

15:45 - 16:15 **José R Castón** (CNB, Madrid)

"Structural basis for development and redesign of virus-based nanotechnology applications"

16:15 - 16:45 **Alex M. Bittner** (CIC biomaGUNE, San Sebastian)

"Approach to the nanoscale analysis of humid virions"

16:45 - 17:05 **Miguel Cantero** (UAM, Madrid)

"Life is plastic: AFM characterization of hyperthermophilic archaeal virus SMVI"

17:05 - 18:30 *Coffee break & POSTER SESSION*

18:45 BUS to BILBAO

20:45 CONFERENCE DINNER**

(for those who wish to join the social dinner, the contribution per person is 15 €)

RESTAURANTE ATEA

Uribitarte Pasealekua, 4,
48001 Bilbao, Bizkaia

<http://atearestaurante.com/>

(Chosen Menú: ISOZAKI)

Friday, November 15th

Morning Session-1 Chair: T. Douglas

9:30 - 10:30 **PLENARY: Paul van der Schoot** (Eindhoven Technological University, Netherlands)
“How a Donnan potential affects the ionic strength and acidity of water in viruses and virus-like particles”

10:30 - 11:00 **Mauricio Mateu** (CBMSO, Madrid)
“Structural determinants of mechanical stiffness and strength of virus capsids”

11:00 - 11:30 *Coffee break*

Morning Session-2 Chair: N.G. Abrescia

11:30 - 12:00 **Mitsuhiro Okuda** (CIC nanoGUNE, San Sebastian)
“Capsid protein use for bio-nanotechnology”

12:00 - 13:00 **CLOSING LECTURE: David I. Stuart** (University of Oxford & Diamond Light Source, UK)
“Bridging basic science to applications through advances in structural virology”

13:00-13:10 **Conclusions**

13:10-14:45 *LUNCH AND FREE TIME*

15:00 *BUS to BILBAO*

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Logistics:

Bus Timetable for those staying at IBIS Hotel (Bilbao):

Wednesday, the 13th:

Hotel IBIS to CIC bioGUNE: departure time 8:10 am

CIC bioGUNE to Hotel IBIS: departure time 6:45 pm

Thursday, the 14th:

Hotel IBIS to CIC bioGUNE: departure time 8:20 am

CIC bioGUNE to Hotel IBIS: departure time 6:45 pm

Friday, the 15th:

Hotel IBIS to CIC bioGUNE: departure time 8:45 am

CIC bioGUNE to Hotel IBIS: departure time 3:00 pm

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