

VoM 2022

18 - 22 July 2022 | Guimarães, Portugal

Monday, 18th July

12:30 Registration

14:45 Welcome

Bird's eye view

Chairs: Joana Azeredo and Madalena Pimentel

15:20 Corina Brussaard Algal ecology from a virus's View

16:15 Sylvain Moineau Sparrow's view on phage research

17:10 Opening Reception

Tuesday, 19th July

Session 1: Ecology and Evolution of microbial viruses I

Chairs: Cristina Moraru and Corina Brussaard

08:30 Curtis Suttle Sequencing ribosomal RNA to infer taxon-specific lysis in microbial communities

08:55 Stineke van Houte Evolutionary and ecological aspects of CRISPR-Cas – phage interactions

09:20 Matthias Fischer Uncultured giant viruses in soil exhibit previously unseen capsid morphologies

09:35 Leonard Bäcker Phage superinfection exclusion factors against host cell scarcity

09:50 Nikhil George Virus-host interactions in a municipal landfill include non-specific viruses, hyper-targeting, and interviral conflicts

10:05 Pedro Leao Asgard archaeal viruses

10:20 Coffee Break

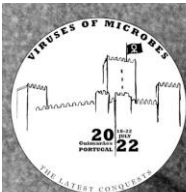
Session 2: Virus structure and function I

Chairs: Douwe van Sinderen and Deborah Hinton

10:50 Alfred Antson DNA recognition and capsid expansion during virus assembly

11:15 Mart Krupovic The secrets of unique lemon-shaped viruses of Archaea

11:40 Ian J. Molineux Towards a complete molecular description of infection initiation by bacteriophage T7



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- 11:55 Miroslav Homola Mechanism of virion formation of the *Emiliana huxleyi* virus 201 enveloped by two membranes
- 12:10 Frank Oechslin Implications of endolysin diversity on phage-host adaptation and evolution

12:25 Lunch

13:30 POSTERS SESSION I

Session 3: Agro-food, Veterinary and Environmental Biotechnology Applications I

Chairs: Zuzanna Drulis-Kawa and Hugo Oliveira

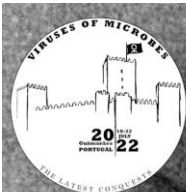
- 15:00 Jennifer Mahony Cell wall polysaccharides - the gate-keepers of phage infection in *Streptococcus thermophilus*
- 15:25 Lars Fieseler Infection of *Erwinia amylovora* by the phages S6 and M7 depends on bacterial cellulose
- 15:50 Cedric Woudstra How to produce phage tail-like particles from phages
- 16:05 Kiandro Jeroen Fortuna Phage biocontrol of rhizogenic *Agrobacterium*: solving the root of the problem
- 16:20 Carlos Soto SMART design of a multi-receptor phage cocktail against *Salmonella* and impact of phage resistance on bacterial fitness

16:35 Coffee Break and Group Photo

Session 4: Biotechnology applications in health care I

Chairs: Jeremy Barr and Ivone Martins

- 17:10 Paul Bollyky Identification of Bacterial Pathogens in Sepsis Using Bacteriophage Present in Circulating Free DNA
- 17:35 Yves Briers Phages playing molecular Lego
- 18:00 Luís Melo Efficacy against dual-species biofilms using phage-antibiotics combinations is independent of the biofilm model
- 18:15 Christian Röhrig Chimeric endolysins selectively kill *S. aureus* in vitro, on reconstituted human epidermis, and on murine skin
- 18:30 Anja Keller Engineering of endolysins for the targeted treatment of localized *Staphylococcus aureus* infections



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18:45 Roberto Vázquez From biological data to new phage-based antimicrobials: the case of AMP-like regions in Gram-negative phage endolysins

19:00 ISVM General Assembly

Wednesday, 20th July

Session 5: Virus-host interaction: host defense and viral evasion mechanisms

Chairs: Sylvain Moineau and Peter Fineran

08:30 Karen L. Maxwell Pseudomonas prophages exploit bacterial signalling to modulate phage defence

08:55 Rotem Sorek New mechanisms of anti-phage defense

09:20 Gaëlle Hogrel Cyclic nucleotides in bacterial immune response: a glue for deadly molecular assemblies

09:35 Witold Kot Biological consequences of 7-deazaguanine hypermodifications in phage genomes

09:50 Leah M. Smith Discrimination of phages and plasmids through inverse regulation of surface-based and CRISPR-Cas immune strategies

10:05 Alice Maestri CRISPR and non-CRISPR defences in *Pseudomonas aeruginosa* act synergistically against phage infection

10:20 Coffee Break

Session 6: Virus-host interaction: overcoming cell barriers

Chairs: Yves Briens and Sérgio Santos

10:50 Lone Brøndsted Phage strategies for overcoming diverse cell barriers in *E. coli*

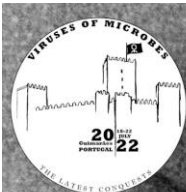
11:15 Zuzanna Drulis-Kawa Phage-derived carbohydrate depolymerases - from structure to function and exploitation

11:40 Olaya Rendueles Bitter sweet symphony: Coevolutionary dynamics and diversity of resistance mechanisms against a polylysogenic competitor

11:55 Hugo Oliveira Understanding the complete reservoir of bacteriophage depolymerases against *A. baumannii* capsules

12:10 Yang Shen The interplay between phages, *Listeria* and host cells

12:25 Lunch



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13:30 POSTERS SESSION II

Session 7: Virus structures and function II

Chairs: Mart Krupovic and Priscila Pires

- 15:00 Deborah Hinton The T4 MotB protein improves infection in various, unexpected ways
- 15:25 Douwe van Sinderen Lactococcal phage-host interactions at a molecular level: a cheesy story
- 15:50 Mateo Seoane-Blanco *Salmonella* virus Epsilon15 tailspike has multiple binding sites and two catalytic activities
- 16:05 Anders Nørgaard Sørensen Diversity and evolution of tail spike proteins of *Ackermannviridae* phages
- 16:20 Shin-Yae Choi Insertion tolerance regions for synthetic RNA phage engineering

16:35 Coffee Break

Session 8: Ecology and evolution of microbial viruses II

Chairs: Kelly Williams and Curtis Suttle

- 17:10 Cristina Moraru Using cultivations to discover new phage diversity in the marine environment
- 17:35 Valerian V. Dolja Global metatranscriptome analysis reveals vast diversity of novel RNA viruses in protists and other eukaryotes
- 17:50 Cynthia Silveira Marine viral infection networks revealed through proximity-ligation sequencing
- 18:05 Karin Holmfeldt Seasonality and transcriptomic responses of the *Rheinheimera* phage-host system from the Baltic Sea
- 18:20 Yichang Zhang The influence of early life exposures on the infant gut virome
- 18:35 Marianne De Paepe Intestinal virome in Crohn's disease patients

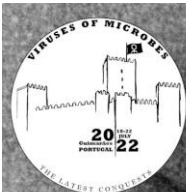
20:00 Conference Dinner and Group Photo

Thursday, 21st July

Session 9: Virus-host interaction: molecular mechanisms I

Chairs: Laurent Debarbieux and Luís Melo

- 08:30 Julia Frunzke Phage defense at the multicellular level – from small molecules to cellular development



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- 08:55 Daniella Schatz Ecological significance of extracellular vesicles in modulating host-virus interactions during algal blooms
- 09:20 Ombeline Rossier Genetic dissection of host takeover by phage T5: developing tools for genome engineering of large virulent phages
- 09:35 Chaffringeon Lorenzo The gut environment regulates bacterial gene expression which modulates susceptibility to bacteriophage infection
- 09:50 Julián Bulsico Phage-Antibiotic Synergy for filamentation-inducing antibiotics
- 10:05 Hanne Hendrix Exploring protein lysine acetylations during phage infection in *Pseudomonas aeruginosa*

10:20 Coffee Break

Session 10: Agro-food, veterinary and environmental biotechnology application II

Chairs: Martin Loessner and Ana Oliveira

- 10:50 Mathias Middelboe Phages select for non-virulent variants of *Flavobacterium* pathogens: implications of pathogen control in aquaculture
- 11:15 Sanna Sillankorva Ultrasonic spray deposition of a bio-based coating loaded with the *Salmonella* phage Felix 01 on food contact materials
- 11:40 Graça Pinto Unveiling the impact of STEC infecting phages on the colon microbiota using an in vitro fermentation model
- 11:55 Ewelina Wójcik Multi-aspect safety assessment of bacteriophage products dedicated for animal health
- 12:10 Golam Shaharior Islam Evaluation of spray-dried microencapsulated phage cocktail to control *Salmonella* carriage and shedding in weaned pigs

12:25 Lunch

13:30 POSTERS SESSION III

Session 11: Virus-host interactions

Chairs: Karen Maxwel and José Penades

- 15:00 Tessa Quax Infection mechanism of haloarchaeal viruses



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- 15:25 Stefanie Barbir A sweet key to bacteriophage infection: Polysaccharide interactions at Gram-negative bacterial surfaces and in extracellular glycan matrices
- 15:50 Véronique Ongenaë Reversible bacteriophage resistance by shedding the bacterial cell wall
- 16:05 Patrick Arthofer Abortive infection and defensive symbiosis - novel defense strategies against giant viruses
- 16:20 Ana Gouveia Unraveling bacterial determinants of tolerance to endolysin lytic action

16:35 Coffee Break

17:10- Andrew Kropinski **Workshop on Viral Genomics and Taxonomy - from**

19:00 Evelien Adriaenssens **isolate to GenBank and beyond**

Friday, 22nd July

Session 12: Biotechnology applications in health care II

Chairs: Krystyna Dabrowska and Martha Clokie

- 08:30 Graham Hatfull Discovery, dynamics, engineering, and the therapeutic opportunities for phage treatment of *Mycobacterium* infections
- 08:55 Jeremy Barr Fundamentally applied phage biology
- 09:20 Sarah Djebara Phage therapy: a Belgian experience
- 09:35 Alexandra von Stempel Targeted design and manipulation of defined microbial consortia by bacteriophages
- 09:50 Luca Ulfo Selective photokilling of colon cancer cells using a spheroid-penetrating phage retargeted to the fibronectin receptor
- 10:05 Kevin Champagne-Jorgensen Phages promote polarization of M1 macrophages

10:20 Coffee Break

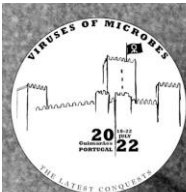
Session 13: Round Table: Current state and latest developments of phage therapy

Chair: Tobi Nagel

10:50 Jean-Paul Pirnay, Patrick Soentjens, Ran Nir-Paz, Martha Clokie, Sofia Corte-Real

12:25 Career Award

13:00 Lunch



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Session 14: Virus-host interaction molecular mechanisms II

Chairs: Tessa Quax and Carlos São-José

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| 14:30 | José Penadés | Bacteriophages mobilise pathogenicity islands encoding immune systems as weapons to eradicate competitors |
| 14:55 | Alexander Hynes | Biasing Bacteriophage Behaviours |
| 15:10 | Edze Westra | Regulation of prophage induction and lysogenization by phage communication systems and the SOS response |
| 15:25 | Audrey Labarde | Compartmentalization of bacteriophage SPP1 replication and assembly in the Gram-positive bacterium <i>Bacillus subtilis</i> |
| 15:40 | Raphael Laurenceau | Diversity generating retroelements: from phage host-range evolution to targeted mutagenesis tools |
| 15:55 | John Chen | Dual pathogenicity island transfer by a novel form of lateral transduction |

16:10 Coffee Break

Session 15: New horizons, new conquests!

Chairs: Julia Frunzke and Rob Lavigne

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|-------|-----------------|---------------------------------------------------------------------------------------------------------------------|
| 16:25 | David Bikard | Phages and their satellites encode hotspots of antiviral systems |
| 16:50 | Peter Fineran | Type III CRISPR-Cas provides resistance against nucleus-forming jumbo phages via abortive infection |
| 17:15 | Carlos São-José | On the occurrence and multimerization of two-polypeptide phage endolysins encoded in single genes |
| 17:30 | Samuel Kilcher | Enhancing bacteriophage therapeutics through in situ production and release of heterologous antimicrobial effectors |
| 17:45 | Katharina Höfer | How to connect RNAs with proteins? -RNAylation of proteins |
| 18:00 | Carina Büttner | Structural insight into giant virus infection of marine picoplankton |

18:15 Closing session and Awards