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## Selected Publications by EVBC Members

 [All publications on Pubmed](#)

### Epidemiology / Monitoring:

- ③ The B-GOOD project aims to create a Health Status Index (HSI) through machine learning to aid beekeepers in managing Western honey bee colonies. (Insects: [10.3390/insects15010076](#))
- ③ Genomic surveillance has revealed multiple introductions of West Nile virus lineages into Europe, notably lineage 1a and 2, with lineage 2 becoming predominant since the early 2000s, prompting increased understanding of the virus's epidemiology and the development of expanded genomic surveillance programs. (One Health: [10.1016/j.onehlt.2023.100664](#))
- ③ Analysis of West Nile virus (WNV) spread in Europe highlights WNV-2a as dominant, originating from Central Europe, with agricultural land use playing a significant role, suggesting the need for enhanced surveillance in Central Europe and targeted monitoring in agriculturally active areas and migratory bird habitats for preparedness. (PLoS Pathog: [10.1371/journal.ppat.1011880](#))

### Phages / Viromics:

- ③ Bacteriophages, both lytic and temperate, exert a significant influence on bacterial community structure, leading to subject-specific fluctuations in microbial populations and suggesting that colonic retention time may have a profound impact on microbiome composition. (iScience: [10.1016/j.isci.2023.108778](#))
- ③ Biological modularity, as seen in phages, enhances evolutionary adaptability through the independent evolution and recombination of functional modules, particularly in receptor-binding proteins, endolysins, and DNA polymerases, reflecting an ongoing co-evolutionary arms race against bacterial resistance mechanisms. (Nat Commun: [10.1038/s41467-023-43236-9](#))

### Molecular biology / RNA structure:

- ③ The discovery of a trefoil knot in the RydC RNA molecule, a member of a small family of bacterial RNAs, marks the first identification of a genuine knot in natural RNA molecules, offering insights into RNA 3D structure formation and its relationship with biological function. (J Mol Biol: [10.1016/j.jmb.2024.168455](#))
- ③ The conservation of a G-quadruplex structure in the Zika virus 3' terminal region with a potential role in viral replication suggests that disruption of DDX3X

or DDX17 binding to this region may be a therapeutic target to combat Zika virus infection. (Biochem Cell Biol: [10.1139/bcb-2023-0036](#))

Potential of RNA conjugates designed to mimic the methylation transition state as inhibitors of viral 2'-O-methyltransferases, finding significant interactions with the nsp16/nsp10 complex of SARS-CoV-2 and the NS5 protein of dengue and Zika viruses, indicating promise for antiviral therapeutic development. (Bioorg Chem: [10.1016/j.bioorg.2023.107035](#))

### Drug design:

- ③ Drug design method using viral protein interactions to create small molecules, exemplified by a potent antiviral compound derived from a KSHV protein, with potential therapeutic applications beyond infectious diseases. (PNAS: [10.1073/pnas.2308776121](#))

### Sequence analysis:

- ③ PCR-based amplicon assay compatible with MinION Nanopore sequencing, achieving high-quality genomic coverage of mpox virus from clinical samples, even at challenging Ct values, enabling rapid and accurate genomic analysis. (J Virol Methods: [10.1016/j.jviromet.2024.114888](#))

- ③ Efficient assembly of polyploid genome of the potato cultivar Altus using low-depth sequencing data from offspring populations to achieve high-quality chromosome assembly with haplotype-specific resolution, applicable in breeding scenarios. (Genome Biol: [10.1186/s13059-023-03160-z](#))

- ③ Novel massively parallel GPU algorithms enable >128-fold speedup for codon-based and >8-fold for nucleotide-based models in statistical phylogenetics, exemplified by estimating the introduction timing of West Nile virus from 104 viral genomes. (Bioinformatics: [10.1093/bioinformatics/btae030](#))

### SARS-CoV-2:

- ③ The live-attenuated vaccine sCPD9-DFCS showed better efficacy in preventing transmission of SARS-CoV-2 variants B.1 and Omicron BA.5 compared to the mRNA vaccine BNT162b2 in two scenarios involving male Syrian hamsters. (Nat Commun: [10.1038/s41467-024-45348-2](#))

**Publication shortcuts:** If you would like us to add a shortcut to a specific virus (family) or topic, drop us an [email](#).

SARS-CoV-2


influenza


HIV

monkeypox

## Tools and Resources

 [Virus tools website](#)

Tools that have been added to our [collection](#) this month have been newly released or updated. Tools developed by EVBC members are marked .

 **Genetic Codes:** Translating sequences using different NCBI translation tables and genetic codes.

## EVBC Special Issues

 [Special issue list](#)

We are again running a [Special Issue "Virus Bioinformatics 2024"](#) alongside ViBioM 2024. We encourage you to publish your work in this Special Issue and present it at ViBioM 2024. However, this is not an obligation for publication.

Submission deadline:

31 July 2024

## viruses *in silico* lecture series

 [Register](#)

This lecture is designed to keep you up to date with the latest developments in virus bioinformatics, especially new tools that might help you in your research.

### A 2D convolutional neural network for taxonomic classification of ssDNA viruses

26. February 2024 | 4 pm CET

[online](#)

Murilo Zerbini, Universidade Federal de Viçosa, Brazil

In virology, sequence-based taxonomic assignments offer a precise framework. In this talk, Murilo Zerbini will present a 2D convolutional neural network addressing the challenge of classifying numerous new viruses, particularly in the Cressdnviricota phylum. Testing on imbalanced datasets, this approach achieved perfect classification in k-fold evaluations for balanced taxa and over 98 % accuracy in the final pipeline. The optimal strategy involved a mix of augmentation techniques, showcasing the precision of these architectures in DNA sequence classification.

You can already [register](#) for our upcoming lectures:

27. May 2024 João Carlos Setubal, University of São Paulo, Brazil

## ECR Viromics Webinar Series

 [Register](#)

This lecture for early career researchers studying viruses in complex communities is organized together with the [Center of Microbiome Science](#) at Ohio State University and the [NSF EMERGE Biology Integration Institute](#).

### What Microbes Do When They Get Sick: Eco-Evolutionary Drivers of Antiviral Defense Strategy

14 February 2024 | 04-05 pm CET

[online](#)

JL Weissman, The City College of New York, US

## Vacancies

 [Find a job](#)


**PostDoc interested in understanding emergent viruses from an experimental virology approach, focusing on viral entry** in Rafael Sanjuán's lab at the Institute of Integrative Systems Biology (I2SySbio), Universitat de Valencia. Applicants should preferably have a background in molecular virology and/or computational biology.

Contact:

Rafael Sanjuán

## Upcoming Events

 [Subscribe to Calendar](#)

We do not endorse any of the listings and do not take any responsibility for the accuracy of the information. EVBC members are involved in events marked .


### 7th Annual training course on Viral Bioinformatics and Genomics

24–28 June 2024 | Glasgow, United Kingdom

*Comprehensive 5-day program comprising lectures and practical exercises tailored to confront bioinformatic challenges associated with high throughput sequencing.*

Registration:

[now open](#)

 Joseph Hughes (organiser)

### 26th Annual Conference of the European Society for Clinical Virology (ESCV 2024)

18–21 September 2024 | Frankfurt/Main, Germany

*The Conference will be dedicated to various aspects of clinical virology and comprise presentations, symposia, discussions, and various workshops.*

Abstract Submission: :

[now open](#)


### 33rd Annual Meeting of the Society for Virology

25–28 March 2024 | Vienna, Austria

*The meeting will cover a broad spectrum of topics in basic, translational, and clinical virology.*

Registration deadline:

15 February 2024

 I. Eckerle (plenary speaker)

### European Conference on Computational Biology

16–20 September, 2024 | Turku, Finland

*Conference theme: Data and Algorithms for health and science*

Submission deadline workshops & tutorials: [15 February 2024](#)


### Viruses of Microbes 2024

15–19 July 2024 | Cairns, Australia

*Advancement of the fields of viruses of microorganisms, including phages, archaeal viruses, and viruses of microbial eukaryotes.*

Abstract submission deadline:

16 February 2024

 C. Hill, R. Edwards (speakers); E. Adriaenssen, R. Edwards, M. Krupovic (Scientific Program Committee)

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