ECDC Training programme

Training programme in genomic epidemiology and public health bioinformatics – "GenEpi-BioTrain"

10 October 2025, Solna

Background:

In 2021, ECDC and the European Commission have launched several initiatives to strengthen EU/EEA Member States' capacity for whole genome sequencing (WGS) and the detection of SARS-CoV-2 variants, including a 83 Mio EUR national infrastructure programme. In addition, the new Regulation on serious cross-border threats to health (Regulation (EU) 2022/237) and the updated ECDC mandate (as of 23 November 2022) include provisions for the collection of "molecular pathogen data, if required, for detecting or investigating serious cross-border threats to health".

Building on these initiatives and the updated regulatory framework, ECDC is conducting a set of support activities, including an ambitious **training programme in genomic epidemiology and public health bioinformatics** (~5.2 Mio EUR) and the disease-specific implementation of WGS into EU level surveillance and outbreak response.

The training programme in genomic epidemiology and public health bioinformatics, the "**GenEpi-BioTrain**", was initiated in January 2023 and is scheduled to continue until the end of 2026.

We will host a meeting on Friday, 24 October 2025, 13:00 - 14:30 CEST, with all relevant stakeholders to outline the upcoming training activities and provide more detailed information.

Of note: there will be no costs for training participants or countries, all costs for training, per diem, accommodation and travel arrangements will be covered.

Contractors:

The contract project managers for the GenEpi-BioTrain are Rene Hendriksen, Technical University of Denmark, DTU (main) and Anders Rhod Larsen, Statens Serum Institut, SSI (deputy). The consortium includes DTU & SSI (DK), Institut Pasteur, IP (FR), Research Centre Borstel, RCB (DE), Finnish Institute for Health and Welfare, THL (FI) and Karolinska Institutet & University Hospital, KUH (SE).

Objectives and aims of the training:

The primary objectives of the training programme are to support countries strengthen their capacity in genomic epidemiology and bioinformatics for public health purposes, and to promote interdisciplinary collaboration among bioinformaticians, epidemiologists, and microbiologists at the national level. This will facilitate the

routine use of genomic data for surveillance, preparedness, and outbreak response. Additionally, the activities aim to enhance data sharing and collaboration between public health institutions and the ECDC, as well as support network activities that foster cross-border cooperation.

Specific objectives are:

- To allow professionals **with** a background in computational biology and bioinformatics to:
  - enhance and extend their skills to strengthen their capacity in the field of public health bioinformatics.
  - better understand the needs and concepts of epidemiology and public health microbiology, with a focus on the inputs and outputs needed by their counterparts (i.e., microbiologists, epidemiologists, and professionals in public health surveillance and response) to take rapid and informed public health action.

- To allow professionals **without** a background in computational biology/bioinformatics to:
  - enhance and extend their understanding of the field of public health bioinformatics.
  - gain a better understanding of how bioinformatics and genomic epidemiology can be applied in a public health context with a special focus on how traditional and genomic data can be jointly analysed, interpreted and used for public health purposes.
  - become more familiar with the concepts, formats and conventions commonly used in microbial genomics and get a better understanding of how the structure and format of the data can be used to streamline the data analysis process.
  - better understand the concepts behind and use of the most common bioinformatic tools and pipelines used for epidemiological analyses, including limitations and possible alternatives; and
  - gain a better overview of the basic principles, options for and best practices of data storage, management and sharing, with a specific focus on sequencing data and associated metadata.

Training activities in GenEpi-BioTrain, 2023 - 2026:

- Face-to-face workshops "Bridging the gaps in bioinformatics" (4 x 2 weeks; i.e. once per year)
  - Trainees might have no or limited background in computational biology/bioinformatics and may have limited knowledge of public health and proficiency in bioinformatics for public health. The forthcoming edition of this activity is scheduled for February–March 2026.
- Face-to-face workshops "Interdisciplinary genomic epidemiology and public health bioinformatics" (8 x 2 weeks; i.e. twice per year)
  - Each workshop may include up to ten "country teams" of one bioinformatician, one microbiologist, and one epidemiologist to promote the collaboration of inter-disciplinary teams within the public health sector. The forthcoming edition of this activity is scheduled for April–May 2026
    - Important note: **for the upcoming "One Health" wave (Wave 7), and specifically for this activity, professionals working in the food sector are also eligible to be part of the country teams, and it is recommended to consider including such a role, which can replace the epidemiologist one. If this is not possible, the team will receive an additional assignment to ensure that all One Health aspects are fully covered and that participants can maximize the benefit of the training.**
- Face-to-face training on specific topics in genomic epidemiology and/or public health bioinformatics
- Exchange visits for bioinformaticians from the public health sector in EU/EEA countries to one of the consortium partners
  - The trainee shall have clearly defined public health bioinformatics-related learning needs and goals that the exchange visit is expected to address
- Virtual information and training sessions (up to 40 x 1 day or 2 half-days; up to 10 times per year)
  - Specific topics in genomic epidemiology aimed at different proficiency levels

Structure of the training:

- The overall training activities will take place over a period of four years (2023 - 2026)
- **Each year, training activities will be dedicated to two pathogen groups ("pathogen waves"), around six months each.**
- The programme of pathogen waves is as follows:
  - Respiratory viruses (2023/1) and antimicrobial resistant pathogens (2023/2) *(already concluded)*
  - Food- and waterborne diseases (2024/1; Listeria, Salmonella, STEC) and vaccine-preventable diseases (2024/2; N. meningitidis, B. pertussis) *(ongoing)*
  - Tuberculosis (2025/1) and antimicrobial resistant pathogens (2025/2). To some extent, the pathogen wave 2025/2 will be similar in content and format to the pathogen wave 2023/2. The decision to repeat this pathogen wave was triggered by the high number of requests we received from Member States.
  - **One Health, with a particular emphasis on antimicrobial resistance (AMR) and food- and waterborne (FWD) pathogens** (2026/1). The final pathogen wave (2026/2) will be defined at a later stage.
- Face-to-face training activities are going to be at the training sites either in Denmark, Germany or France, depending on the pathogen wave
- Exchange visits for bioinformaticians can be in any of the five institutions/countries involved in the training (Denmark, Germany, France, Finland and Sweden)
- Several training activities (see above) are planned per pathogen wave; these activities build on each other
- Since activities build on each other, selected participants will be trained for several weeks per year, depending on availabilities

Training target groups:

- Professionals working in the public health sector as bioinformaticians, or "bioinformaticians-to-be" who are already analysing/will analyse genomic data for public health surveillance purposes. This group may come from diverse backgrounds and fields of study, including bioinformatics, biology, computer science, biochemistry, microbial genomics, metagenomics, algorithm development, microbiology, molecular genetics, biomedical sciences, forensic biology, comparative and molecular bioscience, epidemiology, etc; and
- Professionals working in the public health sector who do not have a specific background in bioinformatics but need to understand and interpret genomic data for surveillance (i.e. microbiologists, epidemiologists, professionals in public health response and surveillance).

Nomination process:

- The **National Focal Points for Microbiology** in coordination with National Focal Points of relevant disease groups are kindly invited to select nominees for the training activities described above.
  - For the face-to-face workshop "Interdisciplinary genomic epidemiology and public health bioinformatics", nominees should also be selected in coordination with the National Focal Points for Surveillance. Different persons can be selected for the role of bioinformatician in the country team, and for the other training activities.
- For each pathogen wave, ECDC will send out invitation letters to the National Focal Points specified above, and countries should nominate and rank up to two individuals per training
- For the "Interdisciplinary genomic epidemiology and public health bioinformatics" workshop, countries should nominate and rank up to two bioinformaticians, epidemiologists and microbiologists each for each pathogen wave
- When selecting nominees, the following should apply:
  - Nominees must currently be employed in the public health sector in one of the EU/EEA countries and their work should include tasks to actively apply skills acquired as part of the training.

- Nominees should be selected to ensure the maximum impact of the training on the public health sector they serve, taking into consideration their projected period of implementation of skills at the institute, possibilities of potentially cascading training nationally and direct use of the acquired skills.
- A link to a survey will be distributed to each country which should be filled out by the nominee (including a short version of the current CV and a short paragraph of their motivation)
- The NFPs for Microbiology should write a letter with a short paragraph to justify why the nominee should be selected for training and how the host institute can benefit from it (the letter can be uploaded in the survey).

Selection process:

- For training activities of each pathogen wave, ECDC will send out invitations after the information meeting on Friday, 24 October 2025 to relevant stakeholders to select nominees. After that, nominees can submit their applications via a survey link until Friday, 28 November 2025
- ECDC will review the applications and select candidates based on professional background, maximum impact and course availability. Notification letters will be sent to successful candidates until 19 December 2025.
- For the Interdisciplinary genomic epidemiology and public health bioinformatics workshop, ECDC will select one country team/country (=3 persons per country) per pathogen wave.

Of note: there will be no costs for training participants or countries, all costs for training, per diem, accommodation and travel arrangements will be covered.

Further details about the different training activities, and the nomination and selection process will be provided during the meeting on Friday, 24 October 2025, 13:00 - 14:30 CEST.

Best regards,

the ECDC Microbiology & GenEpi-BioTrain teams

Annex 2: Overview of the training blocks per pathogen wave

	Block 1: • "Bridging the gaps" • Exchange visits • Specific topics	Block 2: • Interdisciplinary training ("Country teams")	Block 3: • Specific topics	Block 4: • Virtual training sessions	Block 5: • Exchange visits
Level:	BEGINNER LEVEL	BEGINNER/ ADVANCED LEVEL	BEGINNER/ ADVANCED LEVEL	BEGINNER/ ADVANCED LEVEL	BEGINNER/ ADVANCED LEVEL
Target group:	Bioinformaticians or "bioinformaticians-to-be"	Per country: 1 Bioinformatician 1 Microbiologist 1 Epidemiologist	Bioinformaticians, others (Microbiologists, epidemiologists,…)	Anyone who is interested	TBD
Further info:	Candidates should work/plan to work directly with public health sequencing-related activities	Bioinformaticians should have some experience; No bioinformatic experience needed for microbiologists or epidemiologists	Candidates should already have some experience in bioinformatics	These activities will be announced separately	These activities will be announced separately

Block 1

Bridging the Gap

5 trainees/wave

23 Feb - 6 Mar 2026 (at DTU/SSI)

Block 2

Interdisciplinary GenEpi and PH Bioinformatics

Country team

3x 10 trainees

27 April – 8 May 2026 (at DTU/SSI)

Block 1 Block 3

Specific topics

Up to 10 trainees   Up to 10 trainees

B3: Legionella May 2026*
B3: Plasmids 1-3 Sep 2026
B1: Late May/early June 2026 (SSI)*

Block 1 Block 5

Exchange visits

Up to 5 trainees/wave   TBD

Hosts:
IP. June 2026*
THL: Autumn 2026*

1 day
2 days
3 days
⋮

*exact dates to be determined