Watch the following videos in preparation for the course start. Click on the links and they will open in your browser.

1. [Review of Pathogen Genomics—Part 1](https://vimeo.com/864572575)

1. [Review of Pathogen Genomics—Part 2](https://vimeo.com/864947179)

Speaker: Frederic D. Bushman  
These Videos will focus on the fundamentals of pathogen genomics including defining key terms and discussing components of the genome. The impact of mutations on phenotypes and protein expressions will also be discussed.

1. [Connecting the Genome to Molecular Diagnostics](https://vimeo.com/864955045)

Speaker: Rosemary She  
An overview of molecular methods, from principle to clinical application, will be provided in detail. Strengths and limitations of various approaches will be discussed.

1. [The Evolution of NGS Technologies—Part 1](https://vimeo.com/864958530)
2. [The Evolution of NGS Technologies- Part 2](https://vimeo.com/864958591)

Speaker: Mendy Poulter  
With the advent of NGS, it is crucial to understand the evolution of molecular diagnostics, starting from Sanger sequencing through NGS. Additional topics include the appropriate use of long and short reads, as well as understanding commonly used NGS technologies and platforms.

1. [Overview of Whole Genome Sequencing](https://vimeo.com/866148344)

Speaker: Nick Moore  
Whole genome sequencing (WGS) is more frequently being used in outbreak scenarios and for the prediction of antibiotic resistance. This section discusses the history of WGS, including its predecessors and the methodology behind WGS.

1. [Overview of Amplicon-Based NGS](https://vimeo.com/866402490)

Speaker: Paige Larkin  
Amplicon-based NGS is one of the more commonly used types of NGS in the clinical microbiology lab. In this section, participants will learn the principles of amplicon-based NGS and its applications, limitations and impact on patient care.

1. [Overview of Shotgun Metagenomic Sequencing](https://vimeo.com/866413491)

Speaker: Robin Patel  
As targeted and shotgun metagenomic sequencing increase in popularity, their advantages and limitations are being defined. Real clinical cases and impact will be shared.

1. [Application of Genomic Epidemiology for Surveillance and Infection Prevention in Healthcare Settings—Part 1](https://vimeo.com/866418849)
2. [Application of Genomic Epidemiology for Surveillance and Infection Prevention in Healthcare Settings—Part 2](https://vimeo.com/866423396)

Speaker: Marie-Claire Rowlinson  
Part 2 of this training—After learning about the principles and limitations of NGS, participants will discover how NGS is used in epidemiology studies and infection control in hospital settings. Participants will be walked through different clinical scenarios where NGS can be used.

1. [NGS Data Collection and Storage](https://vimeo.com/866439647)

Speaker: Xiaowu Gai  
Data collection and storage are crucial components of NGS. Important considerations, including amount of data, storage options, instrumentation needs and security concerns will be addressed.

1. [NGS Sequence Analysis](https://vimeo.com/866443770)

Speaker: Julie Hirschborn  
Participants will be given an overview of sequence analysis and bioinformatics. Essential terminology will be defined and limitations and challenges discussed. Various approaches and their strengths and weaknesses will be explored.

1. [From Start to Finish: Hands-on Design of NGS and Bioinformatics Practice—Part 1](https://vimeo.com/868031499)
2. [From Start to Finish: Hands-on Design of NGS and Bioinformatics Practice—Part 2](https://vimeo.com/868035560)

Speaker: Stephanie Goya  
These hands-on sessions are a practical recapitulation on how to design a NGS experiment and the bioinformatic analysis in different scenarios, with special emphasis on the limitations and benefits of each development. These sessions are a debate space where attendees accompanied by an NGS expert will be able to reaffirm concepts seen in the previous webinars, solve doubts and ask questions of specific interest for their projects.