



**SELEZIONE PUBBLICA N. 2025N34, PER TITOLI ED ESAMI, PER L'ASSUNZIONE A TEMPO INDETERMINATO E PIENO DI N. 1 PERSONA NELL'AREA DEI FUNZIONARI, SETTORE SCIENTIFICO-TECNOLOGICO, PRESSO L'UNIVERSITÀ DEGLI STUDI DI PADOVA.
TECNICO DI LABORATORIO A SUPPORTO DELLO SVILUPPO DI APPLICAZIONI INNOVATIVE E DI PROCEDURE DI BIOSICUREZZA IN AMBITO MICROBIOLOGICO.**

QUESITI COLLOQUIO

Elenco n. 1

- 1) Quali tecniche innovative si possono utilizzare per identificare un patogeno sconosciuto in un campione?
- 2) Quale programma del pacchetto Office permette di analizzare i dati sperimentali e preparare dei grafici?
- 3) A virus is defined as a subcellular structure with a biogenesis cycle exclusively intracellular, without any metabolism outside the host cell, containing ribonucleic acid (RNA) or deoxyribonucleic acid (DNA) as genetic material. In addition to nucleic acid, they have a molecular arrangement of proteins, possibly with a glycoprotein envelope. Although traditionally considered "obligate parasites", advances in virology have revealed that viruses share various characteristics with natural cellular components. It is already established that extracellular vesicles participate in communication and interaction between cells and the modulation of the host's immune system, with the ability to modulate the immune response and cellular signaling. (Curr Top Membr. 2025;96:33-45.)

Elenco n. 2

- 1) Con quali tecniche si può studiare l'espressione di proteine virali in una coltura cellulare infettata ed evidenziare interazioni tra proteine?
- 2) Quali programmi possono essere utilizzati per analizzare dati sperimentali valutandone la significatività statistica?
- 3) The biogenesis of extracellular vesicles (EVs) and many viruses involves the endosomal pathway, including the Endosomal Sorting Complex Required for Transport (ESCRT) system, which regulates the formation of vesicles within MVBs and viral budding. The system functions as a protein machine that involves the formation of intraluminal vesicles (ILVs) within endosomes, which are subsequently released as small EVs when MVBs fuse with the plasma membrane. Viral budding is a process in which the virus engages with the host cell's plasma membrane and separates to form a complete infectious particle. Many viruses encode membrane proteins that directly interact with ESCRT components, recruiting this machinery to facilitate budding. (Curr Top Membr. 2025;96:33-45.)

Elenco n. 3

- 1) Come si può valutare l'azione antimicrobica (antibatterica e antivirale) di una sostanza?
- 2) Quali programmi si possono impiegare per valutare l'omologia di sequenze nucleotidiche e che informazioni possono fornire?
- 3) The functional and structural similarity of extracellular vesicles (EVs) and viruses is highlighted when we observe EVs produced by virus-infected cells. The EVs from infected cells exhibit distinct molecular signatures compared to non-infected cells. EVs contain viral proteins and parts of viral genetic material. In

the specific case of virus-infected cells, the distinction between viruses (non-infectious) and EVs becomes almost imperceptible. The outcome is a spectrum of particles, including naked virions and EVs with infectious viral genomes which, in addition to facilitating infection and interfering with the antiviral response, can trigger excessive inflammation, influencing clinical outcomes. (Curr Top Membr. 2025;96:33-45.)

Elenco n. 4

- 1) Come si disegna e si sviluppa un sistema in real-time PCR e che vantaggi ha tale metodica?
- 2) Come più persone possono lavorare su un medesimo documento e successivamente generare un file in formato pdf?
- 3) Extracellular vesicles (EVs) and extracellular RNAs (exRNAs) are associated with numerous clinical conditions and may act as critical factors or indicators of COVID-19 severity. EV protein and exRNA profiles were assessed in serum samples from patients exhibiting COVID-19 symptoms. The research found three categories of biomarkers (EV proteins associated with antiviral responses, coagulation indicators, and exRNAs related to liver damage), as potential early predictors of disease severity (Fujita et al., 2021). Other research has shown that exosomes incorporating the spike protein of the coronavirus can induce the production of neutralizing antibodies. (Curr Top Membr. 2025;96:33-45.)

Elenco n. 5

- 1) Principi del Western blot e possibili applicazioni in ricerca e diagnostica microbiologica.
- 2) Quali strategie si possono impiegare per condividere/spedire un file di grandi dimensioni?
- 3) Extracellular vesicles (EVs) associated with viruses represent an emerging area in virology, offering new perspectives on intercellular communication and modulation of the immune response. However, the study of viral EVs presents various methodological challenges that hinder their characterization and data interpretation. One of the main obstacles is the isolation of these vesicles, as they share physical and biochemical characteristics with other types of EVs, such as exosomes and microvesicles. Even with the use of widely applied techniques in EV purification (including ultracentrifugation, ultrafiltration, polymeric precipitation, and chromatography), contamination with intact viral particles or cellular fragments frequently occurs, compromising the reliability of the results. (Curr Top Membr. 2025;96:33-45.)