

**PROCESO SELECTIVO PARA INGRESO, POR EL SISTEMA GENERAL DE ACCESO LIBRE, EN LA ESCALA
DE TECNÓLOGOS DE LOS ORGANISMOS PÚBLICOS DE INVESTIGACIÓN**

ÁREA: «A2-VIDA» ESPECIALIDAD: «V5- “TÉCNICAS EN BIOMEDICINA Y SALUD”

OPI: «INSTITUTO DE SALUD CARLOS III»

FASE OPOSICIÓN-SEGUNDA PARTE

SUPUESTO PRÁCTICO Nº1

During a scientific expedition aimed at discovering new epidemic-causing agents, an outbreak of a potentially unknown pathogen-induced respiratory disease has been reported. A basic and applied research center equipped with human diagnostic capabilities, various scientific-technical core units, and P3 and P4 level experimental laboratories has received several biological samples including some fluids and biopsies of affected individuals.

- I. Outline the strategies you would use to isolate the causative agent.
- II. Detail the strategies you would use for the molecular identification of the agent at different levels.
- III. Explain the molecular methods you would develop for diagnosing patients.
- IV. How would you determine the complete sequence of its genome?
- V. What surveillance protocol would you establish for the emergence of new variants in the event that it is:
 1. a single-stranded RNA virus.
 2. a double-stranded DNA virus.
 3. a bacterium with a 2 Mbp genome.
 4. a fungus with a 30 Mbp genome.
- VI. Describe the protocol(s) you would use in the search for therapies to treat this respiratory disease. Discuss the *in vitro* screening, testing in laboratory animals, and the subsequent steps needed to progress to clinical testing in patients.

SUPUESTO PRÁCTICO Nº2

Please provide a detailed description of the scientific and technical service core units that you believe should be included in a basic and applied biomedical research center focused on human health in infectious, rare, and chronic diseases. Define the equipment, personnel, and services each unit should offer. Also, justify the need for subcontracting certain services, if applicable.

Next, for each category of disease - infectious, rare, and chronic, outline the nature of the samples that could be received at the diagnostic laboratory. Describe the procedures to be followed with these samples, including sample handling, initial extractions, and the methodology to be used. Also, specify the types of tests that should be conducted.