

<u>TITLE</u>	A virological approach to biocontrol Botrytis cinerea, a plant pathogenic fungus also relevant to human health (Eol-TSP1-01)
<u>RESEARCHER PROFILE</u>	Postdoctoral
<u>TYPE OF CONTRACT</u>	Temporary contract of 34 months
<u>IP</u>	María Ángeles Ayllón Talavera
<u>GROUP INFORMATION</u>	http://www.cbgp.upm.es/index.php/en/scientific-information/associated-research-lines/virus-fungus-plant
<u>OFFER DETAILS</u>	<p>In addition to the vast problem that Botrytis cinerea disease represents for several crops and harvested products, and the impact of the indiscriminate use of fungicides on the environment, the fungus is also considered as an airborne mould with strong allergenic properties, and has been proposed to be included in the clinical routine of allergic diagnosis. B. cinerea causes gray mould, one of the most economically important diseases in several horticultural, ornamental and fruits crops, and also in postharvest. The control of this fungus is based on the use of fungicides, specially targeted to Botrytis, representing ca. 10% of the world fungicide market. However, the cost of its chemical control is enormous, economically and environmentally. Therefore, it is important to develop sustainable control strategies to reduce the negative impact of the fungicides and the fungus itself on the human health. One of the most innovative alternatives is the use of non-infectious proteinaceous antifungal nanoparticles. Natural antifungal proteins and plant peptides eliciting a general antimicrobial resistance have been identified as mediators of antifungal activity, therefore, the use of viral like particles derived from plant viruses expressing peptides or antifungal proteins, potentially active against B. cinerea, will control the infection of the fungus in the plant and the development and subsequent liberation of the spores to the air. Another promising alternative is the use of mycovirus-mediated hypovirulent strains of the fungus that produces less spores or decrease their allergenic properties, controlling also the human health effects, and that will be introduced in fields, greenhouses or fruit warehouses to control the virulent strains of the fungus. Thus, the principal objectives of this Eol will be: the isolation of mycoviruses from natural B. cinerea isolates; their identification and the study of their role in the immunological activity and the virulence of the fungus; as well as the production of non-infectious viral nanoparticles with antifungal activity aimed to control B.cinerea.</p> <p>María A. Ayllón http://www.cbgp.upm.es/index.php/es/lineas-de-investigacion-asociadas?id=97</p> <p>Araceli Díaz-Perales http://www.cbgp.upm.es/index.php/es/biotecnologia-y-bioinformatica?id=92</p> <p>Fernando Ponz http://www.cbgp.upm.es/index.php/es/informacion-cientifica/biotecnologia-y-bioinformatica-bb/plant-virusbio</p>
<u>MAIN RESPONSABILITIES</u>	Molecular characterization of mycoviruses infecting B. cinerea and of the mycovirus-fungus interaction. Characterization of the immunological activity of airborne Botrytis cinerea and effect of the mycovirus infection in the immunological activity. Development of non-infectious proteinaceous antifungal nanoparticles, and toxicity and permeability tests. Protoplasts isolation and fusion. PCR. Cloning. In vitro translation. Immunohistochemistry. Western Blot. ELISA. Proteomic. Next generation sequencing. Bioinformatic analysis.
<u>SPECIFIC OFFER REQUIREMENTS</u>	Detailed CV and two recommendations letters of two different supervisors. PhD in Biology, Biotechnology and/or Biochemistry.
<u>REQUIRED QUALIFICATIONS</u>	Postdoctoral. Studies in Biology, Biotechnology or Biochemistry. Skills in Bioinformatics. Languages: Spanish and/or English. Experience in the methodology to be used in the development of the proyect. Experience working with fungi and/or viruses, RNA, proteins, etc.
<u>ELIGIBILITY CRITERIA</u>	Elegibility will depend of PhD studies field, master degree, recommendations letters, years of experience, methology and techniques used.