COST STSM Application Form

To be sent by the applicant as attachment by e-mail together with all the documents he/she would like to submit to support the application (full CV, detailed work plan, motivation, etc.) to the

* Host (who will send his agreement to host the applicant to the MC Chair)
* MC Chair for evaluation and approval

COST Office Science Officer: DR GIUSEPPE LUGANO, giuseppe.lugano@cost.eu
COST MC Chair: PROF. PIERRE PAROT, parot@cea.fr
COST STSM Manager: PIERRE PAROT, pierre.parot@cea.fr

COST STSM Reference Number: COST-STSM-TD1002-12090
Period: 2012-11-12 00:00:00 to 2012-12-11 00:00:00
COST Action: TD1002
STSM type: Regular (from Italy to Spain)

STSM Applicant: Ms Emilia Coppari,Università degli studi della Tuscia,Viterbo(IT) , copparie@unitus.it
STSM Topic: Atomic force microscopy investigation of virus nanomechanical properties
Host: Pedro José de Pablo,Universidad Autónoma de Madrid,Madrid(ES), p.j.depablo@uam.es

Budget Request: Year-2012

Travel	600 Euro
Subsistence (hotel/meals)	1500 Euro
Total	2100 Euro

Short CV:

22/08/1984;

Master degree: Pharmaceutical chemistry and technologies, 2009 (Università degli studi di Perugia).

Post graduate fellowships in Pharmaceutical chemistry on synthesis of biologically active chemical compounds, 2009-2011 (Università degli studi di Perugia).

Post graduate fellowship in Nanomedicine and nanobiophysics, 2011 (Università della Tuscia, Viterbo).

Post graduate fellowship in atomic force spectroscopy and nanomechanics, 2012(Università della Tuscia, Viterbo).

Work Plan Summary:

Atomic force microscopy (AFM) has recently emerged as a powerful tool for exploring intermolecular forces, imaging samples and evaluating mechanical properties in near physiological conditions. AFM has proven to be a valuable approach to study biological samples like viruses. Lately, viruses emerged as a new class of natural biomaterials. They are attractive for materials science, nanotechnology and medicine due to their regular structures, stability of the particles and dynamic structural properties. Virus capsids and virus-like particles (VLPs) which are produced by modified virus capsid gene expression can be used as template for engineering specific nanocontainers. These are able to encapsulate various agents or like building blocks for producing nanomaterials. Moreover the outer capsid surface can be modified to expose specific peptides, entire protein or organic molecules with the most diverse biological functions.

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Plant viruses are very promising for the nanotechnology due to their simple structure and because they are not infective for humans. Tomato Bushy Stunt Virus (TBSV) is a spherical plant virus with icosahedral symmetry, belonging to the family of Tombusviridae; it has a monopartite, single-stranded, positive-sense RNA genome and represents an efficient and versatile system for the production of VPLs. The investigation of the biomechanical properties of the wild-type and of a mutant form can be essential for an optimal use of viral capsids.

I am interested to extend the AFM techniques to study the biomechanical properties of the two types of viruses and the theoretical model to provide quantitative information on the elasticity (Young's modulus).

I request the approval of a COST Short Term Scientific Mission as described above

Applicant

Ms Emilia Coppari 23 Oct 2012