



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 MAGDALENA RADWANSKA, magdalena.radwanska@cost.eu

COST MC Chair: PROF. PIERRE PAROT, parot@cea.fr

COST STSM Manager:

COST STSM Reference Number: COST-STSM-TD1002-8720

Period: 2011-10-29 00:00:00 to 2011-11-07 00:00:00

COST Action: TD1002

STSM type: Regular (from Germany to Italy)

STSM Applicant: Ms Ketaki Apte, University of Bremen, Bremen(DE) , apte.ketaki@gmail.com

STSM Topic: Isolation of Fibroblast nuclei for Atomic force microscopy

Host: Laura Gasparini, Istituto Italiano di Tecnologia (IIT), Genova(IT), Laura.Gasparini@iit.it

Budget Request: Year-2011

Travel	250 Euro
Subsistence (hotel/meals)	950 Euro
Total	1200 Euro

Short CV:

Date of Birth: 20/11/1986

Educational qualifications:

1. B.Sc. Microbiology , 2004-2007 (University of Pune, India)
2. M.Sc. Biochemistry and Molecular biology, 2007-2009 (University of Bremen, Germany)
3. PhD student (Cell biology) , 2010 onwards (University of Bremen, Germany)

Work Plan Summary:

Lamins are a major component of nuclear lamina, a complex filamentous meshwork formed beneath the nuclear envelope. It gives mechanical stability to the nucleus. Mutations in lamins cause diseases (laminopathies). Among these is the Hutchinson-Gilford progeria syndrome (HGPS), a rare premature aging disease. Our previous work in collaboration with Prof. Dr. Radmacher (Department of Biophysics, University of Bremen) shows that overexpression of Lamin A in *Xenopus* oocytes results into stiffer nuclei (1). In addition, it was shown that Lamin A progeria mutant forms more rigid laminae than the wild type laminae having comparable thickness (2).

Based on the results obtained by expression of mutant and wild type lamins in *Xenopus* oocyte nuclei we further plan to investigate effects of progeria mutations in terms of mechanical stability using the mammalian cell line system. Isolation of fibroblast nuclei and probing them by AFM would allow us to directly measure the influence of mutant lamin expression on nuclear rigidity. The work plan includes learning techniques to isolate fibroblast nuclei suitable for AFM measurements in the working group of Dr. Laura Gasparini (Istituto Italiano di Tecnologia (IIT), Genova, Italy). This working group has specially developed nuclei isolation technique for analysis by AFM. I would thus like to apply for STSM support.



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- (1) Influence of Lamin A on the Mechanical Properties of Amphibian Oocyte Nuclei Measured by Atomic Force Microscopy.
(Schäpe, Prausse, Radmacher, & Stick, 2009)
- (2) Amphibian oocyte nuclei expressing lamin A with the progeria mutation E145K exhibit an increased elastic modulus.
(Kaufmann, Heinemann, Radmacher, & Stick, 2011)

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

Applicant

Ms Ketaki Apte

15 Jul 2011