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Davide Ariberto Domenico Cassani

PhD Candidate in Biophysics and Cell Biology

Education

2014 - To date, University College London

PhD candidate in Biophysics and Cell Biology

Biophysics of cell shape lab

Thesis title: Unveil actomyosin cortex architecture: Insights from cryo-electron tomography of actomyosin cortex in isolated blebs

2011 - 2014, Politecnico di Milano

MEng in Biomedical Engineering with specialization in Cells, Tissue and Biotechnology

Thesis title: Influence of physicochemical arrangement on mechanical, morphological and biological properties of electrodeposited chitosan and PEO:chitosan thin films

Mark: 110 out of 110

November 2012, Vysoke Ucení Technické V Praze

Athens course in: "Radiation protection quantities and their measurements"

September 2012 - February 2013, Katholieke Universiteit Leuven

Erasmus program

March 2012, Instituto Superior Técnico de Lisboa

Athens course in: "Essentials on fabrication laboratory"

2008 - 2011, Politecnico di Milano

BSc in Biomedical Engineering

Thesis title: Optimization of experimental setup for bladder compliance analysis

Mark: 101 out of 110

March 2012, Technische Universität Wien

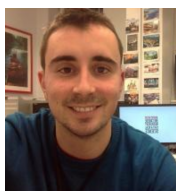
Athens course in: "Ultrasound in nature, engineering and medicine"

Research Experience

September 2014 - To date, PhD Candidate, University College London, UK

Brief Synopsis of the Research:

The ability of cells to change their shape relies on an accurate control of cell surface mechanics. This fine control is achieved by regulation and organisation of single molecules at the actomyosin cortex level. The aim of my project is to understand how the cortical organisation can achieve this control of cell surface mechanics. To answer this question, I will integrate mechanical analysis (e.g. AFM, micropipette aspirations) with light microscopy and cryo electron tomography.



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September 2013 - April 2014, Visiting Student, Surface Nanoengineering Lab, University of Ottawa, Canada

Brief Synopsis of the Research:

The work was aimed to understand the behavior of osteoblast-like cells cytoskeleton on thin films with different stiffness and pattern. The chitosan:PEO blend films were produced by electrophoretic deposition and characterized by FTIR, Raman Spectroscopy and AFM at University of Ottawa. After a culture of Osteoblast-like cells, cytoskeleton and cell morphology were analyzed by Fluorescence Microscopy and Scanning Electron Microscopy.

Publications

A. Ketabchi, K Komm, M. Miles-Rossouw, **D.A.D. Cassani** and F. Variola Nanoporous titanium surfaces for sustained elution of proteins and antibiotics. *PLOS ONE* Vol. 9 Issue 3 (2014)

D.A.D. Cassani, L. Altomare, L. De Nardo and F. Variola Physicochemical and nanomechanical investigation of electrodeposited chitosan: PEO blends. *J. Mater. Chem. B*, Vol.3, 2641-2650 (2015)

P. Chugh, A.G. Clark, M.B. Smith, **D.A.D. Cassani**, K. Dierkes, A. Ragab, P.P. Roux, G. Charras, G. Salbreux and E.K. Paluch Actin cortex architecture regulates cell surface tension. *Nat. Cel. Bio.*, Vol. 19, Issue 6, 689-697 (2017)

Technical Skills

Biophysical techniques

AFM, AFM+confocal, micropipetting, agar-based one-dimensional cell confinement, microfluidics (cell confinement in channels)

Light microscopy

STORM, spinning disk, confocal

Electron microscopy

SEM, cryo electron microscopy

Microfabrication

electrodeposition, soft-lithography (channel), 3D printing

Molecular/cellular biology techniques

siRNA transfection, plasmid transfection, cell culture, live imaging, sample fixation for light and electron microscopy

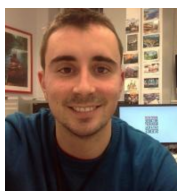
Software Skills

Programming

- Matlab
- Python
- R
- Latex

Computer Software

- Fiji
- Amira
- Onshape
- Illustrator
- Graphpad
- JPK package
- OriginPRO
- Office package
- Endnote
- Rhinoceros



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Awards

Award: "Francesca Martini Prize for best poster"

June 2017, SIBBM2017, Milano

Scholarship: "Tesi all'estero, a.a. 2013/2014"

2013, Politecnico di Milano

Scholarship: "Borsa Erasmus, a.a. 2012/2013"

2012, Politecnico di Milano

Activities and Outreach

Student conference organization

Organization and chairing of the first IPLS PhD students retreat. In collaboration with another PhD student, I organized a small students conference of three days (Hove, UK). In addition to 20 students, four international scientists came and gave seminars.

Student talks organization

Organization of the IPLS chalk talks. In collaboration with another PhD student, I organized a series of students chalk talks throughout the year. The informal environment was perfect to stimulate debate and scientific discussion.

Language

English

Fluent

Italian

Native language

French

Basic