Curriculum Vitae Pietro Cicuta December 2016

Group webpage: http://people.bss.phy.cam.ac.uk/~pc245/

Born: 17/07/1974 in Milan, Italy Family: Two children.

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Education

2000-2003 Cambridge University Ph.D. in Physics
Viscoelasticity of Insoluble Macromolecular Monolayers.

1993-1999 Università degli Studi di Milano Laurea in Physics, 110/110 cum laude
Fluctuations of an Interface Between Two Fluid Phases in Equilibrium and Non-Equilibrium Conditions.

Research Experience

Oct 2016-	Professor of Biological Physics	Cavendish Laboratory, Cambridge, UK
2013-2016	Reader in Biological Physics	Cavendish Laboratory, Cambridge, UK
2006-2013	Lecturer in Physics	Cavendish Laboratory, Cambridge, UK
2004-2007	Oppenheimer Research Fellow	Cavendish Laboratory, Cambridge, UK
Oct. 2005	Visiting Researcher	Chem. Eng. Dept., Stanford University, USA
2003-2004	Postdoctoral Research Associate	Nanotechnology I.R.C., Cambridge, UK
Oct. 2002	Visiting Student	Chem. Eng. Dept., Stanford University, USA
2000-2003	Research Student, EPSRC	Cavendish Laboratory, Cambridge, UK
1998-1999	Laurea project	Department of Physics, Milan, Italy

Teaching

Courses:	Biological Physics, Part III Physics	14/15, to date
	Soft Condensed Matter and Biophysics. 22 lectures, Part II Physics.	07/08 to 12/13.
Overall Head of Class:	II labs	14/15, to date.
Head of Class:	1B labs - Optics and Waves- Physics	06/07.
Head of Class:	1A labs - Physics	09/10.
Supervision:	1A, 1B Physics	08/09 to 14/15.
Supervision:	Thermal and Statistics Physics	07/08, to date.
Director of Studies:	Physics in Corpus Christi College	07/08, to date.
Examiner:	Part II Physics (08, 09, 10); IB Physics (12, Senior 13)	

Areas of activity and expertise

Biophysics: model cell membranes; mechanical properties of cells; flows induced by cilia; gene regulation.
Soft Matter Physics: polymer systems; colloidal particles; liquid interfaces and films.
Experimental techniques: Instrument automation; microfluidics; optical tweezers; image/video analysis.

Main Grants and Personal Awards

Previous main grants:

- Oppenheimer Fellowship (2004-2007) £150K.
- Co-I EPSRC Research Grant (Life Sciences Interface) (2006-2007) £97K.
- Co-I HFSP Research Project grant, (2009-2013), PI for £300K (grant total $1.2M).
- Co-I in 2 EU Training Networks "Comploids" (2009-2013) and "Transpol" (2010-2014), PI for £300K.

Current:

- PI ERC Consolidator Grant, awarded 2012 to start in 2013. 4 years, total £1.1M.
- Co-I HFSP project (2014-2017), PI for £250K (total £1M).
- Co-I EU Training Network "Biopol" (2015-2019), PI for £150K (total £3.2M).
- Co-I EPSRC Programme grant "CAPITALS" (2012-2017), Theme leader and PI for about £350K (grant total £5.1M).

Graduate student supervision: 10 PhD successfully completed . 9 current PhD students. 5 research MPhil student completed. **Examinations of PhD candidates:** 30 UK; 6 non-UK.

Department and University Administration / Community:

- Head of Group (Spokesperson and admin. coordinator for ~120 people) for Biological & Soft sector.
- Co-director of the EPSRC Center for Doctoral Training in "Sensor Technologies", 2014 to date.

- Management Committee of the BBSRC Doctoral Training Programme, 2014 to date.
- Management Committee of the Systems Biology degree course at Cambridge, 2011 to date.

UK Administration / Community:

- Committee Member (currently Treasurer) of the Biological Physics Group of IoP, 2010 to date.
- Editorial Board of J.Phys.: Condensed Matter

Selected of 77 peer reviewed publications:

Membranes

●P.Cicuta, *et al*., Diffusion of liquid domains in lipid bilayer membranes, *JPC B* 111, 3328-3331 (2007).

●R. Honerkamp-Smith, P. Cicuta *et al*., Line tensions, correlation lengths, and critical exponents in lipid membranes near critical points, *Biophys. J.* 95 236-246 (2008).

●L. Parolini, *et al*., Volume and porosity thermal regulation in lipid mesophases by coupling mobile ligands to soft membranes**,** *Nature Communications* 6, 5948 (2015).

Interfaces and films

●D. Vella and P. Cicuta, Granular character of particle rafts, *PRL,* 102, 138302, (2009).

●D.-G. Lee, P. Cicuta and D. Vella, Self-assembly of repulsive interfacial particles via collective sinking, *Soft Matter* DOI: 10.1039/C6SM00901H (2016).

Motile cilia and Synchronisation

●J. Kotar, *et al*., Hydrodynamic synchronization of colloidal oscillators, *PNAS* 107 7669-7673 (2010).

●N.Bruot, *et al*., Noise and synchronization of a single active colloid, *PRL* 107, 094101 (2011).

●N.Bruot, *et al*., Driving potential and noise level determine the synchronization state of hydrodynamically coupled oscillators; *PRL* 109, 164103 (2012).

●J.Kotar, *et al*., Optimal hydrodynamic synchronization of colloidal rotors, *PRL* 111, 228103 (2013).

●N. Bruot and P. Cicuta, Realizing the physics of motile cilia synchronization with driven colloids, *Annu. Rev. Condens. Matter Phys.* 7, 1-26 (2016).

Bacteria: colony growth, single cell, and chromosome organisation

●A.Javer*, Z.Long*, *et al*., Short-time loci displacement unveils E. coli chromosome organization; *Nature Communications* 4, 3003 (2013).

●Z.Long, *et al*., Microfluidic chemostat for measuring single cell dynamics in bacteria; *Lab Chip* 13, 947-954 (2013).

●A.Javer, *et al*., Persistent super-diffusive motion of Escherichia coli chromosomal loci, *Nature Communications* 5, 3854 (2014).

●M. A. A. Grant, *et al*., The role of mechanical forces in the planar-to-bulk transition in growing Escherichia coli microcolonies, *J. Roy. Soc.: Interface* 11, 20140400 (2014).

●A. S. Kennard, *et al*., Individuality and universality in the growth-division laws of single E-coli cells, *Phys. Rev. E* DOI: 10.1103/PhysRevE.93.012408 (2016).

Parasites, malaria and bacterial infection, immunity

●S.M. Man, *et al.*, Inflammasome activation causes dual recruitment of NLRC4 and NLRP3 to the same macro-molecular complex, *PNAS* 111, 7403 (2014).

●A. J. Crick, *et al*., Quantitation of Malaria Parasite-Erythrocyte Cell-Cell Interactions Using Optical Tweezers, *Biophys. J.* 107, 846–853 (2014).

●S.M. Man, et al., Actin polymerization as a key innate immune effector mechanism to control Salmonella infection**,** *Proc. Natl. Acad. Sci.* 111, 17588-17593 (2014).