



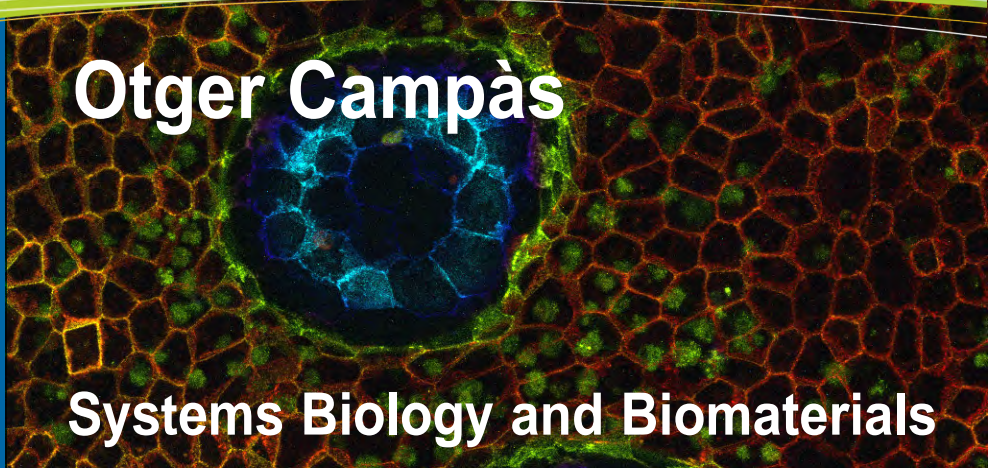
FACULTY OF
THE CENTER FOR
BIOENGINEERING

CBEPeople



Assistant Professor,
Mechanical
Engineering

*Mellichamp Chair in
Systems Biology and
Bioengineering*



Otger Campàs

Systems Biology and Biomaterials

CONTACT

campas@engineering.ucsb.edu

Phone: (805) 893-4015

Lab Phone: (805) 893-3930

Fax: (805) 893-8651

Office Location: 2334 Engineering II
Department of Mechanical
Engineering University of California,
Santa Barbara, CA 93106-5070

EDUCATION

Harvard University
SysCODE Fellow (2009-10)
Postdoctoral Fellow (2007-08)

Curie Institute, France
Ph.D. in Biological Physics
(2006)

University of Barcelona, Spain
M.Sc. in Theoretical Physics
(2005)
B.Sc. Degree in Physics (2002)

HONORS AND AWARDS

National Science Foundation Early
Career Award (2017)

Human Frontiers Science Program
Young Investigator Award (2015)

Hellman Fellowship (2014)

Mellichamp Endowed Chair in
Systems Biology (2012)

RESEARCH OVERVIEW

The Campàs group is interested in morphogenesis and self-organization of living systems, focusing on the role of mechanics in shaping biological structures. The group combines theoretical and experimental approaches from physics, biology, materials science and engineering, to obtain a global (or 'systems') understanding of these topics. Our current interests span several topics such as embryonic development, tissue growth, tumor growth, cell shape and collective cell migration.

The group has pioneered the development of measurement techniques to quantify both the mechanical stresses and material properties within living tissues, *in situ* and *in vivo*. These techniques open up the possibility to study mechanobiology in 3D living tissues, the native environment of cells.

Group Website: <https://campas.me.ucsb.edu/>

Continued on other side



HONORS AND AWARDS

National Institutes of Health Ruth L. Kirschstein Postdoctoral Research Fellowship (2009)

Graduate Student Fellowship (2003)

Selected Publications

In vivo quantification of spatially varying mechanical properties in developing tissues. F. Serwane, A. Mongera, P. Rowghanian, D.A. Kealhofer, A.A. Lucio, Z.M. Hockenbery, **O. Campàs**. *Nature Methods*, 14: 181-6 (2017).

Dynamics of ferrofluid drop deformations under spatially uniform magnetic fields. P. Rowghanian, C.D. Meinart, **O. Campàs**. *Journal of Fluid Mechanics*, 802: 245-262 (2016).

A toolbox to explore the mechanics of living embryonic tissues. **O. Campàs**. *Seminars in Cell & Developmental Biology*, 55: 119-130 (2016).

Quantifying cell-generated mechanical forces within living embryonic tissues. **O. Campàs**, T. Mammoto, S. Hasso, R.A. Sperling, D. O'Connell, A.G. Bischof, R. Maas, D.A. Weitz, L. Mahadevan, D.E. Ingber., *Nature Methods*, 11 (2): 183-189 (2014).

Closely related bird species demonstrate flexibility between beak morphology and underlying developmental programs. R. Mallarino, **O. Campàs**, J.A. Fritz, K.J. Burns, O.G. Weeks, M.P. Brenner and A. Abzhanov., *Proc. Nat. Acad. Sci. USA*, 109 (40): 16222-16227 (2012).

Scaling and shear transformations capture beak shape variation in Darwin's finches. **O. Campàs**, R. Mallarino, A. Herrel, A. Abzhanov and M.P. Brenner., *Proc. Nat. Acad. Sci. USA*, 107 (8): 3356-3360 (2010).

Shape and dynamics of tip-growing cells. **O. Campàs** and L. Mahadevan. *Current Biology*, 19: 2102-07 (2009).

Chromosome oscillations in mitosis. **O. Campàs** and P. Sens., *Phys. Rev. Lett.*, 97: 128102 (2006).

Collective dynamics of interacting molecular motors. **O. Campàs**, Y. Kafri, K.B. Zeldovitch, J. Casademunt and J.-F. Joanny., *Phys. Rev. Lett.*, 97: 038101 (2006).

Soft *Listeria*: actin-based propulsion of liquid drops. H. Boukellal, **O. Campàs**, J.-F. Joanny, J. Prost and C. Sykes., *Phys. Rev. E*, 69: 061906 (2004).