Centre de Recherche en Biologie Cellulaire de Montpellier

CRBM external seminar
Thursday Nov 24th 11:00 am Salle Marcel Dorée

MiniBAR: a dual Rab and Rac effector that controls cilia length and left-right asymmetry in vivo

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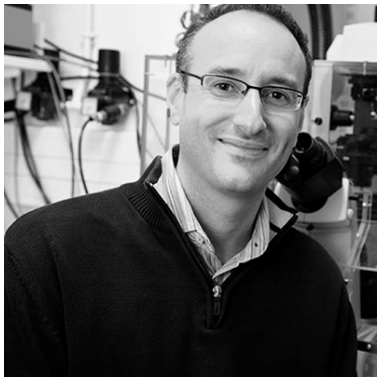

Arnaud is a cell biologist, group leader head of the team Membrane Traffic and Cell Division at the Pasteur institute, Paris. He is also Professor at the Ecole Polytechnique at Paris Saclay Univsersity. He is interested in cytokinesis and abscission, the last steps of mitosis, in particular the membrane traffic during these events. Arnaud received a PhD in Cell Biology in the lab of Bruno GOUD at Curie. After a post-doc at UCSF USA in the lab of Patrick O'FARREL he was recruited CRCN CNRS in Bruno GOUD's lab. He was recruited group leader at Pasteur in 2010.

Abstract

Primary and motile cilia are microtubule-based organelles that protrude from the cell surface and play critical roles in signaling and embryonic development. Cilia malfunction can lead to a group of diseases known as ciliopathies, which can result in various pathologies including polycystic kidneys and heterotaxy. Proper actin-dependent cell contractility and intracellular trafficking are both required for ciliogenesis, but little is known on how these processes might be coordinated. I will present the characterization of unique dual Rac and Rab effector that controls both actin cytoskeleton and membrane trafficking for successful ciliogenesis in cells and in zebrafish embryos.

Selected publications

Caveolae promote successful abscission by controlling intercellular bridge tension during cytokinesis.
Andrade V, Bai J, Gupta-Rossi N, Jimenez AJ, Delevoye C, Lamaze C, Echard A. Sci Adv. 2022 Apr 15;8(15):eabm5095.

The viral restriction factor tetherin/BST2 tethers cytokinetic midbody remnants to the cell surface.
Presle A, Frémont S, Salles A, Commere PH, Sassoon N, Berlioz-Torrent C, Gupta-Rossi N, Echard A. Curr Biol. 2021 May 24;31(10):2203-2213.e5.

The Flemmingsome reveals an ESCRT-to-membrane coupling via ALIX/syntenin/syndecan-4 required for completion of cytokinesis.
Addi C, Presle A, Frémont S, Cuvelier F, Rocancourt M, Milin F, Schmutz S, Chamot-Rooke J, Douché T, Duchateau M, Giai Gianetto Q, Salles A, Ménager H, Matondo M, Zimmermann P, Gupta-Rossi N, Echard A. Nat Commun. 2020 Apr 22;11(1):1941.

Actin reduction by MsrB2 is a key component of the cytokinetic abscission checkpoint and prevents tetraploidy.
Bai J, Wioland H, Advedissian T, Cuvelier F, Romet-Lemonne G, Echard A. Proc Natl Acad Sci U S A. 2020 Feb 25;117(8):4169-4179.