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BRIEF REPORT

Tousled-like kinase regulates cytokine-mediated communication between cooperating cell types during collective border cell migration
Wenjuan Xiang, Dabing Zhang, and D. J. Montell 12–19

Tousled-like kinase is required for signaling between polar cells and border cells in the Drosophila ovary, thus controlling their collective migration. Tlk knockdown in polar cells inhibits cytokine expression without affecting polar cell fate or viability. This study shows novel, cell type-specific functions for this ubiquitous nuclear protein.

ARTICLES

Cell Biology of Disease

Mcl-1 involvement in mitochondrial dynamics is associated with apoptotic cell death

Mcl-1 protein affects mitochondrial calcium homeostasis to modulate apoptosis. Mcl-1 is involved in mitochondrial fusion and fission in a Drp1-dependent manner. By using splicing-switching antisense oligonucleotides, it is possible to increase the synthesis of the Mcl-1 proapoptotic isoform, increasing the sensitivity of cancer cells to apoptotic stimuli.

A Highlights from MBoC Selection

Lamin B1 protein is required for dendrite development in primary mouse cortical neurons
C. Giacomini, S. Mahajani, R. Ruffilli, R. Marotta, and L. Gasparini 35–47

Lamin B1 depletion has detrimental effects on brain development. Lamin B1 loss of function affects neuronal development in primary mouse cortical neurons, strongly impairing dendrite length and complexity. This defective dendrite development stems from impaired nuclear ERK signaling and, possibly, mislocalization of nuclear pores.

A Highlights from MBoC Selection

Ccdc11 is a novel centriolar satellite protein essential for ciliogenesis and establishment of left–right asymmetry

Mutations in CCDC11 cause aberrant placement of internal organs and congenital heart disease in humans. Ccdc11 is a novel component of centriolar satellites and plays a critical role in motile and sensory ciliogenesis. The results implicate centriolar satellites in the pathology of left-right patterning and heart disease.

Cell Cycle

Cell cycle Start is coupled to entry into the yeast metabolic cycle across diverse strains and growth rates
A. J. Burnetti, M. Aydin, and N. E. Buchler 64–74

The interaction of two oscillators (cell division cycle and yeast metabolic cycle) with different frequencies is studied. Cell cycle Start is coupled with the initiation of high oxygen consumption and breakdown of storage carbohydrates across diverse strains and different growth rates.
Membrane Trafficking

**A Highlights from MBoC Selection**

A complex of Rab13 with MICAL-L2 and α-actinin-4 is essential for insulin-dependent GLUT4 exocytosis

Yi Sun, J. Jaldin-Fincati, Zhi Liu, P. J. Bilan, and A. Klip

Rab13 is necessary for insulin-regulated GLUT4-vesicle exocytosis in muscle. Biochemical and imaging analyses provide evidence that activated Rab13 engages a scaffold protein MICAL-L2 to form a complex with Rab13 and α-actinin-4. Through GLUT4 interaction with α-actinin-4, GLUT4 vesicles are recruited to the muscle plasma membrane.

OCRL1 engages with the F-BAR protein pacsin 2 to promote biogenesis of membrane-trafficking intermediates

P. G. Billcliffe, C. J. Noakes, Z. B. Mehta, Guanhua Yan, LokHang Mak, R. Woscholski, and M. Lowe

The Lowe syndrome protein OCRL1 binds via IPIP27A to the F-BAR protein pacsin 2 to promote the biogenesis of trafficking intermediates containing the mannose 6-phosphate receptor at the trans-Golgi network and endosomes.

The endocytic recycling compartment maintains cargo segregation acquired upon exit from the sorting endosome


The endocytic recycling compartment maintains segregation of cargo after sorting in peripheral endosomes, and cargo is recycled by distinct pathways to the plasma membrane. In addition, tubular recycling endosomes can be generated from sorting endosomes and preferentially traffic clathrin-independent cargo.

Auxilin facilitates membrane traffic in the early secretory pathway

Jingzhen Ding, V. A. Segarra, Shuliang Chen, Huacing Cai, S. K. Lemmon, and S. Ferro-Novick

In this study, a proteomic approach links the J-domain chaperone auxilin, which uncoats clathrin-coated vesicles, to the other major coat complexes in the cell (COPII and COPI). Genetic and biochemical studies support the proposal that auxilin facilitates vesicle traffic in the early secretory pathway.

Mena–GRASP65 interaction couples actin polymerization to Golgi ribbon linking

Danming Tang, Xiaoyan Zhang, Shijiao Huanga, Hebao Yuan, Jie Li, and Yanzhuang Wang

GRASP65 plays a role in Golgi ribbon formation. Because the gaps between Golgi stacks are heterogeneous and large, it is possible that other proteins may help GRASP65 in ribbon linking. Mena is a novel GRASP65-binding protein that promotes actin elongation and enhances GRASP65 oligomerization to link Golgi stacks into a ribbon.

Nuclear Functions

**A Highlights from MBoC Selection**

ChromoShake: a chromosome dynamics simulator reveals that chromatin loops stiffen centromeric chromatin


A novel chromosome simulator recapitulates the position and dynamics of centromeric chromatin in a model composed of cross-linked intramolecular loops. Simulations reveal that chromatin loops stiffen the centromere and dictate the distribution of pericentromeric cohesion.

Dissecting in vivo steady-state dynamics of karyopherin-dependent nuclear transport

O. Lolod, H. Yamazaki, S. Otsuka, M. Kumeta, and S. H. Yoshimura

The steady-state dynamics of karyopherin-dependent nuclear transport in a living cell is examined. The kinetic model established by a number of experimentally obtained parameters reveals how each step of the transport system contributes to maintaining steady-state cargo gradient and fluxes across the nuclear envelope.

Epigenetic engineering shows that a human centromere resists silencing mediated by H3K27me3/K9me3

N. M. C. Martins, J. H. Bergmann, N. Shono, H. Kimura, V. Larionov, H. Masumoto, and W. C. Earnshaw

Centromeres are embedded within heterochromatin but are transcriptionally active. Centromeric transcription and the centromere function of a human artificial chromosome resist repression mediated by nucleation of repressive marks H3K27me3 or H3K9me3 via tethering of EZH2 or the SET domain of Suv39h1, respectively.
**Signaling**

Angiotensin II down-regulates nephrin–Akt signaling and induces podocyte injury: role of c-Abl

Qian Yang, Yiqiong Ma, Yipeng Liu, Wei Liang, Xinghua Chen, Zhilong Ren, Huiming Wang, P. C. Singhal, and Guohua Ding

Ang II plays a vital role in the initiation and progression of proteinuric kidney diseases, but the mechanism is still elusive. It is shown that c-Abl is a molecular chaperone of nephrin signaling and the SHIP2-Akt pathway, and released c-Abl from nephrin is involved in Ang II–induced podocyte injury.

**Systems Biology**

The complex genetic and molecular basis of a model quantitative trait

R. A. Linder, F. Seidl, K. Ha, and I. M. Ehrenreich

Sixty-four genomic loci and seven genes that contribute to heritable variation in a model quantitative trait—resistance to oxidative stress—are identified across three yeast strains. The high-resolution understanding of this phenotype provides new insight into the genetic and molecular basis of quantitative traits.