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### RETROSPECTIVE

The secretory pathway at 50: a golden anniversary for some momentous grains of silver  
Karl S. Matlin and Michael J. Caplan  
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### PERSPECTIVE

Trafficking to the primary cilium membrane  
Saikat Mukhopadhyay, Hemant B. Badgandi, Sun-hee Hwang, Bandanigoda Somatilaka,  
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### BRIEF REPORTS

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### ARTICLES

**Biosynthesis and Biodegradation**

Lipid disequilibrium disrupts ER proteostasis by impairing ERAD-substrate glycan trimming and dislocation  
Milton To, Clark W. H. Peterson, Melissa A. Roberts, Jessica L. Counihan, Tiffany T. Wu,  
Mercedes S. Forster, Daniel K. Nomura, and James A. Olzmann  
270–284

Lipid disequilibrium induced by inhibition of long-chain acyl-CoA synthetases impairs ERAD substrate glycan trimming and dislocation independently of its effects on lipid droplet biogenesis. The disruptions in ER proteostasis activate the IRE1 and PERK branches of the unfolded protein response and ultimately induce IRE1-dependent cell death.
### Cell Physiology

**A Highlights from MBoC Selection**  
Ras and Rab interactor 1 controls neuronal plasticity by coordinating dendritic filopodial motility and AMPA receptor turnover  
In hippocampal neurons, Ras and Rab interactor 1 (RIN1) hinders the formation of stable synaptic connections by increasing dendritic filopodial motility and regulates long-term depression by enhancing AMPA receptor endocytosis.

### Cytoskeleton

**A Highlights from MBoC Selection**  
Periodic actin structures in neuronal axons are required to maintain microtubules  
Yue Qu, Ines Hahn, Stephen E.D. Webb, Simon P. Pearce, and Andreas Prokop  
*Drosophila* genetics is combined with high-resolution microscopy and a number of functional readouts to demonstrate key factors required for the presence of regularly spaced cortical actin in axons. The data suggest important roles for the actin rings in microtubule regulation, most likely by sustaining their polymerization.

### Membrane Trafficking

**A Highlights from MBoC Selection**  
How and why intralumenal membrane fragments form during vacuolar lysosome fusion  
Sevan Mattie, Erin K. McNally, Mahmoud A. Karim, Hojatollah Vali, and Christopher L. Brett  
When vacuolar lysosomes fuse, an intralumenal membrane fragment is produced and degraded by hydrolyses. How or why this fragment forms is not entirely understood. We show that the fusion machinery regulates stalk expansion during lipid bilayer fusion to create or eliminate fragments, affecting lysosome morphology and transporter protein turnover.

**Multivalent Rab interactions determine tether-mediated membrane fusion**  
Anna Lünc, Jieqiong Gao, Anne Kuhlee, Erdal Yavavli, Lars Langemeyer, Angela Perz, Stefan Raunser, and Christian Ungermann  
The HOPS tethering complex binds both the Rab7-like Ypt7 and SNAREs. Several HOPS mutants are used to show that both Rab-binding sites, but not the ALPS motif in Vps41, are necessary to tether and fuse membranes.

### Methods

**Extracting microtubule networks from superresolution single-molecule localization microscopy data**  
Zhen Zhang, Yukako Nishimura, and Pakorn Kanchanawong  
Microtubule filaments form ubiquitous networks. However, quantitative analysis of this structure is difficult due to its complex architecture. A tool is given for the automated retrieval of microtubule filaments from superresolution microscopy images and used for a quantitative analysis of microtubule network architecture phenotypes in fibroblasts.

### Signaling

**A Highlights from MBoC Selection**  
NLK-mediated phosphorylation of HDAC1 negatively regulates Wnt signaling  
Katarzyna Chmielarska Masoumi, Renée Daams, Wondossen Sime, Valentina Siino, Hengning Ke, Fredrik Levander, and Ramin Massoumi  
Primary embryonic fibroblast cells isolated from NLK-deficient mice proliferate faster and have a shorter cell cycle than wild-type cells. Nemo-like kinase and HDAC1 together negatively regulate Wnt signaling via Tcf/Lei transcription repression and prevent aberrant proliferation of fibroblast cells.

### CORRECTION

An mDia1-INF2 formin activation cascade facilitated by IQGAP1 regulates stable microtubules in migrating cells  
Francesca Bartolini, Laura Andres-Delgado, Xiaoyi Qu, Sara Nik, Nagendran Ramalingam, Leonor Kremer, Miguel A. Alonso, and Gregg G. Gundersen