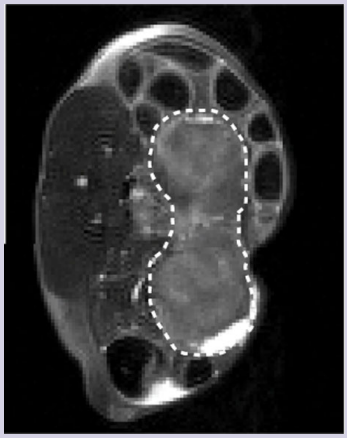

Rapamycin therapy for endometrial cancers

Advanced endometrial cancer has a median survival rate of less than a year. Contreras and colleagues have developed a mouse model of endometrial cancer, in which the tumor suppressor *Lkb1* is deleted in the endometrial epithelium, causing 100% penetrance of aggressive, invasive endometrial tumors. These tumors shrink significantly with rapamycin treatment. Rapamycin analogs are used with varying success in the treatment of human tumors, and this study suggests that analysis of the tumor's LKB1 status may provide a sensitive indicator of responsiveness to rapamycin-based therapy. *This research article is freely accessible online. K.W.*

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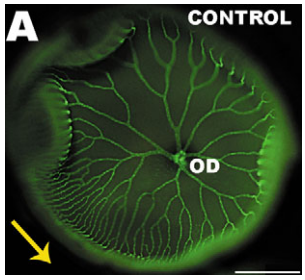
Zebrafish model for the early stages of blindness



Diabetic retinopathy induces blindness by causing vascular and neuronal damage to the retina. There is no cure and little is known about disease initiation and progression. Alvarez et al. show that damage to zebrafish cone receptors occurs as a direct result of hyperglycaemia, independent from vascular damage. Thus, therapeutic protection of cone receptors may help prevent blindness. *K.W.*

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Model of epithelial permeability

Immature epithelia do not create the permeability barrier necessary to maintain body temperature and hydration, and to prevent infection, contributing significantly to death in preterm infants. Enikanolaiye, Larivière and co-workers show that truncating the cytoplasmic domain of claudin 6 (Cldn6), a tight-junction-associated protein, in mice induces an epithelial phenotype similar to that seen in premature human babies. This model should help understand maturation and repair of the epithelial permeability barrier. *K.K.*

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Elastin protection in COPD

Emphysema and chronic bronchitis characterize chronic obstructive pulmonary disease (COPD), which makes it difficult for patients to breathe. Wempe, De-Zolt and colleagues partly alleviated the pathological effects associated with COPD in the lungs of an emphysema mouse model by genetically inactivating sestrin 2 (sesn2). Sesn2 induces the expression of signaling molecules that promote elastin breakdown. Sesn2 inhibition may protect lung elastin from degradation, thereby promoting lung elasticity and function in COPD patients. *This research report is freely accessible online. K.K.*

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Orchestrating bone formation and repair

Careful orchestration of bone formation, maintenance and repair is necessary to prevent abnormal bone formation (osteopetrosis) or pathological bone degradation (osteoperosis). Ortega et al. show that finely balanced bone dynamics involve concomitant metalloproteinase-9 (MMP-9)-induced bone degradation, VEGF-regulated blood vessel formation and osteoclast regulation of the growth plate. The interplay of these components promotes endochondrial ossification and is necessary for normal bone formation. *K.K.*

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α-tectorin mutant mice turn a deaf ear

Deafness, the most common sensory disorder, is often caused by autosomal dominant single gene mutations. Xia et al. found that a point mutant in the mouse α-tectorin gene results in a malformed tectorial membrane, which compromises the conversion of sound waves into electrical impulses. This induces an unexpected sharpening and amplification of sound wave tuning that may create more fragile outer hair cells, making them easier to destroy, and hence causing progressive hearing loss. *K.W.*

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Mitochondrial dysfunction in Parkinson's disease

α-Synuclein (α-syn) is often mutated in neurological diseases, including Parkinson's disease (PD), where it localizes to the Lewy bodies. Su, Auluck, Outeiro and colleagues find that yeast overexpressing α-syn alter their expression of mitochondrial-associated genes and exhibit abnormal mitochondrial function. In a chemical screen they identified compounds that reversed the adverse effects of α-syn on mitochondrial function, and ER-to-Golgi trafficking, in yeast and primary neurons from a rat model of PD. *K.K.*

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