RESEARCH HIGHLIGHTS

Selections from the scientific literature

GENETICS

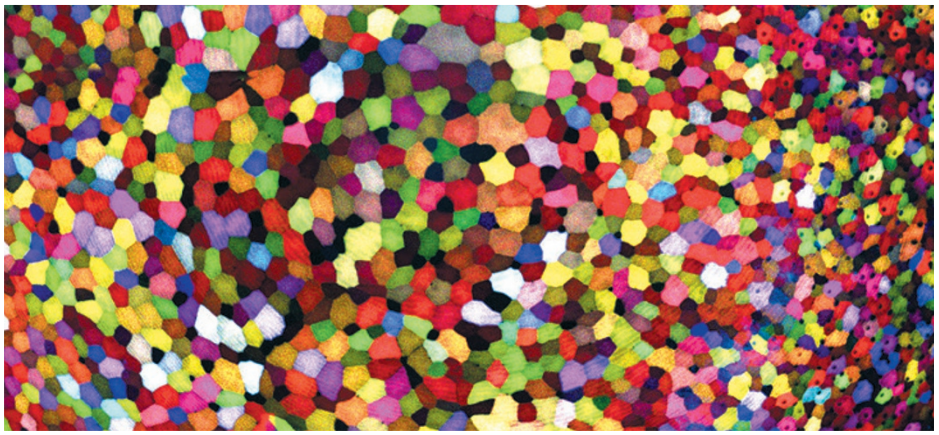
Genes linked to diabetes risk

Variations in two genes have been linked to both type 1 and type 2 diabetes in mice and in humans.

Type 1 diabetes occurs when the immune system attacks insulin-producing β-cells in the pancreas, whereas type 2 diabetes is caused by metabolic changes that make cells resistant to insulin. Adrian Liston of the University of Leuven in Belgium and his colleagues studied a mouse model of type 1 diabetes and found that variations in two genes, *Xrcc4* and *Glis3*, promote diabetes. The variants made β-cells prone to programmed cell death and senescence.

Pancreatic cells taken from people with type 2 diabetes showed reduced expression of the GLIS3 protein compared to that in healthy cells. Expression of XRCC4 was normal, but levels of an important partner of this protein were reduced. The findings suggest a mechanistic link between the two forms of diabetes.

Nature Genet. **http://doi.org/bdnd (2016)**



CHEN *ET AL./DEV. CELL* (2016)

DEVELOPMENTAL BIOLOGY

Zebrafish skin in myriad colours

Researchers have created a transgenic zebrafish with skin that fluoresces in thousands of colours — enabling them to track the behaviour of hundreds of individual cells in real time.

Kenneth Poss at Duke University Medical Center in Durham, North Carolina, and his colleagues adapted a 'brainbow' technique published in 2007, which engineered neurons to express different mixtures of fluorescent proteins. The team made the skin cells of zebrafish express the proteins so that cells could appear in one of around 5,000 different colours. About 70 could be distinguished clearly through a microscope — enough for most cells to be made distinct from their neighbours (pictured).

Using this 'skinbow' method, the team found that skin cells responded in three ways to fin amputation: cells from nearby regions migrated in to cover the new tissue; new skin cells were created; and some skin cells grew in size.

Dev. Cell 36, **668–680 (2016)**

ASTRONOMY

Protoplanet imaged in infancy

Astronomers have captured images of a young star system in the earliest stages of planet formation.

Researchers in 2014 used the Atacama Large Millimeter/submillimeter Array (ALMA) in Chile to image the star HL Tau and its dusty disk, some 138 parsecs (450 light years) from Earth. They found distinct gaps in the disk, where developing planets were thought to be collecting material along their orbits as they grew. To study the system further, Carlos Carrasco-González of the National Autonomous University of Mexico in Morelia and his colleagues used the Very Large Array in New Mexico, which is more sensitive to the disk's inner region than ALMA. It revealed that part of the innermost ring of dust seems to be clumping together into a planet that is 3–8 times the mass of Earth, suggesting that planets are forming in the rings rather than in the gaps.

This is the first time that planetary formation has been observed at such an early stage, the authors say.

Astrophys. J. Lett. **in the press; preprint at http://arxiv.org/abs/1603.03731 (2016)**

CANCER

How tumour cells lie in wait

Researchers have worked out how certain cancer cells go into hiding in the body and emerge later to cause the disease to recur.

Cancer can reappear and spread through the body years after the primary tumour has been surgically removed. To find out more about this latent period, Joan Massagué at Memorial Sloan Kettering Cancer Center in New York and his colleagues isolated cells from human lung and breast cancers that formed tumours only months after being injected into mice. The team found that these cells entered a quiescent, slow-dividing state by inhibiting a signalling pathway driven by the protein WNT. The cells also expressed high levels of the stem-cell genes *SOX2* and *SOX9*, which enabled the cells to grow into new tumours under certain conditions.

Moreover, the cells downregulated the expression of molecules that are recognized by immune cells called natural killer cells, allowing the latent cancer cells to hide from immune surveillance until conditions permitted them to form metastases.

Cell **http://dx.doi.org/10.1016/j.cell.2016.02.025 (2016)**