

METHODS IN BRIEF

MODEL ORGANISMS

Studying fine visual perception using rats

Although rodents are the most common animal model in the life sciences, they are rarely used to study higher visual functions. Historically, most vision studies have been carried out on humans, monkeys or cats, but this trend seems to be changing. Vermaercke & Op de Beeck trained rats to perform a complex visual task that reveals how animals process information to discriminate visual objects. The particular task they performed—the multivariate ‘bubbles’ visual paradigm-based task—has previously been used in species with higher visual acuity. The current study showed that rats performed relatively well in this task and illustrates how this behavioral paradigm can be adapted for studies in rodents, facilitating interspecies comparisons.

Vermaercke, B. & Op de Beeck, H.P. *Curr. Biol.* **22**, 50–55 (2012).

CELL BIOLOGY

Personalized models of virus infection

Induced pluripotent stem (iPS) cell lines generated from the somatic cells of individuals with disease offer the possibility to model both disease mechanism and the role of genomic variation in the disease process. Schwartz *et al.* now extend this notion to examine host-pathogen interactions, reporting an iPS model of hepatitis C virus infection. They demonstrate that hepatocyte-like cells derived from iPS cells, although of a fetal phenotype, express host factors needed for hepatitis C virus infection and support the entire viral life cycle for one viral genotype. The cells mount an anti-inflammatory response upon infection—including unregulation of IL-28B, in which genetic variations are associated with varying response to hepatitis C treatment in humans.

Schwartz, R.E. *et al. Proc. Natl. Acad. Sci. USA* advance online publication (30 January 2012).

MICROSCOPY

Improved Bessel beam light sheets

The use of a light sheet to illuminate a sample for microscopy can speed up imaging and reduce light exposure to the sample. Sheet-based illumination typically uses a standard Gaussian beam with a single wide peak. Bessel beams, in contrast, have a very narrow central peak with a ring system of light surrounding it. The ring system gives Bessel beam light sheets a unique self-healing capacity and improves propagation in scattering media but degrades resolution. Fahrbach & Rohrbach demonstrate a simple way to avoid resolution degradation while retaining the self-healing capacity of Bessel beams. They show that use of confocal line detection to remove signal coming from ring-based excitation preserved the self-healing capability of the Bessel beam light sheet while removing the undesired out-of-focus light. They demonstrate a near-doubling of axial resolution when imaging fluorescent polystyrene spheres in agarose gel or fluorescently labeled fruit fly ovaries.

Fahrbach, F.O. & Rohrbach, A. *Nat. Commun.* **3**, 632 (2012).

STEM CELLS

***In vitro* self-renewing cells from the adult human eye**

The stem cell community continues its search for cells with stem cell properties that can be extracted from adult humans, preferably from a relatively accessible tissue source. Collecting these cells might offer some promise for cell-replacement therapies and can help researchers understand the biology of diseases as well as fate choice and differentiation processes. Salero *et al.* looked inside the human eye and found a subpopulation of adult retinal pigment epithelial cells that can be expanded in culture and differentiated into both neural and mesenchymal progeny. It is unclear whether these cells have stem cell properties *in vivo*, but their *in vitro* properties make them an interesting candidate for obtaining sources of proliferative and lineage-differentiated human cells.

Salero, E. *et al. Cell Stem Cell* **10**, 88–95 (2012).