METHODS IN BRIEF

GENOMICS

Profiling chromatin-bound RNAs

To understand how genomes are regulated, one needs to have a comprehensive picture of all the proteins and RNAs that bind DNA. Li *et al.* sought to profile the RNA–chromatin interactome with a method they called GRID-seq (*in situ* global RNA interactions with DNA by deep sequencing). They first stabilized the RNAs on chromatin with a double-fixation step, and then they isolated the nuclei and digested the DNA before attaching a bivalent linker that binds the single-stranded RNA as well as the double-stranded DNA and can be purified via its biotin label. The authors apply GRID-seq to fly, mouse and human cells and draw a connectivity map of RNAs bound to active promoters and enhancers.

Li, X. *et al. Nat. Biotechnol*. http://dx.doi.org/10.1038/nbt.3968 (2017).

MASS SPECTROMETRY

Mapping the spatial proteome of primary neurons

Spatial proteomics methods have proven powerful for determining the subcellular localization of proteins, which is important information for understanding protein function and cellular organization. One spatial proteomics approach called 'dynamic organellar maps' determines the subcellular localization of proteins (and changes thereof) through a combination of rapid subcellular fractionation and quantitative mass spectrometry. However, this approach has been largely limited to cells grown in culture, because it relies on metabolic labeling. In Itzhak *et al.*, the developers of dynamic organellar maps extend this method to broaden its application to primary cells from animals by making it compatible with label-free quantification and chemical labeling and multiplexing strategies. They used their approach to map the spatial proteome of primary mouse neurons, and they compare the spatial proteome of these primary neurons to that of HeLa cells.

Itzhak, D.N. *et al. Cell Rep*. **20**, 2706–2718 (2017).

IMMUNOLOGY

Broad and deep immune profiling

B lymphocytes are a key component of the immune arsenal; upon antigen challenge, these cells undergo affinity maturation in lymphatic organs and differentiate to become antibody-secreting cells. Next-generation sequencing can profile expressed IgG variants across many individual secreting cells, but methods to measure the functional properties of these antibodies remain laborious and low in throughput. Eyer *et al.* present a microfluidic platform called DropMap that traps tens of thousands of picoliter-sized droplets containing individual antibody-secreting cells in a two-dimensional array. An in-droplet sandwich immunoassay uses functionalized paramagnetic nanoparticles to capture and quantify secreted IgG, which makes it possible to measure secretion rate as well as antibody specificity and affinity from the same cell. The authors use DropMap to profile thousands of antibody-secreting cells from mouse spleen and bone marrow in response to tetanus toxoid immunization.

Eyer, K. *et al. Nat. Biotechnol.* http://dx.doi.org/10.1038/nbt.3964 (2017).

NEUROSCIENCE

Mice at the steering wheel

Despite the notion that mice don't use their visual senses very much, the animals are well suited for studies probing visual perception or decision making. Burgess *et al.* report an efficient behavioral assay for vision research in mice. The mice sit at a steering wheel and choose between visual stimuli by steering into the direction of the preferred stimulus. Upon the correct choice, the animals are rewarded with water. In the described implementation, the visual stimuli differ in contrast. However, the assay is flexible and can be adapted to the experimental needs. For example, the choice can be forced or unforced; i.e., the mouse has to choose one direction upon a 'go' signal, or it can choose not to go towards one direction in situations such as when there is no perceived difference between the presented stimuli. The behavioral assay can be paired with optogenetic manipulation or calcium imaging in order to probe the circuitry involved in the behavior of interest.

Burgess, C.P. *et al. Cell Rep*. **20**, 2513–2524 (2017).