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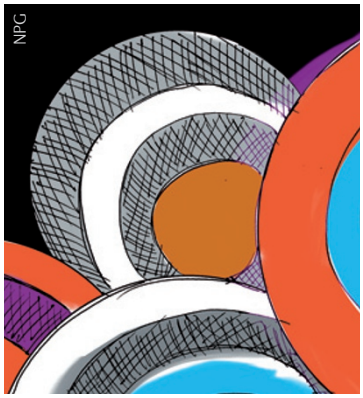
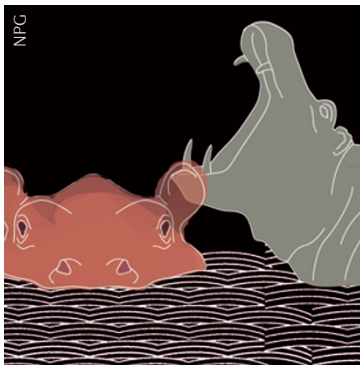


Targeting EPH–ephrin signalling p39



Manipulating Hippo pathway activity p63

The molecular mechanisms that cease organ growth at the appropriate point during development or regeneration remain poorly understood, but the recent discovery of Hippo signalling as a conserved growth control and tumour suppressor pathway has provided important insights. In their Review, Halder and Johnson provide an overview of the current understanding of the components and regulation of the Hippo pathway, focusing on its roles in the regulation of progenitor cell proliferation and organ size, tumourigenesis, tissue repair and regeneration. They discuss the potential for manipulating Hippo pathway activity in cancer therapy and in the expansion of stem cell populations for use in regenerative medicine, highlighting promising targets and small-molecule pathway modulators. EPH receptors, which comprise the largest family of receptor tyrosine kinases, in cooperation with cell-bound ephrins, also have crucial roles in development as well as in adult tissue and organ maintenance, regeneration and pathogenesis. Lackmann and colleagues review the complexity and functions of EPH–ephrin signalling and detail their roles in cancer, Alzheimer's disease, central nervous system injury and inflammation, as well as in tissue repair and remodelling. Targeted therapeutics that are currently being developed to inhibit EPH and ephrin binding, activation, biosynthesis and downstream signalling are discussed. Finally, Sabat and colleagues review the biology of the interleukin-22 (IL-22)–IL-22 receptor subunit 1 (IL-22R1) system, which does not directly regulate immune cell function but instead mainly acts on epithelial cells of various organs, pancreatic cells, hepatocytes and fibroblasts to induce the production of antibacterial proteins and selected chemokines. They assess the potential for targeting the IL-22–IL-22R1 system in chronic inflammatory diseases and infections, hepatitis, pancreatitis and cancer.

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