

### Cover illustration

'Differentiation landscape' by Nik Spencer

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The *Nature Insight* 'Frontiers in Biology' aims to cover timely and important developments across biology, ranging from subcellular molecular mechanisms to whole-organism physiology and biomedicine.

The development of mature blood cells from haematopoietic stem cells (HSCs) has long served as a paradigm for stem-cell research, with the haematopoietic differentiation tree being widely used as a model for the maintenance of hierarchically organized tissues. In this first Review, Laurenti and Göttgens discuss how recent results and new technologies have challenged some aspects of our classical view of blood production from HSCs, and enhanced our understanding of the mechanisms by which stem and multiprogenitor cells contribute to mature blood cell types.

Our skin serves as the interface between us and the environment, and is inhabited by a complex microbiota whose interactions with the host range from commensal or mutualistic to pathogenic. Chen, Fischbach and Belkaid discuss how the interactions between skin-resident microbes and their hosts are shaped by the specific context in which they take place. Factors such as the immune status of the host, tissue localization, and microbe-microbe interactions determine whether the consequences are beneficial or detrimental to the host, contributing to health or disease.

Organoids are self-assembling 3D tissue cultures that can capture normal and abnormal organogenesis *in vitro*. In this third Review, Sergiu Paşca surveys the most recent advances and remaining challenges in these technologies, with emphasis on brain development and the generation of complex neural circuits.

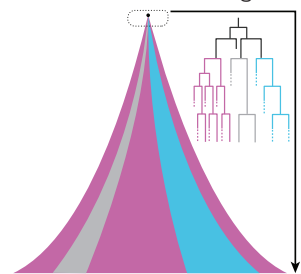
In the final Review of this collection, Herbst, Morgensztern and Boshoff review the aetiology, key biological features, and major therapy approaches for lung cancer over the past two decades, with a particular focus on recent developments of molecularly targeted and immunotherapies.

**Nathalie Le Bot, Barbara Marte & Ursula Weiss**  
*Senior Editors*

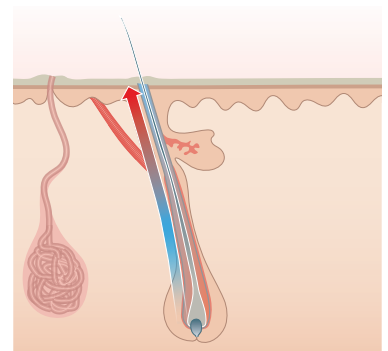
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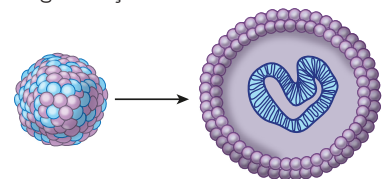
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