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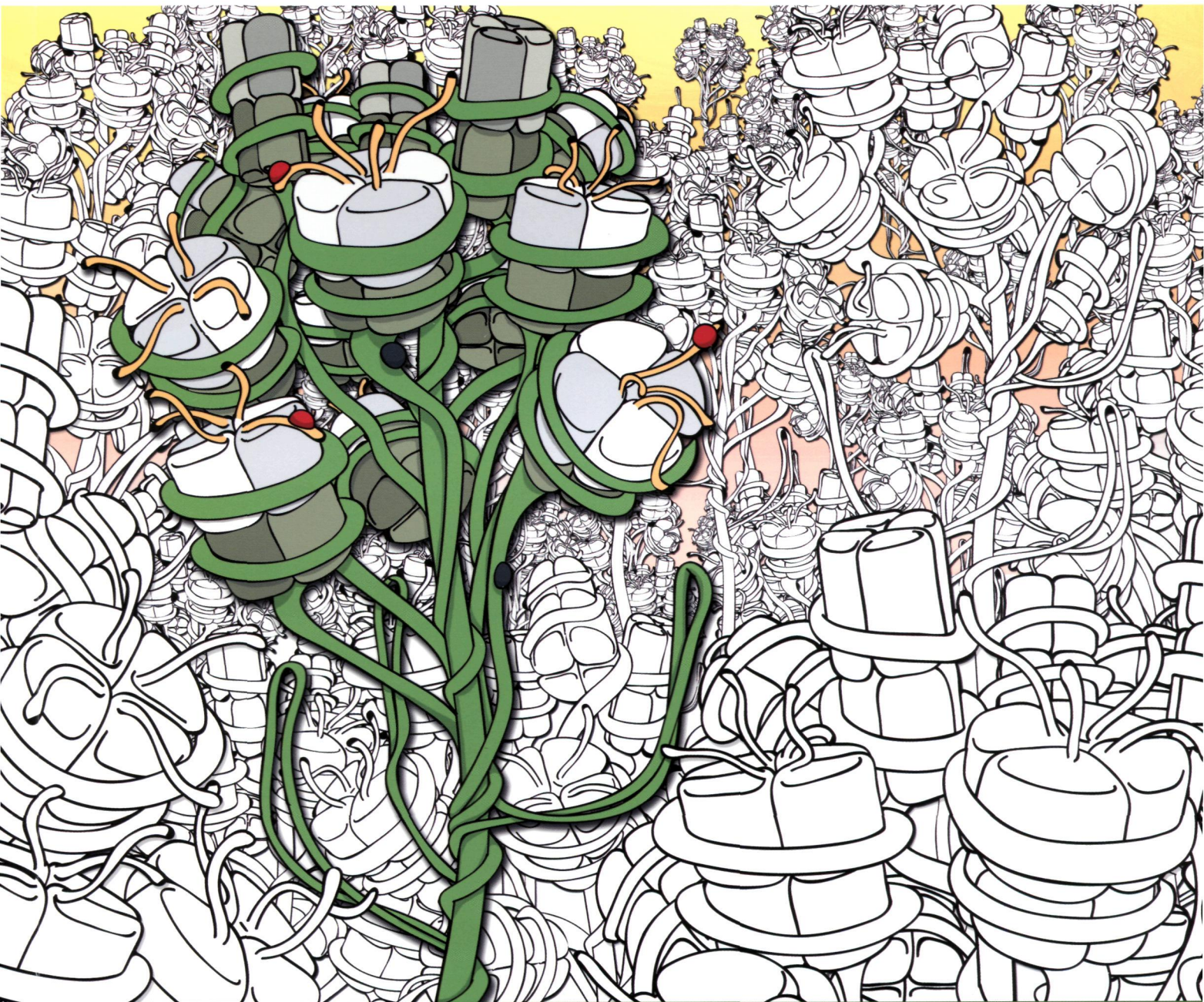
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REVIEWS

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GENETICS

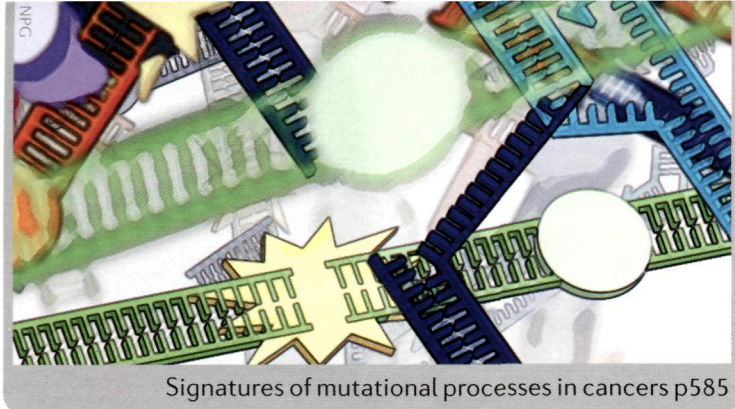


MEMORY RETENTION?

Epigenome reprogramming during plant reproduction

Stem cell models of disease

An expanding repertoire of patient-specific systems



Signatures of mutational processes in cancers p585

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REVIEWS

585 Mechanisms underlying mutational signatures in human cancers

Thomas Hellday, Saeed Eshtad and Serena Nik-Zainal

Mutagenic processes leave characteristic imprints on the cancer genome that can help to identify the underlying DNA damaging components as well as DNA repair and replicative pathways that are active or disrupted. This Review discusses these mutational signatures according to different classes of mutations and summarizes how different components contribute mechanistically to produce each signature type.

599 Identification and consequences of miRNA–target interactions — beyond repression of gene expression

Jean Hausser and Mihaela Zavolan

This Review discusses the main experimental approaches for microRNA (miRNA) target identification, as well as the modulators and the consequences of miRNA–target interactions. It also highlights the role of computational modelling in furthering the conceptual understanding of miRNA functions in gene regulatory networks.

613 Epigenetic reprogramming in plant sexual reproduction

Tomokazu Kawashima and Frédéric Berger

DNA and histone modifications undergo extensive reprogramming to reset the epigenomic state between generations. This Review discusses the mechanisms and consequences of epigenetic reprogramming during plant sexual reproduction. Despite various similarities to the equivalent process in mammals, a key difference is the seemingly incomplete reprogramming of plant epigenomes, which has implications for evolution and transgenerational epigenetic inheritance.

625 Investigating human disease using stem cell models

FEATURED ARTICLE



Jared L. Sternecker, Peter Reinhardt and Hans R. Schöler

Understanding disease pathogenesis and developing potential therapies require accurate and genetically tractable models. This Review discusses how human stem cells — including embryonic stem cells, adult stem cells and induced pluripotent stem cells — can provide informative models of diverse human diseases. Such methods can also be extended through gene editing, co-culture or infectious agent approaches.



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Context-dependent control of alternative splicing by RNA-binding proteins
Xiang-Dong Fu and Manuel Ares Jr

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Korbinian Schneeberger

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RESEARCH HIGHLIGHTS

571 Selections from the recent scientific literature

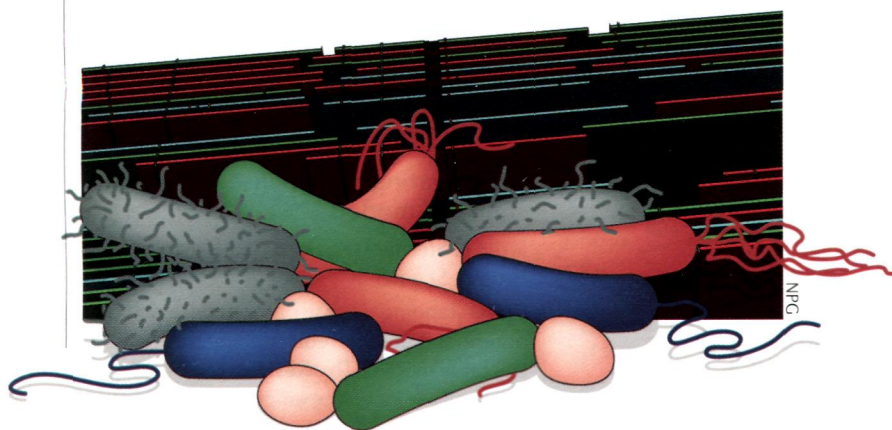
PROGRESS

577 Recent advances in genomic DNA sequencing of microbial species from single cells



Roger S. Lasken and Jeffrey S. McLean

Single-cell sequencing of uncultivated microbial species is rapidly providing a wealth of new information. Here, the authors provide an update on recent progress in capturing novel genomes, large-scale environmental studies and research relating to human health, as well as recent methodological improvements and remaining technical challenges.



► COVER: 'Bloom' by Patrick Morgan, inspired by the Review on p613.



Research Highlight on integrative omics in heart disease p572

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