



nature publishing group



► COVER: 'Entanglement' by Patrick Morgan, inspired by the perspective on p141.



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This year, the 200th anniversary of the birth of Charles Darwin and the 150th year since the publication of *On the Origin of Species* urge us to reflect on the legacy of the theory of natural selection — an idea so influential that, unusually for a scientific concept, it has entered common parlance. Natural selection has done more than stand the test of time — as a concept it has continued to evolve, expand and provoke discussion.

These themes are developed in the Review article by Laurence Hurst (page 83), who examines the intertwined histories of selection and genetics. Genetics gave selection a molecular underpinning; it also highlighted the complexities of selection — such as the seemingly paradoxical ability of deleterious alleles to spread in a population — and provided an explanation for them. Genetics also pinpointed the limitations of selection, and therefore spurred the development of alternative models. Despite our awareness of the wide reach of selection as an evolutionary force, its expanding sphere of influence — for example, on gene order or synonymous mutations — continues to surprise us.

This month we also launch a series of articles on Modelling ([www.nature.com/nrg/series/modelling](http://www.nature.com/nrg/series/modelling)). The abundance of data and unprecedented computational power are allowing biological models to be created and tested in areas ranging from developmental patterning to gene expression dynamics — a feat made possible by incorporating tools from engineering, statistics, physics and computational biology. The first Review in this series, by Darren Wilkinson (page 122), examines the statistical models that aim to describe complex and heterogeneous biological systems. Bayesian methods in particular are expected to revolutionize systems biology, just as they did bioinformatics and genetics.

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Printed in Wales by Cambrian Printers  
on acid-free paper