SPECIAL SECTION
MUTATION AND HUMAN DISEASE

INTRODUCTION
1470 Hunting mutations, targeting disease

NEWS
1472 Can 23andMe have it all?
By K. Servick
1475 Who has your DNA—or wants it
By J. Kaiser

REVIEWS
1478 The origins, determinants, and consequences of human mutations
J. Shendure and J. M. Akey
1483 Somatic mutation in cancer and normal cells
I. Martincorena and P. J. Campbell
1489 Genetics and genomics of psychiatric disease
D. H. Geschwind and J. Flint
1494 Mutations causing mitochondrial disease: What is new and what challenges remain?
R. N. Lightowlers et al.

ON THE COVER
Results of an early next-generation DNA sequencing run show four superimposed false-color images of amplified DNA clusters from one of the hundreds of “tiles” contained on a glass flow cell. Recent advances in this increasingly popular and inexpensive method now enable parallel sequencing reactions that can produce up to 500 gigabases of data per instrument run. These data allow us to better understand the frequency of genetic mutations and their impact on human disease. See page 1470.
Image: Jamie Simon, Ryan Lister, and Joseph R. Ecker, The Salk Institute

SEE ALSO ▶ EDITORIAL P. 1423 ▶ NEWS STORY P. 1433 ▶ PERSPECTIVE P. 1449 ▶ BOOKS ET AL. P. 1456

NEWS

IN BRIEF
1426 Roundup of the week’s news

IN DEPTH
1430 SLEUTHING SHEDS LIGHT ON STAP CELL FIASCO
Researchers describe artifacts that could have misled authors and prompted sensational reprogramming claims
By G. Vogel

1431 HOW TEETH GOT TOUGH: ENAMEL'S EVOLUTIONARY JOURNEY
A new analysis of fossils shows that ancient fish scales and skull bones sported enamel long before this hard substance coated teeth
By S. Perkins

1432 SCRIPPS HOOKS PROMINENT PAIR TO LEAD IT TO HEALTH
Steve Kay and Peter Schultz aim to focus one of the world’s largest basic biomedical science powerhouses on translational medicine
By R. F. Service

1433 NIH OPENS PRECISION MEDICINE STUDY TO NATION
Panel’s plan would allow anyone living in the United States to join million-strong effort
By J. Kaiser

 SECTION P. 1470

1434 CHINA’S ISLAND BUILDING IS DESTROYING REEFS
New land in the South China Sea comes at the expense of corals and fisheries
By C. Larson

1435 THE MARTIAN'S ODE TO SCIENCE
The director, author, and a NASA expert on how they balanced realism and movie magic
By M. Sachdev

FEATURES
1436 ECOLOGY’S TOUGH CLIMB
NSF’s ambitious network of observatories runs into harsh budget and management realities
By J. Mervis

1440 Tragic end for Puerto Rico site
By J. Mervis
1441 NEON jobs plentiful but problematic
By J. Mervis

INSIGHTS

PERSPECTIVES
1444 EXTREME WEATHER, MADE BY US?
Individual climate events cannot be attributed to anthropogenic climate change
By A. R. Solow

1446 FEMALE GENITAL CUTTING IS NOT A SOCIAL COORDINATION NORM
New data from Sudan question an influential approach to reducing female genital cutting
By C. Efferson et al.

1448 GATA GET A HOLD ON SENECEENCE
A transcription factor’s abundance connects autophagy to cellular senescence and a secretory phenotype
By L. D. Cassidy and M. Narita

 BY RESEARCH ARTICLE P. 1503
1449 MITOCHONDRIAL-NUCLEAR DNA MISMATCH MATTERS
Could different nuclear DNA–mitochondrial DNA combinations affect disease severity?
By K. J. Dunham-Snary and S. W. Ballinger
▶ MUTATION AND HUMAN DISEASE
SECTION P. 1470; PODCAST

1450 PROBING THE EDGE WITH COLD ATOMS
Trapped atoms can mimic the nature of edge currents in quantum Hall systems
By A. Celi and L. Tarruell
▶ REPORTS PP. 1510 & 1514

1452 EXPANDING THE CHEMICAL SPACE FOR REDOX FLOW BATTERIES
Flow batteries offer low-cost electricity storage for grid-scale renewable power sources
By M. L. Perry
▶ REPORT P. 1529

BOOKS ET AL.
1455 NEUROTRIBES
By S. Silberman, reviewed by F. Happé

1456 GENOMIC MESSAGES
By G. Annas and S. Elias, reviewed by H. T. Greely
▶ MUTATION AND HUMAN DISEASE
SECTION P. 1470

LETTERS
1459 MERCURY AND THE MOON
By L. L. Hood

1459 EMISSIONS REDUCTION IS NOT ENOUGH
By G. H. Rau and C. H. Greene

1459 RESEARCH FRAUD AS TORT
By E. Guerra-Pujol

1460 TECHNICAL COMMENT ABSTRACTS

RESEARCH

IN BRIEF
1500 From Science and other journals

RESEARCH ARTICLES
1503 AGING
The DNA damage response induces inflammation and senescence by inhibiting autophagy of GATA4
C. Kang et al.
RESEARCH ARTICLE SUMMARY; FOR FULL TEXT:
dx.doi.org/10.1126/science.aaa5612
▶ PERSPECTIVE P. 1448

1504 PROTEIN FOLDING
Structural origin of slow diffusion in protein folding
H. S. Chung et al.

REPORTS
QUANTUM SIMULATION
1510 Observation of chiral edge states with neutral fermions in synthetic Hall ribbons
M. Mancini et al.

1514 Visualizing edge states with an atomic Bose gas in the quantum Hall regime
B. K. Stuhl et al.
▶ PERSPECTIVE P. 1450

1518 NANOMATERIALS
Atomically thin two-dimensional organic-inorganic hybrid perovskites
L. Dou et al.

1522 ASTROPHYSICS
Gravitational waves from binary supermassive black holes missing in pulsar observations
R. M. Shannon et al.

1525 BIOCATALYSIS
Conversion of alcohols to enantiopure amines through dual-enzyme hydrogen-borrowing cascades
F. G. Mutti et al.

1529 BATTERIES
Alkaline quinone flow battery
K. Lin et al.
▶ PERSPECTIVE P. 1452

1532 H-BONDING CATALYSIS
O–H hydrogen bonding promotes H-atom transfer from α-C–H bonds for C-alkylation of alcohols
J. L. Jeffrey et al.

1537 PALEOCEANOGRAPHY
Synchronous centennial abrupt events in the ocean and atmosphere during the last deglaciation
T. Chen et al.

1541 EVOLUTIONARY ECOLOGY
Functional mismatch in a bumble bee pollination mechanism under climate change
N. E. Miller-Struttmann et al.

1544 MITOCHONDRIAL IMPORT
Molecular architecture of the active mitochondrial protein gate
T. Shiota et al.

1549 TRANSPOSONS
Arrested replication forks guide retrotransposon integration
J. Z. Jacobs et al.

DEPARTMENTS
1423 EDITORIAL
Preimplantation genetic screens
By Arthur L. Beaudet
▶ MUTATION AND HUMAN DISEASE
SECTION P. 1470

1578 WORKING LIFE
How science fairs shaped my career
By Rachel Yoho

Published by AAAS
Science

349 (6255)

Science 349 (6255), 1423-1578.

http://science.sciencemag.org/content/349/6255

http://www.sciencemag.org/help/reprints-and-permissions