

nature

NATURE'S CO-CITATION NETWORK

Here, more than 88,000 papers published by *Nature* since 1900 are each represented by a dot, coloured by discipline. Papers are linked if another scientific paper cites both; the dot size reflects the number of these co-citation links. The complex network reveals the relationships between papers and captures the multidisciplinary scope of the journal.

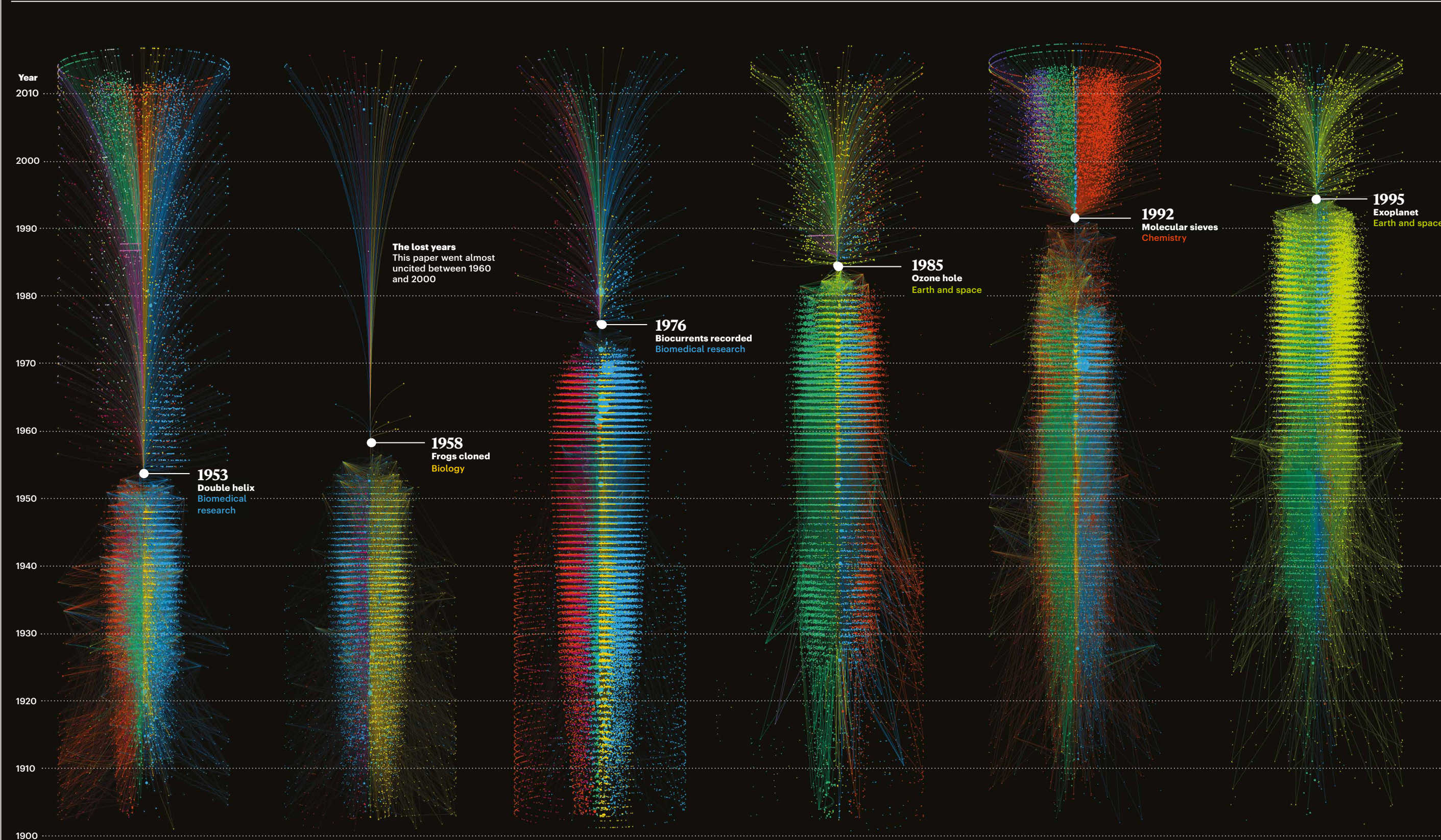
150 YEARS OF NATURE

A web of multidisciplinary
research and discovery



EXPLORE
INTERACTIVE
NETWORK

- Arts
- Biology
- Biomedical research
- Chemistry
- Clinical medicine
- Earth and space
- Engineering and technology
- Health
- Humanities
- Mathematics
- Physics
- Business and management
- Psychology
- Social sciences



ON THE SHOULDERS OF GIANTS

Scientific discoveries build on previous research and inspire future studies. This graphic takes six prominent articles from *Nature's* 150-year history and visualizes their reference cascade (below) and citations (above). Each colourful 'reference tree' reveals the diversity of disciplines that inspired the featured article and that were impacted by it.

See pages 32 & 35

Discipline

- Arts
- Biology
- Biomedical research
- Chemistry
- Clinical medicine
- Earth and space
- Engineering and technology
- Health
- Humanities
- Mathematics
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- Business and management
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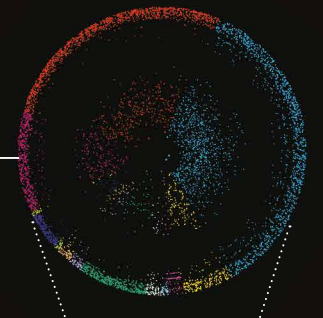
How to read a reference tree

Each tree shows a paper (white dot); papers that cited it (above), and the cascade of references it drew on (references, the references' references and so on) below. These are arranged in rings by year, grouped and coloured by discipline.

Example shown in diagram is the 1953 helix paper.

The trees are best viewed in our interactive version on your mobile or laptop.

View from top shows the paper's citations (best viewed in interactive)



Each ring is a year
Each coloured dot is an article

The lines connect the paper to a citation or reference

More-cited articles are close to the centre



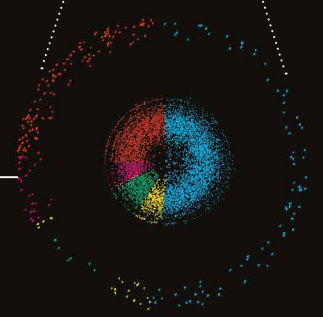
Less-cited articles are farther from the centre

Citations
The paper's impact is visualized through citations in other scientific work.

Focus paper
(white dot)

References
The paper's inspiration is visualized through its cascade of references.

Cross-disciplinarity
The 1953 paper drew more inspiration from biomedical research (blue, below) and had a large impact on chemistry (orange, above). (See Comment, page 32.)



View from bottom shows references (best viewed in interactive)

Molecular structure of nucleic acids
Nature 171, 737–738 (1953)
nature.com/articles/171737a0

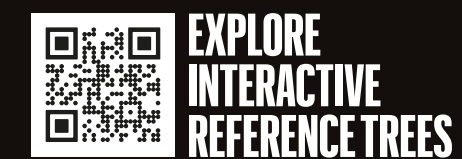
Sexually mature individuals of *Xenopus laevis* from the transplantation of single somatic nuclei
Nature 182, 64–65 (1958)
nature.com/articles/182064a0

Single-channel current recorded from membrane of denervated frog muscle fibres
Nature 260, 799–802 (1976)
nature.com/articles/260799a0

Large losses of total ozone in Antarctica reveal seasonal ClO_x/NO_x interaction
Nature 315, 207–210 (1985)
nature.com/articles/315207a0

Ordered mesoporous molecular sieves synthesized by a liquid-crystal template mechanism
Nature 359, 710–712 (1992)
nature.com/articles/359710a0

A Jupiter-mass companion to a solar-type star
Nature 378, 355–359 (1995)
nature.com/articles/378355a0



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