

Illustrated Presentation

Nobel Poster from the Nobel Committee for Physiology or Medicine, web adapted by Nobel Web

Contents

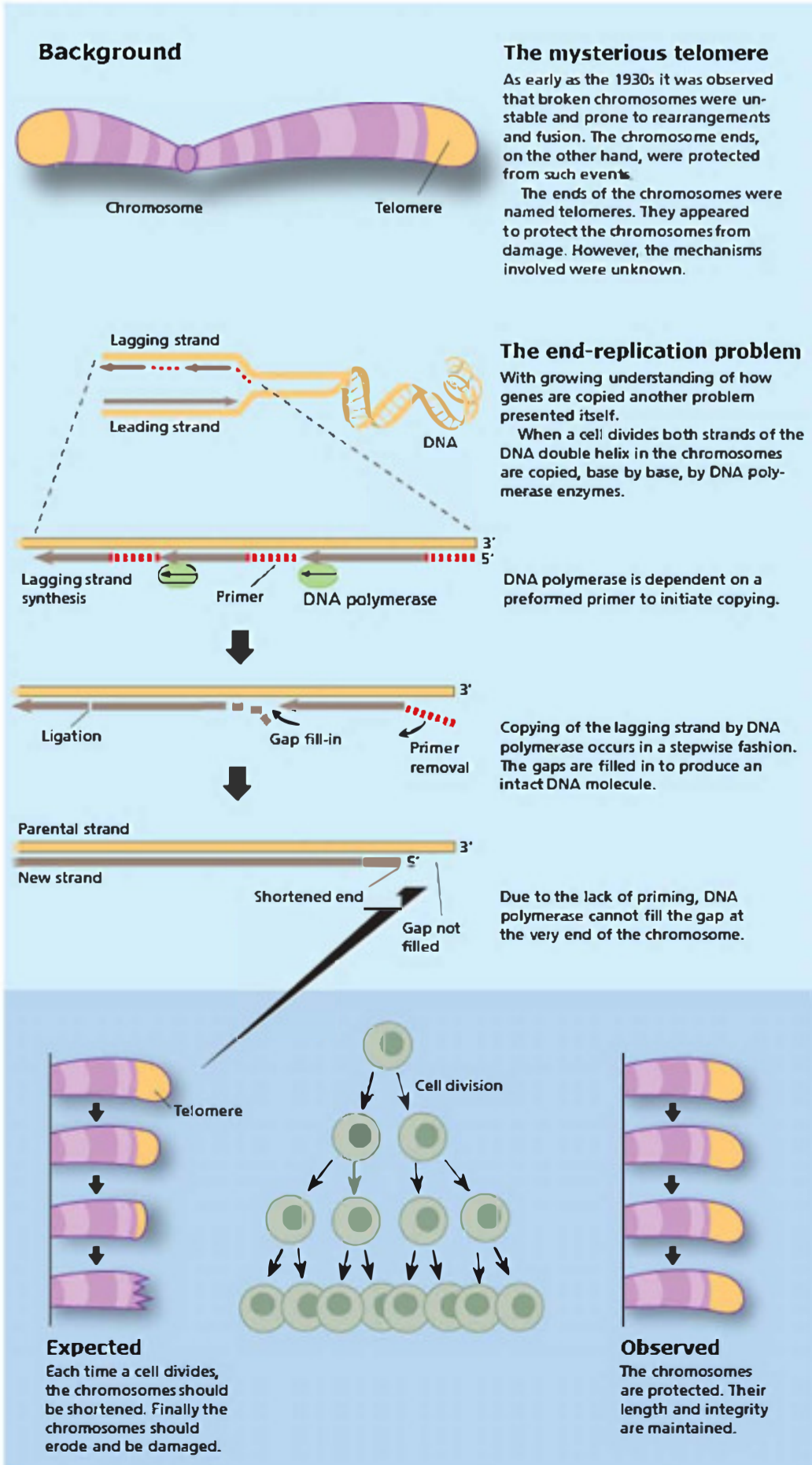
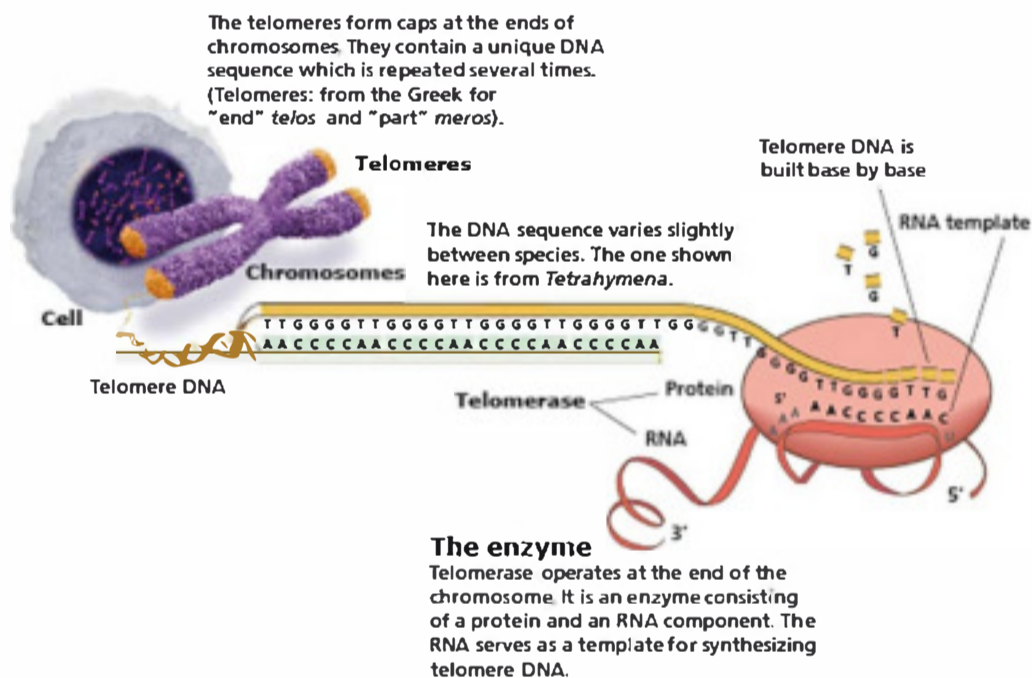
- [Background](#)
- [Telomere DNA protects the chromosomes](#)
- [Telomerase builds telomere DNA](#)
- [Telomerase and disease](#)
- [Credits and references](#)

The Nobel Assembly at Karolinska Institutet has awarded the Nobel Prize in Physiology or Medicine 2009 jointly to Elizabeth Blackburn, Carol Greider and Jack Szostak for the discovery of how chromosomes are protected by telomeres and the enzyme telomerase.



Elizabeth H. Blackburn
 Born 1948
 University of California,
 San Francisco, USA Carol W. Greider
 Born 1961
 Johns Hopkins University
 School of Medicine,
 Baltimore, USA Jack W. Szostak
 Born 1952
 Harvard Medical School,
 Boston, USA

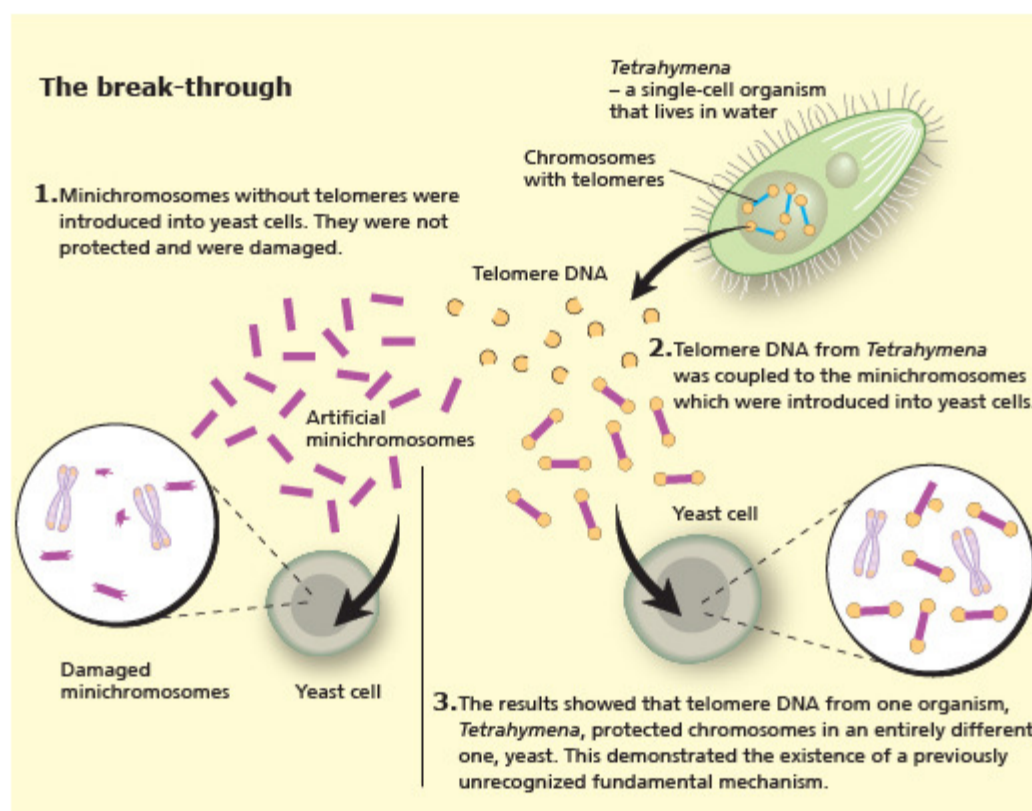
The award recognizes the discovery of a fundamental mechanism that has added a new dimension to our understanding of the cell, shed light on disease mechanisms, and stimulated the development of potential new therapies.



Telomere DNA protects the chromosomes

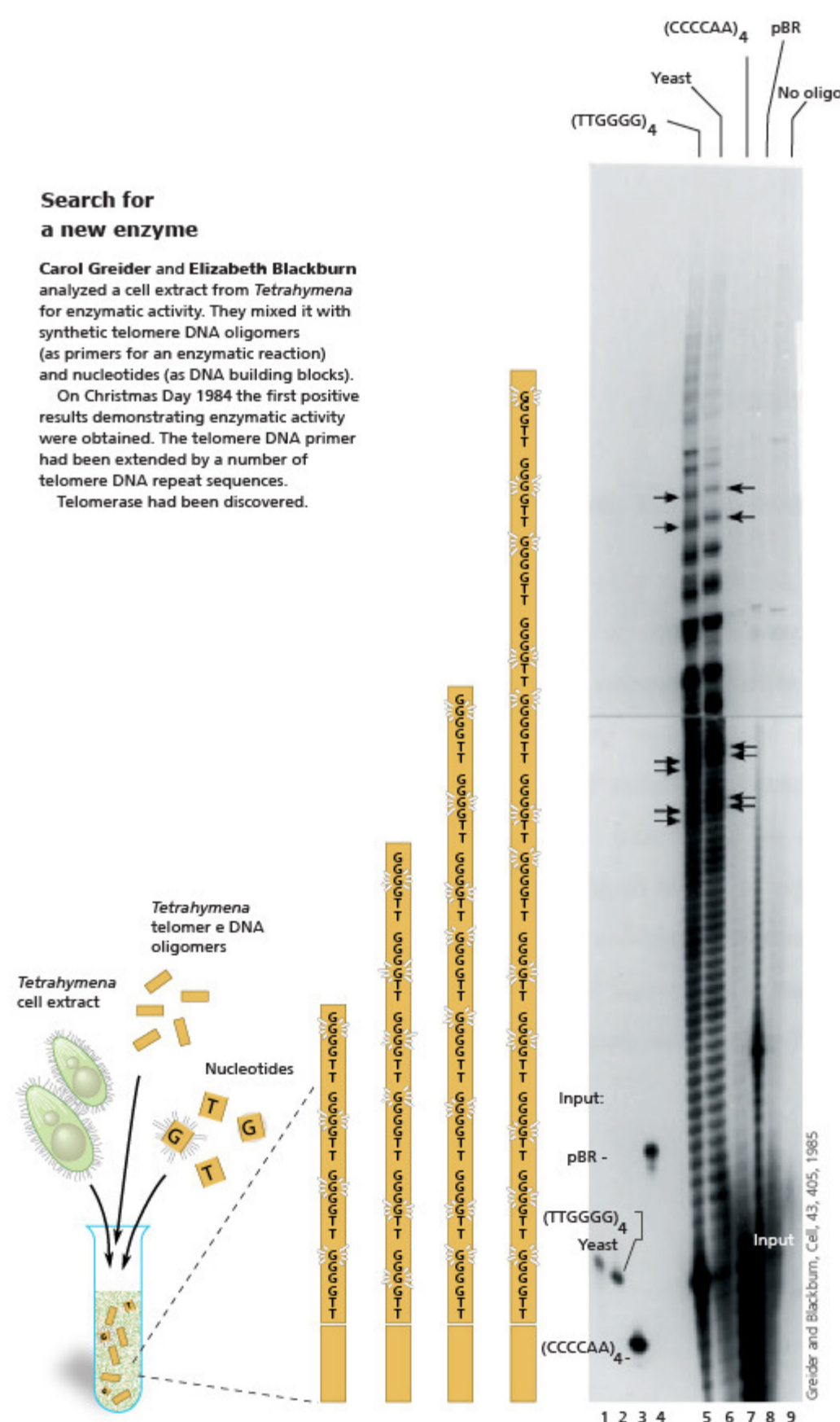
Elizabeth Blackburn studied the single-cell organism *Tetrahymena thermophila* and had found that the ends of chromosomes contain a short DNA sequence repeated many times.

Jack Szostak studied yeast cells and observed that linear artificial minichromosomes were rapidly degraded. Together they decided to test if telomere DNA from *Tetrahymena* could protect minichromosomes in yeast.



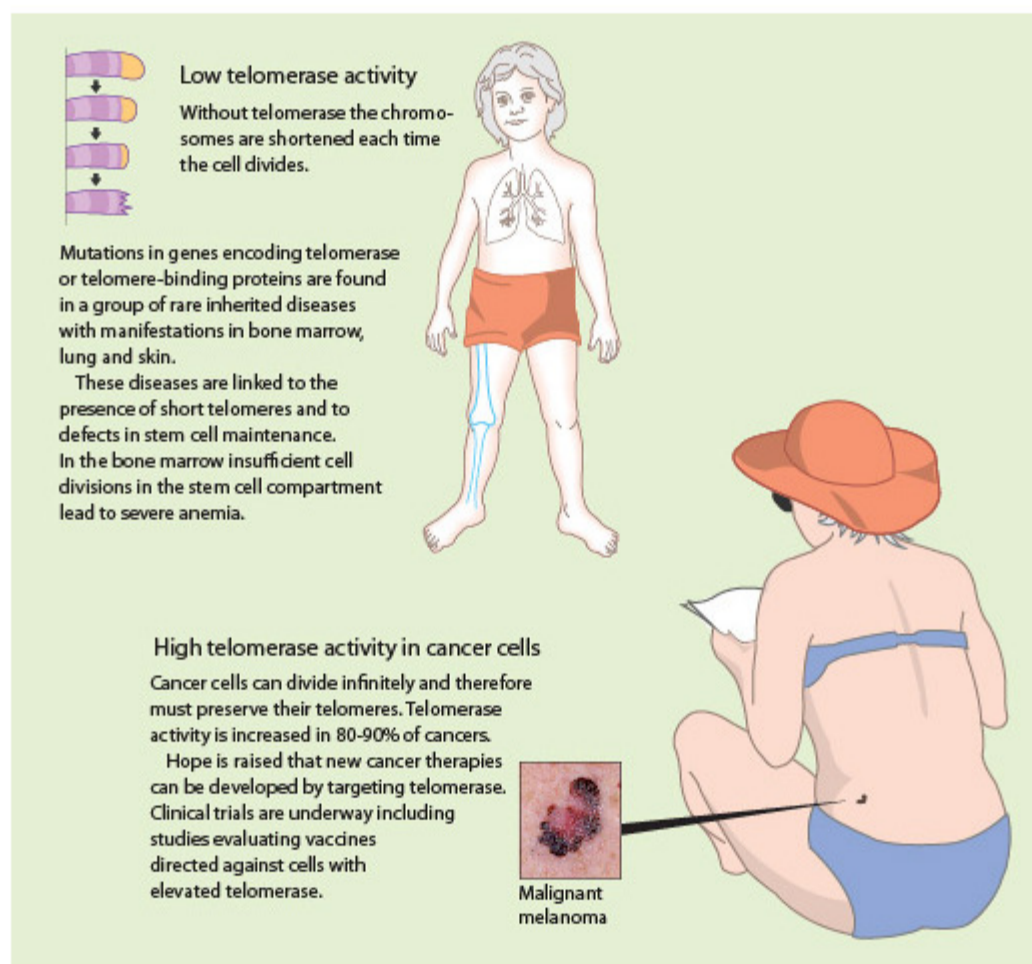
Telomerase builds telomere DNA

How are telomeres formed? **Carol Greider** and **Elizabeth Blackburn** asked if an enzyme might synthesize telomeres.



Telomerase and disease

The discovery of telomere function and telomerase has broad medical implications in many fields including cancer, ageing and certain inherited diseases.



Credits and references for the 2009 Nobel Poster for Physiology or Medicine

Scientific Advisors, Professors at Karolinska Institutet: Göran K. Hansson, Medicine. Secretary of the Nobel Assembly; Klas Kärre, Immunology. Chair of the Nobel Committee; Nils-Göran Larsson, Genetics; Thomas Perlmann, Developmental Biology; Rune Toftgård, Cancer Biology.

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