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Frankfurt am Main, September 30, 2008

### **Telomeres and telomerase: Fountain of youth for cells**

*Elizabeth H. Blackburn and Carol Greider have been awarded the 100,000 euro Paul Ehrlich and Ludwig Darmstaedter Prize 2009*

Frankfurt am Main. **Professor Elizabeth H. Blackburn** (59), a biologist from the Department of Biochemistry and Biophysics of the University of California, San Francisco, USA, and **Professor Carol Greider** (47), a biologist from the Department of Molecular Biology and Genetics of The Johns Hopkins University in Baltimore, USA, are to receive the 100,000 euro Paul Ehrlich and Ludwig Darmstaedter Prize 2009 for their outstanding research achievements “in the discovery of telomeres and telomerase and the elucidation of their significance for cell division and cell aging.” The decision to confer the award on them was made by the Board of the Paul Ehrlich Foundation. The Paul Ehrlich and Ludwig Darmstaedter Prize is among the most prestigious international awards granted in the Federal Republic of Germany in the field of medicine. The award ceremony will take place in the Paulskirche in Frankfurt on March 14, 2009, the birthday of Paul Ehrlich (1854–1915).

### **Telomeres and telomerase**

The ends of chromosomes are protected by so-called telomeres (Greek for “end bodies”), which form a cap surrounding the end-of the chromosomes, rather like the plastic tip on the end of a shoelace. Each time a healthy cell divides, these telomeres are shortened by a tiny amount. Once telomere length falls below a certain minimum, the cell ceases to divide or dies. The enzyme telomerase discovered by Elizabeth Blackburn and Carol Greider can suppress the shortening of telomeres. After cell division, it adds DNA building blocks to the chromosome ends and so lengthens the telomeres again. Telomerase thus acts to prevent cell aging.

Demonstrable levels of telomerase are found in the human body only in cells that have to renew themselves over and over again, such as skin and mucosa cells – and in cancer cells. The enzyme promotes tumor growth by preventing cell aging and counteracting natural cell death. Telomerase is therefore a central and crucial point of attack for the development of new cancer drugs.

Elizabeth Blackburn, together with her then doctoral student Carol Greider, discovered telomerase in 1984 in ciliate protozoa of the *Tetrahymena* species and described it for the first time in 1985. In the following years, she characterized it genetically and biochemically in various species, and studied its effects on human health and aging, while Carol Greider

investigated the implications of the malfunction of telomeres and telomerase for genetic material, the genomic stability of the cell, and the body.

**Professor Elizabeth H. Blackburn** was born in Hobart, Tasmania, on November 26, 1948. She studied biology at the University of Melbourne and took her Ph.D. at the University of Cambridge in the UK in 1975. She then moved to Yale University in the USA, before joining the faculty of the University of California, Berkeley, in 1978. She joined the Department of Microbiology and Immunology of the University of California, San Francisco, in 1990 and is currently Morris Herzstein Professor of Biology and Physiology at the Department of Biochemistry and Biophysics at that same university. Elizabeth H. Blackburn has received numerous honors and scientific awards for her work on telomeres and telomerase, including the Albert Lasker Award for Basic Medical Research 2006 (together with Carol Greider) and the L'Oréal/UNESCO Prize "For Women in Science". Elizabeth H. Blackburn became an American citizen in 2003 and in 2007 was listed by Time Magazine as one of the "100 Most Influential People in the World".

**Professor Carol Greider**, born in San Diego, California, USA, on April 15, 1961, grew up in Davis, California and studied biology at the University of California, Santa Barbara. She made her seminal discovery of telomerase while researching telomeres as a graduate student with Elizabeth Blackburn at the University of California, Berkeley, where she completed her Ph.D. in 1987. She has been Daniel Nathans Professor and Director of the Department of Molecular Biology and Genetics at The Johns Hopkins University in Baltimore since 1993. She has received numerous honors and scientific awards for her work, including the Albert Lasker Award for Basic Medical Research 2006 together with Elizabeth Blackburn.

### **The Paul Ehrlich and Ludwig Darmstaedter Prize**

The Paul Ehrlich and Ludwig Darmstaedter Prize is traditionally presented on Paul Ehrlich's birthday, March 14, in the Frankfurt Paulskirche. It is awarded to scientists in recognition of their special achievements in Paul Ehrlich's field of research, especially immunology, cancer research, hæmatology, microbiology and chemotherapy. This year, the laudatio will be held by Professor Dr. Dr. h.c. Reinhard Kurth, Member of the Council of the Paul Ehrlich Foundation and former President of the Robert-Koch-Institute. Hilmar Kopper, Chairman of the Council, will present the award jointly with a representative of the Federal Ministry of Health. The prize, which has been awarded since 1952, is financed by tied donations from the Federal Ministry of Health, companies and the German Association of Research-Based Pharmaceutical Companies.

### **The Paul Ehrlich Foundation**

The Paul Ehrlich Foundation is a legally dependent foundation of the Association of Friends and Patrons of the Johann Wolfgang Goethe University Frankfurt am Main e.V. The Honorary President of the Foundation, which was set up in 1929 by Hedwig Ehrlich, is the President of the Federal Republic of Germany, who also appoints the elected members of the Council and the Board of Trustees. The Chairman of the Association of Friends and Patrons is at the same time the Chairman of the Council of the Paul Ehrlich Foundation. This committee, comprised of 12 nationally and internationally reputed scientists from four countries, selects the prizewinners. The President of the Johann Wolfgang Goethe University is ex officio member of the Board of Trustees of the Paul Ehrlich Foundation.

### **Further information**

A press conference with the two prize winners and Prof. Reinhard Kurth who is to give the presentation speech will be held at **2 pm on March 13, 2009**. You will be sent a separate invitation to this event in February 2009, but please make a note of the date now.

Detailed CVs and photos of the two prize winners as well as a list of publications are available from the Paul Ehrlich Foundation Press Office (c/o Dr. Monika Mölders, Telephone: +49 6238 982783, Telefax: +49 6238 982784, E-Mail: Paul-Ehrlich-Stiftung@pvw.uni-frankfurt.de).

Additional information:

<http://biochemistry.ucsf.edu/labs/blackburn/> (Elizabeth Blackburn's laboratory)

<http://www.mbg.jhmi.edu/people/profile.asp?PersonID=367> (Carol Greider's laboratory)