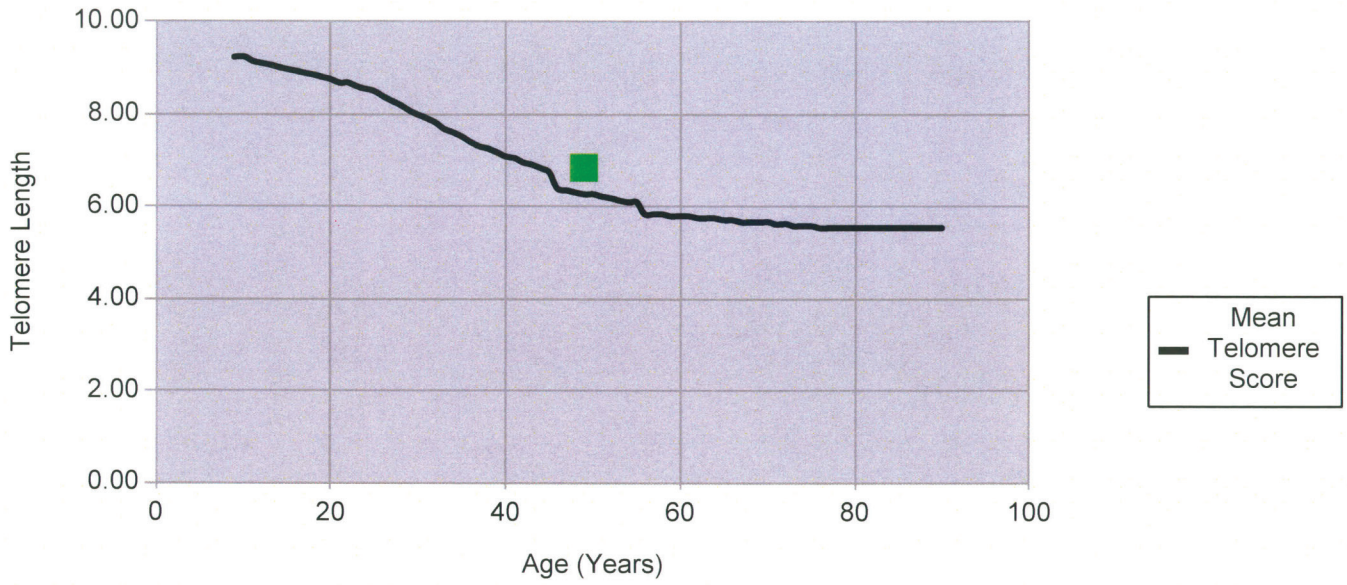
Telomere Testing

SPECTRACELL LABORATORIES
ADVANCED CLINICAL TESTING

www.spectracell.com
800.227.LABS (5227)

Account Number:	Patient:	Accession Number:
	Gender:	Requisition Number:
	DOB:	Date Received:
		Date Reported:

Telomere Test Results



Patient Telomere Score: 6.85

Percentile relative to patient age and population: 74%

The Patient Telomere Score is a calculation of the patient telomere length derived from nucleated white blood cells obtained from whole blood. This result is graphed relative to the average telomere length of a sample population in the same age range. The higher the telomere score, the "younger" the cells.

A Patient Telomere Score that is above the black line (green box) is an above average Telomere score.

A Patient Telomere Score that is below the black line (red box) is a below average Telomere score.

If patient age was not provided, a horizontal red/green line will be shown which represents the patient Telomere score across all age groups.

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CLIA# 45D0710715

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Function:

Telomeres are sections of DNA at the end of each chromosome that serve as a cap to the genetic material. Their purpose is critical to the life of the cell in that they serve as protective buffers that keep the ends of the chromosomes from becoming attached to each other or rearranging. If cells divided without telomeres, they would lose the necessary information at the end of each chromosome. In this way, telomeres prevent chromosomal fraying.

Every time a cell replicates, its telomere will become shorter, eventually causing cell death once the telomere attrition has reached a critical length. It is estimated that human telomeres lose about 100 base pairs from their telomeric DNA during each mitosis (cell division). At this rate, after approximately 125 mitotic divisions, the telomeres would be completely gone, which is why normal cells will eventually die after healthy division. Shorter telomeres imply a shorter life span for a cell, essentially giving it a finite lifespan, depending on the number of cell divisions left within each telomere.

Cells can maintain the length of their telomeres with an enzyme called telomerase, which adds genetic material at the end of the DNA strand, thus lengthening the number of times it can replicate, which ultimately prolongs the life of the cell. It is not active in most cells, but is active in stem cells, germ cells, hair follicles and most cancer cells.

Reporting:

Telomere length is determined using a ratio of the genetic material contained in a nucleated white blood cell telomere relative to the length of a single copy gene of known size to calculate an approximate telomere score. This ratio is then compared to a population of people with similar chronological age.

Clinical Application:

Shorter telomeres have been associated with metabolic abnormalities, obesity and several degenerative diseases including cancer, dementia and cardiovascular disease. In vitro studies have shown that telomeres are highly susceptible to oxidative stress, which will shorten telomere length and enhance cellular aging.

Minimizing associated risk factors that are linked to shortened telomere activity is recommended:

- Reduce oxidative stress
- Correct micronutrient deficiencies, in particular, vitamin C, D and E
- Change sedentary lifestyle by increasing physical activity
- Avoid weight gain or obesity
- Correct insulin resistance