

Telorisk Analysis Report

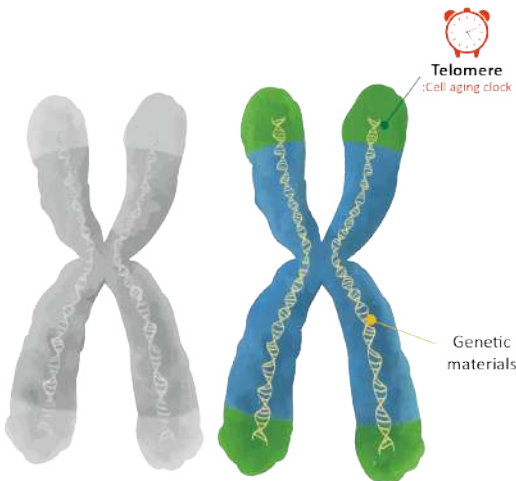
Telorisk

Telomere Test

Institution	GCG No	20230503-971-000
Patient Name	Age/Sex	67/M
Sample ID	Specimen Type	WB
Date collected	Accepted/Reported	2023-05-03/ 2023-05-08



Test Outlines Basic description of the length of telomere



[60]'s average length of telomere

[Jason Doe]'s average length of telomere

✓ Estimated length of telomere : Long

[60]'s average length of telomere

3.4

[unit : kb]

[Jason Doe]'s average length of telomere

3.5

(3.2~3.9)

[unit : kb]

✓ Estimated biological age

61 yrs

✓ Aging rate

Slow

✓ Interpretation

- The length of telomere gets shorter with age, but the shortening rate depends on dietary and exercise habits, etc.
- Compared with the same age group, you have the telomere of [long]
- Estimated biological age of the telomere length is lower than with the chronological age.
- The aging rate of the estimated biological age is [slow] compared with the same age group.
- As the analyzed result of telomere length, it is recommended to have lifestyle habits that can help maintain telomere length.

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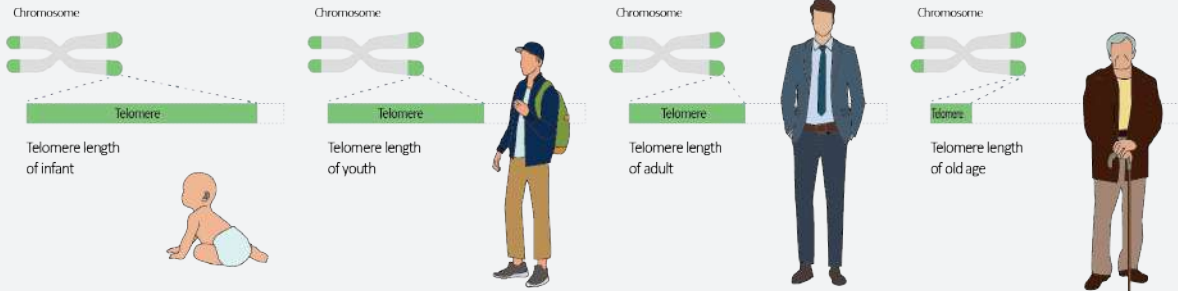
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Test Results

Detail description of the test

What is a Telomere?



- As we age (aging), the smallest units (cells) that make up human are constantly replicating and dividing themselves.
- At this time, the protective material (telomeres) of the genetic material (chromosome) located in the cell gradually shrink.
- When telomere length reaches a critical limit, the cell undergoes senescence and/or apoptosis.
- This is presumed to be the factor that determines aging and longevity

“Telomere length allows the examinee's biological age to be identified as an objective indicator of the degree of aging.”



Estimated length of telomere

The shorter the telomere length, the faster the aging rate.

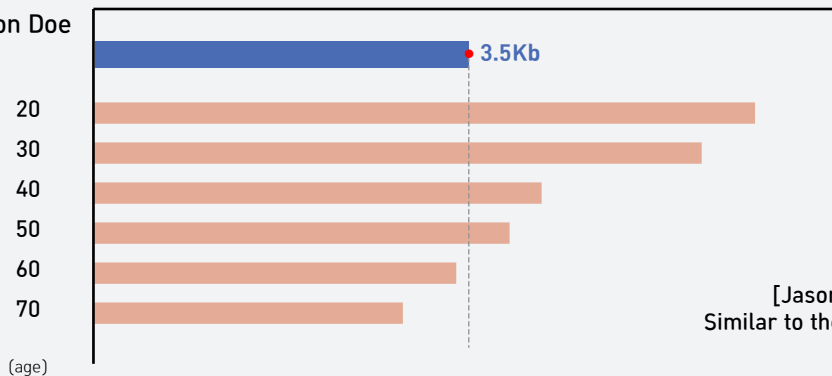
[Jason Doe]'s average length of telomere

3.5kb
(3.2~3.9)
(Long)



[Jason Doe]'s telomere length is [3.5]kb, which has a [long] length compared to the same age. Considering the error according to the examination, the length of [Jason Doe]'s telomere ranges from [3.2] kb to [3.9] kb.

Jason Doe



Average length of telomere by age

[Jason Doe]'s telomere length is [3.5] kb. Similar to the average telomere length in [60]'s.

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Test Results

Detail description of the test

✓ Estimated bio-age

The age by evaluating the overall degree of aging along the length of telomeres.

What is the "bio-age"?

Even at the same age, the degree of aging of individuals may differ depending on their lifestyle. The biological age refers to the actual physiological and functional health age of an individual, not the actual age. In general, the bio-age can be determined by measuring telomere length, and depending on the individual's living environment, it may appear younger or more than the actual age.



* [Jason Doe]'s estimated bio-age converted based on the average telomere length is [61].

* The bio-age is [**younger than**] the actual age and the aging rate is [**slow**].

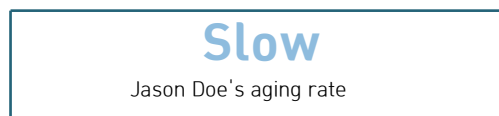
✓ The aging rate

The value obtained by dividing the bio-age by the actual age

What is the aging rate?

The aging rate means the difference between the bio-age and the actual age. If the examiner's bio-age is similar to the actual age, the aging rate is normal. And the bio-age is less than the actual age, the aging rate is considered to be fast.

Jason Doe's aging rate of the bio-age is [**slow**] compared with the same age group.



Slow



The bio-age is younger than the actual age.
The aging rate is slow.

Moderate



The actual age is similar with the bio-age.
The aging rate is moderate.

Fast



The actual age is older than the bio-age.
The aging rate is fast.

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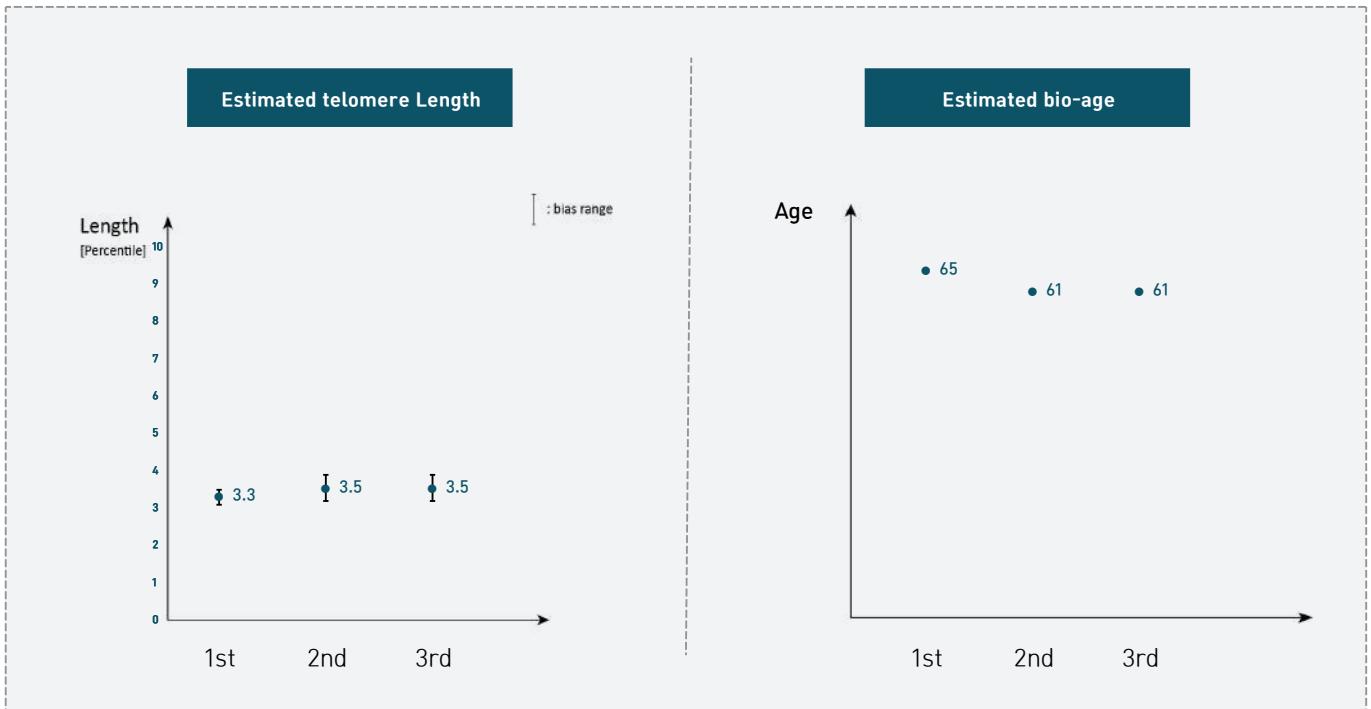


Test Results

Detail description of the test

✓ Changed linear Graph

Check the trend of bio-age and change according to the telomere length every 6 months.



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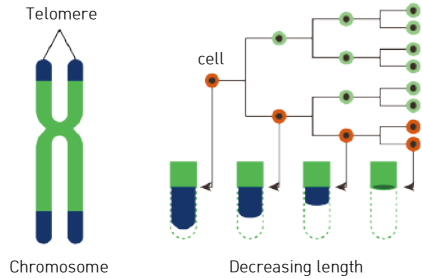
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Test Explanation

Account for telomere test

Why should telomere be measured?



Telomere is a structure in which a specific nucleotide sequence (TTAGGG) without information for synthesizing a protein is repeated at the end of each chromosome. It prevents damage to DNA and protects chromosomes by blocking the binding between chromosomes. Cells in our body continue to divide in the process of cell renewal and growth. As cells continue to divide, the cells gradually age and the telomeres become more shorter. When telomeres are shortened, chromosomal protection decreases, and when they reach a certain length, the cells no longer divide and die.

Due to these characteristics of telomere length and cell aging, telomere length is a representative indicator of the aging state of cells. Whether telomere length is merely an indicator of aging or has a direct effect on aging has not yet been clarified, but recent studies have shown that the association of aging-related diseases and telomere length. In addition, it is known that the telomere length appears short in patients with certain diseases, such as patients with chronic obstructive pulmonary disease.

Telomere length generally shortens with age. However, not all people have the same length of telomeres at birth, and they vary by gender, race, etc. Also, depending on the individual's lifestyle, the telomere length may shorten more quickly or slowly. Habits such as smoking, stress, etc. make the telomere length shorten more quickly. On the other hand, moderate exercise and eating fruits and vegetables can slow down telomere length reduction. Through periodic telomere length measurements and lifestyle checks, you can check your health status and check your risk for various diseases.

Telomere and main disease

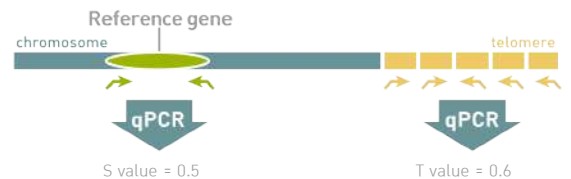
Presents the risk of developing major diseases according to the telomere length.

Be aware that if you have telomeres shorter than normal telomeres of the same age, you may be at increased risk of the following diseases.



How is the telomere test analyzed?

The telomere test uses a quantitative polymerase chain reaction (qPCR) method to quantify the amount of a reference gene and the amount of telomere, and measure the telomere length by calculating the telomere ratio to the reference gene.



Telomere length of reference gene [1230] ± [90] kb

Limitation

- Telomere length may vary slightly depending on the test method and test conditions.
- The bias of the result is due to the value of the telomere length of the reference gene used in each test.
- The bio-age result of this test is calculated using internally constructed data of the age-specific population group, and the accumulated data is regularly updated.
- Telomere test cannot be used to diagnose diseases or to determine actions related to the treatment of a disease.

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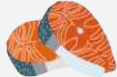











Healthcare Guidance

Present a lifestyle that slows down the shortening of telomeres

✓ Telomere and Diets

Suggest which nutrient-rich foods to eat.

Vitamin A							
	Carrot	Sweet Potato	Melon	Apricot			
Vitamin C							
	Orange	Grapefruit	Lemon	Peach	Pimento	Tomato	Strawberry
Vitamin E							
	Avocado	Alomond	Sunflower Seed				
Folic Acid							
	Crown Daisy	Spinach	Chives	Strawberry	Orange	Tomato	
Magnesium							
	Soya Bean	Unrefined Grain	Cacao	Nuts			
Unsaturated Fatty Acids							
	Salmon	Tuna	Sardine	Canola Oil	Perilla Oil		
Healthy Diet							
	Whole Grain	Seafood	Beans	Vegetables	Algae		

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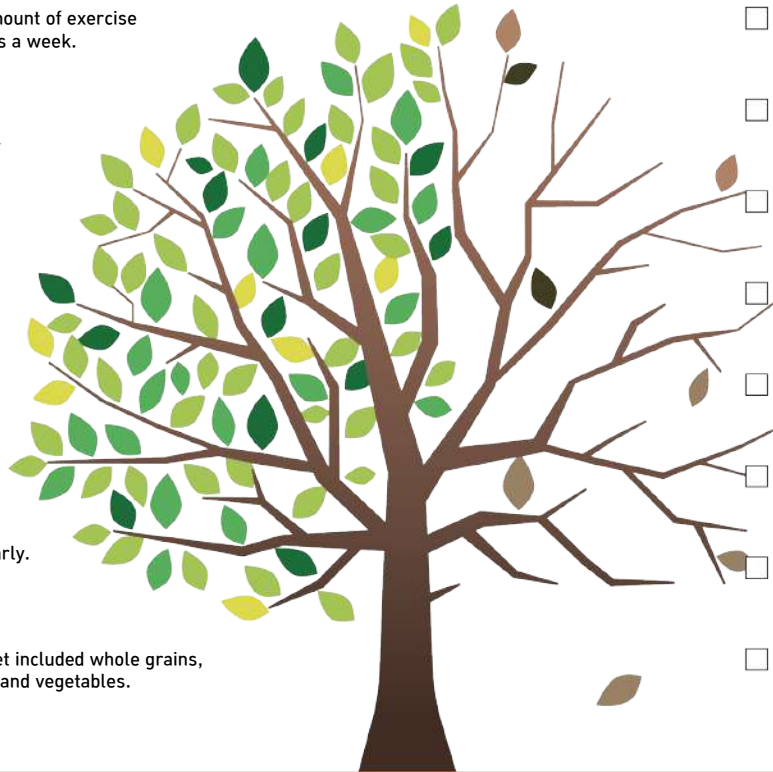
Healthcare Guidance

Present a lifestyle that slows down the shortening of telomeres

Cultivate a [Jason Doe]'s healthy telomere forest

Protect telomere length

- I do a moderate amount of exercise at least three times a week.
- I have my own way to relieve stress.
- Sleep more than 8 hours a day.
- I don't usually eat snacks.
- Eat foods rich in antioxidants regularly.
- The last week's diet included whole grains, seafood, legumes, and vegetables.



Decrease telomere length

- Smoking
- Drinking
- I usually get a lot of stress.
- I have insomnia.
- Obese
- I often consume a processed or red meat
- I drink sweet drinks often.
- Refined grains (white rice, flour, etc.) are often consumed.

< What causes telomere length to be shortened >

The length of telomeres gets shorter and shorter with age, but if the oxidative stress that cells receive due to external factors increases or damage to the DNA occurs, the length of telomeres may become shorter. The following factors make telomeres shorter.

- **Smoking** - Numerous toxic substances in tobacco increase oxidative stress in cells.
- **Air pollution** - Oxidative stress in cells is increased by pollutants in the atmosphere such as fine dust and exhaust gases
- **Heavy drinking** - Oxidative stress in hepatocytes is increased by free radicals produced during alcohol breakdown.
- **Mental stress** -When psychological stress persists, oxidative stress increases in brain cells.

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 **Telorisk** Analysis Report**Reference**

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※ In this test, the clinical significance of the test results has not been established, and there is still insufficient objective validity that the health-related behaviors that follow are useful.

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