

Dental Implant Problems

DNA Health Report

REPORT CATEGORY —



DENTAL & MOUTH
HEALTH

Sample Client

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omicsedge

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DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg



How this works

Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



Similarly, our Trait Reports look at how your DNA influences your traits.



Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information.
We then summarize your results as a risk score or display it on a gauge.

In total, we analyze up to 83 million genetic variants.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

- 5 / 5
- Recommendations that are considered effective and generally recommended by experts and medical bodies.
-
- 4 / 5
- Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.
-
- 3 / 5
- Recommendations that are considered possibly effective and have many studies supporting them
-
- 2 / 5
- Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.
-
- 1 / 5
- Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.
-
- 0 / 5
- No evidence in humans.

Genotype-specific Evidence

- High-quality
- Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).
- Medium-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).
- Low-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).
- Indirect
- A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).
- In theory
- A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

Dental implants are a popular and effective solution for replacing missing teeth, offering durability and functionality that closely mimic natural teeth. However, like any medical procedure, dental implantation can sometimes lead to complications, among which implant failure due to inflammation is particularly significant.

Dental implant failure can occur for a variety of reasons, categorized broadly into early and late failures. Early failures occur shortly after the implant placement and are often related to the surgical procedure or initial osseointegration process. Late failures, which can happen months or years after successful osseointegration, are frequently associated with biomechanical factors or biological processes, including inflammatory responses.

Peri-implantitis is an inflammatory disease affecting the tissues around dental implants, leading to the loss of supporting bone. Peri-implantitis is caused by bacterial biofilms that form on the implant surface, similar to how periodontitis develops around natural teeth. Factors contributing to peri-implantitis include poor oral hygiene, history of periodontal disease, smoking, and systemic conditions like diabetes [\[R\]](#), [\[R\]](#).

Errors in implant placement, such as improper alignment, inadequate spacing, or excessive force during insertion, can lead to excessive stress on the surrounding tissues, initiating an inflammatory response. Premature or excessive loading of the implant can disrupt the healing process and lead to inflammation and failure of osseointegration. Occasionally, particles from the implant or the instruments used during surgery can provoke an inflammatory reaction, which can compromise implant integration [\[R\]](#).

Though rare, some patients may have **allergies** to the materials used in implants, most commonly to nickel present in some titanium alloys. This hypersensitivity can lead to chronic inflammation and implant failure [\[R\]](#), [\[R\]](#), [\[R\]](#).

Management of failed implants includes [\[R\]](#):

- **Antibiotic therapy:** If an infection is present, systemic antibiotics can be prescribed based on the specific bacteria identified through microbiological tests.
- **Surgical intervention:** For cases of peri-implantitis, surgical cleaning of the implant surface may be necessary. In severe cases where bone loss has occurred, regenerative procedures such as bone grafting might be required.
- **Implant removal:** In cases where the implant cannot be salvaged, removal might be necessary. After healing, a new implant can be placed, or alternative dental prosthetic solutions can be considered.

Genetics of Dental Implant Problems

The [IL1A](#) gene encodes IL-1 α , a pro-inflammatory cytokine involved in fighting off viruses and bacteria, as well as in bone resorption [\[R\]](#).

The ‘A’ allele of [rs1800587](#) (C889T) increases IL1A gene expression, leading to higher levels of this cytokine. This variant has been associated with an increased risk of gum disease and implant failure [\[R, R, R, R, R\]](#).

The [IL-1B](#) gene encodes interleukin 1-beta (IL-1 β), one of the chief inflammatory cytokines. IL-1 β is released from [white blood cells](#) (macrophages, [monocytes](#), and [neutrophils](#)) in response to cell [stress](#) or damage and acts as an "alarm signal" for the release of many other pro-inflammatory compounds [\[R, R, R, R\]](#).

One of the most highly-studied SNPs in the *IL-1B* gene is [rs16944](#), also known as the ‘C-511/T’ polymorphism. Its ‘A’ allele is associated with higher IL-1 β levels. In line with its link to higher inflammation, this variant has been associated with an increased risk of gum disease, implant failure, and bone loss around dental implants [\[R, R, R, R, R, R, R\]](#).

Another variant of this gene with increased activity, the ‘A’ allele of [rs1143634](#), has been associated with an increased risk of gum disease and dental implant failure [\[R, R, R, R, R\]](#).

The [TNF](#) gene encodes a protein called tumor necrosis factor-alpha (TNF-alpha or cachexin). TNF-alpha plays a central role in the immune response and [inflammation](#), and it has been implicated in a wide variety of inflammatory disorders [\[R\]](#).

The [rs1800629](#) polymorphism (also known as *TNF*-308) is one of the most researched SNPs in the *TNF* gene. **The ‘A’ allele is associated with 6-7 times higher levels of TNF-alpha.** In line with this link to higher inflammation, this variant has been associated with an increased risk of gum disease and peri-implantitis [\[R, R, R, R, R, R, R\]](#).



TYPICAL LIKELIHOOD

Typical likelihood of dental implant problems based on 5 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
NDUFA2	rs2569190	GG
IL1B	rs16944	AG
TNF	rs1800629	GG
IL1B	rs1143634	GG
SLC20A1	rs1800587	GG

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

The [CD14](#) gene encodes the monocyte differentiation antigen, also called CD14. This antigen sits on the surface of monocytes and macrophages, where it recognizes proteins on the surface of bacteria and viruses and signals the immune system to respond [[R](#), [R](#), [R](#)].

The ‘G’ allele of [rs2569190](#) has been associated with an increased risk of peri-implantitis and bone resorption [[R](#)].

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

	DOSAGE		DOSAGE
1	TMJ Splints	2	Visit a Dentist Regularly
3	Good Oral Hygiene		

1



TMJ Splints

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Wear the TMJ splint as directed by your dental specialist, typically during sleep every night and possibly during the day if recommended. It's essential to follow up regularly with the specialist to adjust the splint as needed and evaluate the progress.

Description

TMJ splints, or temporomandibular joint splints, are dental devices used to manage temporomandibular joint disorders. They help alleviate jaw pain, reduce teeth grinding, and improve overall jaw function.

TMJ splints are mouth devices that protect the teeth and help align the jaw. They include night guards and some more complex types worn daily [\[R\]](#).

TMJ splints are often custom-made by dentists for a perfect fit. However, stock guards or adjustable over-the-counter options are also available [\[R\]](#).

How it helps

TMJ splints help reduce excessive jaw muscle tension and prevent grinding forces that can compromise dental implants, thereby enhancing comfort and promoting more effective healing during the recovery process.

2



Visit a Dentist Regularly

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Schedule and attend dental check-ups every six months for routine cleaning and examination, unless advised otherwise by your dental professional based on your specific oral health needs.

Description

Regular dental visits are crucial for maintaining oral health. Dentists can detect and address issues like cavities, gum disease, and oral cancers early, preventing them from progressing into more serious problems. Professional cleanings help remove plaque and tartar, reducing the risk of tooth decay and gum disease. Regular check-ups also provide an opportunity to receive guidance on proper oral hygiene practices.

Overall, routine dental visits contribute to long-term oral health, preventing complications and ensuring a confident smile.

How it helps

Regular dental visits facilitate the early detection of complications related to dental implants, such as infections or implant failures. Timely intervention can preserve implant integrity and overall oral health, ultimately enhancing long-term outcomes.

3



Good Oral Hygiene

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Brush your teeth at least twice a day for two minutes each time using fluoride toothpaste. Floss daily to remove plaque from places your toothbrush can't reach and consider using mouthwash. Visit your dentist at least twice a year for professional cleanings and checkups.

TYPICAL STARTING DOSE

2 minutes

Description

Good oral hygiene, which includes regular brushing, flossing, and dental check-ups, is crucial for preventing tooth decay, gum disease, and maintaining overall oral health. A healthy mouth contributes to overall well-being and can prevent dental issues that may impact systemic health.

Oral hygiene refers to practices that keep the mouth healthy. Good habits include [R](#), [R](#):

- Gently brushing the teeth and tongue for two minutes, at least twice a day
- Flossing daily
- Using a toothpaste with fluoride and a soft toothbrush
- Replacing a worn toothbrush at least every 3 months

To help maintain good oral hygiene, it is also important to regularly see dental professionals. They can help prevent and address issues with your teeth and gums.

How it helps

Maintaining good oral hygiene is essential for individuals with dental implants, as it reduces the risk of infections such as peri-implantitis, thereby contributing to the longevity and success of the implants. Regular cleaning helps eliminate harmful bacteria, preserving both oral health and systemic well-being.