Fertility Health Report

myDNA | NutriPATH

Welcome to the future of health and human potential

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TEST METHODOLOGY AND LIMITATIONS

This report is intended for informational purposes only and must be reviewed and explained by a qualified healthcare practitioner. It is not designed to provide a medical diagnosis, nor should it be interpreted independently by patients. Nutrigenomic insights can offer supportive guidance, but they should always be considered alongside clinical evaluation, medical history, and other diagnostic information. In sensitive areas such as fertility, where multiple complex factors influence outcomes, the recommendations provided should be viewed as educational and supportive rather than definitive. Patients are strongly encouraged to discuss all results and recommendations with their healthcare provider before making any changes to their diet, supplements, or lifestyle.

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My Comprehensive Results

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My High Priorities

This is a summary of your entire report, highlighting only your highest impact results broken out by report section. Use this section to quickly identify your top priorities, understand what genes and genotypes are involved in each of our reports, and get context on how these genes impact your fertility.

Ovarian Reserve Health

CALCIUM

VDR FokI: GG

The vitamin D receptor (VDR) FokI polymorphism (rs2228570) is associated with vitamin D and calcium absorption. While vitamin D currently shows conflicting results for ovarian reserve, calcium plays a significant role in oocyte maturation.

ACTION PLAN

- You have the VDR FokI GG genotype that is associated with a poor response to vitamin D supplementation and reduced calcium absorption
- Calcium has been shown to be a more potent factor for controlling oocyte maturation than vitamin D
- Mice studies show vitamin D deficiency causes follicular developmental defects, and abnormal levels of FSH, LH, and estradiol, but were completely normalized by calcium and phosphorus supplementation alone
- We recommend testing vitamin D and getting 1,000mg of calcium daily

ZINC AND SELENIUM

TP53: CC

The Tp53 gene is a tumor suppressor gene that has been studied in female infertility cases due to the effect variants have on LIF levels. LIF participates in many diverse biological processes in the uterus. Current data suggest that fluctuations in LIF levels in the endometrium could impair the establishment and maintenance of the pregnancy.

ACTION PLAN

- You have the homozygous Tp53 gene that increases zinc, selenium, niacin, and resveratrol requirements for Tp53 gene function and healthy LIF levels
- The Tp53 gene is indirectly improved by resveratrol and may significantly and positively impact reproductive outcomes, owing to its potential therapeutic effects improving ovarian function
- We recommend getting 15-30mg of zinc and higher selenium requirements than the RDA will depend on your GPX1 genotype

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FERRITIN

TF: GG

Though dietary iron relates to individual iron status, individual variation may, in part, be controlled by genes that regulate iron absorption and transport in the body, specifically TMPRSS6, and TF genes. Variation in these genes can cause reduced functioning of the proteins they code for, which collectively can impact individual risk for low iron status.

ACTION PLAN

- You have the GG genotype for the TF gene that is associated with decreased ferritin levels, lower total iron-binding and unsaturated iron-binding capacities
- Iron supplementation is associated with decreased risk of ovulatory infertility
- Ferritin levels <30µg/L have been associated with unexplained infertility
- We recommend you have your ferritin levels tested to ensure a level over 30µg/L

OMEGA-3 FATTY ACIDS

FADS2: GG

The FADS2 gene encodes for converting plant-based omega-3 fatty acid alpha-linolenic acid (ALA) to EPA and helps determine higher requirements of EPA and DHA. Scientific evidence reveals that SNPs in the FADS2 genes can reduce the function of the desaturase enzymes and influence the bioavailability of PUFAs omega-3 and omega-6 in various tissues.

ACTION PLAN

- Your FADS2 genotype combination is associated with a higher requirement of EPA and DHA
- A meta-analysis found that omega-3 intake significantly improves women's pregnancy and fertilization rates
- Omega-3 fatty acids support fertility by improving hormonal balance, oocyte quality, embryo implantation, and menstrual cycle function and mitigate inflammation that could interfere with the proper function of reproductive organs
- A ratio of high omega-6 fatty acids to low omega-3 fatty acids is associated with very poor reproductive success at an advanced maternal age
- Long-term and short-term diets rich in omega-3 fatty acids delay ovarian aging and improve oocyte quality in those at an advanced maternal age
- We recommend getting at least 400mg of EPA and 600mg of DHA

FASTING INSULIN

9p21: CC

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The homozygous 9p21 rs1333049 SNP has been shown to increase fasting insulin levels by 40% in those following a low-fiber diet compared to a high-fiber diet, whereas this was not seen in those without the risk allele. High fasting insulin levels are associated with a decreased ovarian reserve and impaired ovarian function.

ACTION PLAN

- You have the homozygous CC 9p21 genotype, associated with a 40% higher fasting insulin level when following a low-fiber diet
- The foods used in a study for a high-fiber diet that reduced fasting insulin included fruit, vegetables, nuts, lentils, beans, and whole grains
- We recommend that you test IR-HOMA and increase your fiber intake to 25 grams daily

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Assisted Reproductive Technology

ZINC AND SELENIUM

TP53: CC

The Tp53 gene is a tumor suppressor gene that has been studied in female infertility cases due to the effect variants have on LIF levels. LIF participates in many diverse biological processes in the uterus. Current data suggest that fluctuations in LIF levels in the endometrium could impair the establishment and maintenance of the pregnancy.

ACTION PLAN

- The homozygous genotype for Tp53 is associated with diminished LIF levels
- Low LIF levels negatively affect fertility, but the chances for pregnancy are greater in harsh, cold climates than in the wild-type genotype
- A study looking at Tp53 genotypes in female Europeans undergoing IVF treatment found that the homozygous carriers had approximately 50% lower implantation rates and 30% lower clinical pregnancies compared to the wild-type
- Researchers hypothesize that homozygous carriers present diminished LIF levels that could negatively affect early embryo implantation
- In a study in Northern China, lower zinc concentrations were associated with a 66% increased risk of IVF failure
- We recommend getting 15-30mg of zinc and 70-200mcg of selenium

FERRITIN

TF: GG

Though dietary iron relates to individual iron status, individual variation may, in part, be controlled by genes that regulate iron absorption and transport in the body, specifically TMPRSS6, TFR2, and TF genes. Variation in these genes can cause reduced functioning of the proteins they code for, which collectively can impact individual risk for low iron status.

ACTION PLAN

- You have the GG genotype for the TF gene that is associated with decreased ferritin levels, lower total iron-binding and unsaturated iron-binding capacities
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The FADS2 gene encodes for converting plant-based omega-3 fatty acid alpha-linolenic acid (ALA) to EPA and helps determine higher requirements of EPA and DHA. Omega-3 fatty acids support fertility by improving hormonal balance, oocyte quality, embryo implantation, and menstrual cycle function and mitigate inflammation that could interfere with the proper function of reproductive organs.

ACTION PLAN

- Your FADS2 genotype combination is associated with a higher requirement of EPA and DHA
- A meta-analysis found that omega-3 intake significantly improves women's pregnancy and fertilization rates
- In women undergoing IVF, the intake of DHA and alpha-linoleic acid (ALA) has been positively associated with an increased number of follicles, E2 serum levels, and favorable embryo quality
- We recommend getting at least 400mg EPA and 600mg DHA

FASTING INSULIN

9p21: CC

The homozygous 9p21 rs1333049 SNP has been shown to increase fasting insulin levels by 40% in those following a low-fiber diet compared to a high-fiber diet, whereas this was not seen in those without the risk allele. High fasting insulin levels can affect implantation rates with ART.

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ACTION PLAN

- You have the homozygous 9p21 genotype, associated with a 40% higher fasting insulin level when following a low-fiber diet
- High fasting insulin levels can affect implantation rates with ART
- The foods used in a study for a high-fiber diet that reduced fasting insulin included fruit, vegetables, nuts, lentils, beans, and whole grains
- We recommend that you test IR-HOMA and increase your fiber intake to 25 grams daily

Estrogen Detoxification

PREBIOTIC FIBER AND BIFIDOBACTERIA

FUT2: AA

The FUT2 gene controls prebiotic production, B12 absorption, and how much bifidobacteria you carry in your digestive tract. The estrobolome involves the bacterial genes capable of metabolizing estrogens. Gut dysbiosis can lead to increased bacterial colonies that produce beta-glucuronidase, which deconjugates estrogen and is reabsorbed into circulation.

ACTION PLAN

- You have the homozygous AA genotype for FUT2 that impacts the gut phase of estrogen detoxification
- Research has shown that careful regulation of estrogen levels is one of the crucial factors for improvement of female fertility in IVF and ET (embryo transfer) techniques
- The AA genotypes lacked or were rarely colonized by several strains of the probiotic Bifidobacteria (B. bifidum, B. adolescentis and B. catenulatum/pseudocatenulatum), while several other bacterial genotypes were more common and dominant
- Low levels of bifidobacteria could affect folate levels because the highest extracellular folate levels are produced by four strains of B. adolescentis and two of B. pseudocatenulatum
- The AA genotype may increase the sensitivity to depleted bifidobacteria from antibiotics, proton pump inhibitors, glyphosate, and sucralose
- If you have East Asian ancestry, this genotype does not affect you
- We recommend 5-8 grams of a prebiotic fiber powder daily

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Oxidative Stress

GLUTATHIONE

GSTM1: AA

Glutathione S-transferase (GSTM1) belongs to a family of detoxification enzymes and deficiency in enzyme activity is due to a deletion of the GSTM1 gene. Several studies reveal a possible correlation between female infertility and GSTM1 polymorphisms.

ACTION PLAN

- You have the deletion in GSTM1
- Those with the GSTM1 deletion should take extra precaution to avoid Bisphenol-A and phthalates, and increase alpha lipoic acid, selenium, glycine, cysteine, vitamin C, and cruciferous vegetables

FOXO3

FOXO3: TT

The FOXO3 gene protects against oxidative stress, increases the expression of SOD2 and catalase, influences the DNA damage and repair response, regulates genes involved in cell detoxification and survival, and boosts stress resistance. FOXO3 preserves ovarian reserve in mice.

ACTION PLAN

- You have the homozygous TT genotype for FOXO3 that is associated with reduced FOXO3, SOD2, and catalase expression that affects overall protection against oxidative stress
- FOXO3 gene expression is improved with astaxanthin, curcumin, green tea, grapes, honey, propolis, fermented soy, olive oil, garlic, cherries, blueberries, apples, pomegranate juice, strawberries, onions, capers, and phosphatidylcholine
- A systematic review found that astaxanthin supplementation may improve assisted reproductive technology outcomes by enhancing oocyte quality and reducing oxidative stress in female reproductive organs
- The dosage of astaxanthin used in studies ranged from 6 -12 mg per day, and the duration ranged from 6 to 12 weeks to improve fertility rates
- Avoid vegetable oils, refined sugar, high amounts of refined carbohydrates
- We recommend 6-12mg of astaxanthin daily

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Sleep Support

SLEEP QUALITY

VDR FokI: GG

The vitamin D receptor (VDR) FokI polymorphism (rs2228570) is linked to vitamin D, sleep quality, and fertility. Poor sleep quality can lead to cytokine and immune inflammatory responses marked by TNF and IL-6, with elevated IL-6 levels found in those with unexplained infertility.

ACTION PLAN

- The VDR FokI GG genotype has been found to be associated with poor sleep quality
- In a systematic review and meta-analysis of 9,397 participants, individuals with vitamin D deficiency had a significantly increased chance for sleep disturbances, poor sleep quality and short sleep duration
- Poor sleep quality and sleep loss can lead to cytokine and immune inflammatory responses marked by TNF and IL-6, with elevated IL-6 levels found in those with unexplained infertility
- Vitamin D synthesizes serotonin and melatonin, and lowers IL6
- The G allele of this gene may decrease the sensitivity to vitamin D and its effects on serotonin and melatonin synthesis, which can result in serotoninergic overactivity during the day and melatoninergic hypoactivity at night
- Vitamin D deficiency may worsen this condition as it decreases the availability of vitamin D to bind to the VDR and regulate serotonin and melatonin synthesis
- We recommend that you test your vitamin D levels and supplement appropriately, include vitamin D co-factors including vitamin A, K2, magnesium, calcium, boron and zinc, and optimize your sleep hygiene

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Your Personalized DNA-Based Grocery List

This section of the report represents the most expansive, actionable summary of what you can do, right now, to dramatically up-regulate gene function, building a happier, healthier you! No technical expertise is required – just make these recommendations non-negotiable when you visit the grocery store.

Your grocery list is generated based on a combination of unique gene variants that require an increased intake of the following vitamins, minerals, phytonutrients, amino acids, fiber and more. This list generates the foods and drinks based on the highest levels for each section and does not take into account any food allergies or sensitivities.

Astaxanthin

Wild-caught salmon, shrimp, krill, and lobster

B6

Wild salmon, yellowfin tuna, liver, chicken breast, unfiltered fermented drinks, pistachios, avocado, sweet potatoes, and spinach

Calcium

Grass-fed dairy, sardines, wild-salmon, almonds, collard greens, and Gerolsteiner mineral water

Choline

Pastured eggs, beef round, liver, heart, chicken, wild cod, bacon, and edamame

Fiber

Oats, quinoa, brown rice, beans, lentils, berries, apples, pears, broccoli, Brussels sprouts, kale, nuts and seeds

Glucosinolates

Brussels sprouts, mustard greens, turnips, savoy cabbage, kale, watercress, red cabbage, broccoli cauliflower, and Bok Choy

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Iron

Oysters, beef liver, beef, sardines, white beans, dark chocolate, and spinach

Magnesium

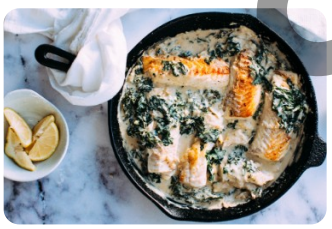
Sprouted pumpkin seeds, hemp seeds, chia seeds, Gerolsteiner mineral water, spinach, wild salmon, and peanut butter

Manganese

Mussels, wild blueberries, hazelnuts, pecans, oysters, clams, hummus, spinach, and cultivated blueberries

Niacin

Yellowfin tuna, canned tuna, wild salmon, ground turkey, chicken breast, liver, skirt steak, white button mushrooms, and brown rice



Omega-3's

Seafood and pastured eggs

Prebiotics

Pistachios, leeks, asparagus, radicchio, bananas, garlic, kiwi, onions, artichokes, Tiger nuts, chicory root, yacon syrup and foods high in polyphenols

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Probiotics

Fermented drinks like Kombucha, fermented veggies like sauerkraut, yogurt and kefir

Resveratrol

Red grapes, peanut butter, Itadori tea, and dark chocolate

Selenium

Oysters, pork chops, beef, chicken breast, shrimp, eggs, shiitake mushrooms, and whole grain sourdough bread

Vitamin A

Liver, pastured eggs, cod liver oil, wild salmon oil, eel, and sockeye salmon

Vitamin D

Sockeye salmon, cod liver oil, canned tuna, wild herring, and sardines

Zinc

Oysters, crab, lobster, beef, lamb, pork loin, liver, and sprouted pumpkin seeds

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My Top Supplements

These are your highest priority supplement and dietary recommendations summarized from your entire fertility health report.

Fertility Recommendations

Alpha Lipoic Acid

Dose: 600mg daily

Notes: We recommend discussing the use and dosing of Alpha Lipoic Acid witih your health care practitioner.

Astaxanthin

Dose: 6-12mg daily

Notes: None.

Calcium

Dose: 1,000mg daily

Notes: We recommend that you test vitamin D with an optimal target being above 30 ng/ml for optimal calcium utilization.

Fiber

Dose: 25 grams daily

Notes: We recommend that you test IR-HOMA.

Iron

Dose: 25mg daily

Notes: We recommend using iron bisglycinate or as directed by your health care practitioner, and having your ferritin levels tested to ensure a level over 30µg/L.

Omega-3 Fatty Acids

Dose: 1,500-3000mg daily

Notes: None.

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Prebiotic Fiber

Dose: 5-8 grams daily

Notes: None.

Zinc

Dose: 15-30mg daily

Notes: None.

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Personalized Blood Work

These results are generated based on a combination of gene variants unique to you. These biomarkers may not be out of range based on your diet and lifestyle habits, but they may be the ones for you to monitor to ensure you are making the right choices based on your genetic results (your predispositions).

For example, if vitamin D comes up in this section, it does not mean that your current levels of vitamin D are actually low. What we are saying is that based on a variety of genetic factors, your variants could make it more difficult to obtain recommended levels of circulating vitamin D, so it might be prudent to further monitor to ensure that you are taking the necessary steps to turn genetic weaknesses into strengths and maintain correct levels.

Fasting Insulin and HOMA-IR

Test fasting insulin and HOMA-IR.

Ferritin

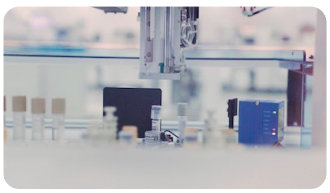
Test your ferritin levels to ensure a level over 30µg/L.

Homocysteine

Test homocysteine with an ideal level between 7-9 (µmol/L).

Omega-3 and Omega-6 Fatty Acids

Test your omega-3 fatty acid levels as well as the ratio of omega-3 to omega-6.



Vitamin D

Test vitamin D with an ideal level between 35-50 ng/ml. Check both 25 and 1,25-dihydroxyvitamin D.

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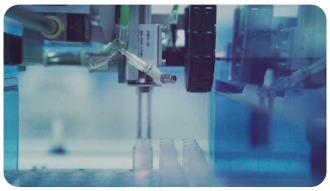

Zinc

Zinc levels may need to be tested.

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Ovarian Reserve Health

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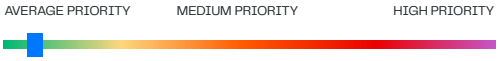
Folate



The MTHFR 677 gene encodes the MTHFR gene to convert folate into the active form, methylfolate. Variants in these genes slow down enzymatic function and increase the need for folinic acid and methylfolate.

- You have the wild-type MTHFR 677 genotype that is associated with an average need for folate
- In women, a higher folate intake was associated with higher ovarian reserve, higher rates of implantation, clinical pregnancy, and live birth in those undergoing IVF treatment
- Folate supplementation is associated with increased luteal progesterone levels and decreased risk of sporadic anovulation in premenopausal women

Ovarian Reserve Health

Vitamin B6

Folate, vitamins B6 and B12, and D, as well as iron, all play roles in mechanisms that can affect fertility, including homocysteine metabolism, inflammation, oxidative stress, and embryogenesis. Variants in the NBPF3 gene have been associated with lower vitamin B6 levels.

- You have the CT genotype, which is associated with a 1.45 ng/mL lower vitamin B6 level
- Women who are infertile appear to have lower vitamin B6 levels than fertile women
- Vitamin B6 plays a critical role in progesterone production and may assist with luteal phase defect
- We recommend consulting with a health care practitioner for dosing if you are experiencing luteal phase defect

Ovarian Reserve Health

B12

The FUT2 enzyme is regulated by the FUT2 gene and is responsible for vitamin B12 homeostasis and transport throughout the body. Variation in the FUT2 gene is associated with differing levels of circulating vitamin B12.

- You have the AA FUT2 genotype that is associated with a higher plasma level of B12
- You may need to avoid high doses of supplemental B12

Ovarian Reserve Health

B6 (Pyridoxine)

The recommended daily allowance (RDA) for B6 is 1.7mg. B6 deficiency can manifest as anorexia, irritability, anxiety, depression, muscle pain, bad PMS/low progesterone, nausea, seizures, migraines, dermatitis, age related macular degeneration (with low folate and B12) and lethargy.

- Your genotype is associated with a higher than average need for B6
- Women of reproductive age, especially current and former users of oral contraceptives, teenagers, male smokers, non-Hispanic African-American men, and men and women over age 65 are most at risk of B6 deficiency
- B6 is high in yellowfin tuna (6 oz., 1.8mg), wild salmon (6 oz., 1.2mg), liver (3oz., 0.8mg), chicken breast (6 oz., 1mg), unfiltered fermented drinks (16oz., 0.8mg), pistachios (1 oz., 0.5mg), avocado (1 whole, 0.5mg), sweet potatoes (1 whole, 0.3mg), and spinach (1/2 cup, 0.1mg)

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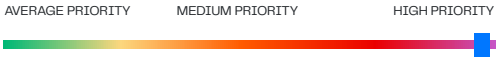
Ovarian Reserve Health

Calcium

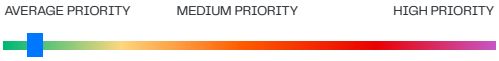


The vitamin D receptor (VDR) FokI polymorphism (rs2228570) is associated with vitamin D and calcium absorption. While vitamin D currently shows conflicting results for ovarian reserve, calcium plays a significant role in oocyte maturation.

- You have the VDR FokI GG genotype that is associated with a poor response to vitamin D supplementation and reduced calcium absorption
- Calcium has been shown to be a more potent factor for controlling oocyte maturation than vitamin D
- Mice studies show vitamin D deficiency causes follicular developmental defects, and abnormal levels of FSH, LH, and estradiol, but were completely normalized by calcium and phosphorus supplementation alone
- We recommend testing vitamin D and getting 1,000mg of calcium daily

Ovarian Reserve Health

Vitamin E

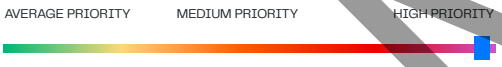


Vitamin E influences the inflammatory marker IL-6, which has been found to be elevated in women experiencing infertility. The ability of alpha-tocopherol to lower IL6 has been found to be dependent on the GSTP1 rs1695 genotype.

- Your genotype for GSTP1 rs1695 is not associated with a higher requirement for alpha-tocopherol to boost ovarian function and fertility
- People with the wild-type AA or heterozygous AG genotype in GSTP1 rs1695 had an increase in IL6 upon supplementing alpha-tocopherol

Ovarian Reserve Health

Zinc and Selenium



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- You have the homozygous Tp53 gene that increases zinc, selenium, niacin, and resveratrol requirements for Tp53 gene function and healthy LIF levels
- The Tp53 gene is indirectly improved by resveratrol and may significantly and positively impact reproductive outcomes, owing to its potential therapeutic effects improving ovarian function
- We recommend getting 15-30mg of zinc and higher selenium requirements than the RDA will depend on your GPX1 genotype

Ovarian Reserve Health

Iron Absorption

Though dietary iron relates to individual iron status, individual variation may, in part, be controlled by genes that regulate iron absorption and transport in the body, specifically TMPRSS6, and TF genes. Variation in these genes can cause reduced functioning of the proteins they code for, which collectively can impact individual risk for low iron status.

- You have the heterozygous AG TMPRSS6 genotype that is hypothesized to slightly affect iron absorption
- Iron supplementation is associated with a decreased risk of ovulatory infertility
- Approximately 40% of women enter pregnancy with insufficient iron reserves and unfavorable iron status, and 25% get iron deficiency anemia
- We recommend the oral iron absorption test (OIAT)

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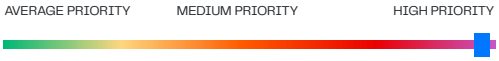
Ovarian Reserve Health

Ferritin



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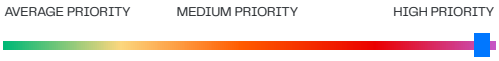
- You have the GG genotype for the TF gene that is associated with decreased ferritin levels, lower total iron-binding and unsaturated iron-binding capacities
- Iron supplementation is associated with decreased risk of ovulatory infertility
- Ferritin levels <30µg/L have been associated with unexplained infertility
- We recommend you have your ferritin levels tested to ensure a level over 30µg/L

Ovarian Reserve Health

Omega-3 Fatty Acids



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- Your FADS2 genotype combination is associated with a higher requirement of EPA and DHA
- A meta-analysis found that omega-3 intake significantly improves women's pregnancy and fertilization rates
- Omega-3 fatty acids support fertility by improving hormonal balance, oocyte quality, embryo implantation, and menstrual cycle function and mitigate inflammation that could interfere with the proper function of reproductive organs
- A ratio of high omega-6 fatty acids to low omega-3 fatty acids is associated with very poor reproductive success at an advanced maternal age
- Long-term and short-term diets rich in omega-3 fatty acids delay ovarian aging and improve oocyte quality in those at an advanced maternal age
- We recommend getting at least 400mg of EPA and 600mg of DHA

Ovarian Reserve Health

Fasting Insulin

The homozygous 9p21 rs1333049 SNP has been shown to increase fasting insulin levels by 40% in those following a low-fiber diet compared to a high-fiber diet, whereas this was not seen in those without the risk allele. High fasting insulin levels are associated with a decreased ovarian reserve and impaired ovarian function.

- You have the homozygous CC 9p21 genotype, associated with a 40% higher fasting insulin level when following a low-fiber diet
- The foods used in a study for a high-fiber diet that reduced fasting insulin included fruit, vegetables, nuts, lentils, beans, and whole grains
- We recommend that you test IR-HOMA and increase your fiber intake to 25 grams daily

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Assisted Reproductive Technology

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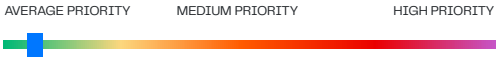
Assisted Reproductive Technology

Folate



The MTHFR 677 gene encodes the MTHFR gene to convert folate into the active form, methylfolate. MTHFR 1298 converts 5-methylfolate (5MTHF) to tetrahydrofolate (THF). Unlike MTHFR 677, the 1298 variant does not lead to elevated homocysteine levels unless paired with a heterozygous MTHFR 677. Variants in these genes slow down enzymatic function and increase the need for folate.

- Your MTHFR 677 and 1298 genotypes are associated with a reduced requirement for folate

Assisted Reproductive Technology

Vitamin B6

Folate, vitamins B6 and B12, and D, as well as iron, all play roles in mechanisms that can affect fertility, including homocysteine metabolism, inflammation, oxidative stress, and embryogenesis. Variants in the NBPF3 gene have been associated with lower vitamin B6 levels.

- You have the CT genotype that is associated with a 1.45 ng/mL lower vitamin B6 level
- Women who are infertile appear to have lower vitamin B6 levels than fertile women
- Researchers found that in women over 39, treatment with micronutrients, including B6, three months before IVF cycles, protected the follicular microenvironment from oxidative stress and increased the number of good-quality oocytes retrieved
- We recommend a dose of 5-10mg, however, you may need to consult your health care practitioner for optimal dosing

Assisted Reproductive Technology

B12

The FUT2 enzyme is regulated by the FUT2 gene and is responsible for vitamin B12 homeostasis and transport throughout the body. Variation in the FUT2 gene is associated with differing levels of circulating vitamin B12.

- You have the AA FUT2 genotype that is associated with a higher plasma level of B12
- You may need to avoid high doses of supplemental B12

Assisted Reproductive Technology

Zinc and Selenium

The Tp53 gene is a tumor suppressor gene that has been studied in female infertility cases due to the effect variants have on LIF levels. LIF participates in many diverse biological processes in the uterus. Current data suggest that fluctuations in LIF levels in the endometrium could impair the establishment and maintenance of the pregnancy.

- The homozygous genotype for Tp53 is associated with diminished LIF levels
- Low LIF levels negatively affect fertility, but the chances for pregnancy are greater in harsh, cold climates than in the wild-type genotype
- A study looking at Tp53 genotypes in female Europeans undergoing IVF treatment found that the homozygous carriers had approximately 50% lower implantation rates and 30% lower clinical pregnancies compared to the wild-type
- Researchers hypothesize that homozygous carriers present diminished LIF levels that could negatively affect early embryo implantation
- In a study in Northern China, lower zinc concentrations were associated with a 66% increased risk of IVF failure
- We recommend getting 15-30mg of zinc and 70-200mcg of selenium

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Assisted Reproductive Technology

Iron Absorption

Though dietary iron relates to individual iron status, individual variation may, in part, be controlled by genes that regulate iron absorption and transport in the body, specifically TMPRSS6, TFR2, and TF genes. Variation in these genes can cause reduced functioning of the proteins they code for, which collectively can impact individual risk for low iron status.

- You have the heterozygous AG TMPRSS6 genotype that is hypothesized to slightly affect iron absorption
- Iron deficiency impacts the quality of eggs and embryos and lowers the chances of pregnancy when undergoing IVF procedures
- We recommend the oral iron absorption test (OIAT)

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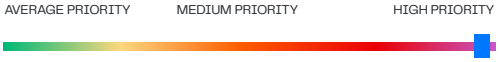
Ferritin



Though dietary iron relates to individual iron status, individual variation may, in part, be controlled by genes that regulate iron absorption and transport in the body, specifically TMPRSS6, TFR2, and TF genes. Variation in these genes can cause reduced functioning of the proteins they code for, which collectively can impact individual risk for low iron status.

- You have the GG genotype for the TF gene that is associated with decreased ferritin levels, lower total iron-binding and unsaturated iron-binding capacities
- Ferritin levels <30µg/L have been associated with unexplained infertility
- We recommend that you have your ferritin levels tested to ensure a level over 30µg/L

Assisted Reproductive Technology

Vitamin A

Vitamin A plays a vital role in female reproductive health. Vitamin A circulates in two main forms in the body: beta-carotene (inactivated) and vitamin A as retinol (activated). The BCMO1 gene converts plant-based beta carotene to vitamin A.

- Your genotype is associated with a 32% lower conversion rate of beta-carotene to vitamin A, making it essential to include more animal-based vitamin A to hit your daily target
- All-trans retinoic acid is the form of vitamin A that supports reproduction as well as embryonic development
- Severe vitamin A deficiency can lead to implantation failure
- We recommend 900mcg of retinol daily or as directed by your health care practitioner

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Assisted Reproductive Technology

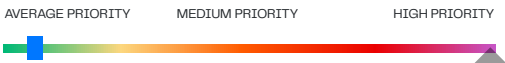
Vitamin D

To exert its biological functions, dietary and endogenous vitamin D must be activated to 1,25-hydroxyvitamin D by the enzyme vitamin D 25-hydroxylase, which is regulated partly by the CYP2R1 gene. Activated vitamin D is transported throughout the body by the vitamin D binding protein (DBP) encoded by the GC gene.

- Your genotype combination of CYP2R1 and GC is associated with lower circulating vitamin D
- Vitamin D deficiency and high IL-6 concentration are risk factors for tubal factor infertility
- Women with tubal factor infertility have lower serum 25-hydroxyvitamin-D [25(OH)D] concentration and higher interleukin-6 (IL-6) concentration than other women
- Increasing vitamin D has been shown to lower IL6, which increases fertility rates
- High serum vitamin D is associated with high pregnancy and live birth rates in those undergoing ART
- We recommend that you test your vitamin D levels and supplement 50-100mcg or as directed by your health care practitioner

Assisted Reproductive Technology

Vitamin E



Vitamin E influences the inflammatory marker IL-6, which has been found to be elevated in women experiencing infertility. The ability of alpha-tocopherol to lower IL6 has been found to be dependent on the GSTP1 rs1695 genotype.

- Your genotype for GSTP1 rs1695 is not associated with a higher requirement for alpha-tocopherol to increase antioxidant capacity and lower IL6
- Vitamin E may boost ovarian function and fertility in women who are trying to conceive
- People with the wild-type AA or heterozygous AG genotype in GSTP1 rs1695 had an increase in IL6 upon supplementing alpha-tocopherol

Assisted Reproductive Technology

Omega-3 Fatty Acids

The FADS2 gene encodes for converting plant-based omega-3 fatty acid alpha-linolenic acid (ALA) to EPA and helps determine higher requirements of EPA and DHA. Omega-3 fatty acids support fertility by improving hormonal balance, oocyte quality, embryo implantation, and menstrual cycle function and mitigate inflammation that could interfere with the proper function of reproductive organs.

- Your FADS2 genotype combination is associated with a higher requirement of EPA and DHA
- A meta-analysis found that omega-3 intake significantly improves women's pregnancy and fertilization rates
- In women undergoing IVF, the intake of DHA and alpha-linoleic acid (ALA) has been positively associated with an increased number of follicles, E2 serum levels, and favorable embryo quality
- We recommend getting at least 400mg EPA and 600mg DHA

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Assisted Reproductive Technology

Endocannabinoids

Endocannabinoids, and in particular anandamide, represent potential biomarkers of human fertility disturbances. The balance between the synthesis and degradation of endocannabinoids will result in local changes in their tone in human female and male reproductive tracts. The endocannabinoid system plays a vital role during the process of implantation. A delicate balance between anandamide synthesis and degradation (mainly by the FAAH gene) is necessary to ensure an appropriate “anandamide tone” during implantation.

- You have the heterozygous AC genotype that encodes for the reduced activity of FAAH that is associated with average or slightly higher levels of anandamide
- High levels of anandamide are correlated with low levels of progesterone, which is associated with implantation failure
- Progesterone increases FAAH activity and has been shown to play a crucial role during human embryo implantation
- Progesterone and estrogen are shown to regulate the anandamide levels by modulating the uterine expression of FAAH
- Increased anandamide levels are found in the peripheral blood of women with ectopic pregnancy together with reduced FAAH activity in peripheral lymphocytes
- Women undergoing IVF or intracytoplasmic sperm injection (ICSI) and becoming pregnant show low levels of serum anandamide at the time of implantation in comparison with those who did not
- Plasma anandamide levels fluctuate with the natural menstrual cycle, with the highest levels during the follicular phase
- Leptin increases FAAH activity, and too much or too little leptin has been shown to affect fertility
- Lipopolysaccharide (LPS), the main component of Gram-negative bacteria frequently associated with maternal infection and pregnancy loss, reduces FAAH activity, increases the production of anandamide, and causes a drop in serum progesterone
- We recommend that you optimize progesterone and leptin levels, and test for LPS if it is suspected as an issue affecting fertility

Assisted Reproductive Technology

Fasting Insulin

The homozygous 9p21 rs1333049 SNP has been shown to increase fasting insulin levels by 40% in those following a low-fiber diet compared to a high-fiber diet, whereas this was not seen in those without the risk allele. High fasting insulin levels can affect implantation rates with ART.

- You have the homozygous 9p21 genotype, associated with a 40% higher fasting insulin level when following a low-fiber diet
- High fasting insulin levels can affect implantation rates with ART
- The foods used in a study for a high-fiber diet that reduced fasting insulin included fruit, vegetables, nuts, lentils, beans, and whole grains
- We recommend that you test IR-HOMA and increase your fiber intake to 25 grams daily

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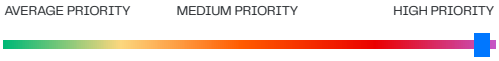
Estrogen Detoxification

SAMPLE

Estrogen Detoxification

Prebiotic Fiber and Bifidobacteria



The FUT2 gene controls prebiotic production, B12 absorption, and how much bifidobacteria you carry in your digestive tract. The estrobolome involves the bacterial genes capable of metabolizing estrogens. Gut dysbiosis can lead to increased bacterial colonies that produce beta-glucuronidase, which deconjugates estrogen and is reabsorbed into circulation.

- You have the homozygous AA genotype for FUT2 that impacts the gut phase of estrogen detoxification
- Research has shown that careful regulation of estrogen levels is one of the crucial factors for improvement of female fertility in IVF and ET (embryo transfer) techniques
- The AA genotypes lacked or were rarely colonized by several strains of the probiotic Bifidobacteria (B. bifidum, B. adolescentis and B. catenulatum/pseudocatenulatum), while several other bacterial genotypes were more common and dominant
- Low levels of bifidobacteria could affect folate levels because the highest extracellular folate levels are produced by four strains of B. adolescentis and two of B. pseudocatenulatum
- The AA genotype may increase the sensitivity to depleted bifidobacteria from antibiotics, proton pump inhibitors, glyphosate, and sucralose
- If you have East Asian ancestry, this genotype does not affect you
- We recommend 5-8 grams of a prebiotic fiber powder daily

Estrogen Detoxification

Soluble Fiber and Magnesium

COMT is involved in catecholamine, dopamine, adrenaline, and estrogen metabolism by inactivating catechol estrogens.

- You have the heterozygous AG COMT genotype that decreases enzymatic activity and consequently increases the accumulation of estrogen metabolites
- Research has shown that careful regulation of estrogen levels is one of the crucial factors for improvement of female fertility in IVF and ET (embryo transfer) techniques
- We recommend increasing soluble fiber (beans, oats, apples, psyllium husk, carrots, avocados, nuts, seeds, sweet potatoes, and berries) and reduce catecholamine intake (coffee, chocolate, alcohol)
- We recommend 400-500mg of magnesium citrate

Estrogen Detoxification

Liver Detox

Genetic variability impacts the expression and activity of the liver enzyme CYP2C19 and, therefore, can influence drug metabolism and catabolism of estrogens.

- Individuals with the T allele for CYP2C19*17 are considered the ultra-rapid metabolizer phenotype
- Women with CYP2C19*17 T allele were associated with a decreased risk of breast cancer due to the increased metabolism of estrogen, thereby decreasing the level of harmful estrogen metabolites
- Women with CYP2C19*17 T allele were also associated with a decreased risk of endometriosis

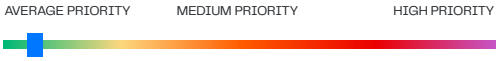
SAMPLE

PCOS

SAMPLE

PCOS

B1 and Refined Carbohydrates

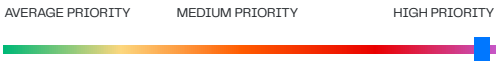


PCOS is known to be a common disorder causing infertility, which affects 7–10% of reproductive-aged women. Variants in genes encoding several proinflammatory cytokines, which are associated with obesity, insulin resistance, and diabetes, have been found to be associated with PCOS.

- You have the wild-type CC genotype for TCF7L2 that improves pancreatic beta-cell function
- In a triple-blinded, randomized, placebo-controlled clinical trial performed on 64 infertile women with PCOS, four weeks using 300mg of vitamin B1 daily resulted in a higher number of positive pregnancy tests

PCOS

Omega-3 Fatty Acids



The FADS2 gene encodes for converting plant-based omega-3 fatty acid alpha-linolenic acid (ALA) to EPA and helps determine higher requirements of EPA and DHA. Scientific evidence reveals that SNPs in the FADS1 and FADS2 genes can reduce the function of the desaturase enzymes and influence the bioavailability of PUFAs omega-3 and omega-6 in various tissues.

- Your genotype combination is associated with a higher requirement of EPA and DHA
- A randomized, double-blind study found that mega-3 supplements demonstrated beneficial effects for fertility in women diagnosed with PCOS, with a higher clinical pregnancy rate for those who were overweight or obese
- The study used 600mg of omega-3 fatty acids 3x a day for two cycles

PCOS

Choline

The PEMT gene controls the production of choline in the liver. Dietary choline requirements are determined by the PEMT genotypes and estrogen status. Choline is beneficial for various aspects of fertility and endocrine disorders like polycystic ovarian syndrome (PCOS).

- You have a higher requirement for choline based on your PEMT genotypes
- Choline has been found to be beneficial for polycystic ovarian syndrome (PCOS)
- We recommend that you increase your dietary choline intake to a minimum of 550mg per day

PCOS

Vitamin D

To exert its biological functions, both dietary and endogenous vitamin D must be activated to 1,25-hydroxyvitamin D by the enzyme vitamin D 25-hydroxylase, which is regulated partly by the CYP2R1 gene. Activated vitamin D is transported throughout the body by the vitamin D binding protein (DBP), which is encoded by the GC gene.

- Your genotype combination of CYP2R1 and GC is associated with lower circulating vitamin D
- Vitamin D supplementation may have a beneficial effect on folliculogenesis in women with PCOS by attenuating AGE-mediated inflammation
- It is recommended that you test your vitamin D levels and supplement based on your practitioner's recommendation to achieve optimal levels

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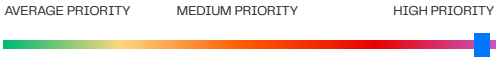
PCOS

Calcium

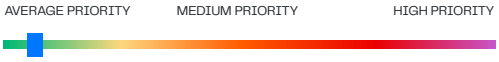


The vitamin D receptor (VDR) FokI polymorphism (rs2228570) is associated with vitamin D and calcium absorption. Calcium plays a significant role in oocyte maturation, while vitamin D deficiency causes insulin resistance and diabetes, which induces hyperandrogenism followed by menstrual irregularity.

- You have the VDR FokI GG genotype that is associated with a poor response to vitamin D supplementation and reduced calcium absorption
- Research has shown that calcium and vitamin D treatment can reduce TNF-a and IL-6 levels and, therefore may be beneficial in improving pregnancy outcomes in patients with PCOS undergoing IVF or ICSI
- We recommend testing vitamin D and getting 1,000mg of calcium daily

PCOS

Vitamin C

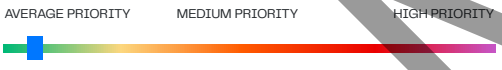


The SLC23A1 gene is one of the two transporters that aid in absorbing vitamin C into the body. Polymorphisms in the gene are associated with reduced plasma vitamin C levels in the body. Vitamin C may improve progesterone levels in women with luteal phase deficiency. Women with PCOS may experience luteal phase defect (or luteal phase deficiency), which occurs when the ovaries do not produce enough progesterone after ovulation.

- You have the wild-type genotype for SLC23A1 that is associated with improved serum vitamin C levels
- Vitamin C, vitamin E, and glutathione were found to be significantly lower in those with luteal phase defects than in healthy women

PCOS

Vitamin E

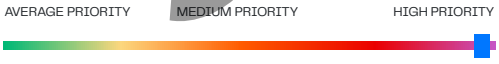


PCOS is known to be a common disorder causing infertility, which affects 7–10% of reproductive-aged women. Variants in genes encoding several proinflammatory cytokines, which are associated with obesity, insulin resistance, and diabetes, are associated with PCOS. Interleukin 6 (IL-6) is a proinflammatory and immunomodulatory pleiotropic cytokine that is influential in reproductive physiology, including fertilization and implantation. The ability of alpha-tocopherol to lower IL6 is dependent on the GSTP1 rs1695 genotype.

- Your genotype for GSTP1 rs1695 is not associated with a higher requirement for alpha-tocopherol to lower IL6

PCOS

Fasting Insulin



The homozygous 9p21 rs1333049 SNP has been shown to increase fasting insulin levels by 40% in those following a low-fiber diet compared to a high-fiber diet, whereas this was not seen in those without the risk allele. High fasting insulin levels are associated with infertility in women with PCOS.

- You have the homozygous 9p21 genotype, associated with a 40% higher fasting insulin level when following a low-fiber diet
- Women with PCOS exhibit higher blood insulin levels, which prematurely arrests follicle development by interacting with luteinizing hormone
- The foods used in a study for a high-fiber diet that reduced fasting insulin included fruit, vegetables, nuts, lentils, beans, and whole grains
- In a study of overweight or obese women with PCOS, 1,500mg of cinnamon per day decreased levels of triglycerides, serum fasting blood glucose levels, and HOMA-IR
- We recommend that you test IR-HOMA and increase your fiber intake to 25 grams daily

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Oxidative Stress

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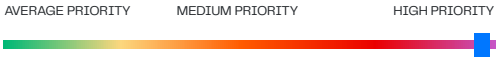
Oxidative Stress

Glutathione



Glutathione S-transferase (GSTM1) belongs to a family of detoxification enzymes and deficiency in enzyme activity is due to a deletion of the GSTM1 gene. Several studies reveal a possible correlation between female infertility and GSTM1 polymorphisms.

- You have the deletion in GSTM1
- Those with the GSTM1 deletion should take extra precaution to avoid Bisphenol-A and phthalates, and increase alpha lipoic acid, selenium, glycine, cysteine, vitamin C, and cruciferous vegetables

Oxidative Stress

Superoxide Dismutase

Superoxide dismutase (SOD2) is manganese dependent and protects against superoxide for the mitochondria of the cell. Variants in SOD2 are associated with reduced pregnancy rates with IVF.

- You have the heterozygous AG genotype for SOD2 that is associated with reduced SOD2 activity and mitochondrial production
- The heterozygous genotype is associated with lower pregnancy rates with IVF compared to the wild-type genotype
- Visceral obesity has been shown to reduce plasma levels of superoxide dismutase and glutathione peroxidase
- Variants in SOD2 increase the need for manganese and intracellular antioxidant protection
- Avoid vegetable oils, high-fat diets, and high amounts of refined carbohydrates
- Optimize manganese, CoQ10, vitamin A, C, E, and omega-3 fatty acid intake, and consider adding maitake, oyster, shiitake, and porcini mushrooms to your diet
- We recommend 2-5mg of manganese daily

Oxidative Stress

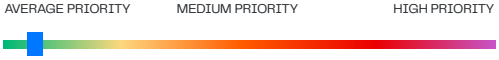
Catalase

The CAT enzyme, encoded by the CAT gene, plays a role in maintaining normal levels of ROS by converting H2O2 to H2O. Research has suggested that polymorphisms in GPX1 and CAT are both associated with the incidence of symptomatic endometriosis and infertility.

- You have the wild-type CC genotype for the CAT gene that is associated with improved catalase levels

Oxidative Stress

Glutathione Peroxidase



The GPX1 (Glutathione peroxidase 1) gene encodes a protein responsible for the modulation and detoxification of hydroperoxides and hydrogen peroxide to protect the mitochondria and cytoplasm of cells against oxidative damage. Research has suggested that polymorphisms in GPX1 and CAT are both associated with the incidence of symptomatic endometriosis and infertility.

- You have the wild-type GG genotype for the GPX1 gene that is associated with improved glutathione peroxidase levels

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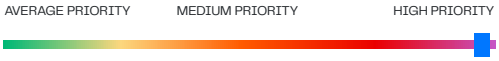
Oxidative Stress

FOXO3



The FOXO3 gene protects against oxidative stress, increases the expression of SOD2 and catalase, influences the DNA damage and repair response, regulates genes involved in cell detoxification and survival, and boosts stress resistance. FOXO3 preserves ovarian reserve in mice.

- You have the homozygous TT genotype for FOXO3 that is associated with reduced FOXO3, SOD2, and catalase expression that affects overall protection against oxidative stress
- FOXO3 gene expression is improved with astaxanthin, curcumin, green tea, grapes, honey, propolis, fermented soy, olive oil, garlic, cherries, blueberries, apples, pomegranate juice, strawberries, onions, capers, and phosphatidylcholine
- A systematic review found that astaxanthin supplementation may improve assisted reproductive technology outcomes by enhancing oocyte quality and reducing oxidative stress in female reproductive organs
- The dosage of astaxanthin used in studies ranged from 6 -12 mg per day, and the duration ranged from 6 to 12 weeks to improve fertility rates
- Avoid vegetable oils, refined sugar, high amounts of refined carbohydrates
- We recommend 6-12mg of astaxanthin daily

Oxidative Stress

Lead

Lead is a female reproductive toxin. Exposure to lead has been associated with disturbances in the menstrual cycle, folliculogenesis, and luteal function. Elevated blood lead levels have been found in infertile women and have been linked to prolonged time to pregnancy. The deletion in GSTM1 and variants in the GPX1 gene are associated with reduced protection against the oxidative stress of lead.

- Your genotype combination for GSTM1 and GPX1 is associated with reduced protection against lead exposure
- Research has found there to be a significant association between even low blood lead levels and infertility
- Avoid lead-containing cookware and check if your home has lead pipes
- We recommend 750mg of vitamin C daily

Oxidative Stress

Cadmium

Elevated cadmium levels are associated with female infertility and variants in GSTP1 increase the sensitivity to the oxidative stress from cadmium.

- You have the wild-type CC genotype for GSTP1 that is associated with average detoxification of cadmium

Oxidative Stress

Pesticides

Genetic variants in the PON1 gene can influence oxidative stress from organophosphate pesticides, therefore, female infertility susceptibility. PON1 Q192R rs662 is an antioxidant gene especially significant for female infertility in numerous populations. The C allele is also known as the “R” allele in research studies.

- You have the wild-type TT genotype for PON1 that is associated with lower oxidative stress from organophosphate pesticides

SAMPLE

Oxidative Stress

Glyphosate

Researchers have postulated that chronic exposure to food containing glyphosate-based herbicides could be related to unexplained fertility issues. Experimental research found that glyphosate affected ovarian health by increasing nitric oxide and malondialdehyde, while decreasing in catalase and superoxide dismutase.

- Your genotype combination for SOD2 and CAT is associated with more cellular damage from exposure to the herbicide glyphosate
- One study found that in utero and lactational exposure to glyphosate impairs female fertility by reducing the number of implanted embryos and increasing the rate of pre-implantation embryo losses
- The highest glyphosate levels have been found in non-organic wheat and non-organic pulses like beans, lentils, and peas
- Avoid non-organic wheat, beans, lentils, peas, wine, and beer, and optimize vitamin E intake to protect against glyphosate-induced oxidative stress
- We recommend 15mg or more of vitamin E daily

Oxidative Stress

Aspartame

Aspartame is an artificial sweetener that has been found to affect female fertility. suppressing catalase and superoxide dismutase and negatively impact the function of ovaries and feedback mechanism of reproductive hormones by affecting the hypothalamic–pituitary–gonadal axis.

- Your genotype combination for SOD2 and CAT is associated with reduced protection against aspartame
- Aspartame suppresses CAT and SOD2 antioxidative activities, resulting in higher oxidative stress in the ovaries and granulosa cells, and a decline in mitochondrial function
- Aspartame negatively impact the function of ovaries and feedback mechanism of reproductive hormones by affecting the hypothalamic–pituitary–gonadal axis
- Frequent consumption of diet drinks was associated with oocyte dysmorphism, decreased embryo quality, and an adverse effect on pregnancy rate
- Avoid foods and drinks that contain aspartame

Oxidative Stress

Hemochromatosis

The HFE C282Y gene is tested to determine hemochromatosis risk. Iron overload and ferroptosis is associated with female infertility, and play a dual role in PCOS and endometriosis.

- You have the wild-type HFE C282Y genotype that is not associated with genetically linked hemochromatosis

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TSH, T3, and T4

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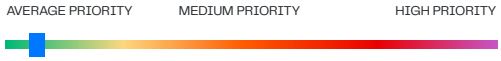
TSH, T3, and T4

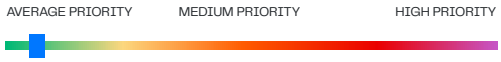


TSH

The PDE8B gene encodes an enzyme that regulates cyclic adenosine monophosphate (cAMP) levels within the thyroid gland, thereby impacting the production and release of thyroid hormones and influencing TSH levels. Both hypothyroidism and hyperthyroidism can cause infertility by affecting ovulation. The G allele for rs2046045 and the A allele for rs4704397 correlates with elevated serum TSH levels.

- Your genotype combination for the PDE8B genes is associated with normal TSH levels

TSH, T3, and T4



T3 and T4

T3 and T4 level variations have been associated with variants in the DIO1 gene.

- You have the C variant for DIO1 that is associated with normal T3 and T4 levels
- T3 and T4 can still be out of range based on other epigenetic factors

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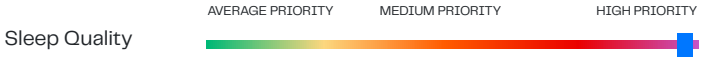
Sleep Support

SAMPLE

Sleep Support



The vitamin D receptor (VDR) FokI polymorphism (rs2228570) is linked to vitamin D, sleep quality, and fertility. Poor sleep quality can lead to cytokine and immune inflammatory responses marked by TNF and IL-6, with elevated IL-6 levels found in those with unexplained infertility.

- The VDR FokI GG genotype has been found to be associated with poor sleep quality
- In a systematic review and meta-analysis of 9,397 participants, individuals with vitamin D deficiency had a significantly increased chance for sleep disturbances, poor sleep quality and short sleep duration
- Poor sleep quality and sleep loss can lead to cytokine and immune inflammatory responses marked by TNF and IL-6, with elevated IL-6 levels found in those with unexplained infertility
- Vitamin D synthesizes serotonin and melatonin, and lowers IL6
- The G allele of this gene may decrease the sensitivity to vitamin D and its effects on serotonin and melatonin synthesis, which can result in serotoninergic overactivity during the day and melatoninergic hypoactivity at night
- Vitamin D deficiency may worsen this condition as it decreases the availability of vitamin D to bind to the VDR and regulate serotonin and melatonin synthesis
- We recommend that you test your vitamin D levels and supplement appropriately, include vitamin D co-factors including vitamin A, K2, magnesium, calcium, boron and zinc, and optimize your sleep hygiene

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Stress Management

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Stress Management

Stress Perception

Your perception of stress is unique to your genotypes and life experience. Variants in 5-HT2A are associated with perceived stress, low vagal tone, anxiety, depression, OCD, and IBS.

- You have the heterozygous CT genotype for 5-HT2A rs6311 that is associated with an increased perception of stress
- Studies show a link between high stress levels and increased difficulty in conceiving, potentially due to disruptions in the hormonal balance regulated by the hypothalamic-pituitary-gonadal (HPG) axis
- To reduce stress perception, we recommend moderate intensity aerobic exercise, meditation, yoga, tryptophan, green or black tea, prebiotics, probiotics, B2, B6, B12, and folate

Stress Management

Pressure Response

COMT (catecholamine methyltransferase) is the gene for dopamine, estrogen, adrenaline and catecholamine metabolism. Studies have found that the A allele in COMT V158M (rs4680) results in a 40% decrease in COMT enzyme activity, leading to naturally higher dopamine and adrenaline levels.

- You have the heterozygous AG genotype for COMT that is associated with a decreased breakdown of dopamine levels and a reduced clearance of adrenaline in response to stress
- Weight lifting helps speed up the pathway responsible for clearing excess dopamine and adrenaline, and therefore is a useful tool for you to use for chronic stress
- We recommend weight lifting 3x a week, 300-400mg of magnesium daily, and minimizing catecholamine intake (coffee, green tea, chocolate, red wine)

Stress Management

Brain-Derived Neurotrophic Factor

Researchers have found that stress levels in hard-working women may contribute to infertility since symptoms related to anxiety and depression are described as more frequent in infertile than in fertile females. Variants in BDNF are associated with lower baseline BDNF levels.

- You have the wild-type CC genotype for BDNF that is associated with higher baseline BDNF levels

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Infertility affects 20–30% of women of reproductive age globally.[1] While health issues, including polycystic ovary syndrome, uterine fibroids, and endometriosis, are causes of infertility, research is showing that nutritional patterns, body weight, oxidative stress, psychological and emotional stress, and inflammation play a monumental role in a high percentage of infertility cases.

The genetic panel for women looks at genes related to deficiency and toxicity that can affect ovarian reserve, assisted reproductive technology (ART), estrogen detoxification, PCOS, oxidative stress, TSH, T3, and T4, sleep, and stress management.

Dietary factors are proven to contribute to infertility. Dietary patterns that are high in sugar, processed red meat, refined carbohydrates, saturated fatty acids, and alternative sweeteners, and low in omega-3 fatty acids, monounsaturated fatty acids, antioxidants, fruits, and vegetables have all been shown to drastically impact fertility rates through increased oxidative stress levels.[2,3]

For women, folate, vitamin B6, vitamin C, vitamin D, vitamin E, iodine, selenium, iron, and DHA might positively impact infertility treatment.[4] Many women fail to meet nutrient needs – particularly folate, calcium, iodine, iron, selenium, vitamin D, and vitamin B12 – and thus have lower blood concentrations. Genetically, these requirements can vary; therefore, the optimal intake for one woman to increase fertility may be higher for another to achieve the same result.

Environmental toxin exposure has accelerated tremendously over the past 50 years and is hypothesized to be a leading cause of infertility cases for men and women. PCBs, phthalates, and BPA plastic have been associated with a more extended period of trying to conceive before achieving pregnancy, worse fertilization rates in those undergoing IVF, ovarian cysts, uterine polyps, vaginal adenosis, and abnormalities in hormone metabolism and transport that contribute to conditions like hypothyroidism.[5] Testing for genetic susceptibilities to these toxins and hormone disruptions enables the ability to pinpoint the highest priorities of exposures and how to improve protection and detoxification.

The myDNA Fertility Panel

The myDNA Fertility panel is the most comprehensive nutrigenomic genetic analysis on the market for men and women experiencing infertility, uncovering foundational causes of deficiency, toxicity, and inflammation.

Women's Fertility

Ovarian Reserve Health

- Folate
- B6
- B12
- Calcium
- Vitamin E
- Zinc and Selenium
- Iron Absorption
- Ferritin
- Omega-3 Fatty Acids
- Fasting Insulin

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Assisted Reproductive Technology

- Folate
- B6
- B12
- Zinc and Selenium
- Iron Absorption
- Ferritin
- Vitamin A
- Vitamin D
- Vitamin E
- Omega-3 Fatty Acids
- Endocannabinoids
- Fasting Insulin

Estrogen Detoxification

- Prebiotic Fiber and Bifidobacteria
- Soluble Fiber and Magnesium
- Liver Detox

PCOS

- B1 and Refined Carbohydrates
- Omega-3 Fatty Acids
- Choline
- Vitamin D
- Calcium
- Vitamin C
- Vitamin E
- Fasting Insulin

Oxidative Stress

- Glutathione
- Superoxide Dismutase
- Catalase
- Glutathione Peroxidase
- FOXO3
- Lead
- Cadmium
- Pesticides
- Glyphosate
- Aspartame
- Hemochromatosis

TSH

- TSH
- T3 and T4

Sleep Support

- Sleep Quality

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Stress Management

- Stress Perception
- Pressure Response
- Brain-Derived-Neurotropic Factor

Clinical Application: The MTHFR Gene

The MTHFR 677 gene produces the MTHFR enzyme that converts methylfolate to 5-MTHF and helps regulate homocysteine levels, with variants in these genes increasing the need for folate to regulate homocysteine levels. Optimizing the methylation genes and homocysteine levels through folate, B6, and B12 has been shown to reduce miscarriages and improve pregnancy outcomes in IVF.[6]

Variants in MTHFR 677 are most common in those with Mediterranean and Southeast Asian ancestry. A diet reflecting these environments with a foundation of fish, legumes, and vegetables was linearly related to red blood cell folate and vitamin B6 in blood and follicular fluid, with a 40% increase in the chance of pregnancy by IVF.

While synthetic folic acid is the general prenatal supplement recommendation, research on the MTHFR polymorphisms has shown multiple potential downsides of using folic acid instead of methylfolate or folinic acid.

In one study, six Australian practitioners submitted case information for twelve patients with diagnosed infertility and MTHFR polymorphisms. All patients had been advised by their practitioner to remove folic acid in supplemental form and were prescribed 5-methyltetrahydrofolate (5-MTHF) or a combination of 5-MTHF and folinic acid. The dosage was higher than the Australian recommended dose (mean daily maximum prescribed dose 2325μg). Eleven patients conceived within two to four months upon commencement of non-folic acid forms of folate, and ten were reported as having a live birth.[7]

Clinical Application: The Tp53 Gene

The Tp53 gene is a tumor suppressor gene that has been studied in female infertility cases due to the effect variants have on LIF levels. LIF participates in many diverse biological processes in the uterus. Current data suggest that fluctuations in LIF levels in the endometrium could impair the establishment and maintenance of the pregnancy.

The homozygous genotype for Tp53 is associated with diminished LIF levels but increased fertility rates for women in harsh, cold climates due to an improved ability to activate LIF under adverse conditions. Low LIF levels negatively affect fertility, but the chances for pregnancy are greater in harsh conditions than in the wild-type genotype.

A study in 2021 looking at Tp53 genotypes in female Europeans undergoing IVF treatment found that the homozygous carriers had approximately 50% lower implantation rates and 30% lower clinical pregnancies compared to the wild-type.[8] The authors hypothesize that homozygous carriers present diminished LIF levels that could negatively affect early embryo implantation.

By genotyping Tp53 before IVF, practitioners can target this gene with nutrigenomic strategies to improve implantation and clinical pregnancy rates.

- Zinc, selenium, and niacin stabilize Tp53 function, while resveratrol indirectly improves Tp53 gene function.
- In one study, lower zinc concentrations were associated with a 66% increased risk of IVF failure.[9]

Clinical Application: The TMPRSS6 and TF Genes

Though dietary iron relates to individual iron status, individual variation may, in part, be controlled by genes that regulate iron absorption and transport in the body.

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These two genes analyze iron absorption and ferritin to give a comprehensive iron profile of each individual.

- Ferritin levels <30µg/L have been associated with unexplained infertility
- Iron supplementation is associated with decreased risk of ovulatory infertility
- Iron deficiency impacts the quality of eggs and embryos and lowers the chances of pregnancy when undergoing IVF procedures
- Approximately 40% of women enter pregnancy with insufficient iron reserves and unfavorable iron status, and 25% get iron deficiency anemia

Summary

myDNA provides nutrigenomic testing that assists patients in discovering the potential causes of infertility through genetic strengths and weaknesses. Discovering these high-impact variants helps practitioners make personalized dietary, supplemental, and lifestyle improvements that have the potential to change the lives of millions of people who are currently experiencing infertility.

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Fertility Gene Summary Report

myDNA | NutriPATH

Welcome to the future of health and human potential

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Date:	10/20/25

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Gene	Gene Rsid	Wild Type	Heterozygous	Homozygous
5-HT2A	5-HT2A-rs6311		CT	
9p21	9p21-rs1333049			CC
BCMO1 A379V	BCMO1 A379V-rs7501331	CC		
BCMO1 R267S	BCMO1 R267S-rs12934922			TT
BDNF	BDNF-rs6265	CC		
CAT C-262T	CAT C-262T-rs1001179	CC		
COMT	COMT-rs4680		AG	
CYP2C19*17	CYP2C19*17-rs12248560		CT	
CYP2R1	CYP2R1-rs10741657			GG
FAAH	FAAH-rs324420		AC	
FADS2	FADS2-rs1535			GG
	FADS2-rs174575			GG
FOXO3	FOXO3-rs2802292			TT
FUT2	FUT2-rs601338			AA
GC	GC-rs2282679	TT		
GPX1	GPX1-rs1050450	GG		
GSTM1	GSTM1-rs366631	AA		
GSTP1 I105V	GSTP1 I105V-rs1695		AG	
HFE-C282Y	HFE-C282Y-rs1800562	GG		
MTHFR 1298	MTHFR 1298-rs1801131	TT		
MTHFR 677	MTHFR 677-rs1801133	GG		
NBPF3	NBPF3-rs4654748		CT	
PDE8B	PDE8B-rs4704397	GG		
	PDE8B-rs2046045	TT		
PEMT	PEMT-rs7946			TT
	PEMT-rs12325817	CC		
PON1	PON1-rs662	TT		
SLC23A1	SLC23A1-rs33972313	CC		
SOD2	SOD2-rs4880		AG	
TCF7L2	TCF7L2-rs7903146	CC		
TF	TF-rs3811647	GG		
TMPRSS6	TMPRSS6-rs855791		AG	

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Gene	Gene Rsid	Wild Type	Heterozygous	Homozygous
TP53	TP53-rs1042522			CC
VDR FokI	VDR FokI-rs2228570			GG

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