NutriPATH
Integrative Pathology Services
P: 1300 688 522
E: info@nutripath.com.au
A: PO Box 442 Ashburton VIC 3142

TEST PATIENT

Sample Test Name
Sex : F
Date Collected : 00-00-0000
111 TEST ROAD TEST SUBURB
LAB ID: 00000000 UR#:0000000

TEST PHYSICIAN

DR JOHN DOE
111 CLINIC STREET
CLINIC SUBURB VIC 3000

CATEGORY	CONDITIONS/TRAITS	RESULT
EXERCISE RESPONSE	Blood pressure response to exercise	Exercise Strongly Recommended
	BMI response to exercise	Exercise Strongly Recommended
	Insulin sensitivity response to exercise	Enhanced Benefit
	Loss of body fat response to exercise	Normal Benefit
HEALTH CONDITIONS	Diabetes, type 1	Average Risk
	Diabetes, type 2	Average Risk
NUTRITIONAL NEEDS	Genetic risk due to decreased vitamin B2	Stay Balanced
	Genetic risk for decreased vitamin A	Optimize Intake
	Genetic risk for decreased vitamin B12	Optimize Intake
	Genetic risk for decreased vitamin B6	Optimize Intake
	Genetic risk for decreased vitamin C	Stay Balanced
	Genetic risk for decreased vitamin D	Stay Balanced
	Genetic risk for increased vitamin E	Stay Balanced
WEIGHT AND DIET	Genetic risk for decreased adiponectin	Possibly Low
	Genetic risk for decreased omega-6 and omega-3	Typical
	Matching diet type	Low Carb Diet
	Obesity	Average
	Response to monounsaturated fats	Neutral
	Response to polyunsaturated fats	Increased Benefit

EXERCISE RESPONSE	RESULT
Blood pressure response to exercise **Gene Tested:** EDN1 **Outcome Description:** This patient has a variant in the EDN1 gene that indicates the patient is more likely to have elevated blood pressure if he or she has low cardiorespiratory fitness. Research shows that people with this variant can reduce their propensity for hypertension by improving their cardiorespiratory fitness.	Exercise Strongly Recommended
BMI response to exercise **Gene Tested:** FTO **Outcome Description:** This patient has a variant in the FTO gene that indicates the patient is more likely to be overweight (BMI ≥ 25) if he or she has low physical activity levels. Research shows that people with this variant can reduce their propensity for increased BMI by being physically active.	Exercise Strongly Recommended
Insulin sensitivity response to exercise **Gene Tested:** LIPC **Outcome Description:** This patient's genotype at a marker in the LIPC gene is associated with an increase in insulin sensitivity in response to exercise.	Enhanced Benefit
Loss of body fat response to exercise **Gene Tested:** LPL **Outcome Description:** The patient has a variant in the LPL gene that is associated with a typical likelihood of reducing body fat mass and percent of body fat in response to 20 weeks of endurance training. This test result only applies to women, and there is insufficient scientific evidence to determine if the same association would be found in men.	Normal Benefit

HEALTH CONDITIONS	RESULT
Diabetes, type 1 **Genes Tested:** CLEC16A, CTLA4, ERBB3, HLA, IFIH1, IL2RA, INS, Intergenic_4q27, PTPN2, PTPN22, SH2B3 **Outcome Description:** This patient has typical genetic risk for type 1 diabetes. This does not mean the patient will or will not develop the disease. This test outcome was determined using genetic laboratory results in conjunction with the patient's self-reported ethnicity.	Average Risk
Diabetes, type 2 **Genes Tested:** CDKAL1, CDKN2B, ESR1, FTO, HHEX, HNF1B, IGF2BP2, JAZF1, KCNJ11, KCNQ1, MTNR1B, NOTCH2, PPARG, SLC30A8, TCF7L2, WFS1 **Outcome Description:** This patient has typical genetic risk for type 2 diabetes. This does not mean the patient will or will not develop the disease. This test outcome was determined using genetic laboratory results in conjunction with the patient's self-reported ethnicity. General preventive measures and patient education regarding the importance of regular physical activity and maintaining a healthy weight could be considered.	Average Risk

NUTRITIONAL NEEDS	RESULT
Genetic risk due to decreased vitamin B2 **Gene Tested:** MTHFR **Outcome Description:** This patient's genotype at a marker in the MTHFR gene indicates that vitamin B2 levels are likely to have a relatively small impact on homocysteine levels. High plasma levels of homocysteine are a risk factor for heart disease.	Stay Balanced
Genetic risk for decreased vitamin A **Gene Tested:** BCMO1 **Outcome Description:** The patient has a variant in the BCMO1 gene that is associated with an impaired conversion of beta-carotene into vitamin A. This test result is derived from a study with only women, and there is insufficient scientific evidence to determine if men are similarly affected. This patient could be advised to consume preformed vitamin A found in fortified milk, breakfast cereals and multivitamins containing retinyl palmitate or retinyl acetate.	Optimize Intake
Genetic risk for decreased vitamin B12 **Gene Tested:** FUT2 **Outcome Description:** This patient is more likely to have lower plasma levels of vitamin B12. The patient has a variant in the FUT2 gene that is associated with decreased vitamin B12 levels. This patient could be advised to consume more foods containing vitamin B12, including meat, fish, poultry, eggs and milk products.	Optimize Intake
Genetic risk for decreased vitamin B6 **Gene Tested:** NBPF3 **Outcome Description:** The patient has a variant in the NBPF3 gene that is associated with reduced levels of vitamin B6, possibly due to faster than normal clearance of this vitamin from the bloodstream. Therefore, this patient is more likely to have lower plasma levels of vitamin B6. This patient could be advised to consume more foods containing vitamin B6, including beans, whole grains, meat, eggs and fish.	Optimize Intake
Genetic risk for decreased vitamin C **Gene Tested:** SLC23A1 **Outcome Description:** This patient is less likely to have lower plasma levels of vitamin C. The patient does not have a variant in the SLC23A1 gene that is associated with decreased levels of circulating vitamin C.	Stay Balanced
Genetic risk for decreased vitamin D **Gene Tested:** GC **Outcome Description:** This patient is less likely to have lower plasma levels of vitamin D. The patient does not have a variant in the GC gene that encodes a vitamin D-binding protein and is associated with decreased circulating levels of vitamin D, possibly due to a reduced ability to transport vitamin D in the body.	Stay Balanced

NUTRITIONAL NEEDS	RESULT
Genetic risk for increased vitamin E **Gene Tested:** intergenic **Outcome Description:** The patient has a variant near the APOA5 gene that is associated with increased plasma levels of alpha-tocopherol. Hence, this patient is more likely to have higher plasma levels of alpha-tocopherol, which is one compound that makes up vitamin E.	Stay Balanced

WEIGHT AND DIET	RESULT
Genetic risk for decreased adiponectin **Gene Tested:** ADIPOQ **Outcome Description:** This patient is more likely to have lower adiponectin levels. Higher levels of adiponectin are considered good for weight loss and health. Individuals with lower adiponectin levels could be advised to lose weight.	Possibly Low
Genetic risk for decreased omega-6 and omega-3 **Gene Tested:** FADS1 **Outcome Description:** This patient has a variant in the FADS1 gene that is associated with typical plasma levels of the omega-6 fat arachidonic acid and the omega-3 fat eicosapentaenoic acid. The FADS1 gene encodes an enzyme involved in processing omega-6 and omega-3 fats.	Typical
Matching diet type **Genes Tested:** ADIPOQ, APOA2, FTO, KCTD10, LIPC, MMAB, PPARG, and more... **Outcome Description:** This patient has an increased likelihood of weight loss or health benefits on a diet that is lower in carbohydrates. This diet has been selected by evaluating many genetic variants associated with LDL, HDL, triglyceride, and blood sugar levels, as well as how people respond to different macronutrients.	Low Carb Diet
Obesity **Genes Tested:** FTO, MC4R **Outcome Description:** This patient has typical risk for being overweight (BMI ≥ 25). This patient's genetic profile in the MC4R and FTO genes is associated with typical risk for being overweight. The MC4R gene is involved in regulating energy balance, and the FTO gene may be important for controlling feeding behavior and energy balance. Both genes are associated with BMI.	Average
Response to monounsaturated fats **Genes Tested:** ADIPOQ, PPARG **Outcome Description:** This patient's genotypes in the ADIPOQ and PPARG genes do not indicate an association between monounsaturated fat intake and body weight. However, several health benefits may still be gained by avoiding trans fats and substituting some saturated fats with monounsaturated fats. The PPARG study included only women, whereas the ADIPOQ study included both men and women. There is insufficient scientific evidence to determine if men are similarly affected by the PPARG variant.	Neutral

WEIGHT AND DIET	RESULT
Response to polyunsaturated fats **Gene Tested:** PPARG **Outcome Description:** This patient is more likely to have a lower body weight when eating a diet containing more polyunsaturated fats than saturated fats. The patient has a variant in the PPARG gene, which can affect the association between body weight and the ratio of consumed polyunsaturated to saturated fats. This test result was derived from a study with only women, and there is insufficient scientific evidence to determine if men are similarly affected.	Increased Benefit

GENOTYPE/HAPLOTYPE DETAIL

HEALTH CONDITIONS

This section lists the genetic markers that were tested for Health Conditions. Results are organized by condition into three columns.

1. “Gene/Locus” refers to the gene or intergenic region where the marker is located.
2. “Marker” refers to the unique identifier of the tested marker.
3. “Genotype” refers to the combination of nucleotides at a particular marker. The letter(s) on each side of the slash refer(s) to the two copies of the patient’s DNA. "Del" indicates a deletion of the nucleotide(s) in the patient's DNA. A genotype of “- -“ indicates that a result could not be obtained.

“Unable To Report” indicates that no result can be provided. The strength of scientific evidence for each marker is available in the technical bulletin of the corresponding condition.

DIABETES, TYPE 1

GENE/LOCUS	MARKER	GENOTYPE
CLEC16A	rs12708716	A/A
CTLA4	rs3087243	A/G
ERBB3	rs11171739	T/C
HLA	rs2187668	G/G
HLA	rs7454108	T/T
IFIH1	rs1990760	T/C
IL2RA	rs12251307	C/C
INS	rs3741208	C/C
Intergenic _4q27	rs2069763	G/G
PTPN2	rs1893217	T/T
PTPN22	rs2476601	G/G
SH2B3	rs3184504	C/C

DIABETES, TYPE 2

GENE/LOCUS	MARKER	GENOTYPE
CDKAL1	rs10946398	A/C
CDKN2B	rs10811661	T/C
ESR1	rs3020314	T/T
FTO	rs8050136	A/C
HHEX	rs1111875	G/G
HNF1B	rs7501939	T/C
IGF2BP2	rs1470579	A/C
JAZF1	rs864745	A/G
KCNJ11	rs5219	T/C
KCNQ1	rs2237892	T/C
MTNR1B	rs10830963	C/C
NOTCH2	rs10923931	G/G
PPARG	rs1801282	C/C
SLC30A8	rs13266634	T/T
TCF7L2	rs7903146	C/C

DIABETES, TYPE 2

GENE/LOCUS	MARKER	GENOTYPE
WFS1	rs10010131	G/G

DIET, NUTRITION AND EXERCISE RESPONSES

This section lists the genetic markers that were tested for Diet, Nutrition and Exercise Responses. Results are organized by condition into four columns:

1. “Gene/Locus” refers to the gene or intergenic region where the marker is located.
2. “Marker” refers to the unique identifier of the tested marker.
3. “Genotype” refers to the combination of nucleotides at a particular marker. The letter(s) on each side of the slash refer(s) to the two copies of the patient’s DNA. A genotype of “- -“ indicates that a result could not be obtained.
4. “Strength” refers to strength of research evidence for the genetic marker and the associated result. Four filled boxes indicate a study of over 2,000 people and at least one study that replicated the results. Three filled boxes indicate a study of over 400 people. Two filled boxes indicate a study of less than 400 people; studies in this category are preliminary but pass Pathway’s criteria for statistical significance. One filled box indicates that results are extremely preliminary.

“Unable To Report” indicates that no result can be provided.

BLOOD PRESSURE RESPONSE TO EXERCISE

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
EDN1	rs5370	G/T	■■■□

BMI RESPONSE TO EXERCISE

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
FTO	rs1121980	C/T	■■■□

GENETIC RISK DUE TO DECREASED VITAMIN B2

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
MTHFR	rs1801133	C/T	■■■□

GENETIC RISK FOR DECREASED ADIPONECTIN

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
ADIPOQ	rs17366568	A/G	■■■■

GENETIC RISK FOR DECREASED OMEGA-6 AND OMEGA-3

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
FADS1	rs174547	T/T	■■■■

GENETIC RISK FOR DECREASED VITAMIN A

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
BCMO1	rs7501331	T/T	■■□□
BCMO1	rs12934922	A/T	■■□□

GENETIC RISK FOR DECREASED VITAMIN B12

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
FUT2	rs602662	G/G	■■■■

GENETIC RISK FOR DECREASED VITAMIN B6

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
NBPF3	rs4654748	C/C	■■■■

GENETIC RISK FOR DECREASED VITAMIN C

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
SLC23A1	rs33972313	G/G	■■■■

GENETIC RISK FOR DECREASED VITAMIN D

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
GC	rs2282679	T/T	■■■■

GENETIC RISK FOR INCREASED VITAMIN E

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
intergenic	rs12272004	A/C	■■■■

INSULIN SENSITIVITY RESPONSE TO EXERCISE

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
LIPC	rs1800588	C/C	■■■□

LOSS OF BODY FAT RESPONSE TO EXERCISE

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
LPL	rs328	C/C	■■□□

MATCHING DIET TYPE

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
ADIPOQ	rs17300539	G/G	■■■□
APOA2	rs5082	T/T	■■■■
FTO	rs9939609	T/A	■■■□
KCTD10	rs10850219	G/G	■■■□
LIPC	rs1800588	C/C	■■■□
MMAB	rs2241201	C/C	■■■□
PPARG	rs1801282	C/C	■■■□

and more...

OBESITY

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
FTO	rs9939609	A/T	■■■■
MC4R	rs17782313	T/T	■■■■

RESPONSE TO MONOUNSATURATED FATS

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
ADIPOQ	rs17300539	G/G	■■■□
PPARG	rs1801282	C/C	■■■□

RESPONSE TO POLYUNSATURATED FATS

GENE/LOCUS	MARKER	GENOTYPE	STRENGTH
PPARG	rs1801282	C/C	■■■□

DISCLAIMER

Risk of Laboratory Technical Problems or Laboratory Error

The certified testing laboratory has standard and effective procedures in place to protect against technical and operational problems. However, such problems may still occur. The testing laboratory receives samples collected by patients and physicians. Problems in shipping to the laboratory or sample handling can occur, including but not limited to damage to the specimen or related paperwork, mislabeling, and loss or delay of receipt of the specimen. Laboratory problems can occur that might lead to inability to obtain results. Examples include, but are not limited to, sample mislabeling, DNA contamination, un-interpretable results, and human and/or testing system errors. In such cases, the testing laboratory may need to request a new sample. However, upon re-testing, results may still not be obtainable.

As with all medical laboratory testing, there is a small chance that the laboratory could report inaccurate information. For example, the laboratory could report that a given genotype is present when in fact it is not. Any kind of laboratory error may lead to incorrect decisions regarding medical treatment and/or diet and fitness recommendations. If a laboratory error has occurred or is suspected, a health care professional may wish to pursue further evaluation and/or other testing. Further testing may be pursued to verify any results for any reason.

Limitations

The purpose of this test is to provide information about how a tested individual's genes may affect carrier status for some inherited diseases, responses to some drugs, risk for specific common health conditions, and/or selected diet, nutrition and/or exercise responses, as well as to learn more about the tested individual's ancient ancestry, depending upon the specific genetic testing that is ordered by the health care professional. Tested individuals should not make any changes to any medical care (including but not limited to changes to dosage or frequency of medications, diet and exercise regimens, or pregnancy planning) based on genetic testing results without consulting a health care professional.

The science behind the significance or interpretation of certain testing results continues to evolve. Although great strides have been made to advance the potential usefulness of genetic testing, there is still much to be discovered. Genetic testing is based upon information, developments and testing techniques that are known today. Future research may reveal changes in the interpretation of previously obtained genetic testing results. For example, any genetic test is limited by the variants being tested. The interpretation of the significance of some variants may change as more research is done about them. Some variants that are associated with disease, drug response, or diet, nutrition and exercise response may not be tested; possibly these variants have not yet been identified in genetic studies.

Many of the conditions and drug responses that are tested are dependent on genetic factors as well as nongenetic factors such as age, personal health and family health history, diet, and ethnicity. As such, an individual may not exhibit the specific drug response, disease, or diet, nutrition and exercise response consistent with the genetic test results.

Another limitation for some conditions, particularly in the areas of diet and exercise, is that genetic associations have been studied and observed in Caucasian populations only, and in some cases only in one gender. In this case, the interpretations and recommendations are made in the context of Caucasian studies, but the results may or may not be relevant to tested individuals who are of non-Caucasian or mixed ethnicities or the non-studied gender. If patient ethnicity is not disclosed in the test requisition form the ethnicity field in the report will read as "Ethnicity: Not Reported". Such reports will be defaulted to phenotype list displayed for Caucasian ethnicity.

Based on test results and other medical knowledge of the tested individual, health care professionals might consider additional independent testing, or consult another health care professional or genetic counselor.