mapmygenome.in
Know Yourself

cardiomap™
A heart-to-heart with your heart

MAPPING OUT A HEALTHY HEART

Risks | Traits | Treatment | Lifestyle

About Cardiomap™

Genes play a significant role in cardiovascular and diabetic health. Cardiomap™ is a revolutionary new development that can give you a genetics-based cardiac risk profile.
At Mapmygenome, India's pioneering genomics company, we extract your DNA from your saliva / blood sample, decode and analyze it, and generate your genetics-based health profile through Cardiomap™.

Cardiomap™ predicts your genetic predisposition to a wide spectrum of CVDs and diabetes, several key associated risk factors, treatment options, and lifestyle changes.

Cardiovascular Diseases and Diabetes

Cardiovascular diseases (CVDs) and diabetes account for the most number of deaths due to diseases worldwide. They also rank among the most preventable diseases. In terms of treatment too, they have a range of options. When detected early, the results from changes in lifestyle and medication can be life-saving.

With growing awareness, many are developing a healthy lifestyle at a younger age. Where there is a family history of CVD or diabetes, people ensure regular medical check-ups along with a fitness routine. However, the actual risk remains unknown for each individual and many cases remain undetected until it is too late.

Bridging the Gap between Healthcare and Personal Health

Personal Genomics is the next major medical paradigm, allowing early detection, prevention, and the most suitable treatment.

Doctors can use insights from:

- Risk to CVDs and diabetes to ensure early detection
- Predisposition to traits and other associated risk factors to prevent CVDs
- Drug responses to choose the best treatment option
- Lifestyle data to recommend nutrition, fitness, and other lifestyle changes

Prevention and Cure with Cardiomap™

Prevention	Cure
Pretest Counseling	Pretest Counseling
↓	↓
Test	Test
↓	↓
Genetic Counseling	Genetic Counseling
↓	↓
Risk Mitigation	Medical Advice
↓	↓
Lifestyle Changes	Early Detection
↓	↓
Disease Prevention	Most Suitable Treatment

Cardiomap™ Conditions Covered

CVDs

Atrial fibrillation | Sudden cardiac arrest
Myocardial infarction | Coronary heart disease
Heart failure | Stroke | Hypertrophic cardiomyopathy

METABOLIC DISORDERS

Type I diabetes | Type II diabetes

TRAITS

Adiponectin levels | Homocysteine levels
QT interval

BLOOD PRESSURE

Hypertension

LIPID LEVELS

LDL - Cholesterol levels | HDL - Cholesterol levels
Triglycerides | Obesity

DRUG RESPONSES

Atorvastatin | Pravastatin | Simvastatin
Metformin | Warfarin | Clopidogrel

LIFESTYLE

Alcohol dependence | Alcohol flush reaction
Nicotine dependence | Diet pattern | Fitness gene

Precaution is Better than Cure

Personal Genomics Test for you

Personal genomics is the branch of genomics that screens your DNA for genetic markers or mutations that predispose you to risks from various diseases, traits, lifestyle tendencies and response to drugs covered by the test. Every disease has a genetic component and environmental factors that include lifestyle, diet, exercise etc. The molecular genetic test is based on the study of SNP (Single Nucleotide Polymorphisms) which are genetic sites that vary between individuals with an incidence equal to or higher than 1%. Personal genomics helps us unravel the major genetic component which will help you to modulate your lifestyle in a manner that reduces your chances of developing a predictive disease in the future.

How Cardiomap™ Helps You

Cardiomap™ will illuminate your risk score for predisposition to most common cardiovascular diseases (arteriosclerosis, atrial fibrillation, coronary heart disease, heart attack, stroke etc.), the risk regarding obesity and imbalances in lipid metabolism, and thereby, the probability of passing on the same to your children.

Scope of the Test

Our tests determine whether you have the lower risk allele (the wild type allele found in the general population) or the higher risk allele (variant allele). Based on your unique results, we can advise you on how to create your own individual plan for cardiac disease prevention. You can then take steps to reduce your risk of heart disease and subsequent illnesses such as angina, heart attack and stroke.

So, stay ahead by understanding your health risks. Change your lifestyle to suit what's in your DNA and live a better life.

Major Genes Involved in the Study

Risk factors covered and their associated genes:

- Stroke - HDAC9, NINJ2, PITX2 - RPL36AP23
- Coronary heart disease - SMAD3, CDKN2BAS, PSRC1, CDH13
- Myocardial infarction - UBA52P6 - DMRTA1, MIA3, CDKN2BAS
- Sudden cardiac arrest - BAZ2B
- QT interval - NOS1AP
- Hypertension - RPL39P10 - CHRM3, STK39, CSK, STK39
- Homocysteine - MTHFR
- Heart failure - USP3, TBC1D4
- Atrial fibrillation - ZFHX3, KCNN3, LOC729065
- Obesity - MC4R
- Diabetes type I - PTPN22, HLA-DQA1, IGF2;INS-IGF2, CTRB2 -CTRB1, IFIH1
- Diabetes type II - TCF7L2, CDKAL1, PPARG, RPL9P23 - API5
- Cholesterol level - LDL (APOC1, APOB), HDL (TBL2, NUTF2), Triglycerides (ZNF259)
- Treatment options like Atorvastatin (KIF6), Pravastatin (KIF6), Simvastatin (SLCO1B1), Metformin (ATM), Clopidogrel (CYP2C19), Bucindolol (ADRB1), Metoprolol (ADRB1)

For each condition, we screen for an associated panel of mutations or SNPs. We select our panel of SNPs from genome-wide association studies, candidate gene studies and disease pathway studies. We only consider SNPs with proven association for any particular condition, replicated in many case-control studies, including multiple ethnicities.

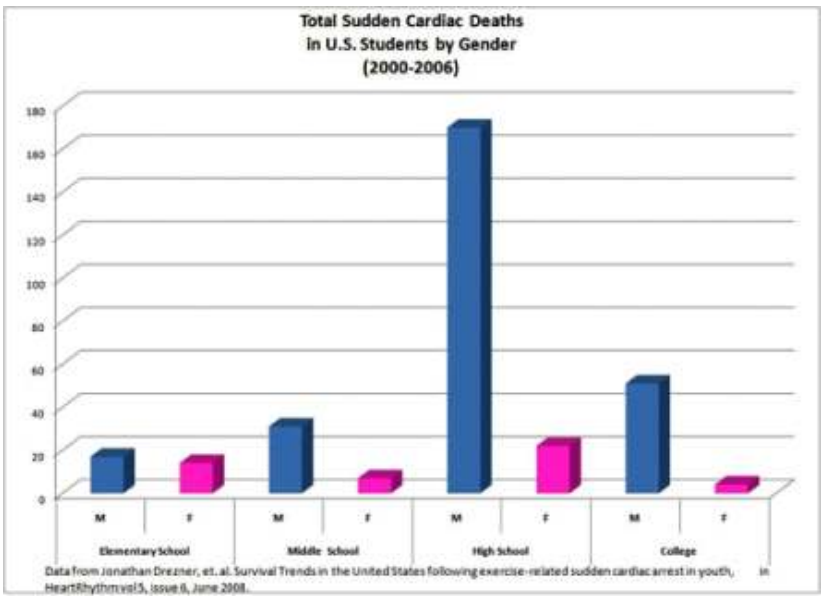
Example: Type I Diabetes

Your Risk	Variant Score
1.33 x relative to population average	4 out of 8

Type 1 diabetes mellitus, previously known as juvenile diabetes, is a chronic autoimmune disease resulting in destruction of insulin-producing beta cells of the pancreas.

SNP ID	Gene	Chromosome#	Risk Allele	Genotype
rs1004446	IGF; INS-IGF2	11	G	AG
rs12708716	CLEC16A	16	A	AA
rs17696736	NAA25	12	G	AA
rs1990760	IFIH1	2	A	AA
rs2476601	PTPN22	1	A	GG
rs9272346	HLA-DQA1	6	G	GG
rs7202877	CTRB2-CTRB1	16	C	AA

Note: There could be other variants, not screened by Mapmygenome.



Knowing your genetic composition will help you understand better your chances of developing a disease in the future. If you are already susceptible to a particular disease, say diabetes, you can custom-tailor a treatment option that is more suitable for your body's tolerance / toxicity towards certain drugs.

Possible Outcomes of a Cardiomap™ Genetic Test

1) A positive result indicates that a disease-causing mutation was identified in the tested individual.
2) A negative result in an individual with cardiovascular disease does not rule out a genetically inherited cause. Possible reasons for a negative result could be:
   - The patient may have a mutation in a part of a cardiovascular disease gene that was not covered by the test.
   - The patient does not have a heritable form of cardiovascular disease.

The Cardiomap™ Advantage

A personalized genomic test like Cardiomap™ is not just a genetic test but a complete package. We offer:

1) Pre-test counseling: for customers who are having second thoughts about taking the tests.

2) Post-test counseling: we offer and strongly recommend genetic counseling after you receive your report, to correctly understand the clinical relevance and check for follow-ups with your physician (if necessary).

3) Periodic updates: for the initial one year. Your report is updated regularly keeping in track with current research and latest databases registered worldwide. After you sign up for any personalized genomic test with Mapmygenome, you will receive free updates for a whole year, as and when we add new conditions, or in case we upgrade to a different database.

References

1) Laura J. Scott et al. A genome-wide association study of Type 2 Diabetes in Finns detects multiple susceptibility variants. Science. Vol. 316, June 1, 2007.

2) Common genetic variants associated with sudden cardiac death: The FinSCDgen Study. Published: July 23, 2012; DOI: 10.1371/journal.pone.0041675.

3) Smith NL, Felix JF, Morrison AC, Demissie S, Glazer NL, et al. (2010) Association of genome-wide variation with the risk of incident heart failure in adults of European and African ancestry: a prospective meta-analysis from the cohorts for heart and aging research in genomic epidemiology (CHARGE) consortium. Circ Cardiovasc Genet 3: 256–266.

4) Amit Kumar et al. Identification of genetic contribution to ischemic stroke by screening of single nucleotide polymorphisms in stroke patients by using a case control study design. BMC Neurology 2013, 13:136; DOI: 10.1186/1471-2377-13-136.

Mapmygenome India Ltd.

Royal Demeure, Plot 12/2, Sector-1, HUDA Techno Enclave, Madhapur, Hyderabad - 500 081. Tel: (040) 6698 6700, Fax: (040) 6662 7205.

www.mapmygenome.in

@mapmygenomein /mapmygenome.in /company/mapmygenome-in