myDNA Pharmacogenomics

The myDNA test is a Functional Pathology test that analyses the DNA of an individual patient and Pharmacogenomics. myDNA test is the study of how genetic factors may influence an individual's response to certain medications. myDNA test combines the study of pharmacology (the study of how drugs work in the body) and genomics (the study of genes and their functions). myDNA test is a reliable way of assisting practitioners in selecting safe and effective medications for their patients based on each patient's unique genetic makeup.

There are certain genes which contain instructions to build enzymes which, in turn, helps the body to break down medications, primarily in the liver. Every individual's genetic makeup comprises of variations of each of these protein producing genes. Each gene will also present varying levels of activity (e.g. slow, normal or fast), and as a result, individuals vary in how slow or fast they break down and clear medications from their body. This test can aid in the clinical understanding of a patients predisposition to metabolize. This test can help to pinpoint areas in phase I detoxification that may need support.

Example Report of myDNA:

CURRENT MEDICATIONS		
MEDICATION	GENE(S)	PRESCRIBING CONSIDERATIONS BASED ON myDNA TEST
Codeine / Paracetamol (Panadeine Forte)	*CYP2D6*	Major – significant result that may require altering this medication
Fluvoxamine (Luvox)	*CYP1A2* *CYP2D6*	Major – significant result that may require altering this medication
Simvastatin (Zocor)	*CYP3A4* *SLCO1B1*	Major – significant result that may require altering this medication
Esomeprazole (Nexium)	*CYP2C19*	Minor – result should be considered as may affect medication response
Clopidogrel (Plavix)	*CYP2C19*	Usual prescribing considerations apply
MEDICATIONS THAT DO NOT HAVE PRESCRIBING CONSIDERATIONS BASED ON myDNA TEST		
Candesartan cilexetil (Atacand), Clarithromycin (Klacid)		

LEGEND: Major prescribing considerations | Minor prescribing considerations | Usual prescribing considerations

GENETIC TEST RESULTS					
GENE	GENOTYPE	PHENOTYPE	GENE	GENOTYPE	PHENOTYPE
CYP1A2	*1F/*1F	Ultrarapid (with inducer present)	*CYP2C19*	*1/*1	Extensive (normal)
CYP2C9	*1/*1	Extensive (normal)	*CYP2D6*	*4/*4	Poor
CYP3A4	*1/*1	Extensive (normal)	*CYP3A5*	*3/*3	Poor
SLCO1B1	CC	Low Transporter Function	*VKORC1*	AA	Highly increased warfarin sensitivity

Test Kit

After the practitioner has provided a request form, the patient can order their myDNA test kit online, or visit their nearest Australian Clinical Labs collection centre to draw the blood sample.
Each test kit contains full instructions.

Specimen Requirements

- A blood or swab specimen is required, which can be collected at any time of day.

Children

The myDNA test is suitable for children.

Patient Preparation

- Patients must list any current medications on their referral form but are not required to discontinue any medications.
- Avoid eating or drinking anything at least 30 minutes prior to collection of the swab sample.
- Fasting is **not** required for the blood sample.

Turnaround Time

The standard turnaround time for this test is
14 working days from the date the patient's specimens are received at our laboratory.

Test Results

Patient results will be delivered to the referring practitioner via electronic download, unless requested otherwise. However, results via fax and/or hardcopy can be issued.

Technical Support

All Australian Clinical Labs Functional Pathology tests are accompanied by an Interpretive Guide to assist practitioners in their clinical understanding and patient management for each result. Australian Clinical Labs Functional Pathology also has experienced Technical Advisors available for practitioners to discuss appropriate test selection, interpretation of test results, individual cases and other technical matters. Please call 1300 55 44 80 between 9.00am and 5.00pm AEST or email csfp@AustralianClinicalLabs.com.au

Companion Tests

- **MTHFR**
- **Urinary Kryptopyrroles**

The results of a MTHFR test in relation to a myDNA test can help to determine whether inhibited methylation may be influencing phase I detoxification. Mutations in the C677T and A1298C SNPs (Single Nucleotide Polymorphisms) affect the methylation and the conversion of homocysteine into methionine as well as the breakdown of heavy metals. Assessing the capability of MTHFR SNPs and SNPs assessed in the myDNA can assess whether a patient has significantly inhibited metabolization.
Pyroluria increases the depletion of key nutrients needed for neurotransmitter production, tissue repair/immune response and liver detoxification. The deficiency of these key nutrients can specifically effect enzyme function in phase I metabolization. This can alter the patient's ability to metabolize pharmaceuticals, toxins and chemicals in our environment.