SelfDecode™

Detox

Biohacker Report

REPORT CATEGORY

DETOX

Sample Client

Report date: 29 July 2025

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Personal information

NAME

Sample Client

SEX AT BIRTH

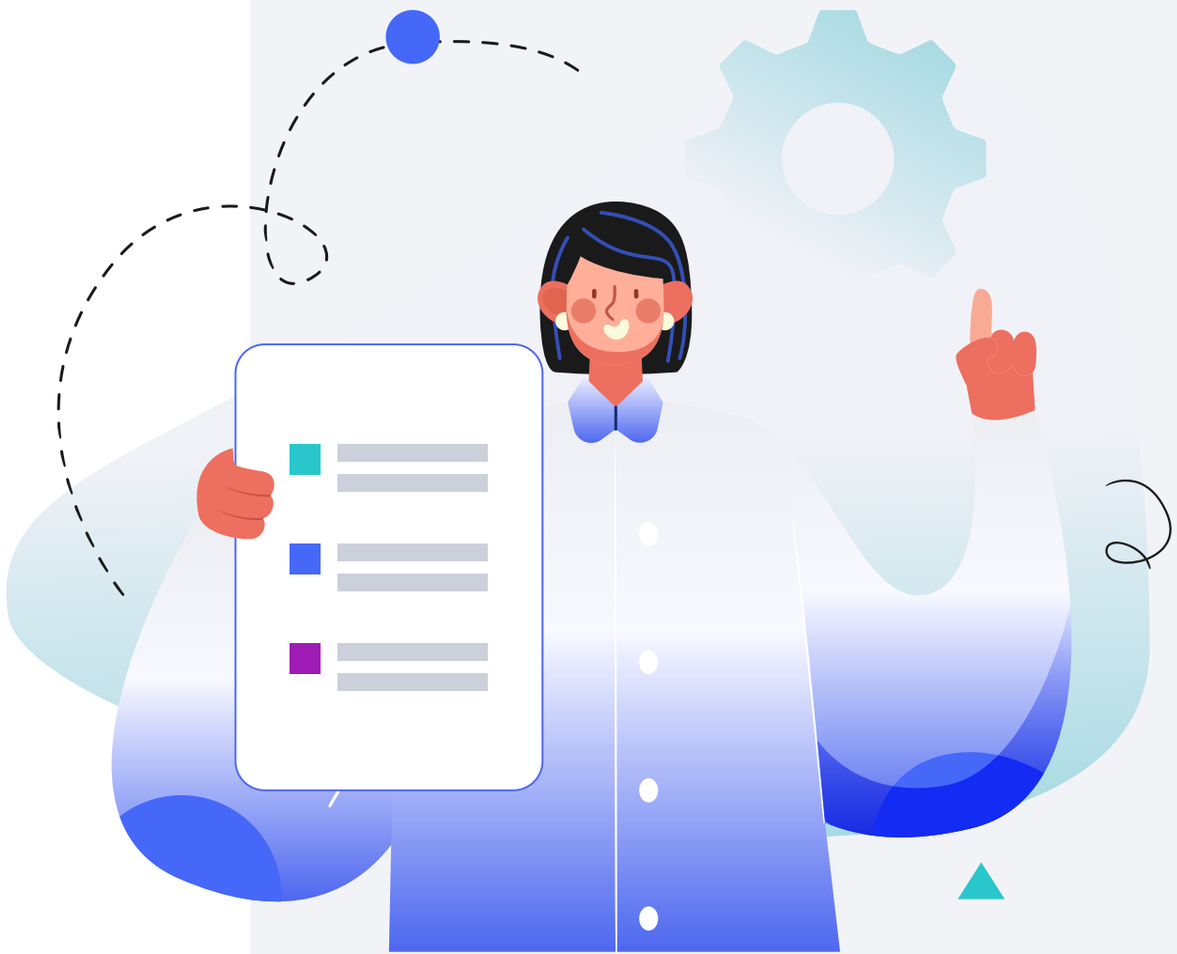
Female

HEIGHT

5ft 9" 175.0cm

WEIGHT

165lb 75.0kg



DISCLAIMER

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

Introduction

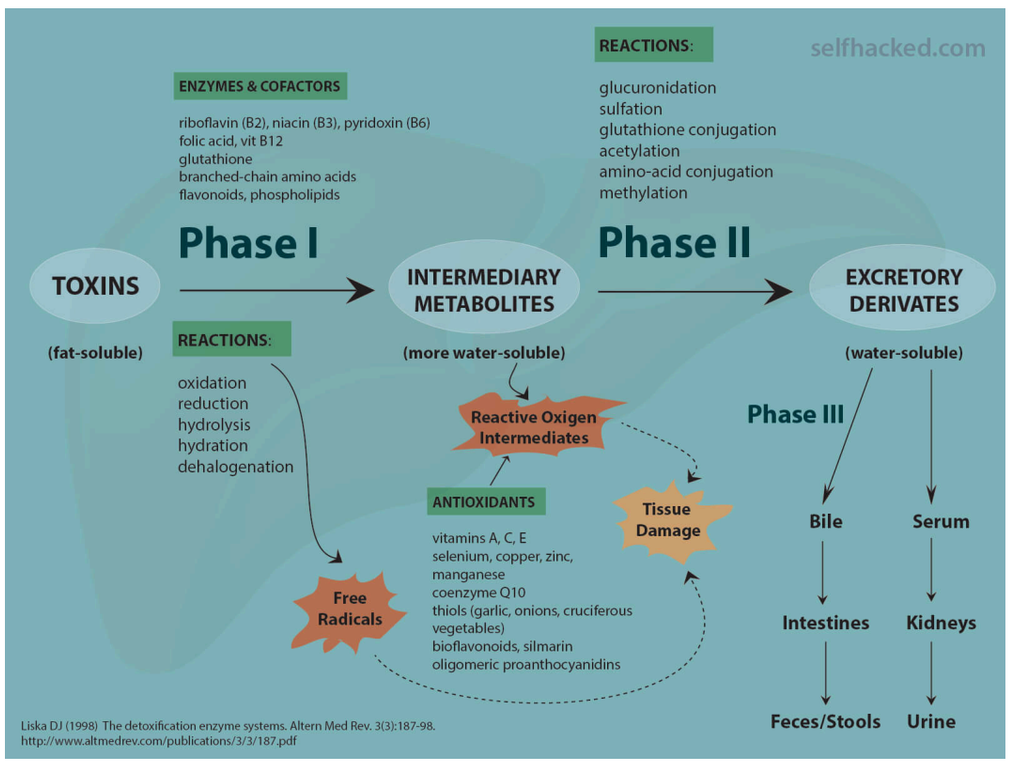
Detoxification is like the body's cleaning service, working to get rid of toxins or harmful substances that come from our environment, the foods we eat, or even from normal processes in our own bodies. Think of it as a multi-step cleaning process that mostly happens in our liver, split into three main parts or phases. Each of these phases has a special role in breaking down these unwanted substances so that our body can safely get rid of them.

In the first step, called **Phase I**, the body uses a set of enzymes, known as **CYP enzymes** (cytochrome P450), to start breaking down toxins. These enzymes are like skilled workers that change these harmful substances into something less harmful and easier to handle. However, sometimes this process can make certain toxins more reactive, so it’s crucial that the next step quickly takes over.

Phase II is where the body takes these slightly transformed substances from Phase I and further changes them to make them harmless. In this phase, UGTs (UDP glycosyltransferases) support essential **glucuronidation** reactions.

One of the key players in both phases, especially phase II, is the “master antioxidant” **glutathione**. It’s like a super cleaner that attaches to the toxins, neutralizing them and making them water-soluble, which means they can be easily removed from the body.

Phase III is the final step in the body's process of eliminating toxins. In this phase, the neutralized toxins are transported out of the cells and into the bloodstream or bile for excretion. This step involves various transport proteins, including ABC transporters like **P-glycoprotein**. They ensure the safe and efficient removal of these toxins from the body through urine or feces.



Being able to detoxify effectively is key to staying healthy. If our body can’t properly handle the toxins from our environment, our food, or even the ones we naturally produce, it could lead to various health problems, including serious diseases.

Detox Genetics

Some people might have genetics that make crucial detox components work differently. Recognizing that each of us might detoxify differently because of our unique genetic makeup is an important step towards personalized healthcare and keeping ourselves healthy.

Variants in the genes encoding different **CYP enzymes** can greatly influence phase I detox ability. Examples include *CYP1A1*, *CYP2E1*, *CYP1B1*, *CYP2A6*, CYP2B6 *and* *CYP2D6*. Variants in these genes are linked to:

- Harmful effects of cigarette smoke [R, R, R, R, R]
- Pesticide sensitivity [R, R, R]
- Air pollution sensitivity [R]

A variant in the *CYP1A2* gene may impair **caffeine metabolism** and contribute to its adverse effects [R].

The *GSTP1* gene codes for a phase II detox enzyme that helps eliminate toxins using the “master antioxidant” glutathione. Studies have linked its variants to harmful effects of **air pollution, cigarette smoke, mercury**, and more [R, R, R, R, R].

The UGT enzymes encoded by genes like *UGT1A1* and *UGT2A1* are also vital for phase II detox. They help produce glutathione and remove toxins found in **plastics, cigarette smoke**, and more [R, R].

Other genes that help make glutathione and support its detox function include *GCLC*, *GSTA1*, and *GPX1*. Variants in these genes may influence the detox of **mercury, mold**, and more [R, R, R, R].

The *NAT2* codes for another major enzyme in phase II detox. Due to the variants in this gene, people can be **“slow acetylators”**, which means they may have a harder time detoxing **cigarette smoke and some chemicals and drugs** [R, R, R, R].

TYPICAL ABILITY

Predisposed to typical detox ability based on 61 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
PON1	rs662	TT
SOD2	rs4880	GG
XPC	rs2228001	TG
UGT2A1	rs10518065	GA
ADH1B	rs1229984	TC
NFE2L2	rs35652124	TT
MTHFR	rs1801133	AA
CYP1B1	rs1056836	GG
NAT2	rs1495741	GA
PON1	rs854560	AT
GSTA1	rs3957357	AA
CYP1B1	rs1800440	CT
GSTO2	rs156697	GA
/	rs72547513	CC
COMT	rs4680	AG
BORCS7	rs743572	AG
NAT2	rs1041983	CT
NAT2	rs1799930	GA
ASAH1	rs4271002	CG
/	rs366631	AG
XRCC1	rs1799782	GG
PTGS2	rs5277	CC
/	rs12228069	GG
MLLT3	rs76878079	GG
MTG1	rs2031920	CC
EGLN2	rs28399433	AA
CYP2D6	rs16947	GA
/	rs2279343	GA

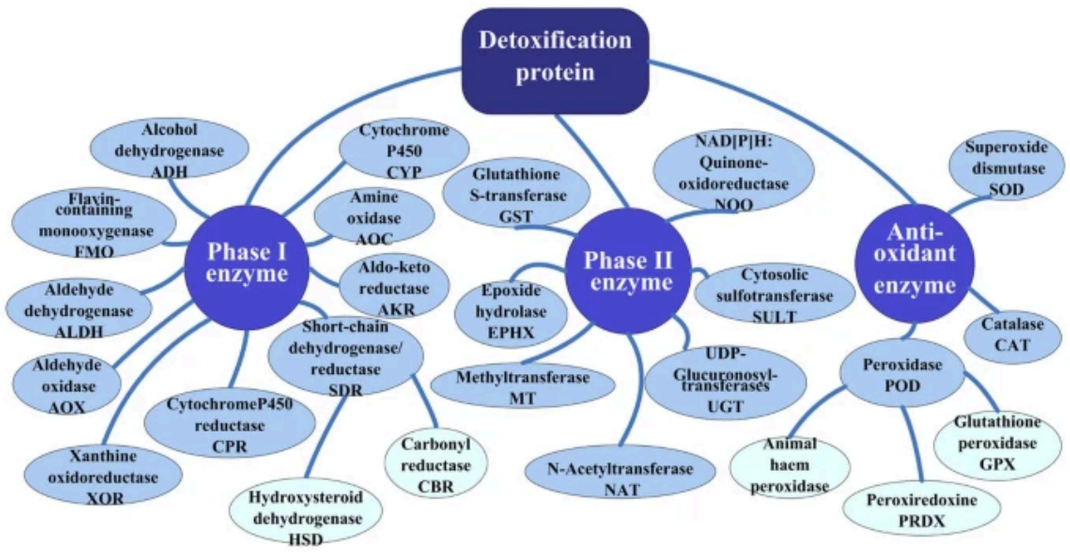


Image source: Yang et al. 2011

The *NFE2L2* gene helps make **NRF2**, a "master" protein that activates a range of antioxidant and detox genes. Its variants may affect the toxicity of alcohol, heavy metals, drugs, and more [R, R, R, R].

Alcohol detox is crucial to minimize its side effects, especially if consumed in higher amounts. Two genes, *ADH1B* and *ALDH2*, help make enzymes that process alcohol, and their variants can greatly affect detox potential [R].

Variants in the following genes also play a role in detox:

- *NQO1* : fighting oxidative stress, DNA damage, and **benzene** toxicity [R, R, R]
- *SULT1A1* : processing toxins found in **cigarette smoke and well-done meat** [R, R, R]
- *PON1* : detoxing **pesticides** and other toxins [R, R]
- *SOD2* and *CAT* : reducing oxidative stress and detoxing **BPA and pesticides** [R, R]
- *COMT* : detoxing **endocrine disruptors** by methylation [R]
- *MTHFR* : supporting methylation and influencing **air pollution** sensitivity [R]
- *XPC*, *XRCC1*, *XRCC4* : repairing DNA damage caused by **pesticides, air pollution, and mold** [R, R, R, R]

GENE	SNP	GENOTYPE
CYP2E1	rs2070673	TA
GSDMB	rs7216389	CT
CSK	rs2606345	AC
UGT2B7	rs7439366	TC
CYP1B1	rs1056827	CA
ITCH	rs819147	TT
GSTM1	rs1056806	TC
CTH	rs1021737	TG
GSTP1	rs1695	AA
ALDH2	rs671	GG
GSTP1	rs1138272	CC
CYP1A1	rs1048943	TT
COX15	rs717620	CC
NFE2L2	rs6721961	GG
NAT1	rs4986782	GG
CYP2D6	rs3892097	CC
TRIM4	rs2740574	TT
NQO1	rs1800566	GG
NQO1	rs1131341	GG
EPHX1	rs1051740	TT
GPX1	rs1050450	GG
CYP1A2	rs762551	AA

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