

Theranostics Lab provides a specialised service for the delivery of molecular diagnostics to clinicians and the public.

A core philosophy of the company is to improve public health through effective screening programmes and improve sustainability in medicine by matching the right treatment to the right individual.

We also support a strong social responsibility programme.

Please find more information at [www.theranosticslab.com](http://www.theranosticslab.com)

TheranostiCLABs. Your Genes. Your Health.

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CYP2C19  
Gene Testing

TheranostiCLABs.

## Personalised Medicine

Personalised medicine is a holistic approach to medicine, and uses molecular diagnostic tools, in combination with advanced informatics, eg. using a person's age, gender, weight etc, to individualise a treatment strategy.

The aim is to make medicine more predictive, preventive, personalised and participatory – in short, P4 medicine. This is a philosophy change to current practice and will lead to improved patient care and reduced costs by reducing wastage and treatment injury.

Pharmacogenomics, proteomics, metabolomics and nanomedicine are emerging fields of science which sit within the framework of personalised medicine. Theranostics Lab will translate relevant discoveries from each of these areas into tools that assist in patient care.

## Ordering a Test

### Specimen Requirements

**4ml EDTA sample**

### Storage Conditions

**4°C**

### Transport Conditions (if off site)

**Keep cooled**

### Documentation

**Provide a request form with patient and clinical details. Requestor information is required for reporting and invoicing.**

### Availability

**The test will be available weekdays with an expected turnaround of 48 hours. In most circumstances, the analysis will occur the same day of arrival.**

### Reporting

**The report will be available or sent electronically. In the event of HL7 not being available, a paper report will be issued.**



The cytochrome P450 2C19 (CYP2C19) gene encodes an enzyme which contributes to the metabolism of a large number of clinically relevant drugs and drug classes such as antidepressants (eg. SSRIs),<sup>1</sup> benzodiazepines,<sup>2</sup> proton pump inhibitors (PPIs),<sup>3</sup> and antiplatelet drugs.<sup>4</sup> Inherited genetic variation in CYP2C19 contributes to interindividual variability in drug response.

Individuals may be poor metabolisers (carrying two copies of a nonresponder gene), intermediate metabolisers (carry one copy of a nonresponder gene), extensive metabolisers (normal metabolism), or ultrametabolisers.

### Antiplatelet Drugs

Poor metabolisers may respond poorly to prodrugs, like clopidogrel, prompting a switch to an alternative antiplatelet drug such as prasugrel or ticagrelor.

### SSRIs

Poor metabolisers may be more responsive to drugs such as sertraline or other SSRIs metabolised by the 2C19 enzyme and require a dose reduction.

### Proton Pump Inhibitors

Ultrametabolisers will metabolise drugs such as omeprazole (PPI) quickly, making them less effective and reducing the efficacy of H. pylori triple therapy eradication.<sup>3</sup> Ultrametabolisers should therefore be given higher doses, or alternative PPIs which are not dependent on this enzyme for clearance.

The prevalence of the nonresponder gene variants is high in Asian and Maori patients, whereas the ultrametaboliser variant is more common in Europeans.

A personalised approach to treatment may be more effective for patients who have failed therapy, or who have adverse reactions to these drugs.

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3. Li XQ, Andersson TB, Ahlstrom M, Weidolf L. Drug metabolism and disposition: the biological fate of chemicals. 2004;32(8):821-7.

4. Hulot JS, Bura A, Villard E, Azizi M, Remones V, Goyenvalle C, et al. Blood. 2006;108(7):2244-7.