

# Asparagine Hydroxylation and Human Hypoxia Responses

## Description of Technology

The HIF (hypoxia-inducible factor) proteins are transcription factors that are major regulators involved in the detection and responses to the levels of oxygenation in tissues. A part of the mechanism of HIF proteins involves the asparagine hydroxylation of the CAD domain of the HIF proteins. We have characterised the site of this modification in human HIF, and a method of screening has been developed to find agonists or antagonists of asparagine hydroxylation. We are currently continuing research to discover additional substrates of the asparagine hydroxylases that are also involved in hypoxia responses.

## Commercial Applications

The involvement of this hydroxylation process, in addition to the already known proline hydroxylation process in the regulation of hypoxia responses offers the possibility of discovering small molecule antagonists that could be candidate drugs for the treatment of ischemic heart disease, and for enhancement of wound healing. There may also be applications of this technology in cancer therapies.

## Patent Status

We have filed a patent application to protect this technology, and it is currently under National Phase examination in Australia, Canada, Europe and the USA. A Notice of Allowance for this Application in the USA has recently been issued.

## Partnership Opportunities

We are seeking development partners and licensees.

## Summary

This technology offers a novel target, the enzyme asparagine hydroxylase, to look for agents that may agonise or antagonise the activity of this enzyme, and thereby modify the responses to hypoxia. This could lead to new agents to treat heart disease, to enhance wound healing and potentially also for cancer therapy.

## Key People

### Professor Murray Whitelaw

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