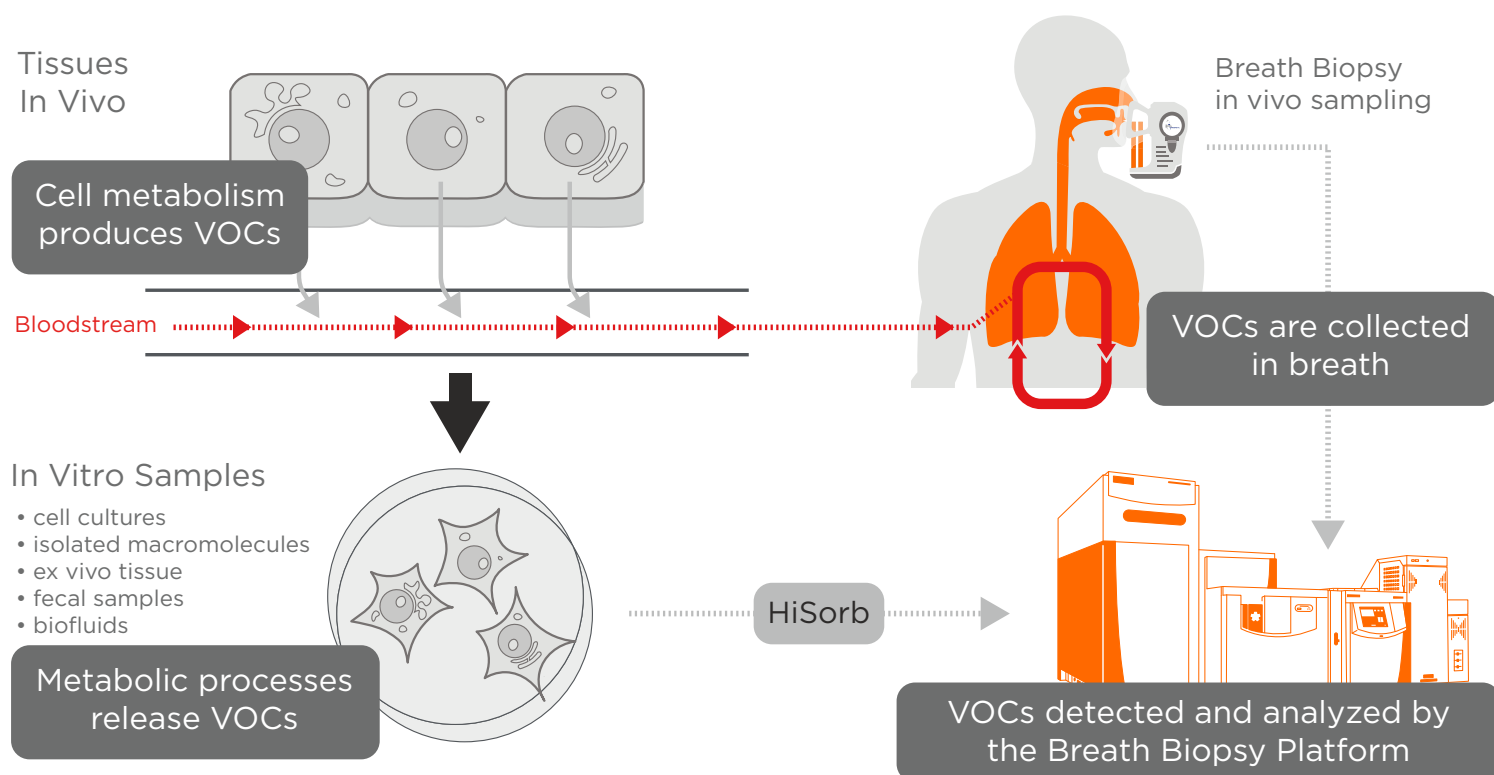


Headspace VOC Analysis of In Vitro, Ex Vivo and Biofluid Samples

BREATH BIOPSY®

Discovering and validating biomarkers for disease is a key stage in developing valuable and effective diagnostic tests for clinical applications. Do you have a detailed understanding of the biology of your disease of interest? Headspace sampling underpins the biological understanding of disease, supporting the translation of clinically useful biomarkers.



Why do Headspace Sampling?

- Identify clinically relevant candidate breath biomarkers
- Directly relate disease biology to breath biomarkers
- Gain insight into mechanisms underlying disease and drug response
- Validate the chemical identities of your biomarkers
- Generate evidence to support your case for clinical approval
- Relate your findings to other published literature

Key Features:

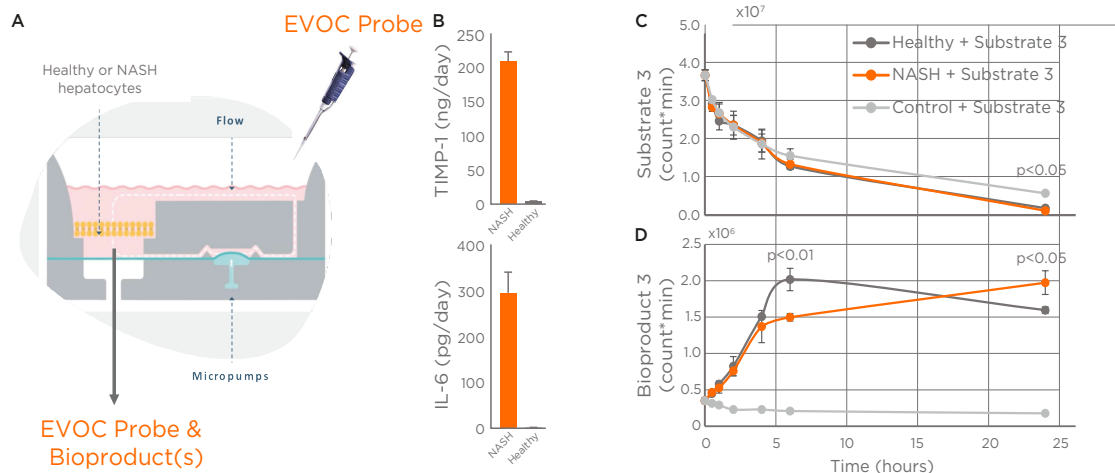
- VOC collection using automated HiSorb probes dynamic sampling
- Direct from sample collection to HRAM GC-MS
- Suitable for study of cell cultures, ex vivo tissues, fecal headspace, biofluids and/or macromolecular isolations
- Compare disease site VOCs to breath samples on the same platform

In Vitro Studies at Owlstone Medical:

Liver Disease

We have used in vitro sampling to identify alterations of metabolic pathways induced by a chronic liver disease. By treating cell cultures of human primary hepatocytes with substrates, we were able to use VOC analysis to find alterations in the bioproduct generation of healthy hepatocytes compared to hepatocytes in which a non-alcoholic steatohepatitis (NASH) phenotype was induced.

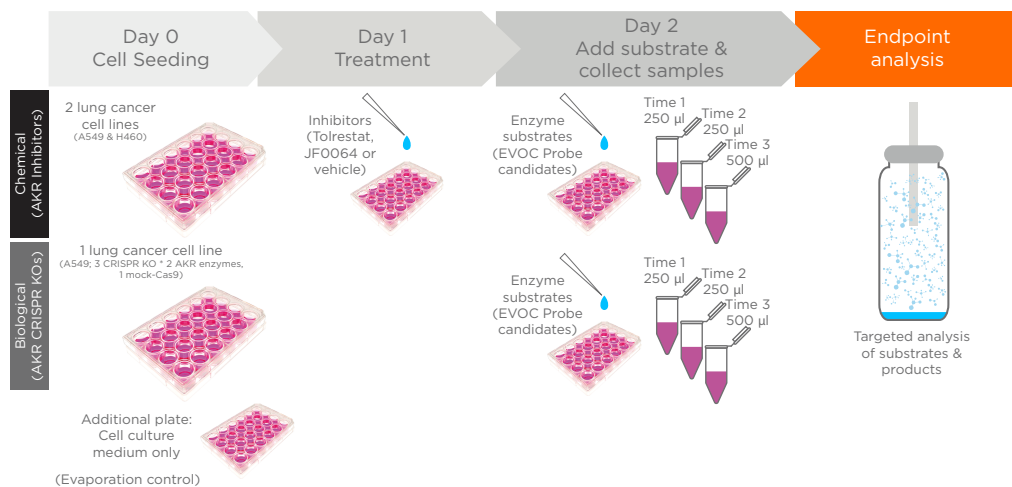
Using pre-clinical models, like this one, to evaluate the relationship between substrates and metabolism alterations represents a step-forward for the identification and assessment of prospective biomarkers for breath diagnosis of disease.



Cancer

Aldo-keto reductases (AKRs) are upregulated in some cancers as an adaptation to oxidative stress and lipid peroxidation. We used in vitro cell cultures of lung cancer cell lines to try and target AKRs in these cells and monitor the metabolic processes they are involved in on breath. To do that we modulated the catalytic activity of AKRs using small compounds and also developed knock-out (KO) cells for target AKR genes.

We treated our cell cultures with a range of substrates, then monitored substrate and product levels using the same GC-MS workflow used for the detection of VOCs in clinical breath samples. This allowed us to demonstrate that the target enzymes were responsible for the metabolism of the substrates and shows that in vitro cell cultures, coupled with VOC analysis can return information about genomic manipulations and drug treatments.



Contact us to find out more about collaborating with Owlstone Medical and to discuss incorporating Breath Biopsy in your biomarker research.

breathbiopsy@owlstone.co.uk



Owlstone Medical Ltd, 183 Cambridge Science Park, Milton Road, Cambridge, CB4 0GJ, UK

[in](https://www.linkedin.com/company/owlstonemedical) [tw](https://twitter.com/owlstonemedical) [fb](https://www.facebook.com/owlstonemedical) @owlstonemedical

Company Number 04955647 | VAT Number 260449214

Owlstone Medical's Products and Services are for research use only. Not for use in diagnostic procedures.

BREATH BIOPSY