

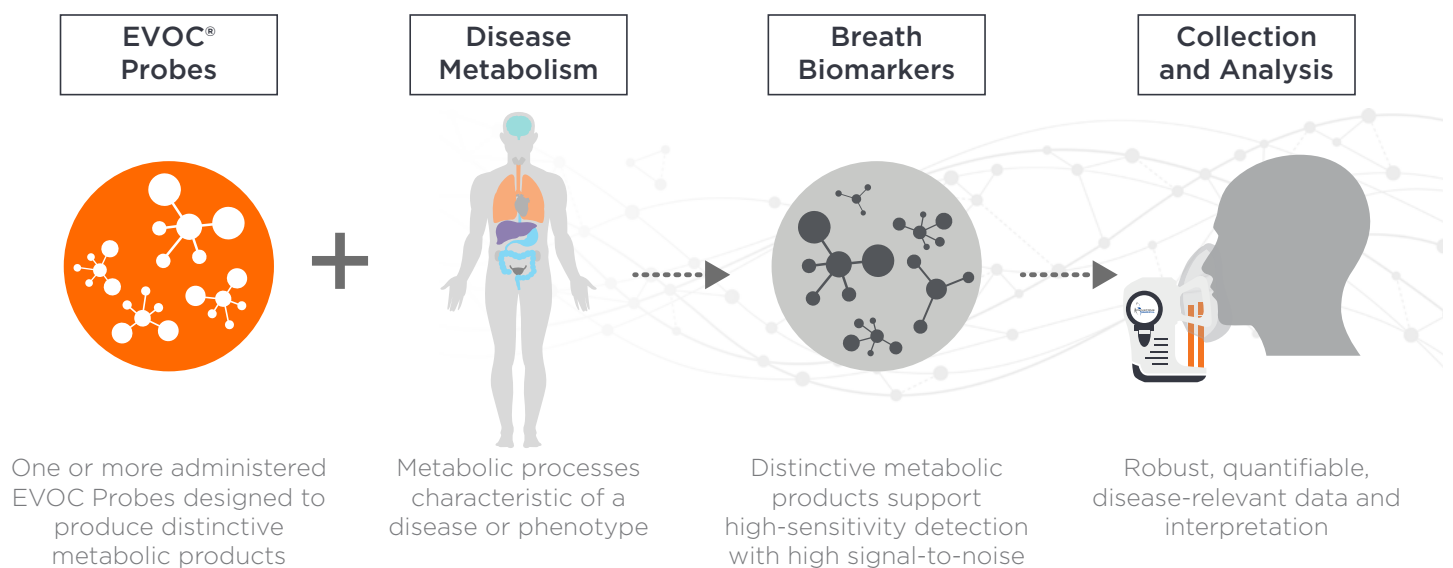
EVOC® Probes

Targeted metabolic probes for non-invasive disease detection

BREATH
BIOPSY®

Harness the Power of Exogenous VOC Biomarkers

Exogenous volatile organic compound probes (EVOC® Probes) provide a focused alternative to breath biomarker discovery. Probes are developed to target specific disease-relevant metabolic pathways that can be monitored non-invasively using Breath Biopsy®.



Benefits

- Designed based on established links between VOCs and disease biology
- Enable smaller, more focused trials that can be concluded faster
- Supported by Breath Biopsy® for robust, reliable EVOC Probe detection
- Administer several Probes together to monitor multiple metabolic processes

Developing an EVOC Probe

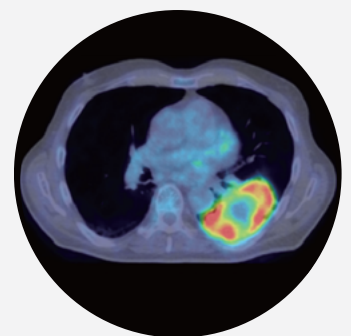
EVOC Probes are rationally developed from existing biological knowledge of disease metabolism. Probes target enzymes within characterized metabolic pathways and the substrates and/or products of these interactions are monitored through non-invasive breath sampling.

This approach parallels drug target development and makes EVOC Probes well-suited for use in pharmaceutical research.

Inspired by Existing Clinical Tests

EVOC Probes draw inspiration from widely used clinical methods. Probes such as fluorodeoxyglucose (FDG) detect metabolic changes linked to cancer by using PET scanning (shown right).

Similarly, substrates such as fructose, lactose and glucose can be ingested to probe the gut microbiome and detect illnesses such as carbohydrate intolerances and small intestinal bacterial overgrowth.



Applications Under Development

EVOC Probes are currently being investigated in areas such as early-stage liver diseases, gastrointestinal illnesses and cancer.

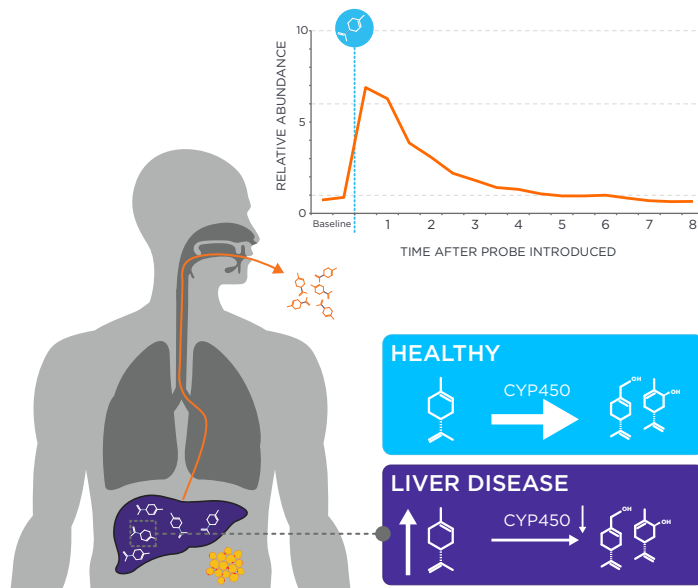


Example EVOC Probe: Limonene for Liver Disease

Limonene is a key example of an EVOC Probe. It is not produced in the body but can be absorbed from food and drinks and is detectable on breath. We are investigating the use of a standardized dose of limonene as a way to detect liver diseases.

Prevalence of liver diseases such as non-alcoholic steatohepatitis (NASH) is rising rapidly, and more than 30% of adults and 10% of children in countries such as the US are estimated to be affected.

In a healthy liver, limonene is metabolized by enzymes in the cytochrome P450 (CYP450) family. Monitoring limonene on breath after ingesting it results in a washout curve as the limonene is absorbed and then metabolized.



Proof of Concept: Ferrandino et al. (2020)

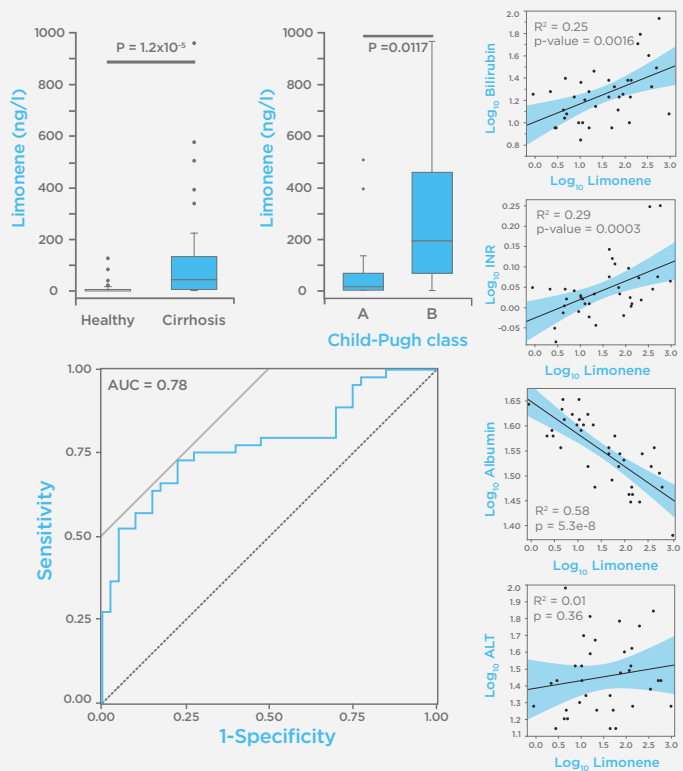
Our work and that of others has shown that limonene is generally present at higher levels in breath samples from people with cirrhosis. Notably Fernandez del Rio et al. showed that a successful liver transplant can reduce the abundance of limonene on breath.

We've also seen that exhaled limonene correlates with blood biomarkers and the Child-Pugh measure of disease severity. This demonstrates that limonene has potential as an EVOC Probe for chronic liver diseases.

Scan to read the paper in full:



Ferrandino et al. (2020)
Clin Transl Gastroenterol
DOI: 10.14309/ctg.0000000000000239



Contact us to find out more about EVOC Probes and non-invasive breath sampling and to discuss adding Breath Biopsy to your research.

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