

# Genedrive<sup>®</sup> System



genedrive plc

## Point-of-need molecular diagnostics sample preparation.

Collaboration with genedrive to develop a versatile low-cost sample preparation companion platform. A portable PCR platform for use in decentralised Tuberculosis laboratories at the point of need.

### Expertise

- Chemistry
- Consumable design
- Industrial design
- Product concepts
- Proof of Principle
- Mechanical engineering
- User experience

### Domain knowledge

- PCR sample preparation
- PoC systems
- Medical device regulation
- System architecture
- Product development planning





## Our client asked:

genedrive required a low-cost, low complexity molecular tuberculosis (mTB) diagnostic system for use in decentralised settings to diagnose TB infection and provide drug resistance information to clinicians in a single test cartridge. The cost of both the cartridge and instrument would need to be low enough to be affordable in the intended lower income markets. The sample preparation system would need to process a raw sputum sample ready for diagnosis in approximately 30 minutes. It would also need to be biosafe, handle a range of working volumes and be suitable for applications additional to mTB.

## The project story:

genedrive focused on the assay & sample preparation chemistry while Sagentia Innovation focused on the design and development of the sample preparation instrument and disposable cartridge. We generated and explored a range of concepts and evaluated their feasibility. To support genedrive in their chemistry development we then developed a Proof of Principle system, using an injection moulded cartridge and electromechanical instrument which was built and supplied to genedrive. To ensure the successful system build we then went through a phase of design refinement and built a 'looks-like, works-like' final product system. This was supplied to genedrive for assay testing.

## Contact us

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## Results: deliverables and outcomes

- The platform reduces user interaction which improves biosafety
- It is a low-cost system making it suited for lower income markets
- Low/no maintenance required for operation
- The platform is extendable to other molecular applications
- All reagents are on board

### Tuberculosis application:

- The target sensitivity is higher than smear microscopy, using bacterial enrichment technology
- Inactivation of live TB occurs within the cartridge which improves biosafety in the intended use environment
- The system performance is expected to be equivalent to incumbents but with operational and cost advantages
- Sagentia Innovation has helped to develop an associated sample processing system and secured an Innovate UK grant with genedrive

[www.genedriveplc.com](http://www.genedriveplc.com)