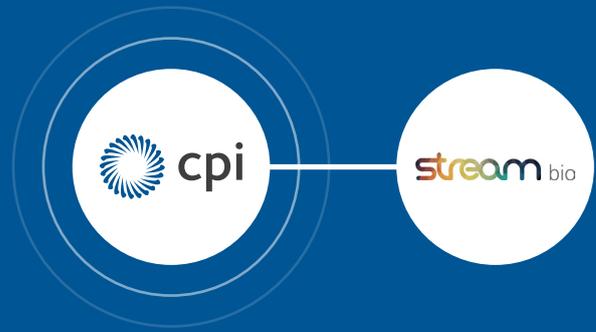


Routes to Impact



UK-based SME Stream Bio has worked with CPI to progress their technically challenging project from a lab-based invention to commercialisation.

Originally developed and patented by King's College London, Stream Bio was founded specifically to commercialise the technology, and to demonstrate the wide-ranging benefits and applications of Conjugated Polymer Nanoparticles (CPNs™) to the life science community. Stream Bio worked with CPI to combine their forward-thinking attitude and breadth of industry knowledge with the expertise that CPI possess in both science and business. This collaboration has enabled Stream Bio to develop a commercially viable manufacturing process and 4 colours (wavelengths). The main outcome of which is CPN™ solutions for various strands of the life science industry that could positively impact in-vitro R&D, diagnostics and therapeutics.



Inputs

- Technical Expertise
- Access to state-of-the-art facilities and equipment
- Initial investment fully funded via two ERDF programmes
- Input into Innovate UK loan application
- Proof of concept
- Business Development workshops
- Initial process development



Outputs

- Development of a new manufacturing process
- Development of a new product
- TRL Progression from 3 to 8
- Loan application for an IUK Innovation Loan



Outcomes

- Commercialisation of four fluorescent coloured markers to market
- Winner of an Institute of Physics, (IOP) 2018 Business Start Up and Innovation Award
- Nominated for RSC Emerging Technology Award
- Supply agreements in place with five Distributors covering the UK and Europe
- Successful application and Award of an Innovate UK Loan within the 2018 Manufacturing & Materials Competition to expand Stream Bio's product portfolio

The Challenge

With the potential to revolutionise a range of life science research technologies, Stream Bio was keen to develop the initial lab research into a commercially viable product in therapeutic and tumour imaging, all of which required significant VC investment.

Before Stream Bio became aware of CPI the business tried to secure Venture Capital and Business Angel support, but were unsuccessful due to the risk and the lack of data available from the initial research; so Stream Bio adapted the business model and decided to concentrate on in-vitro R&D uses first with the help of CPI, while laying the foundations for the later stage tumour imaging and therapeutic applications.

The basic materials used in the development of CPNs™ are not new and have been around in academia for a number of years. Following on from the research at Kings College London (who were able to establish patents), Stream Bio needed to better understand the commercially viable applications in which CPNs™ could be used and the potential scale-up options outside of a bench top lab.

Alternative products that are currently used such as quantum dots are toxic with a cadmium core and others such as organic dyes have poor sensitivity and stability. CPNs™ show no toxicity, are significantly brighter, incredibly stable, and are therefore ideal for use with live cell systems.

How CPI Helped

Stream Bio started their collaboration with CPI in 2017 after a referral from an industry operator to explore the process of potential commercialisation and ERDF support. CPI has helped develop and manufacture four different coloured molecular probes, to trial and test under two ERDF (European Research Development Fund) projects worth approximately £130,000 combined. Prior to working with CPI, Stream Bio was unaware of the potential of ERDF funding.

Stream Bio calculated that to achieve an equivalent level of expertise and facilities used in the development of their product, they would have needed a VC investment of between £750,000 and £1 million.

However, by using CPI's facilities, the company was able to accelerate the timeline to commercialisation, without having to make such significant investment in infrastructure.

An initial proof of concept study undertaken by staff at CPI has shown the products created in the initial lab research can be used in flow cytometry and are readily visible both inside the cell and as individual nanoparticles. This concept study has helped to build confidence that their utility can be extended through their conjugation to target molecules to bind specific cellular proteins. These findings go a long way in the demonstration that the development of CPNs™ can be beneficial in a breadth of applications.

Working with CPI showcased the development of a successful innovation pathway from an academic institution, to a start-up company working with experts based in CPI's state-of-the-art facilities and laboratories. Ease of access enabled closer collaboration and highlighted how bridging the gap between invention and commercialisation can allow companies to progress in the innovation eco-system more efficiently.

“ CPI accelerated our route to commercialisation by a long way, all of the work was done in CPI with access to scientists and equipment. This saved us in the region of £750K - £1m capital investment. ”

Andy Chaloner - CEO, Stream Bio



Summary

Undertaking such a challenging project would have been nigh on impossible for Stream Bio without significant VC investment, or without the help and support of CPI. The CPNs™ developed were launched on the commercial market for in vivo research and supply contracts are in now place with five distributors throughout Europe for use in applications such as flow cytometry, Western Blotting and ELISA amongst others. Several collaborations have also commenced focussing on CPN™ use in point of care diagnostics.