

UKSPA CASE STUDY

ISG CREATES THE CATAPULT FOR CELL THERAPY COMMERCIALISATION

High above the London skyline on the 12th floor of the 30-storey Tower Building of Guy's Hospital lies the Cell Therapy Catapult (CTC) Centre. Delivered by construction services company ISG, it contains state-of-the-art process and assay development laboratories designed to mimic manufacturing suites, enabling the development of cell therapies from the laboratory to commercial scale.



Cell Therapy Catapult - aims to be a world leader in commercialisation

The Cell Therapy Catapult

The Cell Therapy Catapult's (CTC) purpose is to advance the growth of the UK cell and gene therapy industry and bridge the gap between scientific research and full-scale commercialisation

Established by the government in 2012 as an independent centre of excellence, its mission is to establish the UK as a world leader in the commercialisation of cell therapies.

The Cell Therapy Catapult's core projects will tackle industry-spanning hurdles by collaborating with academia and key R&D industry projects. Cells have been used to successfully treat patients for many years, and recent significant advances now mean that new treatments can be devised with the potential to repair or regenerate cell and tissue to help cure diseases and conditions.

The organisation has already made significant progress in examining the potential for cell-based treatments for strokes, leukemia, airway diseases, wound care and skin diseases, as well as the development of synthetic blood for transfusions

However, with more than a hundred employees covering business expertise, manufacturing and clinical functions, the CTC required a permanent 1,200 square metre development laboratory facility. The organisation opted to refurbish existing space located on the 12th floor of the 30-storey Tower Wing building at Guy's Hospital London.

Why was the refurbishment needed?

There were a number of factors that influenced the need for the refurbishment.

Prior to the construction of the CTC's new facility, its laboratory accommodation comprised traditionally constructed laboratories spread through a three-storey building with laboratories on different floors.

Each laboratory contained fixed benching which could not be easily re-configured to meet the needs of different experimental campaigns.

This limited the equipment items that could be housed in the laboratories and causing considerable down time between experimental campaigns where equipment reconfiguration was required.

As there is no large-scale infrastructure in the UK enabling the manufacture of cell therapies for late stage manufacturing and subsequently for in-market supply, the new facility required laboratories designed to mimic manufacturing suites. This would enable the CTC to support the progress of cell therapies from the laboratory scale to commercial scale.

Finally, they wanted to create a mixed use workspace which combined the best of both the corporate and research worlds. The 36-week refurbishment programme involved demolition, design, fit out and segregation of the lab and office space, as well as lab equipment specification and installation.

"Global companies have said 'This is not just world leading, but world beating'..."



Laboratories - energy efficient with movement detection systems

Project Team Selection

When appointing the design team, selecting the people with the knowledge and experience to handle the unique requirements of this project was key to its success. The final team saw BMJ Architects, engineers Bianco Sale, and CRC join ISG on the project. Quantity surveyors Gleeds were on the client side with Exmoor Pharma.

The design team's collective experience in delivering complex science and research facilities and working in live hospital environments were deciding factors in their selection.

The project team was completed by the Cell Therapy Catapult's Chief Operating Officer Dr Stephen Ward and CEO Keith Thompson, and Exmoor Pharma Design who created the facility's concept and layout designs.

The project followed the NEC 3 Two stage Design & Build procurement route, which would allow for the design to evolve as required throughout the process.



Glass partitions allows all activities' to be fully integrated

The Challenges

Challenges of working in a live environment and being located in an operational hospital tower created significant challenges for the project team. With the pharmacy manufacturing facility on the floor above and the Assisted Conception Unit on the floor below, ensuring that the hospital's patients and staff were unaffected by the works was paramount.

Other challenges that emerged included:

- Ageing building services: ISG had to work around ageing mechanical and electrical services that needed to be kept operational throughout the project
- Hazardous materials management: Safely removing asbestos in a hospital environment was a major hurdle to overcome
- Logistical strategy and challenges: Moving materials throughout the building which had faulty lifts and an uncertain chilled water capacity added to the unique challenge of the project
- Obtaining clinical sign-off from tower occupants: Permission was sought from other tower occupants across 30 floors to drain and cut into the chilled water main over the Christmas break, finally achieving sign-off on Christmas Eve!

- Spatial constraints: Fitting the dedicated plant room to serve the clean room space into a compact floor plate was challenging, as was achieving the cost plan whilst maintaining the quality of a world leading facility

- Audio visual integration: In the viewing area of the facility, ISG installed IP TV so that lab processes could be watched on screens, in addition to remote lighting controls enabling clients and visitors to see the labs even when they were unoccupied.



A State of the Art Facility

The CTC Centre was completed in March 2014. Laboratory, audio visual equipment, and office facilities are all state-of-the-art, fostering a collaborative approach between disciplines and functions heralded a bold new way of working for the company in a dynamic space.

Using glass as a partition between meeting rooms, breakout areas, office space and laboratories means that the company's activities are cohesive and fully integrated. Confidentiality is maintained through soundproofing, strategic positioning of monitors and manifestation on the glass of meeting rooms.

Laboratories feature energy-efficient LED lighting, with each lab equipped with a movement detection system to automatically switch off the lights when unoccupied. The laboratory block is ventilated using a dedicated air handling system, re-circulating and re-conditioning the air to each laboratory to minimise heating and cooling loads for fresh make up air.

Running costs are reduced by the use of high performance double-glazed glass partition walls, which minimise heat losses to adjacent laboratories and provide a visual linkage between all of the laboratories.

The outcome of this project is a fantastic working environment that has been shortlisted for major industry awards for its innovative design. Cell Therapy Catapult Chief Operation Officer, Dr Stephen Ward, is particularly pleased with the end result.

"As well as managing over 40 scientists and project managers, my primary responsibility on joining the company was to manage the building of the new facility within the agreed budget and timeframe. Global companies have said 'This is not just world leading, but world beating', so we really have made a mark in terms of what we've delivered here."

About ISG

UKSPA member ISG is an international construction services company delivering fit out, construction, engineering services and a range of specialist solutions. www.isgplc.com



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