



## CASE STUDY

# Industry partnership ventures into new territory

Collaborations don't always go exactly to plan – but that doesn't prevent them from being successful.

**Such was the case for the partnership between the drug discovery company, Oxford Target Therapeutics (OTT), and the Franklin. OTT is one of three early-stage biotech companies to win a 12-week residency at the Franklin, giving them access to the Franklin's top-level technologies and expertise.**

OTT, an oncology drug development company spun out of Oxford Brookes University, has developed a small-molecule based therapy to treat triple negative breast cancer. The therapy disrupts the ability of cells to divide, preventing tumour growth.

The company planned to use the Franklin's serial focused ion beam scanning electron microscopy to find out for the first time exactly how the small molecules affect subcellular structures of breast cancer cells.

Dr Victor Bolanos-Garcia, Founder and Chief Executive Officer at OTT, says: "The Franklin residency was a fantastic opportunity for us. Electron microscopy can provide us with the visual evidence to prove that this mechanism through which the molecule affects

cancer growth is as we predict. This will reassure us that we are on the right track. It's also crucial to have this evidence to present our innovation to potential investors."

The project took both the company and the Franklin's Structural Biology Group into new territory. OTT had never worked with cryo-electron microscopy and the Franklin researchers were using those techniques for the first time with spheroids – 3D structures of cells that more closely mimic cancer tissue.

Spheroids provide a more accurate picture of how drugs work and how effectively they can enter cells. If cancer cells are grown in a single layer on a substrate, when a drug molecule is applied, it can access all



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the cells easily, which isn't the case in a real tumour. Using spheroids allow researchers to see more clearly whether a drug will only affect the peripheral cells or if it has the potential to penetrate inside the tumour.

The first step for the joint OTT and Franklin team was preparing samples to put through the microscope – and this proved a substantial challenge. The first few attempts weren't successful, but on the final session of the residency, the sample survived the preparation process and the team were able to analyse it under the microscope and get some initial data. The team are now confident they know how to take the project forward and start to gather more of the data that OTT are interested in. They are applying for further funding and looking at the possibility of a PhD studentship to continue the research.

For Dr Bolanos-Garcia, the project has definitely been a success. "We've benefited a lot from working with the Franklin, not only in terms of advancing our research, but also enhancing our knowledge of how this very powerful technology can help our understanding of cancer development. We weren't able to complete the

project as planned due to some technical challenges, but that's the nature of science at the forefront of technological advances. We built a really strong rapport with the Franklin team and we're looking forward to working with them in the future."

Dr Maud Dumoux, Associate Investigator in the Franklin's Structural Biology Group, agrees. "Working with Victor and his team has given us a better idea of the requirements of biotech companies, what type of information they need and how to help them on sample preparation. As this was new territory for both of us, it was great to have a partner who was not afraid of the challenge.

"This type of research is exactly where the Franklin wants to be, in terms of a full discovery challenge. To really have an impact on drug discovery, you need technology that doesn't rely on prior knowledge and that can be fully explorative, rather than confirming existing observations. This is exactly what made the collaboration with Victor and his team both challenging and rewarding to work on."

