SCIENTIST SNAPSHOT

# Mark Muldowney

At Sterling, our highly experienced team members and their passion for what they do are central to who we are. This month, we spoke with Mark Muldowney, Head of Technology and Innovation, to learn more about Sterling's approach to analysing and developing novel technologies to apply in customers' programmes.

## Can you briefly describe your background and current role at Sterling?

In my current role as Head of Technology and Innovation, I explore promising, in-demand technologies in pharmaceutical development and manufacturing in order to expand our service offering and augment customer value. My goal is to determine which technologies are best suited to market needs and are complementary with our current capabilities, then ensure that they are successfully applied in our customers' programmes.

I began my career on the front lines as a Development Chemist, which has given me a broad understanding of the API development and manufacturing process, as well as the challenges that can arise along the way. In my current role, this experience provides me an informed perspective, enabling me to better assess commercial viability and anticipate any potential challenges associated with applying new technologies.

## How do you decide which technologies to focus on developing at Sterling?

There are so many technologies on the market. It's easy for service providers to get distracted by those that seem most exciting. But at Sterling, our chief focus has always been and will always be on maximising customer value. As a result, we are focused on identifying those technologies that have the greatest value, both among our existing customer base and within the market at large.

To pinpoint potential areas for exploration and development, we consider insights from our conversations with customers, recent requests from prospects, academic publications on up-and-coming technologies, the work of our university partners, and broader secondary market research resources. Together, these sources help us scorecard which technologies and service offerings will provide the most utility to customers and prospective customers. We also consider synergy between a given technology and our existing services, facilities, and specialities.

## Fast Facts

**ROLE**

Head of Technology and Innovation

**YEARS AT STERLING**

26

**EDUCATION**

PhD in Chemistry, Newcastle University

**SPECIALISATIONS**

Biocatalysis, continuous manufacture, fluorination, hazard evaluation, technology transfer

Sterling

## Which technologies are top of mind for Sterling today?

Right now, we are in the midst of maturing a robust service offering in continuous manufacture and Biocatalysis, both of which have been broadly applied in other industries but are relatively new to the pharmaceutical sector.

Continuous manufacture is in high demand because of its potential to save valuable time and costs, as well as enhance process safety. We currently have several continuous processing projects in motion for our clients at the laboratory scale. This technological area is a perfect complement to our long-held strengths in engineering, process design, and optimisation.

Biocatalysis is of interest because it can powerfully enhance project efficiency by reducing the number of steps involved in syntheses and generates less waste than chemical catalysis. Enzymes also have the potential to be genetically engineered for further process optimisation. By combining the strengths of our university partners with our robust development and scale-up capabilities, we can currently handle Biocatalysis reactions up to the 1000 kg scale.

## How do your university partnerships support Sterling's technology and innovation approach?

At Sterling, we refer to ourselves as a PDMO or partnership development and manufacturing organisation. But in addition to forming collaborative partnerships with our customers, we are also committed to partnering with leading academic institutions to adopt and apply emerging technologies. Today, we have strong partnerships with leading universities like Leeds, Northumbria, and Durham, among others.

We hand-select partners with deep experience and strong specialisations in each technological area to provide our customers access to world-class solutions and expertise.

We hand-select partners with deep experience and strong specialisations in each technological area to provide our customers access to world-class solutions and expertise. For example, we work closely with Northumbria University and its dedicated Nzomics business unit in Biocatalysis. Nzomics aids in enzyme screening, customisation, and immobilisation to help us efficiently develop viable biocatalysts to utilise in our customers' programmes.

## How do you hope to expand Sterling's technology offerings in the next several years?

In the spirit of delivering our customers superior solutions to meet their evolving chemistry requirements, our near-term priority is to continue to expand our capabilities in our main areas of focus. We are currently working to extend our continuous processing competencies to the commercial scale. As for Biocatalysis, we are working on developing a proprietary enzyme database to provide our customers broader, streamlined enzyme access.

We are always keeping an ear to the market to assess and prioritise scientific technologies. Long-term, we will continue to make technology a focus with a commitment to meeting evolving market needs and delivering quality-focused solutions to our customers.

Fluorination is another area of focus for us. In pharmaceutical applications, fluorination has shown great potential in enhancing API stability, bioavailability, and therapeutic activity. I think it is an area where the market and our customers are beginning to see a lot of value, and our hazardous chemistry experience makes it a great fit for Sterling. We have already started to expand and enhance our fluorination offerings, and we will continue to develop this area moving forward.

We are always keeping an ear to the market to assess and prioritise scientific technologies. Long-term, we will continue to make technology a focus with a commitment to meeting evolving market needs and delivering quality-focused solutions to our customers.

## Why should a customer choose to work with Sterling when seeking innovative technologies?

When looking for a service partner, particularly in a complex technological area, customers should demand the highest standards of transparency, collaboration, and true scientific partnership. In addition to providing strong communication throughout the duration of every project, we enable our customers to visit our sites and see their projects in motion at any time. In addition, we have been safely handing hazardous chemistry at Sterling for more than 50 years. When working with new technologies, this expertise enables us to ensure that all necessary hazard evaluation and risk mitigation steps have been taken, and that we observe relevant safety precautions at all times. Finally, the academic institutions with whom we partner are some of the most capable in the world. When a customer partners with us, they tap into all of that expertise.

Sterling

**Dudley, Northumberland, UK**
+44 (0) 191 250 0471

**Cary, North Carolina, US**
+1 (919) 678 0702

**Germantown, Wisconsin, US**
+1 (262) 251 5044