



AstraZeneca

Non-Noble Metal Catalysis: Dr James Douglas

James Douglas leads AstraZeneca's involvement in the Non-Noble Metal Catalysis (NoNoMeCat) project, a consortium looking at sustainable catalysis for clean energy production and the manufacture of pharmaceuticals and agrochemicals. His participation in the four-year Marie Skłodowska-Curie Initial Training Network grant, funded as part of the European Union (EU) Horizon 2020 programme, enabled AstraZeneca to host a number of European researchers and collaborate with leaders in the field of catalysis.

Company: [AstraZeneca](#)

Lead researcher: [Dr James Douglas](#)

Funding: [Marie Curie Non-Noble Metal Catalysis grant](#)

Catalysis is a broad field that is vital in a range of applications and essential across much of the chemical industry. That covers an array of research, from hydrogen as an alternative fuel source to the efficient production of pharmaceuticals and agrochemicals.

The Marie Skłodowska-Curie funding has provided opportunities for 13 PhD students at eight different universities across Europe. James explains that, thanks to the funding, they are planning to host three students for their industry training. He says: "This has been hugely beneficial to me. **It has been great to be part of a broader EU framework. Typically, I have a few of these kinds of interactions ongoing, but they are mainly in the UK, so expanding out to other EU countries has been really fantastic.**"

"In terms of catalysis at AstraZeneca we are very interested in modern research, as we use it regularly in the manufacture of drug molecules. **I think a really important part of this type of funding is that it bridges that gap between industry and academia**, that is a really important thing for a company like AstraZeneca, as we are interested in the science but also in the broader interaction with academia."

"There are a few big drivers for the grant from AstraZeneca's perspective. First off, **it's about environmental impact, ultimately sustainability, as well as cost, both of which are relevant to us as a company.** Take for example a noble metal like Iridium, which is one of the rarest elements on earth, being able to replace that with something like copper or iron, would be good from a sustainability standpoint."

Benefits to researchers and host institutions

James explains that the students also gain through being part of a broader consortium, they learn about a much more varied group of technologies and other disciplines they wouldn't necessarily cover as a PhD student working in a single area. He says: "**The students get a much broader, multidiscipline feel for the wider parts of this catalysis grant. They also get productive research training in numerous technical skills.**"

"The students do rotations both in industry and at the other research institutions that make up the consortium, and that is something that's not normally part of a PhD training. They also get further training in the form of workshops that cover various skills that are transferrable to science, such as scientific presentation and outreach. For instance, the grant will bring in key research fellows/leaders to lecture and teach the students in aspects of science and catalysis. I would say they are getting a lot of extra training and opportunities that aren't typical for PhD students."

James says a benefit for AstraZeneca in dealing with such academic grants is being able to interact with the key leaders in the field, who are accessible through the consortium and who can give guidance on his work at AstraZeneca. He says: **“It’s crucial to get insight into some of the latest technological developments as they begin to appear, thinking how they can be applied for pharmaceutical chemistry from the outset.”**

“Also, from a personal development standpoint, I am able to build a scientific network while working with and mentoring students when they come to AstraZeneca. This specific area of chemistry is not one where I had a large expertise before I joined this consortium, so it has greatly expanded my theoretical understanding.

Developing a talent pool

James believes that, for AstraZeneca, the funding also provides a good way of both assessing diverse and innovative talent and providing resource for productive research.

He says: “I think it is extremely valuable. It’s almost inevitable that, through your career, you become very focused on what is going on around you and within the company. **Often we find that you can bring in a student who’s been working in a different area and they can offer diverse opinions and different insights that are otherwise missed.**”

“One tangible gain from this was that earlier this year we hosted an Erasmus student from Utrecht University as part of their Master’s degree. This only came about from one of the academics for the consortium suggesting to their student that doing an Erasmus placement in the UK with AstraZeneca might be interesting. In the past we hadn’t regularly hosted many Erasmus students, so that kind of thing is a nice example of how being part of a broad group opens up new opportunities for science research.”

“Speaking personally, I think **being able to access and influence EU funding from within the UK is crucial. UK based academics in chemistry are highly effective at bringing in EU funding,** this has had an enormous benefit to AstraZeneca and the wider chemical community. In very simple terms we want to be able to access as many funding opportunities, from as many disciplines, across as wider area as possible.”

“I did my PhD in the UK but my postdoc in America, so I didn’t have a big network across mainland Europe. This grant really opened me up to academics and universities across Europe that I hadn’t worked with before.”

The group working on the NoNoMeCat project

