

Pushing forward with precision medicine

An explosion in computational power and vast collections of data are making precision medicine a reality, starting with diagnostics and leading to individualised treatment for patients, writes **Jason Walsh**

Personalised medicine is not a new concept, but it has seen considerable growth in recent times.

"I think things have changed in the last ten years – big time – and in the last five, there are processes that have made it easier," said Dr Julieta Sylvester of data-driven diagnostics company Diaceutics.

For Diaceutics, which is pushing forward on oncology diagnoses for individual

patients, an important driver has been the democratisation of computational resources. This is something Sylvester sees having an impact across business, not just in medicine or within Diaceutics.

"You don't have to specialise in IT anymore in order to take a deep look at data," she said. "In particular, I'm thinking of AWS [Amazon Web Services] and services like that; we can have a smaller IT department."

There is still significant room for growth, not only in



Dr Julieta Sylvester of Diaceutics: 'There's machine learning being developed that should be applied to healthcare'

the long term as data science matures, but even in the short term as industries such as di-

agnostics, pharma and medicine learn from the experience of other sectors.

"There are tools that are being used in retail and advertising that I've not seen used in

other fields," she said.

AI is part of the wider data picture too, with potential uses

in pattern recognition helping to speed the diagnostic process.

"There's some very interesting machine learning being developed and, in my opinion, that should be applied to healthcare. There are some companies who are doing that with very focused questions already," said Sylvester.

Sylvester also said that the role of data in diagnostics runs up against a confused view of what diagnostics is, at least from the perspective of the public at large, if not medics and laboratory professionals.

"I think that diagnosis has been misunderstood. It used to be that people pictured a machine or a kit at best, but now they're starting to see it as the data that comes from a process.

"There's also the misconception that multiplexing was just about efficiency, but it gives you a qualitatively better analysis. That's where the analytics started to take off and that is the essence of precision medicine," she said.

With precision medicine, the target is no longer the individual molecule understood in a petri dish, but the actual human patient and their individual manifestation of illness.

"With diagnostic companies, in general, they have a diagnosis that is a companion to a drug, but in terms of Diaceutics, what we're looking at with analytics is more like 'I'd really like to see the patient.' You can start to look at pain points in the process and group patients by history and so on," she said.

The irony then is that the bigger the dataset, the more personalised the treatment – a reality that has only become possible in today's data-centric computational environment.

"Cloud services and hosted cloud services are changing the game, but a lot of the secret that's required depends on having services in place, so it really is a boon to the industry to have companies in place who are able to maintain the technology side," she said.