Gene genies target new profits

Speaking to *Scientific Computing World*, EMC Isilon's Rob Anderson discusses the rise of the genomics

We have witnessed a significant shift in the market where pharmaceutical companies have been investing heavily in technology for genomics. Within the realm of European life sciences research, EMC Isilon had initially seen interest almost exclusively from the educational sector and public sector research organizations. But now there is tremendous interest from the pharmaceutical sector in genomics, biotechnology, etc. We are also seeing public/private partnerships where the pharmaceutical sector sponsors genomics research inside publicly funded research bodies.

Many years ago, the pharmaceutical sector found investment in genomics to be unattractive, but the economies have changed, the science has moved forward and the pharma have re-entered the sector in a big way. Pharmaceutical companies face big challenges with the cost and risk introduced by heavy regulation of their industry. Every year it becomes more difficult to develop drugs profitably. The industry model has been based on discovering "blockbuster" drugs whose profits pay for many years of expensive R&D. But that model is breaking down because the blockbuster drugs have to work for the entire population and there is a risk that these drugs can have side effects and face legal challenges as well as more regulation.

In searching for a new way forward, these companies will take into account very long timeframes; patient lifetimes are decades so these companies have long term strategies. Customised drug development and big data analytics to precision of a digital, 'dry-lab' environment. The much spoken about era of the $1,000 genome is almost upon us - we are around $3,000 to $5,000 currently. Sequencing rates are significantly faster than Moore's law so we'll hit the $1,000 genome within the next two or three years. We are also much better at storing and searching patients' digital information. All of these technologies are going to transform medicine over the next decade.

Single molecule sequencers, which form a new generation of sequencing technology, are much better adapted to grid computing and to the data centre in general. They are custom made for massive parallel sequencing of vast amounts of data, which is the way things will be done in the cloud. Diagnostics-as-a-service is not a new idea and is more advanced in the USA. Some of our customers like Complete Genomics have seen real successes in this field. We are seeing newer genomics facilities experiment with doing sequencing in the cloud and producing sequencing services where pricing varies by the deadline required. Sequencing companies are hoping to benefit from these transitions. It is important to remember that established players in bioinformatics may not be ready to move to public cloud deployments, as moving existing petabyte datasets into the cloud runs

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