

Different No More

The convergence between biotechnology and ICT

would have an important impact on both industries,

said Oracle's Derek Williams, despite the differences.



'BIOTECHNOLOGY' and 'information communication technology' (or ICT) are two much talked-about terms these days. Not surprisingly as these two are widely discussed in scientific forums and conferences.

There are a number of important differences between biotechnology and ICT. ICT, for instance, displays much stronger tendencies towards integration. A fine example of the convergence of computing and communication technologies would be the integration of personal computers, minicomputers, mainframes, robots, computer-controlled machinery and even national communication systems into a broader technological system. The same integrative tendencies are not apparent for biotechnology.

At the same time, there is an important process of convergence between biotechnology and ICT. ICT has a significant impact on the development of biotechnology process and product technologies (such as in the use of microprocessors and computers in automated controls for bioreactors and DNA synthesizers), biotechnology is also beginning to have an effect on ICT. This is visible in the area of application of protein engineering in the field of biosensors and biochips where integrated circuit technology is fused with protein engineering technology.

Derek Williams, Oracle Corporation Asia Pacific executive vice-president (*picture above*) in his paper 'Biotechnology and life sciences: The convergence of ICT and Biotech' said that in the last few decades, advances in biology and the equipment available for research in this field have allowed the increasingly rapid sequencing of large portions of the genomes of several species.

The deluge of information has necessitated the careful storage, organization and indexing of information. In fact, information science has been applied to biology to produce the field called Bioinformatics, said Williams. The simplest

tasks used in bioinformatics concern the creation and maintenance of databases of biological information. However, the most pressing tasks in bioinformatics involve the analysis of sequence information.

The convergence could include many areas such as biotech (pharmaceuticals, diagnostics, industrial, research and agriculture), health tech (clinical management and medical devices), info tech (hardware, software and communications) and nano tech (electrical, structural, biomedical and energy and environment). All these could then lead to medical information, which include genomics, Bioinformatics, Biochips and Biosensors.

With such convergence, man would be able to engage new knowledge for clinical decisions, produce better drugs with less side effects, have better candidates for trials, better knowledge on new drugs and find faster resolution to adverse events.

The 'drivers' towards this convergence were also discussed. Genome, protein and chemical research, regulations, 'race' to market and cost pressures are all contributors to the assemblage.

In the paper, Williams also talked about the issue from a Malaysian perspective. He said there was a high level of commitment from the Government that could drive the industry forward. Experience and expertise in the manufacturing industry as well as the country's ICT industry that is currently at a relative mature stage would augur well with the country's vision to excel in this area.

He also reminded participants of the setting up BioValley, which provides good infrastructure for the development of ICT and biotechnology and the abundant of natural resources. The stable socio-economic climate also make it exciting for investors to participate in the convergence of the two.

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