

Putting gene research in a clearer light

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Genapta Ltd, the optics for biosciences company spun out of the Physics Department of Cambridge University has won a Smart award to help turn it's break-through optics into a product to help DNA researchers.

The development award will be used to develop a range of optical modules for use in biotech instrumentation. These modules will allow industrial partners to introduce high performance fluorescence detection easily to their product range.

“Fluorescent dye labelling is well established within the Life Sciences as the principle way of marking results, but the high cost and poor performance of available readers is limiting the take up of new applications” says Andrew Goyder of genapta. “ Our technology and approach has generated significant interest, both for its performance and suitability to make robust products at a competitive price”

“In the last 6 months we have focused on the particular challenges of reading DNA microarrays” explains Dr. Julian White, the founder and CEO of genapta. “Working closely with some of the leading suppliers to this market, we have demonstrated that our technology offers significant advantages to the user. The company now wants to move quickly to turn this into a product our partners can confidently design into their instruments.”

Microarrays are the principle technique in investigating the function of genes, vital to the understanding of what each gene is for, and require the reading of over 100,000 different fluorescently marked tests on a 1 by 3 inch glass slide.

Hardly a month now goes by without the announcement of another major milestone being passed in our understanding of genetics. Behind the headline grabbing firsts from groups like those at the Sanger Centre is an every growing community of bio-tech companies and medical research groups looking to apply this knowledge to deliver tangible benefits in areas like health care and drug discovery. This in turn has driven major growth in the market for the associated instrumentation, a market forecast to grow at over 30-50% per annum over the next 5 years.

The company is currently based within the Cambridge Entrepreneurship Centre, and is backed by the University Challenge Fund. The company is currently looking for funds to carry it through to revenue.

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Further Information:

Dr. Julian White, CEO genapta Ltd

Mr Andrew Goyder, COO genapta Ltd

Tel: 01223 763712 e-mail: press@genapta.com

Notes for Editors – Microarray Technology

All the information needed to make a human being can be stored on a single DVD. Over the last decade groups around the world have been working tirelessly to extract and order this data, in the process building a unique picture of the human species. The next step is to use the data for the diagnosis and, ultimately, treatment of most forms of inherited and infectious disease.

Unlike a DVD, this rich seam of information is locked up in molecular scale building blocks that need to be coaxed into giving up their structure. Until recently this was done in a step by step fashion. For a piece of DNA with many thousand of units this was a time consuming process (the human genome is composed of about 3 billion units).

To counter this extraordinary bottleneck, the microarray concept was born which allows many thousand of parallel experiments to be carried out on one standard microscope slide. Each experiment takes place in a spot a few tens of microns in diameter. To understand the outcome of the experiment the spots are read using laser beams which excite specific luminescent markers attached to the DNA which tell the experimenter the outcome of that mini-experiment.

The microarray reader is the self contained system which takes the slide, scans the laser light across the surface of the array, collecting and collating the results of the many thousands of parallel experiments.

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[Photograph available on request]