link technologies
tools for molecular biology

Get to know us...

www.linktech.co.uk

At Link Technologies we manufacture speciality products for oligonucleotides up to kilo scale, all to the ISO 9001:2000 quality certification.

We offer as diverse a catalogue of reagents for DNA, RNA, LNA and PNA synthesis and modification as you'll find anywhere, together with the full spectrum of custom and contract manufacturing services.

Whatever your oligonucleotide business, be it research, an oligo synthesis service, or developing therapeutic or diagnostic products at the forefront of the oligonucleotide industry, we have the skills and facilities to meet your ambitions.

At Link Technologies we don't just sell reagents for oligonucleotide synthesis: we understand them better than anyone else.

A little bit of history...

Link Technologies Ltd began operations in 1989 in laboratories within Glasgow University with an initial emphasis on the provision of reagents for DNA synthesis. In 1992 the Company expanded to occupy custom-equipped laboratories in Cumbernauld near Glasgow. In 2000 we moved to newly-built premises at the Strathclyde Business Park in central Scotland, and in 2008 the upgrading of these facilities to include kilo-scale laboratories was completed.

Initially the Company operated primarily as a contract manufacturer with a number of key clients, however in 2001 we launched our first catalogue of reagents offering our manufactured products direct to customers. Since then the catalogue has grown to hundreds of products, many of them unique to us, whilst our custom and contract business goes from strength to strength.

Throughout this expansion, the Company goal has remained the same: to provide the unique link between scientists working in the life sciences and the chemical tools and technologies that they require. Such a bridge forms the basis of the multi-disciplinary approach vital to the growing biotechnology industry.

Link now boasts a strong portfolio of joint-venture development projects and research collaborations with a number of companies and research institutions worldwide.

The Company has been continually recognised as amongst the fastest growing hi-tech companies in Scotland by the Deloitte & Touche Technology Fast 50 programme, and is also the proud winner of three UK Government Department of Trade & Industry SMART (Small firms Merit Award for Research and Technology) awards.

The Company is, and always has been, independently owned and financed.

Facilities

Link Technologies operates from a single 7500 sq. ft. custom-built facility at the Strathclyde Business Park in Bellshill, central Scotland. In 2008 the upgrading of these facilities to include 2 large-scale laboratories was completed, giving the company the ability to manufacture from small, development scale right up to the kilo scale required by larger clients.

Our QC operation, associated QA quarantine areas, and our product and process development laboratories are housed in defined areas of the facility separate from routine manufacturing.

We can offer a full range of analytical methods to support our products, and also operate a range of oligonucleotide synthesis instruments (ABI, MerMade, Expedite) as part of product testing and development.

Society & the environment

At Link Technologies we are very much aware of our responsibility to the environment and consider the impact of our operations on society very seriously. We strive to minimise our waste production and maximise recycling at all times – whether in our laboratories, canteen, or paper for our marketing materials.

Of course, chemical production will always produce waste but we always ensure that the hazardous material element of what waste we do produce is properly contained and dealt with responsibly.

We also have an annual charities budget that supports charitable organisations chosen by our staff, including Cancer Research UK (**www.cancerresearchuk.org**), and a local centre for children with motor impairments, the Craighalbert Centre (**www.craighalbert.org.uk**).

Quality runs right through our business...

From the ISO 9001:2000 certified quality management system of our products to the brilliance of our people, a high quality service is at the heart of what we do.

Quality is a concept that can mean different things to different people depending on what is important to your business. For products it means high purity reagents, consistent purification profiles, and high oligo yields. It may even mean the right product at the right price. Efficient and reliable delivery, excellent technical support and personal attention can all contribute to a high quality service. We do all of these things well: in the oligonucleotides business, nobody else provides the combination of quality products and service that we offer.

Our ISO 9001:2000 certified quality management system ensures everything we do from production to delivery runs smoothly, consistently and efficiently providing the highest standard of service every time. All production batches undergo stringent QC and QA testing, with a controlled batch records system and full materials traceability throughout. Customer sales, enquiries and technical support are handled by a fully managed CRM system, and we track orders right up until delivery. A controlled document management system is used throughout.

All of this is achieved by a group of people working to the highest of standards with the customers' needs to the forefront of our thinking.

A scientific team that has extensive experience of synthetic organic chemistry, analytical methods, and the application of chemical techniques to biochemistry and molecular biology, underpins the success of Link Technologies. Our technical staff is predominantly educated to Ph.D. level in either chemistry or the life sciences.

Link Technologies is committed to the training and development of staff at all levels. In this way we create and maintain a dynamic working environment in which our staff are rewarded whilst aspiring to higher personal standards. By achieving this we have the people to provide a high quality service tailored to our customers.

We were awarded Investors In People status (www.investorsinpeople.co.uk) in 1998. We have successfully used this programme as a means of staff development ever since, being re-accredited on a three-yearly cycle, most recently in 2007.

Our products and services are only as good as our people, and our people are the best there is.

Meet our **people...**

Throughout the Company our employees offer a wide range of skills and expertise, all led by a team of individuals with an impressive track record in the industry.

Michael J. McLean, Ph.D.

CEO, McLean and McLean Ltd and Chairman, Link Technologies Ltd

Mick manages a successful consultancy business, specialising in providing business advice to companies in the biotechnology sector, with activities spanning speciality chemicals, diagnostics and novel therapeutics. Now based in Manchester, England, he previously lived for two years in Paris, France, where he was interim CEO of two cancer vaccine start-ups. He joined Link Technologies as Chairman in 2007. Before moving to Paris at the end of 2005 he was based in Boston as President of Avecia's DNA Medicines business, which he led from its inception in the mid-1990s to being the leading manufacturer of cGMP oligonucleotides.

He is a trained chemist, obtaining his Ph.D. in nucleic acids chemistry with Dick Walker at the University of Birmingham, England. He then did two post-docs in molecular biology and biophysics, first at the University of Alabama at Birmingham with Bob Wells, and then at the University of Cambridge with Mike Waring, before joining ICI Diagnostics and starting his industrial career.

Mick has over 25 years experience in the nucleic acids field, ranging from basic research to leadership of businesses in both manufacturing and drug development.

He hopes one day to own his own vineyard!

Dr Mike Gray

Managing Director

Mike also spent some time as Production Director during Link's formative years. He gained a B.Sc. (Hons) in Chemistry and a Ph.D. in Organophosphorus Chemistry, both from Leicester University, England. Prior to co-establishing Link Technologies, Mike spent five years with GD Searle & Company (working first in radio-labelled drug analogue synthesis and then process development and scale-up to pilot plant), and three years as Production Manager for the specialist biotechnology company Cruachem Ltd. He has particular expertise in ISO 9000 and GMP quality management systems.

In his spare time, Mike works with the John Muir Trust (www.jmt.org) and is passionate about conserving Scotland's wild land.

Dr John Bremner

Business Development Director

John joined us in March 1999, having been a non-executive director since the Company's inception. He has now assumed responsibility for all aspects of Link Technologies' business - both in direct sales and in partnerships. He has a B.Sc. (Hons) and Ph.D. in Organic Chemistry from the University of Glasgow, Scotland. Before joining Link to take up his present position, John was head of the Biotechnology Group at Scottish Enterprise. There he led a specialist team supporting the development of the biotechnology industry in Scotland, with particular emphasis on assisting and investing in start-up biotech development companies.

John's ambition is to travel the world's great railway journeys, starting on the Trans-Siberian Express.

Dr Douglas Picken

Research & Development Director

Douglas heads our research & development programme and directs our custom synthesis facility. He has acquired over 20 years experience in nucleotide chemistry since gaining his B.Sc. (Hons) and Ph.D. from the University of Glasgow, Scotland. Before co-establishing Link Technologies, he was a founder member and director of Cruachem Ltd. Douglas has worked in many areas of biotechnology and has particular expertise in synthetic organic chemistry and extensive knowledge of biochemistry.

He is also an Honorary Lecturer in the Division of Biochemistry & Molecular Biology, Faculty of Biomedical & Life Sciences, at the University of Glasgow.

Given the opportunity, Douglas would like to spend his time growing oranges and breeding tropical fish.

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Spoiled for choice...

If you're looking for a ready-made solution, our growing catalogue contains the widest range of reagents for DNA, RNA, LNA & PNA synthesis and modification that you'll find anywhere.

Established Link products include a full range of SynBase™ CPG solid supports for DNA & RNA synthesis, and a full range of standard and modified phosphoramidites (DNA, RNA, LNA and PNA), modifiers and labels. Our main focus is on speciality reagents, many of which you will not find elsewhere. The Company's portfolio of products is continually expanding through internal research & development, and external collaborations and licencing.

Our catalogue reagent business is supported by a number of means designed to make your experience working with our products that much easier.

We regularly produce Technical Information Sheets giving both summaries of our products and detailed information on their protocols for use. These are available on our website (www.linktech.co.uk), as is an updated Knowledge Base of articles and tips on using our products. Periodically we collate all of our current product knowledge into our popular Product Guide. This guide, given free to all our customers, acts as an indispensable aid for selecting and working with our products in the laboratory.

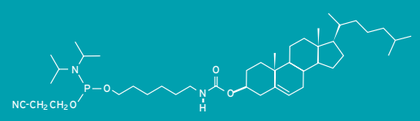
As a customer of ours you'll also benefit from next-day delivery on non-hazardous items (free in the UK and in Europe on orders over €1000), highly competitive pricing and discounting, and simple online ordering.

At Link Technologies we like to think that we're more than just a reagent supplier, but we know how to concentrate on the things that matter to you, like getting your reagents yesterday. We've not quite managed that one yet though...

Product focus

Our products have many varied applications. Here are two examples of particular interest.

5′-Cholesterol-CE Phosphoramidite



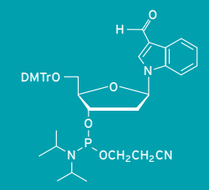
The introduction of hydrophobic residues into oligonucleotides can facilitate their penetration into cells. Cholesteryl-conjugated oligonucleotides have in particular been the subject of substantial interest in antisense and other studies due to the lipophilicity and availability of cholesterol.

Direct 5′ attachment of cholesterol is achieved via our modified phosphoramidite (above). By comparison with other similar commercially available monomers we have found our product to offer specific advantages in oligo synthesis:

- It is not susceptible to 1,2-diol elimination as observed in some other products;
- There is no trityl group to interfere with purification;
- Its coupling efficiency (final modification step) is routinely >90% giving a high yield of modified product;
- Can readily be used in automated synthesis. It is easily dissolved using dichloromethane as the diluent – there is no requirement for solvent mixtures that include THF (this solvent can cause problems in some large-scale automated instruments).

A 3′ -cholesterol modification solid support is also available.

Formylindole Modifier-CE Phosphoramidite



We provide a wide range of products to modify oligos for incorporation into microarray technologies. These products exploit a diverse range of attachment chemistries and array substrates, including amino, thiol and carboxylate products. The aldehyde function provided by our Formylindole phosphoramidite (above) has proved particularly useful for this purpose.

This can be used as an internal or 5′ modifier and multiple modified bases can be incorporated into a DNA sequence. It also has the added advantages of acting as a universal nucleoside in a DNA duplex, and the aldehyde function is available for immediate use. Post-synthetic modification of oligonucleotides bearing this unit, and still bound to the solid support, is possible.

Everyone is different...

Regardless of whether you are a customer for a few catalogue products or a large-scale user of specialised products, customisation is key to our service and what sets us apart from the competition.

Customisation, of course, is synonymous with custom synthesis and this forms a large part of what we do. Taking the lead from your own synthetic methods, literature procedures, or even designing the molecule ourselves, our highly experienced chemists know the route to success.

We have particular expertise in providing compounds such as modified nucleosides and nucleotides, non-standard phosphoramidites, and mono-, di- and tri-phosphates of modified nucleosides. Our existing clients come from diverse commercial or academic backgrounds working in areas such as gene sequencing, gene therapy, oligonucleotide chemistry, diagnostics, microarrays, and general molecular biology.

Whatever your project we will work closely with you, delivering the products you need at the quality and quantity you require.

Our personalised service extends beyond custom synthesis and right through all aspects of our business. For example, for catalogue or custom products we can bulk and/or contract manufacture to your own quality specifications, to your own tailored schedule. Even for routine items, if the product you want is in the wrong synthesiser bottle we'll put it in the one you need.

We treat our customers as individuals and passionately believe that this is the best way to gain your trust and do business. Everything we do is aimed at making our customers' work easier. But if there's something else you need from your reagent partner, tell us and we'll do that too.

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