Key Organics

Chemistry | Innovation | Quality

The Home of BIONET

Support For Your Project | Synthetic Chemistry Services

Key Organics
Chemistry Services

Key Organics Facts:

Who are we?

An international CRO based in the UK with over 35 years expertise in synthetic organic chemistry.

Our customers:

Our customers range from large Pharma and Agrochemical companies, Medium sized Biotechs and Academic groups - as well as virtual organisations and Start-ups.

Our Services:

We offer a wide-range of bespoke chemistry solutions, from the custom synthesis of a single compound to multiple, long-term FTE projects.

Flexibility:

We work closely with our customers through the entire process – especially as project milestones often change and resources must be adjusted along the way.

Why work with us?

With established fragment libraries, an extensive BIONET product portfolio and a proven track record in synthetic organic chemistry, Key Organics is able to support your discovery and development chemistry needs. Our project managers and scientists are highly experienced at managing complexity. We utilise ELN, Datawarrior and other software tools to facilitate information exchange.

Project support from mg to kg

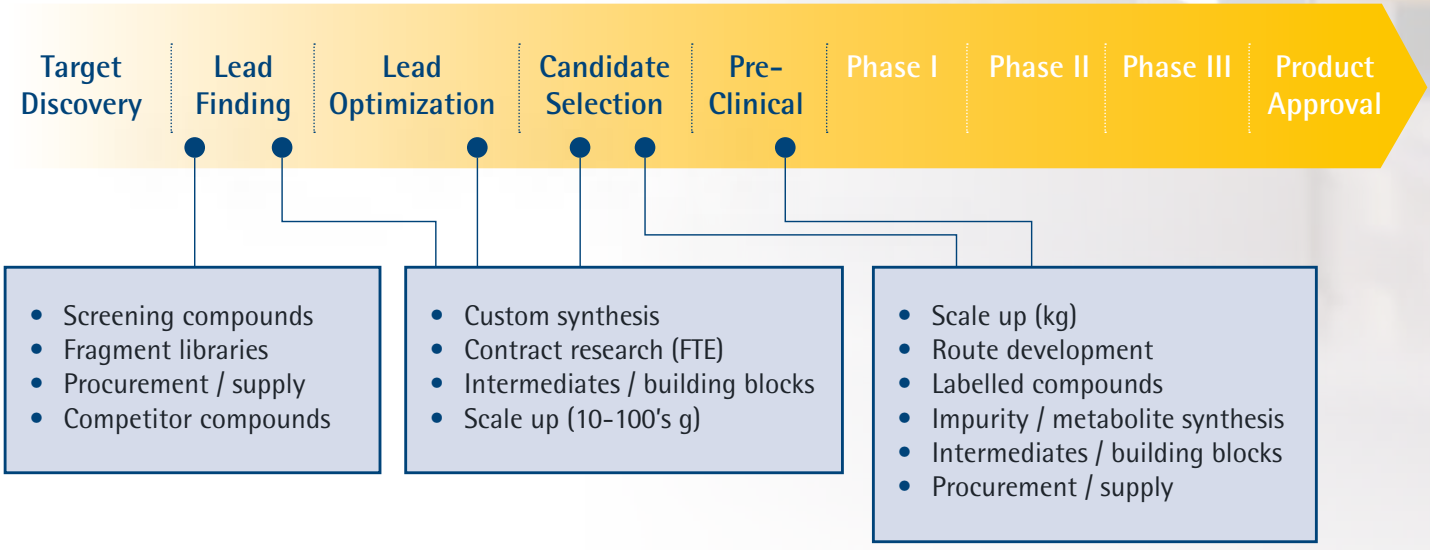
In our first 35 years, Key Organics has created value for its customers by applying our collective years of chemistry knowledge to projects from early stage discovery through to pre-clinical.

Key Organics occupies a unique position by being able to offer fragment and screening libraries for very early stage projects. We can follow this up by performing SAR by catalogue and custom synthesis of further analogues. Additionally, we offer FTE support for accelerating project progress - process development and scale up when the project approaches candidate selection phase. And finally, key Organics offers a deep well of experience in chemical procurement, which adds maximum value to all projects.

Key Organics has experience in the following phases of drug discovery and development:

- SAR by catalogue, fragment libraries, screening compounds
- Isotope-labelled synthesis
- Route scouting
- Early Process Research & Development
- Delivery of pre-clinical batches
- Hit to Lead Lead Optimisation IP exemplification & Quantification

DRUG DISCOVERY PROCESS MAP



Hit-to-Lead

We have undertaken numerous projects involving the design and synthesis of novel molecules, either singletons or using our parallel chemistry techniques to prepare focused arrays (typically 10 to 50 compounds at 1 - 50mg scale) with chemical purities of ≥95% (by LC-MS and NMR) for in vitro screening and ADME profiling.

Lead Optimisation

We have extensive experience in collaborative R&D where we move customer projects forward through the milestones of Lead Optimisation. We add value through the analysis of data and provide rational suggestions on future targets using computational tools such as Data Warrior. This is further supported by our expertise in synthesis which can drive target selection. Our approach is focused on enhancing potency, improving physico-chemical properties and metabolic profile with the ability to build a strong IP position. Our project management structure is highly flexible, and we can respond rapidly to project changes. This approach coupled with a high level of productivity allows for a robust and efficient design/make/test cycle to be established.

In later Lead Optimisation, our team has great experience in the synthesis and investigation of more challenging chemistry as the SAR becomes understood more clearly and the need for more "bespoke" compounds becomes clearer as well as establishing early route improvements for pre-candidate compound batches. We also have in depth experience of the synthesis of project support compounds such as deuterium and ^{13}C labels for PK/PD studies and synthesis of competitor compounds to assist in profiling and benchmarking.

Process Development and scale up

Key Organics has supported many drug discovery programs, from hit validation to preclinical studies. We have particular expertise in the scale-up of synthetic routes to prepare multi-gram quantities of a lead compound for further studies. As many of our customers work to tight deadlines, we seek to optimise the efficiency of a scale-up route by reducing the number of steps and finding alternatives to chromatographic purification. Our chemists work closely with our in-house analytical team to ensure that final compounds meet or exceed the purity specification required by the customer, we can also provide SDS, BSE/TSE, GMO statements as needed by the client.

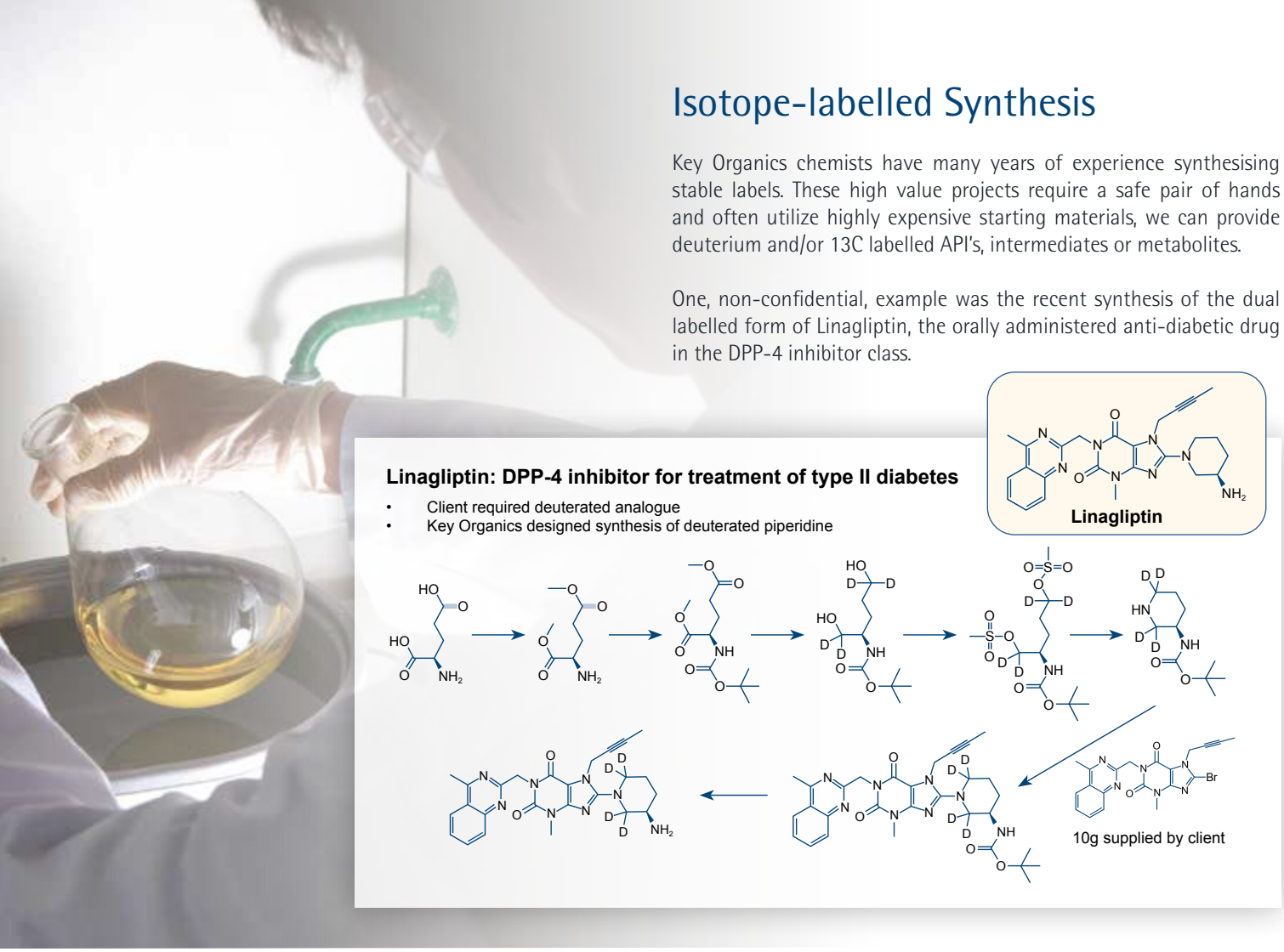
We have in house experience of synthesizing various salts of the desired compound to aid salt screening and polymorphism studies.

Synthetic Chemistry

Our team of highly experienced chemists have extensive synthetic organic chemistry capabilities and expertise that cover the following areas:

- Multi-step complex custom synthesis
- Asymmetric synthesis
- Focused small library synthesis
- Vast hydrogenation/carbonylation expertise
- Heterocyclic chemistry
- Synthesis of literature standards
- Stable labelled compounds
- Pro-drug and linker synthesis
- Manufacturing impurities and metabolites
- Early process development
- Scale up lab to 25 litres

We have worked on thousands of demanding projects for the world's leading Life Science companies. From hit identification to pre-clinical development – we have successfully delivered value through our innovative approach, creativity and product supply.



Isotope-labelled Synthesis

Key Organics chemists have many years of experience synthesising stable labels. These high value projects require a safe pair of hands and often utilize highly expensive starting materials, we can provide deuterium and/or 13C labelled API's, intermediates or metabolites.

One, non-confidential, example was the recent synthesis of the dual labelled form of Linagliptin, the orally administered anti-diabetic drug in the DPP-4 inhibitor class.

Linagliptin: DPP-4 inhibitor for treatment of type II diabetes

- Client required deuterated analogue
- Key Organics designed synthesis of deuterated piperidine

Grant Funding Partnerships with Industry and Academia

Key Organics has a long history of working with academia and being part of larger collaborative groups. We can provide grant writing support in terms of the chemistry element of an application for UK, EU and worldwide research funding. Once projects have been funded, we can assist the progress by providing chemistry resource as needed in the various project stages.

Metabolite / Impurity identification and synthesis

We have a wealth of experience in identifying and synthesising impurities and metabolites. Whether it's profiling an active compound from a Medicinal Chemistry project or part of a 5 batch analysis in the Agrochemical area. We have also provided synthesis support for many Agrochemical companies putting together registration packages.

Compound supply, formatting

Key Organics operates a compound procurement service sourcing from our own growing database and also from other quality vendors. This can involve filtering of compounds (by log P, MWt, substructure, functional group, price) reformatting of compounds into the customer's preferred vials, custom weighing (mmol or mg) and/or even the disposal of any excess stocks.

For larger compound supply needs, we have a dedicated compound handling unit that can utilize all the different tube and plate formats, either as solids or DMSO solutions. These can be QC checked by LC/MS before shipping to ensure the highest quality readout. Plate maps can be provided and are double-checked before shipping using an automated plate reader. Chilled shipping using temperature monitors can also be provided.

Partners

We work closely and confidentially with various partners who offer complimentary expertise, these include Reach Separations (chiral chromatography) OEA Labs (Elemental analysis, metal analysis) and DNA labs (5 Batch analysis). We also have relationships that can move your project on to large scale, providing the necessary tech transfer.

Compound storage and stability testing

Many of our clients have made use of our storage and testing facilities. Compounds can be custom weighed out on request, in preferred vials and shipped to the client's desired location. We can also perform regular QC checks (LC/MS, NMR) to provide valuable stability data to monitor compound stability during storage.

How We Make a Difference

Transparent, Efficient & Honest Communication

For all FTE projects, we utilise a Cloud-based e-notebook system that is both reliable and secure. This software and data transparency complements our communications approach that includes weekly or daily project-update meetings - as well as written reports that might be required by the client.

BIONET Chemistry Products

- Intermediates
- Fragment Libraries
- Biochemicals
- Screening Compounds
- >200,000 Compounds

Access to our Proprietary BIONET Collection

Our ever-growing BIONET collection now contains over 200,000 compounds that provide a valuable resource for both FTE and custom synthesis projects. Many of our BIONET products are available in larger quantities and come with assured quality. Most are available in >95% purity with full Certificate of Analysis that includes LC-MS and 400 MHz NMR data.

We add new BIONET products regularly through our own in-house R&D as well as external alliances and we offer an unrivalled 100% guarantee for all of our BIONET products.

Key Endorsements

Our FTE-based collaborations involving medicinal and developmental chemistry are regularly renewed and extended, demonstrating customer confidence in our capabilities and ability to deliver results to deadlines.

"Over the past 6 years Key Organics has successfully delivered both FFS contracts and FTE contracts for Heptares Therapeutics. I have been particularly impressed with the intellectual input provided by Key Organics' scientists, their consistently high level of productivity and their creativity for providing innovative solutions to difficult problems. We are delighted with the success of our collaborations with Key Organics and are pleased to acknowledge the important contribution they have made to Heptares Therapeutics' drug discovery efforts."

Dr Giles A. Brown,
Associate Director Chemistry,
Heptares Therapeutics

HEPTARES therapeutics

"Having recently moved to the US, we were seeking a fast approach to the scale-up of a published complex multiple-step synthesis to bring momentum to our research program. We approached Key Organics to establish the feasibility of such endeavor. Their reply was quick, professional, and offered multiple options in terms of chemical approaches and mechanisms of implementations. The expertise of the synthetic chemist who was in charge of this project was perfectly suited for the task and inspired confidence from the onset. Working with them has been extremely refreshing as they pursued avidly their efforts on multiple fronts and kept us appraised regularly of their progress. Critically, they delivered high quality materials in a timely manner in the most courteous and professional manner. In my opinion, Key Organics sets the standards for the Chemistry Services Industry!"

Marie Migaud, PhD.
Abraham A. Mitchell Research Scholar
Professor of Oncologic Sciences
Mitchell Cancer Institute,
University of South Alabama

USA MITCHELL CANCER INSTITUTE

"I have been extremely impressed by Key Organics' professionalism and candour during separate multi-gram re-synthesis and route development projects carried out recently. In particular, Key communicated clearly and rapidly with me when any obstacles to project delivery were encountered. Their swift and frank communication gave us time to jointly devise solutions which ensured that objectives were achieved while working to tight deadlines. Key's ability to formulate innovative routes to important organic compounds is also first rate. In this regard, they dramatically improved the availability of one of our crucial intermediates by developing some neat chemistry that relied upon unconventional thinking."

Dr Matthew Fyfe,
Head of Chemistry,
TopiVert

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Images of Cornwall, United Kingdom, where Key Organics has it's main facility, taken by Key Chemists.

www.keyorganics.net