Expression of Interest

GSS23564 – UK Research and Innovation (UKRI): Oligonucleotide Synthesis and DNA Sequencing Services Framework

The Requirement

UK Research and Innovation (UKRI) wishes to establish a Contract for the provision of Oligonucleotide Synthesis and DNA Sequencing Services.

UK SBS is managing this procurement process on behalf of UKRI in accordance with the Public Contracts Regulations 2015 (as may be amended from time to time) (the "Regulations").

It is anticipated that the award of this contract will be based on four Lots:

- **Lot 1** – DNA Sequencing Services
- **Lot 2** – Custom Gene Synthesis
- **Lot 3** – Advanced DNA Service
- **Lot 4** – Custom Oligonucleotides

Lotting Structure

Framework: Oligonucleotide and DNA Synthesis and DNA Sequencing	
Lot 1 – DNA Sequencing Services	
• User selectable DNA sequencing services	
Lot 2 – Custom Gene Synthesis	
Sub-lot 2.1	• Custom gene fragment synthesis (less than 2000 base pairs)
Sub-lot 2.2	• Custom gene synthesis (2001-3000 base pairs)
Sub-lot 2.3	• Custom gene synthesis (3001-5000 base pairs)
Sub-lot 2.4	• Custom gene synthesis (5001+ base pairs)
Lot 3 – Advanced DNA Services	
Sub-lot 3.1	• Gene Specific DNA Methylation
Sub-lot 3.2	• Global DNA Methylation
Sub-lot 3.3	• Allele quantification
Lot 4 – Custom Oligonucleotides	
Sub-lot 4.1	• Synthesis of DNA oligonucleotides

Sub-lot 4.2	• Synthesis of custom RNA oligonucleotides • Supply of siRNA Libraries • Production of custom siRNA Libraries

When available, Bidders may bid for (and be awarded into) one or multiple lots on the Framework; however, the successful Suppliers appointed to each lot will be exclusive to this lot and cannot be asked by UKRI to provide Supplies or Services from another lot.

Where UKRI will be buying large volumes of Supplies defined within these Lots, sub-lots, they will be encouraged to run a Further Competition to leverage greater discounts even though it will be possible to undertake a Direct Award.

Objectives

The objective of this procurement will be to:

a) Produce a Framework Agreement that UKRI can easily use and provide a compliant route to the market.

b) Capture a large percentage of the Oligonucleotide Synthesis and DNA Sequencing requirements from large value items to low value, high volume items.

c) Develop strong relationships with UKRI and Suppliers to ensure that requirements are captured and value for money is achieved.

d) To capture quality management information that will support informed decision making in future procurements.

e) To ensure sustainability aspects are considered and integrated into the Framework Agreement.

f) To continuously improve and apply best practice procurement that meets the end users' requirements.

Lot Specific Requirements: Lot 1 – DNA Sequencing Services

UKRI wish to purchase a range of user selectable DNA Sequencing services (Sanger/ ~800-1000 base pair read) from a range of samples and formats including tubes, microtiter plates, preparation & extractions services including from colonies and tissue, with the capability of sequencing from High GC and AT samples.

A range of user selectable DNA sequencing services to be provided to include but not limited to the following requirements:

- Suppliers must provide sample pick-up at customer site including collection packaging and collection boxes as required.
- Suppliers must provide Phred 20 quality for as many nucleotides per sample as possible (min 800 bp or above for 5' 3' reads).

- Suppliers must provide purification and sequencing of plasmids and PCR products in both 1.5 ml tubes and microtiter plates (must offer 96 well as a minimum).
- Suppliers must provide purification and sequencing of plasmids supplied as Escherichia coli clones in both 1.5 ml tubes and microtiter plates (must offer 96 well as a minimum).
- Suppliers should provide sequencing services using both primers synthesized by supplier and those with user provided primers.
- Suppliers should provide Primer walking services in both double and single stranded DNA.
- Suppliers must guarantee Phred 20 quality for at least 800 nucleotides per sample. (PCR products, plasmids and E. coli clones). Suppliers must offer free repeats if this quality level is not achieved.
- Suppliers should offer suitable solutions to templates failing to give readable results.
- Suppliers should provide results in file format within three business days after sample shipping unless overnight service used.
- Suppliers should provide plasmid preps of sequenced E. coli clones back to the end users upon request.
- The end user must be able to specify the file naming convention used for results files if required.

The Supplier must provide any packaging in conformance with the Packaging Directive as detailed:

https://www.gov.uk/topic/environmental-management/waste

Lot Specific Requirements: Lot 2 – Custom Gene Synthesis

UKRI wish to purchase a user selectable (via supplier engagement) range of Custom Gene Synthesis.

This is to be divided into sub lots:

- **Sub lot 2.1** – Custom Gene fragment synthesis (sub 2000bp)
- **Sub lot 2.2** – Custom Gene fragment synthesis (sub 3000bp)
- **Sub lot 2.3** – Custom Gene synthesis (3001-5000bp)
- **Sub lot 2.4** – Custom Gene synthesis (5001+ bp)

For the above sub-lots, a range of user selectable additional services should be available (but are not mandatory). This could include but is not limited to the following:

- Genes produced with additional synthetic Nucleotides (AGTC + XY)
- Custom vector production
- Codon optimized sequences – all species
- Site-directed mutagenesis
- Bacterial, yeast, Baculovirus and mammalian gene expression services

- Complex sequence synthesis - GC rich, AT rich, complex repeats & hairpin structures and toxic sequences

Suppliers must be able to provide the following:

- Expected turn-around time (based on max bp for sub-lot) per order.
- Weekly update on all synthesis projects currently underway. This report should contain updates on production times as well as detail any issues.
- Sequencing report should be produced for each synthesis and made available on request.

The Supplier must provide any packaging in conformance with the Packaging Directive as detailed:

https://www.gov.uk/topic/environmental-management/waste

Lot Specific Requirements: Lot 3 – Advanced DNA Services

UKRI wish to purchase a user selectable (via supplier engagement) range of additional DNA services. This is to be divided into sub lots:

- **Sub-lot 3.1 – Gene Specific DNA Methylation**
  A range of Gene Specific DNA Methylation services are required to include, but not limited to:
  - Perform Bisulfite modification.
  - Perform PCR reactions.
  - Perform Pyrosequencing analysis.

  The lead time and project update timescale must be agreed between the supplier and requisitioner at the point of ordering.

- **Sub-lot 3.2 – Global DNA Methylation**
  A range of global DNA methylation services are required to include, but not limited to:
  - LC MS DNA-methylation analysis.
  - ELISA that enables the direct quantitation of genomic DNA methylation.
  - PCR based methods e.g.; Alu and LINE1.
  - Methylation sensitive restriction assays e.g.; luminometric methylation assay (LUMA).

- **Sub-lot 3.3 – Allele quantification**
  A range of Allele quantification services are required to include, but not limited to:
  - SNP detection and quantification.
  - Assay development for SNP detection and quantification from pooled DNA with a defined 100bp target region in murine DNA.
  - Validation of the above assay.

- Sample testing if required for the above assay.

Lot Specific Requirements: Lot 4 – Custom Oligonucleotides

UKRI wish to purchase a range of custom Oligonucleotide synthesis services including Custom DNA oligo's in tubes, plates and RNA/siRNA, to be user selectable via supplier engagement with a range of purification and modification options.

This is to be divided into sub lots:

- **Sub lot 4.1** – synthesis of DNA oligonucleotides.
- **Sub lot 4.2** – synthesis of Custom RNA oligo's (both Single and double stranded RNA oligoes, siRNA) the supply of siRNA Libraries and the production of custom SiRNA Libraries

For both sub lots:

The production of custom user defined oligonucleotides in the following ranges are required (Inc. plates), price to be specified per base pair per concentration.

- 0.01UM bases standard
- 0.05UM bases standard
- 0.2UM bases standard
- 1.0UM bases standard
- 0.025 UM / 3OD
- Microtiter plates

Unless otherwise requested, custom oligonucleotides should arrive deprotected and desalted in the following user selectable formats (depending on application):

- lyophilised in 2 ml micro-centrifuge tubes.
- Resuspended to desired concentration and/or volume in 2 ml micro-centrifuge tubes.
- lyophilised in 96- or 384-well plates.
- Resupended to desired concentration and/or volume in 96- or 384-well plates.

The above should be offered with a range of user selectable purification steps (to include PAGE and HPLC as a minimum)

A range of user selectable post modifications should be offered to include:

- 5' and 3' phosphorolation.
- 5' and 3' Biotin and at any other position.
- Phosphorothioate at any position.
- Amino linkers and modifiers.
- 4-thio U and FPMP monomers.

- Thiol modifiers 3' & 5' and 2' O-thiol tethers.

Other modifications should also be offered like 7-deaza, DNP, Ara C, dNebularine, Inosine, dP & dK, 2' O-Me, Methyl phosphoramidites, phosphorothioate, 5-Me C, carbon spacers, P & K amididtes, FAM and other fluorescent amidites, Halogenated bases, Milder deprotecting groups like Acetyl-C, Amino purines, Dabcyl, Nitroindole, Nitropyrrole, Propyn C & U,2' Fluoro, 2' Oxy Amino, B-ala U, 2' Amino Photo labile carboxylate CPG are desirable along with various support structure modifications like polystyrene, PEG, TentaGel, UpOET.

Quality

Process trityl monitoring in real time during production, ensuring the quality of the process, not just the end product, OD readings checked and monitored for synthesis errors along with Post-synthesis QC, mass spectrometry capillary electrophoresis to ensure the quality of each synthesis - Re-synthesis on any of the above QC failures should be carried out before sending to end user.

A comprehensive Certificate of Analysis is supplied with every custom oligonucleotide.

The Supplier must provide any packaging in conformance with the Packaging Directive as detailed:
https://www.gov.uk/topic/environmental-management/waste

Budget:

The Estimated value for this Framework is £8,000,000.00 Excluding VAT

Route to Market

For the avoidance of doubt, this notice is **not** a Call for Competition. It is intended that the Route to Market will be via Open Market (Above Threshold)

This Expression of Interest is being issued to understand interest with regards to the current view of the requirements detailed above.

It is to be noted that there is no commitment at this stage

If you believe this will be of interest to your organisation, please register your interest by sending an email to coreservices@uksbs.co.uk ensuring that the subject heading includes the following: **GSS23564 – Expression of Interest** no later than **12:00hrs GMT on Thursday 24th August 2023.**

Please advise if there is any saliant information you believe that needs to be considered further before any formal competition is launched.

Any information supplied shall not place any supplier at an advantage in a potential procurement process.

There is no commitment at this stage that the above-mentioned opportunity will proceed in its current format however at this stage, and subject to the relevant approvals this is the intention.