**University of Leeds**

**BioScreening Technology Group (BSTG)**

**Project Evaluation Form for Affimer/Adhiron Binding Proteins**

*The BSTG is a not-for-profit service that must cover its costs to ensure continuity. This means we must engage collaboratively in future grant funding applications, research publications and potential IP benefits. The Terms and Conditions are attached and the form should be signed by the Principal Investigator.*

*This form can be used to indicate whether you are interested in a fee-for-service screen or an academic collaboration screening approach, which is our normal mode of operation.*

*To discuss the most appropriate format of project please contact one of the following:*

*Dr Christian Tiede, BSTG Group Leader +44 (0) 113 343 1402*

*Dr Darren Tomlinson, BSTG Deputy Director; +44 (0) 113 343 7099*

*Please complete up to and including section 1.4 of this form electronically and submit to* [*c.tiede@leeds.ac.uk*](mailto:Bioscreening@leeds.ac.uk)

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| **Project title:** |
|  |
| **Name:** |
|  |
| **Position:** |
|  |
| **Institution:** |
|  |
| **Address:** |
|  |
| **e-mail:** |
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| **Telephone:** |
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| **Date for submitted:** |
|  |
| **Proposed start date:** |

**1.1 Type of service required (please tick the appropriate box)**

**Fee-for-service screen There is no need to complete the remainder of this form In the case of fee-for-service we have a strategic alliance with Avacta Ltd. We will pass on your details and they will contact you to discuss your requirements.**

**Collaborative project Please complete the remainder of this form and**

**ask for assistance if required.**

**1.1. Overview and Objectives**

*Please provide a brief outline describing the background to the project, how it will impact on future work and state the objectives to be addressed by the artificial binding protein*

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**1.2. Proposed workflow**

*Please outline the proposed scheme of work. What materials will be supplied including the method of purification or commercial source, and any materials against which counter-screening should be performed. You are responsible for providing the high quality samples to be screened.*

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*The material supplied by BSTG will depend upon your approach to characterisation and analysis and will also impact upon the cost of the project.* ***If you are unsure then this can be discussed during the development of the agreed project plan.***

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| --- | --- |
|  | *Small scale (JM83; 50-200 g)* |
|  | *Medium scale (Sub-cloning and 50 mL expression; 1-5 mg)* |
|  | *Do you require a C-terminal cysteine?* |
|  | *Do you require a C-terminally labelled Affimer (eg. Biotin, fluorophores etc)?* |
|  | *Phagemid DNA to do sub-cloning and protein preparation* |

**1.3. Risks**

*Please outline the major risks associated with the project i.e. issues with target molecule such as protein production or stability etc*

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**1.4. Outline of future collaboration mechanism**

*The BSTG is a not-for-profit service that must cover its costs to ensure continuity. This means we must engage collaboratively in future grant funding applications, research publications and potential IP benefits. On successful completion of the screens please outline the*

1. *Future publication strategy and confirm that agreed BSTG staff will be included as co-authors*
2. *future funding strategies, timelines, the role envisaged for BSTG involvement in future work and the potential for recovering costs incurred by the BSTG during initial subsidised screens and*
3. *potential IP arrangements.*

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**Following discussion of the project requirements**

**1.5. Project plan agreed**

*Outline of agreed actions.*

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**1.6. Funding**

*Level of funding agreed for specified aspects of the project.*

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*Name of PI (CAPITALS)…………………………………………………………………*

*Signed ……………………………………………… Date ……………………*

**BHRC BioScreening Technology Group (BSTG)**

**Affimer (Adhiron) Binding Protein Screening Terms and Conditions Agreement**

The BioScreening Technology Group was set up to support translational research across academic and clinical themes within the University of Leeds and The Leeds Teaching Hospitals NHS Trust (LTHT). In addition it will undertake both academic and commercial projects outside Leeds. The BSTG provides a collaborative and interactive service to screen our proprietary Affimer protein libraries and to conduct initial characterisation of identified hits, including DNA sequence analysis and ELISA confirmation.

We can provide additional expertise, advice, support and scientific input to projects and future grant applications. As a not for profit service which must be self-sustaining it is important that we are able to engage in collaborative projects that lead to involvement in future grant funded work, and research outputs. See point 9 below.

The BSTG facility is located within the School of Molecular and Cellular Biology, Level 7 Astbury Building, Faculty of Biological Sciences.

**Library:**

Proprietary Affimer (Adhiron) library (Patent application number 1302597.9) based on a Leeds designed consensus protein scaffold. Affimers are

* small (ca. 92 amino acids)
* highly stable and robust scaffold (melting temperature typically ≥ 80 oC)
* cysteine-free.

The library;

* comprises two variable regions introduced into the scaffold
* has a complexity of 1.3 x 1010 in a phage display format
* has a non-biased distribution of amino acids in the variable regions
* is of high quality with over 88% full length clones
* can be screened in a simple and robust manner

Isolated binding proteins;

* display high binding affinities (KD in nM range)
* can be easily re-engineered as fusions, or modified via introduced cysteine(s) for derivatization including labelling, immobilization, biotinylation etc
* can be produced in high yield reproducibly in *E. coli*

**Applications of Affimers include, but are not restricted to;**

* scientific tools in immune-application such as western blot, precipitations, ELISA etc.
* co-crystallization chaperones
* *in situ* detection of target proteins including conjugation to quantum dots or fusion to reporter proteins and enzymes
* *in vivo* interaction with targets including inhibition/activation of proteins and protein-protein interactions
* biosensors and diagnostic devices
* identification of druggable sites on proteins to guide structure-based and in silico drug design
* therapeutic applications including conjugation to other Affimers and host proteins to increase retention time
* imaging reagents
* targeted drug delivery
* specific cell enrichment
* bioactive filtration devices including non-woven fabrics
* synthetic biology

**BSTG Terms and Conditions (Artificial Binding protein Section)**

1. Potential projects and screens must be discussed with Christian Tiede ([c.tiede@leeds.ac.uk](mailto:c.tiede@leeds.ac.uk)) and/or Darren Tomlinson ([d.c.tomlinson@leeds.ac.uk](mailto:d.c.tomlinson@leeds.ac.uk)) to ensure that a suitable approach can be developed for your project. **It is essential that discussions take place before submission of any grant application that includes any screens or other work to be undertaken by BSTG.**
2. We offer two types of service;

**Collaborative screens.**

These may be funded either by external grant income or direct funding from an account provided by the PI.

**Commercial Fee-for-Service screen.** The University of Leeds has licensed Adhiron Technology to Avacta Life Science Limited, under the Affimer brand name. For those who wish to undertake commercial screens. This provides a route for the production of tailored quantities of commercial quality protein for research purposes. By ticking the appropriate box on the Proforma we will pass your details to Avacta and they will contact you to discuss your requirements.

1. The expectation is that you will provide the appropriate target molecule for screening. For molecules you have purified it is essential to provide appropriate confirmatory evidence of the identity of the target molecule. The quality of the target is of paramount importance for successful screens, and this includes the quality of commercially sourced targets.
2. Following the library screen, the BSTG will provide you with an agreed number of Affimer proteins to test in your specific assay system.
3. For funded screens the reagents generated will be available for use by the named PI exclusively for any research purposes.
4. For any commercialisation, the intellectual property associated with Affimer reagents is owned by the University of Leeds and licensed to Avacta Life Sciences Ltd and so is subject to initial notification of The University of Leeds Commercialisation Services (contact Dr Chris Brown, IP & Commercialisation Manager [C.J.Brown@leeds.ac.uk](mailto:C.J.Brown@leeds.ac.uk) ; Tel +44 (0)113 343 0906.
5. The BSTG was conceived, established and is managed on a not for profit basis by UoL academics. In order to ensure continuance after the initial funding period the Technology Group must be able to demonstrate the added benefits that it has brought to Leeds researchers and to the profile of grant income and research outputs. In addition the academics and staff involved with the BSTG must demonstrate their contributions to these goals through their own income generation and research outputs. It is therefore an expectation that publications arising from the screens will include authorship for the members of the BSTG who have contributed intellectually or through appropriate research services to the substance of the research paper. The BSTG will make contributions to the preparation of the manuscripts. For grants arising directly from the screens and reagents it is expected that appropriate funding requests for further studies will be included and potentially that a BSTG member may be included as a named Co-I on the application.
6. The BSTG reserve the right to decline/terminate a project at any time when these terms are not followed.