

Guide to submitting your small molecule or therapeutic antibody target

Background on MRC Technology



Understanding the application review process



What MRC Technology looks for in a therapeutic antibody project



What MRC Technology looks for in a small molecule drug discovery project



MRC Technology has an outstanding reputation as a commercial partner



MEDICAL RESEARCH COUNCIL TECHNOLOGY

MRC Technology

Introduction

MRC Technology was established in 2000 to protect and create commercial opportunities arising from the UK's Medical Research Council scientific discoveries. Our mission is to commercialise science and develop improved healthcare products.

Today, MRCT is focused on licensing technologies, drug discovery and developing medical devices.

To date MRCT have generated over £500 million which has been used to fund further MRC research.

Links with industry

Our IP and expertise has been acquired by all of the world's leading pharmaceutical companies and we have participated in the creation of 18 start-ups including the UK's largest and most successful biotech companies, CAT, UCB-Celltech and more recently BiCycle Therapeutics.

We have helped industry develop many healthcare treatments including Avastin®, Actemra® and Tysabri®, with many more in the pipeline.

Expertise

MRCT's Centre for Therapeutics Discovery (CTD) is focused on drug discovery based around small molecule and therapeutic antibody development.

Our teams of scientists have a wealth of assay development, medicinal chemistry and pharmaceutical company drug discovery expertise.

The CTD has state-of-the-art facilities and high quality, diverse chemical libraries (detailed over).

We are currently collaborating with academic organisations from all over the world.

Collaborations

Collaborating with academic researchers is the cornerstone of our operations.

Researchers will be able to work closely with our scientific experts and will be part of the team as projects progress.

This is a truly collaborative model and any research tools, value or income generated will be accessible by researchers or shared with your organisation.

Contact

If you have a target you think may be suitable for inclusion in our programme please do not hesitate to contact our dedicated team.

They will also be able to arrange 1-1's with a member of our scientific team to discuss your application.

Email
targets@tech.mrc.ac.uk

Telephone
020 7391 2826

Application Forms
callfortargets.org

Further information on MRCT and our core services is available on our website:
mrctechnology.org

Successful applications will work with expert teams, and state-of-the-art resources

Proposals are reviewed in 3 cycles per year

Gain access to

Large, diverse chemical libraries

- Our Centre for Therapeutics Discovery (CTD) in-house small molecule library numbers 100,000+ highly diverse compounds, with potential access to 120,000+ more through our collaborations with industry
- 7,000+ kinase and 4,000+ ion channel targeted compounds, as well as 1,000+ fragment, 4,000+ natural product and protein-protein interaction collection
- Access to AstraZeneca's compound libraries

High throughput screening

- Robust assay development on in-house robotics

Antibody production and humanisation

- Long history of successfully engineering antibodies for therapeutic use

in silico screening and modelling

- Computational chemistry where structural information is available, and to interpret screening results

Hit validation & characterisation

- To generate IC50 data and assess structural-activity relationships (SAR)

Pharmacology and ADME/DMPK studies

- To produce pharma-quality data packages for licensing the projects on to industry

Contract research organisation network

- For development of *in vivo* proof-of-principle

The process

↓ Application received

Target review

- ↓ Triage panel prioritise (non-confidential) target proposals (approx' 6 times a year) based on suitability criteria
- ↓ Successful applicants invited to submit (confidential) project proposal for filter
Timescale: Approx' 2 months

Filter & review

- ↓ MRCT collaborates with PI and host technology transfer office to produce detailed project proposal
- ↓ Filter panel comprising external reviewers and MRC Technology evaluate project proposal
- ↓ Successful project proposals moved forward to feasibility
Timescale: Approx' 1 month

Feasibility & review

- ↓ Project team assigned and prepare detailed project plan including collaboration agreements, revenue share and exploratory experimental work
- ↓ Feasibility criteria are examined and successful project plans moved to project launch
Timescale: Between 4-6 months

Project launch →

What MRCT looks for in a therapeutic antibody project

Key criteria

Defined, accessible target

→ MRCT develops therapeutic antibodies against defined molecular targets. The target must be accessible to antibodies that bind in the extracellular environment (e.g. membrane and secreted proteins).

→ In an ideal scenario the precise antigenic region of relevance is defined.

Novelty

→ MRCT develops therapeutics against novel targets and does not work on targets that have already been fully explored by pharma. We are however interested in novel approaches to tackle known therapeutic targets if there is a clear benefit to this novel approach.

Unmet medical need

→ MRCT will consider any therapeutic indication, providing there is unmet medical need.

Application forms are available online - if you need further assistance please contact MRCT

Tel: 020 7391 2826

Email: targets@tech.mrc.ac.uk

callfortargets.org

Other important factors

Strong biological rationale

We need to understand how modulating your antibody target will have the desired cellular and physiological effect and how this will impact on disease. We like to know the physiological function of your target, where it is expressed and what undesirable side effects might result from altering its function.

Defined mechanism of action

It is important to understand the mechanism by which the antibody mediates its therapeutic effect to allow optimisation of the antibody for this purpose. Antibodies can be engineered to enhance recruitment of the immune system (an ADCC approach) but this may not be appropriate for an antibody that mediates its effect by blocking or enhancing the activity of the target.

Disease linkage

Proteins that are de-regulated or mutated in disease are often good drug targets. Data showing that expression or mutation of your target is correlated with, or ideally causative of, disease is beneficial.

Target validation

We like to see data that show that modulation of your target achieves the desired therapeutic effect. Ideally, we prefer to see data showing that an antibody against your target is effective in cell-based and/or animal models. Supportive evidence generated using transgenics/knockouts, siRNA, peptides, or tool compounds is also valuable.

Access to reagents, assays and models

We need to be able to source easily the reagents required to prosecute a therapeutic antibody programme. Good antibody starting points express well from stable hybridomas, and have sub nM affinity for their target. If it is necessary to generate a monoclonal, we will need the relevant protein or expressing cells to be used in an immunisation strategy. In addition, we need medium throughput cellular functional assays to optimise efficacy of potential therapeutics, and physiologically relevant disease models to demonstrate proof-of-efficacy.

Freedom to operate

MRCT will carry out searches of the relevant intellectual property around the target of interest (including reagents and assays) and antibodies active against the target. It is important that MRCT and our collaborators have the necessary freedom-to-operate before commencing a drug discovery project.

Potential to generate protectable intellectual property

It is important that there is existing IP protection or the potential to generate patentable IP around the relevant target antigen and/or the antibody developed under the program.

Partnerability

MRCT has the capability to progress therapeutic antibody projects to the point of demonstrating proof-of-efficacy for a humanised antibody in a disease model. We then seek to identify a partner to progress this further.

What MRCT looks for in a small molecule drug discovery project

Key criteria

Defined molecular target

→ MRCT performs drug discovery against defined molecular targets. Our definition of a drug target is an isolated protein or a protein-protein interaction that has a known biological activity that can be specifically assayed.

→ We prefer to carry out high-throughput screens using recombinant proteins in biochemical assays.

Novelty

→ MRCT carries out drug discovery against novel targets. We prefer not to work on targets already screened by industry, but are interested in novel approaches to tackle known therapeutic targets if there are clear benefits to this novel approach.

Unmet medical need

→ MRCT will consider any therapeutic indication, providing there is unmet medical need.

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Other important factors

Strong biological rationale

We need to understand how modulating your molecular target will have the desired cellular and physiological effect, and how this will impact on disease. We like to know the physiological function of your target, where it is expressed and what undesirable side effects might result from altering its function.

Disease linkage

Proteins that are de-regulated or mutated in disease are often good drug targets. Evidence that mutation of your target is correlated with, or causative of, disease is beneficial.

Target validation

We like to see data that show that modulation of your target achieves the desired therapeutic effect. For example, it will be important to show that inhibition or activation of your target (e.g. by transgenic knockout/overexpression, siRNA, peptides, or tool compounds) results in the relevant phenotype, ideally in an animal model but also in cell based assays.

A tractable drug target

A tractable target is considered to be a protein which is amenable to modification by a small molecule. The most tractable target types have precedents for success in drug discovery – for example kinases, GPCRs and ion channels. It is usually easier to design inhibitors of protein function rather than activators. Therefore, an enzyme may be considered tractable for design of inhibitors, but not activators. Historically, it has been difficult to design drugs that inhibit protein-protein interactions - these are often described as intractable targets. In the right circumstances, MRCT is willing to work on these more challenging target types and will consider protein-protein interaction proposals.

Access to reagents, assays and models

We need to be able easily to source the reagents required to prosecute a drug discovery programme. We usually need large amounts of recombinant protein to carry out biochemical assays in high throughput screening approaches. For cell based assays we need stable cell lines. We also need access to a physiologically relevant disease model (usually an animal model) for proving efficacy of lead compounds.

Access to structural data

The availability of structural information is highly beneficial for drug discovery programs. MRCT uses structural information about drug targets to inform the design of small molecules and to optimise the medicinal chemistry.

Freedom to operate

MRCT will carry out searches of the relevant intellectual property around the target of interest (including reagents and assays) and small molecules designed against the target. It is important that MRCT and our collaborators have the necessary freedom to operate before commencing a drug discovery project.

Potential to generate protectable intellectual property

It is important that there is potential to generate novel compounds that are patentable within a drug discovery project.

Partnerability

MRCT has the capability to progress drug discovery projects to the point of demonstrating proof-of-efficacy for a lead molecule in a disease model, and then seeks to identify a partner to progress this further.

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