



Request for Proposal (RFP) for Landscape analysis on machine learning tools and capabilities for drug and biologics development

1. RFP Background & Objectives

Wellcome supports science to solve urgent health challenges facing everyone: ensuring no-one is held back by [mental health](#) problems (in particular depression, anxiety, and psychoses), controlling escalating (and emerging) [infectious diseases](#) in communities that are most affected, and preventing climate change from harming the health of communities it affects the most.

The [Data for Science and Health](#) team aims to ensure trustworthy data science transforms how science solves these urgent health challenges. To achieve this, we support projects that produce innovative tools using health data, motivate and equip data scientists, and build trust into how data science is funded, governed, and practiced.

The drug development pipeline is a long, complex, and risky process that covers drug discovery, candidate selection and optimisation and pre-clinical development, clinical development with randomised controlled trials, and long-term follow up. However, there is huge potential to optimise this process by accelerating the pipeline and increasing (and making more efficient) the outputs. Below are listed just a few examples but we are interested in all applications to the development pipeline, whether that's supervised or unsupervised, deep learning, reinforcement learning, etc.

1. Knowledge Synthesis – [Benevolent AI](#) utilised machine learning to develop a knowledge graph that has been utilised for quick advances in drug discovery, including in [identifying Baricitinib](#) as a treatment for COVID-19.
2. Protein structure predictions – DeepMind's [AlphaFold](#) is a neural network-based model that can predict three-dimensional protein folding structure with high accuracy, which [streamlines](#) the drug discovery pipeline by making it easier to solve structures experimentally.
3. Foundational software – [SciML](#) is an example of foundational software that includes packages like [DiffEqFlux](#), which implement Neural-ODEs that can be used for [predicting untested treatment regimens](#).
4. Antibiotic discovery – ML has been successfully utilised to discover novel structurally distinct antibacterial molecules, including [discovering antibiotic properties](#) of the compound Halicin.

Machine learning (ML) provides innovative avenues, yet to be fully tapped, for accelerating drug development at all stages of the pipeline, for in-silico testing to infer or predict biological targets and drugs that act on those, for better informed drug optimisation, automated long-term observation with specialist data infrastructures and surveillance networks to monitor long-term successes and adverse events. Not only does this intersection cover a broad landscape but so too do the key actors, from research institutions, to start-ups, and major corporations.

For this RFP, we are looking to appoint a Supplier to landscape the field of machine learning for drug development to help Wellcome identify future opportunities to fund cutting-edge data science projects that can accelerate the drug development pipeline, as well as to identify barriers that prevent uptake of such projects.

Wellcome are providing funding to facilitate the research and creation of a comprehensive and accessible report to detail the landscape of machine learning for drug development.



2. RFP Specification

This section sets out the specification for this RFP exercise. Suppliers should use this section to fully understand Wellcome's requirements and to inform their response.

We seek to commission a Supplier who will have the following responsibilities:

Form a committee of expert consultants in the fields of machine learning and drug discovery:

The Supplier is expected to form a committee of experts in the area who have been identified by Wellcome, as well as inclusion of other experts that the Supplier has identified. The Supplier should create a simple governance structure to ensure regular feedback and reporting to the experts and Wellcome during the landscaping.

Landscape the field of machine learning for drug development:

The primary responsibility of the Supplier is to landscape the field of machine learning for drug and biologics development; background to this area is provided in Section 1.

The Supplier is expected to schedule meetings with key stakeholders within Wellcome, who will be introduced to the Supplier, and to learn Wellcome's strategic interests and our existing portfolio at the intersection of machine learning and drug and biologics development. The Supplier is further expected to identify and engage with experts in the area to identify the machine learning utility gaps, how existing and novel research has the potential to advance the field of machine learning for drug and biologics discovery and development, and what barriers to uptake exist in the field.

The landscaping will consist of desk research and meetings with Wellcome, industry experts, and academic consultants. There are strategic questions that Wellcome would like explored, in general these fall into the following categories:

1. What is the history of ML approaches for drug and biologics development and auxiliary fields (biology, chemistry, genomics) to date? Are there clear successes and failures?
2. What tools are currently available, validated, and usable? Are these open-source or proprietary?
3. Who are the main, active players in machine learning for drug and biologics development in academia and industry?
4. Are subject area experts utilising ML? If not, why not? Are tools/knowledge accessible? Are different/additional tools required? What are the primary barriers preventing machine learning methods being used in practice?
5. Is there any disconnect between researcher communities and ML experts?
6. What is the low hanging fruit aligning with Wellcome's strategy? What are the areas of overlap with Wellcome's portfolio?
7. How can Wellcome incentivise industry to share cutting-edge research?

To help clarify the level of expertise Wellcome expects, below are just a few examples of questions that have been identified as of strategic interest:

- i. How can predictive protein structure modelling support rapid analysis of the antibody-antigen interface to guide vaccine and mAb development?
- ii. What progress has been made to develop in silico approaches for biophysical characterisation and selection of drug-like characteristics of antibodies? Who are the major players? Different companies and proprietary platforms?
- iii. Which stages of small molecule drug discovery and development have machine learning approaches been successfully applied to and how far have compounds from these examples progressed?

Develop a comprehensive and accessible report of findings:

The Supplier should write the findings of the landscaping analysis in a MS Word document that is well laid out, can be followed in a succinct and coherent manner, and is accessible to a wide range of stakeholders. The report will be handed to Wellcome's branding team for final design, who may require input from the Supplier during the design process.

Previous landscaping analyses commissioned by Wellcome, including for [CSID tools](#) and [LPS](#) are good exemplars for the standard of content we expect.

Key Deliverables to be included are (but not limited to):

- D1) Formation of a governance/evaluation structure that will consist of (at least) expert consultants and Wellcome contacts.
- D2) Draft landscaping report.
- D3) Final content for landscaping report.
- D4) Co-design of final report with Wellcome's branding team, handover of report, and preparation for dissemination. Note that areas of the report of strategic value will be removed before publication (but retained in an internal report).

The Supplier may provide suggestions for extra Deliverables, for example interim reports or collation of relevant tools and/or datasets. The final Deliverables will be agreed at the contract negotiation stage but please note that we expect the final deliverable by 31 March 2023 at the very latest.



3. RFP Timetable

#	Activity	Responsibility	Date
1	RFP issue to Suppliers	WT	13 June 2022
2	Submission of Expression of Interest (EOI) to RFP@wellcome.org	Supplier	1 July 2022
3	Submission of Supplier Q&A to Wellcome Contact to RFP@wellcome.org	Supplier	1 July 2022
4	Return of Supplier Q&A to Suppliers	WT	w/c 4 th July 2022
5	Submission of RFP proposal to RFP@Wellcome.org and TPSRA2 Form	Supplier	19 August 2022
6	RFP Evaluation Period (at the end of which Suppliers will be notified whether they are invited to give a presentation).	WT	w/c 22 nd August 2022
7	Supplier Presentations	Supplier	5 Sept – 7 Sept 2022
8	Notification of Contract Award	WT	w/c 12 th Sept 2022
9	Contract Negotiation	WT & Supplier	w/c 12 th Sept 2022
10	Contract Start Date	WT & Supplier	Mid-Oct 2022

4. Response Format

The following headers support the timetable by providing further detail of the key steps.

Expression of Interest

Suppliers are asked to submit a short expression of interest by e-mail to RFP@Wellcome.org in accordance with the RFP timetable, which should contain the following information.

- Confirming whether you are a company or individual, if company please provide Full company name, address, and company registration number.
- A non-binding cost estimate as a single figure in GBP

Supplier Q&A

Prior to the submission of your RFP response, Suppliers are provided the opportunity to submit any questions they have about the exercise and the activity. All questions will be collated, anonymised, answered and returned to all Suppliers who have submitted an expression of interest in the RFP process. Please make sure you ask all questions at this stage. Once Wellcome have responded to all questions if you have any additional questions after this deadline these will not be answered to ensure that this is a fair and equitable process.



RFP Proposal

Having submitted an expression of interest, Suppliers are requested to submit a full proposal which respond to the following questions

RFP Questions

Wellcome would like Suppliers to answer the following specific questions in relation to this RFP exercise.

#	Question	Max
1	<p>Detail your methodology for completing the landscaping analysis, this should include how you will:</p> <ul style="list-style-type: none"> I. Work with Wellcome and key stakeholders. Including how you will balance disparate areas of strategic interest to Wellcome, and how much depth and detail you will give to different areas. How will you identify areas to landscape in more detail vs areas for a shallower review? How will you work with Wellcome to store and share research and findings as the project progresses? II. Approach and work with industry leaders who may have completed relevant but commercially sensitive research. III. Work with Wellcome to identify and approach expert consultants in the area. How will you work with these consultants? IV. Work with Wellcome’s branding team to design and disseminate the final landscaping report. V. Engage with research worldwide, especially research and researchers based in LMICs. 	2000 words
2	Describe anticipated risks and challenges and ways to mitigate them and quality assurance for your work.	500 words
3	Outline your experience in the area and how you will work with experts (both Wellcome appointed and others) to cover the gaps in your knowledge. Include any relevant experience completing landscaping analyses.	500 words
4	Please consider Wellcome’s D&I principles (Section 14) and outline previous relevant experience working with researchers based in LMICs.	500 words
5	Provide a timeline for the work, including key milestones and Deliverables against each of these.	300 words
6	Provide a detailed budget including all costs and expenses, specifying all day rates of individuals involved, the allocation of days between members of the team, and the cost of activities. The budget must include allocation of funds for at least two senior academic consultants.	300 words



Proposals will be assessed against the following criteria:

Methodology	<i>Coverage:</i> How well are the desired focus areas (as outlined in the specification) covered in the proposed methodology address? <i>Quality:</i> Is the proposed methodology aligned with our needs? <i>Utility:</i> Will the proposed methodology deliver the desired, credible, and useful results?
Experience	<i>Skills and Experience:</i> Does the supplier have the relevant skills, experience, and contextual understanding to deliver this work?
Delivery & Outputs	<i>Communication:</i> Is there a good plan for communicating with the Wellcome team? <i>Delivery plan:</i> Is the proposed delivery plan appropriate and achievable? <i>Feasibility:</i> How feasible is the delivery plan? Are there significant risks associated with the proposed timelines, and how well are they mitigated?
Budget	<i>Value for Money:</i> Is the proposed work within budget and good value for money?

Contract Feedback

This section allows Suppliers to provide specific feedback to the contractual agreement which will be used should your proposal be successful. Contract feedback is to be incorporated into your proposal as an annex and in the following format;

Clause #	Issue	Proposed Solution/Comment

Suppliers submitting proposals as a registered company should review Wellcome's Terms and Conditions which can be found [here](#).

Individuals submitting proposals as a sole trader (not registered) should review this [document](#). Individuals submitting proposals through their own personal services company please highlight this to the Wellcome contact immediately (see point 7 below).

Wellcome Data Protection Compliance

Under [GDPR/Data Protection law](#), Wellcome must keep a record of all personal information it is processing (i.e., collecting, using, and sharing). This record will be made available to the Information Commissioner's Office upon request.

[This is Wellcome's record of data processing activities which meets GDPR article 30 requirements.](#)

Suppliers are asked to complete the [TPSRA2](#) assessment before the RFP submission deadline for Wellcome to assess how you handle data.



Supplier Presentations

Following a submission of the proposal successful proposals will invited to a virtual meeting which will last 50 minutes in total and will be a PowerPoint presentation followed by questions and answers session.

5. About Wellcome

Wellcome supports science to solve the urgent health challenges facing everyone. We support discovery research into life, health and wellbeing, and we are taking on three worldwide health challenges: mental health, global heating, and infectious diseases. Find out more about Wellcome and our work at: [wellcome.org](https://www.wellcome.org).

6. Non-Disclosure and Confidentiality

Prospective Suppliers should be aware that inappropriate publicity could have a serious effect upon Wellcome's business. The information contained within this document or subsequently made available to prospective suppliers is deemed confidential and must not be disclosed without the prior written consent of Wellcome unless required by law.

7. Prospective Suppliers Personnel - IR35 and Off Payroll Working Rules

Before the RFP response deadline, Prospective Suppliers must make the Wellcome Contact aware if they are intending to submit a proposal where the services will be provided by any individuals who are engaged by the Prospective Supplier via an intermediary i.e.

- Where the Prospective Supplier is an individual contracting through their own Personal Services Company; or
- The Prospective Supplier is providing individuals engaged through intermediaries, for the purposes of the IR35 off-payroll working rules.

8. Independent Proposal

By submission of a proposal, prospective Suppliers warrant that the prices in the proposal have been arrived at independently, without consultation, communication, agreement or understanding for the purpose of restricting competition, as to any matter relating to such prices, with any other potential supplier or with any competitor.

9. Funding

For the avoidance of doubt, the output of this RFP exercise will be funded as a **Contract** and not as a Grant.

10. Costs Incurred by Prospective Suppliers

It should be noted that this document relates to a Request for Proposal only and not a firm commitment from Wellcome to enter into a contractual agreement. In addition, Wellcome will not be held responsible for any costs associated with the production of a response to this Request for Proposal.



11. Sustainability

Wellcome is committed to procuring sustainable, ethical, and responsibly sourced materials, goods and services. This means Wellcome seeks to purchase goods and services that minimise negative and enhance positive impacts on the environment and society locally, regionally, and globally. To ensure Wellcome's business is conducted ethically and sustainably, we expect our suppliers, and their supply chains, to adhere to these principles in a responsible manner.

12. Disability Confident

The Wellcome Trust is proud to be a Disability Confident Employer (DC Level 2) and we encourage all our partners and suppliers to do the same. More information about this can be found on the government website [Disability Confident employer scheme and guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/disability-confident-employer-scheme). Disability Confident is creating a movement of change, encouraging employers to think differently about disability and take action to improve how they recruit, retain, and develop disabled people.

13. Accessibility

Wellcome is committed to ensuring that our RFP exercises are accessible to everyone. If you have a disability or a chronic health condition, we can offer adjustments to the response format e.g., submitting your response in an alternate format. For support during the RFP exercise, contact the Wellcome Contact.

If, within the proposed outputs of this RFP exercise, specific adjustments are required by you or your team which incur additional cost then outline them clearly within your commercial response. Wellcome is committed to evaluating all proposals fairly and will ensure any proposed adjustment costs sit outside the commercial evaluation.

14. Diversity & Inclusion

Embracing [diversity and inclusion](#) is fundamental to delivering our mission to improve health, and we are committed to cultivating a fair and healthy environment for the people who work here and those we work with. As we learn more about barriers that disadvantage certain groups from progressing in our workplace, we will remove them.

Wellcome takes diversity and inclusion seriously, and we want to partner with suppliers who share our commitment. We may ask you questions related to D&I as part of our RFP processes.

Wellcome Contact Details

The single point of contact within this RFP exercise for all communications is as indicated below;

Name: Lindsey Atkins-Tamblin
Role: Procurement Manager
Email: RFP@wellcome.org