



International

**Human Frontier  
Science Program**

Organization

# **HFSP Postdoctoral Fellowships 2024**

## **Information on Review Process and Assessment Criteria**

## Contents

Mission and objectives of the HFSP postdoctoral fellowship scheme .....	3
Types of fellowships .... ..	3
Stages of Evaluation .....	4
Assessment criteria – Stage 1 – Letters of Intent.....	5
Assessment criteria – Stage 2 – Full Proposals.....	6
Ethics and Confidentiality .....	7
Conflicts of Interest .....	7
Appendix 1: Assessment Criteria for HFSP Postdoctoral Fellowships .....	9
Appendix 2: Scoring Guide for HFSP Postdoctoral Fellowships.....	10
Appendix 3: Numerical scoring guide (ruler) .....	12

## Mission and objectives of the HFSP postdoctoral fellowship scheme

HFSP attaches highest importance to novelty, scientific merit, internationality, and interdisciplinarity.

HFSP Postdoctoral Fellowships support exceptional junior postdoctoral researchers moving to a new research environment to carry out novel and original, cutting edge frontier projects on a topic in the life sciences. The research proposals represent high-risk/high-reward and potentially transformative projects and address important problems at the frontiers of the life sciences. HFSP Postdoctoral Fellowships aim to expose awardees to new theories and methods which complement or build on their previous experience and expertise. As such, projects should present the combination of the applicant's skills/talents/experiences and emphasize the suitability and strengths of the host laboratory.

Proposals representing standard or incremental approaches, obvious next steps in the field or for the host laboratory, have lower priority for funding.

Research projects may range from biological functions at the molecular and cellular level up to the level of biological systems, including cognitive functions. All levels of analysis are supported: for example, studies on genes and individual molecules, intracellular networks, intercellular associations in tissues and organs, and networks underlying the complex functions of entire organisms, populations, or ecosystems.

**HFSP asks Review Committee members to be aware of the differences between reviewing for a typical national funding body (often emphasizing feasibility and translational impacts) and reviewing for HFSP (emphasizing originality and acceptance of risk).**

## Types of fellowships

HFSP offers two types of postdoctoral fellowships:

- **Long-Term Fellowships (LTFs)** and
- **Cross-Disciplinary Fellowships (CDFs)**

**Long-Term Fellowships** are for applicants with a PhD on a biological topic who want to embark on a novel and frontier project focussing on the life sciences. **Cross-Disciplinary Fellowships** are for applicants who hold a doctoral degree from a non-biological discipline (e.g. physics, chemistry, mathematics, engineering or computer sciences) and who have not worked in the life sciences before.

Successful Postdoctoral Fellowship proposals

- incorporate novel investigative approaches at the frontiers of the life sciences with the potential to disrupt existing paradigms and current ways of thinking. The results of the research are expected to have an impact beyond the immediate field.
- demonstrate the change of field of the applicant and the ability to formulate a research project with a frontier-extending, risky nature and describe how the applicant's unique training and special skill set will allow them to address biological problems in a novel and distinct way.

The applicant may consult with the host supervisor in the development and writing of the proposal, but the project should be primarily the idea of the applicant.

- provide a prospect for novel directions for the research in the host laboratory.
- clearly show how the proposed project is different from the applicant's research to date (PhD or previous postdoctoral positions) and how it will help the applicant to learn new research approaches and methodologies.

A note specifically on **Cross-Disciplinary Fellowships**: One of the aims of HFSP is to attract scientists with training from outside the classical life sciences to work on a biological problem as they will bring new ways of thinking, as well as unique skills and approaches to the field.

HFSP Cross-Disciplinary Fellowships thus offer the unique opportunity for scientists with no prior training or experience in the life sciences to enter this exciting research area and get exposed to biological questions, problems and techniques. A successful CDF proposal will combine the best of life-sciences and non-life sciences to solve an outstanding and interdisciplinary research question in biology.

The opportunities are wide, and just by way of examples, engineers can use biomechanics approaches and develop robotic tools to understand movement or to develop biosensors and innovative biomaterials for use in the biomedical sciences. Mathematicians can apply their knowledge to predict behavioral patterns of species or to disease development. Chemists can use synthetic biomolecules as novel agents, while physicists can apply their training to understand biofilm development or phase transition in cells or to study coloration in animals or bioluminescent phenomena.

In assessing CDFs, reviewers are asked to bear in mind that the CDF proposals come from researchers who are entering biology after a PhD in a field outside the life sciences. Therefore, a lower level of familiarity with biology, its terminology and its theoretical constructs may be observed in applications. Similarly, a higher level of host-lab involvement in the design of the project is likely and acceptable and should be factored into the scoring of CDF proposals. Overall, a higher level of risk can be accepted for the CDF applications.

## Stages of evaluation

The application process involves two stages: an initial Letter of Intent (LOI) which will be peer reviewed and the results communicated as quickly as possible. The top applicants will be invited to submit a full proposal to be again peer reviewed.

### Stage 1 (Letters of Intent):

All Letters of Intent are checked for compliance with formal eligibility criteria by HFSP. In addition, LOIs are screened by the three scientific directors of HFSP and members of the Fellowship Review Committee for alignment with the objectives of HFSP and its Fellowship schemes (e.g., basic, interdisciplinary research). The Director of Fellowships will contact individual Review Committee members directly for their help in this first screening step when needed.

Ineligible LOIs or those with research proposals that do not align with the scientific scope of HFSP will not be sent for review.

After this initial screening, eligible LOIs will be assigned to two Review Committee members.

They will be asked to use a letter score from A to D to provide a component score for the proposal and the applicant.

The suitability of the host laboratory will be assessed only by a Yes/No/Maybe rating. In cases in which the two reviewers score significantly different from each other, applications will be sent to a third reviewer.

Letter score aggregates will be used to establish a first ranking that will result in a first cut-off. HFSP then invites the top LOIs to submit a full proposal. Approximately the top 15-20% of eligible LOIs will be invited.

## **Stage 2 (Full Proposals):**

The full proposals will be sent to the same two (or three) main Review Committee members who already reviewed the respective Letter of Intent, plus to 2-4 external mail reviewers with suitable expertise in the field who will be asked to provide written comments to aid the Review Committee members in their subsequent scoring.

The main reviewers will be asked to provide numerical scores from 1-10 for their assigned full proposals, based on a specific set of assessment criteria, and on the evaluations of the mail reviewers (for an explanation of the assessment criteria and the scoring guide please see the detailed instructions below and refer to Appendix 1 and 2, respectively).

### **Review Committee meeting (late January/early February 2024):**

A number of full proposals with different scores will be selected as calibration files to demonstrate a broad range of quality from “truly frontier” to “less competitive” and maybe even “poor”. The aim of the calibration exercise is to introduce Review Committee members (and particularly new members) to the special features of the HFSP assessment criteria, and to establish the range of scores that are appropriate to assign. The calibration files will be discussed and scored by the Review Committee before the rest of the full proposals.

For each calibration file as well as for the remaining proposals, the two (or three) main reviewers will present a summary of the proposal and of the mail reviews and state their initial letter scores and initial numerical scores.

After discussion by the whole Review Committee, the main reviewers will announce their final numerical scores. The rest of the Review Committee will then provide their own numerical scores for each proposal. After each proposal has been scored by the whole Review Committee, an average score is calculated to generate a ranked list of proposals recommended for funding. No subsequent changes to this ranking are made by HFSP.

Usually, the Review Committee meeting takes place as a face-to-face meeting in the HFSP office in Strasbourg. Depending on the development of the COVID-19 pandemic, it might however have to be conducted virtually.

## **Assessment criteria – Stage 1 – Letters of Intent**

During the Letter of Intent stage, Review Committee members are asked to assess the submitted LOIs and take into account the following considerations:

A comprehensive list of the assessment criteria and a scoring guide are also provided in Appendix 1 (Assessment Criteria) and Appendix 2 (Scoring guide).

### **Research Plan:**

- the scientific originality and innovative character of the proposal.
- the potential impact of the project on science beyond the immediate field.
- whether the proposal addresses an important basic biological problem, challenges existing paradigms and changes current ways of thinking.
- whether the proposal represents a clear departure from the previous research of the applicant which is viewed favourably.

The goal is to fund projects that are truly frontier, novel, original, interdisciplinary and risky rather than safe and predictable.

***Applicant:***

- whether the applicant appears ready to embrace the risk of a frontier-pushing project and to step beyond the scope of expertise gained through previous work.
- whether the distinctive background and experience of the applicant will boost the project in unique ways.

Review Committee members are asked to evaluate the quality of the science produced by the applicants and not the number of publications or the impact factor of the journals in which they have published. The overall aim is to identify the frontier science research stars of the future.

***Host laboratory and environment:***

- whether the choice of host laboratory represents a good fit for the proposed research. Please note that a small laboratory and/or an early career host supervisor should not be evaluated as being negative.

In addition to the letter scores, Review Committee members are also asked to formulate brief comments (3-6 lines) for each proposal.

The assessment of the LOIs will lead to a ranked list with a first cut-off. Approximately the top 15-20% LOIs will be invited to submit a full proposal and applicants will be informed by the Fellowship Office about the outcome of the first evaluation stage.

## **Assessment criteria – Stage 2 – Full Proposals**

After the submission of the full proposals, Review Committee members are asked to assess these applications and take into account the following considerations:

A comprehensive list of the assessment criteria and a scoring guide are also provided in Appendix 1 (Assessment Criteria) and Appendix 2 (Scoring guide). A 'ruler' on how to convert the criteria introduced in Appendix 1 and 2 into a numerical score can be found in Appendix 3 (Numerical scoring guide).

***Research Plan:***

- whether it is truly frontier in nature, novel and original, important, ground-breaking, potentially transformative.
- whether the proposal challenges existing paradigms and is going to change the current way of thinking.
- whether the results will likely make an impact beyond the immediate field.
- whether the proposal is risky, daring or better suited to 'safe' national funding schemes: does it have the 'HFSP' element? Or is it 'more of the same' in the relevant laboratory or from that applicant?
- whether it usefully combines applicant and host laboratory talents.
- whether it is a clear departure from the applicant's previous work.
- whether the applicant came up with the idea himself/herself.

Again, the goal is to fund projects that are truly frontier, novel, original, interdisciplinary and risky rather than safe and predictable.

**Applicant:**

- readiness of the applicant to embrace the risk of a frontier-pushing project and potential to tackle research questions at the leading edge of science that go beyond the scope of expertise gained through previous work.
- the level of intellectual contribution of the applicant to the proposed research project.
- potential of the applicant to succeed in their new field and project.
- matching of the background and experience of the applicant to the need of the proposal.
- impact of publications (rather than number of publications and journal impact factor), taking into account field-specific norms, time available, and career breaks such as long illnesses or parental leave; HFSP strongly discourages judgement of an applicant's excellence merely based on number of publications and impact factors of journals in which the applicant has published.
- contribution to the publications, judged from authorship position, stated contributions to each paper, and reference letters.
- awards and prizes
- the level of support, and statements regarding career potential, shown in the reference letters (but reviewers are asked to be aware of exaggerated references, potential cultural and gender biases etc.).
- indications of motivation, leadership, vision, and potential gained from free-form text sections of the proposal.

**Host laboratory:**

- whether the choice of host laboratory represents a good fit for the proposed research. Please note that a small laboratory and/or an early career host supervisor should not be evaluated as being negative.
- opportunities for the applicant to rise and grow in that particular environment.
- capability of the host supervisor to direct the research of the applicant towards a successful outcome.
- whether the host supervisor's letter of support shows clear commitment and willingness of mentorship.

In addition to a numerical score for each assigned application, Review Committee members are also asked to provide written comments to guide the discussion at the RC meeting.

**Ethics and confidentiality**

Members of the Fellowship Review Committee are expected to comply with the highest level of ethical standards when evaluating fellowship applications. All applications must be considered confidential, and reviewers must emphasize this if they consult a colleague for a specific application.

Reviewers must not use previously undisclosed information contained in an application for their own research.

The evaluation should provide a constructive and objective assessment of the applications.

Applications must be securely destroyed after review.

**Conflicts of interest**

Reviewers should disclose as soon as possible any conflict of interest (real or perceived), so that the relevant application can be re-assigned to another committee member.

The HFSP considers Reviewers to be in a conflict of interest if they

- have or had a personal relationship with the candidate.
- are the candidate's current or former supervisor.

- are a collaborator with either the host supervisor or the applicant.
- are a referee for the applicant.
- are employed at the applicant's current or proposed host institution or organisation (e.g., RIKEN, MPI).

During a face-to-face meeting, Review Committee members must leave the room while proposals on which they are conflicted are discussed. If held virtually, Review Committee members will be moved into a virtual breakout room while proposals on which they are conflicted are discussed.

## Appendix 1: Assessment criteria for HFSP Postdoctoral Fellowships

Criteria to assess	Considerations for assessment
<b>Excellence of the proposed research plan</b>	
Positioning of the proposal at the leading edge of the life sciences	<ul style="list-style-type: none"> <li>- is the proposal truly frontier and thus at the leading edge of the life-sciences? Is it likely to be a trailblazer for future discoveries?</li> <li>- are the proposal and approaches novel, original, risky and ground-breaking?</li> <li>- are the results likely to make an impact beyond the immediate field?</li> <li>- does the proposal challenge existing paradigms and is it going to disrupt the current way of thinking?</li> <li>- does the project address an important new problem or a barrier to progress in an established field?</li> <li>- how significant is the departure of the proposal from previous research of the applicant?</li> </ul> <p><b>Specific criteria for CDFs</b></p> <ul style="list-style-type: none"> <li>- does the proposal combine life sciences and non-life sciences in a unique way?</li> </ul>
<b>Excellence of the applicant</b>	
Accomplishments and potential of the applicant	<ul style="list-style-type: none"> <li>- does the applicant appear ready to embrace the risk of a frontier-pushing project and does s/he seem to be able to tackle research questions at the leading edge of science that go beyond the scope of expertise gained through the applicant's Ph.D.</li> <li>- does the applicant appear to have the potential to succeed in his/her new field and project?</li> <li>- was the research plan developed by the applicant himself/herself or does it seem to be a logical extension of the host laboratory's line of research?</li> </ul> <p><b>Specific criteria for LTFs</b></p> <ul style="list-style-type: none"> <li>- will the applicant be exposed to new theories, methods and ideas and will s/he use new approaches?</li> </ul> <p><b>Specific criteria for CDFs</b></p> <ul style="list-style-type: none"> <li>- is the specific (non-life science) background of the candidate likely to boost progress in the life-sciences by answering a fundamental question?</li> </ul>
<b>Host laboratory and host supervisor</b>	
<b>Standing of the host laboratory</b>	<ul style="list-style-type: none"> <li>- Does the choice of host laboratory represent a good fit for the proposed research?</li> <li>- Is the host supervisor capable to direct the research of the applicant towards a successful outcome?</li> <li>- Is there opportunity for the applicant to rise and grow in that particular environment?</li> <li>- does the host supervisor have a clear mentorship plan?</li> </ul>

## Appendix 2: Scoring guide for Full Proposals

Review Committee members should use the whole scale of scores from 1 to 10, in steps of 0.5, according to the criteria listed below.

Scores of 7 and above are fundable.

Excellence of Research Plan score from 1-10	Indicators
<p><b>Truly Frontier</b></p> <p>9.0-10.0</p> <p>(fundable)</p>	<ul style="list-style-type: none"> <li>• highly novel and original, cutting edge frontier science; can be risky</li> <li>• if successful, paradigm shifting and highly impactful for more than the immediate field</li> <li>• very likely that results will change current way of thinking</li> </ul> <p><b>Specific for LTFs:</b> significantly different from previous work  <b>Specific for CDFs:</b> perfect combination of life-science and non-life science approaches and questions</p>
<p><b>Outstanding</b></p> <p>7.0-8.5</p> <p>(fundable)</p>	<ul style="list-style-type: none"> <li>• Outstanding science</li> <li>• novel and original, but less frontier and risky</li> <li>• some aspects might be impactful for the immediate field, but less likely to be paradigm shifting beyond that</li> <li>• likely that some results will change current way of thinking</li> </ul> <p><b>Specific for LTFs:</b> distinct from previous work, but conceptually similar  <b>Specific for CDFs:</b> good combination of life-science and non-life science approaches and questions</p>
<p><b>Excellent</b> (but not within the realms of HFSP)</p> <p>5.0-6.5</p> <p>(non-fundable)</p>	<ul style="list-style-type: none"> <li>• Excellent science, but somewhat mainstream and less original</li> <li>• impact beyond the immediate field is likely to be minor</li> <li>• unlikely to change current way of thinking</li> </ul> <p><b>Specific for LTFs:</b> largely based on previous work with few novel aspects  <b>Specific for CDFs:</b> unclear whether the non-life science background of the applicant would have an impact on the biological question asked in the proposal</p>
<p><b>Less competitive</b></p> <p>3.0-4.5</p> <p>(non-fundable)</p>	<ul style="list-style-type: none"> <li>• solid science, but mainstream</li> <li>• obvious next step for host laboratory</li> <li>• no paradigm shifts or major impact expected</li> </ul> <p><b>Specific for LTFs:</b> mainly a continuation of previous work  <b>Specific for CDFs:</b> unique experiences and training of applicant are not necessary for or integrated into project</p>
<p><b>Poor</b></p> <p>&lt; 3.0</p> <p>(non-fundable)</p>	<ul style="list-style-type: none"> <li>• project very much mainstream</li> <li>• scientifically flawed</li> </ul>

Excellence of Applicant score from 1-10	Indicators
<p><b>Truly Frontier</b></p> <p>9.0-10.0</p> <p>(fundable)</p>	<ul style="list-style-type: none"> <li>• applicant eager and capable to think beyond conventional knowledge and does not avoid risk</li> <li>• applicant seems very comfortable to go beyond the scope of previous expertise, to leave his/her comfort zone, and is very likely to succeed in doing so</li> <li>• development of proposal was for the most part the idea of and driven by applicant</li> </ul> <p><b>Specific for LTFs:</b> applicant proposes approaches and techniques that will expose him/her to extremely novel aspects of biology</p> <p><b>Specific for CDFs:</b> applicant's specific background is ideally suited to boost progress in proposed research question</p>
<p><b>Outstanding</b></p> <p>7.0-8.5</p> <p>(fundable)</p>	<ul style="list-style-type: none"> <li>• applicant seems ready to think beyond borders and ready to embrace some risk</li> <li>• applicant provides some evidence for his/her willingness to leave their comfort zone and for the ability to succeed with the new challenges</li> <li>• development of proposal was driven by host and applicant to a similar extent</li> </ul> <p><b>Specific for LTFs:</b> proposes some methods and approaches that are very distinct from previous ones</p> <p><b>Specific for CDFs:</b> specific non-life science training will likely secure success in new field</p>
<p><b>Excellent</b> (but not within the realms of HFSP)</p> <p>5.0-6.5</p> <p>(non-fundable)</p>	<ul style="list-style-type: none"> <li>• applicant seems to be somewhat risk-avoiding and less likely to be willing to embrace a completely new research area</li> <li>• minor contribution of applicant to the development of the research plan which was mostly driven by the supervisor</li> </ul> <p><b>Specific for LTFs:</b> applicant proposes mostly established methods and approaches that he/she has been exposed to before</p> <p><b>Specific for CDFs:</b> somewhat unclear how the specific background of applicant will boost progress in new field</p>
<p><b>Less competitive</b></p> <p>3.0-4.5</p> <p>(non-fundable)</p>	<ul style="list-style-type: none"> <li>• applicant does not seem to be ready to embrace a risky and bold research project</li> <li>• development of the research plan which was entirely driven by the supervisor</li> <li>• minimal change in research direction</li> </ul> <p><b>Specific for LTFs:</b> applicant proposes only mainstream and established approaches and techniques</p> <p><b>Specific for CDFs:</b> unique background of applicant is not integrated into new research plan</p>
<p><b>Poor</b></p> <p>&lt; 3.0</p> <p>(non-fundable)</p>	<ul style="list-style-type: none"> <li>• applicant is not competitive</li> </ul>

<b>Host laboratory and host supervisor</b>	<b>Indicators</b>
Standing of the host laboratory (rate yes/no/maybe)	<ul style="list-style-type: none"><li>• Are the proposed host laboratory and host supervisor a good fit for the goals in the research plan?</li><li>• Does the host laboratory provide good opportunities and the right infrastructure for the applicant to achieve his/her research goals?</li><li>• Does the letter of support show his/her commitment to mentor and support the applicant?</li></ul>

**Appendix 3: Numerical scoring guide for RC meeting (ruler)**

Please use the whole range of scores from 1-10, in steps of 0.5, according to the criteria listed below. Scores of 7 and higher are fundable

	<b>Poor</b> (non-fundable)	<b>Less Competitive</b> (non-fundable)	<b>Excellent (but not within the realms of HFSP)</b> (non-fundable)	<b>Outstanding</b> (fundable)	<b>Truly Frontier</b> (fundable)
<b>R e s e a r c h  P l a n</b>	Very much mainstream	Solid science, but mainstream	Excellent science, but somewhat mainstream and less original and risky	Outstanding science, novel and original but less frontier and risky	Highly novel and original, cutting edge frontier science; can be risky
	Scientifically flawed	Obvious next step for host laboratory	Impact beyond the immediate field likely to be minor	Impactful for the immediate field, but less likely to be paradigm shifting beyond that	Paradigm shifting and highly impactful for more than the immediate field
		No paradigm shifts or major impact expected	Unlikely to change current way of thinking	Likely that some results will change current way of thinking	Results will change current way of thinking
<b>A p p l i c a n t</b>	Applicant not competitive	Applicant not ready to embrace a risky and bold research project	Applicant somewhat risk-avoiding and less willing to embrace a completely new research area	Applicant ready to think beyond borders and to embrace some risk	Applicant does not avoid risk
		Development of the research plan which was entirely driven by the supervisor  Minimal change in research direction	Minor contribution of applicant to development of the research plan which was mostly driven by the supervisor	Applicant provides some evidence for his/her willingness to leave their comfort zone  Development of proposal was driven by host and applicant to a similar extent	Applicant willing to leave his/her scientific comfort zone  Development of proposal was for the most part the idea of and driven by applicant



<b>Poor</b> (non-fundable)	<b>Less Competitive</b> (non-fundable)	<b>Excellent (but not within the realms of HFSP)</b> (non-fundable)	<b>Outstanding</b> (fundable)	<b>Truly Frontier</b> (fundable)
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