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Risk-takers welcome: applying to the Human Frontier Science Program

What makes a strong application? HFSP fellowships director Carmen Gervais tells Catie Lichten that projects shouldn't be incremental and proposals should be fun to read

Carmen Gervais' top tips for applying to the Human Frontier Science Program

- Make sure you fit the eligibility criteria
- There needs to be a change in direction in your work
- Risky, pioneering projects are valued above incremental work
- Your proposal should be fun to read
- In your proposal, don't waste space stating the obvious
- Think about the criteria that the reviewers need to report on

The HFSP offers Cross-Disciplinary Fellowships and Long-Term Fellowships. What are these?

The Cross-Disciplinary Fellowships are for applicants that have a PhD from outside the life sciences—for instance chemistry, physics, computer science or engineering—and who propose to do a postdoc in the life sciences. Long-Term Fellowships are for people with a PhD in the life sciences who are staying in the life sciences but proposing to move into a new field—maybe changing model system or changing from a molecular to a systems approach.

Cross-Disciplinary Fellowships are peer reviewed as one group and Long-Term Fellowships as another. That's because it is difficult for someone coming from a different field to be as sophisticated in their language when describing a research problem. Also there may be different disciplinary standards and so candidates' CVs are not easily comparable. Cross-Disciplinary Fellowships make up only about 10 per cent of our fellowship applicants, and we don't want them to get lost in the noise of the Long-Term Fellowships.

These are not like traditional grants. We look for applicants who want a change of country and a broadening of their expertise. An applicant may have a stellar CV, working on a strong project at a top lab. But if they just want to carry on doing what they did before, they will rank lower on our list than an excellent researcher who wants to try a different approach. We are looking for someone who will bring knowledge from one area to a new problem, and for synergy between the host lab and the fellow that creates a real learning experience.

Does it help to show you have made forays into the new field before you apply?

You don't have to prove that you can do the transition. We support high-risk research ideas in areas where people are setting themselves big challenges. We choose people with the talent to land on their feet regardless of what happens. So, the bar is quite high and once we're convinced that a person has the skills and mind-set to wrap their head around complex problems, we will look at their idea. But there's no need to have done any kind of proof of concept experiments or to have knowledge of the area.

Is it essential to change countries?

Yes. There are some subtleties to this rule, but essentially, if you have done all your research-oriented work in one country, you shouldn't stay there for an HFSP fellowship. The idea is to form new relationships, seek new territory, and contact new research networks.

When can researchers apply?

You are eligible for up to three years after finishing your PhD. Those still doing a PhD or those who are just finishing their first postdoc post can also apply. The challenge is to have enough on your CV to be competitive and to have disseminated the research in such a way that people can judge its quality. In the last year of a PhD you may not yet have many publications or contributions to conference proceedings and so you could be better off waiting.

We do take career interruptions into consideration and don't have a set rule on that. If somebody takes parental leave, we will give them a reprieve of equal length or maybe a little longer, given that it can take a little time to get back up to speed.

Tell us about the application and review process.

We get about 800 applications a year and 20 per cent of those are discussed at the committee meeting. We do an intensive screening in the office before sending anything out for peer review. This makes sure applications meet all our eligibility rules as well as our scientific criteria. We get back in touch with an applicant if anything is unclear on their CV.

In the initial triage, every application is assigned to the two readers on the committee with the closest expertise and we'll get mail reviews if we don't have the expertise. Each member gets 50 to 70 applications to review in six weeks, then they send in pre-scores of A, B, C or D. We limit the number of As and Bs given out so we can focus on the top 20-25 per cent of applications. We send out a shortlist to everyone for a more thorough evaluation and decisions are made in a committee meeting where we look at the short-listed applications.

Applications for the next competition are due in August 2014 and results will be announced in March 2015.

What is the value of the award?

The typical overall value is about \$60,000 (£37,800) a year for three years and includes \$5,000 (£3,150) for research and travel. We also pay

relocation costs for the fellow and their spouse and children, and we provide a monthly allowance per child and three months paid parental leave. Equal proportions of male and female fellows take that up.

Fellows can defer after the first two years for two years. If they move with the third year of their funding to another country, we will also pay relocation costs.

Fellows can also apply for our career development award, which supports researchers returning to their home country.

Does the success rate differ depending on which fellowship stream you apply for or which country you plan to work in?

There is about a 10 per cent success rate in either stream. More than 50 per cent of applicants propose to work at institutions in the US and more than 60 per cent of the awardees are based there, so the applications to go to US are more competitive. I don't think it's because US labs are favoured in peer review. I think it's because the strongest people from around the world want to go to the strongest labs and most are located in the US.

Do you have equal numbers of male and female fellows?

We have had around 36 per cent female fellowship applicants and 31 per cent female awardees since 2003, so there has been an issue with women not being as successful as men in the programme.

Evidence has shown that the typical approach agencies take to deal with this issue, ensuring that they have a minimum female representation on their committee, does not have an effect. So, even though the HFSP has been exemplary in these traditional practices, it's not enough. When I came in I saw right away that there was a systemic issue.

In the last competition, it was the first time we had similar participation and success rates for females. The difference was that at the beginning of the committee meeting, I said: "You know, there is no affirmative action component to this programme. People should compete on their merits, but let's just make sure that we're not advantaging one group—men—over women." I can't rule out a cohort effect, but maybe the reason why it worked out last year was that I raised awareness at the outset, encouraging the committee to consider how they might be feeling towards people. They really shouldn't be feeling anything they should just be thinking and pulling together the data.

What tips do you have for applicants?

The essential thing is not to say: "I want to get HFSP money because I'd love to have that research and travel award." It should be more like: "I want to do this kind of research. What's the right funding organisation to support my plans?"

Every fellow should have a 10-year plan for where they see themselves going. Plans do shift widely as people go along and things happen, but researchers should be looking at where they want to go and the tools that will help them get there. It is essential to make sure that you know what's out there and to know what fits your research plan.

For instance, if you don't want to change country, then you don't even look at us because clearly you're out. A full 10 per cent of applications that arrive are not even sent for peer review because they just don't meet the basic requirements outlined on our website. It's a huge waste of time.

What about tips for writing proposals?

We got 816 fellowship applications this year and I read each one to make sure it fitted within our scientific scope. If I read another abstract that says "Cancer kills millions of people every year", I'll go crazy. Who doesn't know that? Why are you wasting precious space? Dig a little bit deeper and say, "It's not understood why some circulating tumour cells lead to malignancies and others don't."

You have to write something that people enjoy reading. English doesn't have to be your first language to do this. By the end, the reviewer should know exactly what model system you're working on, what problem you're addressing, and why you want to look at it. If the reviewer comes away with a good impression, often they lead off at the committee meeting by saying it was a pleasure to read. If that happens, the other committee members take notice and they all spend a little bit more time looking at it.

Applicants should look at the things the reviewer has to report on and try to make their job easy. The criteria are there on our website. Try to make it easy for them to find indicators of your strength in the different areas. If you can clearly say, "This project will allow me to diversify my knowledge because I'm switching from this system to that and I'm going to learn these techniques," the reviewer can mark it quickly. Every reviewer has a grid beside them and they're just putting down marks on the characteristics they have to judge.

Rushed applications are always terrible to review, so spend much more time than you think you need putting your proposal together. I tell people to spend a year on it. Most don't do that, but you can tell when something's been well thought out because then it becomes nuanced over time.

Also, solicit feedback from many sources. Don't expect your proposed host supervisor to be that person; they are too busy. Get other postdocs, research associates and graduate students to read it, and get someone from outside the field who will tell you what they didn't understand. When you have a really nice final draft then send that to the host. Then they will take the time and give you good tips.

If you can, find somebody at your university who serves on the review committee for the organisation you're applying to. Our review committee membership is published on our website so you can contact someone and ask for advice. They might give you some really good tips.