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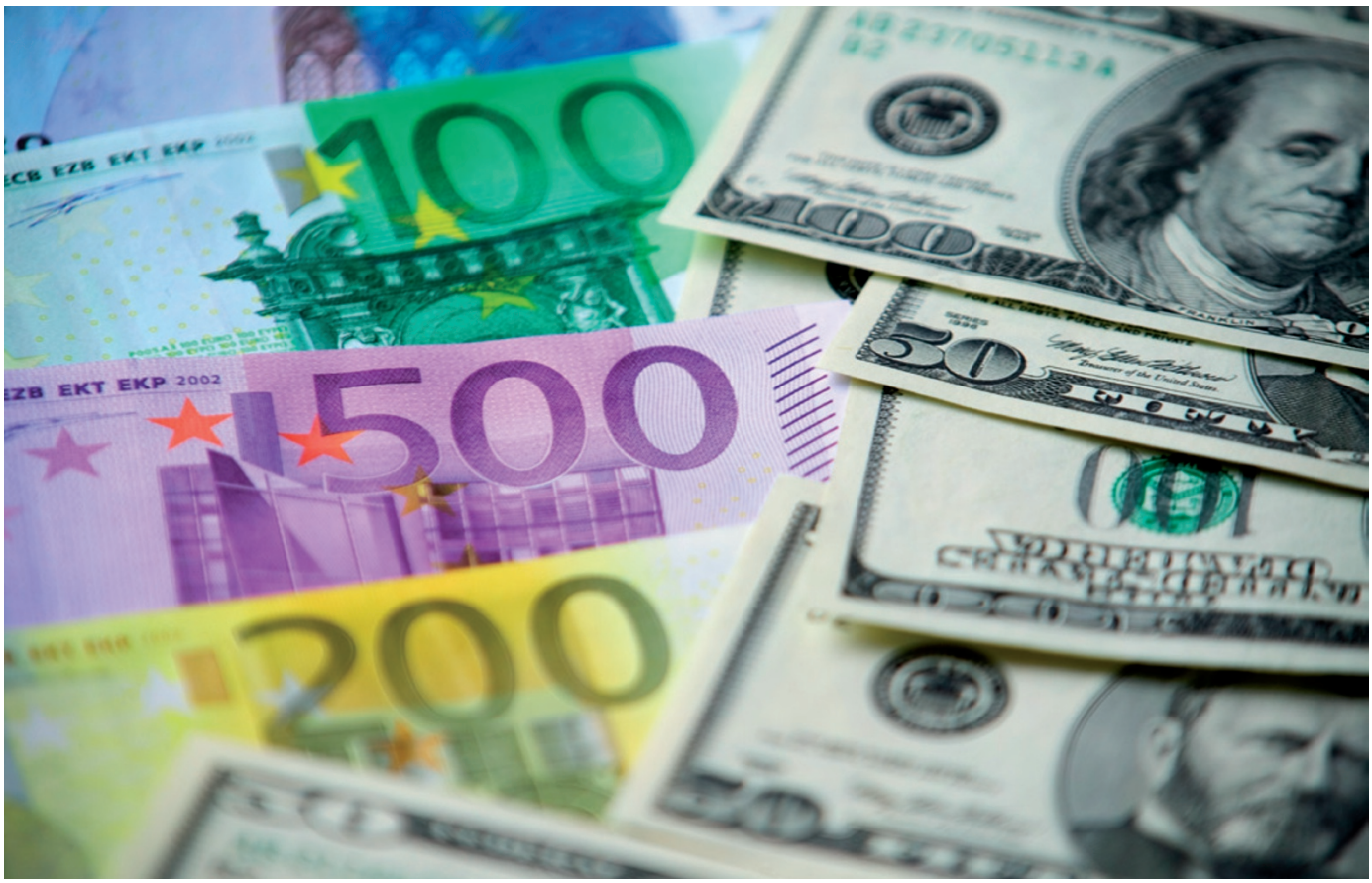

FUNDING

Got to get a grant

A great idea will get applicants only so far. But there are other strategies that can add to the chances of success.

BY KAREN KAPLAN

With his primary grant coming to an end, neuroscientist Thomas Mrsic-Flogel was more than a little stressed. He had launched his lab at University College London (UCL) with a career-development fellowship from the Wellcome Trust in London, but it was set to expire by mid-2011. In 2010, with a worldwide recession in full swing, Mrsic-Flogel knew that he was hardly guaranteed to land a new grant.

He decided to apply for another Wellcome fellowship, proposing a project on how neuronal networks process visual stimuli. Applications had a discouraging success rate of about 20%, but the grant could be renewed every five years, which Mrsic-Flogel found attractive. He won the award — a £1.7-million (US$2.7-million) senior research fellowship, which pays his salary and lets him purchase lab equipment and support a couple of graduate research associates.

Mrsic-Flogel attributes his success to more than luck. He followed the application guidelines to the letter, making sure that his proposal was both high-impact and innovative. He spent a year preparing it, including developing his idea and gathering preliminary data. And he sought input from dozens of people, from UCL grant advisers to colleagues in neuroscience and other fields, in effect creating an informal peer-review panel. He revised the document several times, once deleting an entire section, and when something stumped him, Mrsic-Flogel called grant recipients he knew to find out how they had dealt with similar problems.

In the current funding environment, the odds of winning a grant or fellowship are very slim. But Mrsic-Flogel's success demonstrates some helpful strategies and guidelines — articulating an original idea, seeking feedback from multiple sources and writing concisely — for putting together a winning proposal.

EXCELLENT SCIENCE

Before all else, applicants must make sure that they are presenting excellent and original science, say grant programme officers and successful applicants. "You should be proposing a novel kind of research — not just ▶

continuing some standard research you're already doing," says Jochen Wosnitza, director of the Dresden High Magnetic Field Laboratory in Germany and chairman of the review board for the German Research Foundation (DFG) in Bonn, the country's main grant-giving agency. To make sure that their projects are innovative, applicants should bounce ideas off colleagues and painstakingly comb through the literature.

Grant officers are generally looking for work that could have an enduring influence. It should inherently lead to further study, although not necessarily to immediate applications. "Have you thought about what happens next?" asks David Crosby, programme manager for the UK Medical Research Council (MRC) in London and Swindon. Research funded by the MRC doesn't have to lead to a disease cure in three years, "but you do need to think about the implications of your work," he says. "If you're generating a fundamental insight, what is the consequence of that? How does that help the whole field? How might it go on to be utilized? How will it impact the science community and the public at large?" Researchers applying for a grant from a multinational organization, such as the European Commission's Marie Curie Actions, or funding from the European Molecular Biology Organization (EMBO) in Heidelberg, Germany, will also need to explain how their proposal would have benefits beyond their own country.

Early-career researchers should keep in mind that many granting agencies frown on proposals linked to or associated with work done by the applicant's mentor. "You have to show that you're an independent-thinking scientist taking a different track from your former supervisor," says Gerlind Wallon, deputy director of EMBO and manager of the organization's Young Investigators programme.

"Bend over backwards to give us what we want."
Maryrose Franko

There are no hard and fast rules on which funder to approach, say granting and funding agencies. Colleagues with their own grants can offer advice; early-career scientists applying to the US National Institutes of Health (NIH), for example, can get the names of successful grantees from NIH RePORTER (go.nature.com/32v6n5). It can also be extremely helpful to speak directly to the funder; however, programme managers recommend that applicants first learn the agency's remit by closely reading its website and grant materials. "Absolutely come to us," says Crosby. "Phone up the funder and say, 'I've got this idea that I think pertains to your strategic interest. You've got a highlight notice on your website that says 'systems biology' — what do you mean by that? Does my idea fit into that bracket?'"

Crosby points out that a researcher's institution may also have a preference; for example, the MRC and Wellcome Trust both fund biomedical proposals, but the MRC pays some indirect costs and overheads to the institution that other funders don't, and so might be more attractive.

NUTS AND BOLTS

Applicants must effectively outline their ideas in the application, including a clear and direct hypothesis along with the expected results. Programme managers say that an application for funding to 'explore a cell receptor's signalling mechanisms', for example, is unlikely to be successful because it sounds vague and doesn't seek to prove anything. But a proposal to confirm that a particular protein is involved in a cellular reaction, for example — one that includes preliminary results and explains the potential impact of the discovery — would have a far better chance.

Some applications call for both a summary, aimed at reviewers who are not in the relevant field, and an abstract, for those who are. Most also have a section for a research plan, in which applicants can explain technical details. However, reviewers who see an application for the first (and perhaps only) time in a review-panel meeting usually turn immediately to the summary, say grant officers. That is where applicants should persuasively and succinctly explain exactly why their proposal deserves funding. "It's important to be able to clearly articulate your ideas," says Crosby. "If you can't do that, you're not going to be able to inspire enthusiasm." Some funders also call for a project description or narrative, but veteran grant-writers say that if there is a choice, it is best to make the strongest case in the summary.

Focus is key. If the summary is too technical or rambling, the application's score will suffer, even if the idea itself is brilliant. "A bad summary is really disastrous," says Andrea Hutterer, programme manager for EMBO fellowships. "It sets the tone for how I read the rest of the application."

Applicants must state their research objective clearly and straight away. "The first sentence should begin, 'The research objective of this proposal is …,'" says George Hazelrigg, a programme officer for design and integration engineering at the US National Science Foundation. "Every inch from the top that I have to go down in the proposal to find this sentence lowers the rating by about one percentage point."

It is wise to get editing and streamlining recommendations from as many senior colleagues as possible, both in and outside the research field, and to check the funder's website for advice. In a mock application on the NIH website, the 'before' summary, meant to demonstrate pitfalls, is long, rambling and technical ("G-protein over-activation triggers a biochemical signaling cascade that leads to b-AR desensitization and down-regulation …"), and contains several acronyms. The corrected 'after' summary is clear and direct: "Congestive heart failure is a common and lethal disease in the United States. Current medications … improve survival in some, but not all, patients. … This research will enhance our understanding of the cellular and molecular mechanisms underlying sympathetic neuron dysfunction that may progress to heart disease, and may identify a possible novel pharmaceutical target."

MRC

"It's important to be able to clearly articulate your ideas. If you can't do that, you're not going to be able to inspire enthusiasm."
David Crosby

Applicants should make sure to request an appropriate amount of funding. Too little and there won't be enough money to finish the project — and it is next to impossible, say grant officers, to get supplementary funding. Too much and reviewers are likely to question the applicant's competence. "It implies that you don't know what you're doing and don't have a realistic grasp of the project," says Crosby. Applicants can get help with calculations from their department heads, senior supervisors and mentors. For the costs of supplies, such as lab mice, they can talk to the institutional research office.

C. VARGAS/HHMI

SWEAT THE SMALL STUFF

Other fundamental requirements may sound mundane or even silly — but failing to adhere to them can derail an application (see 'Grant-writing blunders'). Investigators should read and follow all application instructions carefully: most stipulate length and format, including particular typefaces, fonts, font sizes and margins. It does not pay to deviate from these in the hope of cramming in more text or figures, warn programme managers.

"Bend over backwards to give us what we want," advises Maryrose Franko, senior programme officer for graduate science education at the Howard Hughes Medical Institute in Chevy Chase, Maryland. Reviewers don't want to sift through an application to find an investigator's most significant published work or squint to read the text, she says. "If we say 12-point font and you give us 10, the reviewers don't even want to look at it."

DOS AND DON'TS

Grant-writing blunders

- Avoid being too ambitious — don't propose a study that would take decades. Grant officers can tell when an applicant is overextending.
- Don't use abbreviations, acronyms, jargon or highly technical language. Reviewers who aren't familiar with your field will get annoyed and may think that you are trying to cover up for a lack of knowledge or ability to carry out the experiment.
- Don't give short shrift to explaining why your proposal is important. Reviewers don't already know. Explain the study's impact, advances and potential.
- Make the application easy to read — don't cram it with text, use too-small fonts or miniaturize any figures.
- Get lots of colleagues from within and outside your field to review your application closely and provide written responses.
- Make sure that you're asking for an appropriate sum. If you request too much or too little, reviewers will conclude that you don't know what you're doing. **K.K.**

Proposals must be easy to read, agree Stephen Russell and David Morrison, co-founders of Grant Writers' Seminars and Workshops, a consulting business in Los Olivos, California, that helps clients with applications. "Reviewers read grant applications for only one reason — because they have to," says Russell. To help them, he and Morrison recommend making margins wider than the minimum, using an easy-to-read typeface and font size such as 12-point Arial — or whatever is specified in the instructions — and adding spaces between paragraphs and sections.

Spelling errors and poor grammar may not immediately disqualify an application, but they could lower the score, or at the very least give a bad impression. "Bad English and typos are an annoyance factor that reviewers have to overcome," says Wallon. "If it's done sloppily, I wouldn't recommend it."

SET-ROUTES

"You have to show that you're an independent-thinking scientist taking a different track."
Gerlind Wallon

But scientists don't necessarily need to hire a consultant to make sure that their application is letter-perfect, say programme managers. "Using a commercial consultant gives your application a tone that panel members will detect. We're looking for a contribution from the individual," says Alex Martin Hobdey, head of the unit for starting grants at the European Research Council in Brussels. Consultant-assisted applications tend to sound too slick or smooth — it is more effective to get editing recommendations from colleagues.

Submissions that are incomplete or past deadline are certain to be disqualified. Hutterer says that out of the 850 applications to EMBO's fellowship programme each year, some 150 are unfinished and thus immediately ineligible. And Dennis Abbott, a spokesman for the Marie Curie Actions programme, decries late submissions. "No matter how good your application is, it's too late," he says. "Deadlines are set for a reason."

SHADES OF EXCITEMENT

Applicants need to communicate the pay-offs of the research straight away. Russell says that a common mistake is to write a title that could be reused for future renewal applications. For example, he says, 'Studies of renal disease' is accurate but generic. He suggests evoking a salient image or concept — something more like 'Contribution of anti-idiotype antibodies to pathogenesis of acute glomerulonephritis'. He warns applicants not to let snappiness obscure the content of the proposal — something like 'Breakthrough treatment strategies to cure acute glomerulonephritis' draws attention but is sensationalistic and vague.

It helps to be positive and enthusiastic in project summaries, abstracts and research questions — but to include a back-up plan. "You need to say that you expect that this approach will work; however, if it doesn't, you will be prepared to do this and this," says Morrison. "It's all about asserting confidence in your ability to do this research, backed up by your fallback of alternative strategies."

Ultimately, once the mechanics are right, it boils down to convincing reviewers that the application deserves funding. "If you can't convey your excitement and the importance of your proposal and what you think your results will be," says Franko, "then you're not going to get good scores." ■

Karen Kaplan *is* Nature*'s assistant Careers editor.*

UNITED STATES

Charity supports science

At least 10 of the top 50 US charitable donors of 2011 gave funds to support scientific research, according to the *Philanthropy 50* report released on 6 February by *The Chronicle of Philanthropy* in Washington DC. The top 50 donors gave a total of US$10.4 billion, up from $3.3 billion in 2010. The *Chronicle* speculates that the increase is due to some economic recovery and a perceived need for funds at universities. Donations included $70 million to the Allen Institute for Brain Science in Seattle, Washington, for neuroscience and genomics research; $59.2 million to the Ellison Medical Foundation in Bethesda, Maryland, for biomedical research; and $25 million to Yale University in New Haven, Connecticut, to launch an energy-research institute.

CHILE

Tax credit for research

The Chilean government hopes that a tax incentive will boost investment in research and development (R&D), and create jobs. The scheme triples the maximum tax credit for research-investment costs; eliminates a 15% tax on gross sales, easing the financial burden for entrepreneurs and start-ups; and can offset costs related to securing intellectual-property rights. The law will come into effect this year. Pablo Longueira, Chile's economics minister, expects companies in mining, forestry, energy, agriculture and aquaculture to expand their research. "We believe that many of the new PhDs that are currently being trained outside of the country will return to work for R&D projects under this new law," he says.

ANIMAL HEALTH

Allen school expanding

Recruitment has begun at Washington State University's Paul G. Allen School for Global Animal Health in Pullman, where a new research facility will open in May. By 2015, administrators hope to hire 13 researchers to detect emerging cross-species diseases, develop vaccines and work on transmission control, says director Guy Palmer. Hiring is supported by US$51 million in donations from Microsoft co-founder Paul Allen and the Bill & Melinda Gates Foundation in Seattle, Washington; another $14 million is earmarked for programmes including training students in East Africa.