POLISH HEART JOURNAL

Kardiologia Polska
The Official Peer-reviewed Journal of the Polish Cardiac Society since 1957

Online first
This is a provisional PDF only. Copyedited and fully formatted version will be made available soon

ISSN 0022–9032 e-ISSN 1897–4279

How and why to apply for grants? The position of the Expert Panel of the Committee on Science and Grants, Committee on Research and Scientific Analysis, and Club 30 of the Polish Society of Cardiology

Authors: Mateusz Tajstra, Łukasz Pyka, Aleksandra Ciepłucha, Ludmiła Daniłowicz-Szymanowicz, Paweł Gąsior, Marek Gierlotka, Agnieszka Kapłon-Cieślicka, Karolina Kupczyńska, Jerzy Sacha, Katarzyna Mizia-Stec, Katarzyna Starzyk, Piotr Szymański, Robert Gil

Article type: Expert opinion

Received: November 7, 2024

Accepted: November 7, 2024

Early publication date: November 27, 2024

How and why to apply for grants? The position of the Expert Panel of the Committee on Science and Grants, Committee on Research and Scientific Analysis, and Club 30 of the Polish Society of Cardiology

Mateusz Tajstra[1], Łukasz Pyka[1], Aleksandra Ciepłucha[2], Ludmiła Daniłowicz-Szymanowicz[3], Paweł Gąsior[4], Marek Gierlotka[5], Agnieszka Kapłon-Cieślicka[6], Karolina Kupczyńska[7], Jerzy Sacha[5], Katarzyna Mizia-Stec[8] , Katarzyna Starzyk[9], Piotr Szymański[10], Robert Gil[11]

[1]3rd Department and Clinic of Cardiology, Faculty of Medical Sciences in Zabrze, Silesian Medical University, Katowice, Poland
[2]1st Department and Clinic of Cardiology, Karol Marcinkowski University of Medical Sciences, Poznań, Poland
[3]Clinic of Cardiology and Cardiac Electrotherapy, Faculty of Medicine, Medical University of Gdansk, Gdańsk, Poland
[4]3rd Department of Cardiology, Faculty of Medical Sciences in Katowice, Silesian Medical University, Katowice, Poland
[5]Clinic of Cardiology, Faculty of Medicine, University of Opole, Opole, Poland
[6]1st Department and Clinic of Cardiology, Medical University of Warsaw, Warszawa, Poland
[7]Department of Cardiology and Congenital Heart Diseases, Polish Mother's Memorial Hospital — Research Institute, Łodź, Poland
[8]1st Department of Cardiology, Faculty of Medical Sciences in Katowice, Silesian Medical University, Katowice, Poland
[9]Department of Prevention of Cardiovascular Diseases, Collegium Medicum, Jan Kochanowski University, Kielce, Poland
[10]Center for Clinical Cardiology and Rare Cardiovascular Diseases, Central Clinical Hospital of the Ministry of Interior and Administration, Warszawa, Poland
[11]Department of Cardiology of the National Medical Institute of the Ministry of Interior and Administration, Warszawa, Poland

Correspondence to:
Łukasz Pyka, MD, PhD,
3rd Department and Clinic of Cardiology,
Faculty of Medical Sciences,
Silesian Medical University in Katowice,

Skłodowskiej-Curie 9, 41–800 Zabrze, Poland,
phone: +48 32 373 38 60,
e-mail: l.t.pyka@gmail.com

INTRODUCTION

A grant is a financial award designed to support a person, organization, project, or program in accomplishing a specific goal. Grants typically result in a deliverable, which is often a requirement for the completion and accountability of the grant. Generally, grants are provided by grant-making institutions, also known as grantors, for educational, scientific, or other purposes. The application process follows well-defined rules specified in regulations. Grantors include scientific societies, foundations, corporations, and government agencies. Most grants come with detailed guidelines for financial allocation and stipulate how the grant recipient will report progress, fulfill objectives, and complete final accounting requirements.

Scientific grants are a key element in the development of science, especially in the field of medicine. Their importance can be considered from many perspectives, from influencing the progress of research to supporting young scientists, to contributing to the development of innovative therapies [1].

A medical grant application is the process of writing a proposal to secure funding for a program, project, research, or educational goal (e.g., travel to conferences or training). Grant writing involves making a case for the benefits of the grant, demonstrating how it will allow the intended purpose to be achieved within a specified timeframe, and often with a predefined outcome, such as publishing research results in a scientific journal [2].

Applying for grants is a complex, creative skill. It requires hypothesis generation, research planning, team building, logistical optimization, awareness of limitations, and risk anticipation — key elements of a successful application and future grant implementation. More experienced researchers are typically more effective in securing grants, partly because they have developed more grant-writing skills than younger researchers who are just beginning their careers [3].

Given the growing opportunities to secure scientific grants in the medical field, particularly in cardiovascular research, this expert position from the Committee on Science and Grants, the Committee on Scientific Research and Analysis, and Club 30 of the Polish Society of Cardiology (PTK, *Polskie Towarzystwo Kardiologiczne*) is intended to systematize general knowledge on obtaining grants, with particular focus on grants from the PTK. This position paper provides essential general guidance for successful grant applications. It should be noted

that each grant-funding entity has specific guidelines, which must be adhered to. Unfortunately, a comprehensive review of all these guidelines is beyond the scope of this paper due to space limitations.

WHY APPLY FOR RESEARCH GRANTS?

Due to the limited availability of institutional funding, scientific grants make it possible to finance high-cost research that would otherwise be unfeasible. Successfully applying for scientific grants and conducting clinical projects with these funds can foster recognition within the scientific community, build collaborative networks, and contribute to advancements in medical science. Securing a grant is often viewed as a confirmation of the value and innovation of proposed research, potentially paving the way for further scientific and professional accomplishments. Additionally, research projects frequently include educational and public outreach efforts, which increase public awareness of new medical advancements and the significance of scientific research.

Here are some key arguments supporting the importance of applying for grants:

1. **Funding innovative research**: Scientific grants provide essential funding for research projects that can lead to medical breakthroughs. Without this support, many promising studies would remain unrealized. Grants enable researchers to explore new concepts, hypotheses, and therapies that could shape the future of healthcare.
2. **Support for young researchers**: Scientific grants often target young researchers, allowing them to initiate and develop their own research projects. This is crucial for the long-term growth of science, as it ensures the continuity of research and innovation. Additionally, grant experience is often considered in evaluations for scientific degrees, supporting early career researchers in building academic careers and gaining team leadership experience.
3. **Promoting interdisciplinarity**: Science grants frequently encourage interdisciplinary research, integrating knowledge from fields like biology, chemistry, physics, computer science, and engineering. These collaborations can lead to innovative approaches in diagnosing, treating, and preventing diseases that a single discipline might not achieve alone.
4. **Accelerating innovation into practice**: Research grants facilitate the rapid translation of scientific findings into practical medical applications. Such funding supports the clinical trials and tests necessary to confirm the efficacy and safety of new therapies, drugs, or medical technologies, expediting their application in clinical practice.

5. **Addressing global health challenges**: Science grants allow for the rapid allocation of resources to pressing health issues like pandemics, infectious diseases, antibiotic resistance, and chronic illnesses. By enabling flexible research priorities, science grants play a vital role in global responses to public health threats.
6. **Developing new patent solutions and spin-off companies**: Grant-funded research often leads to the creation of new patents and spin-off companies from the main business entity. These spin-offs focus on specialized research areas and can attract new scientific collaborators, advancing the research goals and innovation capacity of the parent organization.
7. **Stimulating the economy**: Although long-term, research investments — particularly in medicine — contribute significantly to economic growth. New medical technologies, drugs, and therapies can spark new businesses, generate jobs, and enhance the national economy's competitiveness on an international scale.
8. **Access to advanced technology and equipment**: Science grants provide researchers with access to modern equipment, advanced technologies, and essential resources, enabling high-quality research. This access allows for more precise and large-scale experiments, accelerating scientific progress.
9. **Developing international cooperation**: Research grants often support international collaboration, promoting the exchange of knowledge, experience, and best practices among researchers worldwide. These partnerships improve the chances of solving complex medical problems and contribute to global medical advancements.
10. **Raising educational standards**: Scientific grants frequently include training opportunities for students, doctoral candidates, and early-career scientists. Participating in grant-funded projects allows them to gain valuable experience, develop research skills, and ultimately enhance the overall quality of medical education.

All of the above arguments underscore the relevance of applying for grants, which serve as a "driving force" in the advancement of medicine, including the field of cardiology that the present authors represent. It is worth emphasizing once again that securing grants in the medical sphere offers numerous benefits and opportunities for both research units and medical institutions, as summarized in Table 1.

CATEGORIES OF AVAILABLE MEDICAL GRANTS, APPLICATION FORMS, AND ACCOUNTING METHODS

Medical grants available to individuals and entities within the health system are divided into domestic and international categories. The subject of funding is strictly defined by the grant regulations and typically includes: a) funds needed to carry out a specific research project, b) funds to support a researcher traveling to a center outside their home institution, or c) funds for travel to a scientific conference to present research results.

The primary grantors in cardiology on the national level include the Agency for Medical Research (ABM), the National Science Center (NCN), the National Center for Research and Development (NCBiR), the Foundation for Polish Science (FNP), and the Polish Cardiac Society (PTK). For international projects, major funding institutions include the European Research Council (ERC), the European Society of Cardiology (ESC), the National Agency for Academic Exchange (NAWA), and PTK. Information on funding opportunities for scientific activities is available on the PTK website under Aktualności — Komunikaty PTK (*News — PTK Announcements*; https://ptkardio.pl/aktualnosci/3-komunikaty_ptk?page=0), usually announced at the start of the second quarter of the year, with a submission deadline of June 30.

Research grants awarded by the PTK, often funded by pharmaceutical companies, have ranged from PLN 100 000 to PLN 150 000 in recent years. Application templates, regardless of the funding body, are standardized. Budget calculations should account for study-related expenses (such as apparatus, reagents, consumables, and outsourced testing), personnel costs (up to 20% of the total budget), and publication preparation costs (including statistical analysis and translations, but excluding publisher fees). Additionally, travel and other expenses may account for up to 10% of the grant amount. The duration of a research project is typically two years, with a possible extension of several months in justified cases. Research funded by the grant should culminate in publication(s) in peer-reviewed journals; publication in *Polish Heart Journal* (*Kardiologia Polska*) or a journal with an Impact Factor equal to or higher than that of *Polish Heart Journal* is preferred. Alongside the substantive and financial reports, the publication is an essential element of grant accountability.

The rules for applying for the Grant for Young Scientists under the auspices of the PTK Club 30 follow similar guidelines. However, applicants must be under 35, and the amount of financial support has typically been PLN 50 000 in recent years.

A special type of grant awarded by the PTK supports multicenter observational studies conducted on the PTK Scientific Platform. The support provided under the PTK Scientific Platform includes offering free use of the platform’s space, managing database maintenance for the requested study, and granting the study the patronage of the PTK General Board. Applicants may include the Boards of PTK Associations, Sections, or Branches.

The PTK Scientific Platform is designed for conducting multicenter observational studies (registries, including snapshot surveys) within a timeline of 6 to 12 months. Longer study durations require individual approval from the PTK General Board and external funding sources. To conduct a study on the PTK Scientific Platform, agreements must be signed between the PTK and the Principal Investigator's center, followed by agreements between the PTK and the cooperating centers. If any procedural difficulties arise, the PTK Office provides support, including consultations with the PTK Legal Department and PTK Data Protection Officer.

The substantive completion of the project includes the publication of study results; publication in *Polish Heart Journal* or a journal with an Impact Factor equal to or greater than that of *Polish Heart Journal* is preferred. From 2021 to 2024, the PTK General Board awarded 18 grants for multicenter observational studies on the PTK Scientific Platform, of which 6 projects have been completed, resulting in 4 original publications in *Polish Cardiology* to date. The Scientific Platform is supervised by the Scientific Research and Analysis Committee of the PTK General Board.

Researchers at all career stages can apply for NCN grants, as the agency offers programs for early-career researchers, experienced researchers, and opportunities where young scientists compete alongside more seasoned colleagues, regardless of country of origin. The NCN website offers a “grant configurator” (https://www.ncn.gov.pl/konfigurator-grantu) to help applicants identify the most suitable competition. The NCN supports scientific activities in basic research, focusing on theoretical advancements rather than direct commercial application.

Researchers seeking funding from NCBiR should note the agency’s strong emphasis on the commercialization of developed technologies. The main goal of NCBiR-funded projects is the creation of new technologies, processes, and services that improve the quality of life and enhance the competitiveness of the national economy. A key program for young researchers is the LIDER Program for young innovation leaders, active since 2009. This program supports researchers with projects that have implementation potential, providing up to PLN 1.5 million per project.

The Polpharma Scientific Foundation also hosts an annual competition for outstanding research projects in pharmaceutical and medical sciences. The Foundation’s primary objective is to fund research projects of great importance to medicine and pharmacy, undertaken by academic research centers and R&D institutions. Competition topics vary annually; the most recent competition focused on artificial intelligence applications in medical data analysis and management, with a total fund of PLN 1 852 021 awarded across three grants.

POTENTIAL RISKS FOR RESEARCHERS APPLYING FOR GRANTS

When preparing and applying for a research grant, applicants should be aware of potential risks that may impact evaluation scores, the likelihood of receiving a grant, and the potential for challenges during project implementation. Such risks may be substantive (related to topic selection and methodology development), economic (related to cost estimation), or logistical. These potential risks are summarized in Table 2. The most critical aspect of any scientific project is a well-chosen topic, clear objectives, and a thoroughly developed methodology. Therefore, the substantive elements of the proposal play the greatest role in minimizing potential risks, while economic and logistical factors follow directly from a robust project design.

An essential point in any grant proposal is a carefully considered assessment of sample size and statistical power. Given the limited budget of most grants, it's vital to submit proposals that can realistically be completed with the available funding and yield statistically significant results. When drafting a proposal, researchers should plan a scheme for statistical analysis and calculate statistical power, which can be done using widely available calculators. From both a scientific and ethical standpoint, it is crucial at the planning stage to assess whether the resources and risks involved (such as exposing participants to invasive procedures) will yield reliable conclusions.

STRATEGIES FOR OVERCOMING OBSTACLES AND INCREASING GRANT ACQUISITION EFFECTIVENESS

Understanding potential obstacles to grant applications and implementing strategies to overcome them can significantly enhance success in securing grants. Each grant competition has its own unique guidelines, some of which may be straightforward, while others can be complex and challenging to interpret. Misunderstanding or overlooking key guidelines can easily result in an application's rejection. To minimize this risk, carefully review all grant guidelines and ensure you understand the requirements fully before beginning your application. If any points are unclear, reach out to the granting authority for clarification.

It is essential to ensure that the application aligns closely with the objectives and criteria of the grant. Many research grants require clear articulation of complex ideas and projects, which can be challenging. To address this, break down intricate ideas into simple, accessible language. Use visual aids, such as diagrams, charts, or infographics, to further clarify complex concepts. Remember, the objective of your proposal is to persuade the grant committee of the project's value and its potential impact within a specific area of science.

Additionally, grant providers aim to fund competent and reliable entities. Therefore, the application should assure reviewers that the team is capable of successfully executing the project and delivering the intended results. Highlight the team's track record, relevant experience, and qualifications to reinforce credibility and reliability.

STRATEGIES FOR OVERCOMING INEQUALITIES AND EXCLUSIONS IN GRANT APPLICATIONS

The goal of the PTK is to ensure equal access to research opportunities for all grant applicants, regardless of gender. For years, there has been ongoing discussion about potential "gender bias" in the awarding of scientific grants. Evidence of disparities in the participation of women and men in grant competitions has led to recommended and implemented practices, such as "priority structured funding" for women [4, 5]. Increasing the percentage of women reviewers in competitions is another step toward addressing potential inequalities. A recent study published by the US National Institutes of Health found that women made up only about one-third of reviewers, which has prompted recommendations to increase women's involvement in the grant review process [6]. Efforts to reform the peer review processes for research grants must be complemented by broader initiatives aimed at changing traditional gender norms in academia through institutional policies that recognize and counteract the existence of "gender bias".

This is supported by specific codes of conduct introduced by the ESC and the European Union's Parliament and Council, namely the ESC Gender Policy [7] and Directive 2022/2381 [8]. The scope of these documents exceeds the capacity to discuss them in detail here.

STRATEGIES FOR INCREASING THE QUALITY AND OBJECTIVITY OF GRANT APPLICATION REVIEWS

The evaluation of grants should employ the peer-review method, which qualitatively assesses scientific achievements on merit by other researchers with similar or greater accomplishments than those being evaluated. This method is considered the most authoritative and reliable. To maintain objectivity in grant evaluations, reviewers must not be affiliated with the funding organization or the applicants, minimizing potential conflicts of interest and ensuring independence in the evaluation process. This independence guarantees an impartial evaluation and selection of proposals based on their merit.

Additionally, involving experts from the specific field related to the grant application can enhance the scientific quality of the reviews. Reviewers evaluate submitted applications against predetermined criteria, which should include factors such as project relevance,

innovation, feasibility, methodology, impact, and alignment with funding priorities, as well as the grant applicant's scientific track record. The role of reviewers is crucial for ensuring a fair and rigorous evaluation process, as their expertise, independence, and collective judgment contribute to selecting proposals with the greatest potential to make a significant impact in the area supported by the grant program.

STRATEGIES FOR INCREASING THE OBJECTIVITY OF EVALUATING GRANT PERFORMANCE EFFECTIVENESS

Research grants are typically awarded for a period of 2–3 years. To enhance the evaluation of grant performance effectiveness, results should be assessed annually by the grantors. The stated goals must be met within reasonable limits, as defined in advance in the grant schedule. If the set goals and milestones are achieved to the satisfaction of the reviewers, project funding may be continued or extended for another year.

It is not necessary for the grant performance evaluation committees to include only members of the selection committees that made the initial funding decisions. Additionally, at the end of the grant period, the project manager should submit a final report, including a self-assessment that describes the results and information on achievements, such as publications, awards, and patents. The evaluation committee should also assess the overall scientific quality of the achievements submitted by the manager.

Successfully advancing a project based on an obtained grant requires comprehensive handling: planning, coordination, and management in accordance with good clinical practice. The legislative and formal processes involved, such as contacting the bioethics committee or the office for the registration of medicinal products, represent just a few of the daily challenges, especially in larger multi-center studies. An appropriately chosen external Contract Research Organization that specializes in complex project handling can significantly enhance project implementation. This consideration should be made early in the planning stage of the study. Another service option is Clinical Research Support Centers (CWBK), which are specialized units located in Polish public centers.

ANATOMY OF A GRANT — STEP-BY-STEP APPLICATION

1. Select a topic

The project topic should be cognitively important, relevant, and preferably novel. During the application review process, evaluators consider both the potential impact of the anticipated research results on science and clinical practice, as well as the originality of the research

hypotheses. The applicant should have prior experience and some scientific output related to the project topic, as this is one of the criteria evaluated during the application review. The choice of topic and objectives is partly influenced by funding sources or the schedule of announced competitions, so it is advisable to keep up with updates from the grantor.

2. **Define your goals**

The objectives of the study must be precisely defined and should correspond to the research hypotheses. Proper formulation of the study objectives is crucial, as it is a key element in evaluating the proposal.

3. **Conduct a literature review**

A review of the current literature allows for the verification of the relevance of the chosen topic, refines the scientific hypotheses, and aids in selecting appropriate research methods and tools. Literature data can help predict the size and strength of the expected effects of the planned intervention, thereby estimating the required size of the study group needed to validate the research hypothesis.

4. **Define feasibility**

Based on literature data and local experience, assess the feasibility of recruiting the required number of patients for the study. This assessment will inform the decision on the number of centers needed to include an adequate number of subjects. When planning the project methodology, verify the availability of specific studies and procedures at the selected center(s). Before submitting a grant application, obtain approval from the management of the center(s) where the study is intended to be conducted, and gather pricing for the planned studies and procedures. This should include the costs of equipment, reagents, and research personnel or service delivery at the respective center(s). The grant application review process evaluates the appropriateness of the chosen research methods, their availability at the participating centers, and the justification of the planned purchases and study costs.

5. **Build a “grant team”**

Depending on the grant, a grant proposal may require a detailed description of the research methodology, procedures, or cost estimates. For more extensive grant applications (e.g., those submitted to ABM, NCN, or NCBiR), the preparation of the application may necessitate collaboration among several individuals in a “grant team”. This team, in addition to the applicant or principal investigator, may include individuals with expertise in the selected research methods or procedures and administrative staff from the center to assist in developing the project cost estimate. An important step in planning the study is the initial recruitment of other centers willing to participate in the project. A useful tool for finding investigators and

centers for multi-center studies is the PTK's "Club 30" Scientific Collaboration Platform, which will be available to all PTK members starting February 2024 (https://platformaklub30.ptkardio.pl). This online platform allows users to post descriptions of planned or ongoing scientific projects and invite other users to participate. Any user of the platform can also apply to join a study of interest that has been posted. It is worth noting that participation in the implementation of a grant by international teams or centers is often rewarded with additional points during the application stage.

TRAVEL GRANTS

Travel grants are designed to cover the costs of transportation and accommodation for individuals traveling abroad for scientific purposes, including the congress fee for attending scientific conferences. Travel grants awarded by the PTK General Board for selected international congresses (such as the ESC Congress, American Heart Association Congress, and American College of Cardiology Congress) or individual PTK Associations/Sections are available to PTK members who are first authors of original papers accepted for presentation at these congresses.

Additionally, the ESC authorities, in cooperation with the PTK General Board, offer scholarships each year. These scholarships consist of a waiver for the registration fee to the ESC Congress for PTK members under 40 or over 40 years of age who are in the process of specializing in cardiology.

Another type of travel grant is the Specialized Research Fellowship of the PTK Club 30. This grant supports a 5- to 6-month specialized research fellowship aimed at gaining research experience at a renowned European academic center. It is directed toward PTK members under the age of 36 and has amounted to €10 000 in recent years (https://klub30.ptkardio.pl/#nagrody).

STATISTICS OF PTK GRANTS

Tables S1 and *S2* (Supplementary material) present summary data on the grants awarded to date. From 2003 to 2023, a total of 409 applications for PTK scientific grants were received, of which 23 had formal errors. A total of 85 PTK science grants were awarded for project implementation, amounting to nearly PLN 6 million.

A LOOK INTO THE FUTURE

Research work is never cost-free, even for projects that do not involve interventions but only the analysis of available data (secondary analysis). Researchers always invest their time and

resources, whether this is done as part of their job duties or as volunteers ("after working hours"). The only difference is that in the first case, the cost is borne by the employer, while in the second, it is borne by the volunteer and their relatives.

Regardless of the type of research project, it is usually necessary to hire data analysts, sometimes a translator, and often, as recommended by international journals, an entire editorial team to prepare the paper for publication. Additionally, due to decisions by international bodies to adopt an “open access” policy, publishing research results in leading journals incurs increasingly high costs associated with publication fees. In top international periodicals, these fees can reach thousands of dollars.

One of the tasks for the scientific community in the future is to develop transparent rules for financing “no-cost” research so that it does not burden volunteers and is acceptable to their employers as well as to the families or next of kin of the researchers. At a minimum, it is necessary to quickly address the issue of funding the publication of “no-cost” research results.

Financing the process of preparing a grant submission is a separate issue. For complex multi-center projects involving multi-person consortia, the initial expenditure amounts to many hundreds of man-hours by the team preparing the proposal. In a grant funding ecosystem where the chances of obtaining grants range from 5% to 10%, the total expenditure of all competing teams equates to many thousands of man-hours, with a likelihood of obtaining funding of 1:10 to 1:20. Each team incurs similar costs when repeatedly applying in grant proceedings. A systemic solution should therefore include increasing the availability of grant funding and thus the likelihood of obtaining it, as well as incorporating the costs of multiple applications into the grant amounts (core funding) or providing funds for so-called “grants for grants”. The latter is essential for forming international consortia, where travel to foreign centers and preparatory meetings are sometimes necessary.

Under basic science funding, researchers must have access to communication, publications, and publicly available databases, as well as, to some extent, the ability to travel and contact researchers from other countries.

A significant threat to science funding is wasted resources (“research waste”), defined as unpublished results, inadequate reporting of the obtained data, or inadequate study planning in terms of feasibility. It is estimated that up to tens of per cent of grant funds may be affected. Researchers, reviewers, science managers, and opinion leaders all share the responsibility for reducing this waste. It is important to build awareness among researchers and to develop a code of ethics in this regard.

APPLICATION CHECKLIST

Table 3 presents a checklist for a grant application that should be completed before submitting the final application.

SUMMARY

The grant application process is complex, multi-stage, and influenced by various factors. Many elements are crucial, including substantive aspects (e.g., objectives), methodological components (e.g., tools), editorial considerations (e.g., application format), logistical planning, and, above all, formal requirements (e.g., submission deadlines, qualifications of the project manager). Adhering to certain general principles can help facilitate, systematize, and optimize working time, thereby increasing the likelihood of successfully obtaining funding. In the experience of the authors, a fundamental rule during the development process is to "be the reviewer of your application", ensuring that planning, preparation, and submission are conducted with a clear understanding of the evaluator's expectations.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

Conflict of interest: None declared.

Funding: None.

REFERENCES

1. Wiseman JT, Alavi K, Milner RJ. Grant writing 101. Clin Colon Rectal Surg. 2013; 26(4): 228–231, doi: 10.1055/s-0033-1356722, indexed in Pubmed: 24436682.
2. Wisdom JP, Riley H, Myers N. Recommendations for writing successful grant proposals: An information synthesis. Acad Med. 2015; 90(12): 1720–1725, doi: 10.1097/ACM.0000000000000811, indexed in Pubmed: 26200582.

3. Levitt M, Levitt JM. Future of fundamental discovery in US biomedical research. Proc Natl Acad Sci USA. 2017; 114(25): 6498–6503, doi: 10.1073/pnas.1609996114, indexed in Pubmed: 28584129.
4. Committee on Maximizing the Potential of Women in Academic Science and Engineering (US). Beyond bias and barriers: Fulfilling the potential of women in academic science and engineering. National Academies Press, Washington, DC 2007.
5. Australian Government, National Health and Medical Research Council. Investigator Grants 2019/2020 Outcomes Factsheet. 2020. https://www.nhmrc.gov.au/funding/data-research/outcomes#download (accessed: November 6, 2024).
6. Volerman A, Arora VM, Cursio JF, et al. Representation of women on national institutes of health study sections. JAMA Netw Open. 2021; 4(2): e2037346, doi: 10.1001/jamanetworkopen.2020.37346, indexed in Pubmed: 33587131.
7. https://www.escardio.org/The-ESC/About/Policies/esc-gender-policy (accessed: November 6, 2024).
8. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022L2381 (accessed: November 6, 2024).
9. Lai BS. The Grant Writing Guide a road map for scholars. Princeton University Press, Princeton 2023.

Table 1. Key benefits of applying for grants

Funding for research and development
Grants enable researchers and medical institutions to secure essential funding for scientific research and development projects across various aspects of medical practice
Support for scientific careers
For scientists and doctors, applying for grants offers not only the chance to fund their research projects but also an opportunity to advance their scientific careers. Securing a grant can enhance one's academic prestige, increase visibility in the field, and support the attainment of advanced degrees and titles
Scientific categorization of medical universities
Securing grants also helps universities earn points in the scientific categorization process, which is valuable not only for academic prestige but also for determining levels of public funding

Collaboration and networking
The grant application process provides opportunities to form new contacts with other researchers, medical institutions, and the pharmaceutical industry
Improving health care
Grant-funded research can lead to advancements in the diagnosis, treatment, and prevention of diseases. In this way, medical grants have a substantial impact on improving health care

Table 2. Potential challenges and risks for grant applicants

Potential risks in the grant application process		
Substantive	***Economic***	***Logistical***
Research topic selection Risks may arise from insufficiently considering the research topic, without thorough knowledge of available literature and data **Project methodology** Potential pitfalls in methodology development include: — Inappropriate study group selection (inclusion/exclusion criteria) — Poor estimation of study group size (based on statistical analysis for endpoints) — Inadequate assessment of equipment availability, including any necessary purchases	**Inadequate cost estimation** The project costing should comprehensively include: — Purchase of essential equipment (fixed assets) — Small laboratory equipment, reagents, electrodes, etc. — Costs of planned statistical analyses — Costs for translation and publication fees, based on market analysis — Indirect costs, typically 10%–30% depending on the institution — Risks of currency exchange fluctuations for international funding	**Grant type and scheduling** Ensuring an appropriate grant type and a realistic schedule for application preparation is critical **Research team and subcontractors** — Sufficiently qualified and appropriately sized research team — Inclusion of necessary subcontractors (e.g., blood sample laboratories, genetic testing labs) **Multi-center study considerations** — Potential complications in contracting with participating centers, especially if legal interpretations of data protection vary

— Insufficiently planned project timeline	— Potential changes in service cost during the grant — Bidding process risks (timing, scope of services, payment terms) — Potential risks associated with third-party technology providers (e.g., placebo suppliers)	

Table 3. Grant application checklist (based on [9])

EVALUATION CRITERIA. ***Specific application requirements:*** Did you address specific application requirements in the application (e.g., through headings and underlined words)?	YES/NO
Grantor's mission/status/strategic plan: Did you include at least one statement in your application about how you are implementing the funder's mission/statute/strategic plan?	YES/NO
Budget: Did you specify the budget and its components in the application, and is it consistent with the grant amount?	YES/NO
Introduction — the form of the message: Do you provide arguments for how your work will affect the development of the field? Avoid descriptive, neutral statements. Are there places where you can reinforce the message? Write how, but argue why.	YES/NO
Argumentation: Does your research plan explain why it is sound and well thought out? Have you chosen the right methods, demonstrated your ability to do the work, and provided reasons why the grantor can expect good results?	YES/NO
Anticipation:	YES/NO

Have you anticipated reviewers' questions about your research plan? Have you addressed these questions? Try to put yourself in the evaluator's shoes for each element of the proposal	
Project: Does each paragraph have a clear message? In each paragraph, does the evidence match the clues given at the beginning? Have you identified conflicting evidence and removed "filler" text, focusing instead on specific numbers, data, and research?	YES/NO
Repetition: Did you use the same terms throughout the application? Don't write about key aspects — objectives, tools, deadlines, etc. — in different ways	YES/NO
Transparency indicators: Do you clearly indicate what you want to include in each section of the application?	YES/NO
Highlighting techniques: Are your emphasis techniques consistent? Is it clear why you are using highlighting techniques? Are there places where highlighting techniques are unnecessary and can be removed?	YES/NO
Figures: Does each figure have a purpose? Can you understand the figure without having to read the text? Is the data accessible? Is the font large enough to be read? Are the figures as simplified as possible? Are they consistent in alignment, color, size, and formatting?	YES/NO
Unnecessary words/phrases: Did you review the entire application and remove every word or phrase that could be eliminated?	YES/NO
Remove jargon: Do a final check of your application to eliminate any jargon	YES/NO
Short sentences: Do all your sentences fit within three lines of text? Can you make your sentences even shorter? Do you have any compound sentences that can be simplified or divided?	YES/NO
Avoid acronyms and the word "It": *Are the acronyms used necessary? Are they clear? When looking for the word "it" in your application, is it always clear what "it" means?*	YES/NO
Precision: Have you made your arguments using credible numbers and data rather than general statements?	YES/NO

Uniqueness/innovation: Have you clearly defined why your work is unique?	YES/NO
Final style verification: Have you checked that all the measure names are correct? Did you cite the correct articles? Are the headings and objectives worded consistently? Is the information presented in the same order each time? Did you use the same terms and spelling throughout the text? Have you checked for all spelling and grammatical errors? Did you verify the numbers of figures and tables, including the places you reference when quoting them in the text?	YES/NO
Final formal verification: Have you ensured that all final documents meet the application requirements? Do you meet the deadline for the final application submission?	YES/NO