

Pennsylvania Department of Health Final Performance Summary Report Formula Grants

Overview of the Health Research Project Performance Review Process and Criteria

An applicant that receives a health research grant under Tobacco Settlement Act / Act 77 of 2001, Chapter 9, is subject to a performance review by the Department of Health upon completion of the research project. The performance review is based on requirements specified by Act 77 and criteria developed by the Department in consultation with the Health Research Advisory Committee.

As part of the performance review process, each research project contained in a grant is reviewed by at least three experts who are physicians, scientists or researchers. Reviewers are from the same or similar discipline as the research grant/project under review and are not from Pennsylvania. Reviewers use the applicant's proposed research plan (strategic plan), the annual progress report and final progress reports to conduct the review. A grant that receives an unfavorable performance review by the Department may be subject to a reduction in funding or become ineligible for health research funding in the future. The overall grant evaluation rating is based on the ratings for the individual research projects contained in the grant.

This performance review report contains the outcome of the review for the grant as a whole (outstanding, favorable, or unfavorable), strengths and weaknesses of each research project, as well as recommendations for future improvement.

The following criteria were applied to information submitted by research grant recipients:

- **Criterion 1 - How well did the project meet its stated objectives? If objectives were not completely met, was reasonable progress made?**
 - Did the project meet the stated objectives?
 - Were the research design and methods adequate in light of the project objectives?
 - Consider these questions about data and empirical results: Were the data developed sufficiently to answer the research questions posed? Were the data developed in line with the original research protocol?
 - If changes were made to the research protocol, was an explanation given, and, if so, is it reasonable?
 - Consider (only for clinical research projects) the extent of laboratory and clinical activities initiated and completed and the number of subjects relative to the target goal.
 - Were sufficient data and information provided to indicate or support the fact that the project met its objectives or made acceptable progress?
 - Were the data and information provided applicable to the project objectives listed in the strategic research plan?

- **Criterion 2 - What is the likely beneficial impact of this project? If the likely beneficial impact is small, is it judged reasonable in light of the dollars budgeted?**
 - What is the significance of this project for improving health?
 - Consider the value of the research completed towards eventual improvement in health outcomes.
 - Consider any changes in risk factors, services provided, incidence of disease, death from disease, stage of disease at time of diagnosis, or other relevant measures of impact and effectiveness of the research being conducted.
 - Consider any major discoveries, new drugs and new approaches for prevention, diagnosis and treatment, which are attributable to the completed research project.
 - What are the future plans for this research project?

- **Criterion 3 - Did the project leverage additional funds or were any additional grant applications submitted as a result of this project?**
 - If leveraging of funds were expected, did these materialize?
 - Are the researchers planning to apply for additional funding in the future to continue or expand the research?

- **Criterion 4 - Did the project result in any peer-reviewed publications, licenses, patents, or commercial development opportunities? Were any of these submitted/filed?**
 - If any of the above listed were expected, did these materialize?
 - Are the researchers planning to submit articles to peer-reviewed publications, file for any licenses, or patents or begin any commercial development opportunities in the future?
 - Consider the number/quality of each.

- **Criterion 5 - Did the project enhance the quality and capacity for research at the grantee's institution?**
 - Were there improvements made to infrastructure?
 - Were any new investigators added or were any researchers brought into the institution to help carry out this research?
 - Were funds used to pay for research performed by pre- or post-doctoral students?

- **Criterion 6 - Did the project lead to collaboration with research partners outside the institution, or new involvement with the community?**
 - Are the researchers planning to begin any collaborations as a result of the research?
 - For clinical research only: consider the number of hospitals and health care professionals involved and the extent of penetration of the studies throughout the region or the Commonwealth.

Overall Evaluation Rating

An overall evaluation rating is assigned to each research project. The rating reflects the overall progress the project attained in meeting the stated goals and objectives. The rating is based on a scale of 1–3, with 1 being the highest. An average rating is obtained from all the reviews (minimum of 3) of each project and is the basis for the determination of the final overall rating for each project as follows:

1.00 – 1.33 = *Outstanding*

1.34 – 2.66 = *Favorable*

2.67 – 3.00 = *Unfavorable*

The grant level rating is an average rating from all projects as above. The numerical rating appears in parentheses for the grant and each project in the ***Overall Grant Performance Review Rating*** section of the report.

Overall Grant Performance Review Rating

Grant Rating: Favorable (1.67)

Project Rating:

Project	Title	Average Score
0863601	Characterizing the Antiviral Activities of Small Interferon-Stimulated Genes against Hepatitis B Virus	Favorable (1.67)

Project Number: 0863601
Project Title: Characterizing the Antiviral Activities of Small Interferon-Stimulated Genes against Hepatitis B Virus
Investigator: Cohen, Chari A.

Section A. Project Evaluation Criteria

Criterion 1 - How well did the project meet its stated objectives? If objectives were not completely met, was reasonable progress made?

STRENGTHS AND WEAKNESSES

Reviewer 1:

This was a modest proposal with two objectives: 1) to study the anti-HBV effect of some low molecular weight/normal cell proteins that are stimulated in terms of expression level by type I IFN, and 2) to train young future scientists. The investigators exercised some flexibility pursuing Aim 1 and deviated from the plan to some extent. Instead of investigating low molecular weight proteins they chose a larger transmembrane protein. Instead of transient transfection they made an inducible cell line. Instead of testing hepatitis B they tested some alternative viruses. The major weakness is that they did not actually do any research on hepatitis B. Little explanation was given for the rationale of these deviations. They did observe some antiviral effect of IFITM3 overexpression on some of the other viruses and characterized this to the level of viral entry. The reports do not provide raw data to the level usually presented in scientific papers or talks, instead providing just a verbal summary. However, with regard to Objective 2, the investigators were successful and document exposing eight undergraduates to science over the summer; the use of resources was mainly to pay one summer intern. In view of the modest resources, and the fact that young Pennsylvania scientists were exposed to modern molecular medicine research, I consider Objective 2 successful and do not express concern about the flexibility shown in terms of the actual lab work completed.

Reviewer 2:

The project contained two objectives: 1) characterizing the antiviral activities of small interferon-stimulated genes (ISGs) against the hepatitis B virus (HBV), and 2) providing a summer internship to train college students in biomedical research. The first aim has not been satisfactorily accomplished, which is understandable considering the limited funds (\$2,537) received for this project. However, the PI did obtain some interesting results regarding the role of the ISG IFITM3. The second aim has been successfully achieved by providing summer internships to train eight young investigators.

Reviewer 3:

Strengths: The project had two important stated objectives: first, to reduce the burden of chronic hepatitis B and its associated liver disease through the identification and development of successful treatment methods; second, to expand and diversify the future pool of biomedical

researchers in Pennsylvania. While it appears the first objective was technically not met, this is entirely reasonable and understandable. The second objective was successfully met, the specific aims and research were adequate relative to the project objectives and very modest budget.

Weaknesses: Changes were made to the original research protocol, but these were not addressed. Furthermore, the data provided was not directly applicable to the stated Objective 1. However, seeing that this was a summer internship project for a young investigator, this is acceptable and is only a minor weakness. The project objectives mention increasing diversity through the recruitment of young scientists from underrepresented populations. The success of this appears to have been modest, as two Asian, but no Hispanic or African American, students were recruited.

Criterion 2 - What is the likely beneficial impact of this project? If the likely beneficial impact is small, is it judged reasonable in light of the dollars budgeted?

STRENGTHS AND WEAKNESSES

Reviewer 1:

There is no benefit for hepatitis B. There is possible benefit for some other viruses such as West Nile or dengue. Given the small resources, even a minimal amount of new data or mechanism of an antiviral effect for these agents is reasonable. The original proposal speaks of presentations at meetings, manuscripts and grant applications, but the Final Report states only that a manuscript is in presentation. No other future plans were discussed in the report; for example, following up on the biological findings or tracking the career choices of the trainees.

Reviewer 2:

The project addressed a highly significant health problem, although it achieved limited progress in understanding the mechanism of interferon-induced antiviral response against the hepatitis B virus. It did obtain some preliminary results towards future funding for the uncompleted studies as proposed in the original application. Additionally, the project provided opportunities to college and high school students to train future investigators in biomedical research.

Reviewer 3:

Strengths: In light of the very small budget (\$2546.60), even though the specific scientific goals are unlikely to have an immediate impact on improving health, the longer term impact could in effect, be very high if the student who was supported by these funds chooses to enter a career in medicine, scientific research, or public health as a result of this research experience.

Weaknesses: None.

Criterion 3 - Did the project leverage additional funds or were any additional grant applications submitted as a result of this project?

STRENGTHS AND WEAKNESSES

Reviewer 1:

There was no expected or achieved leveraging of funds. There is no statement about seeking additional funding.

Reviewer 2:

The project has not succeeded in leveraging additional funding or grant applications. The principal investigator did mention future grant submission to NIH.

Reviewer 3:

Strengths: The researchers are planning to submit additional grant applications in the future.

Weaknesses: The additional grant applications are only planned, but as of the date of this report, they had not been submitted or awarded.

Criterion 4 - Did the project result in any peer-reviewed publications, licenses, patents, or commercial development opportunities? Were any of these submitted / filed?

STRENGTHS AND WEAKNESSES

Reviewer 1:

A paper was discussed in the application, but the report states that a manuscript is in preparation. Given the modest resources, the research might not result in a peer-reviewed paper. A presentation at an undergraduate research forum or an academic paper by one or more of the summer interns at their University would have been reasonable outcomes.

Reviewer 2:

The project did not result in any publication, license, patent, or commercial development opportunity within the limited budget and timeframe. The principal investigator of this project did indicate that a manuscript will be prepared for submission to a peer-reviewed journal.

Reviewer 3:

Strength: A manuscript describing the results of this research is planned.

Weakness: As of the date of the report, a manuscript has not been submitted or accepted for publication.

Criterion 5 - Did the project enhance the quality and capacity for research at the grantee's institution?

STRENGTHS AND WEAKNESSES

Reviewer 1:

Funds were used to pay for programs for college students. Resources were modest and no infrastructure or recruits would be expected for this size grant.

Reviewer 2:

The project has provided an excellent opportunity to facilitate interaction among colleagues from different institutions (Hepatitis B Foundation and Biotechnology and Virology Institutes) and to train young investigators from local high schools and state colleges.

Reviewer 3:

Major strength: The funding primarily supported the summer research performed by an undergraduate student, who was brought into the institution to carry out the research.

Criterion 6 - Did the project lead to collaboration with research partners outside of the institution or new involvement with the community?

STRENGTHS AND WEAKNESSES

Reviewer 1:

None.

Reviewer 2:

The project has achieved the goal of advocacy and outreach, along with strengthening the relationship in the community by providing opportunities to local high school students and state college undergraduates.

Reviewer 3:

Major strength: This funding supported the summer research internship of an undergraduate student. This represents important new involvement of the institution with the community.

Section B. Recommendations

SPECIFIC WEAKNESSES AND RECOMMENDATIONS

Reviewer 1:

1. Document career pathways/future progress of summer interns trained throughout the program.
2. Document presentation of research at poster sessions or similar venues by summer interns even if these were not in peer-reviewed formats.
3. Document why the lab research focused on both host genes and viruses that were not discussed in the original application.

Reviewer 2:

None.

Reviewer 3:

Despite the fact that some specific weaknesses were noted in the individual criteria, these do not detract from the project. The project basically consisted of a 10-week summer research project carried out by a young undergraduate investigator brought into the institution. These types of programs are critical for training the next generation of scientists. Therefore, the specific scientific goals and objectives were judged as secondary to this important broader goal, especially when considering the very small amount of funds available.

ADDITIONAL COMMENTS

Reviewer 2:

Aim 1 of this project is very important for understanding the mechanism of action of interferon-induced antiviral effects. Future studies should be focused on the roles of ISGs in the control of hepatitis B virus infection and replication.