

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 (2.00)

Project Rating:

Project	Title	Average Score
0991501	DNA Polymerase Expression of Human Colon Cell Lines following Chemotherapeutic Treatment	Favorable (2.00)

Project Number: 0991501
Project Title: DNA Polymerase Expression of Human Colon Cell Lines
following Chemotherapeutic Treatment
Investigator: Gestl, Erin

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:

Strength: The researchers finished the experiments designed in the original proposal.

Weakness: None

Reviewer 2:

One objective of the project was to determine if there was a difference at the protein and/or RNA levels of polymerases between normal and colon cancer cells. The same comparison was designed for cells treated with cyclophosphamide, doxorubicin, and methyl-nitrosourea. In the report, on page 6, it is indicated that the colon cell line LS123, which was listed as normal in the plan, is indeed a colon cancer cell line and that there are not any normal colon cell lines. The absence of normal cell lines does not allow comparing the levels of polymerases in normal and colon cancer cells. Therefore, the objectives cannot be met. One major weakness of the project was the experimental design. The LS123 cell line has been in use for a while; its growth properties, as well as the fact it is a colon cancer cell line with mutations in genes, are involved in colon cancer tumorigenesis.

The amount of money cited that was spent in the project was not a lot, and perhaps the project was underfunded. However, even with this in mind, the progress is not sufficient. For example, there is not a single piece of data to indicate the expression at the protein level, one of the major goals of the project. The experiments on the RNA and treatment with drugs are not complete. There are other minor issues. Figure 2 shows an example of dose-response, but it is not clear what the drug was. There is not an explanation of what the different HCT116 cell lines are, or what the rationale was for using them. It can be found in published literature, but it should be described here, too.

Reviewer 3:

This grant provided funding for the support of three undergraduate students to investigate the possible changes in expression of several different DNA polymerase genes in normal and cancer cell lines. The primary goal was to determine if there is a difference in DNA polymerase levels between human normal and carcinoma colon cells. The secondary goal was to determine if there

were differences in DNA polymerase levels in normal and cancer cells following chemotherapy treatment. There was a significant amount of research completed indicating trends in increases in specific DNA polymerases. Data were obtained to address the specific aims of the project, and thus it did make acceptable progress; but, no publications or new sources of funding were obtained.

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:

Strength: The significance of the project is limited, since the experiments are too limited and not at the publication quality. However, considering the small amount of funding for the project (\$~3,000), the progress is reasonable.

Weakness: None

Reviewer 2:

The idea was that treatments with different drugs may alter the expression of polymerases, which in turn could provide clues about the response of the cells to the drug tested. As noted above, there are not any conclusions that can be made from the data, because they lack control cell lines and are incomplete. Assuming that the objectives were met, the data would need extensive validation in more samples.

Reviewer 3:

This was mostly basic research, so little progress was made to show increases in improving health or improving health outcomes. The key deliverable was to show that after chemotherapy specific DNA polymerases change (generally increase) in order to repair damage. This knowledge could in the future lead to the development of agents that prevent these polymerases from upregulating during chemotherapy and thus potentially improve outcomes.

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:

Strength: None

Weakness: There was no plan to apply for additional funding for the continuation of the project.

Reviewer 2:

There was no leveraging of funds, and the investigators are not planning to apply for additional funds.

Reviewer 3:

There was no leveraging of funds. The investigators do not plan to seek additional funding.

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:

Strength: While there was no publication from the project, no publication would be expected from an experiment with such a small amount of funding.

Weakness: There were no publications, patents or commercial development opportunities.

Reviewer 2:

It is stated that a publication may materialize when the data is complete. To reach that point, additional data beyond the plan of this project may be needed for a publication.

Reviewer 3:

No publications were listed, and none is planned to be submitted.

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

STRENGTHS AND WEAKNESSES

Reviewer 1:

Strength: The funding allowed several undergraduate researchers to perform biological experiments. This is considered as enhancing the quality of research at the university.

Weakness: None

Reviewer 2:

Two students were trained in tissue culture techniques.

Reviewer 3:

Two undergraduate students were supported on this award. No new investigators were added, and no researchers were brought to the institution to help carry out this research. No improvements were made to overall infrastructure.

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:

Strength: None

Weakness: No collaboration was established.

Reviewer 2:

None of the above happened.

Reviewer 3:

No collaborations were initiated, and none is planned.

Section B. Recommendations

SPECIFIC WEAKNESSES AND RECOMMENDATIONS

Reviewer 1:

The group finished the study goal with the very limited funding. The project supported several undergraduate students, one of whom entered medical school. The PI is encouraged to seek additional funding to continue the project, including assaying the expression of DNA polymerases at protein levels, and determining the biological significance of polymerase changes during drug responses.

Reviewer 2:

The project had two objectives: Compare the levels of polymerases in normal and cancer cells, and perform the same comparison in cells that have been treated with chemotherapeutic agents. The objectives were not completed because:

1. Specific Weakness: The design of the study was not sound. There was an emphasis on comparing normal to cancer cells, while there was not a normal control.

Recommendation: It would have been better to look for changes in expression in real tumors and normal controls.

2. Specific Weakness: The execution of the plan was sub-optimal.

Recommendation: It would have been much better to focus on completing the set of experiments in some of the cell lines.

Reviewer 3:

1. It would have been appropriate to have completed enough research to submit a publication on the completed work.
2. The principal investigator should be applying for additional funding to advance these projects.