

Final Progress Report for Research Projects Funded by Health Research Grants

Instructions: Please complete all of the items as instructed. Do not delete instructions. Do not leave any items blank; responses must be provided for all items. If your response to an item is “None”, please specify “None” as your response. “Not applicable” is not an acceptable response for any of the items. There is no limit to the length of your response to any question. Responses should be single-spaced, no smaller than 12-point type. The report **must be completed using MS Word**. Submitted reports must be Word documents; they should not be converted to pdf format. Questions? Contact Health Research Program staff at 717-783-2548.

1. **Grantee Institution:** The Trustees of the University of Pennsylvania
2. **Reporting Period (start and end date of grant award period):** 1/1/2009-12/31/2012
3. **Grant Contact Person (First Name, M.I., Last Name, Degrees):** Gearline R. Robinson-Hall, BSF
4. **Grant Contact Person’s Telephone Number:** 215-746-6821
5. **Grant SAP Number:** 4100047654
6. **Project Number and Title of Research Project:** 10 - Research Infrastructure: Expansion and Enhancement of Rodent Housing Space
7. **Start and End Date of Research Project:** 1/1/2009-4/30/2012
8. **Name of Principal Investigator for the Research Project:** Glen N. Gaulton, PhD
9. **Research Project Expenses.**

9(A) Please provide the total amount of health research grant funds spent on this project for the entire duration of the grant, including indirect costs and any interest earned that was spent:

\$ 1,870,534

9(B) Provide the last names (include first initial if multiple individuals with the same last name are listed) of **all** persons who worked on this research project and were supported with health research funds. Include position titles (Principal Investigator, Graduate Assistant, Post-doctoral Fellow, etc.), percent of effort on project and total health research funds expended for the position. For multiple year projects, if percent of effort varied from year to year, report in the % of Effort column the effort by year 1, 2, 3, etc. of the project (x% Yr 1; z% Yr 2-3).

Last Name	Position Title	% of Effort on Project	Cost
None			

9(C) Provide the names of **all** persons who worked on this research project, but who *were not* supported with health research funds. Include position titles (Research Assistant, Administrative Assistant, etc.) and percent of effort on project. For multiple year projects, if percent of effort varied from year to year, report in the % of Effort column the effort by year 1, 2, 3, etc. of the project (x% Yr 1; z% Yr 2-3).

Last Name	Position Title	% of Effort on Project
Gaulton	PI	< 1%

9(D) Provide a list of **all** scientific equipment purchased as part of this research grant, a short description of the value (benefit) derived by the institution from this equipment, and the cost of the equipment.

Type of Scientific Equipment	Value Derived	Cost
10 Biosafety Cabinets	Provides procedure workspace for barrier animals that cannot be taken to labs and returned.	\$89,140
1 Animal Transfer Station	Provides a surgical work area	\$11,215
3 Anesthesia Equipment Setups	Anesthesia is required for procedures on mice	\$11,340

10. Co-funding of Research Project during Health Research Grant Award Period. Did this research project receive funding from any other source during the project period when it was supported by the health research grant?

Yes X No _____

If yes, please indicate the source and amount of other funds:

NCCR = \$700,000
 Other Internal University Funds = \$1,111,514
 Total Co-funding = \$1,811,514

11. Leveraging of Additional Funds

11(A) As a result of the health research funds provided for this research project, were you able to apply for and/or obtain funding from other sources to continue or expand the research?

Yes _____ No X

If yes, please list the applications submitted (column A), the funding agency (National Institutes of Health—NIH, or other source in column B), the month and year when the application was submitted (column C), and the amount of funds requested (column D). If you have received a notice that the grant will be funded, please indicate the amount of funds to be awarded (column E). If the grant was not funded, insert “not funded” in column E.

Do not include funding from your own institution or from CURE (tobacco settlement funds). Do not include grants submitted prior to the start date of the grant as shown in Question 2. If you list grants submitted within 1-6 months of the start date of this grant, add a statement below the table indicating how the data/results from this project were used to secure that grant.

A. Title of research project on grant application	B. Funding agency (check those that apply)	C. Month and Year Submitted	D. Amount of funds requested:	E. Amount of funds to be awarded:
None	<input type="checkbox"/> NIH <input type="checkbox"/> Other federal (specify: _____) <input type="checkbox"/> Nonfederal source (specify: _)		\$	\$

11(B) Are you planning to apply for additional funding in the future to continue or expand the research?

Yes X No _____

If yes, please describe your plans:

Although this is an infrastructure project, now that the renovations of the animal facility on the basement floor of the Clinical Research Building (CRB) are complete, we anticipate that Penn investigators will use this facility and continue to submit grants and successfully compete for grant funding that will allow for further exploration of genetic and diabetic diseases.

12. Future of Research Project. What are the future plans for this research project?

The newly upgraded facility will continue to provide integral animal infrastructure support for the current and future needs of the University of Pennsylvania scientific community.

13. New Investigator Training and Development. Did students participate in project supported internships or graduate or post-graduate training for at least one semester or one summer?

Yes _____ No X

If yes, how many students? Please specify in the tables below:

	Undergraduate	Masters	Pre-doc	Post-doc
Male				
Female				
Unknown				
Total				

	Undergraduate	Masters	Pre-doc	Post-doc
Hispanic				
Non-Hispanic				
Unknown				
Total				

	Undergraduate	Masters	Pre-doc	Post-doc
White				
Black				
Asian				
Other				
Unknown				
Total				

14. Recruitment of Out-of-State Researchers. Did you bring researchers into Pennsylvania to carry out this research project?

Yes _____ No X

If yes, please list the name and degree of each researcher and his/her previous affiliation:

15. Impact on Research Capacity and Quality. Did the health research project enhance the quality and/or capacity of research at your institution?

Yes X No _____

If yes, describe how improvements in infrastructure, the addition of new investigators, and other resources have led to more and better research.

Renovation of the CRB animal facility significantly improved the school's research programs by providing state-of-the-art animal care husbandry and facilities for Penn's present and future programs, including Genetics/Genomics, Metabolism (diabetes/obesity), Immunology/Transplantation and Neurosciences (behavior/neurodegenerative diseases), among others.

16. Collaboration, business and community involvement.

16(A) Did the health research funds lead to collaboration with research partners outside of your institution (e.g., entire university, entire hospital system)?

Yes _____ No X

If yes, please describe the collaborations:

16(B) Did the research project result in commercial development of any research products?

Yes _____ No X

If yes, please describe commercial development activities that resulted from the research project:

16(C) Did the research lead to new involvement with the community?

Yes _____ No X

If yes, please describe involvement with community groups that resulted from the research project:

17. Progress in Achieving Research Goals, Objectives and Aims.

List the project goals, objectives and specific aims (as contained in the grant agreement). Summarize the progress made in achieving these goals, objectives and aims for the period that the project was funded (i.e., from project start date through end date). Indicate whether or not each goal/objective/aim was achieved; if something was not achieved, note the reasons why. Describe the methods used. If changes were made to the research goals/objectives/aims, methods, design or timeline since the original grant application was submitted, please describe the changes. Provide detailed results of the project. Include evidence of the data that was generated and analyzed, and provide tables, graphs, and figures of the data. List published abstracts, poster presentations and scientific meeting presentations at the end of the summary of progress; peer-reviewed publications should be listed under item 20.

This response should be a DETAILED report of the methods and findings. It is not sufficient to state that the work was completed. Insufficient information may result in an unfavorable performance review, which may jeopardize future funding. If research findings are pending publication you must still include enough detail for the expert peer reviewers to evaluate the progress during the course of the project.

Health research grants funded under the Tobacco Settlement Act will be evaluated via a performance review by an expert panel of researchers and clinicians who will assess project work using this Final Progress Report, all project Annual Reports and the project's strategic plan. After the final performance review of each project is complete, approximately 12-16 months after the end of the grant, this Final Progress Report, as well as the Final Performance

Review Report containing the comments of the expert review panel, and the grantee's written response to the Final Performance Review Report, will be posted on the CURE Web site.

There is no limit to the length of your response. Responses must be single-spaced below, no smaller than 12-point type. If you cut and paste text from a publication, be sure symbols print properly, e.g., the Greek symbol for alpha (α) and beta (β) should not print as boxes (\square) and include the appropriate citation(s). DO NOT DELETE THESE INSTRUCTIONS.

The overall goal of this project is to improve disease prevention and control, and enable increased murine housing in the CRB vivarium. This increased capacity is essential to support critical research being conducted in the area of diabetes and other diseases, and to support basic research in genetics. In working toward this goal, we have completed a multiphase approach to renovation, which began with replacement of the tunnel washer and upgrade of the central ventilation systems, as well as installation of a new autoclave.

Renovation of the CRB vivarium has had positive effects on the school's research programs by providing state-of-the-art animal care husbandry and facilities for Penn's present and future programs, including Genetics/Genomics, Metabolism (diabetes/obesity), Immunology/Transplantation and Neurosciences (behavior/neurodegenerative diseases), among others. It has increased total CRB cage capacity from 7,063 to 15,000, with barrier capacity almost tripling, from 4,382 to 15,000. It has also reduced the potential spread of infectious agents, and improved working conditions for animal care staff. Penn is committed to maintaining full accreditation with AAALAC. This facility meets AAALAC standards, improves the quality and quantity of rodent housing, reduces the potential of infectious agents and more adequately meets the needs of NIH-funded research. Lastly, this renovation provides essential improvements to the working environment for dedicated animal care staff.

The expanded barrier became fully functional in April 2012 and the project was completed within the committed project budget, which includes the \$700,000 grant support provided by the NIH.

The following specific aims were met:

- 1) Neighboring laboratories were vacated and modified, increasing animal housing capacity from approximately 7,000 to 15,000 cages, and increasing the number of procedure rooms from 6 to 10.
- 2) The CRB ventilation system was upgraded to tap into spare capacity made available by the new air handler unit (AHU) installed in an earlier phase. The project also included a new autoclave that was installed in an earlier phase and refurbishment of an existing autoclave.
- 3) Offices, locker rooms, toilets, showers and break areas were upgraded or completely replaced with new.

In summary, the expansion of the barrier and improvement in sanitation and working conditions in the animal facility, located at the core of the medical school campus, meets the objective of enhancing the overall animal care and use program of the University of Pennsylvania; it

represents an important phase in the development of a comprehensive, campus-wide, animal facility plan. The newly upgraded facility will continue to provide important animal infrastructure support for the current and future needs of the University of Pennsylvania scientific community.

18. Extent of Clinical Activities Initiated and Completed. Items 18(A) and 18(B) should be completed for all research projects. If the project was restricted to secondary analysis of clinical data or data analysis of clinical research, then responses to 18(A) and 18(B) should be “No.”

18(A) Did you initiate a study that involved the testing of treatment, prevention or diagnostic procedures on human subjects?

_____ Yes
 X No

18(B) Did you complete a study that involved the testing of treatment, prevention or diagnostic procedures on human subjects?

_____ Yes
 X No

If “Yes” to either 18(A) or 18(B), items 18(C) – (F) must also be completed. (Do NOT complete 18(C-F) if 18(A) and 18(B) are both “No.”)

18(C) How many hospital and health care professionals were involved in the research project?

_____ Number of hospital and health care professionals involved in the research project

18(D) How many subjects were included in the study compared to targeted goals?

_____ Number of subjects originally targeted to be included in the study
_____ Number of subjects enrolled in the study

Note: Studies that fall dramatically short on recruitment are encouraged to provide the details of their recruitment efforts in Item 17, Progress in Achieving Research Goals, Objectives and Aims. For example, the number of eligible subjects approached, the number that refused to participate and the reasons for refusal. Without this information it is difficult to discern whether eligibility criteria were too restrictive or the study simply did not appeal to subjects.

18(E) How many subjects were enrolled in the study by gender, ethnicity and race?

Gender:
_____ Males
_____ Females
_____ Unknown

Ethnicity:

- Latinos or Hispanics
 Not Latinos or Hispanics
 Unknown

Race:

- American Indian or Alaska Native
 Asian
 Blacks or African American
 Native Hawaiian or Other Pacific Islander
 White
 Other, specify: _____
 Unknown

18(F) Where was the research study conducted? (List the county where the research study was conducted. If the treatment, prevention and diagnostic tests were offered in more than one county, list all of the counties where the research study was conducted.)

19. Human Embryonic Stem Cell Research. Item 19(A) should be completed for all research projects. If the research project involved human embryonic stem cells, items 19(B) and 19(C) must also be completed.

19(A) Did this project involve, in any capacity, human embryonic stem cells?

- Yes
 No

19(B) Were these stem cell lines NIH-approved lines that were derived outside of Pennsylvania?

- Yes
 No

19(C) Please describe how this project involved human embryonic stem cells:

20. Articles Submitted to Peer-Reviewed Publications.

20(A) Identify all publications that resulted from the research performed during the funding period and that have been submitted to peer-reviewed publications. Do not list journal abstracts or presentations at professional meetings; abstract and meeting presentations should be listed at the end of item 17. **Include only those publications that acknowledge the Pennsylvania Department of Health as a funding source** (as required in the grant agreement). List the title of the journal article, the authors, the name of the peer-reviewed publication, the month and year when it was submitted, and the status of publication (submitted for publication, accepted for publication or published.). Submit an electronic copy of each publication or paper submitted for publication, listed in the table, in a PDF

version 5.0.5 (or greater) format, 1,200 dpi. Filenames for each publication should include the number of the research project, the last name of the PI, the number of the publication and an abbreviated research project title. For example, if you submit two publications for PI Smith for the “Cognition and MRI in Older Adults” research project (Project 1), and two publications for PI Zhang for the “Lung Cancer” research project (Project 3), the filenames should be:

- Project 1 – Smith – Publication 1 – Cognition and MRI
- Project 1 – Smith – Publication 2 – Cognition and MRI
- Project 3 – Zhang – Publication 1 – Lung Cancer
- Project 3 – Zhang – Publication 2 – Lung Cancer

If the publication is not available electronically, provide 5 paper copies of the publication.

Note: The grant agreement requires that recipients acknowledge the Pennsylvania Department of Health funding in all publications. Please ensure that all publications listed acknowledge the Department of Health funding. If a publication does not acknowledge the funding from the Commonwealth, do not list the publication.

Title of Journal Article:	Authors:	Name of Peer-reviewed Publication:	Month and Year Submitted:	Publication Status (check appropriate box below):
1. None				<input type="checkbox"/> Submitted <input type="checkbox"/> Accepted <input type="checkbox"/> Published

20(B) Based on this project, are you planning to submit articles to peer-reviewed publications in the future?

Yes _____ No _____ See note below.

If yes, please describe your plans:

With the opening of this newly renovated facility, a large number of papers from highly productive investigators who use this facility will no doubt be submitted.

21. Changes in Outcome, Impact and Effectiveness Attributable to the Research Project.

Describe the outcome, impact, and effectiveness of the research project by summarizing its impact on the incidence of disease, death from disease, stage of disease at time of diagnosis, or other relevant measures of outcome, impact or effectiveness of the research project. If there were no changes, insert “None”; do not use “Not applicable.” Responses must be single-spaced below, and no smaller than 12-point type. DO NOT DELETE THESE INSTRUCTIONS. There is no limit to the length of your response.

None.

22. Major Discoveries, New Drugs, and New Approaches for Prevention Diagnosis and Treatment. Describe major discoveries, new drugs, and new approaches for prevention, diagnosis and treatment that are attributable to the completed research project. If there were no major discoveries, drugs or approaches, insert “None”; do not use “Not applicable.” Responses must be single-spaced below, and no smaller than 12-point type. **DO NOT DELETE THESE INSTRUCTIONS.** There is no limit to the length of your response.

None.

23. Inventions, Patents and Commercial Development Opportunities.

23(A) Were any inventions, which may be patentable or otherwise protectable under Title 35 of the United States Code, conceived or first actually reduced to practice in the performance of work under this health research grant? Yes _____ No X

If “Yes” to 23(A), complete items a – g below for each invention. (Do NOT complete items a - g if 23(A) is “No.”)

- a. Title of Invention:
- b. Name of Inventor(s):
- c. Technical Description of Invention (describe nature, purpose, operation and physical, chemical, biological or electrical characteristics of the invention):
- d. Was a patent filed for the invention conceived or first actually reduced to practice in the performance of work under this health research grant?
Yes _____ No _____

If yes, indicate date patent was filed:

- e. Was a patent issued for the invention conceived or first actually reduced to practice in the performance of work under this health research grant?
Yes _____ No _____
If yes, indicate number of patent, title and date issued:
Patent number:
Title of patent:
Date issued:

- f. Were any licenses granted for the patent obtained as a result of work performed under this health research grant? Yes _____ No _____

If yes, how many licenses were granted? _____

- g. Were any commercial development activities taken to develop the invention into a commercial product or service for manufacture or sale? Yes _____ No _____

If yes, describe the commercial development activities:

23(B) Based on the results of this project, are you planning to file for any licenses or patents, or undertake any commercial development opportunities in the future?

Yes _____ No X

If yes, please describe your plans:

24. Key Investigator Qualifications. Briefly describe the education, research interests and experience and professional commitments of the Principal Investigator and all other key investigators. In place of narrative you may insert the NIH biosketch form here; however, please limit each biosketch to 1-2 pages. *For Nonformula grants only – include information for only those key investigators whose biosketches were not included in the original grant application.*

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person **DO NOT EXCEED FOUR PAGES.**

NAME Glen N. Gaulton, Ph.D.		POSITION TITLE Professor, Department of Pathology and Laboratory Medicine Executive Vice Dean and Chief Scientific Officer	
eRA COMMONS USER NAME (credential, e.g., agency login) gaulton			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Southern California	B.S.	1974	Biology
University of California, Santa Barbara	Ph.D.	1981	Biochem. & Mol. Biol.

A. Personal Statement

As Executive Vice Dean, Dr. Gaulton has senior planning, operations and management responsibility for the academic component of all scholarly activities and graduate training missions within the School of Medicine (1,428 faculty and 2,219 students). This responsibility encompasses research strategic planning, space allocation and management, faculty appointments and promotions, recruitment of basic science and clinical chairs, and oversight of the 28 basic science and clinical departments and 18 Centers and Institutes. In view of the importance of animals in contemporary research, Dr. Gaulton also oversees all SOM investigators involved in animal research and sets vivaral priorities for the School.

In his role as Executive Vice Dean, Dr. Gaulton oversees the Offices of Finance, Space Planning and Management, Information Technology and Informatics, Human and Animal Research, Research Program Development, Corporate Alliances, and Global Health Programs. Dr. Gaulton also oversees Penn Medicine's graduate and post-graduate training programs (Combined Degree Programs, Biomedical Graduate Studies, Postdoctoral Programs and Masters Programs), which encompass approximately 1,800 trainees. In his role as the Chief Scientific Officer, Dr. Gaulton is responsible for developing and implementing the institutional strategic plan in scholarship and research training for the School of Medicine. A key component of this responsibility is the integration of the School's strategic vision with the President and Provost, with the Deans of the other 11 schools of the University, and with Penn Medicine's Health System and primary institutional affiliates – The Children's Hospital of Philadelphia, the Wistar Institute and the Veterans Administration Medical Center. Coincident with these roles Dr. Gaulton develops and guides Penn Medicine's strategy in corporate relationships, and cross-institutional endeavors at both the national and global levels.

B. Positions and Honors

Academic Appointments

1985-1991	Asst. Professor, Dept of Pathology and Laboratory Medicine, U.Penn, Sch. of Med., Phila, PA
1991-1998	Associate Professor (with tenure), Department of Pathology and Laboratory Medicine, U.Penn
1993-1998	Assoc. Dean and Dir., Combined Degree and Physician Scholar Prgms., U.Penn Sch. of Med.

1995-1998	Director, Biomedical Graduate Studies, University of Pennsylvania
1998-	Professor, Department of Pathology and Laboratory Medicine, U.Penn, School of Medicine
1998-2006	Vice Dean for Research and Research Training, University of Pennsylvania School of Medicine
2006-	Executive Vice Dean and Chief Scientific Officer, University of Pennsylvania School of Medicine

Honors and Awards

1986-1990	National Multiple Sclerosis Society, Harry Weaver Scholar
1990-	American Association of Immunologists
1991-1996	Leukemia Society of America Scholar
1994	University of Pennsylvania Leonard Berwick Teaching Award
1996	University of Pennsylvania Christian and Mary Lindback Teaching Award

C. Selected Peer-reviewed Publications: Additional recent publications of importance to the field (in chronological order)

1. Levinson A.I., Zheng Y., Gaulton GN, Song D., Moore J., and Pletcher H.. 2003. Intrathymic Expression of Neuromuscular Acetylcholine Receptors and the Immunopathogenesis of Myasthenia Gravis. *Immunol. Res.*, 27:399. 12857984.
2. Levinson A.I., Zheng Y., Gaulton GN, Moore J., and Pletcher H., Song D., and Wheatley L.M. 2003. A new model linking intrathymic acetylcholine receptor expression and the pathogenesis of myasthenia Gravis. In *Myasthenia gravis and related disorders*. *Ann. N.Y. Acad. Sci.* 998:257-265. 14592882.
3. Landers, CM., Dugger, N., Quadros, M., Hoffman, P. M., and Gaulton, GN. 2004. Neuropathogenic murine leukemia virus TR1.3 induces selective syncytia formation of brain capillary endothelium. *Virology*. 321: 57-64. 15033565.
4. Murphy, SL, Honczarenko, MJ, Dugger, NV, Hoffman, PM and Gaulton, GN. 2004. Disparate regions of envelope protein regulate syncytium formation versus spongiform encephalopathy in neurological disease induced by murine leukemia virus TR. *J. Virol.* 78: 8392-8399. 152542.
5. Levinson AI, Song D, Gaulton GN, and Zheng. 2005. The intrathymic pathogenesis of myasthenia gravis. *Clin Dev. Immunol.* 11: 215-220. 15559366.
6. Lin G., Murphy, SL, Gaulton GN, and Hoxie JA. 2005. Modification of a viral envelope glycoprotein cell-cell fusion assay by utilizing plasmid encoded bacteriophage RNA polymerase. *J Virol. Methods.* 128: 135-142. 15941597.
7. Murphy, SL, Landers, CM, Honczarenko, MJ and Gaulton, GN. 2006. Linkage of reduced receptor affinity and superinfection to pathogenesis of TR1.3 murine leukemia virus. *J. Virol.* 80: 4601-4609. 16611920.
8. Murphy, SL and Gaulton, GN. 2007. TR1.3 Viral Pathogenesis and Syncytia Formation are Linked to Env-Gag Cooperation. *J Virol.* 81(19):10777-85. 1763219.
9. Hollander, J.E., Gaulton, G.N., Courtney, M.D., Lewis, R.J., Lowe, R.A., Becker, M.O. and Neumar, R.W. 2009. Facilitating emergency care research networks: integration into the CTSA infrastructure. *Academic Emergency Medicine*. In press. 19799580.
10. Trojanowski J.Q., Arnold S.E., Karlawish J.H., Brunden K., Cary M., Davatzikos C., Detre J., Gaulton G., Grossman M., Hurtig H., Jedrzewski K., McCluskey L., Naylor M., Polsky D., Schellenberg G.D., Siderowf A., Shaw L.M., Van Deerlin V., Wang L-S., Werner R., Xie S.X., Lee V.M-Y. 2010. Design of comprehensive Alzheimer's disease centers to address unmet national needs. *Alzheimer's & Dementia* 6: 150-155. PMC2842603.