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:** Albert Einstein Healthcare Network

2. **Reporting Period(start and end date of grant award period):** 1/1/2011 - 6/30/2013

3. **Grant Contact Person(First Name, M.I., Last Name, Degrees):** Mary Klein, PhD

4. **Grant Contact Person's Telephone Number:** 215-456-7216

5. **Grant SAP Number:** 4100054839

6. **Project Number and Title of Research Project**: 2- Changes in Cardiac Anatomy and Physiology during the Mueller Maneuver

7. **Start and End Date of Research Project:** 1/1/2011 - 6/30/2013

8. **Name of Principal Investigator for the Research Project:** Gregg S. Pressman, MD

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:

   $ 24,783.47

   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, First Name	Position Title	% of Effort on Project	Cost
Murthy, Kinnari	Research Coordinator (RC)	12%	$ 2300
Whinnery, Julia	RC	9%	$ 1800
Romero, Abel	Statistician	4%	$ 2500
Samuel, Solomon	Engineering advisor	2%	$ 500

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, First Name	Position Title	% of Effort on Project
Pressman, Gregg	Principal Investigator	45%
Seetha-Rammohan, Harish	Co-Investigator	15%
Saenz, Agustina	Co-Investigator	3%
Cepeda-Valery, Beatriz	Co-Investigator	3%
Moldovan, Raul	Co-Investigator	2%
Figueredo, Vincent	Co-Investigator	2%
Joshi, Kamal	Co-Investigator	1%
Kabirdas, Deepa	Co-Investigator	1%
Codolosa, Jose	Co-Investigator	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
Philips Sonos 5500 echocardiograph and S4 transthoracic transducer probe (purchased used)	Echocardiograph available to members of the Division of Cardiology for research purposes	$ 5400
Omega Engineering PX409 USB electronic pressure transducer	High fidelity electronic pressure transducer, available for research in the Division of Cardiology	$ 673
MD100B handheld ECG monitor (Beijing Chinese Electronic Technology)	Handheld ECG monitor with inputs into laptop for recording ECG rhythm	$ 152
HP Pavilion dv6-6150 laptop computer	Laptop computer equipped with JMP statistical program for use in Clinical Research in the Division of Cardiology	$ 2,150

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_____ No____X_____

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

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_____ but the possibility remains that results from this research may be used in future to obtain additional funding.

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	☐NIH ☐ Other federal (specify:_____) ☐ Nonfederal source (specify:_)		$	$

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

Yes_____ No___X_____

If yes, please describe your plans:

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

Multiple additional analyses are planned in the future that are expected to lead to further publications.

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.

The equipment purchases listed above add new research capacity to the Division of Cardiology; at least one new project is planned using this equipment.

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___X_____ No_____

If yes, please describe the collaborations:

We have pre-existing relationships with clinical investigators at Mayo Clinic and in Brno, Czech Republic. This research is related to, and builds on, research they have previously published.

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 (ß) should not print as boxes (□) and include the appropriate citation(s). DO NOT DELETE THESE INSTRUCTIONS.

Initial Objectives and Specific Aims were to:

1) Evaluate, using Doppler Echocardiography, blood flow in the SVC, IVC, and across the TV during a sustained MM. Our hypothesis is that these flows will increase during the early part of the MM, then stabilize, and possibly decrease in the face of continued negative inspiratory pressure.
2) Evaluate, using Doppler Echocardiography, blood flow in the SVC, IVC, and across the TV immediately following a series of five (5) brief MMs (more closely simulating a naturally occurring apnea). Our hypothesis is that these flows will increase following the series of MMs.
3) Investigate the effects of the MM on the ascending aorta. Our hypothesis is that there will be a measurable increase in aortic diameter during a sustained MM.

Progress to date:
This project was closed on June 30, 2013 though data analysis continues. A total of 42 subjects were enrolled. All were healthy volunteers aged < 30 years. Data collection was completed as of June 30, 2013.

We had initially intended to measure Doppler flows in the vena cavae (SVC, IVC) but this

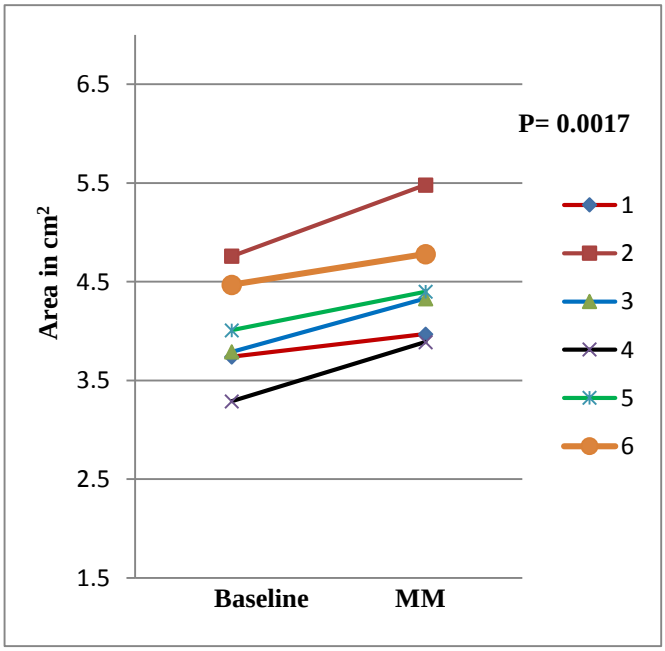
proved too technically challenging. Similarly, obtaining stable 3D images of the ascending aorta during the MM was quite difficult. However, we were able to accomplish this in a subset of subjects (see immediately below). We had initially focused on Doppler flow velocity across the tricuspid valve, but during the course of the study we noted significant changes in Doppler flow velocity across the mitral valve as well. We therefore incorporated interrogation of mitral valve flows into the experimental protocol.

Aortic Area Measurement Subgroup

For this analysis subjects performed a sustained Mueller maneuver (forced inspiration against an occluded airway, MM) as a surrogate for obstructive apnea. Pressure in the airway was continuously recorded via electronic transducer attached to a mouthpiece. 3D echocardiographic loops of the ascending aorta were obtained at baseline and during the MM.3D datasets were then used to create 2D slices of the aorta approximately 1 cm above the sinotubular junction. Care was taken to assure slices were perpendicular to the aortic wall. Area measurements were made by a blinded reader. Paired t-test analysis was used to compare the diastolic aortic area at baseline versus during the MM.

Twenty-two subjects were studied. Of these 22, 10 had images suitable for precise measurements. Of these, 6 reached a negative inspiratory pressure of at least -30 cm H_2O, a minimum value we selected to mimic conditions during a naturally occurring apnea. Multiple aortic area measurements were made at baseline and during the maneuver, with measurements averaged for each phase of the MM. For the group, mean aortic area at baseline was 4.01± 0.53 cm^2 rising to 4.47±0.58 cm^2 during the MM; mean difference = 0.465cm^2(standard error = 0.0761, P = 0.0017, see figure 1 below). Based on this analysis, we can preliminarily conclude that ascending aortic cross-sectional area increases significantly during the MM. This may serve as proof of concept that OSA imposes significant hemodynamic stress on the intrathoracic aorta and can thereby predispose to aortic dissection and other aortic pathologies.

Figure 1



Doppler Measurements

Subjects also undertook a different type of MM designed to better simulate a true obstructive apnea; they were instructed to perform a series of 5 – 6 gasping efforts, providing a maximal inspiratory effort with each inspiratory motion. Doppler echocardiography was performed before, during and after this maneuver. We focused on the E wave and A wave velocity across the mitral and tricuspid valve. The E wave reflects early ventricular relaxation in diastole; its peak velocity varies directly with flow and the pressure difference between atrium and ventricle. The A wave is related to atrial contraction in late diastole. Its peak velocity reflects forcefulness of contraction of the atrium and the stiffness of the receiving ventricular chamber.

Measurements have been made in 28 subjects to date. Preliminary analysis yields the following significant results:

1. Mean mitral E wave velocity immediately post-MM is significantly increased compared with baseline (99.0 cm/sec vs. 88.0 cm/sec, p = 0.03).
2. Mean tricuspid E wave velocity immediately post-MM is significantly reduced compared with baseline (47.1 cm/sec vs 54.5 cm/sec, p = 0.0001).
3. Mean mitral A wave velocity immediately post-MM is not significantly different vs baseline (44.4 cm/sec vs 43.9 cm/sec) but is significantly higher by the 3rd beat post-MM (48.7 cm/sec, p = 0.03 vs baseline) and remains higher at the 6th beat post-MM (48.9 cm/sec, p = 0.01 vs baseline).
4. Mean tricuspid A wave velocity immediately post-MM is not significantly different vs baseline (26.8 cm/sec vs 26.2 cm/sec) but does become marginally higher by the 3rd beat post-MM (29.4 cm/sec, p = 0.05 vs baseline) and significantly higher by the 8th beat (31.0 cm/sec, p = 0.009).

Figure 2

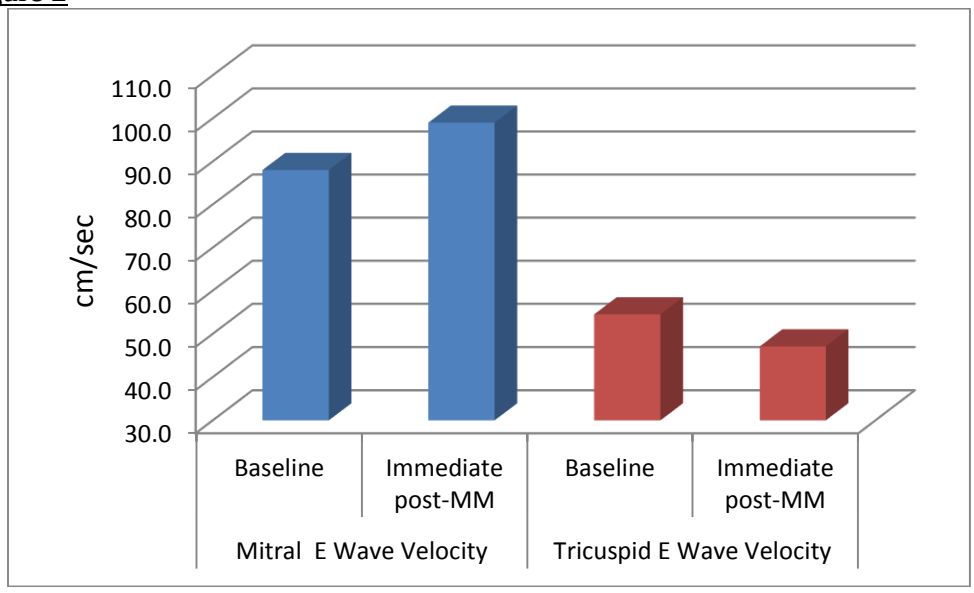
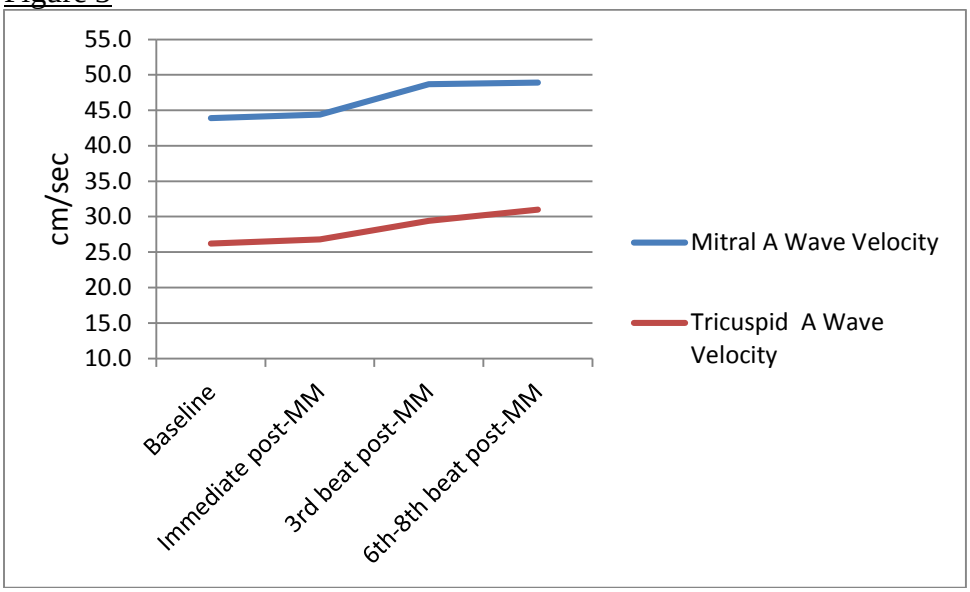


Figure 3



These are novel findings, not reported previously. They suggest that blood flow through the heart varies in a highly dynamic fashion after performing a series of gasping inspiratory efforts against an occluded airway. It is likely that similar changes occur in true obstructive apneas.

OSA is has been strongly associated with a dilated left atrium, reduced systolic function of both ventricles, reduced left ventricular diastolic function, and occurrence of atrial fibrillation. The above documented changes in flow through the cardiac chambers, repeated up to hundreds of times per night (in severe OSA) could help explain these associations.

Pending analyses:

1. Chamber dimensions and systolic function of both ventricles will be compared before (baseline) and immediately post-MM, similar to above.
2. We are in the process of measuring chamber dimensions and systolic function of both ventricles during the series of gasping inspiratory efforts. These measurements are technically challenging and will only be available in a subgroup of subjects. They will be compared with baseline measurements and measurements post-MM. One striking observation to date is the cyclic change in left atrial dimension, decreasing with each inspiratory effort.
3. The above Doppler measurements will be repeated in the subset of subjects in whom adequate Doppler recordings are available during the gasping MM.

Analysis of the aortic area measurement subset was presented at the American Society of Echocardiography convention in Minneapolis June, 2013 and published as an abstract in the Journal of the American Society of Echocardiography.

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:
__42_Males
_____Females
_____Unknown

Ethnicity:
___4_Latinos or Hispanics
__38_Not Latinos or Hispanics
____Unknown

Race:
_____American Indian or Alaska Native
___8_Asian
___1_Blacks or African American
_____Native Hawaiian or Other Pacific Islander
__33_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.)

Philadelphia County, PA

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
___X__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, and an abbreviated title of the

publication. For example, if you submit two publications for Smith (PI for Project 01), one publication for Zhang (PI for Project 03), and one publication for Bates (PI for Project 04), the filenames would be:

Project 01 – Smith – Three cases of isolated
Project 01 – Smith – Investigation of NEB1 deletions
Project 03 – Zhang – Molecular profiling of aromatase
Project 04 – Bates – Neonatal intensive care

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				☐Submitted ☐Accepted ☐Published

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

Yes___X_____ No_____

If yes, please describe your plans:

Analyses to date and any other analyses with significant findings will be submitted to peer-reviewed cardiology journals.

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.

This research will not directly impact outcomes in obstructive sleep apnea. However, the pathophysiology of this prevalent disorder is incompletely understood. OSA is closely linked with several common cardiac disorders (atrial fibrillation, heart failure. Findings

from this research will advance our understanding of the physiologic effects of obstructive apneas on cardiac function.

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

NAME	POSITION TITLE
Pressman, Gregg S. M.D.	Clinical Associate Professor of Medicine, Jefferson Medical College, Philadelphia, PA Associate Program Director Cardiovascular Diseases Fellowship Training Program, Einstein Medical Center, Philadelphia, PA
eRA COMMONS USER NAME PressmanG	

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR	FIELD OF STUDY
Lehigh University (Bethlehem, PA)	BA	1977	Biology
Temple University (Philadelphia, PA)	MD	1981	Medicine

Personal Statement.

My research interests focus on two main areas: a) the impact of cardiac calcifications on structure and function of the heart, and b) the pathophysiology of obstructive sleep apnea as it affects cardiac structure and function. I have conducted clinical research at Einstein Medical Center in both these areas, with resultant publications in major peer-reviewed cardiology journals. I am also involved in several collaborations, both in North America (Mayo Clinic, Rochester, MN and Concordia University, Montreal, Canada) and in Europe (Brno, Czech Republic).

Positions and Honors.

1987 – 2006 Trenton Cardiology Consultants (private practice, cardiology)
1987 – 2006 Teaching Attending, Internal Medicine Residency Training Program, St. Francis Medical Center, Trenton, NJ
2001 – 2004 Director, Non-Invasive Cardiology, St. Francis Medical Center, Trenton, NJ
2003 – 2004 Chief, Section of Cardiology, St. Francis Medical Center, Trenton, NJ
2001 – present Associate Professor of Medicine (Adjunct), Seton Hall University School of Graduate Medical Education, South Orange, NJ
2006 – present Faculty, Department of Cardiology, Albert Einstein Medical Center, Philadelphia, PA
2006 – present Research Collaborator, Mayo Clinic, Rochester, MN
2007 – present Associate Program Director, Cardiovascular Diseases Fellowship Training Program, Albert Einstein Medical Center, Philadelphia, PA
2007 – present Associate Director, Echocardiography Laboratory, Albert Einstein Medical Center, Philadelphia, PA
2008 – present Clinical Associate Professor of Medicine, Jefferson Medical College, Thomas Jefferson University, Philadelphia, PA

Other Experience, Professional Memberships, and Honors

1984 American Board of Internal Medicine – board certification
1987 Cardiovascular Diseases –board certification
1988 Fellow, American College of Cardiology
2002-2003 Self Study Task Force of the Strategic Education Directions Committee, American College of Cardiology Foundation

2004 Adult Comprehensive Echocardiography – board certification
2007 Fellow, American Society of Echocardiography
2007-present Member, Education Committee, Pennsylvania Chapter of the American College of Cardiology
2007-present Member, Sleep Lab Committee, Albert Einstein Medical Center, Philadelphia, PA
2007- present Member, Research Committee, Albert Einstein Medical Center, Philadelphia,PA
2009 – 2012 President, Delaware Valley Echo Society

Other Scholarly Activity

Editorial Board for journal *Sleep*
Associate Coordinating Editor, *Practical Reviews in Cardiology*
Reviewer for *American Journal of Cardiology, European Journal of Echocardiography, International Journal of Cardiology, Nature Clinical Practice – Cardiovascular Medicine*

Selected peer-reviewed publications

1. Kuniyoshi FHS, Garcia-Touchard A, Gami AS, Romero-Corral A, van der Walt C, Pusalavidyasagar S, Kara T, Caples SM, **Pressman GS**, Vasquez EC, Lopez-Jimenez F, Somers VK. *"Day-night Variation of Acute Myocardial Infarction in Obstructive Sleep Apnea"* J Am Coll Cardiol 2008; 52:343-6.
2. Gami AS, **Pressman GS**, Caples SM, Kanagala R, Gard JG, Malouf JF, Ammash NM, Friedman PA, Somers V*K. "Association of Atrial Fibrillation and Obstructive Sleep Apnea*" Circulation 2004; 110: 364 – 367.
3. Orban M, Bruce CJ, **Pressman GS**, Leinveber P, Romero-Corral A, Korinek J, Konecny T, Villaraga H, Kara T, Caples SM, Somers VK. *Dynamic Changes of Left Ventricular Performance and Left Atrial Volume Induced by the Mueller Maneuver in Healthy Young Adults – Implications for Obstructive Sleep Apnea, Atrial Fibrillation and Heart Failure* Am J Cardiol 2008;102:1557-61.
4. Koshino Y, Villarraga HR, Orban M, Bruce CJ, **Pressman GS**, Leinveber P, Saleh HK, Konecny T, Kara T, Somers VK, Lopez-Jimenez F. *Changes in Left and Right Ventricular Mechanics during the Mueller Maneuver in Healthy Adults: a Possible Mechanism for Abnormal Cardiac Function in Patients with Obstructive Sleep Apnea* Circ Cardiovasc Imaging 2010; 3:282-9.
5. Konecny T, Brady PA, Orban M, Lin G, **Pressman GS**, Lehar F, Tomas K, Gersh BJ, Tajik AJ, Ommen SR, Somers VK. *"Interactions Between Sleep Disordered Breathing and Atrial Fibrillation in Patients with Hypertrophic Cardiomyopathy".* Am J Cardiol 2010; 105:1597-602.
6. Konecny T, Kuniyoshi FH, Orban M, **Pressman GS**, Kara T, Gami A, Caples SM, Lopez-Jimenez F, Somers VK. *"Under-diagnosis of sleep apnea in patients after acute myocardial infarction"* J Am Coll Cardiol 2010;56:742-3.
7. Cepeda-Valery B, **Pressman GS**, MD, Figueredo,VM, Romero-Corral, A. *Impact of Obesity on Total and Cardiovascular Mortality: Fat or Fiction?* Nature Reviews Cardiology 2012;8:233-7.
8. Albuquerque FN, Calvin AD, Sert Kuniyoshi FH, Konecny T, Lopez-Jimenez F, **Pressman GS**, Kara T, Friedman P, Ammash N, Somers VK, Caples SM. *"Sleep-disordered breathing and excessive daytime sleepiness in patients with atrial fibrillation."* Chest 2012;141-967-73.
9. **Pressman GS**, Figueredo VM, Romero-Corral A, Murali G, Kotler MN. *"Effect of obstructive sleep apnea on mitral valve tenting."* Am J Cardiol. 2012 Apr 1;109(7):1055-9.
10. Gupta S, Cepeda-Valery B, Romero-Corral A, Shamsuzzaman A, Somers VK, **Pressman GS.** *"Association between QRS duration and obstructive sleep apnea."* J Clin Sleep Med 2012;8:649-54.