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:** Temple University of the Commonwealth System of Higher Education

2. **Reporting Period (start and end date of grant award period):** 01/01/2009 – 12/31/2012

3. **Grant Contact Person (First Name, M.I., Last Name, Degrees):** Germaine A Calicat

4. **Grant Contact Person's Telephone Number:** 215.204.7655

5. **Grant SAP Number:** 4100047651

6. **Project Number and Title of Research Project:** 28 - *Protection from Atherosclerosis in IL-19 Transgenic Mice*

7. **Start and End Date of Research Project:** 7/01/2010 – 6/30/2011

8. **Name of Principal Investigator for the Research Project:** Michael Autieri, 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:

   $ 25,000

   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
Ellison	student	100	25,000

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
Autieri	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
None		

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___x_____ No_____

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:
IL-19 inhibits atherosclerosis by multiple mechanisms	☐xNIH ☐ Other federal (specify:_____) ☐ Nonfederal source (specify: _)	12-2012	$1,116,000	$1,116,000
Inhibition of atherosclerosis by IL-19	☐NIH ☐ Other federal (specify:_____) ☐X Nonfederal source (specify: american heart association__)	1-2013	$154,000	$154,000

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?

To do the work and publish manuscripts. Hopefully will result in new avenues of research.

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_x_____ No_____

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

	Undergraduate	Masters	Pre-doc	Post-doc
Male			1	
Female				
Unknown				
Total			**1**	

	Undergraduate	Masters	Pre-doc	Post-doc
Hispanic				
Non-Hispanic			1	
Unknown				
Total			**1**	

	Undergraduate	Masters	Pre-doc	Post-doc
White			1	
Black				
Asian				
Other				
Unknown				
Total			**1**	

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.

It brought in NIH and AHA funding to do more and better research.

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

AIM 1. Decreased development of atherosclerosis in VSMC restricted IL-19 transgenic mice.

Rationale and Approach. In preliminary experiments, we have shown that the IL-19 knock out mouse has an exacerbated response to a high-fat diet with increased atherosclerosis. These data drive the hypothesis to be tested that the IL-19 VSMC transgenic mouse will have a decreased response to a high fat/high cholesterol diet compared with than control mice, likely as a result of decreased VSMC proliferation.

Results. At 16 weeks feeding a high-fat atherogenic diet, , the entire length of the aorta was removed, and a longitudinal cut through the inner curvature of the aortic arch exposes the intimal surface. En face preparations of the aortic surface were stained for lipid with oil red O, and lesion size was quantified by image analysis software. Lesion size is defined by the percent of a standardized area of the intimal surface covered by atherosclerotic lesions.

Figure 1 shows representative aorta from wild-type control mice compared with IL-19 transgenic mice and shows significantly less aortic plaque in the transgenic mice compared with control mice. Thus far, four control mice and seven IL-19 transgenic mice have been fed, aorta processed, and images analyzed and atherosclerosis quantitated. Figure 2 is quantitation of this data, and shows that atherosclerotic burden is significantly decreased in the IL-19 Tg mice compared with control mice (12.88+/-2.8 % Vs 3.71+/-0.96% for control and IL-19Tg mice, respectively, P=0.004). At present, an additional seven mice from each group are being processed and imaged; we should have data within three weeks.

AIM 2. Cellular characterization of atherosclerotic lesions in AIF-1 transgenic mice.

Rationale and Approach. We will characterize the cellular component of atherosclerotic lesions in the wild-type and transgenic mice by immunohistochemistry to link IL-19 expression with decreased VSMC proliferation, and decrease in inflammatory cell burden in vivo.

Results. For inflammatory cells, immunohistochemical staining was be performed using antibodies directed against smooth muscle cell α actin, and anti-leukocyte common antigen CD45. For all experiments, at least 4 cross sections, 100μM apart, was used for immunohistochemistry. Sections were be counter stained with hematoxylin and specific protein expression or localization was determined by the number of positively stained cells per high powered field and expressed as a percentage of total cells counted. At lest four sections from at least three mice were be examined.

Figure 3 shows representative sections from aortic root of control and IL-19 transgenic mice. These were immunostained with SMC actin to identify smooth muscle cells, and also with Oil Red O, to identify foam cells. Figure 4 shows that the IL-19 Transgenic mice have significantly less smooth muscle cell foam cells compared with control mice (37.0+/-9.1 Vs 15.1+/-5.4 cells per high powered field, P<0.01).. These same sections were immunostained with anti-CD45 antibody to identify inflammatory cell infiltrate. Figure 5 shows significantly less inflammatory cell infiltrate into aortic root lesions in IL-19 transgenic mice compared with control mice (28.2+/-0.9 Vs 17.4+/-1.1, P <0.001).

Together, these data indicate that IL-19 has a protective effect against atherosclerosis, quite possibly by reducing SMC foam cell number and inflammatory cell infiltrate. As more mice are entered into the study we will include that data as well.

Figure 1. representative en face staining for atherosclerotic Plaque in mice. A is wild-type control, B is IL-19 SM22 transgenic. Both mice fed high-fat diet for 16 weeks.

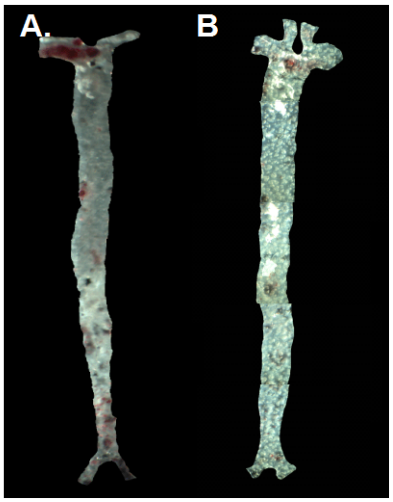


Figure 2. quantification of atherosclerotic burden in mice. Atherosclerotic lesions were quantitated by Image-analysis morphology in control (n=4) and IL-19 Transgenic mice (n=7). P<0.01

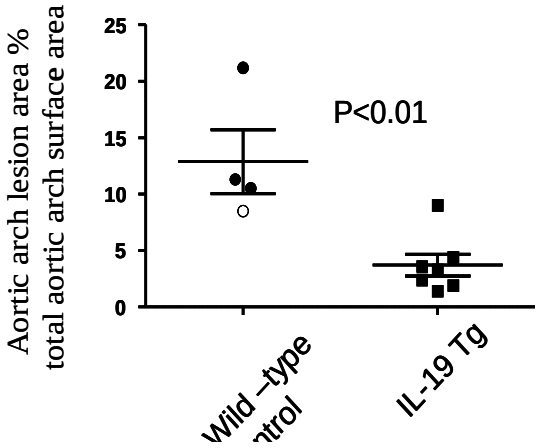


Figure 3. representative histological staining for atherosclerotic Plaque in aortic root from mice fed high-fat diet for 16 weeks.. A. is wild-type control, B. is IL-19 SM22 transgenic. Both mice fed high-fat diet for 16 weeks.

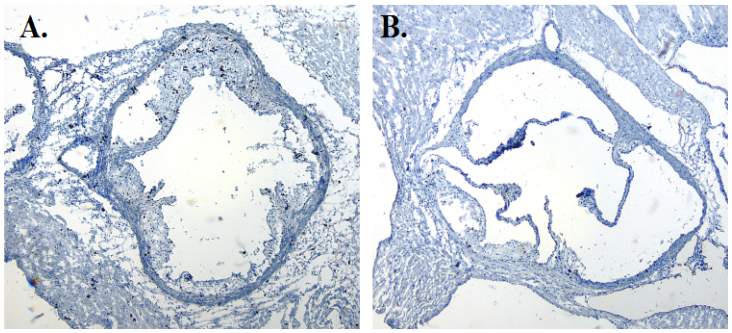


Figure 4. Reduction in SMC positive foam cells from Figure 3. (*P*<0.01)

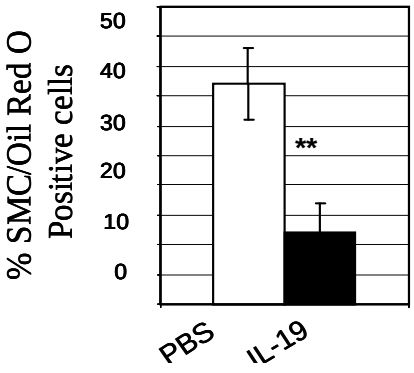
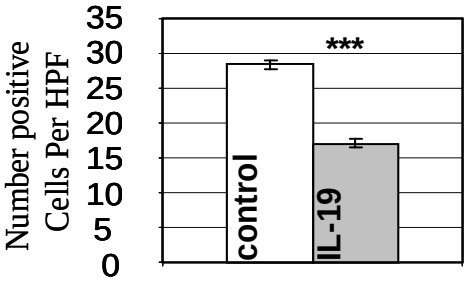


Figure 5. Reduction of CD45 positive Inflammatory cells quantitated from Figure 3. P<0.001.



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
__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, 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				☐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:

We still need to complete the research and write the papers. Manuscripts are in preparation.

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.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
Michael Autieri	Professor of Medicine
eRA COMMONS USER NAME (credential, e.g., agency login)	
autieri001	

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
Temple University, Philadelphia PA	B.S.	1981-1985	Medical Technology
Hahnemann University, Philadelphia, PA	Ph.D.	1988-1992	Molecular Biology
University of Pennsylvania, Philadelphia, PA	Post-doc	1992-1993	Molecular Immunology
SmithKline Beecham, King of Prussia, PA	Post-doc	1993-1994	Cardiovascular Pharm.

B. Positions and Honors.

Positions and Employment

Professional Experience

1986-1992 Histocombatibility Technologist, Transplant Immunology and Organ Preservation Laboratory, Albert Einstein Medical Center, Philadelphia, PA

1994-1996 Instructor, Department of Pathology, Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, NY

1996-1998 Senior Research Associate, Department of Molecular Biology, Deborah Cardiovascular Research Institute, Browns Mills, NJ

1998-2006 Assistant Professor, Department of Physiology, Cardiovascular Research Center, Temple University School of Medicine, Philadelphia, PA

2006- 2010 Associate Professor, Department of Physiology, Cardiovascular Research Center, Temple University School of Medicine, Philadelphia, PA (Tenured, 2006)

2010 - Professor, Department of Physiology, Cardiovascular Research Center, Sol Therry Thrombosis Research Center, Temple University School of Medicine, Philadelphia, PA

Experience, Professional membership, Peer Review Activities:

2009-2013 Member, NIH/NHLBI Atherosclerosis Inflammation of the Cardiovascular System (AICS)

2008-2010 Director, Molecular and Cellular Physiology Graduate Program, Temple University

2008-present Vice Chair for Research, Department of Physiology, Temple University

2006-2009 Member, American Heart Association; National Vascular Wall Biology I study section

2004-2008 Ad-Hoc, NIH/NHLBI Atherosclerosis Inflammation of the Cardiovascular System (AICS)

2008 Michael Smith Foundation for Health Research, British Columbia, Canada

2002-2006 Member, American Heart Association; Mid-Atlantic Vascular Biology study section

2006 Ad-Hoc, NIH/NHLBI Special Emphasis Panel on Transplantation Biology

2005 Ad-Hoc, NIH/NHLBI Vascular Cell Molecular Biology (VCMB)

2004-2003 Ad-Hoc, NIH/NHLBI Pathology A (PATH A) study section
2000 U.S. Civilian Research and Development Foundation (CDRF)

Editorial Board: *Current Vascular Pharmacology* (2002), *Drug News and Perspectives* (2002),*Clinical Medicine: Pathology* (2007), Frontiers in Vascular Physiology (2010)

Memberships: American Heart Association, (AHA) Council on Atherosclerosis, Thrombosis, and Vascular Biology, American Society for Biochemistry and Molecular Biology (ASBMB), American Homebrewers Association, (AHA), American Society of Clinical Pathologists (ASCP), International Society for Heart and Lung Transplantation (ISHLT), North American Vascular Biology Organization (NAVBO)

Honors and Awards

1985 Outstanding Senior Award, Temple University
1991 Hahnemann University Academic Performance in Molecular Biology honors award
1994 AECOM Research Advisory Council Pilot Project Award
2000 US Patent, serial No. 09/004,171 "Interferon Responsive Transcript IRT-1" Inventor: Michael Autieri
2001 Young Investigator Award, American Society for Transplantation

2001 Caves Award Finalist, International Society Heart and Lung Transplantation

C. Selected, relevant, peer-reviewed publications:(from > 55 peer-reviewed publications, 13 in last 3 years)

Most relevant to this application

1. Cuneo, AA, Herrick, D, **Autieri, MV.** IL-19 Reduces VSMC Activation by Regulation of mRNA Regulatory Factor HuR and Reduction of mRNA Stability. *Journal Molecular and Cellular Cardiology 2010, 49(4):647-*
2. Tian, Y., Sommerville, L.J. Cuneo A., Kelemen, SE., and **Autieri, MV**. Expression and Suppressive Effects of Interleukin-19 on Vascular Smooth Muscle Cell Proliferation, Signaling, and Development of Intimal Hyperplasia, *American Journal of Pathology* 2008, 173;901-909
3. Jain S, Gabunia K, Kelemen SE, Panetti TS, **Autieri MV.** The anti-inflammatory cytokine interleukin 19 is expressed by and angiogenic for human endothelial cells. *Arterioscler Thromb Vasc Biol.* 2011 Jan;31(1):167-75.
4. Gabunia, K, Jain, S., England, R., **Autieri, MV.** The Anti-Inflammatory Cytokine Interleukin-19 Inhibits Smooth Muscle Cell Migration and Activation of Cytoskeletal Regulators of VSMC Motility Accepted for publication, *American Journal of Physiology, Cell Physiology* 2011. C896-906
5. Gabunia, K, Ellison, SP. Singh, H. Datta, P., Kelemen, SE, Rizzo,V, **Autieri, MV**. IL-19 induces HO-1 expression and decreases Reactive Oxygen Species in human Vascular Smooth muscle cells. *Journal of Biological Chemistry* 2012 287:2477-2484

Other representative publications

6. Sommerville, LJ, Kelemen, SE., **Autieri, MV** Increased Smooth Muscle Cell Activation and Neointima Formation in Response To Injury in AIF-1 Transgenic Mice *Arteriosclerosis, Thrombosis, and Vascular Biology.* 2008;28:47-53
7. **Autieri MV**, Mu, A. and Carbone, C. Expression of Allograft Inflammatory Factor-1 (AIF1) is a marker of activated human VSMC and arterial injury. 2000 *Arteriosclerosis, Thrombosis, and Vascular Biology* 20:1737-1744.

8. **Autieri MV,**and Carbone, C. Over expression of Allograft Inflammatory Factor-1 (AIF-1) promotes proliferation of Vascular smooth msucle cells by cell cycle deregulation. 2001 *Arteriosclerosis, Thrombosis, and Vascular Biology* 21:1421-1426.
9. **Autieri MV,** Kelemen, SE., Thomas, BA., Feler, ED., Goldman, BI, Eisen, HJ. Allograft Inflammatory Factor-1 (AIF-1) Expression Correlates With Cardiac Rejection And Development Of Cardiac Allograft Vasculopathy. 2002 *Circulation* 106:2218-2223.
10. **Autieri MV,** Kelemen, SE, Wendt, KW. AIF-1 is an Actin-polymerizing and Rac1-activating Protein that Promotes Vascular Smooth Muscle Cell Migration. 2003 *Circulation Research* 92:1107-1114.
11. Chen, X., Kelemen, SE, **Autieri MV,** AIF-1 Induces G-CSF Production, Deregulation of Cell Cycle Protein Expression, and Increased Proliferation of human Vascular Smooth Muscle Cells. 2004, *Arteriosclerosis, Thrombosis, and Vascular Biology* 24:1217-1222.
12. **Autieri MV,** Kelemen, SE., Gaughan, J., Eisen, HJ. Vascular Smooth Muscle Cell Expression of Early Growth Responsive gene-1 (Egr-1) in Response to Acute Cellular Rejection and Cardiac Allograft Vasculopathy. 2004 *Transplantation* 78:107-111.
13. Kelemen, SE. **Autieri MV**, Expression of Allograft Inflammatory Factor-1 (AIF-1) in T-Lymphocytes: a Role in T-Lymphocyte Activation and Proliferative Arteriopathies. *Am J Pathology* 2005, 167: 619-626
14. Sommerville, LJ., Chen, X, Kelemen, SE, Eguchi, S, **Autieri, MV**. Allograft Inflammatory Factor-1 Expression Influences Development of Neointimal Hyperplasia and Regulation of p38 Kinase Activity. *Cardiovasc Res. 2009* ;81(1):206-15.
15. Suzuki, H, Kimura K, Shirai H, Eguchi K, Higuchi S, Hinoki A, Ishimaru K, Dhanasekaran DN, Stemmle LN, Fields TA, Frank GN, **Autieri MV**, and Eguchi S. Endothelial nitric oxide synthase selectively inhibits G12/13 and Rho-kinase activated by the angiotensin II type-1 receptor; implication in vascular migration. *Arterioscler Thromb Vasc Biol*. 2009;29:217-24

D. Research Support

Current Research Support

NIH/NHLBI: R01HL115575 Michael Autieri, (PI) Eric Choi (5% Co-I) 2013-2017

"Mechanisms of Th2-driven Angiogenesis" Goals are to characterize the mechanisms of how anti-inflammatory interleukins can induce angiogenesis and tissue reperfusion

NIH/NHLBI: R01HL066301-06 Victor Rizzo (PI) Michael Autieri (5% Co-I) 2008-2013

"Mechano-Chemical Signaling in Endothelial Cell Caveolae" The goals are to characterize the role of nitric oxide (NO) as a mechano-signaling mediator in caveolae, ii) determine the spatial location of shear-stress induced superoxide formation specifically within the endothelial plasma membrane and iii) examine the function of ROS generation in the caveolae mediated acute mechanotransduction process.

NIH/NHLBI: RO1 HL076770 Satoru Eguchi (PI) Michael Autieri 5% (Co-I) 2004-2013

"ADAM activation by angiotensin II"

"ErbB Activation via a Metalloprotease by Angiotensin II" (2004-2009) The goal of this project is to determine the role and mechanism of the ADAM metalloprotese activation required for EGFR transactivation by angiotensin II in the vasculature.

Completed Research Support in past 3 years

NIH/NHLBI: RO1 HL090885 Michael Autieri (PI) Satoru Eguchi (Co-I) 2009-2013

“Suppression of VSMC Activation and Mechanisms of Vascular Protection by IL-19” The specific aims are to determine IL-19 mediated protein-protein interactions and the molecular mechanism(s) whereby IL-19 suppresses signal transduction and PDGF-driven gene expression.

NIH/NHLBI: 1RO1 HL63810 Michael Autieri (PI) Satoru Eguchi (Co-I)
2001 - 2010

“AIF-1 expression in VSMC growth and arteriopathy” The specific aims are to determine the mechanisms responsible for AIF-1 growth enhancing properties in VSMC, determine AIF-1 protein-protein interactions, and role of AIF-1 expression development of transplant arteriopathy.