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):** 01/01/2010 – 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:** 4100050909

6. **Project Number and Title of Research Project:** Research Project 2: *Effects of IL-19 on Endothelial Cell Activation and Angiogenesis*

7. **Start and End Date of Research Project:** 7/1/2010-6/30/2011

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

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:

   $ 90,346.42

   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
Ross England	graduate student	80	21,000

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
none		

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:
Th2 interleukin angiogenesis	☐xNIH ☐ Other federal (specify:_____ _____) ☐ Nonfederal source (specify: _____)	10/11, 6/12	$1,250,000	$952,000
	☐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_____x____ No_____

If yes, please describe your plans:
Keep applying to NIH until I get the funds

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

This funding was for a single year of 80% of a graduate student stipend. This project Ended two years ago when the funding stopped. When the university stopped providing Tobacco funding for student stipends, the project ended.

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				

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

	Undergraduate	Masters	Pre-doc	Post-doc
White			1	
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_____ No____x_____

If yes, describe how improvements in infrastructure, the addition of new investigators, and other resources have led to 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 <u>for the period</u>

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.

Angiogenesis is the growth of new blood vessels and normally occurs in the process of healing wounds and restoring blood flow after injury. It is well known that many pro-inflammatory cytokines are pro-angiogenic. Very little is known about the effects of anti-inflammatory cytokines on the development of angiogenesis. IL-19 is a compound which occurs naturally in humans and functions to modify inflammatory cells and dampen the immune response. We have previously shown that IL-19 is induced in endothelial cells under inflammatory and pro-angiogenic conditions. Cultured EC in which IL-19 is added display pro-angiogenic effects, such as increased migration, proliferation, and tube formation. In this project, one outcome we expect is that mice, genetically deficient in IL-19, will have decreased angiogenesis. If these experiments are successful, then at least one major benefit of this research is that IL-19 could represent a new class of naturally occurring therapy to increase wound healing and improve outcome of ischemic vascular diseases.

Summary of Research Completed.

The funding was for one year of a graduate student stipend for Mr. Ross England. The aim was partially completed. That year ended June 30, 2011. However, additional data has been generated by Mr. England in the remainder of that year.

In Aim 1 we will determine if there will be decreased development of angiogenesis in IL-19 knock out mice compared with wild-type mice, subject to hind-limb ischemia.

Methods. Hind limb ischemia surgery was performed in rodents. One cohort was injected with PBS as negative control, the other cohort was injected with recombinant IL-19. Perfusion was quantitated by scanning laser doppler imaging.

Results.
IL-19 induces neovascularization in vivo. Rodent hindlimb ligation and ischemia is a well-established model for induction of neovascularization in vivo. In preliminary experiments, we tested the ability of IL-19 to regulate neovascularization using two different platforms; and two different technologies. First, using scanning laser Doppler imaging (SLDI), we show that C57B6 mice injected with 10ng/g/day rIL-19 have significantly increased revascularized hind limb perfusion 15 days post-surgery (0.72±.03 vs. 0.52±.005 ratio for IL-19 and control) (**Figure 1, B.**). Second, we used systemic injection of IL-19, and also IL-19$^{-/-}$ mice (a gift from Dr. Azuma). Both were subject to triple transection of the right femoral artery with sham surgery on the left (non-ischemic) side, and neo-vascularization compared with wild-type littermates. **Figure 1** shows that CD31 ositive capillary density in adductor muscle 28 days post ligation is significantly reduced in the IL-19$^{-/-}$ compared with control mice (633±99 Vs 489±88 capilliaries/mm^2 for IL-19$^{-/-}$ and control mice, n=4 P<0.05). Next, the reverse approach was taken, and wild-type mice were injected with ither PBS or recombinant IL-19 (10ng/g/day, 5 days/week), for 28 days. **Figure 4C** shows that the IL-19-injected mice had significantly more capillary density compared with control animals (901±59 Vs. 623±-66, for IL-19 and control mice, n=4 P<0.05). Interestingly, neither absence of nor systemic IL-19 had any impact on vascular density in un-ligated (normoxic and non-inflammatory) hind limbs, suggesting that these conditions are necessary for IL-19 effects, or perhaps an infiltrating inflammatory cell present in ischemic hind limbs may respond to IL-19.

In Aim 2 we will determine if mice have a reduced capacity to form microvessels toward IL-19-containing matrigel plugs. These experiments were very successful and have been published (1). Figure 2 is from that manuscript. Together, these results suggest that absence of IL-19 impairs angiogenesis, and an increase in IL-19 can exacerbate beneficial angiogenesis. The second aim results indicate that IL-19 is pro-angiogenic and can induce fully formed neovessels with lumens.

METHODS and RESULTS: We demonstrate by immunohistochemistry and immunoblot that IL-19 is expressed in inflamed, but not normal human aortic endothelium, and can be induced in cultured human HVEC by serum and inflammatory cytokine challenge. IL-19 is chemotactic for HVEC (357.6+/- 29.9 Vs 107.5+/-19.3 EC/HPF for control, P<0.01) and promotes cell spreading. IL-19 is mitogenic for HVEC (46.7+/-1.8 x10^3 Vs 29.0+/-1.9 x10^3 EC/ml, for control, P<0.001). IL-19 activates the signaling proteins STAT3, p44/42 MAPK, and Rac1, and induces expression of Matrix Metalloproteinase-2. In functional ex vivo studies, IL-19 promotes

tube-like structure formation on Matrigel by HVECs (31.3+/-3.9 Vs 20.0+/-1.2 tubes for control, P<0.05), and also enhances microvessel formation in the mouse aortic ring assay. IL-19 is expressed in human angiogenic microvessels.
CONCLUSIONS: These data are the first to report expression of the anti-inflammatory interleukin IL-19 in HVEC. This also indicates that IL-19 is mitogenic and chemotactic for HVEC, and can induce the angiogenic potential of HVEC.

Summary. Angiogenesis is a multi-step process requiring endothelial cell activation, proliferation, migration, and vessel formation. We demonstratedthat IL-19 can participate in regulation of all of these steps. Aside from our single publication which was primarily ex vivo, nothing has been reported concerning the expression or presumed function of IL-19 in endothelial cell pathophysiology, or a role in regulation of angiogenesis. Together, these are the first report of effects of IL-19 on EC, and suggest that IL-19 is a novel pro-angiogenic interleukin, and has important implications for wound healing and vascular biology. In a broader sense, this will not only characterize a role for IL-19 in angiogenesis, but also clarify the role of IL-19 as anti-inflammatory therapy, and paracrine EC/macrophage signaling and cross talk in angiogenesis.

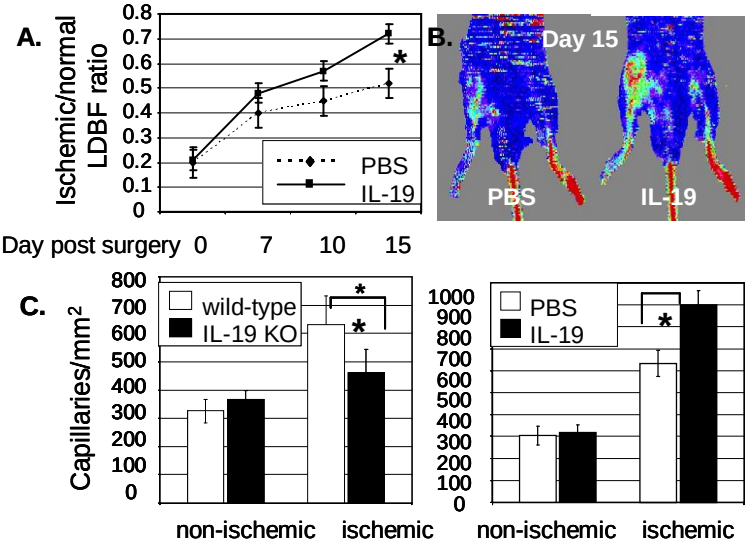

Figure 1. IL-19 accelerates revascularization in vivo. Wild-type mice subject to hind-limb ischemia and injected with PBS or 10ng/g/day rIL-19. **A.** quantitation by scanning laser doppler imaging, ischemic/nonischemic LDBF ratio, n=5, P<0.05 at 15 days, P=0.062 at 10 days. **B.** representative LDBP image at 15 days. **C.** Immuno-histochemistry on adductor muscle with anti-CD31 antibody at 28 days post-hindlimb ligation. Expressed as number/mm^2 n=4, P<0.05.

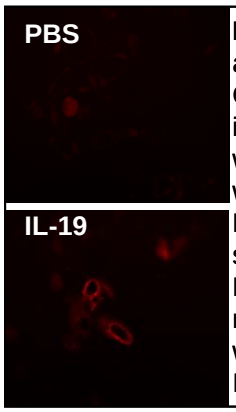

Figure 2. IL-19 stimulates angiogenesis in vivo. C57BL/6 mice were injected sub-cutaneously with Matrigel premixed with PBS control, or IL-19. Plugs were immuno-stained for PECAM1. Positive stained lumens normalized to unit area were quantitated (P<0.05 IL-19 Vs PBS [29]

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.				☐Submitted ☐Accepted ☐Published
2.				☐Submitted ☐Accepted ☐Published
3.				☐Submitted ☐Accepted ☐Published

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

Yes_____ No____x_____

If yes, please describe your plans:

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 was for 80% funding for a single graduate student; it provided for his training and in the future may impact health, but none as yet.

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.

This was for 80% funding for a single graduate student; it provided for his training and in the future may impact health, but none as yet.

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.

A. Personal Statement

My Ph.D. thesis work, as well as post-doctoral work focused on lymphocyte activation, inflammation and cytokine expression. In the intervening 15 years, my independent research has focused on gene expression and pro and anti-inflammatory signal transduction mechanisms in VSMC and EC. I have uncovered expression of many genes previously ascribed to be expressed in leukocytes that are expressed in injured, but not quiescent arterial EC and VSMC. This list includes AIF-1, Rac2, G-GSF, and IL-19.

My laboratory was the first to determine that IL-19 is expressed in injured arteries and activated VSMC, and continues to be the only one to characterize the role of this anti-inflammatory interleukin in vascular protection from injury. We have determined that IL-19 can reduce cell proliferation, migration, and de-stabilize mRNA transcripts. We are the only laboratory to cross the IL-19-/- mouse with atherosclerosis-susceptible mice. We have all of the tools and expertise in place to determine if IL-19 can dampen atherogenesis and to characterize the molecular mechanisms of this protection. This application will identify IL-19 as a previously unrecognized, endogenously expressed modality to allow inflamed arteries to dampen the local response to inflammation and protect themselves from atherogenic stimuli. This may change the way we perceive the activated vasculature as an efferent arm of the immune system. This will identify IL-19, or IL-19 pathway components as novel therapeutics, or targets of intervention to limit vascular inflammation. I've chosen Dr. Scalia because of his expertise in intravital microscopy, and he will help us link IL-19 with regulation of leukocyte-endothelial cell interaction and vascular ROS.

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, 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

D. Research Support

<u>Current Research Support</u>
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. *<u>Currently on No-cost extension</u>*

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.