

Final Progress Report for Research Projects Funded by Health Research Grants

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

1. **Grantee Institution:** The Trustees of the University of Pennsylvania
2. **Reporting Period (start and end date of grant award period):** 1/1/2009-12/31/2012
3. **Grant Contact Person (First Name, M.I., Last Name, Degrees):** Gearline R. Robinson-Hall, BSF
4. **Grant Contact Person's Telephone Number:** 215-746-6821
5. **Grant SAP Number:** 4100047654
6. **Project Number and Title of Research Project:** 7 - Clinical and Molecular Predictors of Responsiveness to Angiogenesis Inhibition in Advanced NSCLC
7. **Start and End Date of Research Project:** 1/1/2009-12/31/2012
8. **Name of Principal Investigator for the Research Project:** Corey J. Langer, MD, FCAP
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:

\$ 115,324.53

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
PACE	CLIN.RES.COORDINATOR	9% YR2; 28% YR3	16,104.32
WERNER	CLIN.RES.COORDINATOR	12% YR4	8789.77

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
Anil Vachani	Pulmonologist – PI of the GEI NSCLC biospecimen collection project	2
Nik Dyanick	CLIN.RES.COORDINATOR	5

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 XX

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 XX

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

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

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

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

Yes XX No _____

If yes, please describe your plans:

We will seek future funds through the CURE mechanism, as well as internal bridge funding to complete the process enumerated in the answer to #12.

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

Now that we have a cohort of patients identified who have received bevacizumab in combination with first-line platinum-based treatment for advanced NSCLC, we intend to correlate outcomes with serum polymorphisms and other factors. Though our numbers are relatively small, we have the advantage of a uniformly staged and uniformly treated population which will help eliminate confounding variables.

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 XX

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 XX

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 XX No _____

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

This project has helped channel our attention to NSCLC patients who are candidates for angiogenesis inhibition, which many of my extramural colleagues in thoracic oncology have begun to downplay; and as part of the broader Genetics and Environmental Interaction (GEI) Project in Lung Cancer, it has helped facilitate opening of other clinical studies targeting this population. We are currently one of the lead accruals to *ECOG 3508* - Phase II Randomized Trial of Paclitaxel, Carboplatin, Bevacizumab +/- IMC-A12, an IGFR inhibitor. Out of 152 patients accrued nationwide to date (02/22/13), we have enrolled 9. 180 subjects total are projected for accrual. In addition, my general involvement in investigating angiogenesis inhibition in advanced NSCLC and this project in particular have helped leverage my role in a PrECOG effort called *AvaALL: Treatment with Bevacizumab Beyond Progression* in patients on maintenance Bevacizumab alone, which compares standard second line single agent therapy to second line treatment in combination with bevacizumab. I am the North American Principal Investigator of this trial. 600 are targeted for accrual globally with 150 targeted for enrollment in the US. To date, 14 subjects have been enrolled through the PrECOG mechanism, with two patients enrolled at Penn/PUPMC.

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 XX

If yes, please describe the collaborations:

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

Yes _____ No XX

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 XX

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

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

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

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

Health research grants funded under the Tobacco Settlement Act will be evaluated via a performance review by an expert panel of researchers and clinicians who will assess project work using this Final Progress Report, all project Annual Reports and the project's strategic

plan. After the final performance review of each project is complete, approximately 12-16 months after the end of the grant, this Final Progress Report, as well as the Final Performance Review Report containing the comments of the expert review panel, and the grantee's written response to the Final Performance Review Report, will be posted on the CURE Web site.

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

Project #1:

Under the aegis of the IRB-approved GEI project, as of 12/31/12 we have collected biospecimens including tissue and blood on 16 patients with advanced, treatment-naïve, bevacizumab-eligible non-small cell lung cancer (NSCLC); and as part of a separately funded project, we have collected similar specimens in over 40 patients receiving pemetrexed-based chemotherapy, of whom roughly half have also received bevacizumab. This project likewise is IRB-approved, and is 10 patients short of completing accrual. We are currently assembling baseline demographic data and collating therapeutic outcome results in these individuals, including response rate (RR%), progression-free survival (PFS), and overall survival (OS). Since the median survival in this population has improved over the past 4 years from roughly 12 months to 18 months or more, it will take some time to assemble mature data. Biospecimens have been banked in Anil Vachani's lab with appropriate alarm systems in the event of power outages. In the interval three years, many of the putative biocorrelative approaches specified in the original hypothesis [(Serum Levels of E-Selectin (endothelial leukocyte adhesion molecule); ICAM (intracellular adhesion molecules); VEGF (vascular endothelial growth factor), Acidic and basic FGF (fibroblast growth factor); Interleukin-8; Platelet-derived endothelial cell growth factor; transforming growth factor- α , β ; Tumor necrosis factor- α ; circulating endothelial cells (CECs)] have been discredited or proven unhelpful. Rather than waste these specimens on disproven or questionable approaches, we are now looking into serum polymorphisms and other potential indicators or outcome in the setting of angioinhibition. This will be fleshed out over the next six months.

Two distinct IRB approved clinical studies associated with this project, including a phase II trial of combination erlotinib and bevacizumab in treatment naïve elderly patients with advanced NSCLC (1), as well as phase II trial of the novel combination of pemetrexed, carboplatin and bevacizumab in treatment-naïve NSCLC patients of any age (2), have been conducted and completed. Penn contributed roughly 30% of the patients to the first project, which was conducted in collaboration with Fox Chase Cancer Center in Philadelphia, and nearly half the patients accrued to the second project. Abstracts focusing on the combined study of targeted treatments (erlotinib and bevacizumab) has been completed and presented at ASCO 2011 (3); and the phase II study of combined chemotherapy and bevacizumab has been published in Cancer (4). Both of these studies have greatly informed our understanding of how bevacizumab works in combination with EGFR TKIs and standard, state-of-the-art chemotherapy. This has been one of the major focal points of our work over the past four years. Funding for this component of the grant helped support the research nurse in charge of

biospecimen collection and the research coordinator who helped collect data for the IRB-approved clinical studies.

Project #2

Unfortunately, the second half of the project never came to fruition. Sharyn Katz MD, who was to spearhead correlation of clinical course in patients with advanced, bevacizumab-eligible NSCLC with novel imaging (DEC-MRI) and nuclear approaches (FLT-PET) lost the support of her department and the funding essential to carrying out her IRB-approved study. Despite multiple attempts to re-ignite this part of the study, the project was put on extended hold. With a change in leadership in the Department of Radiology and Nuclear Medicine, this project was only recently resurrected. Unfortunately, this occurred in the last few months of 2012, leaving us inadequate time to accrue and complete this component of our bevacizumab study within the established deadline. Consequently, funds earmarked for this component of the project have been returned.

References

(1) UPCC# 06508

Sponsor: FCCC and Penn

Title: Phase II Study of Bevacizumab and Erlotinib in Elderly Patients with Advanced Non-Small Cell Lung Cancer (NSCLC)

Regulatory Coordinator: Angie LeVan (215-615-3143)

Research Nurse: Pat Madison, RN (since replaced by Ann Davison)

Research Coordinator: Nik Dyanick

(2) UPCC#12508

Sponsor: Cooper and Penn Medicine

Title: Phase II Study of Bevacizumab and Pemetrexed and Carboplatin in Previously Untreated Advanced NSCLC

Regulatory Coordinator: Amy Marshall

Research Nurse: Pat Madison RN (since replaced by Ann Davison RN)

Research Coordinators: Nik Dyanick and Michael Pace

(3) H. Borghaei, Mehra, R; Millenson, MM; Tuttle, H; Ruth, K; Magdalinski, AJ; **Mintzer, DM; Lee, J; Stevenson, J; Langer, CJ; Phase II study of bevacizumab and erlotinib in treatment-naive elderly patients (older than age 65) with advanced non-small cell lung cancer (NSCLC). *J Clin Oncol* 29: 2011 (suppl; abstr 7548)**

(4) Stevenson JP, Langer CJ, Somer RA, Evans TL, Rajagopalan K, Krieger K, Jacobs-Small M, Dyanick N, Milcarek B, Coakley S, Walker S, Eaby-Sandy B, Hageboutros A Phase 2 trial of maintenance bevacizumab alone after bevacizumab plus pemetrexed and carboplatin in advanced, nonsquamous nonsmall cell lung cancer. *Cancer*. 2012 Nov 15;118(22):5580-7 Apr 27. doi: 10.1002/cncr.27576. [Epub ahead of print].

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
 XX No

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

 Yes
 XX 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?

 5 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?

 30 Number of subjects originally targeted to be included in the study
 32+ Number of subjects enrolled in the study

Note: The IRB-approved GEI project continues to enroll patients separate from the funding provided by this project. We anticipate roughly 10 additional patients as part of the pemetrexed project, which focuses on folate polymorphisms and thymidylate synthetase expression; since roughly half these patients also receive bevacizumab, these subjects will be used to enrich our numbers. The completion of this separately funded project will likely be mid summer of 2013.

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

I'm in the process of breaking down these numbers

Gender:

 Males
 Females
 XX Unknown

Ethnicity:

 Latinos or Hispanics
 Not Latinos or Hispanics
 XX 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.)

Philadelphia

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

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

- Yes
- No

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

- Yes
- No

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

20. Articles Submitted to Peer-Reviewed Publications.

20(A) Identify all publications that resulted from the research performed during the funding period and that have been submitted to peer-reviewed publications. Do not list journal abstracts or presentations at professional meetings; abstract and meeting presentations should be listed at the end of item 17. **Include only those publications that acknowledge the Pennsylvania Department of Health as a funding source** (as required in the grant agreement). List the title of the journal article, the authors, the name of the peer-reviewed publication, the month and year when it was submitted, and the status of publication (submitted for publication, accepted for publication or published.). Submit an electronic copy of each publication or paper submitted for publication, listed in the table, in a PDF version 5.0.5 (or greater) format, 1,200 dpi. Filenames for each publication should include the number of the research project, the last name of the PI, the number of the publication and

an abbreviated research project title. For example, if you submit two publications for PI Smith for the “Cognition and MRI in Older Adults” research project (Project 1), and two publications for PI Zhang for the “Lung Cancer” research project (Project 3), the filenames should be:

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

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

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

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

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

Yes XX No _____

If yes, please describe your plans:

We will submit our work to the annual IASLC and ASCO meetings once the data are mature with appropriate approbation for the Pennsylvania CURE Grant.

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 (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.

None (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 XX

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 XX_____

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 Corey J. Langer, M.D. eRA COMMONS USER NAME CLANGER	POSITION TITLE Member of the Abramson Cancer Center, University of Pennsylvania		
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Boston University	B.A.	1981	Med. Science, Minor in English
Boston University	M.D.	1981	Combined 6 year program in Medicine

PERSONAL STATEMENT:

Corey Langer, M.D., Professor of Medicine at the University of Pennsylvania, is the Clinical Director of Thoracic Oncology at the Abramson Cancer Center and Chair of the Medical Oncology Committee for the Radiation Therapy Oncology Group (RTOG). He brings considerable clinical trial experience to research efforts both at Penn in the Cooperative Group system (RTOG and ECOG). For the 25 years, since completing fellowship, he has led or co-led over 100 clinical trials in both small cell (SCLC) and non-small cell lung cancer (NSCLC), in the adjuvant, locally advanced (LA), and advanced disease setting, and at least 20 trials in Head and Neck Cancer (HNC). He is the author or co-author of nearly 200 peer-reviewed papers, primarily focusing on the treatment of smoking-related malignancies. He is a core member of both the RTOG and ECOG HNC and Thoracic Committees. His clinical research efforts have extended from phase I to phase III studies, with an emphasis on new drug combinations and special populations, including the elderly and those with compromised performance status. His work in both advanced and LA-NSCLC helped show that increasing age, by itself, was not a negative prognostic factor, that PS trumped age in this regard. He has a particular interest in combined modality therapy, which dates back to fellowship when he first investigated the role of concurrent platinum-based chemotherapy and radiation (XRT) in unresectable LA-NSCLC. His research efforts culminated in a phase III trial (RTOG 9410), which he helped spearhead and which demonstrated a survival advantage for concurrent chemo-radiation over sequential therapy, the erstwhile standard of care. Since that time, he has investigated the role of new(er) agents in combination with local XRT as well as the still "radical" notion of radiosensitizing chemotherapy (cisplatin and paclitaxel) and re-irradiation in patients whose HNCs have recurred after definitive XRT and who are no longer resectable, first in phase I at Fox Chase Cancer Center, and then in phase II through the RTOG (9911). The latter study has produced longterm survivors, who likely would have succumbed with systemic therapy alone. He also led an ECOG trial evaluating the role of concurrent C225 and cisplatin/XRT in locally advanced, treatment-naïve, unresectable HNC (ECOG 3303). He was amongst the first medical oncologists in the US to investigate the role of concurrent irinotecan and definitive cisplatin with standard XRT in limited stage SCLC, and more recently was one of the leaders of a randomized phase II trial of carboplatin/etoposide +/- obataclax, a BCL2 inhibitor, in extensive stage SCLC, which he presented at both ASCO [6/11] And IASLC [7/11] in Amsterdam, Holland, and which showed a borderline significant survival advantage. He currently leads research efforts at Penn in thoracic malignancy; and, in the current era of molecularly driven cancer therapy, he has created a working coalition with Anatomic and Molecular Pathology delineating and documenting patient-specific "actionable" mutations and translocations, which are now linked to studies investigating novel therapies in adenocarcinoma of the lung. In coordination with Steve Albelda of the Pulmonary Division at Penn, he is currently leading a research study focused on the identification and implications of circulating tumor cells (CTCs) in SCLC and the immunotherapy of NSCLC. Finally, he spends considerable time mentoring junior investigators as they put launch their own clinical trials.

POSITIONS AND HONORS

Research and Professional Experience:

1990-2008	Chair of the FCCC Pharmacy and Therapeutics and Practice Monitoring Committees
1994-2008	Medical Director, Thoracic Oncology, FCCC

2008- Professor of Medicine, Clinical Director, Thoracic Oncology, University of Pennsylvania
 2009- Co-Chair of the Cancer Therapeutics Core of the Abramson Cancer Center
 2011- Co-Chair of the Interdisciplinary Thoracic Oncology Program (I-TOP) at Penn

PUBLICATIONS Relevant to Thoracic and Head and Neck Oncology (Selected since 2011)

1. Lemma GL, Lee JW, Aisner SC, **Langer CJ**, Tester WJ, Johnson DH, Loehrer PJ Sr [Phase II study of carboplatin and paclitaxel in advanced thymoma and thymic carcinoma](#). J Clin Oncol. 2011 May 20;29(15):2060-5. Epub 2011 Apr 18
2. Gridelli C, Brodowicz T, **Langer CJ**, Peterson P, Islam M, Guba SC, Moore P, Visseren-Grul CM, Scagliotti G. [Pemetrexed Therapy in Elderly Patients With Good Performance Status: Analysis of Two Phase III Trials of Patients With Nonsquamous Non-Small-Cell Lung Cancer](#). Clin Lung Cancer. 2012 Jan 20. [Epub ahead of print] PMID 22266043
3. Wakelee HA, Dahlberg SE, Brahmer JR, Schiller JH, Perry MC, **Langer CJ**, Sandler AB, Belani CP, Johnson DH; Eastern Cooperative Oncology Group. [Differential effect of age on survival in advanced NSCLC in women versus men: Analysis of recent Eastern Cooperative Oncology Group \(ECOG\) studies, with and without bevacizumab](#). Lung Cancer. 2012 Jun;76(3):410-5Jan 20. [Epub ahead of print]PMID:22266041
4. [Stevenson JP](#), **Langer CJ**, [Somer RA](#), [Evans TL](#), [Rajagopalan K](#), [Krieger K](#), [Jacobs-Small M](#), [Dyanick N](#), [Milcarek B](#), [Coakley S](#), [Walker S](#), [Eaby-Sandy B](#), [Hageboutros A](#) Phase 2 trial of maintenance bevacizumab alone after bevacizumab plus pemetrexed and carboplatin in advanced, nonsquamous nonsmall cell lung cancer. [Cancer](#). 2012 Nov 15;118(22):5580-7 Apr 27. doi: 10.1002/cncr.27576. [Epub ahead of print]
5. [Fury MG](#), [Sherman E](#), [Lisa D](#), [Agarwal N](#), [Algazy K](#), [Brockstein B](#), **Langer C**, [Lim D](#), [Mehra R](#), [Rajan SK](#), [Korte S](#), [Lipson B](#), [Yunus F](#), [Tanvetyanon T](#), [Smith-Marrone S](#), [Ng K](#), [Xiao H](#), [Haque S](#), [Pfister DG](#) A Randomized Phase II Study of Cetuximab Every 2 Weeks at Either 500 or 750 mg/m² for Patients With Recurrent or Metastatic Head and Neck Squamous Cell Cancer. [J Natl Compr Canc Netw](#). 2012 Nov 1;10(11):1391-1398
6. [Socinski MA](#), **Langer CJ**, [Okamoto I](#), [Hon JK](#), [Hirsh V](#), [Dakhil SR](#), [Page RD](#), [Orsini J](#), [Zhang H](#), [Renschler MF](#) Safety and efficacy of weekly nab(R)-paclitaxel in combination with carboplatin as first-line therapy in elderly patients with advanced non-small-cell lung cancer. [Ann Oncol](#). 2012 Nov 2.

**RESEARCH SUPPORT
 ONGOING**

NIH/NCI U10 CA027525 (PI: Goldstein) 08/13/2004 - 04/30/2008
 Eastern Cooperative Oncology Group Role: Research Physician
 Major goals of this project include: 1) Maintain a level of accrual to ECOG studies; 2) Increase the level of multidisciplinary involvement by integrating key modality-oriented individuals into ECOG activity in our affiliate institutions; 3) Increase our contribution to the scientific activities of ECOG; and 4) Maintain a high level of scientific and administrative involvement in ECOG programs.

NIH/NCI 3U10CA021161-35 (Curran) 01/01/09-12/31/14
 Radiation Therapy Oncology Group Role: Chair, Medical Oncology Subcommittee
 The goal of this award is to conduct outstanding clinical and translational research through the conduct of international phase II and III trials with full biospecimen and biophysics programs of translational research. My role is to (1) Introduce new agents into the therapeutic paradigm; (2) Investigate new therapeutic venues; (3) Coordinate combined modality trials evaluating new radiosensitizers and targeted agents