AGENDA
Kentucky Lung Cancer Research Program
Governance Board

Council on Postsecondary Education
Wednesday, February 11, 2015
2:00 PM
Conference Room A

Kentucky Lung Cancer Research Program
Clinical & Translational Research Building
CPE Offices, Frankfort, KY
Meeting Minutes
October 22, 2014

Present: Jim Roach (MAL & Chair), Joe Graviss (MAL), Tim Mullett (UK); Dr. John Chesney (UofL); DR. Amdullah Khan, (MAL – by video conference), Mark Evers (UK), Don Miller (UofL), Dr. Rajan Joshi (MAL)
Absent: Dan Flanagan (CPE)
Guests: Nathan Vanderford (UK), Milton Pierson (UofL), Kris Damron (UK, KCTN), Beth Yost (UK), Dianne Konzen (UofL), Travis Powell (CPE General Counsel), Linda Linville (CPE Staff to KLCRP); Dr. Tom Martin (CPE)

The meeting of the KLCRP Governance Board was called to order by chairman, Dr. James Roach. Dr. John Chesney was introduced as a new board member representing the University of Louisville. Dr. Chesney serves as Deputy Director of the James Graham Brown Cancer Center at UofL. Dr. Mullett was recognized as having his appointment renewed for another term. Dr. Miller joined the board in recognition of the contributions made by Dr. Eaton from the University of Louisville, having served on the GB for many years and contributing to the research capacity of the Brown Cancer Center.

The minutes from the June 25, 2014 GB meeting were approved as mailed to all board members.

Nathan Vanderford offered for review to all board members a copy of the Strategic Plan Update. The Update was based in part on the Program Review provided by SciMed consultants. Board member, Joe Graviss, along with staff from both institutions reviewed the recommendations made by SciMed extensively. The review and update staff, Nathan Vanderford, Kris Damron, Milton Pierson, and Travis Powell, attended to the review and incorporated a six year look at intended progress with a two year review as required by KY legislative statute. Much appreciation was extended to all for the board's feedback of updates. The Plan Update was approved as presented and attached herein.

Dr. Evers provided an update of the work going forward with new investigators in cancer control, screening rate increases, and a number of challenge grants which will take the center to follow-on funding much beyond the length of the grants. Dr. Evers indicated a number of new physicians have been on-boarded through the Clinical Trials Network. Intended increases are expected to occur in cancer control and investigative studies, epidemiology and behavioral recruits, with lung, and head and neck specialty recruitment needed. Increased clinical trials'

availability is also expected. UK's annual report was approved as reported and made available to CPE.

Dr. Miller provided updates on 14 years of progress and the huge impact KLCRP has had on lung cancer research initiatives within the Commonwealth. For FY 15, Brown has funded 15 grants. There is a drug currently being tested in patients that had original funded from KLCRP. Another oral HPV vaccine originally funded by KLCRP is also being tested. Many translational studies are underway. Progress is being made with clinical trials. And it is the belief that NCI designation is needed with the help of KYOneHealth. Currently the center is seeing less than 20% of their research applications being funded due to decreased funding. UofL's annual report was approved as distributed to members and made available to CPE.

The Funding Allocations for FY 15 and FY 16 were approved as informed by CPE and affirmed by each centers business officers. A report of FY Cash Activity as of October 15, 2014 was also distributed for information on fund balances to date.

The 2015 Governance Board calendar scheduling was agreed upon setting date and time as February 11, at 2 PM at CPE. This scheduling brought about discussion regarding planned sustainability with strategy to capture the value of the program, to plan an annual meeting and use the annual meeting as a public relations opportunity. It was felt important to show unity between the two cancer centers and their institutions and if a legislative agenda is anticipated to time that activity appropriately. It was thought important to review those legislators serving on the health and welfare committee and perhaps request the assistance of Paul Cooms to help with an economic study of the program. Several members of the group agreed to meet by the end of November to discuss next steps – Drs. Mullett, Evers, and Miller, along with Nathan Vanderford and Milton Pierson will arrange to meet and determine how best to map a plan for the coming legislative session. (Currently scheduled – Wednesday, Nov. 19, 11 AM at CPE offices in Frankfort.)

Joe Graviss brought recognized CPE staff, Linda Linville's retirement at the end of December, 2014. Joe introduced an idea for the GB to present a resolution to the CPE board to allow Linda to continue to facilitate KLCRP and assist with the sustainability efforts. Linda, having served as cancer control specialist with the University of KY prior to her work at CPE, would lend history and transition of the program through the next few years. Several options were presented as possible funding for this position, and/or use of interest earnings to fund a staff position for the program. Through some discussion, Mr. Graviss motioned and Dr. Evers seconded this proposal.

There being no further business, the meeting was adjourned with scheduled next meeting date of February 11, at 2:00 PM at CPE.

Attached:

    UK Markey Cancer Center Annual Report FY 13-14

    UofL Brown Cancer Center Annual Report FY 13-14

    FY15 Cash Activity Report (10/15/14)

    FY15 and FY17 Budget Allocations as Approved 10/22/14

    Strategic Plan Update as Approved 10/22/14

ACTION ITEMS

Sustainability Committee to Meet: Capture Value of Program to Date, Plan Annual Meeting as PR Mechanism, Develop Professional Marketing Document, Show Unity of both Institutions, Set Legislative Agenda, Provide staffing with shared responsibility to both institutions and statewide program, Provide Resolution for CPE staffing to continue to the CPE board.

DRAFT MEETING MINUTES 10//22/14

Submitted by Linda H. Linville, Ph.D.
Distribution to GB 11/6/14

Section 6—Abstracts

Professional Research Abstract
(Read by professionals in your area of inquiry)

Principal Investigator: Chi Wang

Co-investigator: Susanne Arnold, Chunming Liu, Jinze Liu, Sivakumaran Theu Arumugam, and Heidi Weiss

Application Title: Harnessing Advanced Genomic and Bioinformatics Technologies for in-depth Molecular Characterization of Lung Adenocarcinoma in KY

Research Design (*from Section 5b*): Translational research (bridges gap between basic and clinical inquiry)

Research Area (*from Section 5c*): Cancer Cell Biology and Signaling

Key Words (up to 5): lung adenocarcinoma, somatic mutation, whole-exome sequencing, bioinformatics

Professional Abstract (*please do not exceed 1/2 page*)

Appalachian Kentucky is home to the highest incidence rate of lung cancer in the United States (108.48 per 100,000, compared to 55.50 per 100,000 nationally). The disproportionately high incidence is not explained by tobacco alone, and it is thought that other factors such as genetic predisposition may play a key role in this disparity. It is therefore critical to understand the molecular characteristics based on evaluation of somatic genomic alterations in this population, which is inherently at high risk of developing lung cancer. We propose a whole-exome sequencing approach to discover novel genetic risk factors that contribute to the high incidence rate of lung adenocarcinoma in Appalachian KY. We will perform whole-exome sequencing for matched tumor and normal tissue pairs from 40 Appalachian lung cancer patients with adenocarcinoma. We will compare the somatic mutations identified from our samples versus those from samples in The Cancer Genome Atlas (TCGA), which were non-Appalachian, to identify mutation patterns that are unique to patients in Appalachian KY. Because the existing bioinformatics method for comparing somatic mutations between two populations has several limitations, we will develop a novel bioinformatics method for the differential analysis, which accounts for various sources of variation in mutation rates and adjusts for baseline characteristics. We expect the proposed study will generate important and unique genomic data from lung adenocarcinoma patients in Appalachian KY. The bioinformatics method we develop will have broad applications to many differential analysis problems using somatic mutation data.

Section 6—Abstracts

Professional Research Abstract
(Read by professionals in your area of inquiry)

Principal Investigator: Chunming Liu, PhD
            Co-PIs: Susanne Arnold, MD; Chi Wang, PhD; David Watt, PhD

Corresponding Principal Investigator: Chunming Liu

Application Title: KLF4 as a novel biomarker and tumor suppressor in lung cancer

Research Design (*from Section 5b*):
Translational research (bridges gap between basic and clinical inquiry)

Research Area (*from Section 5c*):
Cancer Cell Biology and Signaling

Key Words (up to 5):
KLF4, K-ras, lung cancer, HDAC inhibitor

Professional Abstract (*please do not exceed 1/2 page*)

        Lung cancer is the leading cause of cancer-related mortality in the US. Multiple genetic and epigenetic factors contribute to lung cancer pathogenesis including KLF4, a transcription factor that regulates cell proliferation and differentiation as well as the self-renewal of stem cells. KLF4 is a putative tumor suppressor in gastrointestinal cancers but also acts as an oncogene in several other cancers. To understand the role of KLF4 in the lung, we generated a tamoxifen-induced *Klf4* knockout mouse model. We found that KLF4 inhibits lung cancer cell growth and that depletion of *Klf4* altered the differentiation pattern in the lung. To understand how KLF4 functions during lung tumorigenesis, we generated a $K\text{-}ras^{LSL\text{-}G12D/+};Klf4^{fl/fl}$ mouse model, and we used adenoviruses-expressed Cre to induce *K-ras* activation and *Klf4* depletion in the lung. Although *Klf4* deletion alone or *K-ras* mutation alone can trigger lung tumor formation at eight weeks, *Klf4* deletion combined with *K-ras* mutation significantly enhanced lung tumor formation. We also found that *Klf4* deletion in conjunction with *K-ras* activation causes lung inflammation. To understand the mechanism whereby KLF4 is regulated during lung tumorigenesis, we analyzed a lung-cancer database from TCGA and found that *KLF4* expression was significantly lower in lung tissue from cancer patients than in tissue from normal patients. We analyzed the profiles of *KLF4* mutation, promoter methylation and epigenetic factors. We found that class I histone deacetylases (HDACs) are overexpressed in lung cancer and that HDAC inhibitors induced KLF4 and inhibited proliferation of lung cancer cells, suggesting that KLF4 is probably repressed by histone acetylation and that HDACs are valuable drug targets for lung cancer treatment. In summary, the **Central Hypothesis** is that KLF4 regulates normal lung homeostasis and acts as a tumor suppressor for lung cancer. KLF4 is a potential biomarker for lung cancer and small molecules KLF4 activators could be developed as therapeutic agents for lung cancer treatment. To this end, we have two **Specific Aims: 1)** Delineate the mechanisms of KLF4 as a tumor suppressor for lung cancer using *in vitro* and *in vivo* models; and **2)** Examine the mechanisms of KLF4 deregulation in lung cancer and test small molecule KLF4 activators for lung cancer treatment.

Section 6—Abstracts
Professional Research Abstract
(Read by professionals in your area of inquiry)

Principal Investigator: Ramakanth Kavuluru
Co-investigators: Tamas Gal, Bin Huang, Michael Brooks

Application Title: Information Extraction from Diagnostic Narratives to Improve Patient Recruitment Efforts for Lung Cancer Clinical Trials

Research Design (*from Section 5b*): Translational research (bridges gap between basic and clinical inquiry)

Research Area (*from Section 5c*): Drug Discovery, Delivery and Translational Therapeutics Program

Key Words (up to 5): lung cancer clinical trials, clinical trial recruitment, automated prescreening, information extraction, predictive modeling

Professional Abstract (*please do not exceed 1/2 page*)

Recruiting patients for a clinical trial is an arduous and time-consuming task involving significant manual efforts and disparate sources of information available in patients' medical records. On the other hand, inability to recruit in a timely and unbiased fashion has been a major hurdle for academic researchers and pharmaceutical companies in developing new treatment options. Due to this, automated eligibility screening (AES) approaches are becoming increasingly popular to alert healthcare providers of potential eligible patients. The main challenge for AES is the vast amounts of textual data that needs to be analyzed to derive information needed for verifying criteria, especially histology and staging information. This project focuses on automatic extraction of positive lung cancer diagnoses and the associated details of disease progression and observed metastases from diagnostic reports including pathology and radiology reports. The extraction is modeled as a prediction task using *text classification* methods using novel syntactic and semantic features and proven base learning algorithms: multinomial naïve Bayes, support vector machines with linear kernels, and multinomial logistic regression. Feature and data selection will be additionally used to maximize performance over validation datasets and evaluated finally using test datasets from UK cancer registry. For training we will use a dataset, from Kentucky Cancer Registry (KCR), that is an order of magnitude larger than those used in prior efforts. To demonstrate the value of this information, an initial prototype will be built that employs both the extracted information and other elements of interest from structured sources from Markey Cancer Center (MCC) and KCR to flag potential eligible cases and eventually generate alerts based on this automated identification. The team has experience in machine learning, natural language processing, and data integration and will use MCC lung cancer patient and trial datasets for AES prototype development and testing and KCR datasets for building an information extraction pipeline to automatically extract histology and staging information. We will particularly target NIH opportunities on informatics and big data science based on results from this project.

Section 6—Abstracts

Professional Research Abstract
(Read by professionals in your area of inquiry)

Principal Investigator: Teresa W.-M. Fan

Co-investigators: Susanne Arnold, Andrew Lane, and Jerry Martin

Application Title: Biomarker Discovery by Interrogating Lung Cancer lipid Metabolome

Research Design (*from Section 5b*): Basic and translational research

Research Area (*from Section 5c*): Cancer cell biology and signaling, Cancer Prevention & Control

Key Words: Lung cancer metabolomics, exosomes/microvesicles, lipid biomarker, $^{13}C_6$-glucose

Professional Abstract Lung cancer is by a large margin the leading cause of death among all cancers for both men and women in the U.S. Kentucky leads the nation both in lung cancer incidence and mortality, and Appalachian Kentucky has even worse statistics, a cause of special concern. Early stage lung cancer is typically asymptomatic, but patients have the best prognosis when the tumor is removed by surgery. Unfortunately, there are no routine and low cost screening methods available for early detection of lung cancer in individuals at risk. It has been shown that the number of lipid microparticles (MP such as microvesicles and exosomes) circulating in the blood increases in lung cancer and other cancer patients. These MP derive from the plasma or endosomal membranes of various cells from different tissues, and are important in interorgan communication such as immunomodulation and tumor progression. In preliminary work, we showed that the lipid composition of plasma MP are distinct among healthy subjects, those with early stage non-small cell lung cancer (NSCLC), and individuals with breast cancer. We seek to extend this work to the Appalachian population and determine the mechanistic links between lung cancer tissues and plasma MP to discern a robust set of lipid components for distinguishing early stage NSCLC from healthy subjects and subjects with other diseases including inflammatory lung disease. The use of ultra-high resolution mass spectrometry and informatics approaches that we have pioneered makes such a quest possible for the first time. These findings will be used to develop a simple blood-based screening tool that utilizes the complete lipid profile of circulating MP for at-risk populations, especially those from Appalachia. The markers will comprise a pattern of multiple lipid species, rather than a single or a few lipid species, and thus have greater power for discriminating different stages of development or from other confounding diseases. We will achieve our objectives by fulfilling the following specific aims. **SA1 - *To discern microvesicle/exosome lipid components released by paired non-cancerous & cancerous lung tissue slice cultures*. SA2 - *To measure plasma microvesicle/exosomal lipids of lung cancer patients & non-lung cancer subjects for discerning lung cancer marker patterns***.

The data generated from this pilot proposal will serve as preliminary data for a multi-investigator R01 proposal and/or as a project of a lung spore proposal to NCI to validate the biomarker patterns uncovered in a large cohort, and to explore the biological function(s) of exosomal lipid markers in lung cancer development.

PROPOSAL OF SERVICES ECONOMIC IMPACT ANALYSIS

Prepared for:
Kentucky Lung Cancer Research Fund –
University of Kentucky and University of Louisville

12/10/2014

TrippUmbach
Research • Strategy • Impact

INTRODUCTION

Tripp Umbach has been invited to prepare a proposal of services to complete economic impact analysis and reporting to quantify economic, employment, tax revenue, and other data points needed to demonstrate the impact of the Kentucky Lung Cancer Research Fund (KLCR) and funding received by University of Kentucky and the University of Louisville as a part of this joint research initiative. The study will look at the impact of both the operations in the current year, as well as the cumulative impact since 2009.

This report will allow both universities to communicate the economic, employment, and government revenue impacts of these funds and the improved cancer research program on the Commonwealth of Kentucky.

SUMMARY OF PROJECT OBJECTIVES

Quantification of Impacts of the Kentucky Lung Cancer Research Fund (KLCR) Initiative:

KLCR requires an IMPLAN economic impact study to determine the impacts research funding utilized by KLCR both in 2014 and over the past five years. The report will provide analysis highlighting the impacts of these funds. The analysis will be completed within four to six weeks of data being provided to Tripp Umbach.

IMPLAN ANALYSIS OVERVIEW
- **Geography:** Commonwealth of Kentucky
- **Entities Included:** University of Kentucky and University of Louisville
- **Analysis:** Tripp Umbach will utilize IMPLAN to determine the economic impact of the funds received through KLCR as a whole as well as through each institution.
- **Reporting**: One (1) Microsoft Word report will be provided with an analysis of the impact of the KLCR research dollars. The report will include the direct, indirect, and induced jobs created by the research funds and the operations of the research program. In addition to the number of jobs created, the analysis will quantify the economic impact directly attributed to the research conducted as a result of these research funds granted to both participating institutions, as well as the indirect and supporting economic impact. Tax revenue generated directly and indirectly by the project will be included in the analysis. The analysis will also quantify any additional impacts which are required to satisfy state reporting standards.
- **Analysis Completed:** Tripp Umbach will complete this report within four to six weeks of the data being provided by KLCR.

DATA COLLECTION PROCESS

Tripp Umbach will provide KLCR team members with a data collection form to gather information needed for this assignment. This data collection form will include data points such as, but not limited to, the following:

- Research dollars received
- Government funding received
- Amount of the research dollars used for the operations of the research program
- Amount of the research dollars used for the capital needs of the research program
- Operational staffing levels of the research program
- Payroll expenditures directly resulting from the research program
- Available business plans for the research program

FINAL REPORT DEVELOPMENT

Tripp Umbach will develop a summary report of economic impact findings for this project. A written report of all study findings, providing a detailed description of the study methodology and research procedures used, will also be provided to the client.

PROJECT FEES & BILLING

Tripp Umbach's total fees to complete the services outlined above equal **$15,000** ($7,500 per institution participating in the KLCR). Tripp Umbach will invoice the client for 50% of the total amount ($7,500) upon authorization to proceed, and the remaining 50% of the total amount ($7,500) upon completion. It is the understanding of all parties that if payment is not received within thirty days (30) of receipt of the invoice, Tripp Umbach has the right to suspend services until payment is received.

STATEMENT OF CONSULTANT QUALIFICATIONS

Tripp Umbach is a national leader in conducting economic impact studies, consultation, and communication services for a wide variety of clients including, but not limited to, leading corporations, universities, hospitals, medical schools, academic medical centers, public events, convention centers, airports, amusement parks, and PGA golf events. Tripp Umbach has provided consultation and economic impact analysis services to more than 200 clients in all regions of the United States since 1990. Our consultants are skilled in all types of economic

impact analysis including linear cash flow modeling, IMPLAN, RIMS II, and REMI Analysis. Our studies are truly customized to match the needs of our diverse clients.

Since 1990, Tripp Umbach has completed many notable economic impact studies including:

- Health system impact studies for long-standing clients such as Mayo Clinic, Penn Medicine, Summa Health System, University of Pittsburgh Medical Center, Carolinas Health Care System, Mount Carmel Health Care System, and many others throughout Pennsylvania and the United States.
- Economic impact analysis of Cancer Research organizations such as PA Cancer Alliance, The Wistar Institute, UCMC Cancer Center, and AACI.
- Five national studies measuring the economic impact of all 130 medical schools and more than 400 teaching hospitals for the Association of American Medical Colleges (AAMC), making Tripp Umbach the most qualified firm to assess economic impact of a medical school or hospital campus.
- National economic impact studies for the American Hospital Association, the Association of American Cancer Institutes, Susan G. Komen Foundation, the Blue Cross and Blue Shield Association, and GE Healthcare.
- Economic impact analysis for 50 of the top 100 health systems ranked by *U.S. News & World Report*.
- Economic impact analysis for leading academic institutions such as The Pennsylvania State University, University of Michigan, University of Iowa, Illinois University, University of Arizona, Michigan State University, and the University of California.

Terms of Engagement

To retain Tripp Umbach to perform the program of research outlined above, please sign both copies of this contract in the space provided below (keeping one for your records and returning the other to Tripp Umbach). This document will then serve as an agreement between Tripp Umbach and the University of Kentucky and the University of Louisville (hereinafter referred to as KLCR).   Tripp Umbach will undertake this project subject to the following terms and conditions:

Confidentiality

Contractor shall treat all information relating to the activities of KLCR, its subsidiaries or affiliates, as confidential and shall not disclose such information to any other party unless and until asked to do so, in writing, by clients. This covenant shall survive the termination of this agreement.

- The contractor shall maintain the highest standards of integrity in the performance of this contract and shall take no action in violation of state or federal laws, or regulations.
- The contractor shall not disclose to others any confidential information gained by virtue of this contract.
- The contractor shall not, in connection with this or any other contract or agreement, directly or indirectly, offer, confer, or agree to offer or confer any pecuniary benefit on anyone as consideration for decision, opinion, recommendation, vote, or other exercise of discretion.
- The contractor shall not, in connection with this or any other contract or agreement, directly or indirectly, offer, give, or agree or promise to offer or give to anyone any gratuity of the benefit of or at the direction or request of any officer or employee of the two sponsoring organizations.
- The contractor shall not have a financial interest in any other contractor, subcontractor, or supplier providing services, labor, or material on this project.

 Liability and Insurance

- T Contractor shall perform its services under this contract as an independent contractor and shall provide public liability, property damage, workers' compensation insurance, insuring as they may appear, the interests of all parties to this contract against any and all claims which may arise out of contractor's operations under the terms of this contract. The contractor shall accept full responsibility for the payment of premiums for workers' compensation and social security as well as all income tax deductions and other taxes or payroll deductions required by law for its employees who are performing services specified by this contract.
- Tripp Umbach cannot be held liable for any use by the sponsoring organizations of the information or reports generated by the services outlined herein. Tripp Umbach is supplying market and economic information only: any use of the provided information by the clients is strictly beyond Tripp Umbach's control and Tripp Umbach accepts no liability for the client's use of the research, data, findings, information or reports generated by Tripp Umbach's services.

- B ☐ signing this Agreement, KLCR and Tripp Umbach hereby covenant and agree to indemnify and hold each party harmless against and from any and all losses, damages, expenses, obligations, claims and costs, arising out of the use of the research, data, findings, information or reports provided by Tripp Umbach under this Agreement.

Interest of Contractor

- The contractor certifies and agrees that it presently has no interest and shall not acquire any interest, direct or indirect, which would conflict in any manner or degree with the performance of its services hereunder. The contractor further certifies and agrees that in the performance of this contract, it shall not knowingly employ any person having such interest. Contactor further certifies that no member of the board of the contractor or any of its officers or directors have such an adverse interest.
- Termination for Convenience – The sponsoring organizations or contractor may terminate this contract at any time by giving written notice to the other party of such termination by specifying the effective date thereof, at least thirty (30) days before the effective date of such termination.

For Tripp Umbach:

_____   __12/10/2014___

 (Authorized signature & title)   **(Date)**

For University of Kentucky:

_____   _____

(Authorized signature & title)   **(Date)**

For University of Louisville:

_____   _____

(Authorized signature & title)   **(Date)**

Kentucky Lung Cancer Research Program

2014 Strategic Plan Update

Approved by the KLCR Program Governance Board

October 22, 2014

KLCR Strategic Plan Update

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Kentucky Lung Cancer Research Program (KLCR Program)

Strategic Plan

Introduction

In 2000, the Kentucky General Assembly passed enabling legislation that created the Lung Cancer Research Fund, a partnership of the Cancer Centers at the University of Kentucky and University of Louisville under the leadership of a Governance Board of the Lung Cancer Research Fund. This legislation required development of research expertise in lung cancer at each Cancer Center, innovative clinical trials to test new lung cancer treatments throughout the Commonwealth, and leveraging this support to lead the centers toward designation as National Cancer Institute recognized Cancer Centers.

The enabling legislation focuses on lung cancer research and complements the mission of the Commonwealth's two medical research universities in helping Kentuckians gain or retain their good health. To accomplish this mission, each university strives to meet the educational, research, and patient care needs of our citizens working cooperatively together as well as with similarly focused organizations throughout the Commonwealth.

The Governance Board set initial strategies and goals for the program, and in 2014 a group of external experts reviewed the progress and accomplishments of the program since its inception. In alignment with that review, the following Strategic Plan Update for 2014 delineates specific goals, objectives, strategies and measurable outcomes and provides a blueprint for the two universities to follow as they continue to build the nation's centerpiece of lung cancer research in Kentucky.

Out of the 2014 program review, this strategic plan update – that will now span the remaining 6 years of the current Tobacco Settlement Funding including an annual review – includes overarching opportunities for gaining additional synergies between the University of Kentucky and University of Louisville. Additionally, in future years, a joint symposium focusing on the lung cancer research will bring together faculty and staff from both universities in a way that will facilitate greater collaboration toward the ultimate goal of reducing the burden of lung cancer in the Commonwealth and reducing the factors – such as smoking and other environmental factors – that contribute to the disease.

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KLCR Strategic Plan Update

GOAL 1: Investigator-Initiated Research

"164.476(5)(a) Develop an expertise in the area of lung cancer research."

The conduct of investigator-initiated, hypothesis-driven research – i.e., independently conceived research approaches and projects developed by scientists from all relevant disciplines - is the primary means by which biomedical research is advanced. Driven by state of the art knowledge and creative synergism present at medical schools, hospitals, universities, research centers, and corporations they represent, these highly trained investigators:

- Review current scientific knowledge and identify critical gaps
- Develop new hypotheses
- Design the most direct pathways to test those hypotheses
- Utilize and develop novel molecular, genetic and cellular approaches in lung cancer research
- Develop and utilize animal models in the analysis of lung cancer
- "Translate" new findings and technologies into innovative clinical applications
- Test the most promising new prevention and treatment strategies in clinical trials

The KLCR Program's Investigator-Initiated Research Initiative continues to provide valuable financial resources to develop novel concepts and identify new avenues of research in lung cancer. These innovative research projects are by nature the most high-risk/high-reward research approaches generating proof-of-concept/proof-of-principle data that will lead to stronger scientific programs, increased publication s and additional extramural funding.

Objectives

In congruence with the 2014 program review, the KLCR Program will focus its attention on the research areas of tobacco control, epidemiology, early detection/screening, and translational research. Further, additional steps will be taken to strengthen synergies and collaborations occurring at and between the University of Kentucky and the University of Louisville. To this end we will:

1. Recruit existing faculty at the front-lines of lung cancer research to focus on problems in the areas of tobacco control, lung cancer epidemiology, early detection/screening of lung cancer, and translational lung cancer research.
2. Recruit new faculty both with interests and expertise in cancer that may be applied specifically to the lung cancer focus areas described above.
3. Develop, mentor and focus early stage career investigators and graduate students on lung cancer. This was specifically suggested by the external reviewers and the KLCRP will henceforth ensure that the investigator-initiated grants have a plan in place for the career development of early stage researchers.

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4. Continue to support a robust research portfolio for lung cancer at and between each university.
5. Develop intra-programmatic linkages within and between both Cancer Centers, and in alignment with the 2014 program review, we will better define complementary focus areas at each Cancer Center.
6. In addition to the overarching annual symposium we will now have, we will also conduct joint seminars between the two Cancer Centers to share research results among lung cancer scientists funded by the KLCR Program as well as through other mechanisms.

Priorities
1. Recruit additional scientists into the lung cancer research program priority areas.
2. Develop more integrated research programs at each Cancer Center, as well as links between universities.
3. Utilize KLCR investigator-initiated grants to leverage current and future cancer research into the area of lung cancer.

Indicators
1. Publications of lung cancer research at each university continue to break new ground in understanding and intervening in the incidence and mortality from lung cancer.
2. Research portfolios mature into well-rounded representations of lung cancer study, with progressive increases in extramural funding.
3. Annual professional meetings for KLCR scientists result in additional collaborative studies.
4. The Markey Cancer Center and the Brown Cancer Center are identified as increasingly prominent lung cancer research and treatment centers.

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KLCR Strategic Plan Update

GOAL 2: Research in Early Detection & Prevention

"164.476(5)(a) Develop an expertise in the area of lung cancer research with an immediate focus on early detection and epidemiology and with an ultimate goal of eradication of lung cancer."

Despite the direct link between tobacco and lung cancer, only 15% of smokers develop the disease. Thus, a fundamental goal is to discover risk factors that predispose a person to lung cancer. Defining high-risk individuals and development of an effective screening methodology will allow earlier detection, when a malignant tumor is small and asymptomatic, when treatment produces a higher cure rate.

Recent technological advances and new tools for screening have led to renewed trials for detecting early stage lung cancers. Correlative explorations of smoking history, compromised lung function, and biomarkers in serum or exhalant are proposed to help pre-define lung cancer risk in otherwise asymptomatic individuals. Establishment of a biospecimen repository is a key resource to facilitate such studies.

In congruence with the 2014 program review, the KLCR Program will focus its attention on the research areas of early detection/screening, and translational research. Further, additional steps will be taken to leverage and continue previous work to advancing phases. To this end we will:

Objectives
1. Conduct screening and early detection research using available and applicable tools in key geographic areas of the state.
2. Develop and conduct studies in dissemination and implementation research of lung cancer screening; including studies of patient and provider education, community awareness, patient care and program implementation.
3. Expand and refine methodologies for risk-factor delineation.
4. Validate the use of methodologies for lung cancer screening.
5. Identify and develop methodologies for lung cancer prevention.
6. Maintain and expand the biospecimen repository for use by lung cancer researchers.
7. Capitalize on partnerships with regional and local hospitals and clinics to build an early detection network where research is integral to the relationship, including studies of implementation and outcomes of lung cancer screening programs in diverse community based settings, socioeconomic and other epidemiologic studies, and treatment of tobacco addiction studies.
8. Link prevention and early detection studies.

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KLCR Strategic Plan Update

Priorities
1. Continue development of and conduct of high priority studies in early detection and prevention of lung cancer, including lung cancer screening and treatment of tobacco addiction.
2. Continue the development and validation of biomarker correlates of lung cancer and/or lung cancer risk through advanced molecular surveillance studies.
3. Articulate current standards of surveillance and screening for lung cancer to be included in CME and other CE programs for Kentucky physicians and healthcare professionals.

Indicators
1. The biomarker repositories at the universities are increasing collections and utilization of biospecimens toward the advancement of early detection research.
2. Further development of candidate molecular markers identified for lung cancer susceptibility and/or early diagnosis.
3. Further development of lung cancer preventative measures.
4. Continue development of and conduct of high priority studies in early detection and prevention of lung cancer, including lung cancer screening and treatment of tobacco addiction.
5. Optimal strategies to treat tobacco addiction of lung cancer patients are researched, examined and advanced in clinical trial phases.
6. Community outreach and continuing education programs are supported by advancing topics in lung cancer screening and treatment of tobacco addiction to articulate best practices.

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KLCR Strategic Plan Update

GOAL 3: Kentucky Clinical Trials Network

"164.476(5)(b) Establish a statewide clinical trial network to make university-based clinical trials available to the community physician in order to bring the most innovative cancer treatments to all Kentuckians in need of these treatments."

Improvements in the effectiveness of cancer treatments are accomplished through a series of phased clinical trials: Phase I – identify maximum tolerated doses of new drugs and dose-limiting toxicities; Phase II – test the study drug's effectiveness in specific cancers; Phase III – compare new treatments or new use of a treatment with approved treatments. All current approved drugs and treatment guidelines are based on clinical trials before they became generally available. Despite that record of success, many people do not know that cancer clinical trials are the means by which cancer research becomes cancer treatment.

Thousands of cancer clinical trials are underway in the United States. The National Cancer Institute, cooperative groups, academic medical centers, community hospitals, physician private practices, and pharmaceutical companies sponsor cancer clinical trials. Of the 1.3 million people who will be diagnosed with cancer this year, only three to five percent will participate in cancer clinical trials.

The University of Kentucky and University of Louisville have worked together to establish the Kentucky Clinical Trials Network (KCTN) to facilitate collaborative participation in trials, to educate patients and physicians about the benefits of clinical trials, and trial availability and to assist physicians with planning and implementing trials.

In accordance with priorities driven by programmatic stakeholders, and in congruence with the 2014 program review, the KCTN will continue to focus on the development and conduct of high-priority clinical trials at qualified partner sites. Further, the KCTN will place an emphasis of its portfolio on the research areas of early detection/screening, treatment of tobacco addiction, and translational research. During this strategic plan period, additional steps will be taken to advance previous work sponsored by KLCRP in early detection of lung cancer.

Objectives:
1. Increase number of Kentuckians with access to and participating in lung cancer clinical trials.
2. Develop and maintain a critical mass of trained professional staff to support multi-site clinical trials.
3. Offer and manage a portfolio of lung cancer clinical trials through the Network.
4. Identify and develop investigator-initiated clinical trials at both universities that can be offered to patients in diverse settings.

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5. Continually improve the Network's services with input from participating member sites and physicians.

Priorities
1. Efficiently and effectively manages quality clinical trials for the Network.
2. Utilize technologies to engage, manage and conduct network activities.
3. Identify and develop high-priority investigator-initiated interventional and non-interventional clinical trials for the network portfolio, with emphasis on any or all of the following: lung cancer screening, prevention and early detection, treatment of tobacco addiction, and other concepts emerging for lung cancer clinical trials.
4. Develop and offer balanced trial portfolio that aligns with priorities of stakeholders including the Markey Cancer Center, the Brown Cancer Center, KTCN and participating sites. Provide research training and resources to site research teams.
5. Increase number of patient accrual to network trials.

Indicators
1. The Network has a continuing stream of novel therapeutic trials and non-therapeutic trials available to patients, partnering physicians and sites.
2. The network has increasing patient accrual.
3. The Kentucky Clinical Trials Network provides training and information to participating site teams and physicians and their communities, including clinical trial results and availability.
4. Clinical trials are accessible for Kentuckians at sites with commitment to quality conduct of trials in accordance with applicable research regulations and ethical standards.

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GOAL 4: NCI-Designation as Cancer Centers

"164.476(5)(c) Leverage the resources earmarked for the Lung Cancer Research Project toward the certification of the cancer program at the University of Kentucky and the University of Louisville by the National Cancer Institute as a cancer center[.]"

The Cancer Centers Program of the NCI supports major academic and research institutions throughout the United States to sustain broad based, coordinated, interdisciplinary programs in cancer research. These institutions demonstrate scientific excellence and the ability to integrate a diversity of research approaches to focus on cancer. The NCI and its Cancer Centers Program are dedicated to advancing cancer research to ultimately reduce cancer incidence, morbidity, and mortality.

Designated Cancer Centers receive funds from NCI for scientific infrastructure of the center, including such elements as scientific leadership and administration; shared/core research resources that give ready access to state-of-the-art technologies; and flexible program development funds that help the center and its associated faculty pursue its planned objectives and take immediate advantage of new research opportunities.

The University of Kentucky obtained NCI designation in 2013 and the University of Louisville is pursuing NCI designation. Support from the KLCR Program has provided vital financial resources to both institutions during a critical stage of development. The goal of NCI Designation requires a continued investment in scientific expertise, equipment, space and financial resources.

In alignment with the original mission of the KLCR Program and with the 2014 review, NCI designation will continue to be a priority for both the University of Kentucky and the University of Louisville. As such, we will:

Objectives
1. Expand the base of cancer research expertise, particularly in translational research, with the recruitment of both promising young scientists and established investigators working at the front lines of cancer research.
2. Develop and maintain diverse cancer research programs with a high degree of inter- and intra-team collaboration.
3. Provide and promote interactive research opportunities.
4. Offer expanded innovative clinical trials, building on combined research underpinnings of the two centers.

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KLCR Strategic Plan Update

Priorities

1. Continue to expand the overall research bases at each institution, particularly in Translational and Clinical Research.
2. Increase extramural funding with emphasis on funding from the NCI.
3. Increase NCI multi-project grants including program projects, SPORE grants and NCI cooperative grants.
4. Expansion of research laboratory space.
5. Develop a more broadly inclusive smoking-related cancer program that involves lung, head & neck, pancreas, cervix and bladder cancers.
6. Provide all support necessary to renew and submit an application for NCI designation for the Markey Cancer Center and James Graham Brown Cancer Center, respectively.
7. Continue to develop multidisciplinary clinics for lung cancer patients.

Indicators

1. Maintain/develop 3-5 firmly established NCI-designable cancer research programs at each institution, with an emphasis on translational and clinical research.
2. Grow NCI funding at both institutions in the range of $15-$20 million.
3. Meet with, receive and respond to recommendations of an External Advisory Committee.
4. Meet with, receive and respond to recommendations of the NCI Centers Branch Director.
5. Renew/submit P30 application for NCI-designation.

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Council on Postsecondary Education
Lung Cancer Research, Tobacco Settlement Fund (6349 fund)
FY15 Cash Activity Report as of February 10, 2015

						UK Lung Cancer		UofL Cancer			
Date	Description		Interest	Ovarian	Combined LC Pool	Grants	Programs	Grants	Programs	Total Allocation (Calculated)	CASH
	Final FY14 carryforward balances		**56,620.38**	**-**	**78,500.00**	**697,096.44**	**-**	**-**	**0.93**		**832,217.75**
	FY 14 contintuing appropriation received -distribution approved by Board - to be invoiced by institutions						256,363.72		185,642.69	442,006.41	1,274,224.16
	FY15 appropriation - yet to be received	4,972,500.00									
	FY15 appropriation - allocation board approved 6/25/14 - cash not received			775,000.00		750,000.00	1,564,550.00	750,000.00	1,132,950.00	4,972,500.00	
2/3/2015	YTD Interest Earnings as of 2.3.15		511.32								1,274,735.48
8/29/2014	APA annual audit fee		(5,940.00)								1,268,795.48
9/30/2014	UK data coordinator one time payment				(78,500.00)						1,190,295.48
	Cash Balance		**51,191.70**	**-**		**697,096.44**	**256,363.72**		**185,643.63**		**1,190,295.48**