In January 1966 we launched *Lung Cancer Frontiers* (LCF), assisted by a small but dedicated group of editorial board members, who shared the belief that advancing knowledge and technology could soon begin to control lung cancer. *LCF* 25 cites a few of the highlights that have increased our ability to diagnose, treat and cure lung cancer. **We continue to believe that pulmonologists must begin to play a key role in diagnosis and treatment of lung cancer, particularly in early stages of disease!**

Early issues focused on the powerful association between COPD and lung cancer and dealt with various issues of screening high risk groups. At that time CT scanning had not yet begun to achieve the popularity that has been astonishing over the past decade. CT is now the standard of care for the diagnosis of all stages of lung cancer and is particularly effective in finding early stage peripheral lesions, which have a high likelihood of cure because of their early stage of disease.


[Continued on page three]
In spite of the tremendous advances made in our knowledge about who has lung cancer, who is at high risk for lung cancer, and how we can detect it in early stages of disease, lung cancer is scarcely mentioned in the report by the National Cancer Institute about progress. Could this be that the NCI has been the culprit, along with the American Cancer Society, who steadfastly refuse to recommend the screening even in high risk groups, in spite of all of the evidence that we know where to find lung cancer in early stages?

There can be no doubt that the diagnosis of early lung cancer has a better outcome than when it is diagnosed in later stages, so why the lethargy in action and lack of enthusiasm for tackling the greatest challenge that remains today in cancer prevention and treatment. Will it take the death of young celebrities such as the late Peter Jennings, or other public figures such as sport stars or government officials to finally turn the tide?

If we work to apply present day knowledge, we can probably reduce mortality from lung cancer in a steady fashion over the decade that is before us. Perhaps this will be accomplished.

This issue of Lung Cancer Frontiers was devoted to capturing the highlights of a unique international conference on the prevention and early diagnosis of lung cancer. Pulmonologists, surgeons, oncologists, radiologists, molecular biologists, and scientists from other disciplines representing eleven countries, met in the lovely northern city of Varese, home of the newest medical school in Italy. The Conference co-sponsoring organizations, presented at the end of this summary, give powerful evidence of the broad base of support for what surely should be considered the landmark Conference that will launch a new era in lung cancer prevention, early identification, and intervention.

At the conclusion of the Conference, a consensus statement was agreed upon unanimously by all delegates. Since this statement has such profound implications, it is reproduced in its entirety as follows:

_We are in the midst of a global and growing lung cancer epidemic. On a worldwide basis, lung cancer is the most deadly malignancy; it will cause more than one million deaths this year. Because cigarette smoking is the vastly predominant cause, lung cancer is almost entirely preventable. Other sources of risk include environmental exposures and inherited risk._

Accordingly, the only current effective means of prevention is to refrain from smoking. For children and adolescents the focus should be on not starting smoking, whereas for adults, smoking cessation is an effective method of reducing lung cancer risk, but it is difficult to implement and achieve. It is important to recognize their continuing risk; even after quitting, long term smokers remain at high risk for prolonged periods. There is a pressing need for effective secondary prevention (screening) measures.

The Conference reviewed available evidence relative to early diagnosis of lung cancer. The early pioneering studies have not shown mortality reductions, and have led many organizations to recommend against lung cancer screening. However, there are a number of limitations to these studies, leaving us with an imperfect basis for health policy. Paradoxically, case-finding studies, show favourable outcomes when lung cancer is detected early. Furthermore, over the last twenty years, the pattern of disease has changed; conventional diagnostic techniques have improved and new early detection techniques have emerged.

An important aspect of the Conference was a review of new technology that holds the promise of substantial mortality reduction from lung cancer. These new technologies include low dose spiral CT scan, autofluorescent bronchoscopy and molecular markers in sputum cytology. Rigorous and rapid evaluation of these new technologies is essential in order to ensure confidence in their efficacy, and timely application of their findings.

At this time, only one large trial with chest x-ray screening is ongoing, although newer modalities are being investigated in other studies around the world. The Conference concluded that additional studies are needed. It is especially important that investigation of new early detection technologies receive high scientific and public health priority.

For those who develop lung cancer, outcome is dramatically better when the disease is detected at an early stage and surgically treated. Unfortunately, at this time, the majority of lung cancers are diagnosed when the disease is overly symptomatic, and in an advanced stage when prognosis is extremely poor. Available clinical data demonstrate that the vast majority of curable lung cancers are currently detected by chest x-rays and CT scan, although there is no proven strategy to assure early detection.

The Conference encourages national governments and public health organizations involved in cancer prevention and control to more aggressively address tobacco control and to urgently consider the issues surrounding the early detection of lung cancer. The Conference recognizes that current and former smokers must be advised of their continuing risk of lung cancer. In order to address these issues, organizations must support research on new diagnostic techniques, chemoprevention and develop recommendations regarding how health care providers and high risk patients can make informed decisions about monitoring for the occurrence of lung cancer.

At this conference, Claudia I. Henschke presented early results of their early lung cancer action project (ELCAP), which has probably been the single most important revolution in our advancing ability to diagnose lung cancer in early stages. This was first cited in _LCF March 1999_. (Original report Lancet 1999;354:99-105)

The use of CT scanning in early identification has been expanded dramatically in the years that follows and have created a proven tool in the study of epidemiology and the public health control of lung cancer available today.
Along the way we criticized the “party line” that lung cancer is an indolent disease. All pulmonologists and oncologists who deal with the tragedy know the fallacy of this concept in all but the rarest cases. We have intended to be provocative, but we based our comments on the principles, reason and common sense. We also chided the NCI for doing a study to compare the role of standard chest x-rays with CT in early diagnosis. We felt this study was doomed to failure because by the time of its conclusion technological advances and knowledge of improved survival in early stage, asymptomatic lung cancer, will render the results obsolete.

We covered selected highlights of the 9th and 10th World Lung Conferences in Tokyo and Vancouver, respectively.

We were impressed with the development of the development of the multidisciplinary approach to lung cancer. Clinics, such as cited in LCF 10 January 2005 (our five-year anniversary). This type of clinic has become a prototype to multidisciplinary approach to lung cancer diagnosis and treatment, such as the program which is emerging at Swedish Hospital in Denver, Colorado. (See program)

At the beginning we had a series of sponsors from industry, which made hard copy publication possible. From the first through the 18th editions, Lung Cancer Frontiers reached all board certified pulmonologists in the United States and Canada. The 18th edition received special support from the Flight Attendant Medical Research Institute of Florida (FAMRI). FAMRI has supported other of our activities in the early diagnosis and intervention of asymptomatic lung cancer in Grand Junction, Colorado.

THE GRAND JUNCTION STUDY

The confluence of the Colorado and the Gunnison Rivers near the Utah border, has been the sight for interesting studies in asymptomatic and roentgenographically occult lung cancer for more than a decade. St. Mary’s Hospital, the venue for the landmark work of the late Geno Saccomanno who perfected and popularized the present cytological techniques that are used worldwide, though most commonly in Japan and Canada, but with increasing frequency in the United States. Previous studies from Grand Junction have shown that roentgenographically occult lung cancer, when diagnosed by sputum cytology and treated either surgically or with radiation when early stage disease is found shows a survival rate of greater than 50% beyond five years (Bechtel JJ et al. Ann Intern Med 1994; 154:975–80; Bechtel JJ et al. Lung Cancer 2000; 30:17).

This community just completed another landmark study wherein all primary care physicians of the community were persuaded to provide a simple one page questionnaire to patients over the age of 50 to determine subjects at high risk. In the calendar year 2000–2001, physicians in the rural town of a population of 40,000 but with a drawing area of 250,000 had 5236 patient visits. High risk questionnaires were completed in 1296 adults with the criteria of high risk, i.e., a family history of cancer of the aerodigestive tract, smoking of 30 pack years or more, exposure to asbestos and coal dust. Four hundred and thirty completed questionnaires indicated high risk. Of these 430 patients, all of whom received spirometry, 126 had an airflow abnormality. Eighty-eight of these agreed to have sputum cytology and CT scanning. Amongst those with airflow obstruction, a total of eight cancers were found. Details of this report were published (Bechtel JJ, Kelley WA, Coons TA, Klein MG, Slagel DD, Petty TL: Lung cancer detection in patients with airflow obstruction identified in a primary care outpatient practice. Chest 2005;127:1140-1145) and have been previously described in abstract form in Lung Cancer Frontiers Volume 16. Follow-up of all 430 patients, both with and without airflow obstruction, is planned for a total of five years. This follow-up study will shed additional light upon the value of spirometry and the one-page questionnaire offers a pragmatic approach in the very highest risk patients. The study will allow analysis of the cost of diagnosing and treating lung cancer and its ultimate outcome.
GRAND JUNCTION QUESTIONNAIRE

Did you know that in 1999 it is estimated that 171,600 new lung cancer cases were diagnosed in the United States? Lung cancer is the most common cause of cancer deaths for both men and women in the United States. Dr. Joel Bechtel, Dr. Thomas Petty, The Saccomanno Research Institute at St. Mary's Hospital and Medical Center, and Primary Care Partners, P.C. hope to learn more about the lung cancer risks in our community. We have undertaken a community screening project with the purpose of investigating methods for detecting lung cancer at an earlier, more treatable stage. Patients choosing to take part in the project will be evaluated using spirometry (a test of lung function done by blowing into a measurement device), sputum cytology (cells coughed up from deep in the lungs are looked at through a microscope), a chest x-ray and a chest CT scan. We would appreciate your help in this important project by completing this brief questionnaire.

1) Name:_____________________________________________________________
Date:_______________ Age___________  Telephone No. _____________________

2) Type of Insurance Coverage: ____________________________________
   No Coverage: ______

3) Please circle the answer that best describes your smoking habits:
   I have never smoked.
   I currently smoke.
   I smoked in the past, but no longer smoke.

   Packs per day:____  Year or age started:____ Year or age stopped:_____  

Please circle the answers that apply to you:
I current work or have previously worked in one or more these occupations:
Underground Mining
Construction
Railroad

I have significant industrial and/or occupational exposure to the following substances:
Asbestos
Silica Dust
Coat Dust

4) Please circle the answer that best describes who in your family has been diagnosed with cancer of the lung and/or larynx:
   No One  Self  Parent  Brother or Sister  Children

I would like to get more information about this important project:
   No  Yes
This study was planned in 1999 and enrolled patients between 2000 and 2001.

From the 19th edition to the present, we have continued publication of LCF electronically (www.lungcancerfrontiers.org).

Over the past ten years, the editorial board has been expanded to include a total of 25 experts from various disciplines from North America, Europe and Japan.

   In September 2004 (LCF No. 20), we cited two landmark trials of adjuvant chemotherapy in lung cancer. Following this, adjuvant chemotherapy has also been studied and been found effective. (See current literature citations).

   We believe that it is urgent to establish early identification and treatment programs, as well as comprehensive multidisciplinary care programs for patients with all stages of lung cancer. In pursuit of this, for the past two years we have presented an update on lung cancer biology, manifestations, identification and treatment, occurring in Denver, Colorado in March 2005, sponsored by Swedish Medical Center in Denver and the Flight Attendant Medical Research Institute (FAMRI). The second of these annual conferences will be held on March 4, 2006, in Denver. A copy of the program for the March 2006 event is shown on the last page of this issue.

   FUTURE DIRECTIONS

   We believe that it is urgent to establish early identification and treatment programs, as well as comprehensive multidisciplinary care programs for patients with all stages of lung cancer. In pursuit of this, for the past two years we have presented an update on lung cancer biology, manifestations, identification and treatment, occurring in Denver, Colorado in March 2005, sponsored by Swedish Medical Center in Denver and the Flight Attendant Medical Research Institute (FAMRI).
The second of these annual conferences will be held on March 4, 2006, in Denver. A copy of the program for the March 2006 event is shown on the last page of this issue.

CITATIONS FROM THE PEER REVIEWED LITERATURE:


Familial lung cancer: genetic susceptibility and relationship to chronic obstructive pulmonary disease.

Schwartz AG, Ruckdeschel JC. Karmanos Cancer Institute, 110 East Warren Avenue, Detroit, MI 48201.

Lung cancer continues to be the leading cause of cancer death, and although most lung cancer is attributable to cigarette smoking, underlying genetic susceptibility is suggested by studies demonstrating familial aggregation. The first family linkage study of lung cancer has identified linkage of lung, laryngeal, and pharyngeal cancer in families to a region on chromosome 6q23-25. Because lung cancer and chronic obstructive pulmonary disease (COPD) are known to aggregate in families beyond shared risk associated with smoking, the linkage results are compared and contrasted with results from genomewide linkage and association studies and candidate gene studies searching for genes for lung cancer, lung function, and COPD. Linkage on chromosome 6q to both lung cancer and lung function, and on 12 to lung cancer, COPD, and lung function, together with overlap in candidate genes for these outcomes . . .


Adjuvant Chemotherapy for Early-Stage Non-small Cell Lung Cancer.

Visbal AL, Leighl NB, Feld R, Shepherd FA.

Department of Medical Oncology, Princess Margaret Hospital/University Health Network, University of Toronto, ON, Canada.

Lung cancer is the leading cause of cancer-related mortality in the developed world. Non-small cell lung cancer (NSCLC) represents 85% of cases of lung cancer, and patients have a poor 5-year survival rate. Approximately one third of NSCLC patients present with early-stage disease that is amenable to potentially curative resection and multimodality therapy. Several randomized trials now have confirmed the survival benefit with adjuvant platinum-based chemotherapy, as seen in the 1995 meta-analysis from the NSCLC Collaborative Group. The International Adjuvant Lung Cancer Collaborative Group Trial demonstrated a 4.5% improvement in survival for patients with stage I to III NSCLC. Studies from Japan have reported an improvement of 15.4% in the 5-year survival rate among patients with T1N0 disease after they had received adjuvant therapy with a combination of platinum and uracil-tegafur, and an improvement in the 5-year survival of 11% rate favoring chemotherapy with uracil-tegafur in a subgroup analysis of patients with T2N0 disease. Two recently published meta-analyses have estimated a relative risk reduction in mortality of 11 to 13% at 5 years. Significant improvement in the long-term survival rate has been demonstrated for patients with stage IB and II disease by the Cancer and Leukemia Group B 9633 trial (4-year survival rate,
12%) and the National Cancer Institute of
Canada Clinical Trials Group BR.10 trial (5-
year survival rate, 15%; risk reduction for
recurrence, 40%). Thus, there is compelling
evidence to now recommend adjuvant
platinum-based combination chemotherapy
for patients after resection of early-stage
NSCLC.

Editorial Comment (TLP): This is an
important advance in improving survival in
patients with early stage lung cancer who are
candidates for survival resection.

3. Advanced age does not exclude lobectomy
for non-small cell lung carcinoma.

Sullivan V, Tran T, Holmstrom A,
Kuskowski M, Koh P, Rubins JB, Kelly
RF.

Division of Cardiovascular and Thoracic
Surgery, University of Minnesota,
Minneapolis, USA.

STUDY OBJECTIVES: Localized non-small
cell lung carcinoma (NSCLC) is best treated
by complete surgical resection, commonly
requiring lobectomy. The impact of
lobectomy on the health status of the elderly
patient is not well-characterized. The aim of
this study was to compare the effect of
lobectomy in elderly patients (> or = 70 years
of age) and younger patients (< 70 years of
age) on their pulmonary function and
functional status 1 year following surgery.
DESIGN: One hundred forty patients
underwent lobectomy for NSCLC at the
Minneapolis Veterans Affairs Medical Center
from January 1999 to December 2003. All
patients underwent pulmonary function tests
(PFTs) and functional status assessment
using Karnofsky scores (KS) that were
assessed preoperatively. Sixty-three of 140
lobectomy patients were available 1 year
postoperatively for reevaluation by PFTs and
KS. RESULTS: There was no statistical
difference between groups in either the
pulmonary function or functional status
testing results at 1 year after undergoing
lobectomy. FVC decreased by 14% in the
elderly patient and by 9% in the younger
patient group. FEV1 decreased by 19% in
elderly patients and by 13% in younger
patients. Functional status declined for two
older patients (8%), who dropped their KS
from 80 to 100% (normal activity without
limitation) to 40 to 70% (unable to work, but
able to care of self at home). Nine of the
younger patients (24%) had KS drop from 80
to 100% to 40 to 70%. There was one
perioperative death (30-day mortality rate for
the study groups, 1.5%). CONCLUSIONS: Elderly
patients > or = 70 years of age undergoing
lobectomy for NSCLC had similar PFT results and
functional status as younger patients < 70 years of
age 1 year after undergoing surgery. Curative
resection should not be denied based on age alone.

Editorial Comment (TLP): Good news for the
elderly who are candidates for surgical resection of
lung cancer. Since the presence of lung cancer
increases with age, this is an important study on
conclusions.

4. Lung cancer and its operable brain metastasis:
survival rate and staging problems.

Furak J, Trojan I, Szoke T, Agoes L, Csekeo A,
Kas J, Svastics E, Eller J, Tiszlavicz L.

Departments of Medical Informatics, Pathology,
and Surgery, University of Szeged, Szeged.

BACKGROUND: We assessed the survival rates
regarding different stages of operable lung cancers
causing operable brain metastasis in patients with
or without cancer-related symptoms. The
correlation between survival rates and the disease-
free interval between lung surgery and
metastasectomy was studied. METHODS: Sixty-
five patients were operated on for lung cancer and
brain metastases. The disease-free interval was
divided into 5 subgroups: 0-2 months, 3-5 months,
6-11 months, 12-23 months, and 24 months and
beyond. The study group comprised of patients
with lung cancer in the following stages: 17
patients in stage I (1 patient in stage I A, 16 patients
in stage IB), 16 patients in stage II (2 patients in
stage IIA, 14 patients in stage IIB), 9 patients in
stage IIIA, 4 patients in stage IIIB, and 19 patients
in stage IV. Forty-four patients were symptom-free
for lung cancer and 21 patients manifested lung
cancer related symptoms. RESULTS: The 5-year
survival rates were as follows: stage I = 22%, stage
II = 20%, stage IIIA = 22%, stage IIIB = 0%, and
stage IV = 23% after lung resections. There were
no significant differences in the 5-year survival
rates regarding the disease-free interval subgroups
after brain metastasectomies (p = 0.19); disease-
free interval 0-2 months = 22% and disease-free
interval 24 months and beyond = 23%. The 5-year
survival rate after metastasectomy was
significantly greater (26% vs 5%) in patients
without lung cancer related symptoms (p = 0.05).
CONCLUSIONS: The 5-year survival rate in stage
I, II, IIIA, and IV lung cancer with operable
hematogenous brain metastases corresponds to that
in the customary stage IIIA (23%). The disease-
free interval exhibited no significant impact on the survival rate. The complaint-free status exhibits a significantly greater impact on the survival rate in hematogenic metastasis.

Editorial Comment (TLP): Unfortunately, many lung cancers are diagnosed because of symptoms of CNS involvement, often brain metastasis. In the past, this often led to therapeutic nihilism. This reactionary attitude is now changing because of improved chemotherapeutic strategies.

5. Optical coherence tomography in the diagnosis of bronchial lesions.


Department of Surgery, Tokyo Medical University, 6-7-1, Nishishinjuku, Shinjuku-ku, Tokyo 160-0023, Japan.

PURPOSE: Optical coherence tomography (OCT) can obtain high-resolution, cross-sectional microscopic images of tissue, potentially enabling optical biopsy to substitute for conventional excisional biopsy. We sought to investigate the capability of OCT to image the microstructure of normal and abnormal bronchial tissue. MATERIALS AND METHODS: Equipment: The OCT system was produced by Light Lab Imaging (Boston, U.S.A.) and Pentax. (Tokyo, Japan). Preliminary examination: the OCT system was used to image-resected lung specimens from patients who had given written informed consent for this study. We inserted the OCT catheter via the working channel of the bronchoscope to evaluate the bronchial lumen. The catheter delivers a radial OCT beam and scans circumferentially to generate a transluminal image. We collected OCT images of normal bronchus, primary tumors and alveoli. All images were saved and labeled according to the patient and type of tissue imaged for later correlation with histologic studies. Clinical examination: five other patients, all of whom had given written informed consent, were examined with the OCT system under local anesthesia. The OCT catheter was inserted into the working channel of the bronchoscope for evaluation of the bronchial lumen. We collected OCT images of the normal bronchus and tumors in vivo. RESULTS: (1) Normal bronchus: the bronchial mucosal and submucosal layers appear homogeneous in OCT images. The submucosal layer is relatively reflective due to the presence of an extracellular matrix. A membrane can be seen between the submucosal and the smooth muscle layer, and areas of cartilage show high levels of scattering. (2) Alveoli: OCT images show the uniform appearance of the bronchial wall and the structure of air-containing alveoli. (3) Central type lung cancers: in preliminary and clinical examinations, the tumors showed unevenly distributed high backscattering areas and resultant loss of the normal layer structure.

CONCLUSIONS: This study was the first report of the endobronchial OCT for lung cancer in clinical practice. Layers of the bronchial wall were distinctly observed in the normal bronchus on the OCT images, as opposed to bronchial tumors which lacked a layered structure. The ability of OCT to identify abnormal areas may well revise present methods for early diagnosis endoscopically.

Editorial Comment (TLP): Now an optical “biopsy!” This will help guide the bronchoscopist in sampling tissue for histological diagnosis.


Promoter methylation of genes in bronchial lavages: a marker for early diagnosis of primary and relapsing non-small cell lung cancer?

de Fraipont F, Moro-Sibilot D, Michelland S, Brambilla E, Brambilla C, Favrot MC.

Centre d’Innovation en Biologie, Pavillon B, CHU de La Tronche, 38 043 Grenoble Cedex 9, France.

A prospective screening program, including CT, autofluorescent bronchoscopy, biopsies and bronchial lavage (BL) collection, was initiated with the specific goal of identifying biomarkers for the early detection of non-small cell lung cancer. We report and discuss the results of p16, DAPK, MGMT, FHIT and APC methylation analysis in the 126 first patients: 77 at high risk of cancer and 49 followed up.
In presence of peripheral tumours, only 38% of BLs were abnormal versus 73% in presence of central tumours, 50% in presence of preneoplastic lesions and 47% in absence of lesions. Prostatectomy profiles were calibrated, binned, and normalized before analysis.

We found specific patterns of protein expression of the airway epithelium that accurately classify bronchial and alveolar tissue with normal histology from preinvasive bronchial lesions and from invasive lung cancer.

after primary cancer resection. Positive results were found in 49% of BLs, 53% in current smokers and 43% in former smokers. In presence of peripheral tumours, only 38% of BLs were abnormal versus 73% in presence of central tumours, 50% in presence of preneoplastic lesions and 47% in absence of lesions. FHIT methylation was an early event, observed in one-third of the BLs from patients with or without lesions as well as in tumours. APC methylation was a late event observed in 33% of tumours but rarely in BLs. P16 was methylated in 17% of BLs but in 48% of tumours; DAPK in 15% of BL and 22% of tumours. MGMT methylation was rare. Among patients followed up after cancer surgery, 14 were in remission with normalized BL, whereas three had positive BLs and relapsed with a central tumour. Thus, gene methylation in BL might help to detect central tumours but a CT is crucial for peripheral cancer detection.

Editorial Comment (TLP): Dual testing to find both early central and peripheral cancers is required for comprehensive diagnosis. Biochemical markers may help in the diagnosis of early central lesions.

Am J Respir Crit Care Med 2005;172:1556-1562

Proteomic Patterns of Preinvasive Bronchial Lesions


Division of Allergy, Pulmonary, and CC Medicine, Department of Medicine, Departments of Biostatistics and Pathology; Mass Spectrometry Research Center; Division of Hematology and Oncology, Departments of Surgery and Cancer Biology, Vanderbilt-Ingram Comprehensive Cancer Center, Vanderbilt University School of Medicine, Veterans Affairs Medical Center, Nashville, Tennessee; and Department of Medicine and Pathology, University of Colorado Health Science Center, Denver, Colorado

Purpose: A proteomics approach is warranted to further elucidate the molecular steps involved in lung tumor development. We asked whether we could classify preinvasive lesions of airway epithelium according to their proteomic profile. Experimental Design: We obtained matrix-assisted laser desorption/ionization time-of-flight mass spectrometry profiles from 10-p.m sections of fresh-frozen tissue samples: 25 normal lung, 29 normal bronchial epithelium, and 20 preinvasive and 36 invasive lung tumor tissue samples from 53 patients. Proteomic profiles were calibrated, binned, and normalized before analysis. We performed class comparison, class prediction, and supervised hierarchic cluster analysis. We tested a set of discriminatory features obtained in a previously published dataset to classify this independent set of normal, preinvasive, and invasive lung tissues. Results: We found a specific proteomic profile that allows an overall predictive accuracy of over 90% of normal, preinvasive, and invasive lung tissues. The proteomic profiles of these tissues were distinct from each other within a disease continuum. We trained our prediction model in a previously published dataset and tested it in a new blinded test set to reach an overall 74% accuracy in classifying tumors from normal tissues. Conclusions: We found specific patterns of protein expression of the airway epithelium that accurately classify bronchial and alveolar tissue with normal histology from preinvasive bronchial lesions and from invasive lung cancer. Although further study is needed to validate this approach and to identify biomarkers of tumor development, this is a first step toward a new proteomic characterization of the human model of lung cancer tumorigenesis.

Editorial Comment (TLP): I suspect that an array of molecular markers will soon replace cytomorphology in the diagnosis of asymptomatic poly stage lung cancer. It will probably complement CT screening for peripheral testing.
Forty-eight conferences have now been held. Over the years the conference has more than maintained its excellence and has stimulated collaboration among scientists and clinicians. This book is an effort to capture the essence of Aspen Lung Conference proceedings in one volume. Accordingly, all previously published summaries have been included for the convenience of the reader. Additional selected comments and presentations are included. Although this book’s major goal is to report some of the fantastic scientific advances presented at the Aspen Lung Conferences, it will never be able to capture all of the spirit and camaraderie that has permeated each and every meeting in the invigorating high altitude atmosphere of the Rocky Mountains!

These Aspen Lung Conferences were originally named “Emphysema Conferences,” from their outset in 1958. In this era emphysema and chronic bronchitis (COPD) were rapidly overtaking tuberculosis as the major problems faced by pulmonologists. Later conferences covered asthma, interstitial lung disease, the pulmonary circulation, Acute Respiratory Distress Syndrome (ARDS) and lung cancer. The 29th and 46th Aspen Lung Conferences covered the state of the art of lung cancer. Massive progress was achieved in the interval between these two conferences.

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Preliminary Program:

8:00 – 8:30:
Registration and Exhibits
Continental Breakfast Served

8:30 – 8:45:
Introduction and Discussion of Lung Cancer Program at Swedish Medical Center
Allan B. Wicks, M.D
Swedish Medical Center.

8:45 – 9:30:
Keynote Lecture: Spiral CT:
an Emerging Tool for Public Health Application in Controlling Early Lung Cancer
James L. Mulshine, M.D.
Rush University
Chicago, Illinois

9:30 – 10:00:
Chemoprevention and Clinical Trials
David Trevarthen, M.D.
Swedish Medical Center

10:00 – 10:30:
Exhibits and Break

10:30 – 11:00:
Management of Solitary and Multiple Pulmonary Nodules
James T. Good, M.D.
Swedish Medical Center

11:00 – 11:45:
CT and PET Imaging of the thorax: State-of-the-Art
Matthew Fleishman, M.D.
Swedish Medical Center

12:00 – 2:00:
Case Presentations and Discussion Panel
Lunch served
Marshall Davis, M.D.; Jason Sutherland, M.D.; Matthew Fleishman, M.D.; James Fenton, M.D., Edgar Prasthofer, M.D.; Myles Guber, M.D.
Swedish Medical Center

2:00 – 2:30: Exhibits

Conference Objectives
To discuss public health issues in the use of spiral CT scans in early lung cancer
To explain a systematic program for lung cancer treatment
To review the use and importance of clinical trials
To describe the management of pulmonary nodules
To explain radiographic evaluations with CT and PET scans
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