Ninth Annual Meeting of the
American Society of Preventive Oncology

April 10–12, 1985
Royal York Hotel
Toronto, Ontario, Canada
**MASTER AGENDA**

**Wednesday, April 10**

**MORNING**
- Registration  
  8:00 am - 4:30 pm

**AFTERNOON**
- Workshop  
  Quantitation of carcinogens in the environment  
  2:00 - 5:00 pm  
  QUEBEC ROOM

**EVENING**
- Free evening

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**Thursday, April 11**

**MORNING**
- Registration  
  8:00 am - 4:30 pm
- Welcoming remarks  
  8:30 - 8:45 am  
  ALBERTA ROOM
- Keynote address  
  The role of toxicology in strategies for cancer prevention  
  8:45 - 9:30 am
- Symposium I  
  Aids: Etiology and prevention  
  10:00 am - 12:00 pm

**AFTERNOON**
- Videotape  
  Cigarette advertising and the health risks of smoking  
  12:00 - 12:30 pm  
  and 1:00 - 1:30 pm
- Distinguished achievement award  
  1:30 - 2:30 pm
- Selected papers  
  2:30 - 4:45 pm

**EVENING**
- Reception  
  6:30 - 7:30 pm  
  TERRITORIES ROOM
- Banquet  
  Goals of the NCI for cancer prevention - the year 2000 program  
  7:30 - 10:30 pm  
  TERRITORIES ROOM

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**Friday, April 12**

**MORNING**
- Presidential address  
  Screening for cancer: Issues and future directions  
  8:30 - 9:15 am  
  ALBERTA ROOM
- Selected papers  
  9:15 - 9:55 am

**AFTERNOON**
- Symposium II -  
  Public policy issues related to cancer prevention  
  10:10 am - 12:10 pm
- Symposium III -  
  Prevention of primary hepatocellular carcinoma  
  2:30 - 4:30 pm

**EVENING**
- Adjourn
PROGRAM AND SELECTED PAPERS

Welcome to Toronto!

Program chairman: W. Thomas London, MD

sponsored by:
American Society of Preventive Oncology
American Cancer Society
Conference information

This ninth annual meeting of the American Society of Preventive Oncology focuses on some of the current major issues in cancer prevention: quantitation of environmental carcinogens, AIDS, public policy in smoking and asbestos control, and the prevention of primary hepatocellular carcinoma. The program chairman, Dr. W. Thomas London, and the Executive Committee of ASPO have brought together what promises to be an extraordinary series of presentations by leaders in their fields of scientific inquiry. This meeting is supported by ASPO and by a generous grant from the American Cancer Society.

ASPO

In its ninth year ASPO is striving to

- promote the exchange and dissemination of information and ideas relating to cancer prevention and control;

- identify and stimulate research areas in cancer prevention and control;

- foster the implementation of programs in cancer prevention and control.

A growing and active membership facilitates achievement of these goals. The Executive Committee and council members listed below are very interested in hearing from prospective or current members.

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The National Office for ASPO is at the University of Wisconsin, where the executive secretary, Ms. Joan Wiegel, may be contacted for any information or assistance: 1300 University Ave. - 7C, Madison, WI 53706, (608)263-2118.
CME credit

No arrangements for continuing medical education credit for this meeting have been made.

Messages

Please see Ms. Joan Wiegel at the registration desk if you wish to leave or expect a message.

Banquet

Please let Ms. Joan Wiegel know immediately of your plans to attend the banquet on Thursday evening.

Dining and discovering Toronto

The booklet "Metropolitan Toronto Discovery Guide 1985" is available at the registration desk.

Special acknowledgement

The Executive Committee of ASPO wishes to offer special thanks to Dr. W. Thomas London, the program chairman, for his tireless efforts in arranging this meeting.
Wednesday, April 10

12:00 pm - 5:00 pm  REGISTRATION

2:00 pm - 5:00 pm  WORKSHOP  
Quantitation of carcinogens in the environment
Moderator: John Weisburger, PhD
Dose-response studies
David Gaylor, PhD
Risk assessment in animals and humans
Daniel Krewski, PhD
Classification of carcinogens and mechanisms of carcinogenesis variation by species
Gary Williams, MD
Thursday, April 11

8:00 am - 4:30 pm
REGISTRATION

8:30 am - 8:45 pm
WELCOMING REMARKS
ALBERTA ROOM
Anthony Miller, MB, FRCP(C)
President, ASPO

8:45 am - 9:30 am
KEYNOTE ADDRESS
The role of toxicology in strategies for cancer prevention
Ian C. Munro, MD

9:30 am - 10:00 am
REFRESHMENT BREAK

10:00 am - 12:00 pm
SYMPOSIUM I
AIDS: Etiology and prevention
Moderator: David Schottenfeld, MD
Viral etiology
Jay Levy, MD
Discussant
Robert J. Biggar, MD
Risk factors and prevention
Michael Marmor, MD
Discussant
Colin Soskolne, PhD

12:00 pm - 1:30 pm
LUNCH

12:00 pm - 12:30 pm
VIDEO TAPE PRESENTATION
Mixed messages: Cigarette advertising and the health risks of smoking
Virginia Ernst, PhD

1:00 pm - 1:30 pm
VIDEO TAPE PRESENTATION
Mixed messages: Cigarette advertising and the health risks of smoking
Virginia Ernst, PhD
1:30 pm - 2:30 pm ASPO DISTINGUISHED ACHIEVEMENT AWARD PRESENTATION
1985 Award recipient:
Sam Shapiro
Presentation of award:
Anthony B. Miller, MB, FRCP(C)
Awardee address: Cancer control and the health care system

2:30 pm - 3:30 pm SELECTED PAPERS
Moderator: Anthony B. Miller, MB, FRCP(C)
2:30 pm - 2:50 pm 1* Neuroblastoma and paternal occupation
Margaret R. Spitz, MD
2:50 pm - 3:10 pm 2 Factors that increase the risk of a second tumor in children with a primary soft-tissue sarcoma
Wick R. Williams, PhD
3:10 pm - 3:30 pm 3 Cholecystectomy and colon cancer: Lack of association
Guy R. Newell, MD

3:30 pm - 3:45 pm REFRESHMENT BREAK

3:45 pm - 4:45 pm SELECTED PAPERS
Moderator: Nicholas Petrakis, MD
3:45 pm - 4:05 pm 4 Elevated levels of bioassayed serum prolactin (PRL) in women at risk for familial breast cancer
Richard R. Love, MD, MS
4:05 pm - 4:25 pm 5 Glutathione transferase as a possible marker of risk for lung cancer
Ronald W. Pero, PhD
4:25 pm - 4:45 pm 6 Appearance of nevi, palpable arm nevi, and the clinical diagnosis of non-familial dysplastic nevus
George C. Roush, MD

4:45 pm - 5:30 pm BUSINESS MEETING

6:30 pm - 7:30 pm RECEPTION

7:30 pm - 10:30 pm TERRITORIES ROOM BANQUET
Goals of the National Cancer Institute for cancer prevention - the Year 2000 program
Peter Greenwald, MD

*Number refers to the abstract printed in the selected paper section of this program.
Friday, April 12

8:30 am - 9:15 am  PRESIDENTIAL ADDRESS
Screening for cancer: Issues and future directions
Anthony B. Miller, MB, FRCP(C)

9:15 am - 9:55 am  SELECTED PAPERS
Moderator: Richard R. Love, MD, MS

9:15 am - 9:35 am  7
The impact of a community breast self-examination program
James E. Enstrom, PhD

9:35 am - 9:55 am  8
Attitudes toward cancer and having had cancer-related tests
Zili Amsel, ScD

9:55 am - 10:10 am  REFRESHMENT BREAK

10:10 am - 12:10 pm  SYMPOSIUM II
Public policy issues related to cancer prevention
Moderator: Virginia Ernster, PhD
Smoking
John Pinney
Discussant
Mary Jane Ashley, MD
Asbestos
J. Fraser Mustard, PhD
Discussant
Richard Lemen

12:10 pm - 1:30 pm  LUNCH
Executive Committee Lunch
PRINCE EDWARD ISLAND ROOM

1:30 pm - 2:30 pm  SELECTED PAPERS
Moderator: David Schottenfeld, MD

1:30 pm - 1:50 pm  9
Mutagenic cervical mucus in women smokers
Elizabeth A. Holly, PhD, MPH
The sex ratio of the offspring of patients with cancer of the prostate
Gerry B. Hill, MD

Prevention of chronic liver disease and liver cancer: Hepatitis B virus replication and tuberculin reactivity
Katherine McGlynn, PhD

SYMPOSIUM III
Prevention of primary hepatocellular carcinoma
Moderator: W. Thomas London, MD

Epidemiology
R. Palmer Beasley, MD, DPh

Discussant
Paul M. Newberne, DVM, PhD

Prevention
James F. Maynard, MD, PhD

Discussant
Brian McMahon, MD

ADJOURNMENT
INVITED SPEAKERS
Mary Jane Ashley, MD
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Fox Chase Cancer Center
Philadelphia, Pennsylvania

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Harvard University  
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George C. Roush, MD  
Yale University School of Medicine  
New Haven, Connecticut

David Schottenfeld, MD  
Epidemiology and Preventive Medicine  
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Sam Shapiro  
Professor Emeritus of Health Policy and  
Management  
Past Director, Health Services Research  
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Gary Williams, MD  
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Wick R. Williams, PhD  
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SELECTED PAPERS

The peak incidence of neuroblastoma (NBL) during early infancy suggests that prezygotic or prenatal exposures to carcinogens could be implicated. Several recent epidemiologic studies have documented an association between parental exposure to hydrocarbons and the aircraft manufacturing industry and the development of nervous system cancer in the offspring. This is a case control epidemiologic analysis of the paternal occupation of 157 children under 15 years of age who died from NBL in Texas during the time period 1964 through 1978. As controls, 314 children were selected, by stratified random sampling, from all Texas live births with the same birth year distribution as the cases. Data on paternal occupation and industry and other demographic variables were abstracted from birth certificates. Neither hydrocarbon-related work exposures nor employment in the aircraft industry was associated with increased risk for NBL. However, children of fathers employed in occupations with electromagnetic field exposure were at significantly increased risk for NBL (odds ratio = 2.14). These occupations included electricians, electric and electronics workers, linemen, and utility employees and welders. The odds ratio was 11.3 for children of fathers who reported themselves to be electronics workers (6 cases, 1 control). Previous reports of exposure to electromagnetic fields and induction of cancer, as well as potential chemical exposures in these industries, are outlined.
FACTORS THAT INCREASE THE RISK OF A SECOND TUMOR IN CHILDREN WITH A PRIMARY SOFT-TISSUE SARCOMA. W.R. Williams, Ph.D., L.C. Strong, M.D., E. Lustbader, Ph.D., M. Stine, M.P.H. Fox Chase Cancer Center, Philadelphia, PA; M.D. Anderson Hosp. and Tumor Institute, Houston, TX.

A cohort of patients who had a soft tissue sarcoma diagnosed before 16 years of age and who had survived at least three years were identified from a list of patients seen at M.D. Anderson Hospital before 1975. Of the 161 patients, 9 have developed a second primary malignancy; less than one second malignancy was expected. Another 15 individuals have developed benign tumors.

To identify patient characteristics that increase the risk of a second tumor, survival analysis under the proportional hazards model was used to test the significance of epidemiologic (sex, age at diagnosis, race, histology), treatment (radiation and/or chemotherapy), and genetic variables. The genetic variable was determined from the results of segregation analysis involving the patient’s 1st and 2nd degree relatives. This defined a subgroup of 11 families in which cancer appears to be transmitted as an autosomal dominant trait. The genetic variable we used reflects the likelihood that cancer in the patient’s family is inherited vs. the likelihood that it occurred by chance.

An early age at diagnosis and having a rhabdomyosarcoma primary lesion were associated with increased risk of developing a second tumor. None of the cancer treatment variables were significant; however, the genetic variable was important (p<.05), and individuals whose family history of cancer was more likely to be due to an inherited mechanism were at increased risk to develop a second primary tumor. This finding suggests that family histories of patients should be obtained and close surveillance be maintained on those that have a strong family history of cancer. (Sup. by CA34097 and CA38929).
CHOLECYSTECTOMY AND COLON CANCER: LACK OF ASSOCIATION.
University of Texas M. D. Anderson Hospital, Houston.

This study was conducted to test the null hypothesis of no association between right-sided colon cancer and previous cholecystectomy. Importance of the question rested with the prevalence of gallbladder removal in the U.S. A case-control, hospital chart review was conducted on 267 white women with right-colon cancer (RSC, cases) and 268 women with left-colon cancer (LSC, controls) to compare prevalence of prior removal of the gallbladder between the two groups. Thirty of 256 cases (11.7%) and 21 of 261 controls (8.0%) had a cholecystectomy 6 months or longer before diagnosis of colon cancer. The risk estimate for cases vs. controls was 1.5 (95% CI 0.8, 2.7). Previous studies exploring the association between cholecystectomy and colon cancer have yielded inconsistent findings. Results of this study, together with an independent one recently published, provide no evidence for a significant etiologic role of cholecystectomy in the development of right-sided colon cancer.
ELEVATED LEVELS OF BIOASSAYED SERUM PROLACTIN (PRL) IN WOMEN AT RISK FOR FAMILIAL BREAST CANCER.

Richard R. Love, M.D. and David P. Rose, Ph.D. Wisconsin Clinical Cancer Center, Madison, WI 53792 and American Health Foundation, Valhalla, NY 10595

In women at increased risk for breast cancer, specific endocrinologic abnormalities have been found inconsistently. Prolactin (PRL) has been of particular interest because of its demonstrated role in rodent mammary carcinogenesis. A new sensitive and specific bioassay for lactogenic hormones (prolactin and growth hormone, GH) has recently been described (J. Clin. Endocrinol. Metab. 51:1058, 1980). We studied 8 healthy, unrelated premenopausal women, each of whom had at least two first degree relatives with breast cancer and a history of familial breast cancer. Throughout one menstrual cycle, morning blood samples were taken and thyrotropin releasing hormone (TRH) stimulation tests were done in mid-follicular and mid-luteal phases in each woman. Compared with previously studied controls, basal and TRH stimulated serum PRL and GH levels determined by the standard radioimmunoassays were unremarkable, while basal levels of serum prolactin by bioassay were significantly elevated, and responses to TRH stimulation showed exaggerated bioactive to immunoreactive PRL ratios. We conclude that, as in the rat, different forms of PRL exist in humans, and that a bioassayable form of PRL is significantly elevated in a homogeneous subset of women at risk for familial breast cancer. Supported by K07-CA00721-05, NCI/NIH.
GLUTATHIONE TRANSFERASE AS A POSSIBLE MARKER OF RISK FOR LUNG CANCER.

Ronald W. Pero, Janeric Seidegard and Daniel G. Miller, PMI-Strang Clinic, New York City.

The glutathione transferases are a group of multifunctional proteins which play an important role in the biotransformation and detoxification of many different endogenous and exogenous compounds. Recently, we have determined the hereditary characteristics of a glutathione transferase (GT) in human mononuclear leukocytes having high activity towards trans-stilbene oxide. Our data are consistent with a dominant expression of a single gene located on an autosomal chromosome for this high GT activity. We have applied this GT assay to age-matched individuals with and without lung cancer who all had a strong previous history of cigarette smoking. The data in Table I show a significant under-representation of high GT activity levels among individuals with lung cancer. Therefore, these data suggest that low GT activity may be a marker for increased risk to lung cancer.

TABLE I

<table>
<thead>
<tr>
<th>Glutathione transferase activity (pmol/min/10^7 cells)</th>
<th>Low Group (100)</th>
<th>High Group (600)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung Cancer Patients</td>
<td>n=35</td>
<td>n=20</td>
</tr>
<tr>
<td>Controls</td>
<td>n=32</td>
<td>n=46</td>
</tr>
</tbody>
</table>

Chi Square=5.72   p 0.02
Clinical recognition of the dysplastic nevus (DN) is deemed important in the prevention and follow up of melanoma. However, quantitative data are lacking. In this study, patients with newly diagnosed cutaneous melanoma (CM) without evidence for familial dysplastic nevus syndrome were examined and the most atypical nevus biopsied in every patient undergoing exam. Prior to biopsy, each mole was characterized independently by two examiners regarding presence or absence of features thought to characterize DN: diameter > 5 mm, a macular component, irregular border, ill-defined border, variegated color, and erythema. Histopathologic diagnosis of DN was positively and significantly correlated with presence of 4 or more clinical features (specificity for each examiner = 79%, sensitivity = 58% and 63%). Histopathologic diagnosis of DN was correlated with each of the 5 clinical features. Histopathologic diagnosis of DN was also strongly and significantly associated with total number of palpable nevi on the arms—a nevus count obtained because it has been strongly associated with CM in epidemiologic studies. Combinations of the 6 clinical features with total number of palpable arm nevi permitted adjustment of specificity (up to 93% with sensitivity maintained above 50%) or sensitivity (up to 83% with specificity above 70%). Although further refinement is vital, combinations of clinical and epidemiologic variables point to a diagnostic index applicable to research on etiology and prevention of CM and to research and clinical care of patients with CM.
THE IMPACT OF A COMMUNITY BREAST SELF-EXAMINATION PROGRAM.
James E. Enstrom, Ph.D., and Linda E. Kanim, M.A.
University of California, Los Angeles, CA 90024.

The goals of this study are to assess long-term breast self-examination (BSE) practice among a cohort of women trained to do BSE and to examine the impact of this practice on their subsequent incidence, staging, and mortality from breast cancer. Initially, 22,000 self-selected women were trained to do BSE during 1978-81 at five hospital-based breast examination training centers throughout the Los Angeles area as part of the Community Cancer Control/Los Angeles (CCC/LA) project. A random sample of 2500 of these women was telephoned in 1980-81 at 12 to 20 months after training to determine BSE frequency and technique. A second independent random sample of 500 women was telephoned in 1984 at 40-70 months after training and questioned about current BSE practice. A number of these women had their BSE technique examined in-person. This cohort of women, although self-selected, appears to be demographically similar to Los Angeles County adult women. For breast screening, the women rely primarily on BSE and physician examinations and not on mammography. Their overall level of breast screening is very high. About 40% of the women practiced BSE at the time of training and have continued to do so, 40% have taken up and continued BSE practice since training, and 20% have not practiced BSE at all. There has been a substantial increase in the portion of the cohort that practices BSE at least monthly--25% at time of initial training, 60% at 12-20 months follow-up, and 50% at 40-70 months. General population surveys indicate that about 35% of adult women practice BSE at least monthly. The cohort is currently being followed for breast cancer, incidence staging, and mortality. This is the first cohort study in the U.S. of BSE and may determine the impact of BSE on reducing breast cancer mortality.
ATTITUDES TOWARD CANCER AND HAVING HAD CANCER-RELATED TESTS
Zili Amsel, Sc.D. and Andrew Balscsm, B.A., Fox Chase
Cancer Center, Philadelphia, PA.

The purpose of this analysis is to examine the relation-
ship of attitudes toward cancer and ever having had
cancer-related tests. Residents of a high cancer mortality
community were surveyed by mail to determine their levels
of knowledge about cancer, their attitudes toward cancer
and, their experiences and practices related to cancer.
Responses were received from 1538 residents (23% of a
random sample of 4320 households or approximately 6560
residents). Attitude statements were grouped according to
the components of the Health Belief Model—perceived
susceptibility of getting cancer, perceived severity of
having cancer, perceived benefits of early detection and
perceived social costs of detection. Respondents were
asked to identify tests or procedures to detect cancer and
which of these they had experienced (chest x-ray, examina-
tion of skin, digital rectal examination, proctoscopic
examination, breast examination by a physician, pap test,
regular oral self-examination, regular breast self-examina-
tion and regular skin-examination). Respondents were
classified as to whether they had experienced each test or
procedure. Preliminary analysis showed attitudes measuring
perceived severity of having cancer being highly associated
with have a chest x-ray, rectal examination and procto-
scopic examination as well as regular performance of oral
and skin self-examination. Measures of perceived benefits
were important for rectal examination, and for women
examination of breasts by a physician and performance of
breast self-examination. Educational status was associated
with performance of oral and skin self-examination in all
respondents and, for women, examination of breasts by a
physician and pap tests. The implications of these results
for a community health education program are discussed.
This project is supported by NCI NIH grant #CA34955.
MUTAGENIC CERVICAL MUCUS IN WOMEN SMOKERS. EA Holly PhD, NL Petrakis MD, NL Friend MS, et al. University of California, San Francisco and Northern California Cancer Program, Palo Alto, California

This study was conducted to determine if mutagenic substances could be detected in the secretions of the uterine cervix of smokers more frequently than nonsmokers. Cervical fluids were obtained from 78 premenopausal women seen at the University of California dysplasia and diethylstilbestrol clinic, or in a private practice. The women were interviewed with regard to their smoking and reproductive histories. The cervical fluids were tested for mutagenicity using the Salmonella microsomal test. Fourteen of 36 women (39%) who smoked had positive tests as compared to 5 of 42 nonsmokers (12%). The age-adjusted estimate of the odds ratio (OR) was 7.8 with 95% confidence limits (CL) of 2.1 to 29.0. Among smokers, 13 of 14 women (93%) who were positive on the laboratory test had smoked within 6 hours prior to sample collection while 18 of 22 women (82%) with negative tests had smoked during this period (age-adjusted OR = 3.8 with 95% CL of .40 to 36.5). Women who smoked 3-10 and 11+ cigarettes per day were more likely to have positive laboratory test results when compared to nonsmokers (for 3-10 cigarettes, age-adjusted OR = 10.3 with 95% CL of 2.5 to 42.6; for 11+ cigarettes, OR = 3.3 with 95% CL of .90 to 11.9). Women with dysplasia or carcinoma in situ were more likely to be positive on the test for mutagenicity when compared with all other women (OR = 3.1 with 95% CL of .99 to 9.9).

This relationship between smoking and mutagenic cervical fluids offers biochemical evidence for the association between cervical cancer and cigarette smoking that has been noted in previous epidemiologic studies.
THE SEX RATIO OF THE OFFSPRING OF PATIENTS WITH CANCER OF THE PROSTATE

G. B. Hill, M.B., S. Fincham, M.A.,
C. Wijayasinghe, M.P.V.H. and C. Haronga, B.A.

We have completed a population-based case-control study of prostatic cancer in Alberta. We focus here on the fertility of the 354 cases and 597 controls who had married at least once. Considering offspring of both sexes, the mean fertility of the cases was 3.17, not significantly different from the mean of 3.11 for the controls ($X^2=0.22$, $p>0.10$). However the sex-ratios were significantly different, 56.5 percent of the cases' offspring being sons, compared with 50.1 percent for the controls ($X^2=11.47$, $p<0.001$). The equality of total fertility, but increase in the sex ratio of the cases' offspring, persisted after stratification by age at first marriage, which was found to be a risk factor in this study. If the finding is confirmed by other studies then an abnormality of one of the sex chromosomes, or of the seminal fluid, may be implicated in prostatic cancer.
PREVENTION OF CHRONIC LIVER DISEASE AND LIVER CANCER: HEPATITIS B VIRUS REPLICATION AND TUBERCULIN REACTIVITY.
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Chronic carriers of hepatitis B virus (HBV) who are also positive for hepatitis B e antigen (HBeAg(+)) are actively replicating virus and are more likely to develop chronic hepatitis (CAH) than HBeAg(-) carriers. Carriers with CAH are at higher risk of developing cirrhosis and primary liver cancer than carriers without CAH.

In a prior study of southeast Asian refugees, a population with high prevalences of M. tuberculosis (TB) and HBV infections, we detected an inverse association between HBeAg status and tuberculin skin test (PPD) reactivity. Among 224 HBV carriers, PPD(+) persons were significantly less likely to be HBeAg(+) than PPD(-) persons. PPD positivity increased with age and HBeAg positivity decreased with age, but the HBeAg/PPD association remained constant across age groups. To test whether this relationship occurs in other populations, we studied carriers in the Alaska native American population.

We identified, from the Alaska hepatitis B registry, 613 carriers whose HBeAg status had been determined. We used records of the Alaska Native Medical Service and the Alaska Tuberculosis Control Program to ascertain the PPD reactivity of each subject. Analysis of this data confirmed the inverse relationship of HBeAg and PPD reactivity. The Mantel-Haenszel common odds ratios (across age groups) of the Alaskan and southeast Asian populations were identical; 2.13.

Since PPD reactors are more likely to be HBeAg(-), we are investigating whether bacille Calmette Guerin (BCG) vaccination has an effect similar to natural TB infection, i.e.; interferes with the replication of HBV in carriers.