PLENARY SESSION
An Integrated View of the Cancer Cell (Donald S. Coffey)

SYMPOSIA
The Cell Cycle and Tumor Suppressor Genes (Thea D. Tisty)
DNA Damage and Repair (Philip C. Hanawalt)
Natural Products in Chemoprevention of Cancer (Michael B. Sporn)
Ribozymes and Antisense Oligonucleotides and the Alteration of Gene Expression (Kevin J. Scanlon)
Genetic Susceptibility to Cancer (Kenneth W. Kinzler)
Contributions of Environmental Factors to Cancer (Kenneth Olden)
Cell Surface Glycosylation Defining Malignancy (Sen-itiroyo Hakomori)
Peripheral Stem Cells and High-Dose Chemotherapy (Peter J. Quesenberry)
Apoptosis (Alan R. Eastman)
Biology of Radiation Oncology (H. Rodney Withers and C. Nonnan Coleman)
Biomarkers of Carcinogenesis (David Sidransky)
Transcription Factors and Carcinogenesis (Frank J. Rauscher III)
Gene Therapy in Cancer Clinical Trials (Carol W. Greider and Jerry W. Shay)
Extracellular Matrix, Gene Expression, and Cell Signalling (Hynda K. Kleinman)
Mechanistic Basis for Ethnic Differences in Cancer Risk (Kenneth Olden)
Signal Transduction and Gene Control and Development (James E. Darnell)
Angiogenesis (Judah Folkman and Adrian L. Harris)
Genes, Development, and Cancer (Eric N. Olson)
Growth Factors, Receptors, and Differentiation (Angie Rizzino)
New Strategies and Targets for Chemotherapy (Joseph R. Bertino and Eddie Reed)
Genetic Approaches to Invasion and Metastasis (Robert S. Kerbel and Patricia S. Steeg)
Immunotherapy: Tumor Vaccines (David A. Berd)
Graft versus Tumor Effects (Richard J. O'Reilly)
Dietary Intervention in Hormonal Carcinogenesis (Diane F. Birt and Lovell A. Jones)
The Role of Stromal-Epithelial Interactions in Growth and Neoplasia (Leland W. K. Chung)
Cancer Prevention and Intermediate Biomarkers (Peter Greenwald)
Translational Research in Breast Cancer (Marc E. Lippman)
DNA Methylation (Peter A. Jones and Stephen B. Baylin)

METHODS WORKSHOPS
General, In Situ, and Quantitative PCR (including Differential Display) (Saraswati Sukumaran)
Gene Targeting (Janet Rossant and Andras Nagy)

CONTROVERSY SESSIONS
Are Estrogens Implicated in Breast Cancer? (Lovell A. Jones)
Is Mammography Before Age 50 Beneficial? (John Trachtenberg)
What Are the Limits and Benefits of the PSA Assay? (Richard P. Hilly)
What Are the Risks of Electromagnetic Fields in Causing Cancer? (Mark A. Israel)
Is Bone Marrow Transplantation Indicated for Breast Cancer? (Nancy E. Davidson)

MEET-THE-EXPERT SUNRISE SESSIONS
New Developments in Clinical Pharmacology (Merrill J. Egorin)
Site-specific Gene Expression in Transgenic Animals (Norman Greenberg)
Organ-specific Carcinogenesis (Cheryl Lyn Walker)
Modeling and Analyzing Clinical Trials (Steven Piantadosi)
Multivariate Determinants of Radiocurability (Richard P. Hill)
Multidrug Resistance (Victor Ling)
Cytokines, Vaccines, and Gene Therapy (Jonathan W. Simons)
Tyrosine Kinases and Phosphatases (Allan B. Okey)
Prostate Cancer (John T. Isaacs)
Lung Cancer (Stephen B. Baylin)
Colon Cancer (Ronald N. Buick)
Pediatric Malignancies (Joseph V. Simone)
Hematological Malignancies (Lee M. Nadler)
Stem Cell Transplantation (Elizabeth J. Shpall)
Molecular Determinants of Multidrug Resistance (Elizabeth W. Newcomb)
Is a Mutagenic Event Involved in Initiation? (Ann R. Kennedy)
Glutathione S-Transferase (Kenneth D. Tew)
Farnesyl Transferase as a Target for Therapy (Alexander W. Wood)
Liver Cancer Etiology and Prevention (John D. Groopman)
Biochemical Determinants of Carcinogenesis (Allan B. Okey)

EDUCATIONAL WORKSHOPS
To Be Announced

Further Information: AACR Office • Public Ledger Building • Suite 816 • 150 S. Independence Mall West Philadelphia, PA 19106-3483 • TELEPHONE (215) 440-9300 • FAX (215) 440-9313
## The Division of Cancer Etiology

### National Cancer Institute

Announces to the Scientific Community the Availability of the Following Resources/Services for Cancer Related Research As Noted Below:

### Biological Resources

<table>
<thead>
<tr>
<th><strong>Cell Culture Identification Service: Using Isoenzyme Analysis, Immunofluorescence and Karyotypic Analysis (Chromosome Banding).</strong></th>
</tr>
</thead>
</table>
| **Contact:** Dr. Joseph Kaplan  
Children's Hospital of Michigan  
3901 Beaubien Boulevard  
Detroit, MI 48201  
(313) 745-5570 |
| **Citing Contract #N01-CP-33063** |
| **Cost:** Reasonable; inquire with specific requests. |

<table>
<thead>
<tr>
<th><strong>Goat Antisera Against: Avian, Bovine, Feline, Murine, and Primate Intact Viruses and Viral Proteins. Antibodies to Immunoglobulins for a number of species. Premmune Sera available for some Virus Antisera.</strong></th>
</tr>
</thead>
</table>
| **Contact:** Kathleen Whitaker, Ph.D.  
BCB Repository  
Quality Biotech, Inc.  
1667 Davis Street  
Camden, NJ 08104  
(609) 966-8000  
(609) 342-8078 FAX |
| **Citing Contract #N01-CP-15665** |
| **Cost:** $75.00/5 ml (Antisera)  
$25.00/5 ml (Premmune Sera)  
65.00/100 ml (Immunoglobulins)  
(Frozen Material) |

<table>
<thead>
<tr>
<th><strong>Viruses: Avian, Feline, Murine, and Primate Viruses Produced in vivo and in vitro.</strong></th>
</tr>
</thead>
</table>
| **Contact:** Kathleen Whitaker, Ph.D.  
BCB Repository  
Quality Biotech, Inc.  
1667 Davis Street  
Camden, NJ 08104  
(609) 966-8000  
(609) 342-8078 FAX |
| **Citing Contract #N01-CP-15665** |
| **Cost:** Reasonable; inquire with specific requests. |

<table>
<thead>
<tr>
<th><strong>Monoclonal Antibodies are available with specificities for sym cotic peptides representing the amino acid sequences of the left end, right end and active site of the oncogene products of avian and mammalian retroviruses. Blocking peptides are also available, as are a limited number of cell lines producing the monoclonal antibodies.</strong></th>
</tr>
</thead>
</table>
| **Contact:** Kathleen Whitaker, Ph.D.  
BCB Repository  
Quality Biotech, Inc.  
1667 Davis Street  
Camden, NJ 08104  
(609) 966-8000  
(609) 342-8078 FAX |
| **Citing Contract #N01-CP-15665** |
| **Cost:** Peptides — $25.00/mg.  
Ascites Fluid — 45.00/ml.  
Cell Culture — 100.00/culture.  
(Plus Shipping and Handling) |

### Environmental Cancer

<table>
<thead>
<tr>
<th><strong>NCI's Chemical Carcinogenesis Research Information System (CIRIS) is available online through the National Library of Medicine's Toxonomy Data Network (TOXNET) system. Through an interagency agreement between NCI and NLM, the CCRIS database has been built and will be maintained and updated as one of TOXNET's sponsored databases in the broad areas of chemistry, toxicology, and hazardous waste information. The CCRIS database contains evaluated data and information on carcinogens, mutagens, tumor promoters, cocarcinogens, metabolites of carcinogens, and carcinogen inhibitors derived from published review articles, ongoing current awareness survey of primary literature, NCI/NIH's short- and long-term bioassay studies, the IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man, and special studies and reports.</strong></th>
</tr>
</thead>
</table>
| **Contact:** Ms. Inge Blackwood  
Division of Cancer Etiology  
National Cancer Institute  
Executive Plaza North, Room 712  
Bethesda, MD 20892  
(301) 496-1625 |
| **Cost:** Inquire |

<table>
<thead>
<tr>
<th><strong>The National Cancer Institute, along with the National Institute of Environmental Health Sciences, the Centers for Disease Control, and the Food and Drug Administration, has, for many years, supported a study by the Michigan Department of Public Health dealing with an accidental exposure to polycyclic aromatic hydrocarbons.</strong></th>
</tr>
</thead>
</table>
| **Contact:** Dr. Harold E. B. Humphrey  
Michigan Department of Public Health  
Division of Health Risk Assessment  
3423 North Logan, P.O. Box 30195  
Lansing, MI 48909  
(517) 335-8350 |
| **Cost:** Free to qualified investigators. |

---

**Below: The Division of Cancer Etiology's Registry of Experimental Cancers announces the availability of 16 different study sets containing histologic slides of rodent tumors. The study sets, submitted with accompanying syllabi, illustrate a variety of spontaneous and induced tumors, chiefly of rats, mice, and hamsters. Each set is available to cancer investigators worldwide, without charge, for up to two months. Requests or inquiries should be addressed to:**

**Contact:** Registry of Experimental Cancers  
National Cancer Institute  
Building 41, Room D311  
NIH, Bethesda, MD 20892  
USA
Epidemiology Resources

- The Tumor Virus Epidemiology Repository (TVER) contains serum and other biological samples from more than 13,000 patients and controls obtained in 12 countries. The TVER was established primarily to support collaborative research on the role of Epstein-Barr virus (EBV) in Burkitt's lymphoma and related diseases. Sera characterized for human herpes virus 6 (HHV) antibodies are also available. The TVER collection is available for new collaborative studies and some independent research. The most extensive collections are serum samples from patients with Burkitt's lymphoma.

  Contact: Dr. Paul H. Levine  
  Viral Epidemiology Branch  
  DCE, NCI, NIH  
  Executive Plaza North, Room 434  
  Bethesda, MD 20892  
  (301) 496-8115

Cost: Inquire

- The National Cancer Institute has available extensive chemical information on smoke and cigarette smoke condensates, and of smoke condensate components is available. The collection is historical with followup on many individuals is unavailable. Information requests should include potential use of cultures.

  Contact: Chief, Genetic Epidemiology Branch  
  DCE, NCI, NIH  
  Executive Plaza North, Room 439  
  Bethesda, MD 20892  
  (301) 496-4375

Cost: Free to collaborative investigators. Others: $70/cell line

- The National Institute of Allergy and Infectious Diseases and the National Cancer Institute have developed a repository of biological specimens from homosexual men. The specimens were collected through cooperative agreements with four major U.S. universities for studies of the natural history of acquired immune deficiency syndrome (AIDS). Information about applying for collaborative use of these specimens is available from the NIAID Project Officer or the NCI Co-Project Officer.

  Contact: Chief, Epidemiology Branch, AIDS Program, NIAID  
  CDC, Room 240  
  National Institutes of Health  
  Rockville, MD 20852

or to  

  Chief, Extramural Programs Branch, EBP,  
  Division of Cancer Epidemiology, NCI  
  Executive Plaza North, Room 535  
  Rockville, MD 20852

Cost: Free

- The Epidemiology and Biostatistics Program of the National Cancer Institute and the Industrywide Studies Branch of the National Institute for Occupational Safety and Health have created a Computerized Occupational Referent Population System (CORPS) which contains data from occupations cohort studies conducted in the past by either agency. This new large population of employed persons can be used in place of the general population as the referent group in occupational cohort studies to ameliorate the healthy worker effect. Populations from standardized mortality studies and proportional mortality studies have been assembled. Potential users may request mortality rates in the format required by software commonly used to analyze epidemiologic occupational data (i.e., Monson, NIOSH Life Table, OCMAP, O/E). Rate files may be requested by race, gender, blue/white collar status, minimum employment duration, state, and other characteristics.

  Contact: Sheila Hoar Zahn, Sc.D.  
  Occupational Studies Section  
  EEB, EBP, DCE, NCI, NIH  
  Executive Plaza North, Room 418  
  Bethesda, MD 20892  
  Phone: (301) 496-5903  
  Fax: (301) 402-1819

Cost: Free

- The Epidemiology and Biostatistics Program of the National Cancer Institute (NCI) has developed a computer-aided occupational and industrial code searching program (CODESEARCH) which allows the code assigner to select appropriate codes from existing classification systems for job or industrial titles from work histories of the study subjects. The program is user friendly and allows searches from four occupational Classification Systems (1977 Standard Occupational Classification Manual [SOC], 1980 SOC, 1976 Bureau of Census Occupational Classification System [BOCOC], and 1980 BOCOC, and four industrial classification systems (1972 Standard Industrial Classification System [SIC], 1987 SIC, 1970 Bureau of Census Industrial Classification System [BOCIC], and 1980 BOCIC). The program is written using PC-Clipper software and is exportable to most 486 PCs.

  Contact: Mustafa Dosemeci, Ph.D.  
  Occupational Studies Section  
  DCE, DCE, NCI, NIH  
  Executive Plaza North, Room 418  
  Bethesda, MD 20892  
  Phone: (301) 496-9083  
  Fax: (301) 402-1819

Cost: Free

- The Chemical Carcinogen Reference Standard Repository contains reference quantities of over 750 compounds are available. The newest additions are dilute aqueous standards of PAH deoxyguano- sine-3'-monophosphates for Randerath *P* post labeling essays. Other classes of available compounds are: food mutagens, polycyclic aromatic hydrocarbons (PAH), PAH metabolites, radiolabeled PAH metabolites, nitrogen heterocycles, nitrosoamines/nitrosamides, aromatic amines, aromatic amine metabolites, azoxy aromatics, inorganic nitrosamines, pesticides, pyrethroids, narcotics, natural products, dyes, dioxins and chlorinated aliphatics. A number of radiolabeled PAH adducts, metabolites and nitrosamines is also available. Data Sheets provided with the compounds include chemical and physical properties, analytical data, hazard information, and handling information. Catalog available upon request.

  Contact: Manager, NCI Chemical Carcinogen Repository  
  Midwest Research Institute  
  425 Volker Boulevard  
  Kansas City, MO 64110  
  (816) 753-7600, Ext. 523  
  (816) 753-3664

Fax: Manager, NCI Radiolabeled Chemical Repository  
CHEMSYN Science Laboratories  
13605 W. 96th Terrace  
Lexena, KS 66215  
(913) 541-0525  
(913) 639-5362

Fax: Subject to chemical class code and quantity (see catalog) includes handling and shipping charges.

Chemical Resources

- Analytical support for the collection, separation, and extraction of environmental carcinogens including combustion and smoking-related exposures. A contractor with experience in the development of analytical methods for the determination of constituents of cigarette smoke and cigarette smoke condensates, and of specialty instrumentation for inhalation toxicity is available to assist qualified investigators with particular interests in human and animal models. Exposure to environmental and sidestream smoke. Extensive chemical information on smoke and smoke condensate components is available.

  Contact: Harold E. Seifried, Ph.D.  
  Chemical and Physical Carcinogen Branch, DCE, NCI  
  Executive Plaza North, Room 700  
  Bethesda, MD 20892  
  (301) 496-5471  
  (301) 496-1040

Fax: Inquire

- Chemical Carcinogen Reference Standard Repository. Reference quantities of over 750 compounds are available. The newest additions are dilute aqueous standards of PAH deoxyguanosine-3'-monophosphates for Randerath *P* post labeling essays. Other classes of available compounds are: food mutagens, polycyclic aromatic hydrocarbons (PAH), PAH metabolites, radiolabeled PAH metabolites, nitrogen heterocycles, nitrosoamines/nitrosamides, aromatic amines, aromatic amine metabolites, azoxy aromatics, inorganic nitrosamines, pesticides, pyrethroids, narcotics, natural products, dyes, dioxins and chlorinated aliphatics. A number of radiolabeled PAH adducts, metabolites and nitrosamines is also available. Data Sheets provided with the compounds include chemical and physical properties, analytical data, hazard information, and handling information. Catalog available upon request.

  Contact: Manager, NCI Chemical Carcinogen Repository  
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  425 Volker Boulevard  
  Kansas City, MO 64110  
  (816) 753-7600, Ext. 523  
  (816) 753-3664

Fax: Manager, NCI Radiolabeled Chemical Repository  
CHEMSYN Science Laboratories  
13605 W. 96th Terrace  
Lexena, KS 66215  
(913) 541-0525  
(913) 639-5362

Fax: Subject to chemical class code and quantity (see catalog) includes handling and shipping charges.
MECHANISM OF ACTION OF RETINOIDS, VITAMIN D, AND STEROID HORMONES

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<td>Thirty-Fourth G.H.A. Cloves Memorial Award Lecture: Genetic Analysis of Human Breast Cancer, Mary-Claire King</td>
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<td>CAN-438V</td>
<td>Third American Cancer Society Award Lecture on Cancer Epidemiology and Prevention: The Prevention of Hormone-induced Cancers, Brian E. Henderson</td>
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<td>CAN-463V</td>
<td>Eighteenth Richard and Linda Rosenthal Foundation Award Lecture: Angiogenesis as a Target for Cancer Therapy, Marc E. Lippman</td>
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<td>CAN-464V</td>
<td>Public Education Session: The Funding Crisis in Cancer Research: What Can We Do?</td>
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<td>CAN-474V</td>
<td>Thirteenth Cornelius P. Rhodes Memorial Award Lecture: Genetic Suppressor Elements: New Tools for Molecular Oncology, Igor B. Roninson</td>
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<tr>
<td>CAN-486V</td>
<td>Thirteenth Bruce F. Cain Memorial Award Lecture: Camptothecin and Taxol: From Discovery to Clinical Usage, Mansukh C. Wani and Monroe E. Wall</td>
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The genetic basis of cell signaling, apoptosis/programmed cell death, and drug resistance drive the design of several cutting edge therapies such as clinical studies with vitamin analogues or drugs that interfere with the resistance of brain tumor cells to conventional chemotherapeutic agents. PCI investigators are pursuing the development and utility of gene vectors, such as retroviruses, adenoviruses, and liposomes, optimizing gene delivery to such target cells as immune cells, fibroblasts, and tumor cells.

Research on cancer growth and metastases is promoting greater understanding of their biological mechanisms. Current investigations cover enzymes involved in metastases and the properties of tumor endothelia, thereby contributing to clinical assays that predict an individual tumor’s invasiveness. Gene therapy, the first at the University of Pittsburgh Medical Center, initiated for patients with advanced cancer, involved injecting patients with fibroblasts transfected with the gene for interleukin 4. Also this year, PCI researchers used another novel synthetic peptide vaccine to treat advanced cancer, based on an altered form of mucin, which appears exclusively on cancer cells of the breast, colon, and pancreas.

On the basis of extremely promising preliminary research, PCI is now leading an Eastern Cooperative Oncology Group Trial combining chemotherapy and radiation for malignant gliomas. This year, a PCI-led multi-institutional study showed that a specific combination of chemotherapy and autologous bone marrow transplantation significantly improves survival of patients with acute myelogenous leukemia.

PCI also has been involved in the NCI-funded Prostate Cancer Prevention Trial and the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trials. The University of Pittsburgh is one of only 16 vanguard centers of the Womens Health Initiative, which involves prospective studies of interventions to prevent breast and colorectal cancers. PCI has created an enterprising, enormously productive environment for cancer prevention, detection, diagnosis, and treatment, sustained by the interplay of many different research disciplines focused on translating basic findings to clinical initiatives.

Dr. Herberman, the first Director of the Pittsburgh Cancer Institute, and recently appointed the first Hillman Professor of Oncology, is an internationally recognized tumor immunologist whose major discoveries have fostered novel approaches to cancer therapy. NK cell-mediated cytotoxicity against tumors was first discovered in Dr. Herberman’s laboratory in the early 1970s. His investigations into NK cells have demonstrated that stimulation of NK activity by various immunomodulators leads to inhibition of metastases.

Dr. Herberman has also played a leading role in several other important aspects of tumor immunology. During his 19 years at the NCI, these included: evidence for specific antitumor immunity to human tumors and their prognostic value; the organization of a national program of immunodiagnostic research and a critical approach to the evaluation of tumor markers; a major role in the development of the Biological Response Modifiers Program of the NCI; and the adoption of a systematic, rational approach to the clinical investigation of biological response modifiers. Much of his current research focuses on the systematic evaluation of interleukin-2-stimulated NK cells for their therapeutic efficacy and prolongation of survival, especially in the treatment of minimal residual disease following conventional treatment by surgery or chemotherapy or both.

Dr. Herberman’s achievements have been recognized by numerous awards, including the Governor of Pennsylvania’s Award for Excellence in Science and Medicine, a Lifetime Science Award from the Institute for Advanced Studies in Immunology and Aging, and the Solomon A. Berson Medical Alumni Achievement Award in Clinical Science from his alma mater, New York University. Dr. Herberman was one of the 100 most-cited research authors for the period 1981–1990. He has been an active member of the American Association for Cancer Research since 1969, residing on the Board of Directors from 1987–1990 and currently serving on the Public Education Committee.

We are indebted to Dr. Herberman for the information and photographs for this cover feature.

Sidney Weinhouse