



CONTENTS†

Asterisks * preceding page numbers refer to studies using human-derived material.

Perspectives in Cancer Research

- 4677 **Papillomaviruses in Anogenital Cancer as a Model to Understand the Role of Viruses in Human Cancers.** Harald zur Hausen.
Review
4682 **ras Oncogenes in Human Cancer: A Review.** Johannes L. Bos.

BASIC SCIENCES

- *4690 **Inhibition of Lymphokine-activated Killer Cell Function by Human Alveolar Macrophages.** Michael D. Roth and Sidney H. Golub.
- *4696 **Alkaline Phosphatase Isozymes in Human Testicular Germ Cell Tumors, Their Precancerous Stage, and Three Related Cell Lines.** Marie-Claude Hofmann, Willy Jeltsch, Jolanda Brecher, and Heinrich Walt.
- *4701 **Altered Expression of Growth-regulated Protooncogenes in Human Malignant Plasma Cells.** Antonio P. Palumbo, Alessandro Pileri, Umberto Dianzani, Massimo Massaia, Mario Boccadoro, and Bruno Calabretta.
- *4705 **Radiation Sensitivity of Cell Strains from Families with Genetic Disorders Predisposing to Radiation-induced Cancer.** John B. Little, Warren W. Nichols, Philip Troilo, Hatsumi Nagasawa, and Louise C. Strong.
- 4715 **Nuclear but not Mitochondrial Genome Involvement in 3-Methylcholanthrene-induced Expression of Tumorigenicity in Mouse Somatic Cells.** Jun-Ichi Hayashi, Hiromichi Yonekawa, and Yusaku Tagashira.
- 4721 **Urinary Excretion of N¹-Acetylspermidine and Other Acetylated and Free Polyamines in the 1,2-Dimethylhydrazine Model of Experimental Rat Colon Cancer.** Allan G. Halline, Pradeep K. Dudeja, Bret A. Lashner, and Thomas A. Brasitus.
- 4724 **Linoleic Acid Metabolism in Metastatic and Nonmetastatic Murine Mammary Tumor Cells.** Robert S. Chapkin, Neil E. Hubbard, Dianne K. Buckman, and Kent L. Erickson.
- 4729 **Mechanisms of the *in Vivo* Resistance to Adriamycin and Modulation by Calcium Channel Blockers in Mice.** Ming-biao Yin, Issam Bankusli, and Youcef M. Rustum.
- 4734 **High Affinity Binding of Estrogen Receptor to Recombinant Plasmids Containing (dA-dC)_n-(dG-dT)_n Sequences.** Thesia Thomas and T. J. Thomas.
- *4740 **Paraneoplastic Syndrome of Hypercalcemia and Leukocytosis Caused by Squamous Carcinoma Cells (T3M-1) Producing Parathyroid Hormone-related Protein, Interleukin 1 α , and Granulocyte Colony-stimulating Factor.** Kanji Sato, Yuko Fujii, Terutaka Kakiuchi, Keizo Kasono, Hidehito Imamura, Yukio Kondo, Hiroyuki Mano, Tetsuro Okabe, Shigetaka Asano, Fumimaro Takaku, Toshio Tsushima, and Kazuo Shizume.
- 4747 **Afferent and Efferent Specificity in the Induction and Elicitation of Parental Cross-Protective Immunity by an Immunogenic Murine Tumor Variant: Associative Recognition of a Unique Tumor-specific Antigen on Somatic Cell Hybrids.** Stephen J. LeGrue, Honnavara N. Ananthaswamy, and William J. Simcik.
- 4752 **Novobiocin, Nalidixic Acid, Etoposide, and 4'-(9-Acridinylamino)methanesulfon-*m*-anisidide Effects on G₂ and Mitotic Chinese Hamster Ovary Cell Progression.** Roy Rowley and Lila Kort.
- *4758 **Enhanced Growth of an Estrogen Receptor-negative Endometrial Adenocarcinoma by Estradiol in Athymic Mice.** A. Friedl, M. M. Gottardis, J. Pink, D. A. Buchler, and V. C. Jordan.
- *4765 **Differential Ability of Antiestrogens to Stimulate Breast Cancer Cell (MCF-7) Growth *in Vivo* and *in Vitro*.** Marco M. Gottardis, Randall J. Wagner, Ernest C. Borden, and V. Craig Jordan.
- 4770 ***In Vivo* Antitumor Activity of Anti-CD3-induced Activated Killer Cells.** Yeon-Sook Yun, Myrthel E. Hargrove, and Chou-Chik Ting.
- *4775 **Dependence of Etoposide-induced Cytotoxicity and Topoisomerase II-mediated DNA Strand Breakage on the Intracellular Ionic Environment.** Theodore S. Lawrence, Christine E. Canman, Jonathan Maybaum, and Mary A. Davis.
- 4780 **Effect of Treatment with Aromatase Inhibitor 4-Hydroxandrostenedione on the Nonhuman Primate Menstrual Cycle.** Angela M. H. Brodie, Janice O. Hammond, Maya Ghosh, Katherine Meyer, and Eugene D. Albrecht.
- *4785 **Chemosensitivity and Radiosensitivity of Small Cell Lung Cancer Cell Lines Studied by a Newly Developed 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium Bromide (MTT) Hybrid Assay.** Toyooki Hida, Ryuzo Ueda, Takashi Takahashi, Hiroyoshi Watanabe, Taketoshi Kato, Motokazu Suyama, Takahiko Sugiura, Yutaka Ariyoshi, and Toshitada Takahashi.
- *4791 **Enhancement of the Activity of Immunotoxins by Analogues of Verapamil.** Robert Pirker, David J. P. FitzGerald, Manfred Raschack, Zimmermann Frank, Mark C. Willingham, and Ira Pastan.
- 4796 **Type IV Collagen-mediated Melanoma Cell Adhesion and Migration: Involvement of Multiple, Distinct Domains of the Collagen Molecule.** Mary K. Chelberg, Effie C. Tsilibary, Alan R. Hauser, and James B. McCarthy.
- *4803 **Modulatory Potency of the β -Galactoside-specific Lectin from Mistletoe Extract (Iscador) on the Host Defense System *in Vivo* in Rabbits and Patients.** Tibor Hajto, Katarina Hostanska, and Hans-Joachim Gabius.
- *4809 **Antileukemic Effects of Deferoxamine on Human Myeloid Leukemia Cell Lines.** David L. Becton and Barbara Roberts.
- *4813 **Relationships among Cell Survival, O⁶-Alkylguanine DNA Alkyltransferase Activity, and Reactivation of Methylated Adenovirus 5 and Herpes Simplex Virus Type 1 in Human Melanoma Cell Lines.** K. Maynard, P. G. Parsons, T. Cerny, and G. P. Margison.
- *4818 **Tyrosine Protein Kinase Activity of Human Hyperplastic Prostate and Carcinoma Cell Lines PC3 and DU145.** Yves Durocher, Alcide Chapdelaine, and Simone Chevalier.
- *4824 **Induction of HL-60 Leukemia Cell Differentiation by the Novel Antifolate 5,10-Dideazatetrahydrofolic Acid.** John A. Sokoloski, G. Peter Beardsley, and Alan C. Sartorelli.

† The CONTENTS arranged by Subject Category can be found immediately following these CONTENTS.

- *4829** Elimination of Chemoresistant Multiple Myeloma Clonogenic Colony-forming Cells by Combined Treatment with a Plasma Cell-reactive Monoclonal Antibody and a P-Glycoprotein-reactive Monoclonal Antibody. Alex W. Tong, Jennifer Lee, Ru-Miin Wang, William S. Dalton, Takashi Tsuruo, Joseph W. Fay, and Marvin J. Stone.
- *4835** Directed Migration of Murine and Human Tumor Cells to Collagenases and Other Proteases. Victor P. Terranova, David Maslow, and Gabor Markus.
- *4842** Relationship between Cell Membrane Potential and Natural Killer Cell Cytolysis in Human Hepatocellular Carcinoma Cells. Douglas Stevenson, Richard Binggeli, Roy C. Weinstein, James G. Keck, Min Chan Lai, and Myron J. Tong.
- 4846** Enhanced Sensitivity of the Rat Hepatoma Cell to the Daunorubicin Analogue 4-Demethoxydaunorubicin Associated with Induction of DNA Damage. Karen E. Woods, Amy L. Ellis, Joyce K. Randolph, and David A. Gewirtz.
- 4852** Antigenic Sites in Carcinoembryonic Antigen. Sten Hammarstrom, John E. Shively, Raymond J. Paxton, Barbara G. Beatty, Åke Larsson, Rahul Ghosh, Ole Bormer, Franz Buchegger, Jean-Pierre Mach, Pierre Burtin, P. Seguin, Bruno Darbouret, F. Degorce, J. Sertour, J. P. Jolu, Abraham Fuks, Holger Kalthoff, Wolff Schmiegell, Rudiger Arndt, Gunter Kloppel, Sabine von Kleist, Fritz Grunert, Klaus Schwarz, Yuji Matsuoka, Masahide Kuroki, Christoph Wagener, Teddy Weber, Akira Yachi, Kohzoh Imai, Noriyuki Hishikawa, and Masayuki Tsujisaki.
- *4859** Biochemical Analysis of the Role of Transmethylation in the Methionine Dependence of Tumor Cells. Jean Gabriel Judde, Martha Ellis, and Philip Frost.
- *4866** Implications for Therapy of Drug-metabolizing Enzymes in Human Colon Cancer. Kamilia Mekhail-Ishak, Nancy Hudson, Ming-Sound Tsao, and Gerald Batist.
- 4870** Expression of Five Cathepsins in Murine Melanomas of Varying Metastatic Potential and Normal Tissues. Fang Qian, Andrew S. Bajkowski, Donald F. Steiner, Shu Jin Chan, and Allen Frankfater.
- *4876** Radiation Response of Vulvar Squamous Cell Carcinoma (UM-SCV-1A, UM-SCV-1B, UM-SCV-2, and A-431) Cells *in Vitro*. Kirsi Pekkola-Heino, Jarmo Kulmala, Seija Grenman, Thomas E. Carey, and Reidar Grenman.
- *4879** Role of Ligand in Antibody-directed Endocytosis of Liposomes by Human T-Leukemia Cells. Katherine K. Matthey, Anna M. Abai, Suzanne Cobb, Keelung Hong, Demetrios Papahadjopoulos, and Robert M. Straubinger.
- 4887** Production of Monoclonal Antibodies to Preneoplastic Liver Cell Populations Induced by Chemical Carcinogens in Rats and to Transplantable Morris Hepatomas. Harold A. Dunsford and Stewart Sell.
- 4894** Different Lineages of Chemically Induced Hepatocellular Carcinoma in Rats Defined by Monoclonal Antibodies. H. A. Dunsford, C. Karnasuta, J. M. Hunt, and S. Sell.
- *4901** Clonal Immunoglobulin Gene Rearrangements and Normal T-Cell Receptor, *bcl-2*, and *c-myc* Genes in Primary Cutaneous B-Cell Lymphomas. Domenico Delia, Maria G. Borrello, Emilio Berti, Marco A. Pierotti, Daniela Biassoni, Raffaele Gianotti, Elvio Alessi, Maria G. Rizzetti, Ruggero Caputo, and Giuseppe Della Porta.
- *4906** Endocytosis and Degradation of Monoclonal Antibodies Targeting Human B-Cell Malignancies. Oliver W. Press, Andrew G. Farr, K. Ingrid Borroz, Susan K. Anderson, and Paul J. Martin.
- 4913** Stimulated Rat Liver Mitochondrial Biogenesis after Partial Hepatectomy. Masato Nagino, Masashi Tanaka, Morimitsu Nishikimi, Yuji Nimura, Hitoshi Kubota, Michio Kanai, Takehito Kato, and Takayuki Ozawa.

CLINICAL AND EPIDEMIOLOGICAL INVESTIGATIONS

- 4919** Role of Tobacco and Alcoholic Beverages in the Etiology of Cancer of the Oral Cavity/Oropharynx in Torino, Italy. Franco Merletti, Paolo Boffetta, Giovannino Ciccone, Arthur Mashberg, and Benedetto Terracini.
- 4925** Smoking and Infectious Agents and Risk of *in Situ* Cervical Cancer in Sydney, Australia. K. E. Brock, R. MacLennan, L. A. Brinton, J. L. Melnick, E. Adam, P. A. Mock, and G. Berry.
- 4929** Biological Monitoring of Fire Fighters: Sister Chromatid Exchange and Polycyclic Aromatic Hydrocarbon-DNA Adducts in Peripheral Blood Cells. Saou-Hsing Liou, David Jacobson-Kram, Miriam C. Poirier, Dung Nguyen, Paul T. Strickland, and Melvyn S. Tockman.
- 4936** A Case-Control Study of Large Bowel Cancer and Hormone Exposure in Women. Sylvia E. Furner, Faith G. Davis, Richard L. Nelson, and William Haenszel.
- 4941** Altered Tryptophan and Neopterin Metabolism in Cancer Patients Treated with Recombinant Interleukin 2. Raymond R. Brown, Carol M. Lee, Peter C. Kohler, Jaquelyn A. Hank, Barry E. Storer, and Paul M. Sondel.
- 4945** Announcements
AACR Special Conferences in Cancer Research
Future Annual Meetings of the AACR
Collected Perspectives in Cancer Research
International Union against Cancer Fellowships
Calendar of Events
- 4946** Errata
M. Kashani-Sabat *et al.*, 48: 5775-5778, 1988.
S. H. Abou-El-Ela *et al.*, 49: 1434-1440, 1989.
A. Zalatnai and A. V. Schally, 49: 1810-1815, 1989.
- 4947** Employment Register
- 4954** Author Index

NOTE: AACR forms available in the back of this issue--

- Application for Active and Corresponding Membership
- Application for Associate Membership

Cancer Research

VOLUME 49 • NUMBER 17

CONTENTS Arranged by Subject Category

Perspectives in Cancer Research

- 4677 **Papillomaviruses in Anogenital Cancer as a Model to Understand the Role of Viruses in Human Cancers.** Harald zur Hausen.

Review

- 4682 ***ras* Oncogenes in Human Cancer: A Review.** Johannes L. Bos.

BASIC SCIENCES

Biochemistry and Biophysics

- 4724 **Linoleic Acid Metabolism in Metastatic and Nonmetastatic Murine Mammary Tumor Cells.** Robert S. Chapkin, Neil E. Hubbard, Dianne K. Buckman, and Kent L. Erickson.
- 4734 **High Affinity Binding of Estrogen Receptor to Recombinant Plasmids Containing (dA-dC)_n·(dG-dT)_n Sequences.** Thesia Thomas and T. J. Thomas.
- *4859 **Biochemical Analysis of the Role of Transmethylation in the Methionine Dependence of Tumor Cells.** Jean Gabriel Judde, Martha Ellis, and Philip Frost.
- 4913 **Stimulated Rat Liver Mitochondrial Biogenesis after Partial Hepatectomy.** Masato Nagino, Masashi Tanaka, Morimitsu Nishikimi, Yuji Nimura, Hitoshi Kubota, Michio Kanai, Takehito Kato, and Takayuki Ozawa.

Carcinogenesis

- *4705 **Radiation Sensitivity of Cell Strains from Families with Genetic Disorders Predisposing to Radiation-induced Cancer.** John B. Little, Warren W. Nichols, Philip Troilo, Hatsumi Nagasawa, and Louise C. Strong.
- 4721 **Urinary Excretion of *N*¹-Acetylspermidine and Other Acetylated and Free Polyamines in the 1,2-Dimethylhydrazine Model of Experimental Rat Colon Cancer.** Allan G. Halline, Pradeep K. Dudeja, Bret A. Lashner, and Thomas A. Brasitus.
- 4887 **Production of Monoclonal Antibodies to Preneoplastic Liver Cell Populations Induced by Chemical Carcinogens in Rats and to Transplantable Morris Hepatomas.** Harold A. Dunsford and Stewart Sell.
- 4894 **Different Lineages of Chemically Induced Hepatocellular Carcinoma in Rats Defined by Monoclonal Antibodies.** H. A. Dunsford, C. Karnasuta, J. M. Hunt, and S. Sell.

Endocrinology

- *4740 **Paraneoplastic Syndrome of Hypercalcemia and Leukocytosis Caused by Squamous Carcinoma Cells (T3M-1) Producing Parathyroid Hormone-related Protein, Interleukin 1 α , and Granulocyte Colony-stimulating Factor.** Kanji Sato, Yuko Fujii, Terutaka Kakiuchi, Keizo Kasono, Hidehito Imamura, Yukio Kondo, Hiroyuki Mano, Tetsuro Okabe, Shigetaka Asano, Fumimaro Takaku, Toshio Tsushima, and Kazuo Shizume.
- *4758 **Enhanced Growth of an Estrogen Receptor-negative Endometrial Adenocarcinoma by Estradiol in Athymic Mice.** A. Friedl, M. M. Gottardis, J. Pink, D. A. Buchler, and V. C. Jordan.
- *4765 **Differential Ability of Antiestrogens to Stimulate Breast Cancer Cell (MCF-7) Growth *in Vivo* and *in Vitro*.** Marco M. Gottardis, Randall J. Wagner, Ernest C. Borden, and V. Craig Jordan.

- 4780 **Effect of Treatment with Aromatase Inhibitor 4-Hydroxandrostenedione on the Nonhuman Primate Menstrual Cycle.** Angela M. H. Brodie, Janice O. Hammond, Maya Ghosh, Katherine Meyer, and Eugene D. Albrecht.

- *4818 **Tyrosine Protein Kinase Activity of Human Hyperplastic Prostate and Carcinoma Cell Lines PC3 and DU145.** Yves Durocher, Alcide Chapdelaine, and Simone Chevalier.

Immunology

- *4690 **Inhibition of Lymphokine-activated Killer Cell Function by Human Alveolar Macrophages.** Michael D. Roth and Sidney H. Golub.

- 4747 **Afferent and Efferent Specificity in the Induction and Elicitation of Parental Cross-Protective Immunity by an Immunogenic Murine Tumor Variant: Associative Recognition of a Unique Tumor-specific Antigen on Somatic Cell Hybrids.** Stephen J. LeGrue, Honnavara N. Ananthaswamy, and William J. Simcik.

- *4770 ***In Vivo* Antitumor Activity of Anti-CD3-induced Activated Killer Cells.** Yeon-Sook Yun, Myrthel E. Hargrove, and Chou-Chik Ting.

- *4829 **Elimination of Chemoresistant Multiple Myeloma Clonogenic Colony-forming Cells by Combined Treatment with a Plasma Cell-reactive Monoclonal Antibody and a P-Glycoprotein-reactive Monoclonal Antibody.** Alex W. Tong, Jennifer Lee, Ru-Miin Wang, William S. Dalton, Takashi Tsuruo, Joseph W. Fay, and Marvin J. Stone.

- *4842 **Relationship between Cell Membrane Potential and Natural Killer Cell Cytolysis in Human Hepatocellular Carcinoma Cells.** Douglas Stevenson, Richard Binggeli, Roy C. Weinstein, James G. Keck, Min Chan Lai, and Myron J. Tong.

- *4879 **Role of Ligand in Antibody-directed Endocytosis of Liposomes by Human T-Leukemia Cells.** Katherine K. Matthey, Anna M. Abai, Suzanne Cobb, Keelung Hong, Demetrios Papahadjopoulos, and Robert M. Straubinger.

- *4906 **Endocytosis and Degradation of Monoclonal Antibodies Targeting Human B-Cell Malignancies.** Oliver W. Press, Andrew G. Farr, K. Ingrid Borroz, Susan K. Anderson, and Paul J. Martin.

Molecular Biology and Genetics

- *4701 **Altered Expression of Growth-regulated Protooncogenes in Human Malignant Plasma Cells.** Antonio P. Palumbo, Alessandro Pileri, Umberto Dianzani, Massimo Massaia, Mario Boccadoro, and Bruno Calabretta.

- 4715 **Nuclear but not Mitochondrial Genome Involvement in 3-Methylcholanthrene-induced Expression of Tumorigenicity in Mouse Somatic Cells.** Jun-Ichi Hayashi, Hiromichi Yonekawa, and Yusaku Tagashira.

- *4901 **Clonal Immunoglobulin Gene Rearrangements and Normal T-Cell Receptor, *bcl-2*, and *c-myc* Genes in Primary Cutaneous B-Cell Lymphomas.** Domenico Delia, Maria G. Borrello, Emilio Berti, Marco A. Pierotti, Daniela Biassoni, Raffaele Gianotti, Elvio Alessi, Maria G. Rizzetti, Ruggero Caputo, and Giuseppe Della Porta.

* Indicates studies using human-derived material.

Preclinical Pharmacology and Experimental Therapeutics

- 4729 Mechanisms of the *in Vivo* Resistance to Adriamycin and Modulation by Calcium Channel Blockers in Mice. Ming-biao Yin, Issam Bankusli, and Youcef M. Rustum.
- 4752 Novobiocin, Nalidixic Acid, Etoposide, and 4'-(9-Acridinylamino)methanesulfon-*m*-aniside Effects on G₂ and Mitotic Chinese Hamster Ovary Cell Progression. Roy Rowley and Lila Kort.
- *4775 Dependence of Etoposide-induced Cytotoxicity and Topoisomerase II-mediated DNA Strand Breakage on the Intracellular Ionic Environment. Theodore S. Lawrence, Christine E. Canman, Jonathan Maybaum, and Mary A. Davis.
- *4785 Chemosensitivity and Radiosensitivity of Small Cell Lung Cancer Cell Lines Studied by a Newly Developed 3-(4,5-Dimethylthiazol-2-yl)-2,5-diphenyltetrazolium Bromide (MTT) Hybrid Assay. Toyooki Hida, Ryuzo Ueda, Takashi Takahashi, Hiroyoshi Watanabe, Taketoshi Kato, Motokazu Suyama, Takahiko Sugiura, Yutaka Ariyoshi, and Toshitada Takahashi.
- *4791 Enhancement of the Activity of Immunotoxins by Analogues of Verapamil. Robert Pirker, David J. P. FitzGerald, Manfred Raschack, Zimmermann Frank, Mark C. Willingham, and Ira Pastan.
- *4803 Modulatory Potency of the β -Galactoside-specific Lectin from Mistletoe Extract (Iscador) on the Host Defense System *in Vivo* in Rabbits and Patients. Tibor Hajto, Katarina Hostanska, and Hans-Joachim Gabius.
- *4809 Antileukemic Effects of Deferoxamine on Human Myeloid Leukemia Cell Lines. David L. Becton and Barbara Roberts.
- *4824 Induction of HL-60 Leukemia Cell Differentiation by the Novel Antifolate 5,10-Dideazatetrahydrofolic Acid. John A. Sokoloski, G. Peter Beardsley, and Alan C. Sartorelli.
- 4846 Enhanced Sensitivity of the Rat Hepatoma Cell to the Daunorubicin Analogue 4-Demethoxydaunorubicin Associated with Induction of DNA Damage. Karen E. Woods, Amy L. Ellis, Joyce K. Randolph, and David A. Gewirtz.
- *4866 Implications for Therapy of Drug-metabolizing Enzymes in Human Colon Cancer. Kamilia Mekhail-Ishak, Nancy Hudson, Ming-Sound Tsao, and Gerald Batist.

Tumor Biology

- *4696 Alkaline Phosphatase Isozymes in Human Testicular Germ Cell Tumors, Their Precancerous Stage, and Three Related Cell Lines. Marie-Claude Hofmann, Willy Jeltsch, Jolanda Brecher, and Heinrich Walt.
- 4796 Type IV Collagen-mediated Melanoma Cell Adhesion and Migration: Involvement of Multiple, Distinct Domains of the Collagen Molecule. Mary K. Chelberg, Effie C. Tsilibary, Alan R. Hauser, and James B. McCarthy.
- *4813 Relationships among Cell Survival, O⁶-Alkylguanine DNA Alkyltransferase Activity, and Reactivation of Methylated Adenovirus 5 and Herpes Simplex Virus Type 1 in Human Melanoma Cell Lines. K. Maynard, P. G. Parsons, T. Cerny, and G. P. Margison.
- *4835 Directed Migration of Murine and Human Tumor Cells to Collagenases and Other Proteases. Victor P. Terranova, David Maslow, and Gabor Markus.

- 4852 Antigenic Sites in Carcinoembryonic Antigen. Sten Hammarstrom, John E. Shively, Raymond J. Paxton, Barbara G. Beatty, Åke Larsson, Rahul Ghosh, Ole Borner, Franz Buchegger, Jean-Pierre Mach, Pierre Burtin, P. Seguin, Bruno Darboret, F. Degorce, J. Sertour, J. P. Jolu, Abraham Fuks, Holger Kalthoff, Wolff Schmiegel, Rudiger Arndt, Gunter Kloppel, Sabine von Kleist, Fritz Grunert, Klaus Schwarz, Yuji Matsuoka, Masahide Kuroki, Christoph Wagener, Teddy Weber, Akira Yachi, Kohzoh Imai, Noriyuki Hishikawa, and Masayuki Tsujisaki.
- 4870 Expression of Five Cathepsins in Murine Melanomas of Varying Metastatic Potential and Normal Tissues. Fang Qian, Andrew S. Bajkowski, Donald F. Steiner, Shu Jin Chan, and Allen Frankfater.
- *4876 Radiation Response of Vulvar Squamous Cell Carcinoma (UM-SCV-1A, UM-SCV-1B, UM-SCV-2, and A-431) Cells *in Vitro*. Kirsi Pekkola-Heino, Jarmo Kulmala, Seija Grenman, Thomas E. Carey, and Reidar Grenman.

CLINICAL AND EPIDEMIOLOGICAL INVESTIGATIONS

Clinical

- 4941 Altered Tryptophan and Neopterin Metabolism in Cancer Patients Treated with Recombinant Interleukin 2. Raymond R. Brown, Carroll M. Lee, Peter C. Kohler, Jaquelyn A. Hank, Barry E. Storer, and Paul M. Sondel.

Epidemiological

- 4919 Role of Tobacco and Alcoholic Beverages in the Etiology of Cancer of the Oral Cavity/Oropharynx in Torino, Italy. Franco Merletti, Paolo Boffetta, Giovannino Ciccone, Arthur Mashberg, and Benedetto Terracini.
- 4925 Smoking and Infectious Agents and Risk of *in Situ* Cervical Cancer in Sydney, Australia. K. E. Brock, R. MacLennan, L. A. Brinton, J. L. Melnick, E. Adam, P. A. Mock, and G. Berry.
- 4929 Biological Monitoring of Fire Fighters: Sister Chromatid Exchange and Polycyclic Aromatic Hydrocarbon-DNA Adducts in Peripheral Blood Cells. Saou-Hsing Liou, David Jacobson-Kram, Miriam C. Poirier, Dung Nguyen, Paul T. Strickland, and Melvyn S. Tockman.
- 4936 A Case-Control Study of Large Bowel Cancer and Hormone Exposure in Women. Sylvia E. Furner, Faith G. Davis, Richard L. Nelson, and William Haenszel.

* * *

4945 Announcements

AACR Special Conferences in Cancer Research
Future Annual Meetings of the AACR
Collected Perspectives in Cancer Research
International Union Against Cancer Fellowships
Calendar of Events

4946 Errata

M. Kashani-Sabat *et al.*, 48: 5775-5778, 1988.
S. H. Abou-El-Ela *et al.*, 49: 1434-1440, 1989.
A. Zalatnai and A. V. Schally, 49: 1810-1815, 1989.

4947 Employment Register

4954 Author Index

NOTE: AACR forms available in the back of this issue--
• Application for Active and Corresponding Membership
• Application for Associate Membership

Cancer Research

The Journal of Cancer Research (1916–1930) | The American Journal of Cancer (1931–1940)

49 (17)

Cancer Res 1989;49:4677-4953.

Updated version Access the most recent version of this article at:
<http://cancerres.aacrjournals.org/content/49/17.citation>

E-mail alerts [Sign up to receive free email-alerts](#) related to this article or journal.

Reprints and Subscriptions To order reprints of this article or to subscribe to the journal, contact the AACR Publications Department at pubs@aacr.org.

Permissions To request permission to re-use all or part of this article, use this link <http://cancerres.aacrjournals.org/content/49/17.citation>. Click on "Request Permissions" which will take you to the Copyright Clearance Center's (CCC) Rightslink site.