CURRICULUM VITAE

Date: Sep, 2010

NAME: Edna Cukierman

EDUCATION:

Technion-Israel Institute of Technology, B.S., Biology,	1991
Technion-Israel Institute of Technology. M.Sc., Biochemistry	1993
Technion-Israel Institute of Technology. Ph.D., Molecular and Cell Biology	1997

PROFESSIONAL EXPERIENCE:

Teaching Assistant at the Technion-Israel Institute of Technology	1991-1997
Postdoctoral Fellow, NIH/National Institute of Dental and Craniofacial Research, Craniofacial Developmental Biology and Regeneration Branch (Mentor- Dr. Kenneth M. Yamada)	1997-2002
Associate Member, Institute for Cancer Research, Fox Chase Cancer Center, Philadelphia, PA (September 2002- June 2009)	2002-2009
Adjunct Associate Professor, Drexel University School of Medicine, Philadelphia, PA	2008-date
Associate Professor with Tenure, Institute for Cancer Research, Fox Chase Cancer Center, Philadelphia, PA (Started July 2009)	2009-date
Adjunct Associate Professor, Faculty of Health Sciences Ben-Gurion University of the Negev in Israel.	2009-date

FELLOWSHIPS, HONORS, AWARDS:

The Dean's List of the Faculty of Biology (Technion Institute of Technology)	1989
The Dean's List of the Faculty of Biology (Technion Institute of Technology)	1990
Fellowship from the government of Israel	1988-1990
Feldman Fellowship	1990-1993
Fund of the Technion Institute of Technology Fellowship	1993-1997
Fogarty International Center, Fellowship for postdoctoral training at the NIH	1997-2002
Fellows Award for Research Excellence at the NIH	2002
National Pancreas Foundation Award	2004-2005
AACR Career Development Award	2004-2006
Nikon Small World Competition (Image Distinction Award)	2005
W.W. Smith Charitable Trust Award	2005-2008
Olympus BioScapes Digital Imaging Competition (Honorable Mention Award)	2006
AACR Career Development Award (continuation from 2004)	2006-2007

SOCIETIES:

The American Society for Cell Biology	2000-date
American Association for Cancer Research	2004-date
International Cancer Microenvironment Society	2007-date
American Gastroenterological Association	2010-date

ADVISORY BOARDS / REVIEW PANELS:

NIH's development of the first artificial Salivary Gland Consultant in Cell Biology.	1997-2003
Israel Science Foundation Academic and Executive Boards Scientific Reviewer. (ad hoc).	2005
DOD's Breast Cancer Research Program, Scientific Reviewer New and Synergistic Idea grants, Cell Biology-2 panel. (Member).	2006-2009
DOD's Breast Cancer Research Program, Scientific Reviewer Concept Idea grants (ad hoc).	2007
North Carolina Biotechnology Center, Scientific Reviewer, Biotechnology Research Grant Program. (ad hoc).	2007
ACS's Cell Structure and Metastasis Committee, Scientific Reviewer (Permanent Member since January 2010).	2007-date
Drexel University College of Medicine, Ph.D. Program Advisor in the Faculty Committee; Keneshia Turner (Dr. Reginato, mentor).	2007-date
NIH/NCI's Tumor Micro Environment Study Section, Scientific Reviewer (ad hoc).	2008
NIH's Diversity Pre-doctoral Fellowship Study Section, Scientific Reviewer (ad hoc).	2008
Canadian Breast Cancer Foundation – Ontario, Canada Panel for Research Project Grant Programs, Scientific Reviewer. (ad hoc).	2009
Drexel University College of Medicine, Ph.D. Program Advisor in the Faculty Committee; Diane M. Keene (Dr Lelkes, mentor).	2009-date
Italian Association for Cancer Research, Preferred Reviewer (Member)	2009-date
NIH/NCI's Tumor Progression and Metastasis Study Section, Scientific Reviewer (ad hoc)	2009-date
DOD's Ovarian Cancer Research Program OC-3, Scientific Reviewer (ad hoc)	2009
Author-in-Chief to Springer Reference Live: Cancer Encyclopedia of Cancer	2009-date
University of Pennsylvania, School of Medicne, Ph.D. Program Advisor in the Faculty Committee; Gabrielle. Wong (Dr. Rustgi, mentor).	2009-date
Hebrew University Jerusalem Israel, Ph.D. Program. Graduate Thesis Reviewer; Nilly Shimony (Drs Panet and Haviv, mentors).	2009
NIH/NCI's F09 Fellowship Panel Study Section, Scientific Reviewer (ad hoc)	2009
AACR's Tumor Microenvironment Subcommittee/ Tumor Biology Section Annual Meeting 2010 Program Committee (Member)	2009-2010
DOD's Breast Cancer Review Panel/Concept Awards MBG-3, Scientific Reviewer (ad hoc)	2010

Florida Department of Health, Scientific Reviewer (Member) James & Esther King Biomedical and Bankhead-Coley Cancer Research Program	2010-date
DOD's Breast Cancer Research Program, Scientific Reviewer "Functional Study of Biological Molecules," Idea Awards (CBY#5, ad hoc).	2010
Ben-Gurion University of the Negev in Israel Scientific Consultant to evaluate a putative Associate Professorship promotion at the department of Clinical biochemistry.	2010

Fox Chase Activities/Committees

Tumor Cell Biology Working Group (Member) Chaired by J. Chernoff	2002-date
Signal Transduction Interest Group (Member) Initiative of Dr. E. Golemis	2002-date
Faculty Committee Oversight of Russian Graduate Student Nina Makhortova	2003-2007
Pancreatic Cancer Interest Group (Member) Initiative of Dr. N. Meropol	2003-date
Breast Cancer Research Program (Collaborating Member) Chaired by Dr. L. Goldstein	2003-date
FCCC-Russian State Medical University Sister Institution Program, (Member)	2004-date
Faculty Committee Oversight of Russian Graduate Student Yuliya V. Skorobogatko	2004
Cell Imaging Facility, Oversight Committee (Member)	2004-date
10th Annual Postdoctoral Day (Organizer)	2005
Faculty Committee Oversight of Russian Graduate Student Andrey Parkhitko.	2006-date
Ovarian Cancer Research Program (Collaborating Member) Chaired by Drs. T. Hamilton and A. Godwin.	2006-date
Junior Faculty at FCCC Advisor Committee (Adjunct Member) Initiative of Dr. E. Golemis	2007-2008
Ben Gurion University Collaborative Effort (participant)	2007-2009
Keystone Program in Personalized Kidney Cancer Therapy (Member) Chaired by Drs. Hudes, Testa and Uzzo	2008-date
Institutional Biosafety Committee, (Member)	2008-date
Gynecologic Cancer Therapeutic Trials (GCTT) Working Group (Member)	2008-date
Cancer Biology Program (Primary Member) Chaired by Drs. J. Chernoff and J. Testa.	2009-date
Molecular Translational Medicine Program (Secondary Member) Chaired by Drs. E. Golemis, R. Cohen, and G. Adams.	2009-date
Women's Cancer Program (Secondary Member) Chaired by Drs. L. Goldstein and A. Godwin.	2009-date
Ben Gurion University Collaborative Effort (Co-organizing Member at FCCC)	2009-date
Faculty Committee Oversight of Russian Graduate Student Andrey Gorin.	2010-date

AD HOC REVIEWER FOR:

Acta Biomaterialia. American Journal of Pathology. Biomoacromolecules. Bio-Techniques. BMC Cancer. Cancer Cell International. Cancer Microenvironment. Cancer Research. Cancer Treatment Reviews. Carcinogenesis. Cell Biochemistry and Biophysics. Cellular and Molecular Biology. Clinical Cancer Research. European Journal of Biochemistry. Food and Bioproducts Processing. Integrative Biology. Journal of Anatomy. Journal of Cell Biology. Journal of Cell Science. Journal of Clinical Investigation. Journal of Controlled Release. Journal of Cytotechnology. Journal of Mammary Gland Biology and Neoplasia. Journal of Molecular, Cellular, and Biochemical Toxicology. Molecular Biology of the Cell. Molecular Cancer. Molecular Cancer Research. Molecular Carcinogenesis. Molecular Cell Biology. Nature Cell Biology. Nature Methods. Science.

RESEARCH INTERESTS:

The research interests of my laboratory focus on the study of "three- dimensional matrix adhesions" (3D-adhesions). The investigative effort includes a review of interactions among cells and the extracellular matrix, together with the structure, function, dynamics, and signal transduction of *in vivo* cell-matrix adhesions. It consists of studies of the implication of the natural fibroblastic 3D microenvironment progression due to tumor development in a bi-directional exchange of information at cell-matrix contacts like the 3D-adhesions. I have developed a primary fibroblast-derived and *in vivo*-like 3D system that mimics stroma progression. We use this 3D system to investigate both the mechanisms of matrix induced myofibroblastic differentiation (e.g., desmoplastic activation) and the tumor-associated matrix induced permissiveness that promotes tumorigenesis, especially tumor cell invasion. The stroma progressive 3D system also serves as basis for a platform investigating tumor-associated matrix induced drug responsiveness. All studies incorporate biochemical and cell-based assays, as well as laser scanning confocal immunofluorescence, real time multi-channel microscopy, digital imaging analyses, and tissue patterning approaches.

PUBLICATIONS:

Peer-Reviewed Publications

Cassel, D., Shouvi, S., Glusman, G., **Cukierman, E**., Rotman, M., Zilberstein, D. Leishmania donovani: characterization of a 38 kDa membrane protein that cross-reacts with the mammalian G-protein transducin. *Exp. Parasitol.* **72**:411-417, 1991.

Makler, V., **Cukierman, E**., Rotman, M., Admon, A., Cassel, D. ARF-directed GTPase activating protein: purification and partial characterization. *J. Biol. Chem.* **270**:5232-5237, 1995.

Cukierman, E., Huber, I., Rotman, M., Cassel, D. The ARF GTPase activating protein: Zinc finger motif and Golgi complex localization. *Science.* **270**:1999-2001, 1995.

Poon, P., Wang, X., Rotman, M., Huber, I., **Cukierman, E**., Cassel, D., Singer, R.A., Johnston, G.C. Saccharomyces cerevisiae Gcs1 is an ADP-ribosylation factor GTPase-activating protein. *Proc. Natl. Acad. Sci.* **93**:10074-10077, 1996.

Aoe, T., **Cukierman, E**., Lee, A., Cassel, D., Peters, P. J., Hsu, V. W. The KDEL receptor, ERD2, regulates membrane traffic by recruiting a GTPase-activating protein for ARF1. *EMBO J.* **16**:7305-7316, 1997.

*Huber, I., ***Cukierman, E**., Rotman, M., Aoe, T., Hsu, V. W., Cassel, D. Requirement for both the amino-terminal catalytic domain and a noncatalytic domain for in vivo activity of ADP-ribosylation factor GTPase-activating protein. *J. Biol. Chem.* **273**:24786-24791, 1998 (*Contributed equally).

Wang, S., **Cukierman, E.**, Swaim, W.D., Yamada, K.M., Baum, B.J. Extracellular matrix protein-induced changes in human salivary epithelial cell organization and proliferation on a model biological substratum. *Biomaterials* **20**:1043-1049, 1999.

Aframian, D.J., **Cukierman, E.**, Nikolovski, J., Mooney, D.J., Yamada, K.M., Baum, B.J. The growth and morphological behavior of salivary epithelial cells on matrix protein-coated biodegradable substrata. *Tissue Eng.* **6**:209-216, 2000.

Pankov, R., **Cukierman, E.**, Katz, B.-Z., Matsumoto, K., Lin, D.C., Lin, S., Hahn, C., Yamada, K.M. Integrin dynamics and matrix assembly: Tensin-dependent translocation of $\alpha_5\beta_1$ integrins promotes early fibronectin fibrillogenesis. *J. Cell Biol.* **148**:1075-1090, 2000. (Cover article)

Aframian, D.J., Zheng, C., Goldsmith, C.M., Nikolovski, J., **Cukierman, E.**, Yamada, K.M., Mooney, D.J., Birkedal-Hansen, H., Baum, B. J. Using HSV-thymidine kinase for safety in an allogeneic salivary graft cell line. *Tissue Eng.* **7**:405-413, 2001.

Cukierman, E., Pankov, R., Stevens, D.R., Yamada, K.M. Taking cell-matrix adhesions to the third dimension. *Science*. **294**:1708-1712, 2001. (Featured in Faculty 1000)

Aframian, D.J., Redman, R.S., Yamano, S., Nikolovski, J., **Cukierman, E**., Yamada, K.M., Kriete, M.F., Swaim, W.D., Mooney, D.J., Baum, B.J. Tissue compatibility of two biodegradable tubular scaffolds implanted beneath the skin of buccal mucosa in mice. *Tissue Eng.* **8**:649-659, 2002.

Aframian, D.J., Tran, S.D., **Cukierman, E.**, Yamada, K.M., Baum, B.J. Absence of tight junction formation in an allogeneic graft cell line used for developing an artificial salivary gland. *Tissue Eng.* **8**:871-878, 2002.

Engelholm, L. H., List, K., Netzel-Arnett, S., **Cukierman, E.,** Mitola, D.J., Aaronson, H., Kjøller, L., Jørgen K. L., Yamada, K. M., Strickland, D. K., Holmbeck, K., Danø, K., Birkedal-Hansen, H., Behrendt, N., Bugge, T. H. uPARAP/Endo180 is essential for cellular uptake of collagen and promotes fibroblast collagen adhesion. *J. Cell Biol.* **160**:1009-1015, 2003.

Pankov, R., **Cukierman, E.,** Clark, K., Matsumoto, K., Hahn, C., LaFlamme, S. E., Poulin, B., Yamada, K. M. Specific β_1 integrin site selectively regulates Akt/PKB signaling via local activation of PP2A. *J. Biol. Chem.* **278**:18671-18681, 2003.

Zajaczkowski, M.B., **Cukierman, E.**, Galbraith, C.G., Yamada, K.M. Cell-matrix adhesions on poly(vinyl alcohol) hydrogels. *Tissue Eng.* **9**:525-33, 2003.

Katz, B.-Z., Romer, L., Miyamoto, S., Volberg, T., Matsumoto K., **Cukierman, E.,** Geiger, B., and Yamada, K. M. Targeting membrane-localized FAK to focal adhesions: Roles of tyrosine phosphorylation and Src family kinases. *J. Biol. Chem.* **278**:29115-29120**,** 2003.

Einarson, M.B., **Cukierman, E.,** Compton, D.A., Golemis, E.A. Human enhancer of invasion-cluster, a coiled-coil protein required for passage through mitosis. *Mol. Cell Biol.* **24**:3957-3971, 2004. (Cover article)

Amatangelo, M.D., Bassi, D.E., Klein-Szanto, A.J., **Cukierman, E**. Stroma-derived 3D matrices are necessary and sufficient to promote desmoplastic differentiation of normal fibroblasts. *Am. J. Pathol*. **167**:475-488, 2005. (Featured in Faculty 1000)

Johnson, J.E., Varkonyi, R.J., Schwalm, J., Cragle, R., Klein-Szanto, A., Patchefsky, A., **Cukierman, E.,** von Mehren, M., Broccoli, D. Multiple mechanisms of telomere maintenance exist in liposarcomas. *Clin. Can. Res.*, **11**:5347-5355, 2005.

Bassi, D.E., Lopez DeCicco, R., Cenna, J., Litwin, S., **Cukierman, E.**, Klein-Szanto, A.J. PACE4 expression in mouse basal keratinocytes results in basement membrane disruption and acceleration of tumor progression. *Cancer Res*. **65**:7310-7319, 2005.

Pankov, R., Endo, Y., Even-Ram, S., Araki, M., Clark, K., **Cukierman, E.**, Matsumoto, K., Yamada, K.M. A Rac switch regulates random versus directionally persistent cell migration. *J. Cell Biol.* **170**:793-802, 2005. (Cover article and Featured in Faculty 1000)

Okawa, T., Michaylira, C. Z., Kalabis, J., Stairs, D. B., Nakagawa, H., Andl, C., Johnstone, C. N., Klein-Szanto, A. J., El-Deiry, W. S., **Cukierman, E**, Herlyn M, Rustgi AK. The functional interplay between EGFR overexpression, hTERT activation and p53 mutation in esophageal epithelial cells with activation of stromal fibroblasts induce tumor development, invasion and differentiation. *Genes Dev.,* **21**:2788-2803, 2007. PMCID: PMC2045132

Damianova, R., Stefanova, N. **Cukierman, E**. Momchilova, A. Pankov, R. Three-dimensional matrix induces sustained activation of ERK1/2 via Src/Ras/Raf signaling pathway. *Cell Biol. Int.,* **32**:229-234, 2008. (Accepted prior to April 2007)

Quiros, RM., Valianou, M., Kwon, Y., Brown, KM., Godwin, AK., and **Cukierman, E**. Ovarian normal and tumor-associated fibroblasts retain *in vivo* stromal characteristics in a 3-D matrix-dependent manner. *Gynecologic Oncology.*, **110**:99-109, 2008. PMCID: PMC2612536

Serebriiskii, I., Castelló-Cros, R., Lamb, A., Golemis, EA., **Cukierman, E**: Fibroblast-derived 3D matrix differentially regulates the growth and drug-responsiveness of human cancer cells. *Matrix Biol.*, **27:**573-585, 2008. PMCID: PMC2603546

Castelló-Cros R, Khan DR, Simons J, Valianou M, **Cukierman E**: Staged stromal extracellular 3D matrices differentially regulate breast cancer cell responses through PI3K and beta1-integrins. *BMC Cancer*, 9:94, 2009. PMCID: PMC2669806.

Bassi DE, Zhang J, Cenna J, Litwin S, **Cukierman E**, Klein-Szanto A: Proprotein Convertase Inhibition Results in Decreased Skin Cell Proliferation, Tumorigenesis, and Metastasis. *Neoplasia* **12**(7):516-26, 2010. PMCID: PMC2907578.

Goicoechea SM, Bednarski B, Stack C, Cowan DW, Volmar K, Thorne L, **Cukierman E**, Rustgi AK, Brentnall T, Hwang RF *et al*: Isoform-specific upregulation of palladin in human and murine pancreas tumors. *PLoS ONE* **5**(4):e10347. 2010. PMCID: PMC2859948.

SOLICITED REVIEWS & TECHNICAL ARTICLES:

Reviews:

Baum, B.J., Wang, S., **Cukierman, E**., Delporte, C., Kagami, H., Marmary, Y., Fox, P.C., Mooney, D.J., Yamada, K. M. Re-engineering the functions of a terminally differentiated epithelial cell *in vivo*. *Bioartificial Organs II.* (Annals. N.Y. Acad. Sci.) **875**:294-300, 1999.

Cukierman, E., Pankov, R., Yamada, K.M. Cell interactions with three-dimensional matrices. *Curr. Opin.Cell Biol.* **14**:633-640, 2002. (Cover Review, the cover image was requested and is featured in the new edition of Cancer Biology by Robert A. Weinberg).

Yamada, K.M., Pankov, R., **Cukierman, E**. Dimensions and dynamics in integrin function. *Brazilian J. Med. Biol. Res.* **36**: 959-966, 2003.

Cukierman, E. A visual-quantitative analysis of fibroblastic stromagenesis in breast cancer progression. *J. Mammary Gland Biol. Neoplasia* **9**:311-324, 2004.

Beacham, D.A., **Cukierman, E.** Stromagenesis: the changing face of fibroblastic microenvironments during tumor progression. *Semin. Cancer Biol.* **15**:329-341, 2005.

Cukierman, E. Tumour development due to stroma permissiveness. *J. Biosci* **30**:551-552, 2005.

Yamada, K. M**., Cukierman, E**. Modeling tissue morphogenesis and cancer in 3D. *Cell*. **130**:601-610, 2007. (Accepted prior to April 2007)

Cukierman, E., Khan, D. R. The benefits and challenges associated with the use of drug delivery systems in cancer therapy. *Biochem. Pharm* **1;80**(5):762-770, 2010. PMCID: PMC2897922.

Cukierman E, Bassi DE: Physico-mechanical aspects of extracellular matrix influences on tumorigenic behaviors. *Semin. Can Biol.* 2010, in press.

Book Chapters:

Huber, I., Rotman, M., Pick, E., Makler, V., Rothem, L., **Cukierman, E.**, Cassel, D. Expression, purification, and properties of ADP-ribosylation factor (ARF) GTPase activating protein-1. In: Regulation and Effectors of Small GTPases, Part E: GTPases Involved in Vesicular Traffic. (Balch, W.E., Der, Channing, J., Hall, A. eds.). vol. 329, pp. 307-316, Methods Enzymol. Academic Press, San Diego, CA, 2001.

Huber, I., **Cukierman, E.**, Rotman, M., Cassel, D. ARF GTPase-activating protein 1. In: GTPase Protocols: The Ras Superfamily (Manser, E., Leung, T. eds.) vol. 189, pp. 199-206. Methods Mol. Biol. Humana Press, Totowa, NJ, 2002.

Cukierman, E. Preparation of extracellular matrices produced by cultured fibroblasts. In: Current Protocols in Cell Biology (Bonifacino, J.S., Dasso, M., Lippincott-Schwartz, J., Harford, J.B., Yamada, K.M., eds.), pp. 10.9.1-10.9.14. John K. Wiley & Sons, New York, NY, 2002.

Cukierman, E. Cell migration analyses within fibroblast-derived 3D matrices. In: Cell Migration in Development. (Guan, J., ed.), vol. 294, pp. 79-93. Methods Mol. Biol. Humana Press, Totowa, NJ, 2004.

Beacham, D.A., Amatangelo, M.D., **Cukierman, E.** Preparation of extracellular matrices produced by cultured and primary fibroblasts. (Bonifacino, J.S., Dasso, M., Lippincott-Schwartz, J., Harford, J.B., Yamada, K.M., eds.) pp. 10.9.1-10.9.21. John K. Wiley & Sons, New York, NY, 2007.

Cukierman, E. Three-dimensional tumor-associated stromal system; preparation of extracellular matrices produced by immortalized and primary fibroblasts. Publication for the 2007 Summer School on Nanobiology of the Center for Functional Nanostructures. In press. Bad Herrenalb Germany, August, 19th – 23rd 2008

Cukierman, E. Stromagenesis. In: Encyclopedia of Cancer. (M. Schwab, ed.), pp 2843-2845. Springer, Heidelberg/Germany, 2009.

Castelló-Cros R, **Cukierman E**: Stromagenesis during tumorigenesis: characterization of tumor-associated fibroblasts and stroma-derived 3D matrices. In: Methods Mol Biol / Extracellular Matrix Protocols. Edited by Even-Ram S, Artym V, vol. 522, 2nd edn. Totowa, NJ,: Humana Press; 2009: 1-31 (275-305).

INVITED LECTURES:

NHLBI, NIH. Branch Seminar Series. Sponsored by Dr. Warren Leonard, 1996. Bethesda, MD, USA.

NIDCR, NIH. Branch Seminar Series. Sponsored by Dr. Hynda Kleinman, 1996. Bethesda, MD, USA.

Lombardi Cancer Center, Georgetown University Medical Center. Seminar series. Sponsored by Dr. Susette Mueller, 2001. Washington, DC, USA.

2nd International Conference on Tumor Microenvironment Progression, Therapy & Prevention. Podium Speaker. Sponsored By Dr. Israel Vlodavsky. Tel-Aviv, 2001 (canceled).

NIDCR, NIH. Branch Seminar Series. Sponsored by Dr. Silvio Gutkind, 2001. Bethesda, MD, USA.

Fox Chase Cancer Center. Recruiting Committee Seminar Series. Sponsored by Dr. Jonathan Chernoff, January 2002. Philadelphia, PA, USA.

Technion-Israel Institute of Technology, Department of Biology. Recruiting Committee Seminar Series. Sponsored by Dr. Rami Sherf, February, 2002. Haifa, Israel.

Weizmann Institute of Science, Department of Molecular Cell Biology. Recruiting Committee Seminar Series. Sponsored by Prof. B. Geiger, February 2002. Rehovot, Israel.

Technion-Israel Institute of Technology, School of Medicine. Recruiting Committee Seminar Series. Sponsored by Dr. Israel Vlodavsky, February 2002. Haifa Israel.

The Wistar Institute. Laboratory Seminar series. Sponsored by Professor Meenhard Herlyn, July 21, 2003. Philadelphia, PA, USA.

Johns Hopkins University, Department of Biomedical Engineering. BME Seminar Series. Sponsored by Dr. Jennifer Elisseeff, November 14, 2003. Baltimore, MD, USA.

University of Pennsylvania, Department of Pharmacology. Seminar Series. Sponsored by Dr. David Boettiger, January 24, 2005. Philadelphia, PA, USA

Keystone Meeting "The Role of Microenvironment in Tumor Induction and Progression" Podium Speaker. Sponsored by Dr. Mina Bissell. February 5-10, 2005. Banff, Alberta, Canada.

NIDCR, NIH. CDBRB, Branch Seminar Series. Sponsored by Dr. Hynda Kleinman, December 8, 2005. Bethesda, MD, USA.

Tufts University, Department of Anatomy & Cell Biology. Department Seminar Series. Sponsored by Dr. Carlos Sonnenschein, March 8, 2006. Boston, MA, USA.

The Wistar Institute, Tumor Microenvironment Interest Group Seminar series. Sponsored by Professors Ellen Pure and Meenhard Herlyn, August 7, 2006. Philadelphia, PA, USA.

University of Pennsylvania, Gastroenterology Division. Seminar series. Sponsored by Dr. Jon Lynch, October 26, 2006. Philadelphia, PA, USA.

University of Pennsylvania School of Medicine. Muscle Institute's Seminar Series. Sponsored by Prof. Dennis Discher, December 4, 2006. Philadelphia, PA, USA.

Ben Gurion University, Shraga Segal Memorial Conference. Podium Speaker. Sponsored by Dr. Ron Apte, February 6, 2007. Ber Sheva Israel,

4th International Conference on Tumor Microenvironment: Progression Therapy and Prevention. Podium Speaker. Sponsored by Professor Isaac Witz, March 6-10, 2007 Florence, Italy.

University of California, San Francisco. Comprehensive Cancer Center/Pancreatic Cancer Research Group Seminar Series. Sponsored by Drs. Martin McMahon and Margaret Tempero. May 07, 2007. California, SF, USA.

Universität Karlsruhe, Center for Functional Nanostructures. Nanobiology Summer School. Selected Speaker. Sponsored by Professor Martin Bastmeyer, August 19-23, 2007. Bad Herrenalb, Germany.

Georgetown University School of Medicine. Tumor Biology Training Program's Visiting Professorship Seminar Series. Sponsored by Drs. Robert Clarke and Claudine Isaacs. October 26, 2007. Washington DC, USA.

New Jersey Medical School. Department of Pathology and Laboratory Medicine, Seminar Series Sponsored by Dr. Marion Cohen. November 29, 2007. Newark, NJ, USA.

Drexel University, Department of Biochemistry Seminar Series. Sponsored by Dr. Mauricio Reginato. December 10, 2007. Philadelphia PA, USA.

Gordon Conference "Signal Transduction by Engineered Extracellular Matrices." Podium Speaker. Sponsored by Drs. Molly S. Shoichet and Christopher Chen, July 2008. Bates College in Lewiston, Maine, USA.

Ovarian Cancer Research Fund Meeting. Podium Speaker, July 19, 2008. Chicago, IL, USA
NIDCR, NIH. Oral and Pharyngeal Cancer Branch Seminar series. Sponsored by Dr. Silvio Gutkind. September 24, 2008. Bethesda MD, USA
Ohio State University Medical Center. Department of Pathology and Tumor Microenvironment Program Seminar series. Sponsored by Drs. Steve Qualman and Michael Ostrowski. October 1, 2008. Columbus, OH USA.
Keystone Meeting "Extrinsic Control of Tumor Genesis and Progression" Podium Speaker. Sponsored by Drs. Thea D. Tlsty and Mary J.C. Hendrix. March 15-20, 2009. Vancouver, British Columbia.
Wound Healing Society National Meeting 2009. "Micro-environment: Wound vs. Cancer." Plenary Session, Podium Speaker. Invited by Dr. Tai-Lan Tuan, April 26-29, 2009. Dallas, Texas, USA.
Abbott Laboratories. Institute's Seminar Series. Sponsored by Vivek C. Abraham, Ph.D. August 2009. Abbott Park , IL.
Swiss Federal Institute of Technology (ETH Zurich). BioInterface Group, Laboratory for Surface Science and Technology Department of Materials. Departmental Seminar series. Sponsored by Dr. Marcus Textor, Ph.D. March 22 and 23, 2010. Zurich, Switzerland.
Centocor Research & Development, Inc. Ortho Biotech Oncology's Seminar series. Sponsored by Dr. Deborah Marshall Ph.D. June 23, 2010. King of Prussia Radnor, PA.
Gordon Conference "Signal Transduction by Engineered Extracellular Matrices." Session Chair. Sponsored by Drs. Christopher Chen and Karen Hirschi, June-July 2010. University of New England in Biddeford, Maine, USA.
University of Massachusetts Medical School, Cancer Biology Program Seminar Series. Sponsored by Dr. Lucia Languino. December 7, 2010. Worcester, MA USA. Postponed by the organizers due to logistic problems.
Temple University, Department of Biochemistry together with the Fels Institute for Cancer Research joint Seminar Series. Sponsored by Dr. Ana Gamero, December 6, 2010. Philadelphia, PA.
Thomas Jefferson University, Jefferson Medical College, Department of Surgery Seminar Series. Sponsored by Dr. Susan Lanza-Jacoby, March 3. 2011. Philadelphia PA.
The 6th International Conference on Microtechnologies in Medicine and Biology (MMB 2011). "Keynote Lecture." Sponsored by Dr. Shuichi Takayama, May 4-6, 2011. Lucerne, Switzerland.

GRANT SUPPORT:

<u>Ongoing Research Support</u>

RO1 CA113451 (PI: Cukierman) 07/01/2006 – 05/30/2011
NIH/NCI
3D-adhesion Stromagenesis in Cancer Permissiveness
The major goals of this project are: 1) Determine the progressive changes in stromal fibroblasts and their ECMs that are associated with tumor development; 2) Determine the changes in fibroblastic signal transduction during stroma activation; and 3) Determine the regulatory effects of stromal fibroblasts and their ECMs on epithelial tumor behavior.
Role: Principal Investigator

Kidney Keystone - Pilot Project (PI: Cukierman) 07/01/2008 – 06/30/2013
A study of renal primary and secondary tumor-associated stroma
The major goal of this project is to establish and characterize a human primary and secondary 3D renal-stroma system.
Role: Principal Investigator

Ewing Trust, Pancreatic Cancer (PI: Cukierman) 09/01/2007 – 05/31/2010
Pancreatic stroma progression: microenvironmental-induced tumorigenesis.
This study will test whether a model of pancreatic tumor-associated 3D matrices can induce normal to tumor-associated phenotypes in normal fibroblasts and will measure tumor-associated 3D matrix permissiveness in pancreatic tumor progression.
Role: Principal Investigator

Ovarian Cancer Research Fund Program project (OCRF) (PI: Godwin) 10/01/2005 – 09/30/2011
Therapeutic targeting of the tumor microenvironment in ovarian cancer
The major projects of this grant application are: 1) The Role of Extracellular Environment in Regulating Drug Response in Ovarian Cancer. 2) The Role of uPA Activation and Basement Membrane Remodeling in Ovarian Surface Epithelial Transformation. 3) Molecular Characterization of Ovarian Stromal/Epithelial/ECM Interactions.
Role: Co-Principal Investigator

Completed Research Support

R21 CA109442 NCI (PI: Cukierman) 09/07/2004 – 08/31/2007
Primed Stroma: A Tumor Permissive Microenvironment
The major goals of this R21 grant were: 1) Characterize the biochemical and architectural properties of 3D matrices derived from normal, primed, and activated stroma fibroblasts; and 2) Assess the 3D stroma permissiveness in cancer cell progression.
Role: Principal Investigator

Susan G. Komen Foundation grant (PI: Maffini, Tufts) 05/01/2006 – 04/30/2008
The tumor suppressing effect of pregnancy: can the mammary stroma do the job?
Given the new evidence regarding the role of the stroma in suppressing tumor formation in parous rats, we propose to use a new model system that will allow us to study the effect of pregnancy-associated hormones locally in the mammary stroma.
Role: Collaborator at FCCC
This project is a subcontract to Tufts University

W.W. Smith Charitable Trust (PI: Cukierman) 11/01/2005 – 12/31/2008
3D Matrix Cultures for Better Anti-Metastic Drug Screening
The goal of this project is to improve the preclinical cancer drug development process.
Role: Principal Investigator

AACR (PI: Cukierman) 07/01/2006 – 06/30/2007
The Role of Progressive Stroma Signaling in Cancer Permissiveness
The major goal of this Career Development Award in Basic Cancer Research was to develop a 3D matrix-based novel high throughput system, which will score tumor cell invasiveness.

Role: Principal Investigator

NCI/NIH Ovarian SPORE Pilot Project (PI:Cukierman) 06/01/2006 – 05/31/2007
Ovarian stroma progression; targeting the tumor microenvironment.
Aimed to investigate whether previous *in vitro* observations could be validated through multi-protein labeling tumor specimens from women with ovarian cancer, as well as to test whether matrices derived from human fibroblasts at different stages of tumor progression, could differentially induce ovarian tumorigenesis.
Role: Principal Investigator

Ewing Trust, Pancreatic Cancer (PI Cukierman) 09/01/2005 – 08/31/2006
An *in vivo*-like 3D system to study stroma permissiveness in pancreatic neoplasia
This study was based on effort to develop a human staged pancreatic stromagenic 3D system.
Role: Principal Investigator
AACR (PI: Cukierman) 07/01/2004 – 06/30/2006
In Vivo-Like 3D System to Assess Stroma Permissiveness in Tumor Cell Invasion
The major goal of this award was to develop a 3D matrix-based novel high throughput system, which will score tumor cell invasiveness and will assess effectiveness of cancer drugs in metastases.
Role: Principal Investigator

NCI/NIH Ovarian SPORE Pilot Project (PI: Cukierman) 04/01/2005 – 05/31/2006
The three-dimensional signaling pathway and its implication on the study of ovarian cancer
Aimed to utilize ovarian cancer-associated fibroblasts to produce 3D matrices. The matrices were used as a model system to study stromagenic cancer permissiveness in ovarian cancer.
Role: Principal Investigator

National Pancreas Foundation (PI: Cukierman) 05/01/2004 – 04/30/2005
A Pilot Study to Model the Role of Fibroblasts in the Extracellular Matrix of Patients with Pancreatic Cancer.
This pancreas cancer project proposed to utilize fine needle aspirates of pancreatic cancer of patients to establish a human stromagenic 3D system for the study of pancreatic cancer permissiveness.
Role: Principal Investigator

Tobacco Formula Research Fund Grant (PI: Leedy) 01/01/2003 – 06/30/2004
Pennsylvania Health Department
Interactions among Cells and Natural Surroundings
The goal of this project was to understand the structural interactions among cancerous cells and their natural surroundings in order to prevent them from invading other tissue and stop cancer progression at the cellular level.
Role: Co-Principal Investigator

PATENTS
Baum, B.J., Yamada, K.M., **Cukierman, E.**, Mooney, D. Patent No. 6,743,626 "Artificial Salivary Gland", 2004. The present invention generally relates to the field of oral prosthetics and tissue engineering. More specifically, a novel, artificial fluid secreting prosthesis for non-invasive insertion is disclosed. Further, methods of use of the foregoing are provided.