Stanford

Erinn Rankin

Assistant Professor of Radiation Oncology (Radiation Biology) and of Obstetrics and Gynecology (Oncology)

Radiation Oncology - Radiation and Cancer Biology

Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrative Contact**

  Meg Fuentes - Administrative Associate

  Email megfuentes@stanford.edu

  Tel (650) 724-0261

Bio

ACADEMIC APPOINTMENTS

- Assistant Professor, Radiation Oncology - Radiation and Cancer Biology
- Assistant Professor, Obstetrics & Gynecology - Gynecologic Oncology
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

HONORS AND AWARDS

- Saul Winegrad Award for Outstanding Dissertation, University of Pennsylvania (2007)
- Postdoctoral Trainee Award, NCI (2007-2012)
- J. Martin Brown Award for Outstanding Achievements in the Radiation Sciences, Stanford University (2012)
- Gabilan Faculty Award, Stanford University (2014-2016)
- Ovarian Cancer Academy Award, Department of Defense (2015)
- Pape Family Pilot Award, Rivkin Center for Ovarian Cancer Research (2016)
- Research Award, Mary Kay Foundation (2016)

PROFESSIONAL EDUCATION

- BS, University of Illinois Urbana-Champaign , Microbiology (2000)
- PhD, University of Pennsylvania , Cellular and Molecular Biology (2007)

LINKS

- Rankin Lab Website: http://med.stanford.edu/rankinlab

Teaching

COURSES

2020-21

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)
- Molecular and Genetic Basis of Cancer: CBIO 240 (Aut)

2019-20

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)
- Molecular and Genetic Basis of Cancer: CBIO 240 (Aut)

2018-19

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)
- Molecular and Genetic Basis of Cancer: CBIO 240 (Aut)

2017-18

- Cellular and Clinical Aspects of Cancer: CBIO 242 (Spr)
- Molecular and Genetic Basis of Cancer: CBIO 240 (Aut)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Suchitra Natarajan, Jin Qian

Doctoral Dissertation Co-Advisor (AC)

Albert Li

Postdoctoral Research Mentor

Jin Qian

Publications

PUBLICATIONS

- **Neutralization of PD-L2 is Essential for Overcoming Immune Checkpoint Blockade Resistance in Ovarian Cancer.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
  Miao, Y. R., Thakkar, K. N., Qian, J., Kariolis, M. S., Huang, W., Nandagopal, S., Yang, T. T., Diep, A. N., Cherf, G. M., Xu, Y., Moon, E. J., Xiao, Y., Alemany, et al
  2021
- **-003 Oxygen dependent resistance to PARP inhibitors**
  Mehibel, M., Xu, J., Li, G., Moon, J., Thakkar, K., Diep, A., Kim, R., Blomstein, J., Xiao, S., Bacal, J., Saldivar, J., Le, Q., Cimprich, et al
  AMER ASSOC CANCER RESEARCH.2021
- **Omental macrophages secrete chemokine ligands that promote ovarian cancer colonization of the omentum via CCR1.** *Communications biology*
  Krishnan, V., Tallapragada, S., Schaar, B., Kamat, K., Chanana, A. M., Zhang, Y., Patel, S., Parkash, V., Rinker-Schaeffer, C., Folkins, A. K., Rankin, E. B., Dorigo, O.
  2020; 3 (1): 524
- **FLASH irradiation enhances the therapeutic index of abdominal radiotherapy in mice**
  Natarajan, S., Levy, K., Wang, J., Chow, S., Eggold, J., Loo, P., Manjappa, R., Lartey, F. M., Schuler, E., Skinner, L., Rafat, M., Ko, R., Kim, et al
  AMER ASSOC CANCER RESEARCH.2020
- **Reprogramming of serine metabolism during breast cancer progression**

Li, A., Ducker, G. S., Li, Y., Seoane, J. A., Xiao, Y., Melemenidis, S., Zhou, Y., Liu, L., Vanharanta, S., Graves, E. E., Rankin, E. B., Curtis, C., Massague, et al
AMER ASSOC CANCER RESEARCH.2020

- **Total abdominal ultra-rapid FLASH irradiation enhances the efficacy of PD-1 inhibition in preclinical models of ovarian cancer**
  Chow, S., Eggold, J. T., Levy, K., Wang, J., Manjappa, R., Breitkreutz, D. Y., Yu, A. S., Bush, K., Dorigo, O., Loo, B. W., Rankin, E. B.
  AMER ASSOC CANCER RESEARCH.2020

- **Ultrarapid total abdominal FLASH irradiation in a preclinical model of ovarian cancer.**
  Levy, K., Wang, J., Eggold, J., Natarajan, S., Maxim, P., Loo, B., Rankin, E.
  AMER ASSOC CANCER RESEARCH.2020: 49

- **Validated limited gene predictor for cervical cancer lymph node metastases.** *Oncotarget*
  Bloomstein, J. D., von Eyben, R., Chan, A., Rankin, E. B., Fregoso, D. R., Wang-Chiang, J., Lee, L., Xie, L., David, S. M., Stehr, H., Esfahani, M. S., Giaccia, A. J., Kidd, et al
  2020; 11 (24): 2302–9

- **Induced tumor heterogeneity reveals factors informing radiation and immunotherapy combinations.** *Clinical cancer research : an official journal of the American Association for Cancer Research*
  Aguilera, T. A., Elghonaimy, E., Shehade, H., Rafat, M., Castellini, L., Jiang, D., Kariolis, M., Koong, A., Le, Q., Ellies, L. G., Rankin, E. B., Graves, E. E., Giaccia, et al
  2020

- **Abdominal FLASH irradiation reduces radiation-induced gastrointestinal toxicity for the treatment of ovarian cancer in mice.** *Scientific reports*
  Levy, K. n., Natarajan, S. n., Wang, J. n., Chow, S. n., Eggold, J. T., Loo, P. E., Manjappa, R. n., Melemenidis, S. n., Lartey, F. M., Schüler, E. n., Skinner, L. n., Rafat, M. n., Ko, et al
  2020; 10 (1): 21600

- **Evaluating the Reproducibility of Mouse Anatomy under Rotation in a Custom Immobilization Device for Conformal FLASH Radiotherapy.** *Radiation research*
  Ko, R. B., Soto, L. A., von Eyben, R. n., Melemenidis, S. n., Rankin, E. B., Maxim, P. G., Graves, E. E., Loo, B. W.
  2020

- **The m6A RNA demethylase FTO is a HIF-independent synthetic lethal partner with the VHL tumor suppressor.** *Proceedings of the National Academy of Sciences of the United States of America*
  Xiao, Y. n., Thakkar, K. N., Zhao, H. n., Broughton, J. n., Li, Y. n., Seoane, J. A., Diep, A. N., Metzner, T. J., von Eyben, R. n., Dill, D. L., Brooks, J. D., Curtis, C. n., Leppert, et al
  2020

- **Metabolic Profiling Reveals a Dependency of Human Metastatic Breast Cancer on Mitochondrial Serine and One-Carbon Unit Metabolism.** *Molecular cancer research : MCR*
  Li, A. M., Ducker, G. S., Li, Y. n., Seoane, J. A., Xiao, Y. n., Melemenidis, S. n., Zhou, Y. n., Liu, L. n., Vanharanta, S. n., Graves, E. E., Rankin, E. B., Curtis, C. n., Massague, et al
  2020

- **TOTAL ABDOMINAL ULTRA-RAPID FLASH IRRADIATION DEMONSTRATES DECREASED GASTROINTESTINAL TOXICITY COMPARED TO CONVENTIONAL TOTAL ABDOMINAL IRRADIATION IN MICE**
  Levy, K., Eggold, J., Rafat, M., Schuler, E., Shehade, H., Fregoso, D., Vilches-Moure, J., Koong, A., Maxim, P., Loo, B. W., Rankin, E.
  AMER ASSOC CANCER RESEARCH.2019: 182

- **THE HYPOXIC TUMOR-MESOTHELIAL NICHE PROMOTES OVARIAN CANCER METASTASIS THROUGH COLLAGEN REMODELING**
  Natarajan, S., Foreman, K., Soriano, M., Shehade, H., Fregoso, D., Eggold, J., Rosen, N. S., Heilshorn, S., Krieg, A. J., Krishnan, V., Dorigo, O., Sinha, S., Fuh, et al
  AMER ASSOC CANCER RESEARCH.2019: 168

- **S100A10 is a critical mediator of GAS6/AXL-induced angiogenesis in renal cell carcinoma.** *Cancer research*
  Xiao, Y., Zhao, H., Tian, L., Nolley, R., Diep, A. N., Ernst, A., Fuh, K. C., Miao, Y. R., von Eyben, R., Leppert, J. T., Brooks, J. D., Peehl, D. M., Giaccia, et al
  2019

- **Genomics and molecular mechanisms of high grade serous ovarian cancer: the 12th Biennial Rivkin Center Ovarian Cancer Research Symposium.** *International journal of gynecological cancer : official journal of the International Gynecological Cancer Society*
  Rankin, E. B.

2019; 29 (Suppl 2): s7–s11

- **Modulating the tumor microenvironment to enhance efficacy of PARP inhibitors**
  Mehibel, M., Xu, J., Diep, A., Thakkar, K., Li, C. G., Xiao, Y., Rankin, E., Giaccia, A.
  AMER SOC CLINICAL ONCOLOGY.2019

- **Preclinical testing of ultra-rapid FLASH total abdominal irradiation demonstrates survival benefit and decreased gastrointestinal toxicity compared to conventional external beam radiation.**
  Levy, K., Rafat, M., Schueler, E., Eggold, J., Wang, J., Casey, K., Koong, A., Maxim, P., Loo, B. W., Rankin, E.
  AMER SOC CLINICAL ONCOLOGY.2019

- **Collagen Remodeling in the Hypoxic Tumor-Mesothelial Niche Promotes Ovarian Cancer Metastasis** *CANCER RESEARCH*
  Natarajan, S., Foreman, K. M., Soriano, M., Rossen, N. S., Shehade, H., Fregoso, D. R., Eggold, J. T., Krishnan, V., Dorigo, O., Krieg, A. J., Heilshorn, S. C., Sinha, S., Fuh, et al
  2019; 79 (9): 2271–84

- **Collagen remodeling in the hypoxic tumor-mesothelial niche promotes ovarian cancer metastasis.** *Cancer research*
  Natarajan, S., Foreman, K. M., Soriano, M. I., Rossen, N. S., Shehade, H., Fregoso, D. R., Eggold, J. T., Krishnan, V., Dorigo, O., Krieg, A. J., Heilshorn, S. C., Sinha, S., Fuh, et al
  2019

- **Hypoxia-Induced Phenotypes that Mediate Tumor Heterogeneity.** *Advances in experimental medicine and biology*
  Qian, J. n., Rankin, E. B.
  2019; 1136: 43–55

- **Hypoxic signaling in the tumor-mesothelial niche promotes collagen remodeling and ovarian cancer metastasis.**
  Foreman, K., Fuh, K., SorianoJAL, M., Dorigo, O., Krishnan, V., Shehade, H., Natarajan, S., Sinha, S., Krieg, A., Rankin, E.
  AMER ASSOC CANCER RESEARCH.2018: 57

- **Erythropoiesis, EPO, macrophages, and bone.** *Bone*
  Eggold, J. T., Rankin, E. B.
  2018

- **Systematic discovery of mutation-specific synthetic lethals by mining pan-cancer human primary tumor data.** *Nature communications*
  Sinha, S., Thomas, D., Chan, S., Gao, Y., Brunen, D., Torabi, D., Reinisch, A., Hernandez, D., Chan, A., Rankin, E. B., Bernards, R., Majeti, R., Dill, et al
  2017; 8: 15580-?

- **Inhibition of the GAS6/AXL pathway augments the efficacy of chemotherapies** *JOURNAL OF CLINICAL INVESTIGATION*
  Kariolis, M. S., Miao, Y. R., Diep, A., Nash, S. E., Olcina, M. M., Jiang, D., Jones, D. S., Kapur, S., Mathews, I. I., Koong, A. C., Rankin, E. B., Cochran, J. R., Giaccia, et al
  2017; 127 (1): 183-198

- **Targeting integrins with RGD-conjugated gold nanoparticles in radiotherapy decreases the invasive activity of breast cancer cells.** *International journal of nanomedicine*
  Wu, P. H., Onodera, Y. n., Ichikawa, Y. n., Rankin, E. B., Giaccia, A. J., Watanabe, Y. n., Qian, W. n., Hashimoto, T. n., Shirato, H. n., Nam, J. M.
  2017; 12: 5069–85

- **Cabozantinib inhibits tumor growth and metastasis of a patient-derived xenograft model of papillary renal cell carcinoma with MET mutation** *CANCER BIOLOGY & THERAPY*
  Zhao, H., Nolley, R., Chan, A. W., Rankin, E. B., Peehl, D. M.
  2017; 18 (11): 863–71

- **Reprogramming the immunological microenvironment through radiation and targeting Axl** *NATURE COMMUNICATIONS*
  Aguilera, T. A., Rafat, M., Castellini, L., Shehade, H., Kariolis, M. S., Hui, A. B., Stehr, H., von Eyben, R., Jiang, D., Ellies, L. G., Koong, A. C., Diehn, M., Rankin, et al
  2016; 7

- **The Receptor Tyrosine Kinase AXL in Cancer Progression.** *Cancers*
  Rankin, E. B., Giaccia, A. J.
  2016; 8 (11)

- **AXL modulates extracellular matrix protein expression and is essential for invasion and metastasis in endometrial cancer.** *Oncotarget*
  Divine, L. M., Nguyen, M. R., Meller, E., Desai, R. A., Arif, B., Rankin, E. B., Bligard, K. H., Meyerson, C., Hagemann, I. S., Massad, M., Thaker, P. H., Hagemann, A. R., McCourt, et al
  2016
- **Cabozantinib inhibits tumor growth and metastasis of a patient-derived xenograft model of papillary renal cell carcinoma with MET mutation.** *Cancer biology & therapy*
  Zhao, H., Nolley, R., Chan, A. M., Rankin, E. B., Peehl, D. M.
  2016: 0-?
- **Polycomb repressive complex 2 regulates skeletal growth by suppressing Wnt and TGF-beta signalling** *NATURE COMMUNICATIONS*
  Mirzamohammadi, F., Papaioannou, G., Inloes, J. B., Rankin, E. B., Xie, H., Schipani, E., Orkin, S. H., Kobayashi, T.
  2016; 7
- **Targeting MET and AXL overcomes resistance to sunitinib therapy in renal cell carcinoma** *ONCOGENE*
  Zhou, L., Liu, X., Sun, M., Zhang, X., German, P., Bai, S., Ding, Z., Tannir, N., Wood, C. G., Matin, S. F., Karam, J. A., Tamboli, P., Sircar, et al
  2016; 35 (21): 2687-2697
- **Hypoxic control of metastasis** *SCIENCE*
  Rankin, E. B., Giaccia, A. J.
  2016; 352 (6282): 175-180
- **Hypoxia: Signaling the Metastatic Cascade.** *Trends in cancer*
  Rankin, E. B., Nam, J. M., Giaccia, A. J.
  2016; 2 (6): 295–304
- **Biology of the bone marrow microenvironment and myelodysplastic syndromes.** *Molecular genetics and metabolism*
  Rankin, E. B., Narla, A., Park, J. K., Lin, S., Sakamoto, K. M.
  2015; 116 (1-2): 24-28
- **Oxygen-sensing PHDs regulate bone homeostasis through the modulation of osteoprotegerin** *GENES & DEVELOPMENT*
  Wu, C., Rankin, E. B., Castellini, L., Fernandez-Alcudia, J., Lagory, E. L., Andersen, R., Rhodes, S. D., Wilson, T. L., Mohammad, K. S., Castillo, A. B., Guise, T. A., Schipani, E., Giaccia, et al
  2015; 29 (8): 817-831
- **Hypoxic induction of AKAP12 variant 2 shifts PKA-mediated protein phosphorylation to enhance migration and metastasis of melanoma cells** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Finger, E. C., Castellini, L., Rankin, E. B., Vilalta, M., Krieg, A. J., Jiang, D., Banh, A., Zundel, W., Powell, M. B., Giaccia, A. J.
  2015; 112 (14): 4441-4446
- **Osteoblasts: a novel source of erythropoietin.** *Current osteoporosis reports*
  Wu, C., Giaccia, A. J., Rankin, E. B.
  2014; 12 (4): 428-432
- **Osteoblasts: a novel source of erythropoietin.** *Current osteoporosis reports*
  Wu, C., Giaccia, A. J., Rankin, E. B.
  2014; 12 (4): 428-432
- **Direct regulation of GAS6/AXL signaling by HIF promotes renal metastasis through SRC and MET** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Rankin, E. B., Fuh, K. C., Castellini, L., Viswanathan, K., Finger, E. C., Diep, A. N., Lagory, E. L., Kariolis, M. S., Chan, A., Lindgren, D., Axelson, H., Miao, Y. R., Krieg, et al
  2014; 111 (37): 13373-13378
- **Direct regulation of GAS6/AXL signaling by HIF promotes renal metastasis through SRC and MET.** *Proceedings of the National Academy of Sciences of the United States of America*
  Rankin, E. B., Fuh, K. C., Castellini, L., Viswanathan, K., Finger, E. C., Diep, A. N., Lagory, E. L., Kariolis, M. S., Chan, A., Lindgren, D., Axelson, H., MIAO, Y. R., Krieg, et al
  2014; 111 (37): 13373-13378
- **Loss of VHL in mesenchymal progenitors of the limb bud alters multiple steps of endochondral bone development.** *Developmental biology*

Mangiavini, L., Merceron, C., Araldi, E., Khatri, R., Gerard-O'Riley, R., LeShan Wilson, T., Rankin, E. B., Giaccia, A. J., Schipani, E.
2014; 393 (1): 124-136

- **PHD inhibition mitigates and protects against radiation-induced gastrointestinal toxicity via HIF2.** *Science translational medicine*
Taniguchi, C. M., Miao, Y. R., Diep, A. N., Wu, C., Rankin, E. B., Atwood, T. F., Xing, L., Giaccia, A. J.
2014; 6 (236): 236ra64-?

- **PHD Inhibition Mitigates and Protects Against Radiation-Induced Gastrointestinal Toxicity via HIF2.** *Science translational medicine*
Taniguchi, C. M., Miao, Y. R., Diep, A. N., Wu, C., Rankin, E. B., Atwood, T. F., Xing, L., Giaccia, A. J.
2014; 6 (236): 236ra64-?

- **CTGF is a therapeutic target for metastatic melanoma.** *Oncogene*
Finger, E. C., Cheng, C., Williams, T. R., Rankin, E. B., Bedogni, B., Tachiki, L., Spong, S., Giaccia, A. J., Powell, M. B.
2014; 33 (9): 1093-1100

- **Regulation of Bone Marrow Angiogenesis by Osteoblasts during Bone Development and Homeostasis.** *Frontiers in endocrinology*
Schipani, E., Wu, C., Rankin, E. B., Giaccia, A. J.
2013; 4: 85-?

- **Blood and bones Osteoblastic HIF signaling regulates erythropoiesis** *CELL CYCLE*
Wu, C., Rankin, E. B., Giaccia, A. J.
2012; 11 (12): 2221-2222

- **The HIF Signaling Pathway in Osteoblasts Directly Modulates Erythropoiesis through the Production of EPO** *CELL*
Rankin, E. B., Wu, C., Khatri, R., Wilson, T. L., Andersen, R., Araldi, E., Rankin, A. L., Yuan, J., Kuo, C. J., Schipani, E., Giaccia, A. J.
2012; 149 (1): 63-74

- **A central role for hypoxic signaling in cartilage, bone, and hematopoiesis.** *Current osteoporosis reports*
Rankin, E. B., Giaccia, A. J., Schipani, E.
2011; 9 (2): 46-52

- **AXL Is an Essential Factor and Therapeutic Target for Metastatic Ovarian Cancer** *CANCER RESEARCH*
Rankin, E. B., Fuh, K. C., Taylor, T. E., Krieg, A. J., Musser, M., Yuan, J., Wei, K., Kuo, C. J., Longacre, T. A., Giaccia, A. J.
2010; 70 (19): 7570-7579

- **Regulation of the Histone Demethylase JMJD1A by Hypoxia-Inducible Factor 1 alpha Enhances Hypoxic Gene Expression and Tumor Growth** *MOLECULAR AND CELLULAR BIOLOGY*
Krieg, A. J., Rankin, E. B., Chan, D., Razorenova, O., Fernandez, S., Giaccia, A. J.
2010; 30 (1): 344-353

- **Hypoxia-Inducible Factor 2 Regulates Hepatic Lipid Metabolism** *MOLECULAR AND CELLULAR BIOLOGY*
Rankin, E. B., Rha, J., Selak, M. A., Unger, T. L., Keith, B., Liu, Q., Haase, V. H.
2009; 29 (16): 4527-4538

- **Bringing H2AX into the Angiogenesis Family** *CANCER CELL*
Rankin, E. B., Giaccia, A. J., Hammond, E. M.
2009; 15 (6): 459-461

- **Stable expression of HIF-1 alpha in tubular epithelial cells promotes interstitial fibrosis** *AMERICAN JOURNAL OF PHYSIOLOGY-RENAL PHYSIOLOGY*
Kimura, K., Iwano, M., Higgins, D. F., Yamaguchi, Y., Nakatani, K., Harada, K., Kubo, A., Akai, Y., Rankin, E. B., Neilson, E. G., Haase, V. H., Saito, Y.
2008; 295 (4): F1023-F1029

- **Hypoxia-inducible factor-2 regulates vascular tumorigenesis in mice** *ONCOGENE*
Rankin, E. B., Rha, J., Unger, T. L., Wu, C. H., Shutt, H. P., Johnson, R. S., Simon, M. C., Keith, B., Haase, V. H.
2008; 27 (40): 5354-5358

- **The role of hypoxia-inducible factors in tumorigenesis** *CELL DEATH AND DIFFERENTIATION*
Rankin, E. B., Giaccia, A. J.
2008; 15 (4): 678-685

- **Regulation of iron homeostasis by the hypoxia-inducible transcription factors (HIFs)** *JOURNAL OF CLINICAL INVESTIGATION*
  Peyssonnaux, C., Zinkernagel, A. S., Schuepbach, R. A., Rankin, E., Vaulont, S., Haase, V. H., Nizet, V., Johnson, R. S.
  2007; 117 (7): 1926-1932

- **Hypoxia-inducible factor-2 (HIF-2) regulates hepatic erythropoietin in vivo** *JOURNAL OF CLINICAL INVESTIGATION*
  Rankin, E. B., Biju, M. P., Liu, Q., Unger, T. L., Rha, J., Johnson, R. S., Simon, M. C., Keith, B., Haase, V. H.
  2007; 117 (4): 1068-1077

- **Rend cyst development in mice with conditional inactivation of the von Hippel-Lindau tumor suppressor** *CANCER RESEARCH*
  Rankin, E. B., Tomaszewski, J. E., Haase, V. H.
  2006; 66 (5): 2576-2583

- **Inactivation of the arylhydrocarbon receptor nuclear translocator (Arnt) suppresses von Hippel-Lindau disease-associated vascular tumors in mice** *MOLECULAR AND CELLULAR BIOLOGY*
  Rankin, E. B., Higgins, D. F., Walisser, J. A., Johnson, R. S., Bradfield, C. A., Haase, V. H.
  2005; 25 (8): 3163-3172

- **Putative intestine-specific enhancers located in 5 ' sequence of the CDX1 gene regulate CDX1 expression in the intestine** *AMERICAN JOURNAL OF PHYSIOLOGY-GASTROINTESTINAL AND LIVER PHYSIOLOGY*
  Rankin, E. B., Xu, W., Silberg, D. G., Suh, E.
  2004; 286 (5): G872-G880

- **An essential role of Th1 responses and interferon gamma in infection-mediated suppression of neoplastic growth** *CANCER BIOLOGY & THERAPY*
  Rankin, E. B., Yu, D. N., Jiang, J., Shen, H., Pearce, E. J., Goldschmidt, M. H., Levy, D. E., Golovkina, T. V., Hunter, C. A., Thomas-Tikhonenko, A.
  2003; 2 (6): 687-693

- **DNA methylation down-regulates CDX1 gene expression in colorectal cancer cell lines** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Suh, E. R., Ha, C. S., Rankin, E. B., Toyota, M., Traber, P. G.
  2002; 277 (39): 35795-35800