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Education

Graduate Education

PhD, Cancer Biology
Stanford University
Stanford, CA 1989-1993

MS, Biology
Eastern Michigan University
Ypsilanti, MI 1985-1987

Undergraduate Education

BS, Biology
Summa cum Laude
Korea University, Seoul 1977-1984

Virginia Commonwealth University and Medical Center Appointments

Professor, Dept. of Pathology, Medical College of Virginia Campus, Virginia Commonwealth University. 2003-present

Member, Virginia Bio-Technology Research Park's Leadership Council, Virginia Commonwealth University. 2008-present

Professor, Integrative Life Sciences Program, Virginia Commonwealth University.
2004-present

Cancer and Metabolic Syndrome Research Lab. Department of Pathology, MCV
Campus, Virginia Commonwealth University 2008-present

Professor, Dept. of Biochemistry and Molecular Biology, MCV Campus, Virginia
Commonwealth University. 2003-present

Member Scientist, Massey Cancer Center, Virginia Commonwealth University.
2003-present

Graduate Faculty of the School of Graduate Studies, Virginia Commonwealth
University, 2003-present

Professional Organizations

The Endocrine Society

American Association for Cancer Research

American Association for the Advancement of Science

The Western Society for Pediatric Research

The Society for Experimental Biology and Medicine

Professional Service

Virginia Commonwealth University Cancer and Metabolism Research Group,
Steering Committee. 2013-present

Virginia Commonwealth University Obesity Research Group. 2013-present

Virginia Commonwealth University Obesity and Breast Cancer Research Interest
Group. 2013-present

Ad hoc scientific reviewer of the Pathophysiology and Complications Section for
the Endocrine Society Annual Meeting, 2015-present

International Panel Review Member for Prostate Cancer Canada (PCC), Canada, 2015.

International Peer Review Member for National Research Foundation of Korea, Korea, 2014, 2015.

External Referee for Scottish Government Experimental and Translational Medicine Research Committee, United Kingdom, 2013.

External Referee Committee Member for Auckland Medical Research Foundation, New Zealand, 2012.

Scientific Reviewer for the Max and Minnie Voelcker Foundation Funds, 2013.

Ad hoc reviewer and Chair of the IGFs and IGFbPs in Aging and Disease section for the Fifth International Congress of the GRS and the IGF Society, 2010.

Ad hoc reviewer and Chair of the IGF and Physiology section for the Fourth International Congress of the GRS and the IGF Society, 2008.

External Examiner Committee member of the Ph.D. thesis for National University of Singapore, 2004, 2005.

Study section member for the Congressionally Directed Medical Research Program (CDMRP) Prostate Cancer Research Program (PCRP) Peer Review panel, 2006, 2007, 2011, 2013.

Ad hoc reviewer and Scientific Advisor of the Hormone and Cancer Section for the 87th Annual Meeting of The Endocrine Society, 2005.

Scientific Reviewer on the Jeffress Memorial Trust Funds, 2010.

Oregon State Medical Research Foundation Committee, 1999-2003.

Oregon Health Sciences University Research Radiation Safety Committee, 1999-2003.

Editorial Advisory Boards

American Journal of Physiology-Endocrinology and Metabolism, 2010-present, Annals of Pediatric Endocrinology and Metabolism, 2012-present
Endocrinology and Metabolism, 2013-present

Recent Grants

Development of Prolastin-C liquid -IGFBP-3R Agonistic antibody as a targeted therapy for colon cancer (Grifols Investigator Sponsored Research Award) (PI) 2023-2025

A novel targeted antibody therapy for triple-negative breast cancer (Virginia Innovation Partnership Corporation Commonwealth Commercialization Fund) (PI) 2023-2024

Development of TMEM219 mAb as a targeted therapy for TNBC (VCU Commercialization Fund) (PI) 2022-2023

Development of humanized TMEM219 agonistic mAbs (VCU Massey Cancer Center) (PI) 2021-2023

Targeting Transglutaminase 2 in cancer cachexia (R01CA251405, NIH/NCI) (Co-I) 2020-2025

StarD5, a protein that translocates cholesterol to the plasma membrane, a novel target for colon cancer. (VA Merit Grant) (Co-I) 2019-2024

Development and validation of TMEM219 agonistic mAbs (VCU Massey Cancer Center) (PI) 2019-2020

Understanding and targeting neutrophil proteases in colon cancer (NIH R21 Grant) (PI), 2018-2021

TMEM219 as a new therapeutic target for lung cancer (DOD Lung Cancer Concept Award) (PI), 2017-2019

Development of a novel targeted antibody therapy for triple-negative breast cancer (VCU Quest for Innovation Commercialization Fund) (PI), 2017-2018

Developmental Therapeutics Project Grant (VCU Massey Cancer Center) (PI)

2016 Intellectual Property Foundation Support Fund (VCU) (PI) 2016

Development of novel therapies for colitis-associated cancer (VCU Massey Cancer Center) (PI), 2014-2015

Impact of Neutrophil Proteinases in Obesity-induced Insulin Resistance (VCU CCTR Endowment Fund) (PI), 2013-2014

Impact of MicroRNA-200 Family on Epithelial-to-Mesenchymal Transition, Invasion and Sensitivity to Radiotherapy in Prostate Cancer. (Massey Cancer Center) (PI), 2010-2011

Molecular mechanisms of IGFBP-3 regulation on GFP78-induced anti-estrogen resistance in breast cancer (U.S. Army Breast Cancer Idea Award) (PI), 2009-2013

Novel NF- κ B inhibitory action of IGFBP-3 in prostate cancer: New paradigm for suppression of angiogenesis and chemoresistance (U.S. Army Prostate Cancer Research Idea Development Award) (PI), 2007-2011

Dysregulation of the IGFBP-3/IGFBP-3 receptor axis in prostate tumorigenesis (U.S. Army Prostate Cancer Research Idea Development Award) (PI), 2004-2008

IGFBP-3 Receptor: a New Class of Cell-death Receptor in Breast Cancer (U.S. Army Breast Cancer Research Idea Award) (PI), 2003-2007

Recent Invited Presentations

Invited speaker, " Targeted Therapy for Colon Cancer through the Alpha-1 Antitrypsin-IGFBP-3 Axis" The 16th Annual World Cancer Congress, Budapest, Hungary, June 2024.

Invited speaker, Development of AAT-IGFBP-3R Agonist as a targeted therapy for CAC therapy" Investigator-Sponsored Research Programs Forum, Grifols Zoom Meeting, March 2023.

Invited speaker, "Use of TMEM219 agonists for the treatment of cancer, metabolic syndrome, obstructive respiratory disorders and related diseases" TechConnect World Innovation Conference & Expo, Washington, DC, June 2022.

Invited speaker, "Development of therapeutic TMEM219 agonistic antibody" Molecule to Medicine Focused Interactive Group Meeting, Massey Cancer Center, Virginia Commonwealth University, Richmond, Virginia, May 2022.

Invited speaker, "The IGFBP-3/IGFBP-3 receptor axis is a new therapeutic target for triple negative breast cancer", The 101th Annual Meeting of The Endocrine Society, San Francisco, March, 2020. (virtual meeting).

Invited speaker, "A novel targeted antibody therapy for cancer", Grand Rounds, Institute of New Drug Discovery and Development, Chungnam National University, Daejeon, Korea, April, 2019.

Invited speaker, "Development of therapeutic biologics for cancer", Grand Rounds, Scripps Korea Antibody Institute, Chuncheon, Korea, April, 2019.

Invited speaker, "Novel targeted antibody therapy for cancer: Exploring IGFBP-3/IGFBP-3R system as an anti-tumor signaling in cancer", Grand Rounds, University of Tokyo, Tokyo, Japan Oct. 2018.

Invited speaker, Cai Q, "Targeting a novel IGFBP-3/IGFBP-3R antitumor signaling in human cancer", The 8th International Congress of the GRS and the IGF Society, Seattle, September, 2018.

Invited speaker, "New monoclonal antibody therapy for breast cancer", Biden Cancer Community Summit, Richmond, September, 2018.

Invited speaker, "Targeting a Novel Cell Death Signaling in Human Cancer" BIT's 11th Annual World Cancer Congress, Philadelphia, May, 2018.

Invited speaker, "IGFBP-3/IGFBP-3R Signaling in Cancer", The 5th Korean Insulin-like Growth Factor and Cancer Meeting, Jeonju, Korea, September, 2016.

Invited speaker, "IGF/IGFBP Signaling and Cancer", The 17th International Congress of Endocrinology and the 15th Annual Conference of Chinese Society of Endocrinology, Beijing, China, August, 2016.

Invited speaker, "Novel anti-inflammatory signals in obesity-induced metabolic disorders", The 36th Symposium of the Korean Society of Pediatric Endocrinology, Seoul, Korea, Oct. 2014.

Invited speaker, The 6th International Congress of the GRS and the IGF Society, Munich, Germany, Oct. 2012.

Invited speaker, Children's National Medical Center, Grand Rounds, Washington DC, June, 2012.

Invited speaker, The 31st Korean Society of Nephrology Symposium, Jeju, Korea, Oct. 2011.

Invited speaker, Lee Gil Ya Cancer and Diabetes Institute Grand Rounds, Gachon University of Medicine and Science, Incheon, Korea, Oct. 2011.

Invited Speaker, Dept of Pharmacology and Therapeutics Grand Rounds, School of Medicine, University of Florida, Gainesville, Florida, Aug. 2011.

Invited speaker, International Anatomical Sciences and Cell Biology Conference, Singapore, May, 2010.

Invited speaker, 14th World Congress on Advances in Oncology & 12th International Symposium on Molecular Medicine, Loutraki, Greece, Oct. 2009.

Invited speaker, The 10th Korean Society of Pediatric Nephrology Meeting (KSPN) Busan, Korea, July 2009.

Invited speaker, The 4th International Congress of the GRS and the IGF Society Meeting, Genoa, Italy, Sept. 2008.

Recent Publications

Peer Reviewed Publications

Kwon A, Chae HW, Lee WJ, Kim J, Kim YJ, Ahn J, **Oh Y**, Kim HS. Insulin-like growth factor binding protein-3 induces senescence by inhibiting telomerase activity in MCF-7 breast cancer cells. *Sci Rep.* 2023;30;13(1):8739. doi: 10.1038/s41598-023-35291-5. PMID: 37253773; PMCID: PMC10229562.

Cai Q; Kim M; Harada A; Idowu MO; Sundaresan G; Zweit J; **Oh Y**. Alpha-1 antitrypsin inhibits tumorigenesis and progression of colitis-associated colon cancer through suppression of inflammatory neutrophil-activated serine proteases and IGFBP-3 proteolysis. *Int J Mol Sci*, 2022;23(22):13737. doi: 10.3390/ijms232213737, PMID: 36430216 PMCID: PMC9698049.

Kim SY; Zhao Y; Kim H; **Oh Y**; Xu Q. Sodium iodate-induced retina degeneration observed in non-separate sclerochoroid/ retina pigment epithelium/retina whole mounts. *Ann Eye Sci*, 2022;7:3 <https://dx.doi.org/10.21037/aes-21-27>.

Kim SY; Kim Y; **Oh Y**. Inflammatory pathways in pathological neovascularization in retina and choroid: a narrative review on the inflammatory drug target molecules in retinal and choroidal neovascularization. *Ann Eye Sci*, 2021;6:24 <https://dx.doi.org/10.21037/aes-21-4>.

Kim SY, Kim M, **Oh Y**, Lee DY. Relationship of serum total insulin-like growth factor binding protein-3 with insulin-like growth factor-I and glucose tolerance in Korean children and adolescents. *International J Endocrinology*, 2021; Article ID 9966114, doi.org/10.1155/2021/9966114.

Cai, Q, Harrell JC, Koblinski J, **Oh Y**. The IGFBP-3/IGFBP-3 Receptor Axis Is a New Therapeutic Target for Triple Negative Breast Cancer. *J Endocr Soci*, 2020;4(1):05–02, doi.org/10.1210/jendso/bvaa046.1885.

Cai Q, Dozmorov M, **Oh Y**. IGFBP-3/IGFBP-3 Receptor System as an Anti-Tumor and Anti-Metastatic Signaling in Cancer. *Cells*, 2020;9(5):E1261. [doi:10.3390/cells9051261](https://doi.org/10.3390/cells9051261). PMID: 32443727.

Arab JP, Cabrera D, Sehrawat TS, Jalan-Sakrikar N, Verma VK, Simonetto D, Cao S, Yaqoob U, Leon J, Freire M, Vargas JI, De Assuncao TM, Kwon JH, Guo Y, Kostallari E, Cai Q, Kisseleva T, **Oh Y**, Arrese M, Huebert RC, Shah VH. Hepatic stellate cell activation promotes alcohol-induced steatohepatitis through Igfbp3 and SerpinA12. *J Hepatol*. 2020 Feb 20:S0168-8278(20)30103-3. [doi:10.1016/j.jhep.2020.02.005](https://doi.org/10.1016/j.jhep.2020.02.005). PMID: 32087348.

Cai Q; **Oh Y**. The Impact of IGFBP-3/IGFBP-3R System on Obesity-associated Insulin Resistance. *Interventions Obes Diabetes* 3(3). IOD.000563.2019. DOI: 10.31031/IOD.2019.03.000563.

Davis MD; Suzaki I; Kawano S; Komiya K; Cai Q; **Oh Y**, Rubin BK. Tissue Factor facilitates wound healing in human airway epithelial cells. *Chest*. 2019, 155(3):534-539.

Kim M, Cai Q; **Oh Y**. Therapeutic potential of alpha-1 antitrypsin in human disease. *Annals of Pediatric Endocrinology & Metabolism*, 2018;23(3): 131-135.

Min H-K; Maruyama H; Shimada M; Jang BK; Ren S; Mirshahi F; **Oh Y**; Sanyal AJ. Suppression of IGF binding protein-3 by palmitate promotes hepatic inflammatory responses. *FASEB J*, 2016, 30(12):4071-4082.

Cai Q; **Oh Y**. Understanding and targeting the IGFBP-3/IGFBP-3R system in obesity related disorders: IGFBP-3R agonists as preventive and therapeutic interventions for obesity-induced IR and T2DM. *Growth Hormone IGF Res.*, 2014, 24; S1: S32.

Robins JL; Cai Q; **Oh Y**. The impact of neutrophil proteinase 3 on IGFBP-3 proteolysis in obesity. *Internal Medicine*, 2014, S6: 003. doi:10.4172/2165-8048.S6-003.

Li C; Li W; Mohanraj L; Anscher M; **Oh Y**. Multiple mechanisms for anti-fibrotic actions of statins on radiotherapy induced fibrosis. *J Cancer Res Updates*. 2014, 3: 73-80.

Lee H; Kim SR; **Oh Y**; Cho SH; Lee YC. Targeting IGF-I and IGFBP-3 signaling pathways: A novel therapeutic approach for asthma. *Am J Respir Cell Mol Biol*, 2013.

Jogie-Brahim S; Harada A; **Oh Y**. Impact of the IGFBP-3 system on NNK-induced lung cancer, *Lung Cancer*, 2013, 80:270-277.

** This paper was featured in MDLinx.com as well as in Global Medical Discovery.*

Mohanraj L; Kim H-S; Li W; Cai Q; Kim KE; Shin H-J; Lee Y-J; Lee WJ; Kim JH; **Oh Y**. Human IGFBP-3 inhibits cytokine-induced insulin resistance and early manifestation of atherosclerosis. *PLoS ONE*, 2013, 8(1): e55084. doi:10.1371/journal.pone.0055084.

Li C; Harada A; **Oh Y**. IGFBP-3 sensitizes antiestrogen-resistant breast cancer cells through interaction with GRP78. *Cancer Letters*, 2012, 325:200-206.

Oh Y. The Insulin-like growth factor (IGF) system in chronic kidney disease: Pathophysiology and therapeutic opportunities. *Kidney Res Clin Pract*, 2012, 31:26-37.

Mohanraj L; **Oh Y**. Impact of IGF System on Dietary Short Chain Fatty Acid-Induced Anti-Inflammatory and Anti-Tumor Effects, *Biomedical Research (Special Issue: Cancer Metabolism In memory of Erich Eigenbrodt)*, 2012, 23: SI 187-195.

Yoo EG; Lee WJ; Kim JH; Chae HW; Hyun SE; Kim DH; Kim HS; **Oh Y**. Insulin-like growth factor binding protein-3 mediates high glucose-induced apoptosis by increasing oxidative stress in porcine proximal tubular epithelial cells.

Endocrinology, 2011, 6: 166-177.

Han J; Jogie-Brahim S; Harada A; **Oh Y**. IGF binding protein-3 suppresses tumor growth through inhibition of tumor-induced NF- κ B activity. Cancer Letters, 2011, 307:200-210.

Lee YC, Jogie-Brahim S, Lee DY; Han J; Harada A; Murphy LJ; **Oh Y**. IGFBP-3 blocks the effects of asthma by negatively regulating NF- κ B signaling through IGFBP-3R-mediated activation of caspases J. Biol. Chem, 2011, 286(20):17898-17909.

** This paper was selected as a 1% impact paper in the JBC and placed in the top 5% of cited authors for journals in Biology and Biochemistry by Thomson Reuters*

Mohanraj L; **Oh Y**. Targeting the IGF system in cancer: The current and future In breast cancer therapy. Recent Pat Anticancer Drug Discov. 2011, 6: 166-177.

Ingermann AR; Yang YF; Han J; Mikami A; Garza AE; Mohanraj L; Fan L; Idowu M; Ware JL; Kim HS Lee DY; **Oh Y**. Identification of a novel cell death receptor mediating IGFBP-3-induced antitumor effects in breast and prostate cancer. J. Biol. Chem, 2010, 230(39): 30233-30246.

Kim HS; Lee WJ; Lee SW; Chae HW; Kim DH; **Oh Y**. Insulin-like Growth Factor Binding Protein-3 Induces G1 Cell Cycle Arrest with Inhibition of Cyclin-dependent Kinase 2 and 4 in MCF-7 Human Breast Cancer Cells. Horm Metab Res. 2010, 42(3):165-172.

Jogie-Brahim S; Feldman D; **Oh Y**. Unraveling IGFBP-3 Actions in Human Disease, Endocrine Reviews, 2009, 30(5):417-437.

Book Chapters

Walker GE; Kim H-S; Yang Y-F; **Oh Y**. IGF-independent effects of the IGFBP Superfamily. In "Insulin-like Growth Factor" Le Roith D, Zumkeller W, Baxter R, eds, Landes Bioscience, 2004. Chapter 28.

Werner H; **Oh Y**; Roberts CT Jr. Apoptosis in breast cancer. In "Programmed Cell Death Volume II: Role in Disease, Pathogenesis and Prevention" Mattson MP, Estus S, Rangnekar V, eds, "Advances in Cell Aging and Gerontology " Elsevier Science, Netherlands, 2001, vol. 6:1-22.

Minniti G; **Oh Y**. Insulin-like growth factor binding proteins in endocrine-related

neoplasia. In "Endocrine Oncology' Ethier SP, ed, "Contemporary Endocrinology"
Humana Press, NJ 2000, vol. 17:215-236.