

# Olivier Gevaert, Ph.D.

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## Education

- Ph.D. 2004–2008 **Bioinformatics**, Katholieke Universiteit Leuven, Leuven, Belgium  
**Title:** A Bayesian network integration framework for modeling biomedical data  
*University of Leuven, KU Leuven, <http://www.kuleuven.be/>*
- M.S. 2003–2004 **Artificial Intelligence**, Katholieke Universiteit Leuven, Leuven, Belgium  
*University of Leuven, KU Leuven, <http://www.kuleuven.be/>*
- M.S. 2001–2003 **Industrial Engineering**, Katholieke Hogeschool Sint-Lieven, Ghent, Belgium  
*University College, now merged with KU Leuven*
- B.S. 1999–2001 **Industrial Engineering**, Katholieke Hogeschool Sint-Lieven, Ghent, Belgium  
*University College, now merged with KU Leuven*

## Professional Appointments

- Assistant Professor, Medicine, Stanford University, Stanford. 2013–Current  
My lab focuses on multi-scale data fusion by developing machine learning methods to integrate multi-omics, cellular and medical image data primarily in cancer research.
- Research Associate, Plevritis Lab, Radiology, Stanford University, Stanford, CA. Developing mathematical methods for multi-scale data integration. Mentored by Prof. Sylvia Plevritis at the Center for Cancer Systems Biology (CCSB) and the Information Sciences in Imaging (ISIS) section at Stanford. 2012–2013
- Post-doc, Plevritis Lab, Radiology, Stanford University, Stanford, CA. 2010–2012  
Investigating mathematical methods to integrate molecular biology and medical imaging data in lung and brain cancer.  
Mentored by Prof. Sylvia Plevritis at the Center for Cancer Systems Biology (CCSB) and the Information Sciences in Imaging (ISIS) section at Stanford.
- Post-doc, Bioinformatics@Sista/ESAT, Katholieke Universiteit Leuven, Leuven, Belgium. 2009  
Integration of data of cancer patients using kernel methods.  
Mentored by Prof. Bart De Moor.

## Awards/Fellowships

- SNO/EANO Award from the European Association of Neuro-Oncology Meeting 2014
- Post-doctoral researcher of the Fund for scientific research Flanders (FWO-Vlaanderen). 2009–2012
- Fellow of the Belgian American Educational Foundation (BAEF) 2009–2010

- Henri Benedictus Fellow of the King Baudouin Foundation 2009–2010
- Ph.D. grant of the agency for Innovation by Science and Technology in Flanders (IWT-Vlaanderen) 2004–2008

## Publications

### Journal articles with peer review

- Last author
  - Planey RK, **Gevaert O.** CoINcIDE: A framework for discovery of patient subtypes across multiple datasets. Accepted for publication in *Genome Medicine*, 2016
  - Sweeney TE, Chen AC, **Gevaert O.** Combined Mapping of Multiple clUsteriNg ALgorithms (COMMUNAL): A Robust Method for Selection of Cluster Number, *K. Sci Rep.* 2015 Nov 19;5:16971. doi: 10.1038/srep16971. PMID: 26581809; PMCID: PMC4652212.
  - Itakura H, Achrol A, Mitchell AL, Loya JJ, Liu T, Westbroek EM, Feroze AH, Rodriguez S, Echegaray S, Azad TD, Yeom KW, Napel S, Rubin DL, Chang SD, Harsh GR IV, **Gevaert O.** Magnetic resonance image features identify glioblastoma phenotypic subtypes with distinct molecular pathway activities. *Science Translational Medicine*, 2015 Sep 2;7(303):303ra138. PMID: 26333934; PubMed Central PMCID: PMC4666025.
  - Manolakos A., Ochoa I., Venkat K., Goldsmith A., **Gevaert O.** CaMoDi: a new method for cancer module discovery. *BMC Genomics* 2014, 15(Suppl 10):S8.
- First author
  - **Gevaert O**, Tibshirani R, Plevritis S. Pancancer' analysis' of 'DNA' methylation4driven' genes' using' MethylMix'. *Genome Biol.* 2015 Jan 29;16(1):17. PMCID: PMC4365533
  - **Gevaert O.** MethylMix: an R package for identifying DNA methylation-driven genes. *Bioinformatics.* 2015, 31(11):1839-41. PMCID: PMC4443673
  - **Gevaert O**, Mitchell L, Achrol A, Xu J, Echegaray S, Steinberg G, Cheshier S, Napel S, Zaharchuk G, Plevritis S. Exploratory radiogenomics analysis of glioblastoma using quantitative image features. *Radiology* 2014, 273(1):168-74. PMID: 24827998; PMCID: PMC4263772.
  - **Gevaert O**, Villalobos V, Sikic B, Plevrits S Identification of ovarian cancer driver genes by using module network integration of multi-omics data. *Interface focus*, 2013, 3 20130013.
  - Nair VS\*, **Gevaert O\***, Davidzon G, Graves E, Napel S, Hoang CD, Quon A, Rubin D, Plevritis S. Unique 18F-FDG PET tumor uptake imaging features predict poor outcome and are associated with major oncogenomic dysregulation in resected non-small cell lung cancer. \*Equally contributing authors. *Cancer Research* 2012, Aug 1;72(15):3725-34.
  - **Gevaert O**, Xu J, Hoang C, Leung A, Xu Y, Quon A, Rubin D, Napel S, Plevritis S. Non-small cell lung cancer: identifying prognostic imaging biomarkers by leveraging public gene expression microarray data--methods and preliminary results. *Radiology*, 2012, Aug;264(2):387-96.
  - Leunen K.\*, **Gevaert O.\***, Daemen A., Vanspauwen V., Michils G., De Moor B., Moerman P., Vergote I. and Legius E. Recurrent copy number alterations in BRCA1-mutated ovarian tumors alter biological pathways., \*equally contributing first authors. *Human Mutation*, 30:1693–1702, 2009,
  - **Gevaert O.**, Daemen A., De Moor B., Libbrecht L. A Taxonomy of epithelial human cancer and their metastases. *BMC Medical Genomics*, 2009 2:69
  - **Gevaert O.**, De Moor B. Prediction of cancer outcome using DNA microarray technology: past, present and future, *Expert Opinion in Medical Diagnostics*, 2009, 3(2):157-165

- **Gevaert O.**, Pochet N., De Smet F., Engelen K., Van Gorp T., Amant F., De Moor B., Timmerman D., Vergote I., Expression profiling to predict the clinical behaviour of ovarian cancer fails independent evaluation, *BMC Cancer*, 2008 (18),pp1-26, 2008
- **Gevaert O.**, Van Vooren S., De Moor B., A framework for elucidating regulatory networks based on prior information and expression data, *Annals of the New York Academy of Sciences*, 1115, pp.240-248, 2007.
- **Gevaert O.**, De Smet F., Timmerman D., Moreau Y., and De Moor B. Predicting the prognosis of breast cancer by integrating clinical and microarray data with Bayesian networks, *Bioinformatics*, 22(14):e184–190, 2006
- **Gevaert O.**, De Smet F., Kirk E., Van Calster B., Bourne T., Van Huffel S., Moreau Y., Timmerman D., De Moor B and Condous G., Predicting the outcome of pregnancies of unknown location: Bayesian networks with expert prior information compared to logistic regression, *Human Reproduction*, 21(7), pp1824-1831, 2006
- Co-author 2015
  - Echegaray S, **Gevaert O**, Shah R, Kamaya A, Louie J, Kothary N, Napel S. Core samples for radiomics features that are insensitive to tumor segmentation: method and pilot study using CT images of hepatocellular carcinoma. *J Med Imaging (Bellingham)*. 2015 Oct;2(4):041011. PMID: 26587549; PMCID: PMC4650964.
  - Musen MA, Bean CA, Cheung KH, Dumontier M, Durante KA, **Gevaert O**, Gonzalez-Beltran A, Khatri P, Kleinstein SH, O'Connor MJ, Pouliot Y, Rocca-Serra P, Sansone SA, Wisner JA; CEDAR team. The center for expanded data annotation and retrieval. *J Am Med Inform Assoc*. 2015 Nov;22(6):1148-52. doi:10.1093/jamia/ocv048. Epub 2015 Jun 25. PubMed PMID: 26112029.
  - Verstraete M, Debuquoy A, Dekervel J, van Pelt J, Verslype C, Devos E, Chiritescu G, Dumon K, D'Hoore A, **Gevaert O**, Sagaert X, Van Cutsem E, Haustermans K. Combining bevacizumab and chemoradiation in rectal cancer. Translational results of the AXEBEAM trial. *Br J Cancer*. 2015 Apr 14;112(8):1314-25. doi: 10.1038/bjc.2015.93. Epub 2015 Mar 17. PubMed PMID: 25867261; PubMed Central PMCID: PMC4402460.
- Co-author 2014
  - Li X, Nadauld L, Ootani A, Corney DC, Pai RK, **Gevaert O**, Cantrell MA, Rack PG, Neal JT, Chan CW, Yeung T, Gong X, Yuan J, Wilhelmy J, Robine S, Attardi LD, Plevritis SK, Hung KE, Chen CZ, Ji HP, Kuo CJ. Oncogenic transformation of diverse gastrointestinal tissues in primary organoid culture. *Nature Medicine*. 2014 Jul;20(7):769-77.
  - Nicolasjilwan M, Hu Y, Yan C, Meerzaman D, Holder CA, Gutman D, Jain R, Colen R, Rubin DL, Zinn PO, Hwang SN, Raghavan P, Hammoud DA, Scarpace LM, Mikkelsen T, Chen J, **Gevaert O**, Buetow K, Freymann J, Kirby J, Flanders AE, Wintermark M; TCGA Glioma Phenotype Research Group. Addition of MR imaging features and genetic biomarkers strengthens glioblastoma survival prediction in TCGA patients. *J Neuroradiol*. 2014 Jul 2
  - Litovkin K, Joniau S, Lerut E, Laenen A, **Gevaert O**, Spahn M, Kneitz B, Isebaert S, Haustermans K, Beullens M, Van Eynde A, Bollen M. Methylation of PITX2, HOXD3, RASSF1 and TDRD1 predicts biochemical recurrence in high-risk prostate cancer. *J Cancer Res Clin Oncol*. 2014 Jun 18.
- Co-author 2013
  - Nair VS, **Gevaert O**, Davidzon G, Plevritis SK, West R. NF-κB protein expression associates with (18)F-FDG PET tumor uptake in non-small cell lung cancer: A radiogenomics validation study to understand tumor metabolism. *Lung Cancer*. 2013 Nov 13. pii: S0169-5002(13)00511-4.
  - Zuurbier L, Gutierrez A, Mullighan CG, Canté-Barrett K, **Gevaert O**, de Rooi J, Li Y, Smits WK, Buijs-Gladdines JG, Sonneveld E, Look AT, Horstmann M, Pieters R, Meijerink JP. Immature MEF2C-dysregulated T-cell leukemia patients have an early T-cell precursor

- acute lymphoblastic leukemia gene signature and typically have non-rearranged T-cell receptors. *Haematologica*. 2013 Aug 23
- Van Bockstal M, Lambein K, **Gevaert O**, De Wever O, Praet M, Cocquyt V, Van den Broecke R, Braems G, Denys H, Libbrecht L. Stromal architecture and periductal decorin are potential prognostic markers for ipsilateral locoregional recurrence in ductal carcinoma in situ of the breast. *Histopathology*. 2013 May 14.
  - Co-Author 2012
    - Vicent S, Sayles L.C., Vaka D., Khatri P., **Gevaert O**, Chen R., Zheng Y, Gillespie A., Clarke N., Xu Y., Shrager J., Hoang C., Plevritis S., Butte A., Sweet-Cordero A., Cross-species functional analysis of cancer-associated fibroblasts identifies a critical role for CLCF1 and IL6 in non-small cell lung cancer in vivo. *Cancer Research* 2012, In Press.
    - Fassbender A., Verbeeck N., Börnigen D., Kyama CM, Bokor A., Vodolazkaia A., Peeraer K., Tomassetti C., Meuleman C., **Gevaert O**, Van de Plas R., Ojeda F., De Moor B., Moreau Y., Waelkens E., D'Hooghe TM. Combined mRNA microarray and proteomic analysis of eutopic endometrium of women with and without endometriosis. *Human Reproduction* 2012, Jul;27(7):2020-9
    - Vodolazkaia A., El-Aalamat Y., Popovic D., Mihalyi A., Bossuyt X., Kyama CM., Fassbender A., Bokor A., Schols D., Huskens D., Meuleman C., Peeraer K., Tomassetti C., **Gevaert O**, Waelkens E., Kasran A., De Moor B., D'Hooghe T. Evaluation of a panel of 28 biomarkers for a non-invasive diagnosis of endometriosis. *Human Reproduction* 2012, Sep;27(9):2698-711.
    - Fassbender A, Waelkens E, Verbeeck N, Kyama CM, Bokor A, Vodolazkaia A, Van de Plas R, Meuleman C, Peeraer K, Tomassetti C, **Gevaert O**, Ojeda F, De Moor B, D'Hooghe T. Proteomics analysis of plasma for early diagnosis of endometriosis. *Obstetrics & Gynecology*, 119:276-85
  - Co-Author, 2011
    - Beert E, Brems H, Daniëls B, De Wever I, Van Calenbergh F, Schoenaers J, Debiec-Rychter M, **Gevaert O**, De Raedt T, Van Den Bruel A, de Ravel T, Cichowski K, Kluwe L, Mautner V, Sciote R, Legius E. Atypical neurofibromas in neurofibromatosis type 1 are premalignant tumors. *Genes Chromosomes Cancer*. 2011 Dec;50(12):1021-32
    - Smeets A, Daemen A, Vanden Bempt I, **Gevaert O**, Claes B, Wildiers H, Drijkoningen R, Van Hummelen P, Lambrechts D, De Moor B, Neven P, Sotiriou C, Vandorpe T, Paridaens R, Christiaens MR. Prediction of lymph node involvement in breast cancer from primary tumor tissue using gene expression profiling and miRNAs. *Breast Cancer Research and Treatment*, 2011 Oct; 129(3):767-76.
    - Kyama CM., Mihalyi A., **Gevaert O**, Waelkens E., Simsa P., Van de Plas R., Meuleman C., De Moor B., D'Hooghe TM. Evaluation of endometrial biomarkers for semi-invasive diagnosis of endometriosis, *Sterility and Fertility*, 2011 Mar 15;95(4):1338-43.e1-3
  - Co-Author 2010
    - Kirk E, Van Calster B, Condous G, Papageorghiou AT, **Gevaert O**, Van Huffel S, De Moor B, Timmerman D, Bourne T. Ectopic pregnancy: using the hCG ratio to select women for expectant or medical management. *Acta Obstet Gynecol Scand*. 2011 Mar;90(3):264-272
    - Fassbender A., Simsa P., Kyama C.M., Waelkens E, Mihalyi A., Meuleman C., **Gevaert O**, Van de Plas R., De Moor B., D'Hooghe T.M. TRIzol treatment of secretory phase endometrium allows combined proteomic and mRNA microarray analysis of the same sample in women with and without endometriosis. *Reproductive Biology and Endocrinology*, 2010 Oct 21;8:123

- van Malenstein H., **Gevaert O.**, Libbrecht L., Daemen A., Allemeersch J., Nevens F., Van Hummelen P., Cassiman D., De Moor B., Verslype C. and van Pelt J. A 7 Gene Set Associated with Chronic Hypoxia of Prognostic Importance in Hepatocellular Carcinoma, *Clinical Cancer Research*, 2010, Aug 15, 16(16),4278-88
- Daemen A., Signoretto M., **Gevaert O.**, Suykens J., De Moor B. Improved Microarray-Based Decision Support with Graph Encoded Interactome Data, *PLoS ONE*, 2010, 5(4), e10225
- Mihalyi A., **Gevaert O.**, Kyama C., Simsa P., Pochet N., De Smet F., De Moor B., Meuleman C., Billen J., Blanckaert N., Vodolazkaia A., Fulop V., D'Hooghe T. Non-invasive diagnosis of endometriosis based on a combined analysis of six plasma biomarkers. *Human Reproduction*, March 2010, 25(3), 654-664
- Co-Author 2009
  - Gravendeel L, Kouwenhoven M, **Gevaert O.**, de Rooi J., Stubbs A., Duijm J., Daemen A., Bleeker F., Bralten L., Kloosterhof N., De Moor B., van der Spek P., Kros J., Sillevius Smitt P., van den Bent M. , French P. Intrinsic gene expression profiles of gliomas are a better predictor of survival than histology. *Cancer Research*, 2009, 69(23):9065-72
  - Debucquoy A., Haustermans K., Daemen A., Aydin S., Libbrecht L., **Gevaert O.**, Tejpar S., McBride W.H., Penninckx F., Scalliet P., Stroh C., Vlassak S., Sempoux C., Machiels J-P. Molecular response to cetuximab and efficacy of preoperative cetuximab-based chemoradiation in rectal cancer, *Journal of Clinical Oncology*, 2009 Jun 10;27(17):2751-7,
  - Van den Bosch T., Daemen A., **Gevaert O.**, De Moor B., Timmerman D., Building decision trees for diagnosing intracavitary uterine pathology. *Facts, Views & Vision in ObGyn*, 2009, 1(3),182-188
  - Bokor A., Kyama C.M., Vercruyse L., Fassbender A., **Gevaert O.**, Vodolazkaia A., De Moor B., Fulop, V., D'Hooghe T. Density of Small Diameter Sensory Nerve Fibers in Endometrium: a Semi-Invasive Diagnostic Test for Minimal to Mild Endometriosis. *Human Reproduction*, 24:12:3025-32, 2009
  - Daemen A., **Gevaert O.**, Ojeda F., Debucquoy A., Suykens J.A.K., Sempoux C., Machiels J-P., Haustermans K., De Moor B., A kernel-based integration of genome-wide data improving clinical decision support, *Genome Medicine*, 2009, 1:39.
- Co-Author 2008
  - Van den Bosch T., Verguts J., Daemen A., **Gevaert O.**, Domali E., Claerhout P., Vandenbroucke V., De Moor B., Deprest J., Timmerman D. Experienced pain during vaginal ultrasound, hydrosoneography, hysteroscopy and office sampling: a comparative study, *Ultrasound in Obstetrics and Gynecology*, 31(3), pp.346-351, 2008.
- Co-Author 2005
  - Condous G., Kirk E., Lu C., Van Huffel S., **Gevaert O.**, De Moor B., De Smet F., Timmerman D., Bourne T. Diagnostic accuracy of varying discriminatory zones for the prediction of ectopic pregnancy in women with a pregnancy of unknown location, *Ultrasound in Obstetrics and Gynecology* 26,(7), pp.770-775, 2005.

### Letters and editorial replies in journals

- **Gevaert O.**, Pochet N., De Smet F., Van Gorp T., De Moor B., Timmerman D., Amant F., Vergote I., Molecular profiling of platinum resistant ovarian cancer: use of the model in clinical practice, *International Journal of Cancer*, 119(6), pp1511-1512, 2006
- Van den Bosch T., Verguts J., Daemen A., **Gevaert O.**, Domali E., Claerhout F., Vandenbroucke V., De Moor B., Deprest J., Timmerman D. In reply: Pain experienced during transvaginal ultrasound, saline contrast sonohysterography, hysteroscopy and office sampling: a comparative study, *Ultrasound in Obstetrics and Gynecology*, 32(1), pp.118-119,2008

## Full conference papers with peer review

- Last author
  - Panahiazar M., Dumontier M., **Gevaert O.** Context aware recommendation engine for metadata submission. K-CAP Workshop on Capturing Scientific Knowledge. 2015, Palisades, NY
  - Manolakos A., Ochoa I., Venkat K., Goldsmith A., **Gevaert O.** CaMoDi: A new method for fast Cancer Module Discovery. 25th International Conference on Genome Informatics (GIW/ISCB-Asia), Tokyo, Japan 2014.
- First author
  - **Gevaert O.**, Plevritis S. Identifying regulators of cancer and their downstream targets by integrating genomic and epigenomic features. Pacific Symposium on Biocomputing 2013.
  - **Gevaert O.**, Van Vooren S., De Moor B. Integration of microarray and textual data improves the prognosis prediction of breast, lung and ovarian cancer patients, In Pacific Symposium on Biocomputing (PSB), Kohala Coast, Hawaii, pp. 279-290, 2008.
  - **Gevaert O.**, De Smet F., Timmerman D., Moreau Y., and De Moor B. Integration of clinical and microarray data using Bayesian networks. In Proceedings of the 14th IFAC Symposium on System Identification (SYSID), Newcastle, Australia, March 2006.
  - **Gevaert O.**, Van Vooren S., De Moor B., "The use of prior distributions for learning genetic networks", in Proc. of the workshop on Probabilistic Modeling and Machine Learning in Structural and Systems Biology (PMSB), Helsinki, Finland, Jun. 2006, pp. 103-107.
- Co-author
  - Daemen A., **Gevaert O.**, Leunen K., Legius E., Vergote I., De Moor B., Supervised classification of array CGH data with HMM-based feature selection. In Pacific Symposium on Biocomputing (PSB), Kohala Coast, Hawaii, 2009
  - Daemen A., **Gevaert O.**, Leunen K., Vanspauwen V., Michils G., Legius E., Vergote I., De Moor B., Classification of sporadic and BRCA1 ovarian cancer based on a genome-wide study of copy number variations, In Proceedings of 12th International Conference on Knowledge-Based and Intelligent Information and Engineering Systems (KES), Zagreb, Croatia, 2008
  - Daemen A., **Gevaert O.**, De Bie T., Debucquoy A., Machiels J.-P., De Moor B., Haustermans K., Integrating microarray and proteomics data to predict the response on cetuximab in patients with rectal cancer, In Pacific Symposium on Biocomputing (PSB), Kohala Coast, Hawaii, pp. 166-177, 2008.
  - De Moor B., Van Delm W., **Gevaert O.**, Engelen K., Coessens B., Systems Biology, Come Forth! In Foundations of Systems Biology in Engineering (FOSBE), Stuttgart, Germany, 2007

## Abstracts at conferences with peer review (oral presentations)

- 2016
  - Champion M., **Gevaert O.**, Pancancer module analysis captures major oncogenic pathways and identifies master regulator of immune response. Keystone Symposia on The Cancer Genome, Banff, Alberta, Canada, 2016
- 2015
  - Brennan K., Koenig J., Sunwoo J., **Gevaert O.** Methylation-Driven Subtyping of Head and Neck Squamous Cell Carcinoma", 4th Cancer Epigenetics Conference, November 16-17, 2015 in San Francisco, CA.

- **Gevaert, O.**, S. Napel, S. Echegaray, A. Khuong, C. D. Hoang, J. Shrager, S. Plevritis, and A. N. Leung. 2015. "Radiogenomics Mapping of Non-Small Cell Lung Cancer Identifies Prognostic Relationships between Semantic Image Features and Metagenes Captured Using RNA Sequencing." 101<sup>th</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA) 2015. Chicago, IL.
- **Gevaert O.**, Echegaray S., Napel S., Kothary N. Predictive modeling of microvascular invasion using triphasic quantitative imaging of hepatocellular carcinoma. 101<sup>th</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA) 2015. Chicago, IL.
- Itakura H., **Gevaert O.** Partial integration strategy of heterogeneous datasets to prognosticate survival in glioblastoma. AMIA Translational Bioinformatics Symposium, San Francisco, CA.
- Sweeney T., Chen A., **Gevaert O.** COMbined Mapping of Multiple cUsteriNg ALgorithms (COMMUNAL): A Robust Method for Selection of Cluster Number K. AMIA Translational Bioinformatics Symposium, San Francisco, CA.
- Planey K. **Gevaert O.** Definition and Exploration of LUAD-LUSC Hybrid Subtype via Integrative Omics Module Networks. AMIA Translational Bioinformatics Symposium, San Francisco, CA.
- 2014
  - **Gevaert O.** Glioblastoma subtypes defined by quantitative imaging map to different canonical signaling pathways. European Association of Neuro-Oncology (EANO), Turin, Italy
  - **Gevaert O.** Pancancer analysis of DNA-methylation driven genes. International Conference on Systems Biology (ICSB), Melbourne, Australia
  - **Itakura H.**, Achrol A., Liu TT., Echegary S., Loya J., Feroze AH., Mitchell L.A., Rodriguez S., Westbroek E., Cheshier S.H., Steinberg G.K., Rubin D., Yeom K., Napel S., Harsh G.R., **Gevaert O.** Development and validation of a quantitative image signature that predicts clinical survival in glioblastoma. 100<sup>th</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA) 2014. Chicago, IL
- 2013
  - **Gevaert O.**, Mitchell L., Achrol A., Xu J., Steinberg G., Cheshier S., Napel S., Zaharchuk G., Plevritis S. Creating a Radiogenomics map of multi-omics and quantitative image features in glioblastoma multiforme. 99<sup>th</sup> Scientific Assembly and Annual Meeting of the Radiological Society of North America (RSNA) 2013. Chicago, IL.
  - **Gevaert O.**, Achrol A., Chang S., Harsh G., Steinberg G., Cheshier S., Plevritis S. GLIOMETH: A novel DNA methylation signature predicts overall survival in glioblastoma multiforme. 4th Quadrennial Meeting of the World Federation of Neuro-Oncology, 18th Annual Meeting of the Society for Neuro-Oncology, November 21-24, 2013, San Francisco, California.
  - **Gevaert O.**, Achrol A, Gholamin S, Mitra S., Westbroek E., Loya J, Mitchell L., Chang S., Harsh G., Steinberg G., Plevritis S., Cheshier S. Cancer stem cell transcriptional subtyping of glioblastoma multiforme correlates with clinically relevant molecular and imaging phenotypes. 4th Quadrennial Meeting of the World Federation of Neuro-Oncology, 18th Annual Meeting of the Society for Neuro-Oncology, November 21-24, 2013, San Francisco, California.
  - **Gevaert O.**, Mitchell L., Achrol A., Xu J., Steinberg G., Cheshier S., Napel., Zaharchuk G., Plevritis S., Creating a radiogenomics map of multi-omics and quantitative image features in glioblastoma multiforme. 4th Quadrennial Meeting of the World Federation of Neuro-Oncology, 18th Annual Meeting of the Society for Neuro-Oncology, November 21-24, 2013, San Francisco, California.
- 2012



- **Gevaert O.**, Plevritis S. Identifying a landscape of DNA methylation-driven genes in breast cancer using MethylMix. RECOMB Conference on regulatory and Systems Genomics, San Francisco 2012.
- **Gevaert O.**, Mitchell L., Xu J., Yu C., Rubin D., Zaharchuk G., Napel S., Plevritis S. Radiogenomic analysis indicates MR images are potentially predictive of EGFR mutation status in glioblastoma multiforme. AACR 103rd annual meeting, Chicago, April 2012.
- Adam S., Yetil A., **Gevaert O.**, Jojic V., Gentles A., Felsher DW. Distinct roles of p53 and p19ARF in MYC-dependent tumor oncogene addiction. AACR 103rd annual meeting, Chicago, April 2012.
- 2011
  - **Gevaert O.**, Xu J., Hoang C., Leung A., Quon A., Rubin D., Napel S., Plevritis S. Integrating medical images and transcriptomic data in non-small cell lung cancer. AACR 102nd annual meeting, Orlando, April 2011.
  - **Gevaert O.**, Gentles A., Stubbs A., Kremer A., van der Spek P., Plevritis S., Meijerink J. Modeling the regulatory network of pediatric T cell acute lymphoblastic leukemia. AACR-NCI Conference on Systems Biology: Confronting the Complexity of Cancer, San Diego, February 2011.
  - Napel S., Hoang C., Xu J., **Gevaert O.**, Rubin D., Plevritis S., Xu Y., Leung A., Quon A. Computational and semantic annotation of CT and PET images and integration with genomic assays of tumors in non-small cell lung cancer (NSCLC) for decision support and discovery: method and preliminary results. Radiological Society of North America (RSNA), Chicago, November 2011.
  - Plevritis S., **Gevaert O.**, Xu J., Hoang C., Leung A., Xu Y., Quon A., Rubin D., Napel S. Rapid Identification of Prognostic Imaging Biomarkers for Non-small Cell Lung Carcinoma (NSCLC) by Integrating Image Features and Gene Expression and Leveraging Public Gene Expression Databases. Radiological Society of North America (RSNA), November 2011 Chicago.
  - Hoang C., Napel S., **Gevaert O.**, Xu Y., Rubin D., Leung A., Merritt R., Whyte R., Shrager J., Plevritis S. NSCLC Gene Profiles Correlate with Specific CT Characteristics: “Image-omics”. American Association for Thoracic Surgery (AATS) 2011 Philadelphia.
- 2010
  - Beert E., Brems H., **Gevaert O.**, De Wever I., Van Calenbergh F., Kluwe L., Mautner V., Sciot R., Legius E. Chromosomal abnormalities in high grade MPNSTs from NF microdeletion versus non-microdeletion patients. 14th Annual European Neurofibromatosis meeting location, September 2010, Oslo, Norway.
- 2008
  - **Gevaert O.**, Van Holsbeke C., Fruscio R., Guerriero S., Czekierdowski A., Savelli L., Testa A., Fischerova D., Jurkovic D., Bourne T., Neven P., Valentin L., De Moor B., Timmerman D. Multicenter prospective testing to predict malignancy in adnexal masses using Bayesian network models, In 18th World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG), Chicago, Illinois, Aug. 2008
  - **Gevaert O.**, Testa A., Daemen A., Van Holsbeke C., Fruscio R., Epstein E., Leone FPG., Czekierdowski A., Valentin L., Savelli L., Bourne T., Amant F., De Moor B., Timmerman D. Investigation of the performance of mathematical models on small ovarian masses on IOTA phase 1 and 2 data. In 18<sup>th</sup> World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG), Chicago, Illinois, Aug. 2008
  - Kyama CM., Mihalyi A., **Gevaert O.**, Simsa P., Waelkens E., Van de Plas R., Mwenda JM., Meuleman C., De Moor B., D’Hooghe TM. Proteomics in translational research: an integrated approach in the pathogenesis and diagnosis of endometriosis. In The 10th world congress on endometriosis, Melbourne, Australia, March 2008
  - Daemen A., Van Holsbeke C., **Gevaert O.**, Fruscio R., Guerriero S., Czekierdowski A., Valentin L., Savelli L., Testa A., Fischerova D., Bourne T., Vergote I., De Moor B.,



- Timmerman D. Prospective comparison of one-step and two-step models for the classification of adnexal masses as benign or malignant, In 18<sup>th</sup> World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG), Chicago, Illinois, Aug. 2008
- Machiels J.H., Debucquoy A., **Gevaert O.**, Daemen A., Sempoux C., McBride W., Stroh C., Vlassak S., Haustermans K. Prediction of pathological response to preoperative chemoradiotherapy with cetuximab in rectal cancer. Annual Meeting of American Society of Clinical Oncology (ASCO), J Clin Oncol, Suppl, Chicago, Illinois, May-June 2008
  - 2007
    - **Gevaert O.**, Van Vooren S., De Moor B. Integration of expression and textual data enhances the prediction of prognosis in breast cancer. International workshop on Probabilistic Modeling in Computational Biology: Probabilistic methods for Active Learning and Data Integration in Computational Biology, Vienna, July 2007
    - **Gevaert O.**, De Moor B., Timmerman D., Optimizing variable selection and cost using a genetic algorithm for modeling adnexal masses with Bayesian networks, In 17th World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG), Firenze, Italy, Oct 2007
    - Kyama CM., Mihalyi A., **Gevaert O.**, Simsa P., Waelkens E., Van de Plas R., Mwenda JM., Meuleman C., De Moor B., D'Hooghe TM. Endometrial biomarkers for semi-invasive diagnosis of endometriosis, In 23rd Annual Meeting of the European Society for Human Reproduction and Embryology (ESHRE), Lyon, France, 2007
    - Van den Bosch T., Daemen A., **Gevaert O.**, Timmerman D. Mathematical decision trees versus clinician based algorithms in the diagnosis of endometrial disease In 17th World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG), Firenze, Italy, Oct 2007
    - Daemen A., Bottomley C., **Gevaert O.**, De Moor B., Timmerman D., Bourne T. Predicting early pregnancy loss with Functional Linear Discriminant Analysis (FLDA) In 17th World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG), Firenze, Italy, Oct 2007
    - Daemen A., **Gevaert O.**, De Moor B. Integration of clinical and microarray data with kernel methods, In 29th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Lyon, France, Aug. 2007.
  - 2005
    - Kirk E., **Gevaert O.**, Haider Z., Condous G., Bourne T. Can the hCG ratio be used to predict the likelihood of success of conservative management of ectopic pregnancies? In 15th World Congress on Ultrasound in Obstetrics and Gynecology (ISUOG), Vancouver, Canada, Sept. 2005

## Book chapters

- De Moor B., **Gevaert O.**, "ICT and eHealth: New roads for science", in Lessons for the 21st Century, Translated: "ICT en eHealth. Nieuwe wegen voor de wetenschap", in XXI lessen voor de eenentwintigste eeuw, (Pattyn B., and Raymaekers B., eds.), Universitaire Pers (Leuven, Belgium), 2010, pp. 15-26.
- Daemen A., **Gevaert O.**, Leunen K., Vanspauwen V., Michils G., Legius E., Vergote I., De Moor B. Genome-wide computational study of copy number variations to classify familial ovarian cancer, in Chapter 9, Investigating Human Cancer with Computational Intelligence Techniques, (Vellido A., and Lisboa PJG., eds.), Future Technology Press (Shoreham-by-sea, UK), 2009, pp. 107-118
- Van Calster B., **Gevaert O.**, Van Holsbeke C., De Moor B, Van Huffel S., Timmerman D. Clinical decision support for ovarian tumor diagnosis using Bayesian models: Results from the IOTA study. Computational intelligence in bioengineering, Essays in memory of Antonina Starita. Edited by Masulli F., Micheli A. and Sperduti A. IOS Press, Frontiers in Artificial Intelligence and Applications, Volume 196, 2009, pp 111-128.

## Refereeing

- Journals
  - Present
    - Biostatistics, BMC Bioinformatics, BMC Cancer, BMC genomics, BMC medical genomics, Bioinformatics, Genome Biology, Scientific Reports, PLoS ONE, IEEE Transactions on computational biology.
  - Past
    - Human Reproduction, International Journal of Artificial Intelligence in medicine, International Journal of Computer Mathematics
- Conference program committee/reviewer:
  - RECOMB Conference on Regulatory and Systems Genomics, with DREAM challenges, San Francisco 2012.
  - European Conference on Computational Biology, Basel Switzerland (ECCB 2012)
  - International Conference on Intelligent Systems for Molecular Biology, Boston, USA (ISMB 2010)
  - Neural Information Processing Systems Conference, Vancouver, Canada (NIPS 2009, 2010)

## Grants

### Current funding

- NIH/NIBIB R01 EB020527 (Gevaert) 2/15/15 – 1/31/19  
“Radiogenomics framework for personalized medicine”  
Role: Principal Investigator
- NIH/NIAID U54 AI117925 (Musen) 9/1/2014 – 9/31/2018  
“CEDAR: Center for Expanded Data Annotation and Retrieval”  
Role: Investigator
- NIH/NCI R01 CA184968, (Sikic/Fantl) 5/6/2014 – 4/30/2018  
“New Biomarkers and Pathways to Enhance Cure in Ovarian Cancers”  
Role: Investigator
- NIH/NCI U01 CA176299 (Kuo/Ji) 5/2/2013 – 4/30/2017  
“Functional analysis of oncogenic networks in primary organoids”  
Role: Investigator
- NIH/NCI R01 CA160251 (Napel/Plevritis) 9/1/2011 – 7/31/2016  
“Tools for Linking and Mining Image and Genomic Data in Non-Small Cell Lung Cancer”  
Role: Investigator
- NIH/NCI U01 DK085527 (Kuo) 9/22/2009 – 31/08/2014  
“RNA-Seq Analysis of Intestinal Stem Cell Populations”  
Role: Investigator

### Previous Funding

- Post-Doc Fellowship (Research Foundation Flanders, Belgium (FWO))
- Post-Doc Fellowship Belgian American Educational Foundation (BAEF)
- PhD Fellowship (Applied Research Foundation Flanders, Belgium, (IWT))

### Grant Reviewer

UK Cancer Research, NWO Netherlands Organization for Scientific Research

## Patent application

- US WO/2010/127417: Hepatocellular Carcinoma: kit and in vitro method for the evaluation of the biological stage of an HCC tumor, based on the expression profile of 7 genes.

## Membership

- Society for Neuro-Oncology (SNO) 2013-current
- International Society for Computational Biology (ISCB) 2006-current
- American Association for Cancer Research (AACR) 2010-current

## Invited Presentations

- 2015
  - “Radiomics for tumours: The future for personalised radiotherapy?”, 5<sup>th</sup> European Lung Cancer Conference (ELCC), Geneva Switzerland, April 2015
  - “Neuroinformatics for Brain Tumors”, American Society for Neuroradiology (ASNR), Omics and Big Data for Neuroradiology Symposium, Chicago April 2015,
- 2014
  - “Glioblastoma subtypes defined by quantitative imaging map to different canonical signaling pathways”, European Association of Neuro-Oncology Meeting, Turin, Italy, October 2014s
  - “Multi-omics analysis of colorectal cancer and beyond”, Colon Cancer Family Registry, Kauai, Hawaii, September 2014
  - “Integrative Informatics for Brain Tumor Gene Expression: Correlation with Imaging”, ASNR 52<sup>nd</sup> Annual Meeting, Montreal, Canada, May 2014
  - “MethylMix: Identifying methylation driven genes in cancer”, Cancer Target Discovery and Development (CTD<sup>2</sup>) workshop, Bethesda, MD, April 2014
  - “RNA sequencing pipeline for Intestinal Stem Cell profiling”, Intestinal Stem Cell consortium (ISCC) workshop, Washington DC, March 2014
- 2013
  - “Integrative Cancer Systems Biology”, UCLA, Los Angeles, CA, January 2013.
  - “Radiogenomics of Non-Small Cell Lung Cancer”, Radiomics Workshop, Moffitt Cancer Center, Tampa, FL, October 2013.
  - Gevaert O. Radiogenomics in lung cancer. AAPM 2013, Indianapolis, IN
- 2012
  - “Radiogenomics of Lung Cancer: Linking Molecular, Cellular and Tissue Cancer Data”, Ohio State University Cancer Center, Columbus OH, August 2012
- 2011
  - “Integrating Medical Images and Transcriptomic Data in Non-Small Cell Lung Cancer”, Molecular Profiling Colloquium, Brown Lab, February 2011, Stanford, CA
  - “Integrating Medical Images and Transcriptomic Data in Non-Small Cell Lung Cancer”, Information Sciences in Imaging Seminar (ISIS) Series, January 2011, Stanford, CA
- 2010

- “Integrating Medical Images and Transcriptomic Data in Non-Small Cell Lung Cancer”, BCATS Symposium, November 2010, Stanford, CA

## Teaching Experience

- Undergraduate Pre-major advisor: three students 2015-2017
- Stanford Graduate classes:
  - BIOMEDIN 217: Translational Bioinformatics:
    - Core faculty Winter 2015-2016
  - BIOMEDIN 205: Precision practice with big data
    - Guest lecture Fall 2014: Multi-scale data fusion
    - Guest lecture Fall 2015: Multi-scale data fusion.
  - CBIO 243: Principles of Cancer Systems Biology:
    - Guest lecture 2013/2014: Multi-omics data modeling.
    - Guest lecture 2014/2015: Multi-omics data modeling.
  - HRP 236: Epidemiology Research Seminars
    - Guest lecture Fall 2014: Multi-scale data fusion in glioblastoma multiforme
- Presenter, Bioinformatics tutorial seminar
  - ETumour FP6 European Framework Project: “Introduction to bioinformatics”, KU Leuven, Leuven, Belgium, 2006.
- Teaching Assistant:
  - Problem solving & design 3, Bachelor of Science in Engineering, Katholieke Universiteit Leuven, Belgium
- Master thesis mentorship:
  - Paolo Pilozzi, Modularized Learning of Genetic Networks, Master of Artificial Intelligence, 2005-06, now PhD candidate at Computer Science, KU Leuven Belgium
  - Joachim Jacobs, Data mining in health insurance, Master of Electrical Engineering, 2006-07
  - Nico Verbeeck, Learning cancer biology: the combination of Bayesian networks and prior information, Master of Artificial Intelligence, 2008-09, now PhD Candidate at Electrical Engineering, KU Leuven, Belgium
- PhD thesis mentorship:
  - Anneleen Daemen, Design of clinical decision support systems for cancer based upon clinical and molecular data, 2006-2010. Now post-doc at UCSF, San Francisco, CA

## Technical Expertise

Programming: Matlab, Perl, Java, C++, R, MySQL,

Technology: gene expression microarray, DNA methylation, DNA/RNA sequencing, copy number variation, SNP microarrays, mass spectrometry based proteomics (SELDI/MALDI), CT and MRI imaging.