

Vanessa Dumeaux, PharmD, PhD

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SUMMARY

Data science and molecular biology expert with over 15 years' experience in the oncology field. Supported the establishment a large biobank within a nation-wide Norwegian prospective cohort study. Co-initiation and coordination of a randomized clinical trial. Developed several proofs of concept studies and evaluated laboratory protocols to sensitively measure molecular changes in circulating blood cells for biomarker discovery. Expert in combining basic molecular biology, novel technology and statistical / computational approaches to health-related research. Proven track record for working in multi-disciplinary teams and delivering high quality results on time. Solution-focused leader capable of translating complex problems into executable plans. Dedicated and accountable professional with a passion for translating biological discoveries to patient health impact.

PROFESSIONAL EXPERIENCE

Concordia University

Research Scientist, PERFORM Center, Concordia University

Montreal, QC

Nov 2017 – Present

Dumeaux Data Science

Research and Data Consultant

Montreal, QC

Jan 2017 – Present

- Web: <https://dumeaux.science/>
- Provide pragmatic sound bioinformatics, biostatistical and project management assistance with all stages of research projects.
- Current projects involved analyses of RNA-seq and ChiP-seq data, project management, and mentoring of students to improve their technical skills in bioinformatics.

Concordia University

Senior Researcher, Computational Biology Laboratory

Montreal, QC

Jan 2017 – Oct 2017

- Software development resulted in a manuscript and a R/Bioconductor software package.
- Consulting scientist for Genomic Health Inc, Redwood City, CA.

McGill university

Senior Researcher, Breast Cancer Informatics Laboratory

Montreal, QC

November 2014 – 2017

- Research lead for the Matched Interaction Across Tissues Program: Development of a novel computational methodology for identifying and exploring associations between sets of genes or molecular processes across tissues. Successfully identified genes and pathways in the primary breast tumor that are tightly linked to genes and pathways in the patient systemic response. Resulted in a web application, publication and several invited oral presentations.
- Co-supervision and mentoring of undergraduate and graduate students resulted in several publications.
- Continued development of a blood-based diagnostic test for breast cancer. Assist in the design of a Norwegian trial that compares our diagnostic test to standard of care.

Assistant Professor, Department of Oncology

2011 – 2014

- R&D lead of a blood-based diagnostic test for breast cancer in collaboration with Norinova Technology Transfer AS and Zacco IP firm in Norway: resulted in a grant funding (Proof of Concept grant, European Research Council, PI: Lund)

- Regional academic collaboration (Michael Hallett, McGill University), resulted in a grant funding from Canadian Cancer Society Research Institute and several publications. Established that the prognosis of about 20% of breast cancers are difficult to assess using only molecular properties of the tumor.
- International collaboration with the Norwegian Women and Cancer study (NOWAC). Lead researcher for bioinformatics analysis for NOWAC. Mentoring of graduate students and post-doctoral fellows to improve their technical skills in bioinformatics.
- Collaboration with international academic consortium: The European Prospective Investigation into Cancer and Nutrition and the Public Population Project in Genomics and society. Resulted in several publications.
- Development of a 40-hour lecture course providing fundamental aspects of epidemiology and biostatistics, and genomics especially with respect to large epidemiological cohorts, and bioinformatics analysis techniques relevant to such studies.
- Guest lecturer for the Computational Cancer Biology course (McGill) and for the Molecular and Clinical aspects of Cancer (Tromso).
- Member of Advisory Board in McGill Systems Biology Training Program.
- Reviewer and member of research advisory PhD thesis committees (Université de Montreal, McGill)

Associate Member, Department of Epidemiology, Biostatistics and Occupational Health 2013 – 2014

- Member of the MSc Epidemiology Admissions Committee
- Small group teaching for the undergraduate medical program in clinical epidemiology
- Research mentor in the McGill MD,CM curriculum

Visiting Research Scientist, The Goodman Cancer Center 2010 – 2011

- Research lead for a blood-based diagnostic test for breast cancer: successful identification of a robust and reproducible diagnostic signal specific to breast cancer reflecting an overall systemic immunosuppression of the patient. Resulted in a patent and a publication
- Peer review for EU-CORDIS Cooperation agency: Translational research in cancer: from basic to clinical research.

Maternity leave 2009 – 2010

Paris V University **Paris, France**

Visiting post-doctoral fellow, Department of Applied Mathematics Fall 2008 – 2009

Development of a novel statistical methodology for the sensitive detection of low amplitude changes in blood profiles across healthy individuals. Determined the inter-individual variability in blood gene expression profiles and established the feasibility of blood gene expression profiling for disease diagnosis or prognosis.

Princeton University **Princeton, NJ**

Visiting post-doctoral fellow, Lewis-Sigler Institute for Integrative Genomics 2008 – Fall 2008

Establishment of a tissue-specific knowledge database to build context-specific functional relationship networks. Resulted in a publication.

Oslo University **Oslo, Norway**

Visiting post-doctoral fellow, Department of Genetics 2005 – 2008

Sustained effort to investigate hormonal carcinogenesis using prospective observational data or as part of the European Prospective Investigation into Cancer and Nutrition (EPIC) collaboration. Identify blood-based gene expression signatures in response to diverse exposures and health status including breast cancer. Co-supervision and mentoring of graduate students: identification of systemic biological processes deregulated in breast cancer survivors experiencing late side-effects of radiotherapy including chronic fatigue and fibrosis. Resulted in several publications

ACSO preparatory school of pharmacy **Poitiers, France**

81 rue Logan St-Lambert, Quebec 5142947582 vanessadumeaux@gmail.com

Teacher

1997 – 2000

Small group teaching and exams practice in physiology-embryology and botany for the pharmacy entrance exams.

Pharmacie des Arcades

La Rochelle, France

Pharmacy assistant

Summer 1999

EDUCATION

PARIS XI UNIVERSITY AND THE ARCTIC UNIVERSITY OF NORWAY **France & Norway**

PhD Molecular epidemiology

2002 – 2005

PhD Thesis: Exposure to exogenous hormones in women: risk factors for breast cancer and molecular signature

First Class Honors

Successfully identified breast cancer risks specific to different types of oral contraceptives and menopausal treatments. Established a large blood and tumor biobank within a nation-wide Norwegian Women and Cancer (NOWAC) cohort study to integrate the molecular aspects of the disease within the context of the patient and the population. Developed several proofs of concept studies and evaluated laboratory protocols to sensitively investigate molecular changes in circulating blood cells for biomarker discovery. Resulted in several publications.

VICTOR-SEGALLEN UNIVERSITY

Bordeaux, France

MSc Epidemiology and Intervention in Public Health

2002

MSc Thesis: Breast cancer and specific types of oral contraceptives: a large Norwegian cohort study.

First Class Honors

POITIERS UNIVERSITY

Poitiers, France

Doctorate in Pharmacy

1995 – 2002

PhamD Thesis : Contraceptifs oraux et cancer du sein : le risque est-il le même avec les estrogènes et les progestagènes ?

First Class Honors

PATENTS

Gene expression profile in diagnostics (PCT/NO2013/050203, US Patent 14/646,010)

RELEVANT ORAL PRESENTATIONS

Genomic Health Inc, Redwood City, CA, 2017

16th Annual McGill Workshop on Bioinformatics, Holetown, Barbados 2017

Molecular Interception of Disease Symposium, Doha, Qatar, 2016

15th Annual McGill Workshop on Bioinformatics, Holetown, Barbados 2016

Systems Genetics of Cancer, Cambridge, UK, 2015

Canadian Cancer Research Conference, Toronto, ON, 2013

MonBUG seminar, IRIC, Montreal, Canada, 2010

RESEARCH AWARDS AND FUNDING

European Research Council

2016 – 2017

A gene expression test in blood for breast cancer (C\$60,000)

Canadian Cancer Society Research Institute

2014 – 2017

Interactions between the tumor-microenvironment and the systemic response of breast cancer patients (C\$199,860)

European Research Council

2009 – 2014

Transcriptomics in Cancer Epidemiology (C\$440,500)

The Research Council of Norway

2006 – 2009

Post-doctoral fellowship: Hormone replacement therapy, gene expression profiles and breast cancer (C\$400,000)

PUBLICATIONS

Names of supervised PhD student are underlined

Dumeaux V, Fjukstad B, Lund E, Bongo LA, Hallett M. MIXT: Matched Interaction Across Tissue analysis and visualization (manuscript).

Dumeaux V, Fjukstad B, Fjosne HE, Frantzen JO, Holmen MM, Rodegerdts E, Schlichting E, Bongo LA, Lund E, Hallett M. Interactions between the tumor and the blood systemic response of breast cancer patients. *PloS Computational Biology* 2017 (in press).

Fjukstad B, **Dumeaux V**, Olsen KS, Lund E, Hallett M, and Bongo LA (2017). Building Applications for Interactive Data Exploration in Systems Biology. In *Proceedings of the 8th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics (Boston, Massachusetts, USA: ACM)*, pp. 556-561.

Paquet ER, Lesurf R, Tofigh A, **Dumeaux V**, Hallett M. Detecting pathway activation in breast cancer in an absolute, single patient manner. *Breast Cancer Research* 2017 (Epub ahead of print)

Dumeaux V, Ursini-Siegel J, Flatberg A, Fjosnes HE, Frantzen JO, Holmen MM, Rodegerdts E, Schlichting E, Lund E. Gene expression changes in circulating blood cells informs on the host's response to the presence of breast cancer. *International Journal of Cancer* 2015;1:656-67.

Tofigh A*, Suderman M*, Paquet E, Livingstone J, Bertos N, Saleh S, Zhao H, Souleimanova M, Cory S, Lesurf R, Shahalizadeh S, Garcia Lopez N, Riazalhosseim Y, Omeroglu A, Ursini-Siegel J, Park M, **Dumeaux V**, Hallett M. The prognostic ease and difficulty of invasive breast carcinoma. *Cell Reports* 2014;9:129-41.

Gavrilyuk O, Braaten T, Weiderpass E, Skeie G, **Dumeaux V**, Lund E. High coffee consumption and different brewing methods in relation to postmenopausal endometrial cancer risk in the Norwegian Women and Cancer Study. *BMC Women's Health* 2014;14-48.

Ritte R, Tikk K, Lukanova A, Tjønneland A, Olsen A, Overvad K, Dossus L, Fournier A, Clavel-Chapelon F, Grote V, Boeing H, Aleksandrova K, Trichopoulou A, Lagiou P, Trichopoulos D, Palli D, Berrino F, Mattiello A, Tumino R, Sacerdote C, Quirós JR, Buckland G, Molina-Monte E, Chirlaque MD, Ardanaz E, Amiano P, Bueno-de-Mesquita HB, van Gils CH, Peeters PHM, Wareham N, Khaw KT, Key TJ, Travis RC, Weiderpass E, **Dumeaux V**, Lund E, Sund M, Andersson A, Romieu I, Rinaldi S, Vineis P, Merritt MA, Riboli E and Kaaks R. Reproductive factors and risk of hormone receptor positive and negative breast cancer: A cohort study. *BMC Cancer* 2013;13:584.

Landmark-Høyvik H, **Dumeaux V**, Nebdal D, Lund E, Tost J, Kamatani Y, Renault V, Børresen-Dale AL, Kristensen V, Edvardsen H. Genome-wide association study in breast cancer survivors reveals SNPs associated with gene expression of genes belonging to MHC class I and II. *Genomics* 2013;102:278-87.

González CA, Megraud F, Buissonniere A, Lujan Barroso L, Agudo A, Duell EJ, Boutron-Ruault MC, Clavel-Chapelon F, Palli D, Krogh V, Mattiello A, Tumino R, Sacerdote C, Quirós JR, Sanchez-Cantalejo E, Navarro C, Barricarte A, Dorronsoro M, Khaw KT, Wareham N, Allen NE, Tsilidis KK, Bas Bueno-de-Mesquita H, Jeurnink SM, Numans ME, Peeters PH, Lagiou P, Valanou E, Trichopoulou A, Kaaks R, Lukanova-McGregor A, Bergman MM, Boeing H, Manjer J, Lindkvist B, Stenling R, Hallmans G, Mortensen LM, Overvad K, Olsen A, Tjønneland A, Bakken K, Dumeaux V, Lund E, Jenab M, Romieu I, Michaud D, Mouw T, Carneiro F, Fenge C, Riboli E. Helicobacter pylori infection assessed by ELISA and by immunoblot and noncardia gastric cancer risk in a prospective study: the Eurgast-EPIC project. *Ann Oncol* 2012;23:1320-4.

Rylander C, **Dumeaux V**, Olsen KS, Waaseth M, Sandanger TM, Lund E. Using blood gene signatures for assessing effects of exposure to perfluoroalkyl acids (PFAAs) in humans: the NOWAC postgenome study. *Int J Mol Epidemiol Genet* 2011;2:207-16.

Fortier I, Doiron D, Little J, Ferretti V, L'Heureux F, Stolk RP, Knoppers BM, Hudson TJ, Burton PR; **International Harmonization Initiative**. Is rigorous retrospective harmonization possible? Application of the DataSHaPER approach across 53 large studies. *Int J Epidemiol* 2011;40:1314-28.

Waaseth M, Olsen KS, Rylander C, Lund E, **Dumeaux V**. Sex hormones and gene expression signatures in peripheral blood from postmenopausal women – the NOWAC postgenome study. *BMC Medical Genomics* 2011;4:29.

Landmark-Høyvik H, **Dumeaux V**, Reinertsen KV, Edvardsen H, Fosså SD, Børresen-Dale AL. Blood gene expression profiling of breast cancer survivors experiencing fibrosis. *Int J Radiat Oncol Biol Phys* 2011;79:875-83.

Dumeaux V, Olsen SK, Paulssen RH, Børresen-Dale AL, Lund E. Deciphering blood gene expression variation – The postgenome NOWAC study. *PLoS Genetics* 2010;6:e1000873.

Lund E and **Dumeaux V**. Towards a more functional concept of causality in cancer research. *Int J Mol Epidemiol Genet* 2010;15:124-33.

Gu F, Schumacher FR, Canzian F, Allen NE, Albanes D, Berg CD, Berndt SI, Boeing H, Bueno-de-Mesquita HB, Buring JE, Chabbert-Buffet N, Chanock SJ, Clavel-Chapelon F, **Dumeaux V**, J Michael Gaziano JM, Giovannucci E, Haiman CA, Hankinson SE, Hayes RB, Henderson BE, Hunter DJ, Hoover RN, Johansson M, Key TJ, Khaw KT, Kolonel LN, Lagiou P, Lee IM, Lemarchand L, Lund E, Ma J, Onland-Moret NC, Overvad K, Rodriguez L, Sacerdote C, Sanchez MJ, Stampfer MJ, Stattin PE, Stram DO, Thomas G, Thun MJ, Tjønneland AM, Trichopoulos D, Tumino R, Virtamo J, Weinstein SJ, Willett WC, Yeager M, Zhang SM, Kaaks R, Riboli E, Ziegler RG, Kraft PL. Eighteen Insulin-like Growth Factor (IGF) pathway genes, circulating levels of IGF-1 and its binding protein (IGFBP-3), and risk of prostate and breast cancer. *CEBP* 2010;19:2877-87.

Landmark-Høyvik H, Reinertsen KV, Loge JH, Kristensen VN, **Dumeaux V**, Fosså SD, Børresen-Dale AL, Edvardsen H. The Genetics and Epigenetics of Fatigue. *PMR* 2010;2:456-65.

Bakken K, Fournier A, Lund E, Waaseth M, **Dumeaux V**, Clavel-Chapelon F, Fabre A, Hémon B, Rinaldi S, Chajes V, Slimani N, Allen NE, Reeves GK, Bingham S, Khaw KT, Olsen A, Tjønneland A, Rodriguez L, Sánchez MJ, Etzezarreta PA, Ardanaz E, Tormo MJ, Navarro C, Peeters PH, van Gils CH, Steffen A, Schulz M, Chang-Claude J, Kaaks R, Tumino R, Gallo V, Norat T, Riboli E, Panico S, Masala G, Berrino F. Menopausal Hormone Therapy and breast cancer risk: Impact of different hormones,

regimens, routes of administration and duration of use. The European Prospective Investigation into Cancer and nutrition (EPIC). *Int J Cancer* 2010;128:144-56.

Aarøe J, Lindahl T, **Dumeaux V**, Sæbø S, Tobin D, Hagen N, Skaane P, Lönneborg A, Sharma P, Børresen-Dale AL. Gene expression profiling of peripheral blood cells for early detection of breast cancer. *Breast Cancer Research* 2010;12:R7.

Dossus L, Allen N, Kaaks R, Bakken K, Lund E, Tjønneland A, Olsen A, Overvad K, Clavel-Chapelon F, Fournier A, Chabbert-Buffet N, Boeing H, Schütze M, Trichopoulou A, Trichopoulos D, Lagiou P, Palli D, Krogh V, Tumino R, Vineis P, Mattiello A, Bueno-de-Mesquita HB, Onland-Moret NC, Peeters PH, **Dumeaux V**, Redondo ML, Duell E, Sanchez-Cantalejo E, Arriola L, Chirlaque MD, Ardanaz E, Manjer J, Borgquist S, Lukanova A, Lundin E, Khaw KT, Wareham N, Key T, Chajes V, Rinaldi S, Slimani N, Mouw T, Gallo V, Riboli E. Reproductive risk factors and endometrial cancer: The European prospective investigation into cancer and nutrition. *Int J Cancer* 2009;127:442-51.

Lönneborg A, Aarøe J, **Dumeaux V**, Børresen-Dale AL. Found in translation: Gene Expression and other Novel Blood Biomarkers for the Early Detection of Breast Cancer. *Expert Review of Anticancer Therapy* 2009;9:1115-23.

Landmark-Høyvik H, Valborg RK, Loge JH, Fosså DS, Børresen-Dale AL, **Dumeaux V**. Gene expression analysis of cancer-related fatigue in breast cancer survivors. *Pharmacogenomics* 2009;9:333-40.

Huttenhower C, Haley EM, Hibbs MA, **Dumeaux V**, Coller HA, Troyanskaya OG. A functional map of the human genome. *Genome Research* 2009;19:1093-106.

Barutcuoglu Z, Airoidi E, **Dumeaux V**, Schapire RE, Troyanskaya OG. Heterogeneous hidden conditional random fields for aneuploidy-based cancer prediction. *Bioinformatics* 2009;25:1307-13.

Lund E, **Dumeaux V**. Systems epidemiology. *CEBP* 2008;17:2954-7.

Dumeaux V, Børresen-Dale AL, Frantzen JO, Kumle M, Kristensen VN, Lund E. Gene expression analyses in breast cancer epidemiology: the Norwegian Women and Cancer postgenome cohort study. *Breast Cancer Research* 2008; 10:R13.

Dumeaux V, Lund E, Børresen-Dale A.L. Comparison of globin RNA processing methods for genome-wide transcriptome analysis from whole-blood. *Biomarkers in Medicine* 2008;2:11-21.

Waaseth M, Bakken K, **Dumeaux V**, Standahl Olsen K, Rylander C, Figenschau Y, Lund E. Hormone replacement therapy and plasma levels of sex hormones in The Norwegian Women and Cancer Postgenome Cohort. *BMC Women's Health* 2008;8:1.

Lund E, **Dumeaux V**, Braaten T, Hjartåker A, Engeset D, Skeie G, Kumle M. Cohort profile: The Norwegian Women and Cancer study – NOWAC – Kvinner og kreft. *Int J Epidemiology* 2008;37:36-41.

Lund E, Bakken K, **Dumeaux V**, Andersen V, Kumle M. Hormone replacement therapy and breast cancer in former users of oral contraceptives-The Norwegian Women and Cancer study. *Int J Cancer*. 2007;121:645-48.

Dumeaux V, Johansen J, Børresen-Dale AL, Lund E. Gene expression profiling in whole-blood samples from women exposed to hormone replacement therapy. *Molecular Cancer Therapeutics* 2006;5:868-76.

Dumeaux V, Fournier A, Lund E, Clavel-Chapelon F. Previous oral contraceptive use and breast cancer risk according to hormone replacement therapy use among postmenopausal women. *Cancer Causes and Control* 2005;16:537-44.

Dumeaux V, Lund E, Hjartåker A. Use of oral contraceptives, alcohol, and risk for invasive breast cancer. *CEBP* 2004;13:1302-7.

Dumeaux V, Alsaker E, Lund E. Breast cancer and specific types of oral contraceptives: a large Norwegian cohort study. *Int J Cancer* 2003;105:844-850.