

Paul Van Hummelen, PhD

San Francisco, CA

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Summary

Accomplished Director and R&D Scientist with hands-on experience in developing and applying genome-wide technologies to study the genome and transcriptome. Driven to advance the field of Precision Cancer Medicine. Led initiatives to apply next-generation sequencing (NGS) methods to study cancer development, improve cancer diagnosis and prognosis, and to understand acquired resistance to treatment. Supervised teams that include PhD level researchers and bioinformaticians; encourage exploration of ideas and project ownership.

Professional Experience

ILLUMINA INC., CA

Associate Director Scientific Research in Res Tech Dev - Oncology Tools. 2016-March 2017

- Responsible for developing new technologies and applications in oncology using NGS
- Directed staff of 4 PhD scientists.

DANA-FARBER CANCER INSTITUTE, HARVARD MEDICAL SCHOOL, MA 2010-2016

Associate Director of the Center of Cancer Genome Discovery (www.dana-farber.org/CCGD)

- Developed, optimized and validated NGS for tumor profiling starting from FFPE tissue biopsies and cfDNA.
- Created one of the first cancer-gene panels for targeted sequencing of barcoded DNA libraries (in 2010).
- Translated Illumina based targeted sequencing (OncoPanel) and Sequenom based genotyping (OncoMap) in the clinic. Cancer genome profiling became standard of care for all Dana-Farber cancer patients.
- Directed staff of 10-15, including PhD group leaders, bioinformaticians, technicians, administrators.
- Established financially sustainable service model with a 3 million dollar operating budget.

BIONOMICS RESEARCH & TECHNOLOGY CENTER (BRTC), UMDNJ-RUTGERS, NJ 2008-2010

Research and Project Manager of the Bionomics Research & Technology Center.

- Coached 5-10 employees in a large scale sample repository and service center
- Managed large projects for genome analyses (DNA fingerprinting-Fluidigm, Agilent and Affymetrix microarrays, high-throughput qRT-PCR), sample processing, sample repository and distribution.
- Created a new process flow, including Information Management Systems and data bases.
- Adhered to aggressive deadlines within a challenging working environment.

FLANDERS INSTITUTE OF BIOTECHNOLOGY (VIB), Leuven, Belgium 1999-2008

Director of Genomic Service Facility (www.nucleomics.be/about-us/history)

- Founded the first industry-like Service Facility within Belgian academia.
- Developed in-house cDNA and aCGH microarrays for Arabidopsis, Mouse and Human genomes.
- Initiated and led interdisciplinary collaborations: biology-engineering-bioinformatics-medicine
- Directed a staff of 8-12 employees.
- Wrote a business plan and accomplished financial independence in 5 years.

LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL), Livermore, California, USA 1994-1999

Biomedical Scientist – PostDoctoral fellow

- Developed new molecular techniques to study genome instability in human germ cells.
- Introduced microarray technology to study the toxicogenome in the embryo.

Consultancy and Scientific Outreach

- Organized annual research symposia for Science, Marketing and Education.
- Member of Dana-Farber Assessment Committee for community hospital partnerships, 2015-present
- Member of the Dana-Farber Scientific and Institutional Review Board (SRC & IRB), 2014-present
- Consulted for Industrial, Clinical, Government and Academic partners:
 - Chair of Scientific Advisory Board, Genomics Core Gasthuisberg University Hospital, Leuven Belgium (2014)
 - Technology consultant on introducing precision cancer medicine at Asan Medical Center (AMC), Seoul - Korea (2012-present)
 - Member of Omics Working group at European Center Ecotoxicology and Toxicology of Chemicals (ECETOC) (2007, 2010)
 - Expert at the Toxicogenomics Working Party of European Medicines Agency (EMA) (2007)
 - Consultant on Omics technologies for Molecular Dynamics/Amersham (2003)
 - Expert and teacher at international microarray workshops in Santiago-Chile (2000), Utrecht-The Netherlands (2003), and Vicosa-Brazil (2005)

Education and Memberships

LAWRENCE LIVERMORE NATIONAL LABORATORY, Livermore, CA

- **Postdoctoral Fellow**, Human Genetics and Genomics

UNIVERSITY OF BRUSSELS (VUB), Brussels, Belgium

- **PhD** in Cytogenetics and Genetic Toxicology
- **MS** in Molecular Biology and Biotechnology
- **BS** in Biology – Genetics

MEMBERSHIPS

- American Society of Human Genetics (ASHG), 1999, 2015-Present
- American Association of Cancer Research (AACR), 2010-Present

Selected publications (out of 120)

(www.ncbi.nlm.nih.gov/sites/myncbi/1zmsIGhgNi75_/bibliography/48110014/public/?sort=date&direction=descending)

- Campbell JD, Lathan C, Sholl L, Ducar M, Vega M, Sunkavalli A, Lin L, Hanna M, Schubert L, Thorner A, Faris N, Williams DR, Osarogiagbon RU, van Hummelen P, Meyerson M, MacConaill L. **Comparison of Prevalence and Types of Mutations in Lung Cancers Among Black and White Populations.** *JAMA oncology.* 2017
- Myers AP, Filiaci VL, Zhang Y, Pearl M, Behbakht K, Makker V, Hanjani P, Zweizig S, Burke JJ 2nd, Downey G, Leslie KK, Van Hummelen P, Birrer MJ, Fleming GF **Tumor mutational analysis of GOG248, a phase II study of temsirolimus or temsirolimus and alternating megestrol acetate and tamoxifen for advanced endometrial cancer (EC): An NRG Oncology/Gynecologic Oncology Group study.** *Gynecologic oncology.* 2016; 141(1):43-8.
- Chung TK, Van Hummelen P, *et al.*, and Wong YF. **Genomic aberrations in cervical adenocarcinomas in Hong Kong Chinese women.** *Int J Cancer.* 2015 Aug 15;137(4):776-83.
- Abo RP, Ducar M, Garcia EP, Thorner AR, Rojas-Rudilla V, Lin L, Sholl LM, Hahn WC, Meyerson M, Lindeman NI, Van Hummelen P, MacConaill LE. **BreaKmer: detection of structural variation in targeted massively parallel sequencing data using kmers.** *Nucleic Acids Res.* 2015 Feb 18;43(3).
- Kim J, Fox C, Peng S, Pusung M, Pectasides E, Matthee E, Hong YS, Do IG, Jang J, Thorner AR, Van Hummelen P, Rustgi AK, Wong KK, Zhou Z, Tang P, Kim KM, Lee J, Bass AJ. **Preexisting oncogenic events impact trastuzumab sensitivity in ERBB2-amplified gastroesophageal adenocarcinoma.** *J Clin Invest.* 2014 Dec;124(12):5145-58.
- Abedalthagafi MS, Merrill PH, Bi WL, Jones RT, Listewnik ML, Ramkissoon SH, Thorner AR, Dunn IF, Beroukhir R, Alexander BM, Brastianos PK, Francis JM, Folkerth RD, Ligon KL, Van Hummelen P, Ligon AH, Santagata S. **Angiomatous meningiomas have a distinct genetic profile with multiple chromosomal polysomies including polysomy of chromosome 5.** *Oncotarget.* 2014 Nov 15;5(21):10596-606.
- MacConaill LE, Garcia E, Shivdasani P, Ducar M, Adusumilli R, Breneiser M, Byrne M, Chung L, Conneely J, Crosby L, Garraway LA, Gong X, Hahn WC, Hatton C, Kantoff PW, Kluk M, Kuo F, Jia Y, Joshi R, Longtine J, Manning A, Palescandolo E, Sharaf N, Sholl L, van Hummelen P, *et al.* **Prospective enterprise-level molecular genotyping of a cohort of cancer patients.** *J Mol Diagn.* 2014 Nov;16(6):660-72.
- Brastianos PK, Taylor-Weiner A, Manley PE, Jones RT, Dias-Santagata D, Thorner AR, Lawrence MS, Rodriguez FJ, Bernardo LA, Schubert L, Sunkavalli A, Shillingford N, Calicchio ML, Lidov HG, Taha H, Martinez-Lage M, Santi M, Storm PB, Lee JY, Palmer JN, Adappa ND, Scott RM, Dunn IF, Laws ER Jr, Stewart C, Ligon KL, Hoang MP, Van Hummelen P, *et al.* **Exome sequencing identifies BRAF mutations in papillary craniopharyngiomas.** *Nature genetics* 2014, 46(2):161-165.
- Wagle N, Berger MF, Davis MJ, Blumenstiel B, Defelice M, Pochanard P, Ducar M, Van Hummelen P, *et al.* **High-throughput detection of actionable genomic alterations in clinical tumor samples by targeted, massively parallel sequencing.** *Cancer discovery* 2012, 2(1):82-93.
- MacConaill LE, Van Hummelen P, Meyerson M, Hahn WC. **Clinical implementation of comprehensive strategies to characterize cancer genomes: opportunities and challenges.** *Cancer discovery* 2011, 1(4):297-311.
- Van Hummelen P, Sasaki J: **State-of-the-art genomics approaches in toxicology.** *Mutation research* 2010, 705(3):165-171.
- Weckx S, Allemeersch J, Van der Meulen R, Vrancken G, Huys G, Vandamme P, Van Hummelen P, De Vuyst L: **Development and validation of a species-independent functional gene microarray that targets lactic acid bacteria.** *Applied and environmental microbiology* 2009, 75(20):6488-6495.
- Pappaert K, Vanderhoeven J, Desmet G, Van Hummelen P. **Toward highly efficient automated hybridizations, in: G.Hardiman (Ed.), Microarray innovations: technology and experimentation,** CRC press, 2009, pp. 71-86.
- Vanderhoeven J, Pappaert K, Dutta B, Van Hummelen P, Desmet G. **DNA microarray enhancement using a continuously and discontinuously rotating microchamber.** *Anal. Chem.* 2005; 77(14): 4474-80.
- Puskas LG, Zvara A, Hackler L Jr, Van Hummelen P. **RNA amplification results in reproducible microarray data with slight ratio bias.** *Biotechniques* 2002 June; 32(6): 1330-4, 1336, 1338, 1340.
- Van Hummelen P, Manchester D, Lowe X, Wyrobek AJ. **Meiotic segregation, recombination, and gamete aneuploidy assessed in a t(1;10)(p22.1;q22.3) reciprocal translocation carrier by three- and four-probe multicolor FISH in sperm.** *Am. J. Hum. Genet.* 1997 Sept.; 61(3): 651-9.