IBM Watson

IBM Watson Genomic Analytics

Vanessa Michelini, Distinguished Engineer

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Sixteen Early Adopters and Partners

- Ann & Robert H Lurie Children's Hospital of Chicago
- BC Cancer Agency
- City of Hope
- Cleveland Clinic
- Columbia University, Irwing Cancer Center
- Duke Cancer Institute
- Fred & Pamela Buffett Cancer Center in Omaha, Nebraska
- McDonnell Genome Institute at Washington University in St. Louis
- New York Genome Center
- Sanford Health
- University of Kansas Cancer Center
- University of North Carolina Lineberger Cancer Center
- University of Southern California Center for Applied Molecular Medicine
- University of Washington Medical Center
- Yale Cancer Center
- University of Tokyo

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Clinicians Tap Watson to Accelerate DNA Analysis and Inform Personalized Treatment Options for Patients

Fourteen Leading Cancer Institutes Collaborate with IBM to Advance Genomics as Part of Watson Health

"Determining the right drug combination for an advanced cancer patient is alarmingly difficult, requiring a complex analysis of different sources of Big Data that integrates rapidly emerging clinical trial information with personalized gene sequencing," said Norman Sharpless, MD, director, University of North Carolina Lineberger Comprehensive Cancer Center. "We are partnering with IBM in an effort to solve this decision problem with the help of cognitive technology and to improve the decisions we make with our patients to maximize their chance for cure."

"When you are dealing with cancer, it is always a race," said Lukas Wartman, MD, assistant director of cancer genomics at The McDonnell Genome Institute at Washington University in St. Louis. "As a cancer patient myself, I know how important genomic information can be. Unfortunately, translating cancer-sequencing results into potential treatment options often takes weeks with a team of experts to study just one patient's tumor and provide results to guide treatment decisions. Watson appears to help dramatically reduce that timeline."

"Watson will sift through the thousands, the tens of thousands, of genetic changes between a patient's tumor cells and normal cells. It will learn and start finding which genetic changes are important to the cancer," said KU Cancer Center deputy director Andrew Godwin. "The hope is this will be a tool in our everyday treatment of patients."

"IBM has fed millions of research articles into the program, including biomedical research and clinical information," Dr. Guda said. "The cognitive computer can keep track of the complex relationships among gene mutations, drug treatments and treatment outcomes."

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Watson Genomics Analytics (WGA) Overview

Case Sequenced

VCF / MAF, Log2, Dge Encryption

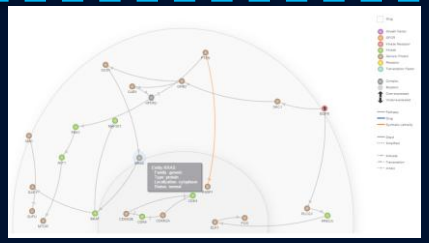
WGA Service Analysis, Reports, & Visualizations

Molecular Profile Analysis

Gene		
NF2 heterozygous loss	Driver Score	0.898
	Expression Score	0.898
	Copy Number Heterozygous Loss	log2=-0.579
	Evidence	[TSGene_TSG], [Vogelstein_TSG], [IBM2020_TSG], [TAG_DB_TSG]
SMARCB1 heterozygous loss	Driver Score	0.898
	Expression Score	0.898
	Copy Number Heterozygous Loss	log2=-0.579
	Evidence	[TSGene_TSG], [Vogelstein_TSG], [IBM2020_TSG], [TAG_DB_TSG]
PTEN heterozygous loss	Driver Score	0.898
	Expression Score	0.898
	Copy Number Heterozygous Loss	log2=-0.553
	Evidence	[TSGene_TSG], [Vogelstein_TSG], [Zack_DEL], [IBM2020_TSG], [TAG_DB_TSG]
CDKN2A heterozygous loss	Driver Score	0.898
	Expression Score	0.898
	Copy Number Heterozygous Loss	log2=-1.627
	Evidence	[TSGene_TSG], [Vogelstein_TSG], [Zack_DEL], [IBM2020_TSG], [TAG_DB_TSG]

Pathway Analysis

Target	Reason for Identification	Pathway Distance	
PIK3CG	PIK3CG is downstream of EGFR.	4	PubMed: 10913131, 19233262, 8903320
	PIK3CG is downstream of PTEN.	1	PubMed: 12149650
PRKCA	PRKCA is downstream of EGFR.	2	PubMed: 1689310, 2, 8290562, 2153914
EGFR	EGFR is a possible driver.	0	
BRAF	BRAF is downstream of EGFR.	5	PubMed: 17563371, 17486115, 1049952



Drug Analysis

Actionable Alteration	D/P	Approved for Glioblastoma	Investigational for Glioblastoma	Approved for other cancers
PTEN heterozygous loss	P	Everolimus	Veliparib (ABT-888)	Olaparib (AZD-2281), Temsirolimus
EGFR amplification	D			Cetuximab, Erlotinib, Panitumumab, Gefitinib, Lapatinib, Afatinib, Vandetanib
	P			Dabrafenib, Trametinib, Vemurafenib

WGA Content

- 20+ Content Sources Including:
  - Medical Articles (23Million)
  - Drug Information
  - Clinical Trial Information
  - Genomic Information

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