



Population Genetics: How Genomics is Impacting Value Based Care

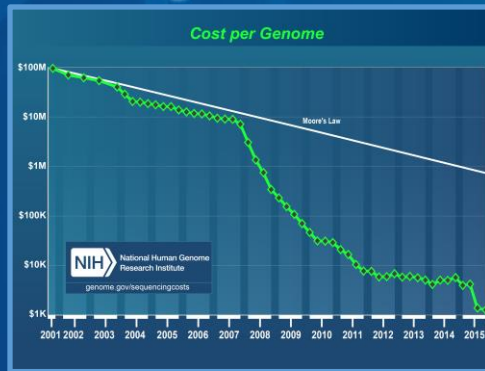
Presented at: TJU Pop Health Colloquium March 18-20 Philadelphia

Kirk Sudheimer General Manager, Global Sales
ksudheimer@dnanexus.com

My PoV

We are in a state of rapid advancement as the knowledge associated with the best standards of care is evolving at an exponential rate. In the very near future, combining genomic information with traditional quality based initiatives will lead us into population genetics.

Influencing Precision Medicine's Growth



Precision Medicine

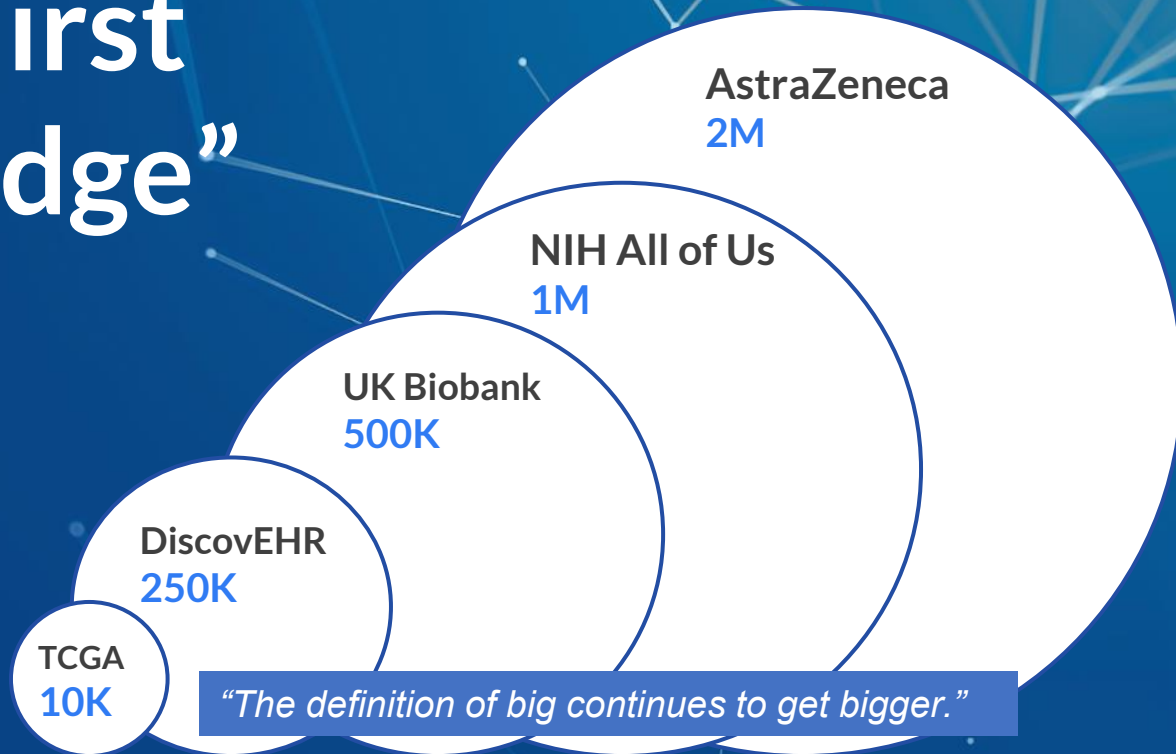


1 in 4 since 2014
16 in 2017
35% in 2017
73% of Oncology Agents

“We drown in data but thirst for knowledge”

Jan Baumbach

University of Southern Denmark



“The definition of big continues to get bigger.”

Yet...genomics is just part of the puzzle

Value is derived with other data











Many Data Sources

- 
Clinical Trials
- 
EMR
- 
Population Health
- 
Lab Studies



Many Types of Data

 Genomic	 RNA
 Protein	 Metabolites
 Methylation	 Microbiome
 Image	 Pheno Clinical

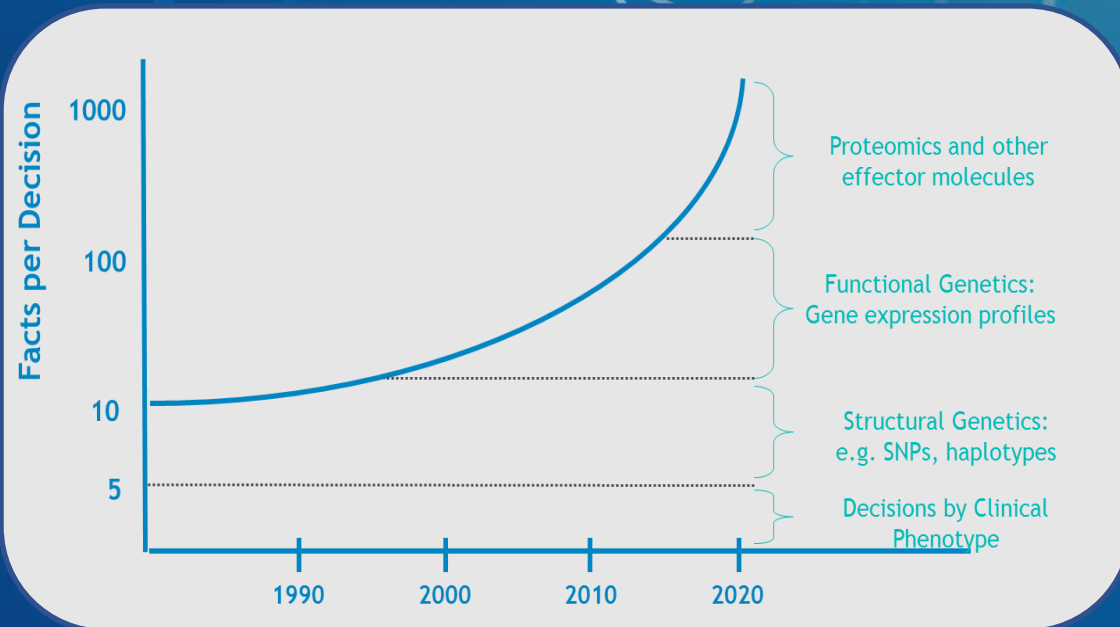


Researchers & Clinicians



Clinical Decision-Making is Becoming More Complicated

How can we expect health care professionals to review 6 billion pieces of data in a 15 minute encounter?



William W. Shred, M.D., 2007 AMA Panel Presentation, "Why We Need Internet Development," December 11, 2007



Scale
&
Complexity

Enabling Geno/Pheno Integration & Collaboration

Large Scale Translational Research Project



GEISINGER

\$3.5B health care
provider for 3M
patients.

DNAnexus

REGENERON

\$30B pharma company
focused on cholesterol,
oncology and rheumatoid
arthritis.



Enabling the largest analysis
to compare patient genetic data
with their medical histories

Regeneron has brought Geisinger on
to DNAAnexus as their collaboration
platform

Pfizer and Ochsner

Partnering to Enhance Care and Clinical Trials

“Partnering with Pfizer allows us to transform medicine by creating a digital clinical trial experience that improves patient participation, integration, communication, and accessibility.”

Richard Milani, MD
Chief Clinical Transformation
Medical Director of iO
Ochsner Health System

Northshore and Color Genomics

Color Genomics Inc. is partnering with NorthShore University Health System to offer its genetic tests to more than 10,000 patients.

Key Insights

- The DNA-testing startup has been moving away from marketing directly to individual patients.
- As part of the collaboration, the Chicago hospital system will offer Color's genomic health tests to more than 10,000 patients as a primary-care service, rather than only to patients with genetic health risks. The goal is to incorporate genetic information throughout care.

<https://www.bloomberg.com/news/articles/2019-01-09/color-genomics-announces-partnership-with-illinois-health-system>

Remember p450?

GENE-DRUG INTERACTIONS							
USE AS DIRECTED							
	CYP1A2	CYP2B6	CYP2C19	CYP2C9	CYP3A4	CYP2D6	UGT1A4
ANTIDEPRESSANTS							
levominicpran (Fetzima [®])			●		○	●	
vilazodone (Vibryd [®])			●		○	●	
ANXIOLYTICS AND HYPNOTICS							
alprazolam (Xanax [®])					○	●	
buspirone (Buspar [®])					○	●	
diazepam (Klonopin [®])					○	●	
eszopiclone (Lunesta [®])					○	●	

A typical carrier screening panel offers insights on almost 200 different diseases.




genesight[®]
Questions? Call 855.801.9415 or email rs@genesight.com

SIGNIFICANT GENE-DRUG INTERACTION					
	CYP1A2	CYP2B6	CYP2C19	CYP2C9	CYP3A4
desvenlafaxine (Pristiq [®])			●	●	○
levominicpran (Fetzima [®])			●	●	○
vilazodone (Vibryd [®])			●	●	○

USE AS DIRECTED	
desvenlafaxine (Pristiq [®])	
levominicpran (Fetzima [®])	
vilazodone (Vibryd [®])	

MODERATE GENE-DRUG INTERACTION	
trazodone (Desyrel [®])	1
venlafaxine (Effexor [®])	1
selegiline (Emsam [®])	2
fluoxetine (Prozac [®])	1,4
citalopram (Celexa [®])	3,4
escitalopram (Lexapro [®])	3,4
sertraline (Zoloft [®])	3,4

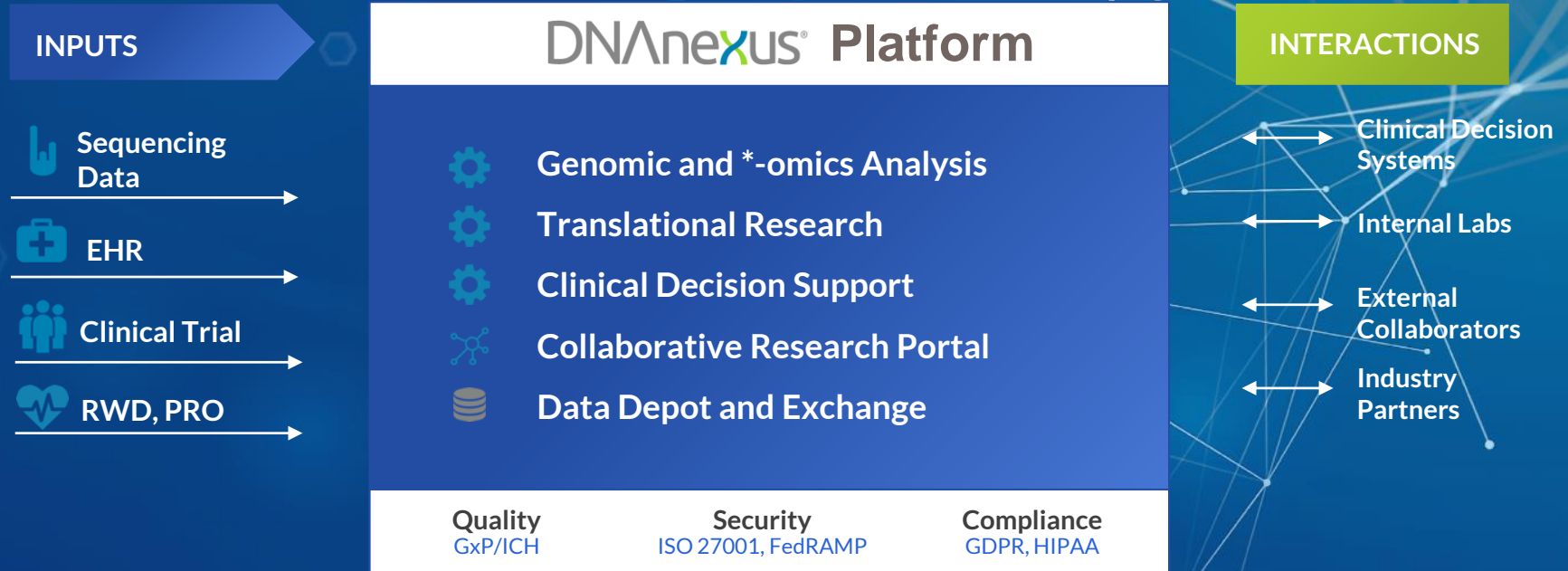
SIGNIFICANT GENE-DRUG INTERACTION	
bupropion (Wellbutrin [®])	1,6
mirtazapine (Remeron [®])	1,6
amitriptyline (Elavil [®])	3,6
clomipramine (Anafranil [®])	1,6,8
desipramine (Norpramin [®])	1,6,8
doxepin (Sinequan [®])	1,6,8
duloxetine (Cymbalta [®])	1,6,8
imipramine (Tofranil [®])	1,6,8
nortriptyline (Pamelor [®])	1,6,8
vortioxetine (Trintella [®])	1,6,8
fluvoxamine (Luvox [®])	1,4,6,8
paroxetine (Paxil [®])	1,4,6,8



In the liver, a family of about **60 genes** produce enzymes that metabolize antidepressants and other mental health medications.

DNAexus Platform

Cloud Genomics Platform for Clinical and Research Analysis





"We've considered every potential risk except
the risks of avoiding all risks."



Thank you