Translating a Trillion Points of Data into Therapies and New Insights in Health and Disease

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@atulbutte

UCSF Benioff Children's Hospital San Francisco

Conflicts of Interest

- Scientific founder and advisory board membership
  - Genstruct
  - NuMedii
  - Personalis
  - Carmenta
- Honoraria for talks
  - Lilly
  - Pfizer
  - Siemens
  - Bristol Myers Squibb
  - AstraZeneca
  - Roche
  - Genentech
  - Warburg Pincus
- Past or present consultancy
  - Lilly
  - Johnson and Johnson
  - Roche
  - NuMedii
  - Genstruct
  - Tercica
  - Ecoeos
  - Helix
  - Ansh Labs
  - Prevendia
  - Samsung
  - Assay Depot
  - Regeneron
  - Verinata
  - Pathway Diagnostics
  - Geisinger Health
  - Covance
  - Wilson Sonsini Goodrich & Rosati
  - 10X Genomics
  - Medgenics
  - GNS Healthcare
  - Gerson Lehman Group
  - Coatue Management
- Corporate Relationships
  - Northrop Grumman
  - Aptalis
  - Allergan
  - Astellas
  - Thomson Reuters
  - Intel
  - SAP
  - SV Angel
  - Progenity
  - Illumina
- Speakers' bureau
  - None
- Companies started by students
  - Carmenta
  - Serendipity
  - NuMedii
  - Stimulomics
  - NunaHealth
  - Praedicat
  - MyTime
  - Flipora

The Economist

FEBRUARY 27TH–MARCH 5TH 2010 Economist.com

Obama the warrior

Misgoverning Argentina

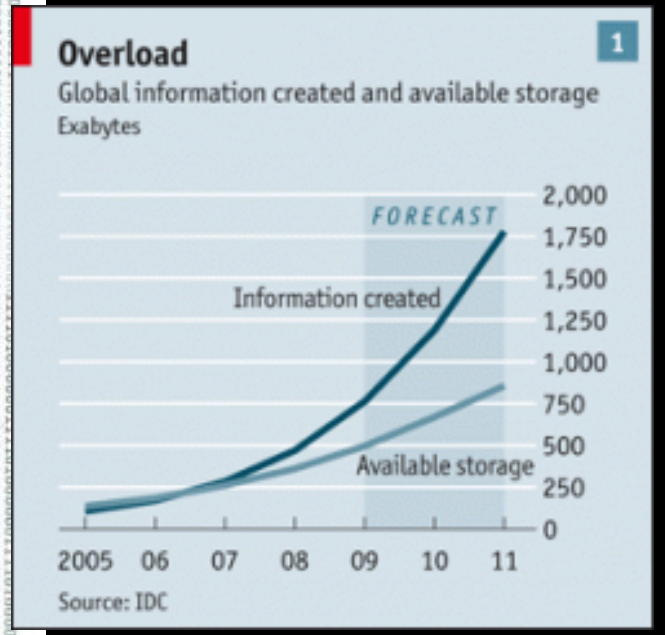
The economic shift from West to East

Genetically modified crops blossom

The right to eat cats and dogs

The data deluge

AND HOW TO HANDLE IT: A 14-PAGE SPECIAL REPORT



Kilo


The Economist
Obama the warrior
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The economic shift from West to East
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The right to eat cats and dogs
FEBRUARY 27TH–MARCH 5TH 2010
Economist.com
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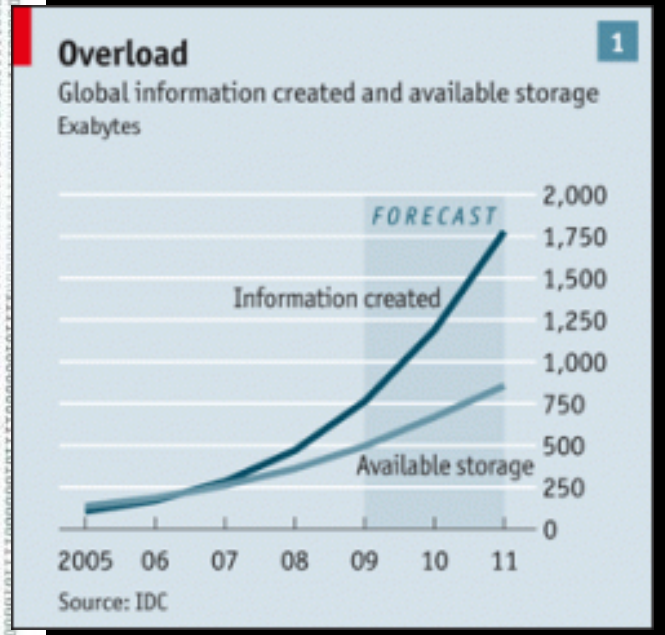
Overload
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FORECAST
Information created
Available storage
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1,750
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1,250
1,000
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250
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Source: IDC

Kilo
Mega


The Economist
Obama the warrior
Misgoverning Argentina
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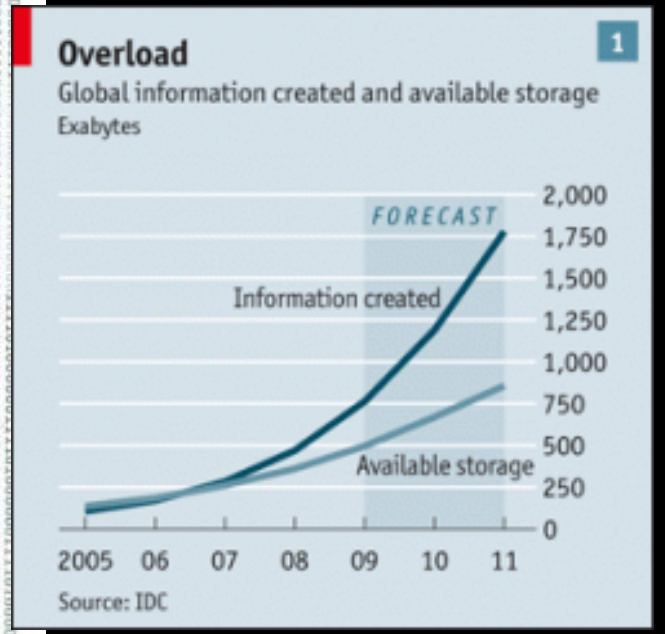
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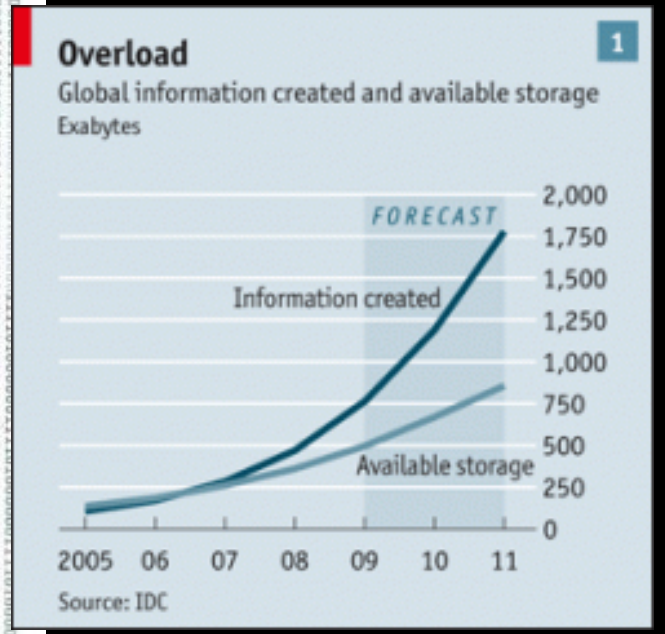
Kilo
Mega
Giga



Kilo
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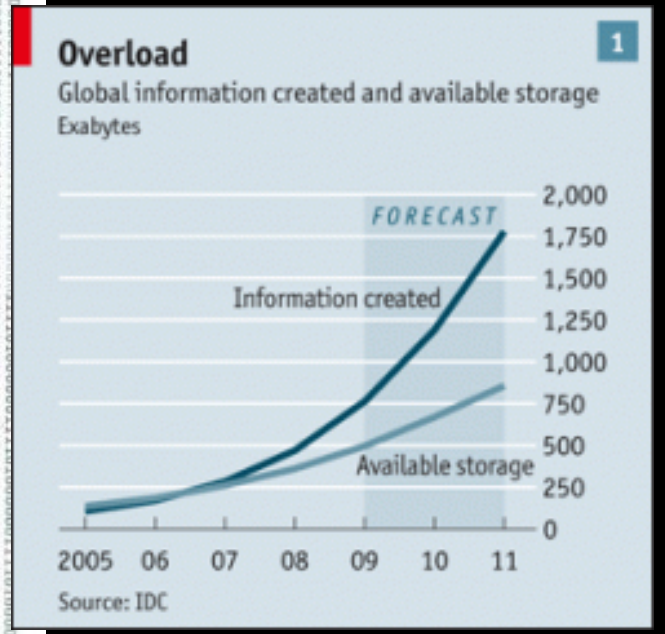

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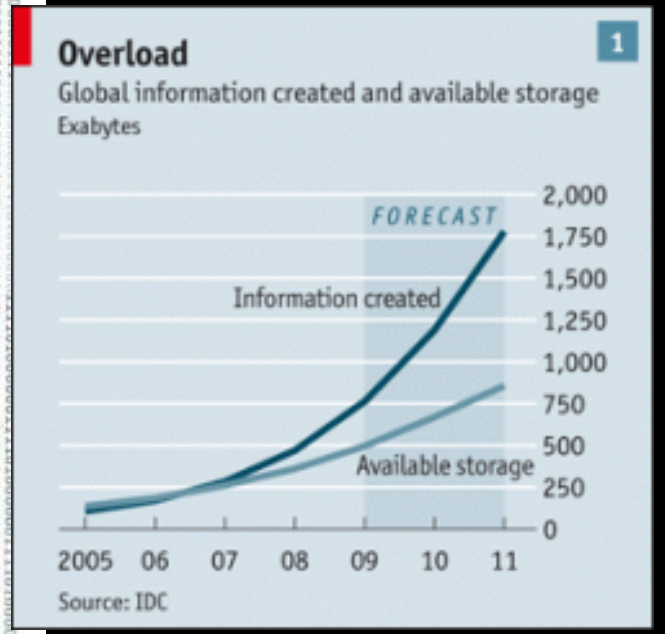

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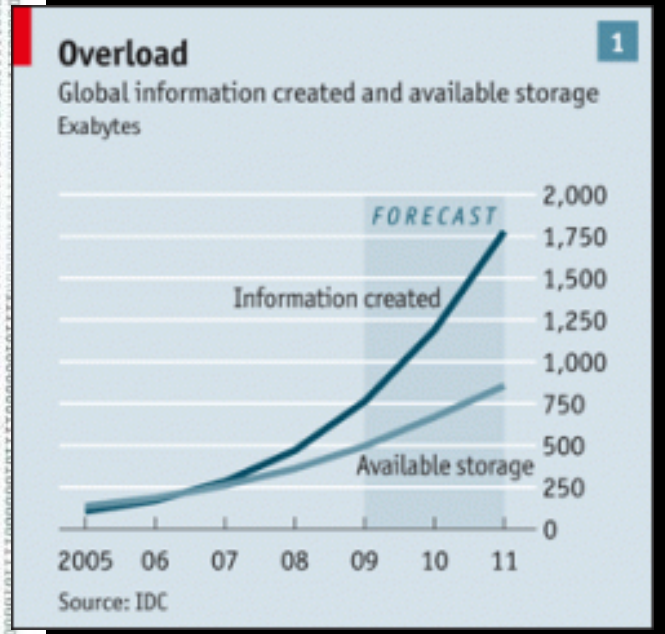

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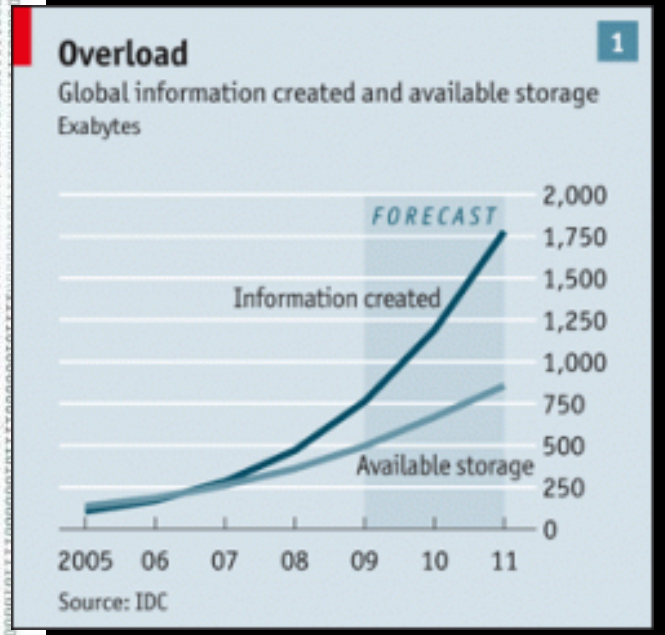


WIRED MAGAZINE: 16.07

SCIENCE : DISCOVERIES

The End of Theory: The Data Deluge Makes the Scientific Method Obsolete

By Chris Anderson 06.23.08

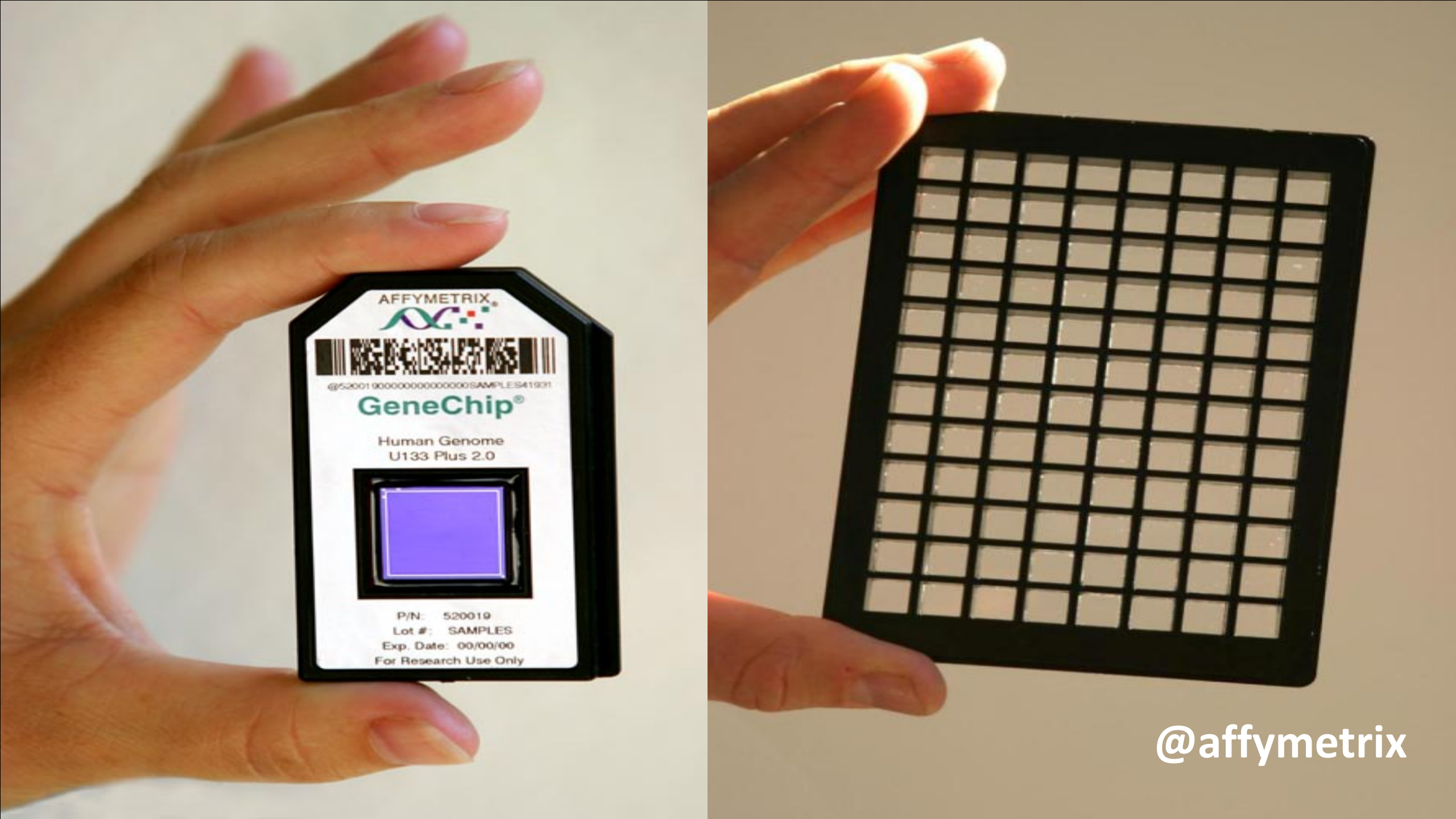
Illustration: Marian Bantjes

THE PETABYTE AGE:
Sensors everywhere. Infinite storage. Clouds of processors. Our ability to capture, warehouse, and understand massive amounts of data is changing science, medicine, business, and technology. As our collection of facts and figures grows, so will

"All models are wrong, but some are useful."

So proclaimed statistician George Box 30
he was right. But what choice did we have?
from cosmological equations to theories o
behavior, seemed to be able to consistentl
imperfectly, explain the world around us

@chr1sa
bit.ly/endscience


AFFYMETRIX
GeneChip®
Human Genome
U133 Plus 2.0
P/N: 520019
Lot #: SAMPLES
Exp. Date: 00/00/00
For Research Use Only
@affymetrix

DNA microarrays allow researchers to analyse the expression of a huge number of genes simultaneously.

GENOMICS

Gene data to hit milestone

With close to one million gen… …cly accessible repositories, researchers can identify dise… …ter a laboratory.

BY MONYA BAKER

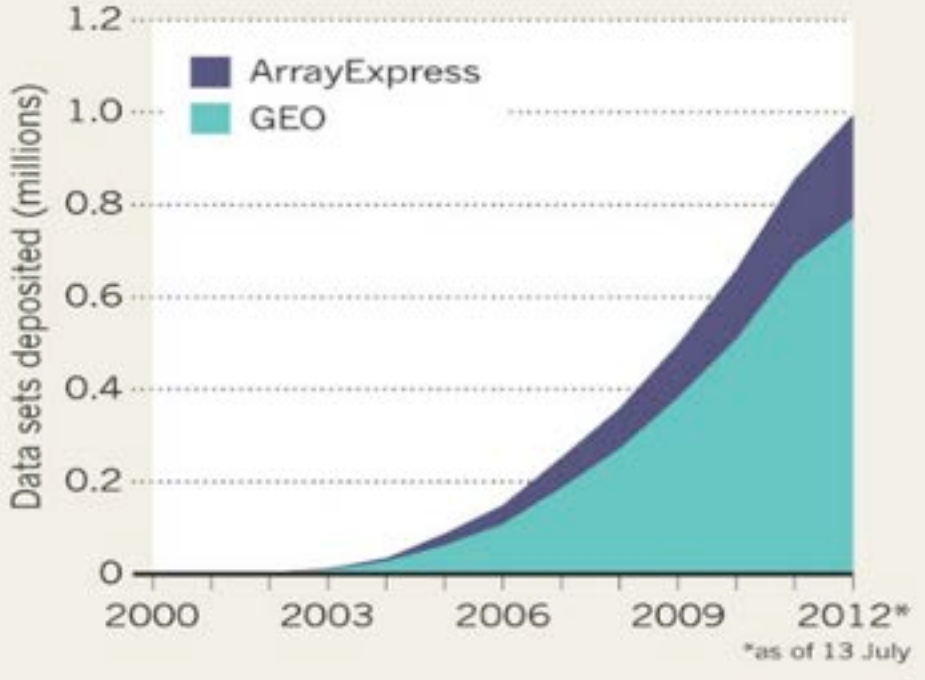
Purvesh Khatri sits in front of an oversize… computer screen, trawling for treasure i… a sea of genetic data. Entering the searc… term 'breast cancer' into a public repositor… called the Gene Expression Omnibus (GEO… the postdoctoral researcher retrieves a list … 1,170 experiments, representing nearly 33,00… samples and a hoard of gene-expression dat… that could reveal previously unseen patterns.

That is exactly the kind of search that le… Khatri's boss, Atul Butte, a bioinformatician … the Stanford School of Medicine in Californi… to identify a new drug target for diabetes. Afte… downloading data from 130 gene-expressio… studies in mice, rats and humans, Butte looke… for genes that were expressed at higher levels i…

…pository at the European Bioinformatics …titute (EBI) in Hinxton, UK. Some time in … next few weeks, the number of deposited …a sets will top one million (see 'Data dump'). …The result is an unprecedented resource that …mises to drive down costs and speed up pro- …ss in understanding disease. Gene-sequence …a are already shared extensively, but expres- …n data are more complex and can reveal …ich genes are the most active in, say, liver …sus brain cells, or in diseased versus healthy …ue. And because studies often look at many

DATA DUMP

The number of gene-expression data sets in publicly available databases has climbed to nearly one million over the past decade.



bit.ly/genedata

NCBI Resources How To

GEO DataSets

GEO DataSets | breast cancer

Save search Advanced

Show additional filters

Display Settings: Summary, 20 per page, Sorted by Default order

Filters: Manage Filte

Send to:

Entry type
DataSets (162)
Series (2445)
Samples (59225)
Platforms (41)

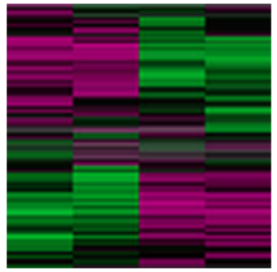
Organism
Select ...

Study type
Expression profiling by array
Methylation profiling by array
More ...

<< First < Prev Page 1 of 3094 Next > Last >>

Results: 1 to 20 of 61873

1. PIAS1 SUMO ligase depletion effect on **breast cancer** cell line



Analysis of MDA-MB231 **breast cancer** cells depleted for PIAS1. PIAS1 is a SUMO ligase. Results provide insight into the role of PIAS1 in breast tumorigenesis.

Organism: Homo sapiens
Type: Expression profiling by array, count, 2 growth protocol, 2 protocol sets
Platform: GPL571 Series: GSE44024 4 Samples
Download data: GEO (CEL, CHP)
DataSet Accession: GDS5076 ID: 5076

Top Organisms
Homo sapiens (57
Mus musculus (43
Rattus norvegicus
Canis lupus familia
synthetic construc
More...

Find related data
Database: Select
Find items

bit.ly/geobrca

NCBI Resources How To Sig

GEO DataSets

GEO DataSets | breast cancer

Save search Advanced

Show additional filters

Display Settings: Summary, 20 per page, Sorted by Default order

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Select ...

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Methylation

<< First < Prev Page 1 of 3094 Next > Last >>

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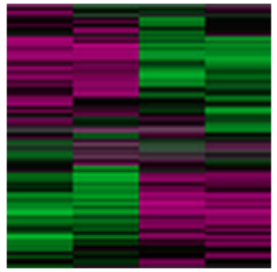

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Type: Expression profiling by array, count, 2 growth protocol, 2 protocol sets

Top Organisms
Homo sapiens (57
Mus musculus (43
Rattus norvegicus
Canis lupus familia
synthetic construct
More...

Find related data
Database: Select
Find items

Public big data = retroactive crowd-sourcing

Yes, even a high-school student can use public data to design a new diagnostic test!

17-year-old programs artificial 'brain' to diagnose breast cancer

Published July 25, 2012 / InnovationNewsDaily Staff

Print
Email
Share
Like 787
Tweet 303
Share 24

A high school junior has created a computer brain that can diagnose breast cancer with 99 percent sensitivity.

Seventeen-year-old Brittany Wenger of Sarasota, Fla., wrote a breast cancer-diagnosing app based on an artificial neural network, basically a computer program whose structure is inspired by the way brain cells connect with one another. She won grand prize at the Google Science Fair for her invention in ceremony held in Palo Alto, Calif. last night (July 23).

Like other artificial intelligence programs, artificial neural networks "learn" what to do by analyzing examples they're given and they perform better if they get

The Sydney Morning Herald

Technology

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Teen develops algorithm to diagnose leukaemia

May 22, 2013 - 8:44AM

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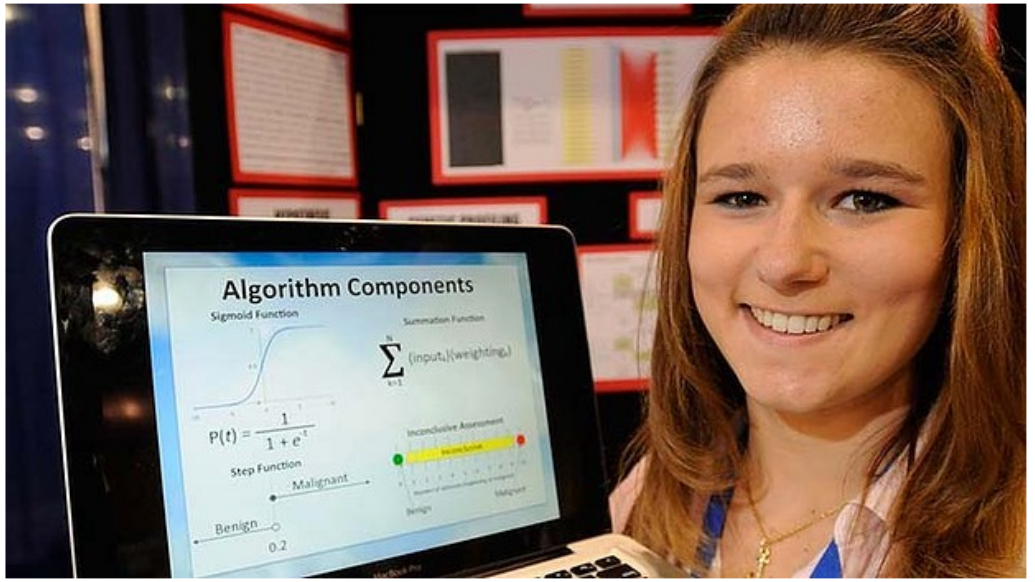
Email article | Print



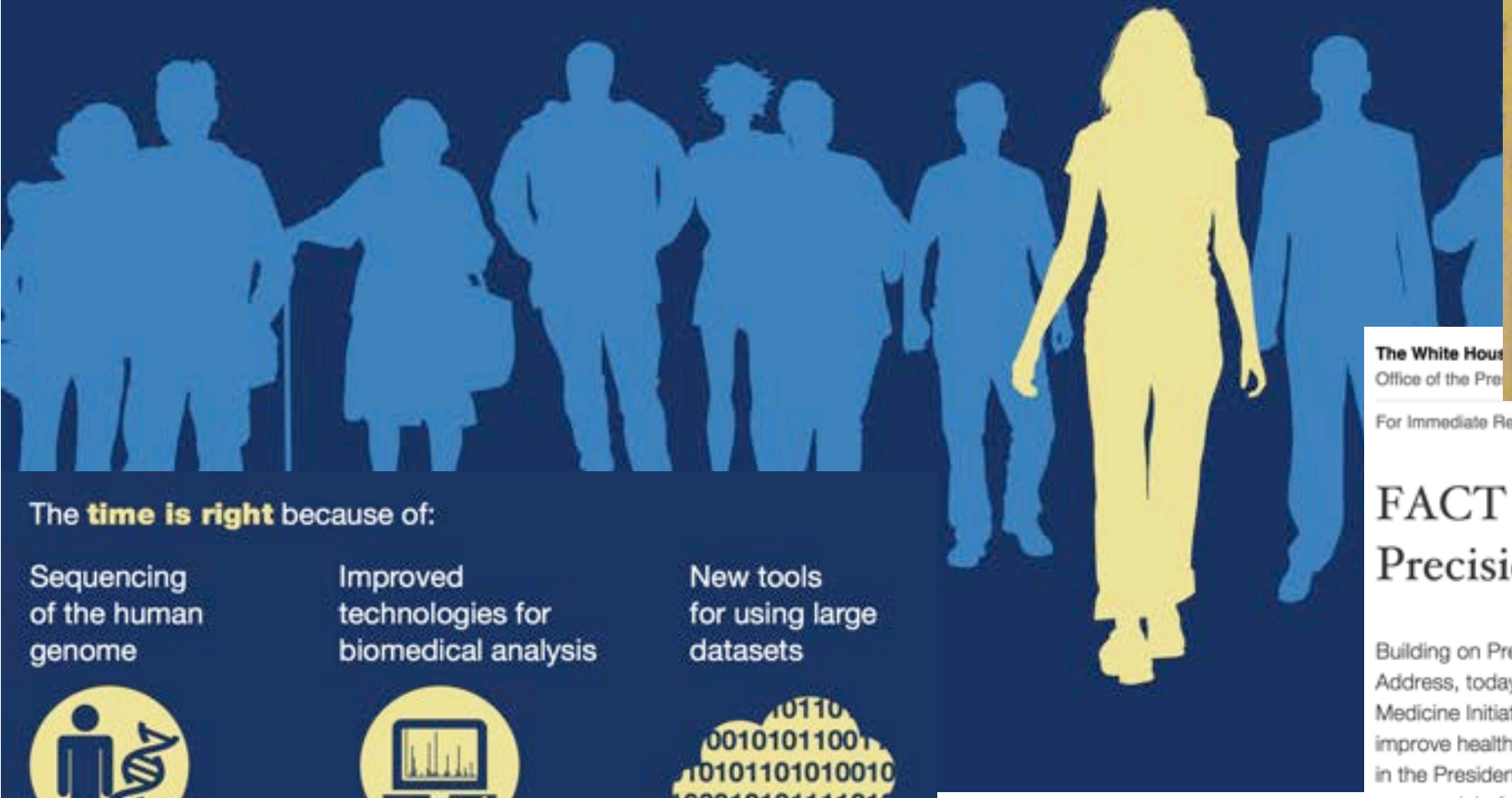
"I wanted to prove that the infrastructure I built could work with multiple diseases": Brittany Wenger. *Photo: Intel*

This post was originally published on Mashable.

Brittany Wenger isn't your average high-school student: she taught a computer how to diagnose leukaemia.

> *"The most amazing part about science is you can answer questions and really revolutionise the world and our knowledge base."*

THE PRECISION MEDICINE INITIATIVE



The **time is right** because of:

Sequencing of the human genome

Improved technologies for biomedical analysis

New tools for using large datasets

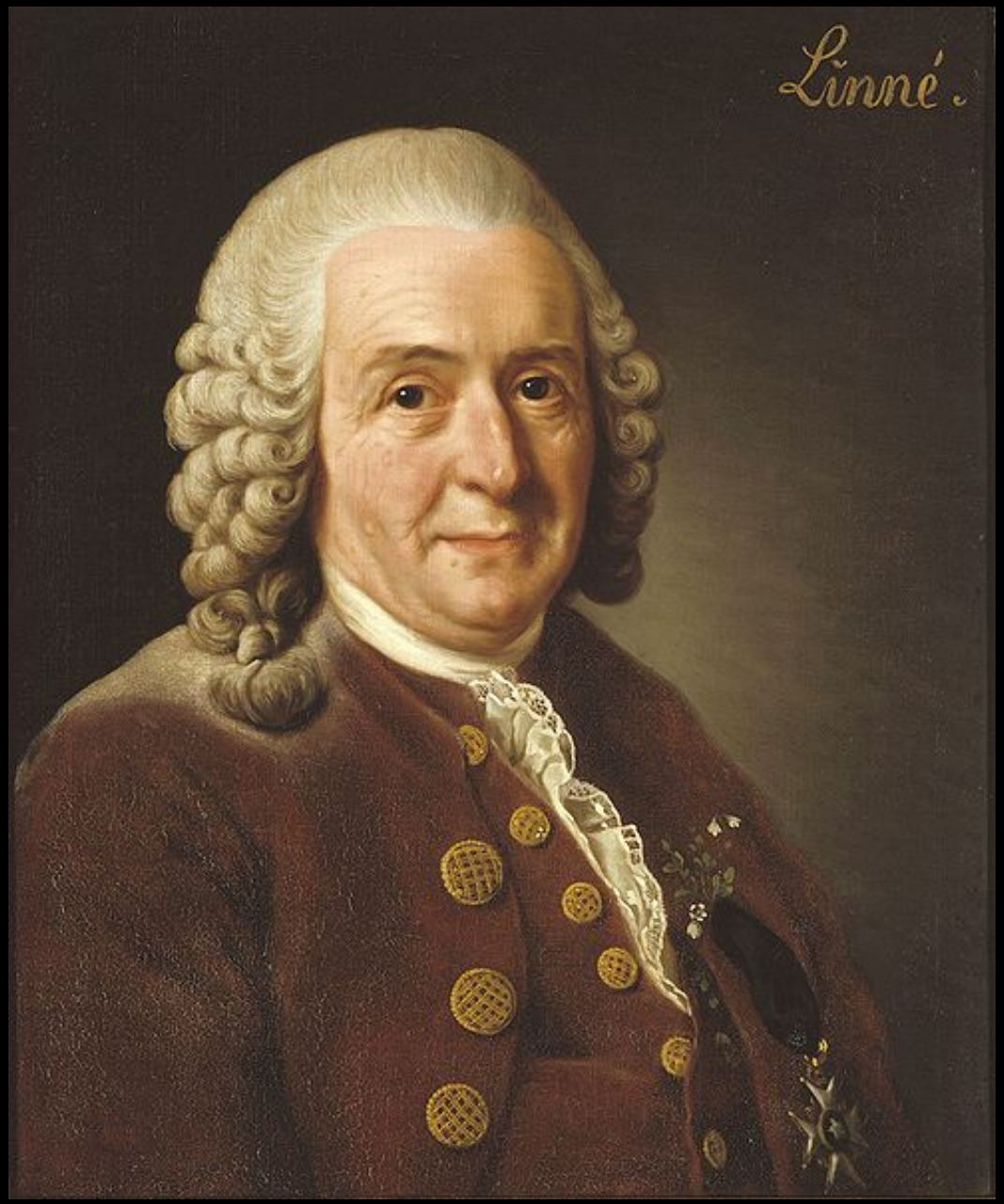
The White Hous
Office of the Pre

For Immediate Release

January 30, 2015

FACT SHEET: President Obama's Precision Medicine Initiative

Building on President Obama's announcement in his State of the Union Address, today the Administration is unveiling details about the Precision Medicine Initiative, a bold new research effort to revolutionize how we improve health and treat disease. Launched with a $215 million investment in the President's 2016 Budget, the Precision Medicine Initiative will pioneer a new model of patient-powered research that promises to accelerate biomedical discoveries and provide clinicians with new tools, knowledge, and therapies to select which treatments will work best for which patients.



Credit: Painting by Alexander Roslin (public domain, through Wikipedia)

A. S. M.

GENERA MORBORUM,

QUÆ

INDULTU NOBIL. NEC NON EXPER. ORD. MED.
IN SUPREMO AD SALAM LYCEO,

PRÆSIDE

VIRO NOBILISSIMO ET EXPERIENTISSIMO

DN. DOCT. CAROLO

LINNÆO,

EQVIT. AURAT. DE STELLA POLARI,
S:Æ R:Æ M:TIS ARCHIATRO,
MEDIC. ET BOTAN. PROFESSORE REG. & ORD.
ACADEM. SCIENT. UPSAL. HOLMENS. PETROPOL.
BEROLIN. IMP. NAT. CUR. LONDIN. MONSPEL.
TOLOS. ET FLORENT. SOCIO,
ACAD. h. t. RECTORE MAGNIFICO,
PRO GRADU DOCTORIS,
PUBLICO SUBMITTIT EXAMINI

JOHANNES SCHRÖDER,

GOTHOBURGENSIS.

IN AUDIT. CAR. MAJ. AD DIEM V. DECEMBR.
ANN. MDCCLIX.
H. A. & P. M. S.

UPSALIÆ

CLAVIS CLASSIUM.

MORBI sunt

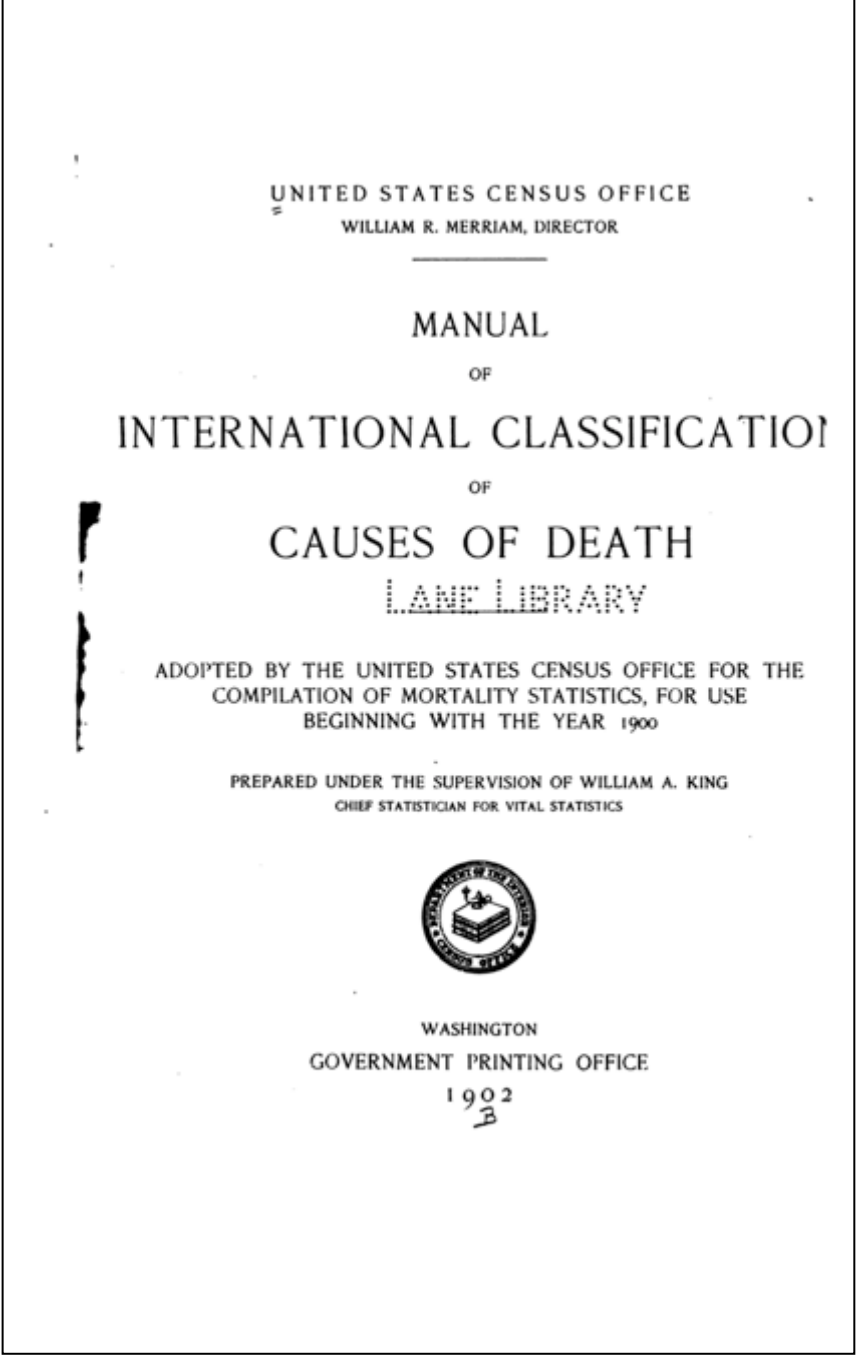
- Interni
  - Febriles
    - EXANTHEMATICI. 1.
    - PHLOGISTICI. 2.
    - CRITICI. 3.
  - absque febre
    - MENTALES. 4.
    - in Nervis
      - QUIETALES. 5.
      - MOTORII. 6.
      - DOLORIFICI. 7.
    - Solidis
      - DEFORMES. 8.
    - Fluidis.
      - EVACUATORII. 9.
- Externi
  - VITIA. 10.

EXANTHEMATICI. Febris cum efflorescentia cutis.
PHLOGISTICI. Febris cum pulsu duro, dolore topico.
CRITICI. Febris cum urinæ hypostasi lateritia.
(absque dolore topico)
MENTALES. Judicium erroneum.
QVIETALES. Motus abolitio.
MOTORII. Motus involuntarius.
DOLORIFICI. Sensatio doloris.
DEFORMES. Solidorum mutata facies.
EVACUATORII. Fluidorum evacuatio.
VITIA. In externa corporis parte palpabiles.

I. EX-

SYMPTOMATA se habent ad Morbum, ut Folia & Ful-

Credit: Harvard University Libraries and Google Books



UNITED STATES CENSUS OFFICE

WILLIAM R. MERRIAM, DIRECTOR

MANUAL

OF

INTERNATIONAL CLASSIFICATIOI

OF

CAUSES OF DEATH

ADOPTED BY THE UNITED STATES CENSUS OFFICE FOR THE COMPILATION OF MORTALITY STATISTICS, FOR USE BEGINNING WITH THE YEAR 1900

PREPARED UNDER THE SUPERVISION OF WILLIAM A. KING

CHIEF STATISTICIAN FOR VITAL STATISTICS

WASHINGTON

GOVERNMENT PRINTING OFFICE

1902

39 Cancer of the buccal cavity

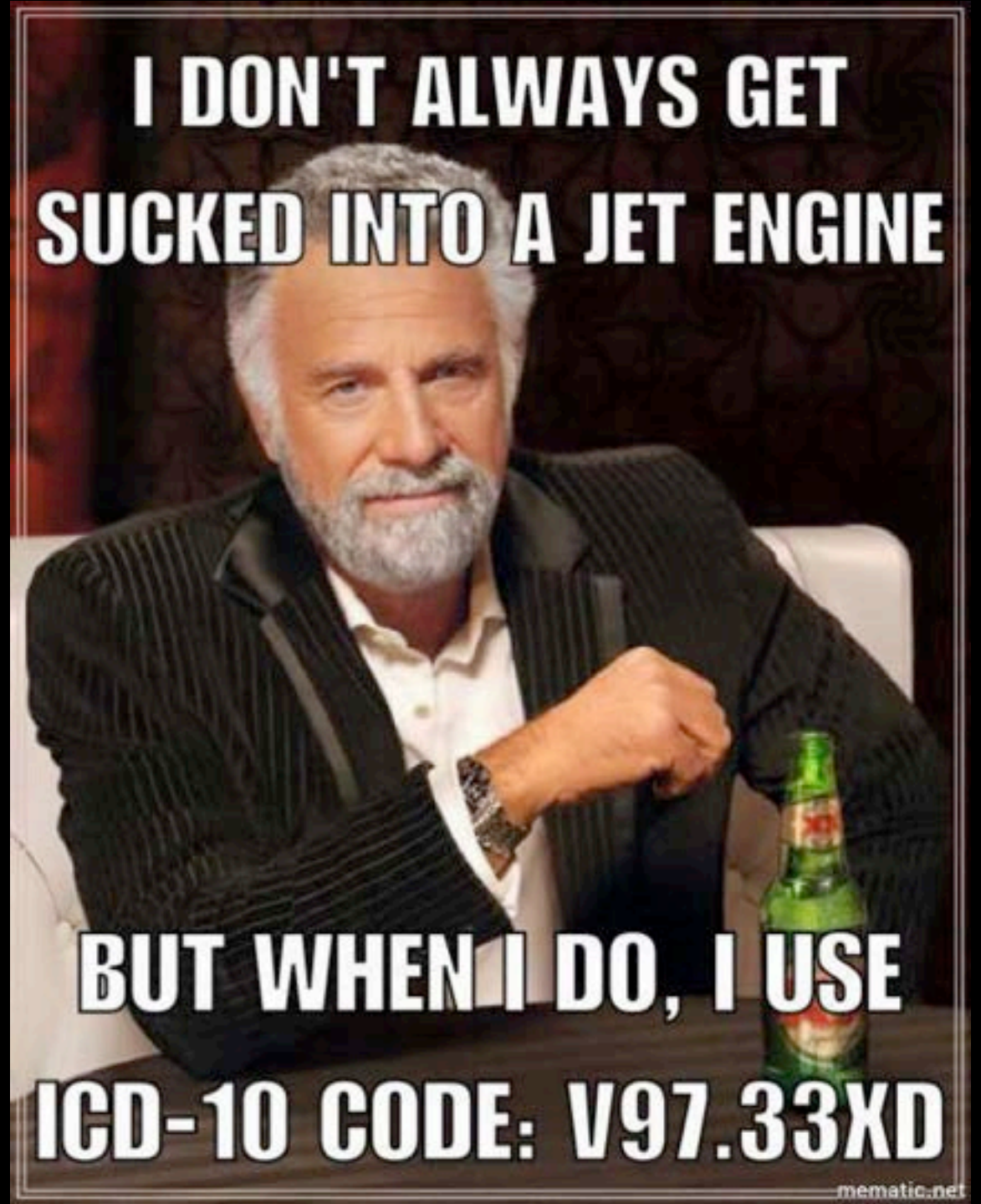
40 Cancer of stomach and liver

41 Cancer of peritoneum, intestines, rectum

...

44 Cancer of skin

Credit: Stanford Lane Medical Library and Google Books


I DON'T ALWAYS GET SUCKED INTO A JET ENGINE
BUT WHEN I DO, I USE ICD-10 CODE: V97.33XD
mematic.net

2012 ICD-9-CM Diagnosis Code 162.9

Malignant neoplasm of bronchus and lung, (

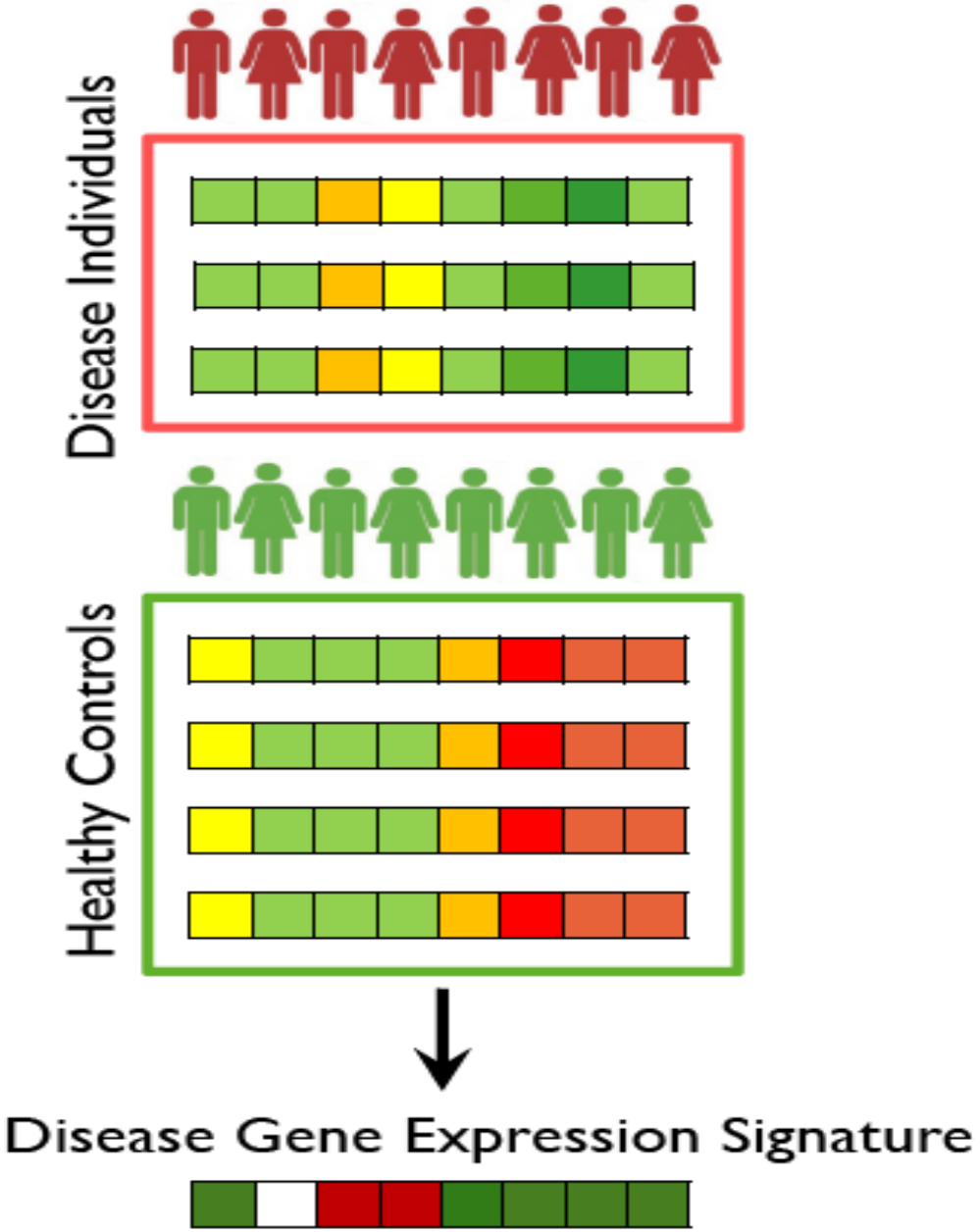
- Short description: Mal neo bronch/lung NOS.
- ICD-9-CM 162.9 is a billable medical code that ca
  September 30, 2015. For claims with a date of se
- You are viewing the 2012 version of ICD-9-CM 16
- More recent version(s) of ICD-9-CM 162.9: 2013

Convert to ICD-10-CM: 162.9 converts approximately t(

- 2015/16 ICD-10-CM C34.90 Malignant neoplasm (

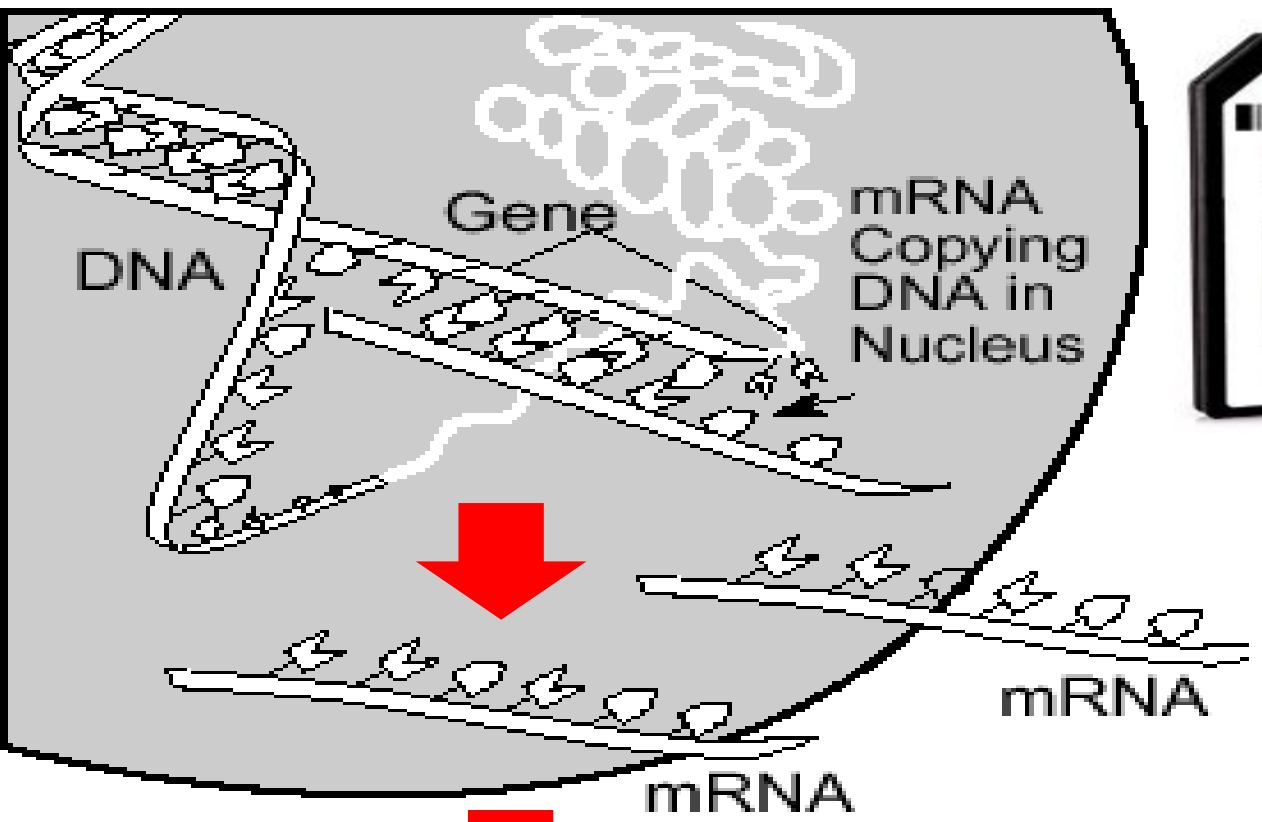
Disease Synonyms

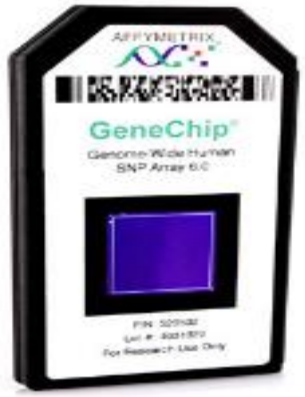
- Adenocarcinoma of lung
- Adenocarcinoma of lung, stage I
- Adenocarcinoma of lung, stage II
- Adenocarcinoma of lung, stage III
- Adenocarcinoma of lung, stage IV
- Adenocarcinoma, lung
- Adenocarcinoma, lung stage 1
- Adenocarcinoma, lung stage 2
- Adenocarcinoma, lung stage 3
- Adenocarcinoma, lung stage 4
- Bronchioloalveolar carcinoma
- Bronchioloalveolar carcinoma - dis
- Bronchoalveolar cancer
- Bronchoalveolar cancer of the lun
- CA of lung
- Cancer of the left lung, large cell
- Cancer of the left lung, squamous
- Cancer of the lung

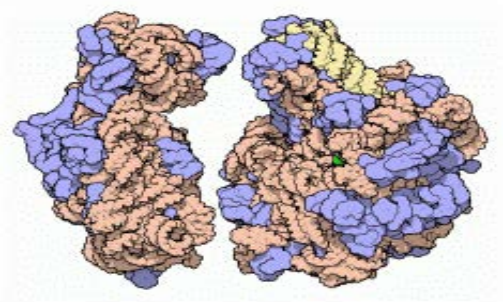


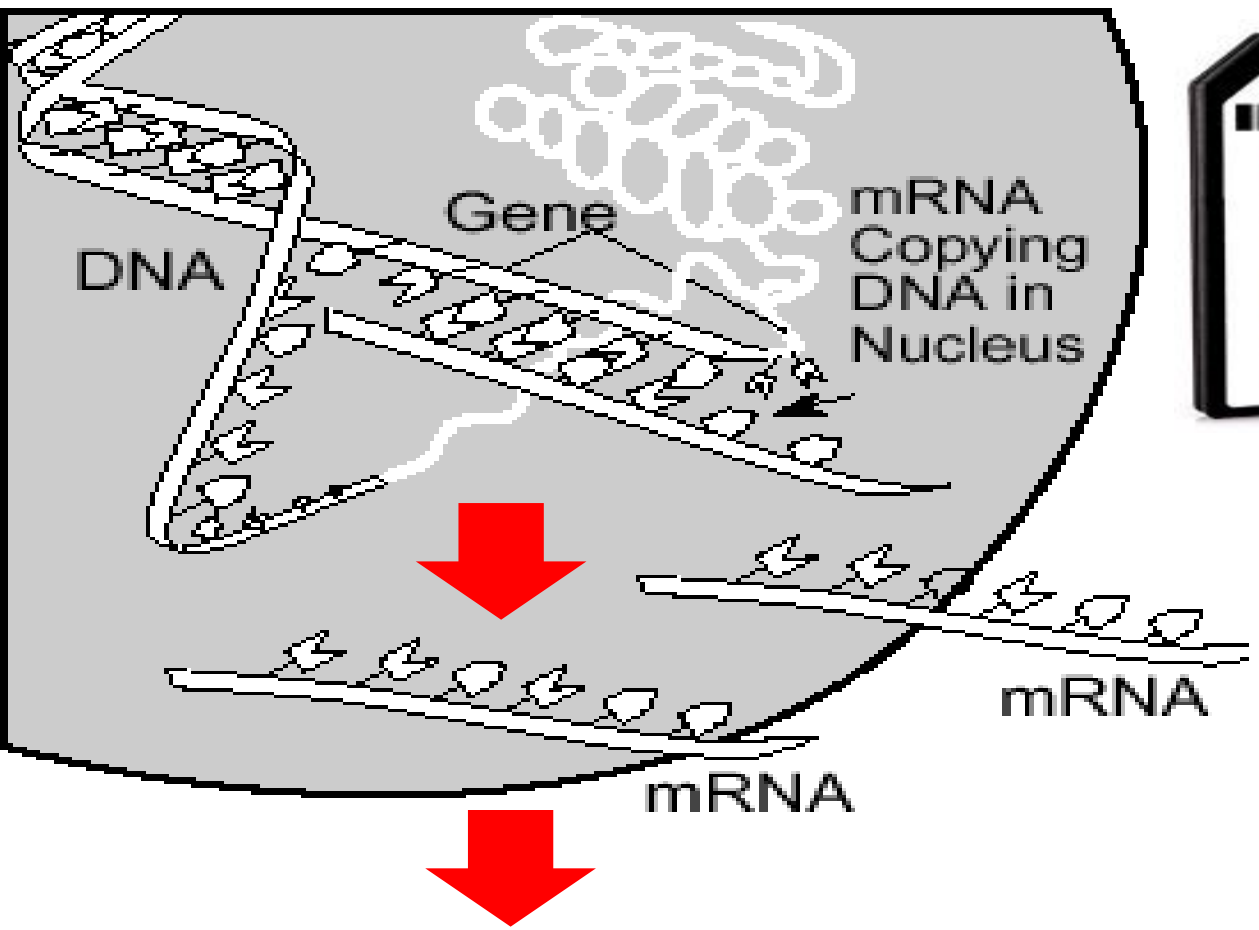
Marina Sirota


Disease Individuals
Healthy Controls
Disease Gene Expression Signature


DNA
Gene
mRNA
Copying
DNA in
Nucleus
mRNA
mRNA

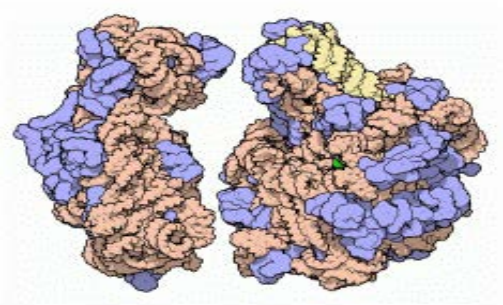

AFFYMETRIX
GeneChip

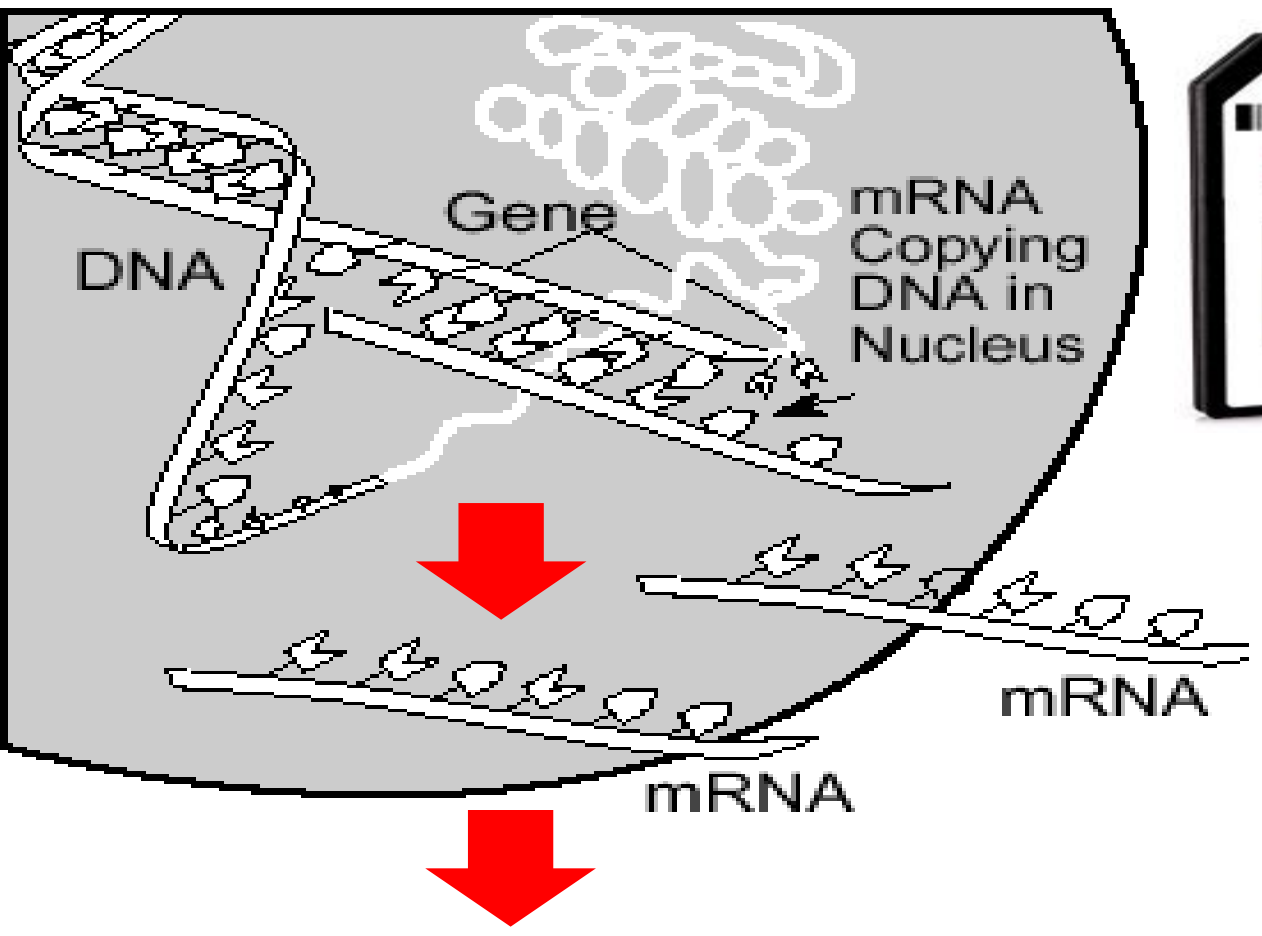




Cancer markers

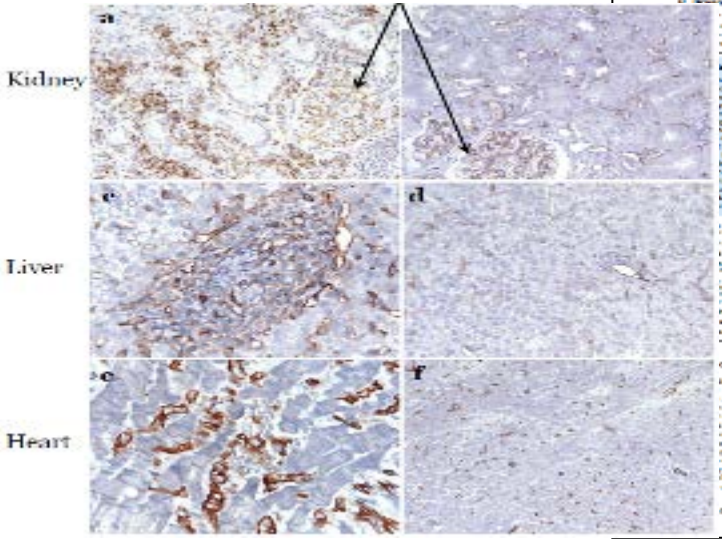
Haeberle H, Dudley JT, …,
Butte AJ, Contag CH. *Neoplasia,* 2012.

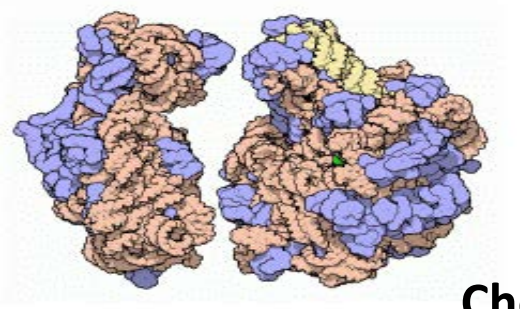




Cancer markers

Transplant Rejection markers





Chen R, …, Butte AJ.
PLoS Computational Biology, 2010.

Preeclampsia: large cause of maternal and fetal death

- Incidence
  - 5-8% of all pregnancies in the U.S. and worldwide
  - 4.1 million births in the U.S. in 2009
  - Up to 300K cases of preeclampsia annually in the U.S.
- Mortality
  - Responsible for 18% of all maternal deaths in the U.S.
  - Maternal death in 56 out of every 100,000 live births in US
  - Neonatal death in 71 out of every 100,000 live births in US
- Cost
  - $20 billion in direct costs in the U.S annually
  - Average hospital stay of 3.5 days

Linda Liu
Matt Cooper
Bruce Ling

Page 1 2 3 4 5 6 .. 11 Showing 1 - 25 of 266 experiments

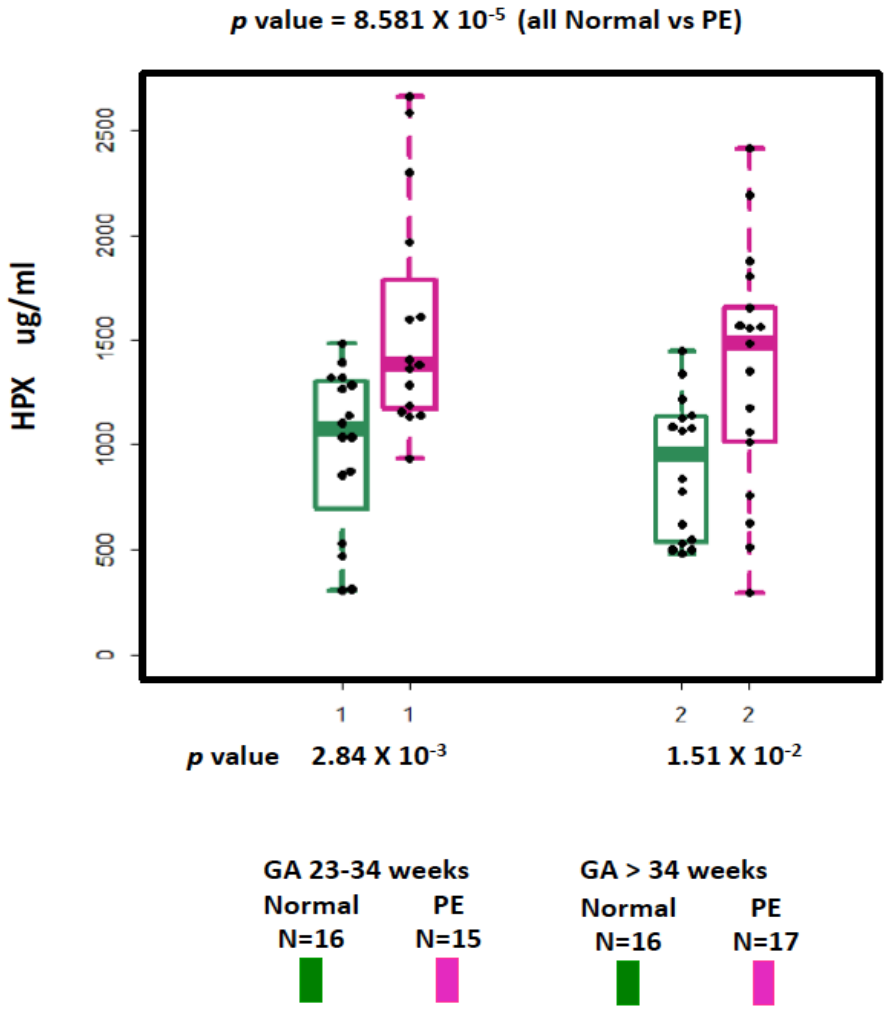
Accession	Title	Type	Organism	Assays	Released
E-GEOD-32472	Oxygen induced complication of prematurity: from experimental data to prevention strategy	transcription profiling by array	Homo sapiens	299	01/11/2011
E-GEOD-27976	Calvarial osteoblast transcriptome analysis identifies genetic targets and extracellular matrix-mediated focal adhesion as potential biomarkers for single-suture craniosynostosis	transcription profiling by array	Homo sapiens	249	04/03/2012
E-GEOD-46510	New whole blood gene expression profile predictve of preterm birth	transcription profiling by array	Homo sapiens	154	15/05/2014
E-GEOD-37210	The application of nonsense-mediated mRNA decay inhibition to the identification of breast cancer susceptibility genes	transcription profiling by array	Homo sapiens	143	11/04/2012
E-TABM-682	Transcription profiling of human decidua basalis to identify pre-eclampsia susceptibility genes	transcription profiling by array	Homo sapiens	104	07/04/2009
E-GEOD-35574	Differentially expressed microRNAs revealed by molecular signatures of Preeclampsia and IUGR in human placenta	transcription profiling by array	Homo sapiens	94	07/02/2012
E-GEOD-41336	Cultured Cyto and Syncytio-trophoblast samples exposed to varying degrees of hypoxia (methylation)	methylation profiling by array	Homo sapiens	90	18/01/2013
E-GEOD-5999	Transcription profiling of human 27 non-	transcription	Homo sapiens	72	07/11/2008

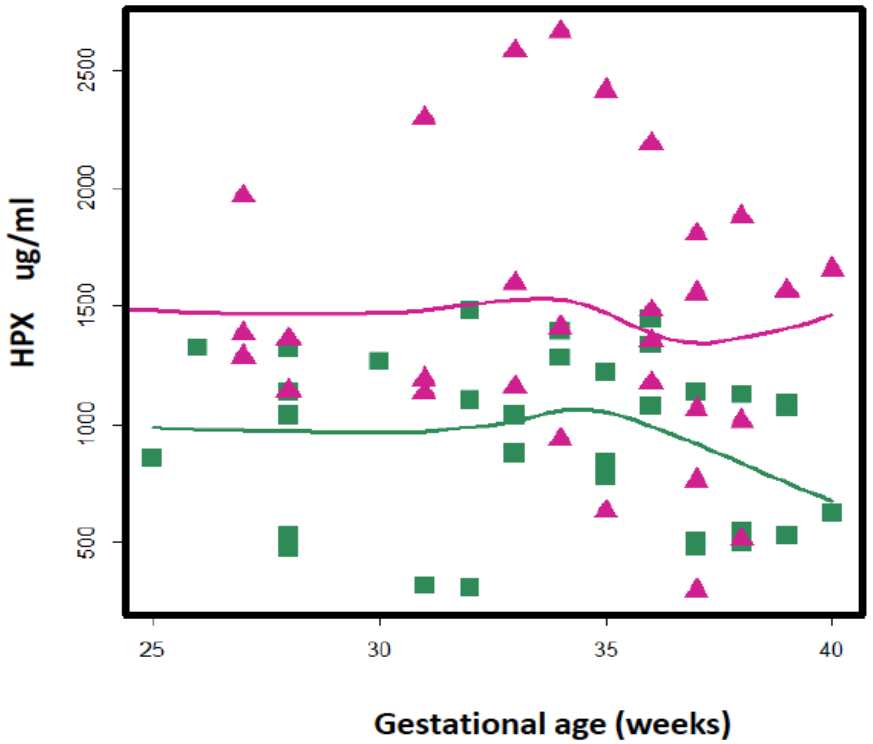
march of dimes
prematurity research center
at STANFORD University School of Medicine

SPARK
AT STANFORD

Linda Liu
Bruce Ling
Matt Cooper

New blood markers for preeclampsia





@MarchofDimes
bit.ly/preeclamp

Need a diagnostic for preeclampsia

Public big data available

March of Dimes Center for Prematurity Research

Data analyzed, diagnostic designed

SPARK grant ($50k)

Life Science Angels, other seed investors ($2 million)

@CarmentaBio
progenity.com
bit.ly/carm_prog

STOCK WATCH | Express, Wet Seal, Avago Jump

Carmenta Bioscience Secures Over $2 Million in Oversubscribed Seed Financing

Camille Samuels Accepts Seat on Carmenta Board of Di

BusinessWire

Press Release: Carmenta Bioscience, Inc. – Wed, A

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Carmenta BIOSCIENCE

PALO ALTO, Calif.--(BUSINESS

Carmenta Bioscience, Inc., a priv
company focused on maternal a
it has secured over $2M in seed
financing will support development and commercialization of a ne
diagnose and predict preeclampsia in pregnant women. The test is

BusinessWire
A Berkshire Hathaway Company

Progenity Acquires Carmenta Bioscience for Proprietary Preeclampsia Technology; Appoints Matthew Cooper Chief Scientific Officer

April 29, 2015 08:00 AM Eastern Daylight Time

SAN DIEGO--(BUSINESS WIRE)--Progenity, Inc., a provider of complex molecular and specialized diagnostic testing services, today announced the acquisition of Carmenta Bioscience, a leader in preeclampsia diagnostic development. With this acquisition, Progenity continues its mission of helping families prepare for life, through the development of diagnostic tests for preeclampsia. Preeclampsia, a hypertensive disorder of pregnancy, is often difficult to distinguish

Matthew Herper
Forbes Staff

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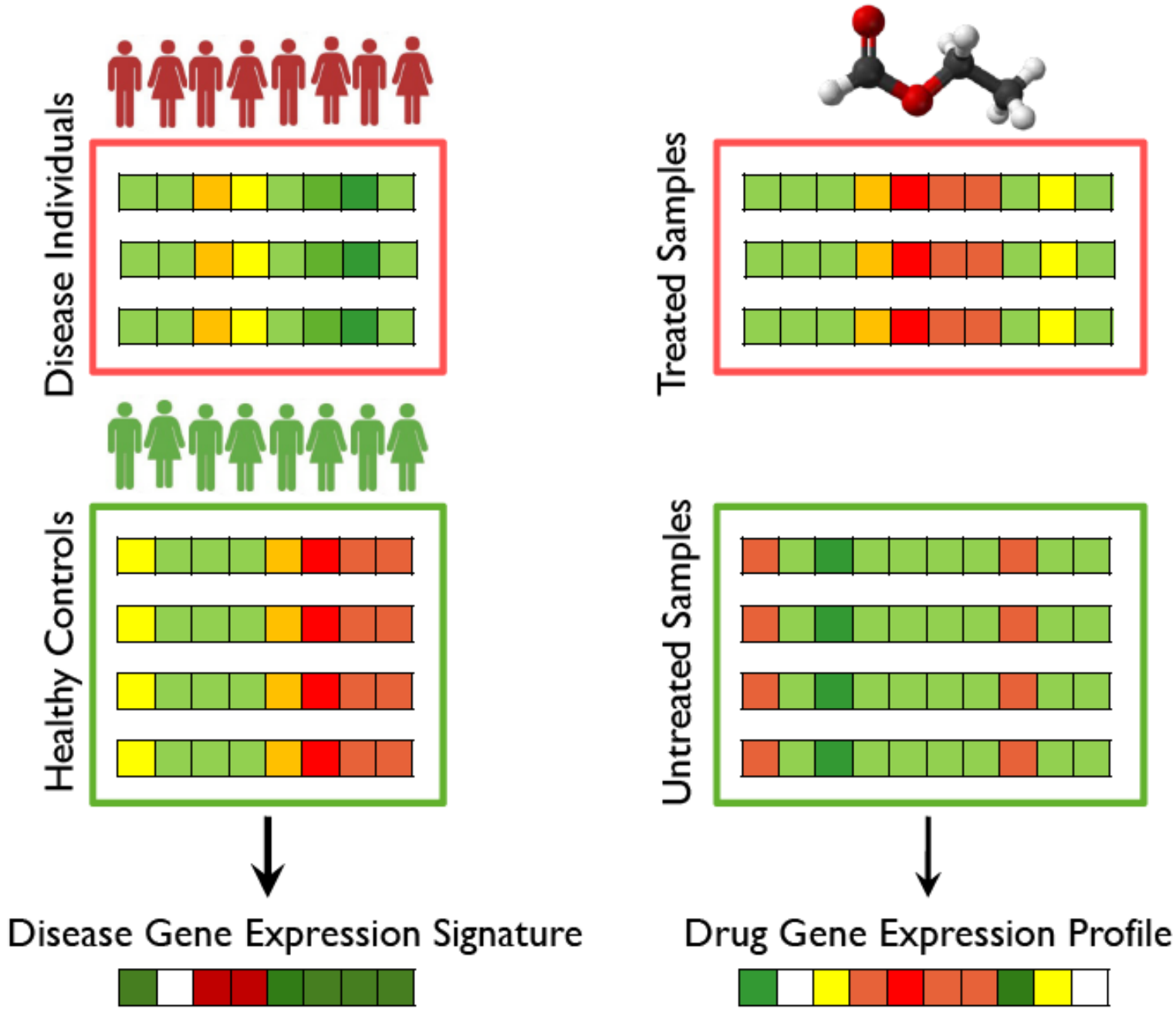
How Much Does Pharmaceutical Innovation Cost? A Look At 100 Companies

+ Comment Now + Follow Comments

Company	Ticker	Number of drugs approved	R&D Spending Per Drug ($Mil)	Total R&D Spending 1997-2011 ($Mil)
AstraZeneca	AZN	5	11,790.93	58,955
GlaxoSmithKline	GSK	10	8,170.81	81,708
Sanofi	SNY	8	7,909.26	63,274
Roche Holding AG	RHHBY	11	7,803.77	85,841
Pfizer Inc.	PFE	14	7,727.03	108,178
Johnson & Johnson	JNJ	15	5,885.65	88,285
Eli Lilly & Co.	LLY	11	4,577.04	50,347
Abbott Laboratories	ABT	8	4,496.21	35,970
Merck & Co Inc	MRK	16	4,209.99	67,360
Bristol-Myers Squibb Co.	BMY	11	4,152.26	
Novartis AG	NVS	21	3,983.13	
Amgen Inc.	AMGN	9	3,692.14	

Sources: InnoThink Center For Research In Biomedical Innovation; Tho Fundamentals via FactSet Research Systems

@MatthewHerper
bit.ly/newdrug1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Healthy Controls
Disease Gene Expression Signature
Treated Samples
Untreated Samples
Drug Gene Expression Profile

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Bone Models

Bone Metastases
Osteoarthritis
Osteoporosis

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Atrial Arrhythmias
Coronary Artery Disease
Hypertension
Ischemia
Myocardial Infarction
Restenosis
Ventricular Tachycardia

Dermatology Models

Acne
Atopic Dermatitis
Hair Growth
Lupus
Psoriasis
Rosacea
Skin Graft
Wound Healing

Diabetes Models

BB/W Rats
Food Intake
Goto-Kakizaki Rats
Non Obese Diabetic Mice
Obese Mice
Primate Diabetes
Streptozotocin Mice
Streptozotocin Rats
More...

Genitourinary Models

Chronic Kidney Disease
Cystometry
Endometriosis
IGA Glomerulonephritis
Interstitial Cystitis
Spinalized Rats

In Vitro Models

In Vitro Bone Models
In Vitro CVD Models
In Vitro Diabetes Models
In Vitro Eye Models
In Vitro Oncology Models
In Vitro Skin Models

In Vivo Technologies

Cognition
EEG
Electrophysiology
Imaging
Microdialysis

Infectious Disease

Bacterial Infection
Dengue Virus
Hepatitis C Virus
Influenza
LCMV Mouse
Malaria

Inflammation Models

Arthritis
Delayed Type Hypersens
Edema
Hemophilia
Irritable Bowel Disease
Irritant
LPS Acute Response
Mucositis
More...

Neurological Models

Alzheimer's Disease
Anxiety
Behavioral Tests
Cerebral Palsy
Circadian Profiling
Depression
Epilepsy
Olfactory Testing
More...

Oncology Models

Angiogenesis
Cachexia

Ophthalmic Models

Cataract
Corneal Dystrophy

Otology Models

Hearing Loss
Meniere's Disease

Pain Models

General Pain
Inflammatory Pain

Respiratory Models

Ascaris Lung Allergy
Cough

ob/ob Diabetes Model - 16 Mice

Service Description

Provider: Links Biosciences is a US company with laboratories in Hangzhou, China. The laboratory has been offering exploratory (non-GLP) pharmacology services to US and Chinese biopharma since 2004.

Background: The obese mutant mouse model was first reported by Ingalls A *et al* from the Jackson Laboratory in 1951 (Obese, a New Mutation in the House Mouse [164 KB]). The obese mouse resulted from a spontaneous mutation in a gene that was named *ob* in the V stock. Mice homozygous for the obese spontaneous mutation, (Lep^ob^; commonly referred to as *ob* or *ob/ob*), are first recognizable at about 4 weeks of age. Homozygous mutant mice gain weight rapidly and may reach three times the weight of wild-type controls. In addition to obesity, mutant mice exhibit hyperphagia, a diabetes-like syndrome of hyperglycemia, glucose intolerance, elevated plasma insulin, subfertility, impaired wound healing, and an increase in hormone production from both pituitary and adrenal glands. Friedman J *et al* reported leptin in 1994, and demonstrated that leptin, the product of the *ob* gene, was produced in white adipose tissue and served as the peripheral signal to the central nervous system of nutritional status.

Service Details: This service offers a 28 day db/db mouse model of T2DM and obesity. Customer has various options that are conveyed to Links Biosciences using a Service Order Form. Customer assigns up to 16 mice to

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biology | chemistry | dmpk | pharmacology | toxicology

Home » Pharmacology » Diabetes and Obesity » Obese Mice

ob/ob Diabetes Model - 16 Mice

$9,000.00 USD
per service

9 week
turn around time

Provided By
Links Biosciences

Request Info

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Service Description

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Validation methods are increasingly commoditized

Scroll down to browse a list of available research models for **Type I and Type II diabetes, hyperglycemia, insulin resistance, diet-induced obesity and related diseases**. Use the filters on the left to refine the list and then click on any listing to view technical information or to ask a question.

Click on the Vendors tab to view a complete list of CROs that offer diabetes and obesity pharmacology models.

VIEW SERVICES | VIEW VENDORS | **133 results** get help

Search Filters

Diabetes and Obesity

- BB/W Rats
- Food Intake
- Goto-Kakizaki Rats
- Non Obese Diabetic Mice
- Obese Mice
- Obese Primates
- Primate Diabetes
- Streptozotocin Mice
- Streptozotocin Rats
- db/db Diabetic Mice
- fa/fa Zucker Diabetic Rats

Certifications help

- GLP (48)
- AAALAC (28)
- GMP (20)
- ISO 9001 (7)
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Locations

- United States (64)

Univ. of Maryland School of Medicine Obesity and Diabetes Research Center

University of Maryland School of Medicine Obesity and Diabetes Research Center focuses on research of obesity, diabetes, and aging in nonhuman primates.

vendor info | Add

Transgenic Rabbit Models

Transgenic Rabbit Models offers transgenic rabbit models for the study of atherosclerosis, ophtalmology, hypertrophic myopathies, diabetes, obesity, hemostasis, respiratory diseases, AIDS, and cancer.

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Ophthy-DS

Ophthy-DS offers ophthalmic model services for macular degeneration, diabetes, uveitis, and dry eye.

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PharmaNess offers pharmacokinetics, pharmacodynamics, formulations, behavioral assay, in vivo screening, ex vivo screening, microscopy, stereology and histology staining services.

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Wisconsin National Primate Research Center

Wisconsin National Primate Research Center focuses on research of regenerative medicine, reproduction, immunology, virology, aging, and metabolic diseases.

vendor info | Add

Ask An Expert

Use our free service locator program to find the research services you need.

Search PubMed

Search PubMed for "Diabetes and Obesity" using BioWizard.

Selected Vendors

Scroll down to browse a list of available research models for **Type I and Type II diabetes, hyperglycemia, insulin resistance, diet-induced obesity and related diseases**. Use the filters on the left to refine the list and then click on any listing to view technical information or to ask a question.

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vendor info | Add

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Use our free service locator program to find the research services you need.

Search PubMed

Search PubMed for "Diabetes and Obesity" using BioWizard.

Selected Vendors

Anti-seizure drug works against a rat model of inflammatory bowel disease

Rat colonoscopy

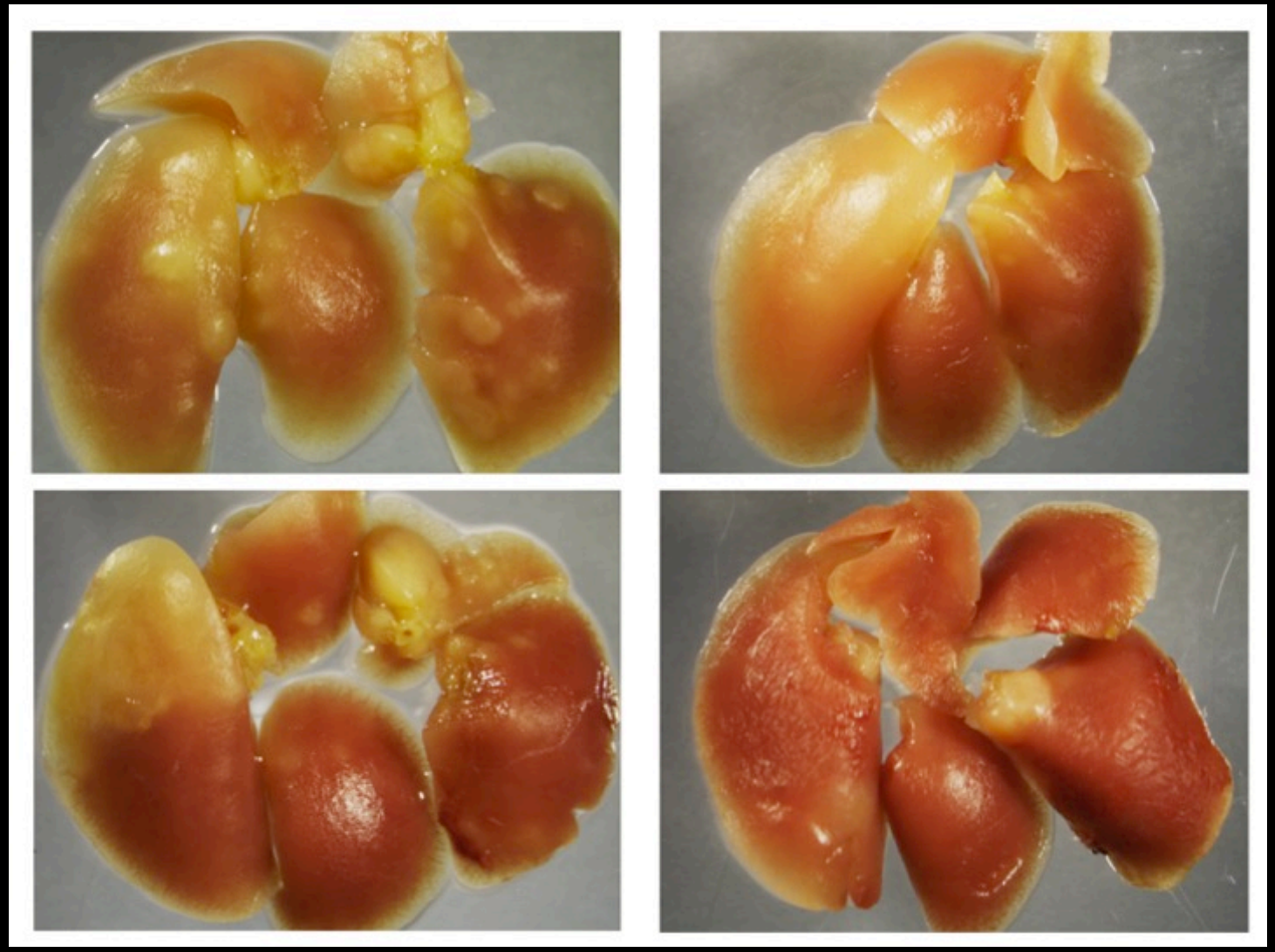
Rat with Inflammatory Bowel Disease

Inflammatory Bowel Disease After Anti-seizure Drug

Joel Dudley
Marina Sirota

bit.ly/scitmtop

Psychiatric Drug Imipramine Shows Significant Activity Against Small Cell Lung Cancer



Vehicle control

Imipramine

p53/Rb/p130 triple knockout model of SCLC

Mice dosed after tumor formation

Joel Dudley
Nadine Jahchan
Julien Sage
Alejandro Sweet-Cordero
Joel Neal
@NuMedii

Need more drugs for more diseases

Public big data available

NIH funding

Data analyzed, method designed

Company launched, ARRA, StartX, Stanford license, first deal

Claremont Creek, Lightspeed ($3.5 million)

@NuMedii

BIOTECHsf

NuMedii
Translating Big Data into new medicines

Jun 26, 2013, 5:30am PDT

Venture capital

'Digital drug development' company NuMedii snags $3.5 million

Ron Leuty
Reporter-
San Francisco Business Times
Email | Twitter | Google+ | Twitter

NuMedii Inc., the Palo Alto startup looking to convert pages of drug safety data into faster drug-development times, lined up $3.5 million in a Series A round.

NuMedii CEO Gini Deshpande: Tapping old data drugs.

FierceBiotechIT

NEWS TOPICS ANALYSIS FEATU

Topics: R&D

Allergan taps NuMedii's digital discovery platform for psoriasis R&D

October 5, 2015 | By Nick Paul Taylor

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NuMedii has landed a deal tha discovery. Allergan ($AGN) is to source a flow of potential tre spinout.

THE WA

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Astellas hooks up with NuMed repurposing deal drive

January 15, 2016 | By Nick Paul Taylor

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Astellas Pharma has signed its second tech many months. The latest deal connects Aste discovery shop cofounded by Atul Butte that

immport.niaid.nih.gov

IMMPORT
BIOINFORMATICS FOR THE FUTURE OF IMMUNOLOGY

What is ImmPort?

The Immunology Database and Analysis Portal (ImmPort) project provides tools and services for the collection, QC, curation, and sharing of immunological data. The purpose of ImmPort is to provide a long term, sustainable source for promoting the re-use of these data provided by NIAID DAIT and DMID funded investigators.

This Beta website provides an open search interface to locate studies of interest once they are released to the research community. Private data and pre-release data are stored in private workspaces of investigators at the ImmPort site located at NIAID, http://immport.niaid.nih.gov.

The next big open data: clinical trials

Announcements

Welcome to immport.org our new Beta web site currently in user review

Data Summary - Studies: 118, Subjects: 20691, Experiments: 736

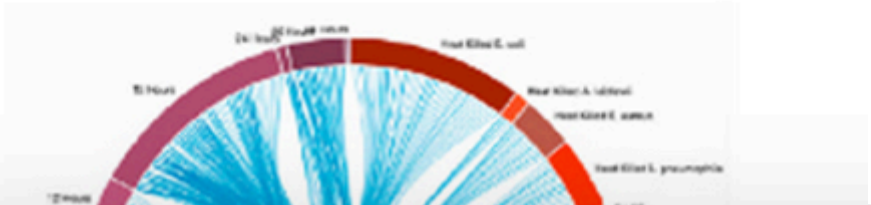
April 2015 - ImmPort PI and director of the new UCSF Institute for Computational Health Sciences, Dr. Atul Butte, will lead the California Initiative to Advance Precision Medicine. Details at San Francisco Business Times

Featured Studies | Study Filter | Study Explorer

e.g. influenza

Study: Systems scale interactive exploration reveals differences in response to influenza and pneumococcal

Immune responses to viral and bacterial vaccination produce similar results through different mechanisms. Study SDY180 examined both vaccine responses using flow



bit.ly/immport

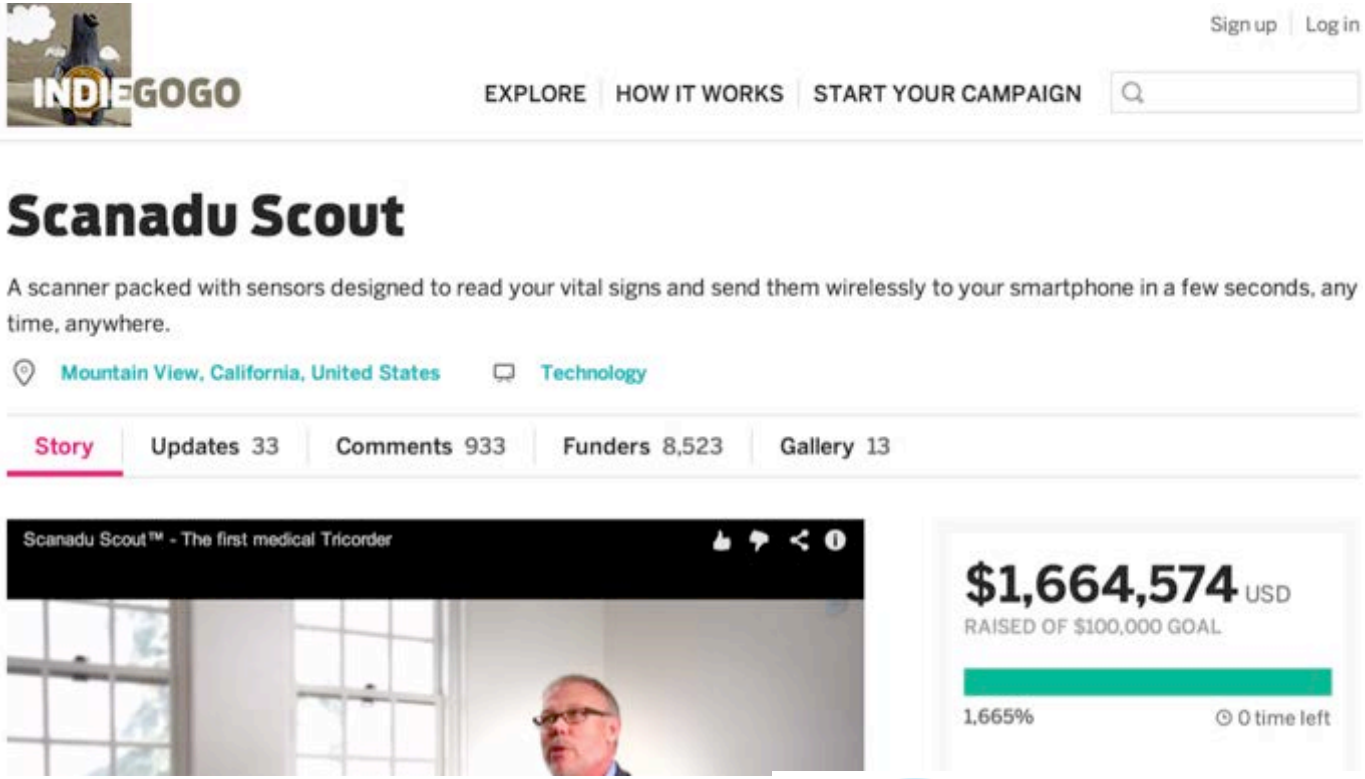
@fitbit

Withings

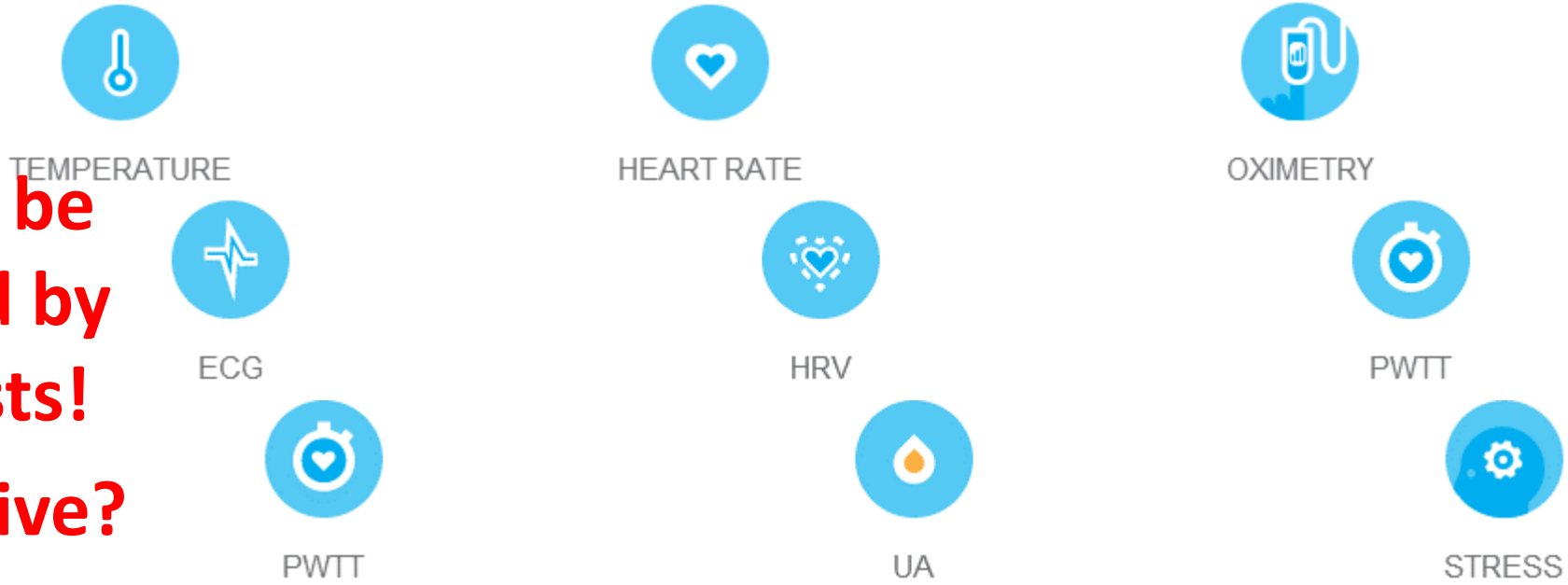
fitbit

With daily weight and intake measures, I have lost 50 pounds (22 kg) in 2 years!

But my clinician was the last to hear about this!



@scanadu



Medical devices can be funded and designed by internet technologists!

Where will the data live?

WONKBLOG

One hospital charges $8,000 — another, $38,000

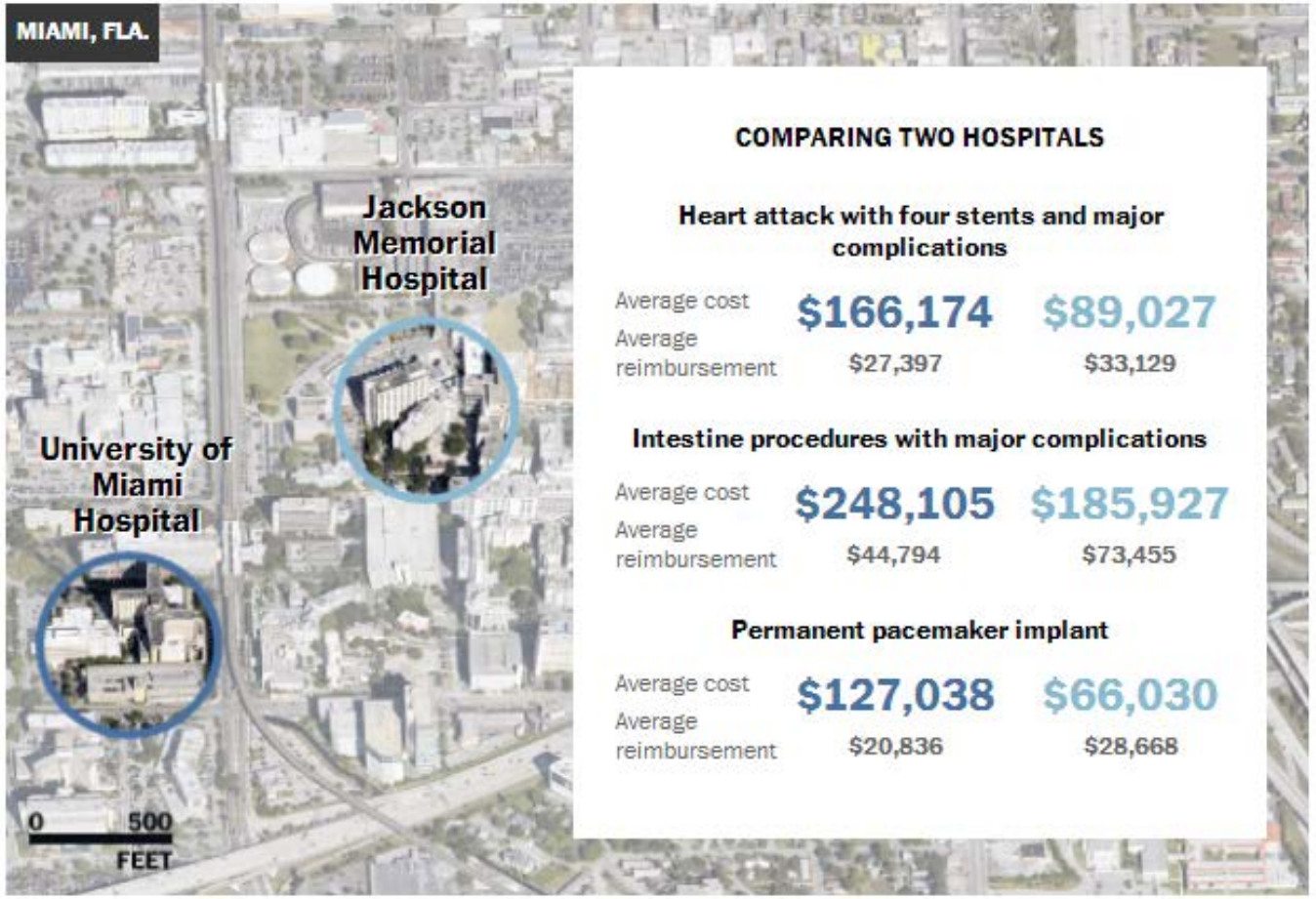
By Sarah Kliff and Dan Keating, Published: May 8, 2013 at 12:01 am

Consumers on Wednesday will finally get some answers abo
persistent mysteries: how much medical care actually costs

For the first time, the federal government will release the p
for the 100 most common inpatient procedures. Until now,

The cost of delivered care is becoming public.

How will the public respond?




National Cancer Institute
The Cancer Genome Atlas
Understanding genomics to improve cancer care
ENCODE
HMP
NIH HUMAN MICROBIOME PROJECT
CCLE Cancer Cell Line Encyclopedia
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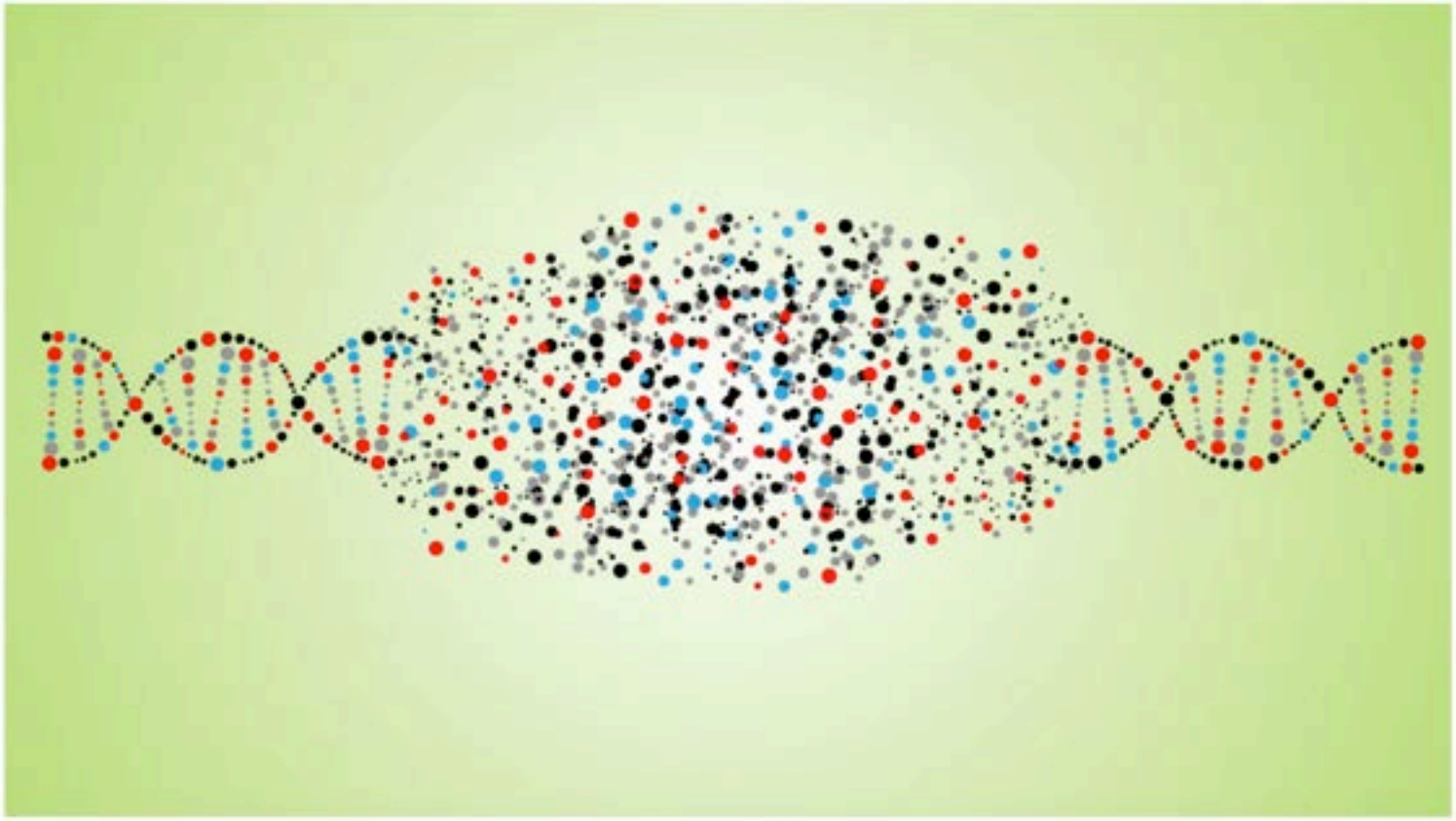
California Launches Initiative to Advance Precision Medicine

UCSF to Lead Public-Private Effort to Advance Data-Driven Medicine

By Laura Kurtzman on April 14, 2015 | Email | Print



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@jerrybowngov

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Institute for Computational Health Sciences

Home

UCSF Taps Atul Butte to Lead Big Data Center

By Kristen Bole on January 15, 2015 | Email | Print

UC San Francisco has recruited a world-renowned expert in medical technology, Atul Butte, MD, PhD, to lead the new UCSF Institute for Computational Health Sciences, which will serve as a cornerstone of the university's efforts to harness the power of "big data," to lead to faster and more effective cures for patients worldwide.

A noted expert in pediatrics and medical informatics at Stanford University, Butte brings the rare combination of deep knowledge in

UCSF Benioff Children's Hospital San Francisco

UC HEALTH

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UCSF Medical Center at Mission Bay opens

Large-scale transport completed with support of city of San Francisco agencies. (CLICK IMAGE TO VIEW)

Institute for Computational Health Sciences

Build the strongest team in the world in biomedical data analytics

- Research and development (and spin out technologies)
- Develop new educational plans
- Bring new computational faculty members to UCSF
- Organize infrastructure and operations
- Build and use our new data assets for precision medicine

UC ReX
University of California Research eXchange

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SEARCH 14.1 MILLION+ PATIENT RECORDS FROM THE UNIVERSITY OF CALIFORNIA WITH THE UC ReX DATA EXPLORER

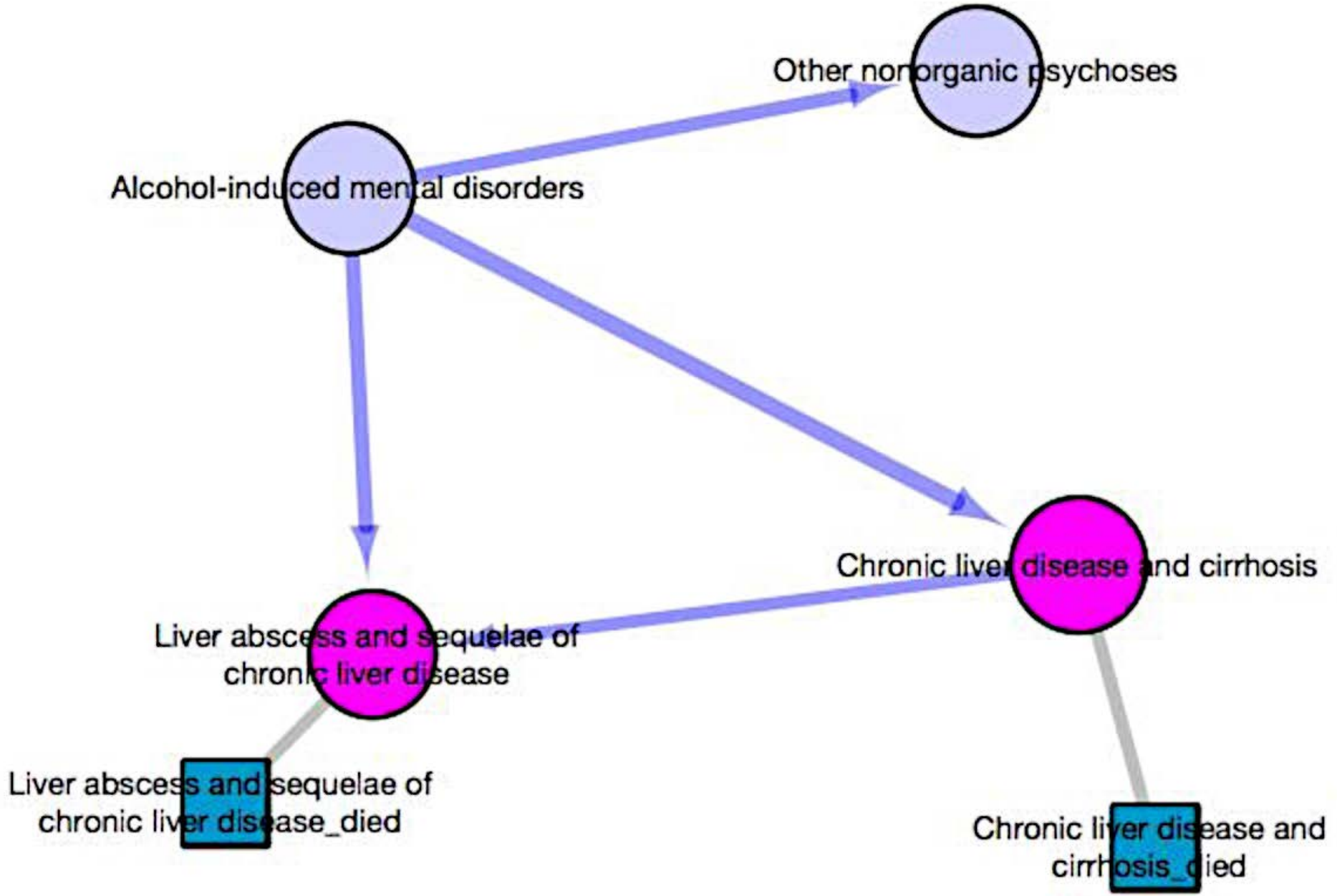
ABOUT THE TOOL

ABOUT THE DATA

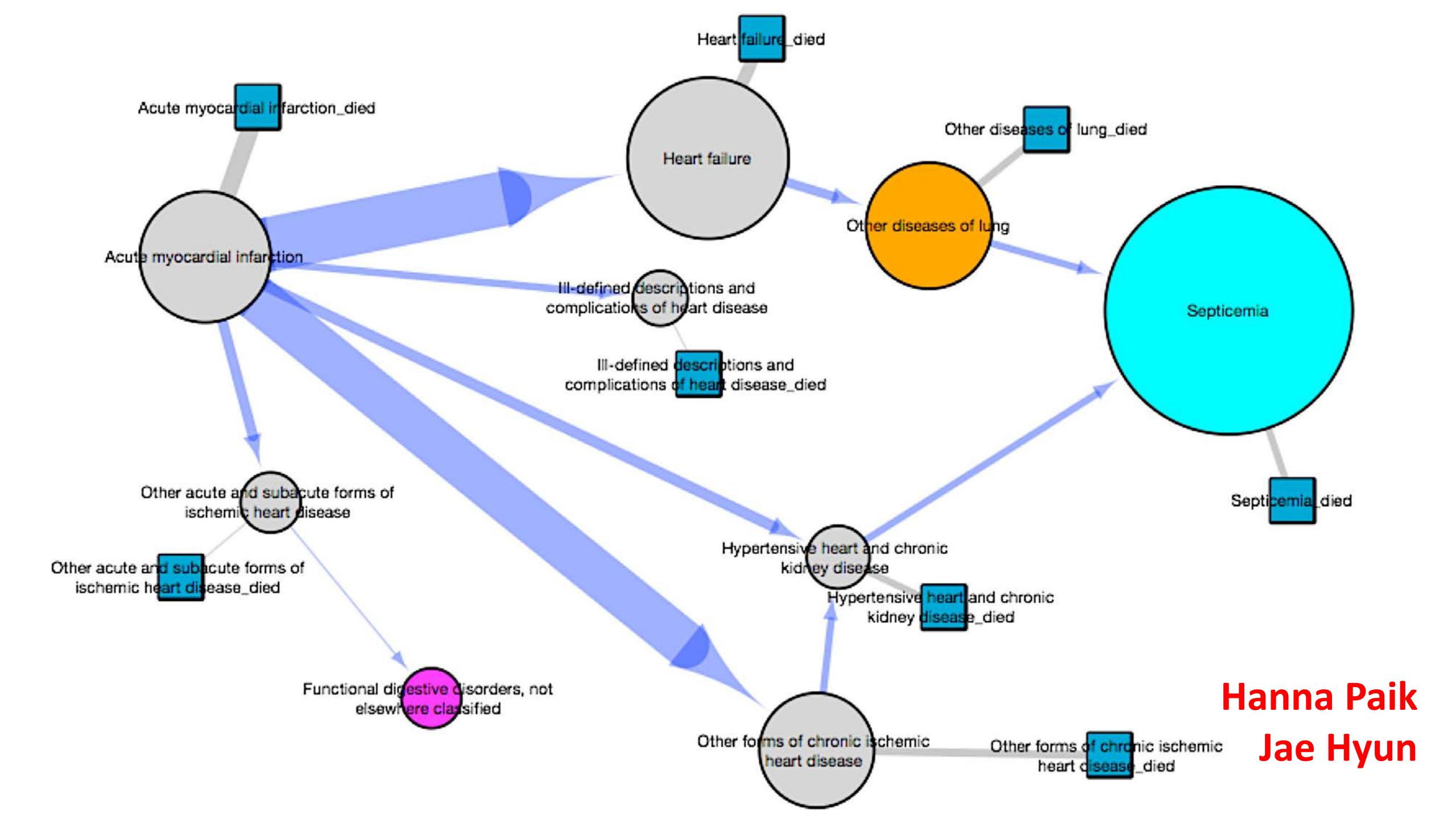
GET STARTED

What could we do with the data?

- Clinical researcher at UCLA could run a genome wide association study across UC Health
- Mobile health researcher at UCSD can enable patients to contribute data for research
- Community activist and researcher UC Modesto can study environmental factors contributing to health and disease
- Transplant patient at UC Irvine can download all their data across UC Health
- Data scientist at UC Santa Barbara can model development of Alzheimer's disease and build a multi-modal predictor
- App designer at UC Riverside can show patients their choices with chronic disease
- CMO at UCSF can build predictive models for readmission, test, share across UC Health
- AI researcher at UC Berkeley can build deep-learning models for image-based diagnostics
- Health services researcher at UC Davis can build predictive models for drug efficacy, and maybe enable pay-for-performance
- Cancer genomics researcher at UCSC can study all our clinical cancer genomes



Hanna Paik
Jae Hyun


Heart failure_died
Acute myocardial infarction_died
Heart failure
Other diseases of lung_died
Other diseases of lung
Acute myocardial infarction
Septicemia
Ill-defined descriptions and complications of heart disease
Ill-defined descriptions and complications of heart disease_died
Other acute and subacute forms of ischemic heart disease
Septicemia_died
Hypertensive heart and chronic kidney disease
Other acute and subacute forms of ischemic heart disease_died
Hypertensive heart and chronic kidney disease_died
Functional digestive disorders, not elsewhere classified
Other forms of chronic ischemic heart disease
Other forms of chronic ischemic heart disease_died
Hanna Paik
Jae Hyun

What is Big Data in Biomedicine?

What is Big Data in Biomedicine?

Algorithms?

Programmers?

Databases?

High-performance computers?

Mobile?

Big Data in Biomedicine is…

Predicting the disease before it strikes

Explaining the rare disease that defies experts

Finding drugs for diseases lacking attention

Making sure we do the right thing for patients

An amazing platform for biomedical innovation

Big Data in Biomedicine is

Hope

UC Clinical Data Warehouse Team

Executive Team
- Atul Butte
- Joe Bengfort
- Michael Pfeffer
- Tom Andriola

Steering Committee
- Irfan Chaudhry
- Mohammed Mahbouba
- Lisa Dahm
- David Dobbs
- Kent Andersen
- Ralph James
- Jennifer Holland
- Eugene Lee

ETL Team
- Albert Dugan
- Tony Choe
- Michael Sweeney
- Timothy Satterwhite
- Ayan Patel
- Niranjan Wagle
- Ralph James
- Joseph Dalton

Data Harmonization
- Dana Ludwig

Data Quality
- Momeena Ali
- Jodie Nygaard

Epic
- Kevin Ames
- Ben Jenkins
- Steve Gesualdo

Business Analyst
- Ankeeta Shukla

Hardware
- Sandeep Chandra
- Jeff Love
- Scott Bailey
- Kwong Law
- Pallav Saxena

Support
- Jack Stobo
- Michael Blum
- Sam Hawgood

Collaborators

- Jeff Wiser, Patrick Dunn, Mike Atassi / Northrop Grumman
- Ashley Xia and Quan Chen / NIAID
- Takashi Kadowaki, Momoko Horikoshi, Kazuo Hara, Hiroshi Ohtsu / U Tokyo
- Kyoko Toda, Satoru Yamada, Junichiro Irie / Kitasato Univ and Hospital
- Shiro Maeda / RIKEN
- Alejandro Sweet-Cordero, Julien Sage / Pediatric Oncology
- Mark Davis, C. Garrison Fathman / Immunology
- Russ Altman, Steve Quake / Bioengineering
- Euan Ashley, Joseph Wu, Tom Quertermous / Cardiology
- Mike Snyder, Carlos Bustamante, Anne Brunet / Genetics
- Jay Pasricha / Gastroenterology
- Rob Tibshirani, Brad Efron / Statistics
- Hannah Valantine, Kiran Khush/ Cardiology
- Ken Weinberg / Pediatric Stem Cell Therapeutics
- Mark Musen, Nigam Shah / National Center for Biomedical Ontology
- Minnie Sarwal / Nephrology
- David Miklos / Oncology

Support

- University of California, San Francisco
- NIH: NIAID, NLM, NIGMS, NCI; NIDDK, NHGRI, NIA, NHLBI, NCATS
- March of Dimes
- Juvenile Diabetes Research Foundation
- Hewlett Packard
- Howard Hughes Medical Institute
- California Institute for Regenerative Medicine
- Luke Evnin and Deann Wright (Scleroderma Research Foundation)
- Clayville Research Fund
- PhRMA Foundation
- Stanford Cancer Center, Bio-X, SPARK

- Tarangini Deshpande
- Kimayani Butte
- Sam Hawgood
- Keith Yamamoto
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- Mounira Kenaani
- Kevin Kaier
- Boris Oskotsky