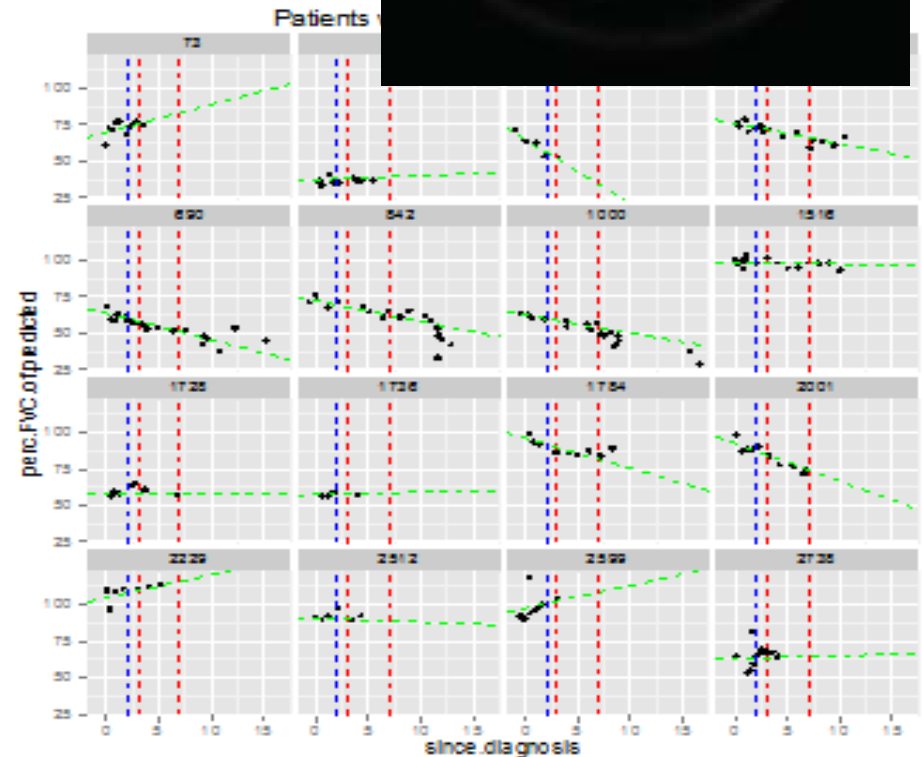
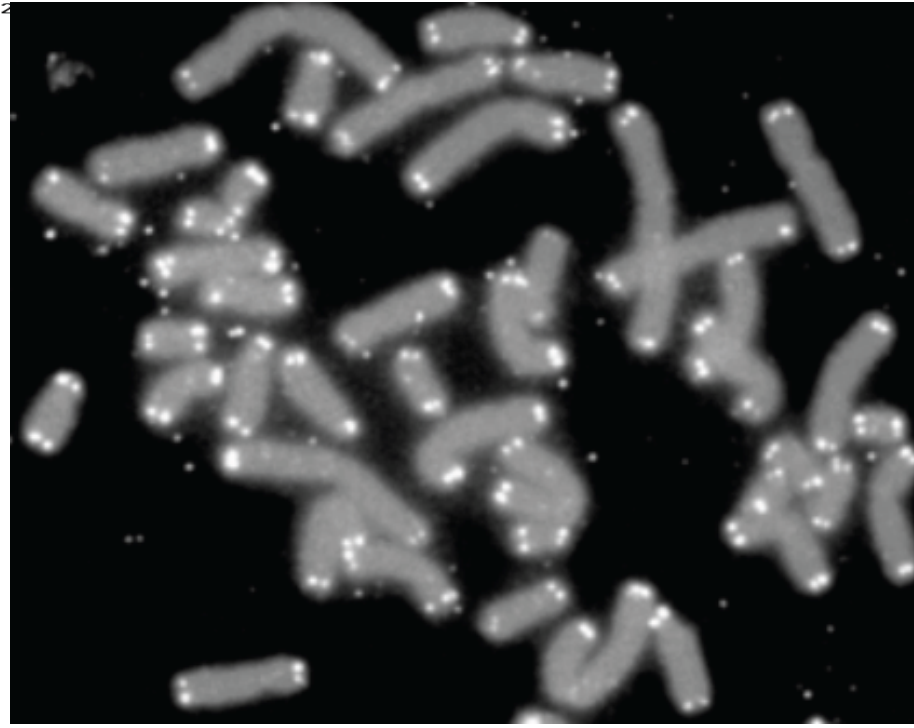


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 119739 cccattttctc attaccattg aaatgtctca tgagcatgtc acattctggt acaactgcta
 119799 atccaggatg acagtttagt tctttttaat ccaattgaga gccttctact catgaccaga
 119859 gaacctaaag aaaggttaag atacatttat tccttggtgt aagtgatttg tctattttta

Johns Hopkins Individualized Health Initiative (Hopkins *in*Health)

Riding the Biotechnology and Information Technology Waves
Fostering Improved Health at More Affordable Costs

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 121479 acttggtgat atctttattcc aagcatattt gtttctctcc tatttatttt tattctgtgt
 121539 tcattttocaa aattgttttta ctcacaactg tttgtttttt
 121599 ggtatcattt ggctaattgt ataatttcag tgtcatttct



Hopkins *in*Health Strategy

- **Embrace meaningful variation** among people,
- Explain meaningful variation by **novel measurements and novel analysis** of existing data,
- **Stratify (subset) diverse individuals into subgroups and learn to “manage” each stratum optimally,** and

Variability is the law of life, and as no two faces are the same, so... no two individuals react alike and behave alike under the abnormal conditions which we know as disease. – William Osler

Hopkins *in*Health

Steven Johnson's *coral reef* analogy

Fostering:
Connections
Collisions
Recycling

<https://www.youtube.com/watch?v=ssutK1Gei4A&nohtml5=False>

Some Johns Hopkins (*in*)Health InitiativeS of Note

- Johns Hopkins Precision Medicine - 2015
 - Precision Medicine Centers of Excellence – 2016
 - Johns Hopkins HealthCare Innovation, LLC - 2017
- Whiting School Malone Institute for Healthcare Engineering – 2015
- APL Healthcare Program – 2015
- People and Infrastructure
 - ~50 new faculty at the interface of biomedical and data sciences since 2010 with 4 new BDPs
 - MARCC – 2015
 - Center for Clinical Genomics – 2016
 - ICTR Cores - 2008

Benefiting People

Components	Prostate Cancer active surveillance example
<ul style="list-style-type: none"> • Frame unmet health need 	Half of active surveillance prostatectomies yield indolent cancers
<ul style="list-style-type: none"> • Specify health mechanisms model 	Predictors of indolence: PSA, past biopsies, family history,...
<ul style="list-style-type: none"> • Identify and wrangle data into a cohort database from which to learn through careful analyses 	Brady Institute, Bal Carter Active Surveillance clinical cohort database with 1300 men
<ul style="list-style-type: none"> • Design and test” knowledge solution” 	Coley, et al Bayesian hierarchical model http://arxiv.org/abs/1508.07511 http://arxiv.org/abs/1510.08802
<ul style="list-style-type: none"> • Design and test users’ interface for population health manager, clinician and/or individual 	PCORI ME-1408-20318
<ul style="list-style-type: none"> • Design and test curation 	PCORI proposal
<ul style="list-style-type: none"> • Design and implement scale-up for wide use 	Microsoft partnership
<ul style="list-style-type: none"> • Design and implement business model 	??

*in*Health Resources Available

**Health
measurement**
Peter Searson

Bioethics
Nancy Kass

**JH Data
CCDA**
Diana Gumas

**Statistical design
and analysis**
*Nilanjan
Chatterjee*

Behavior change

**Finance/ org.
models**
Mary Cooke

Hopkins *in*Health

tcctaa
ttttgc
aaaatt
actttt
tattag
tggog
acaggg

gggtcatatt
aatatgaaat
aatttgggtot
gtatttggta
caccaaataa
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taggttaggt

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atgtagt
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acattttccc
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