
The Future of Healthcare
with Big Data and AI
databricks

UNIFIED ANALYTICS PLATFORM

DATA ENGINEERS

DATA SCIENTISTS

DATABRICKS WORKSPACE

Jobs
APIs
Notebooks
Models
Dashboards

mlflow
End to end ML lifecycle

DATABRICKS RUNTIME

Databricks Delta
Reliable & Scalable

APACHE Spark

ML Frameworks
Simple & Integrated

Hadoop kafka Parquet

TensorFlow XGBoost

Azure

DATABRICKS CLOUD SERVICE

amazon web services

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DOMAIN EXPERT

EXPERTISE GAP

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DOMAIN EXPERT

UNIFIED ANALYTICS PLATFORM

INDUSTRY-SPECIFIC TOOLS

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Unified Analytics Platform
for Genomics
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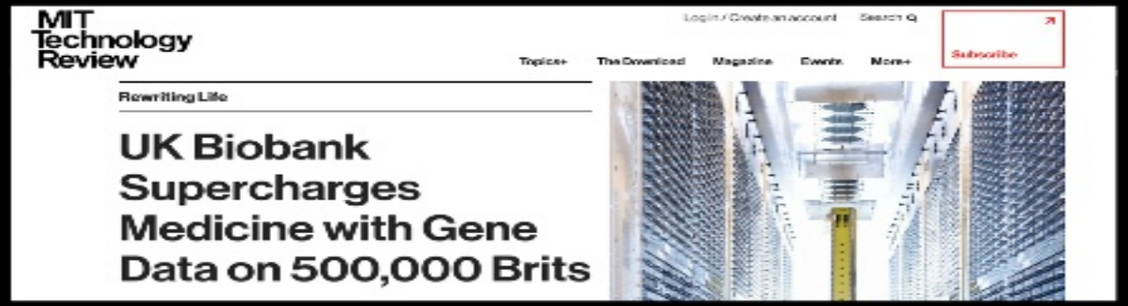
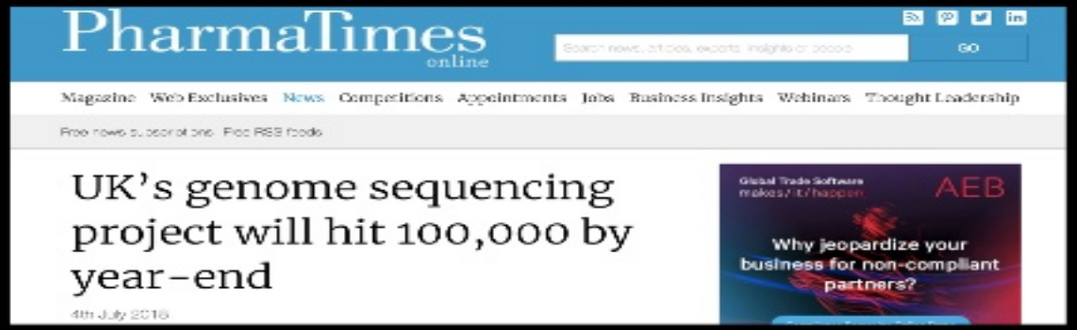
Massive Investments in Genomic Data





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Potential to Transform the Industry

Faster Drug Discovery

Reduced Health Claims

Better Patient Outcomes

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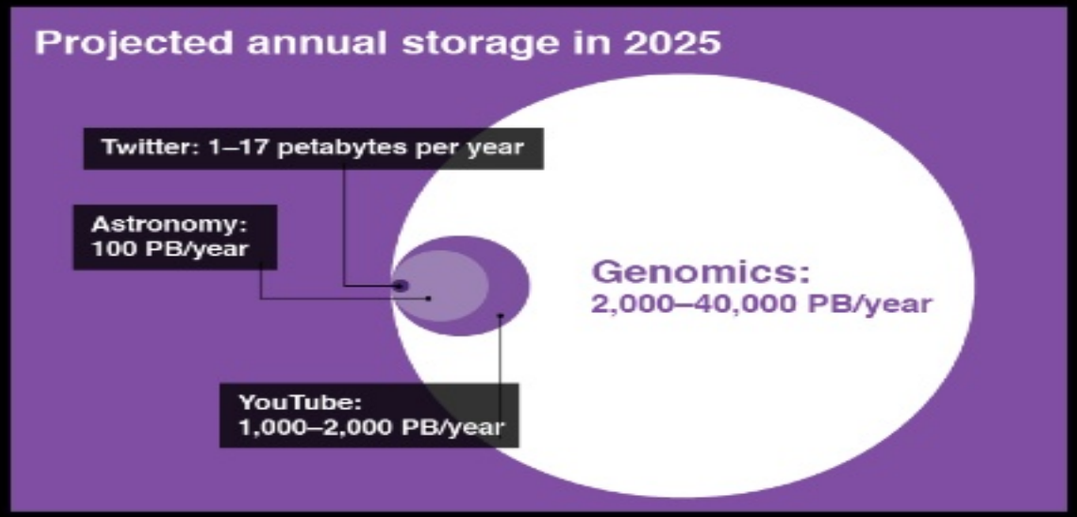
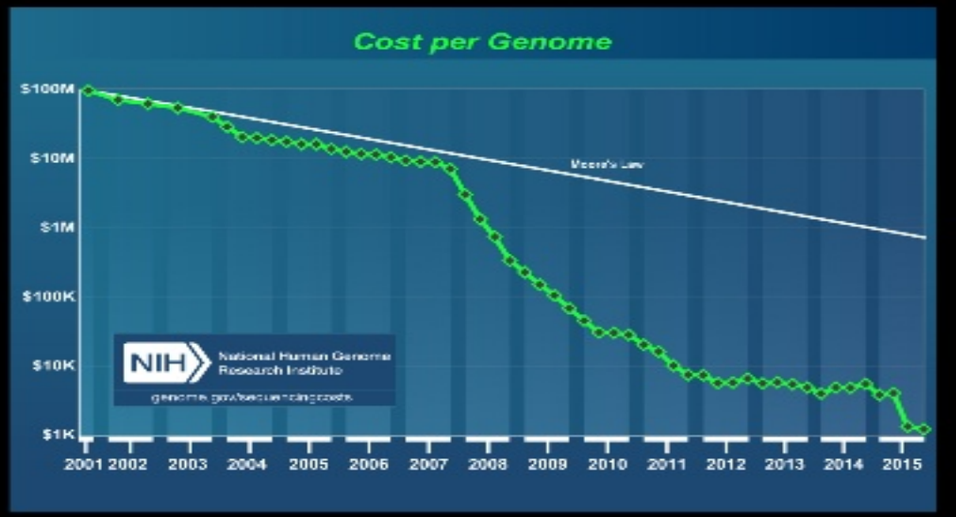
Genomic Data Volumes are Exploding

40,000 Petabytes / year by 2025



Source: "Big Data: Astronomical or Genomical? PLoS Biology, 7 July 2015

From $2.7B to <$1,000



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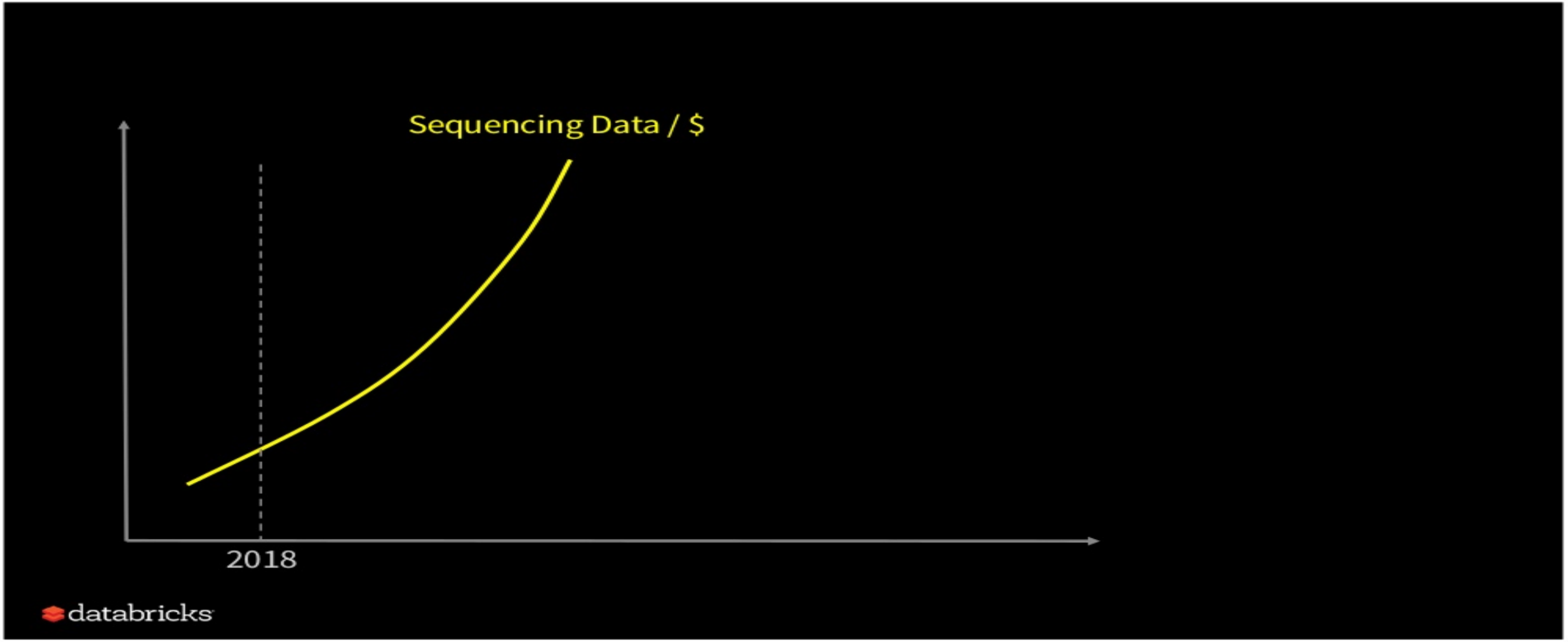
Sequencing Data / $
2018
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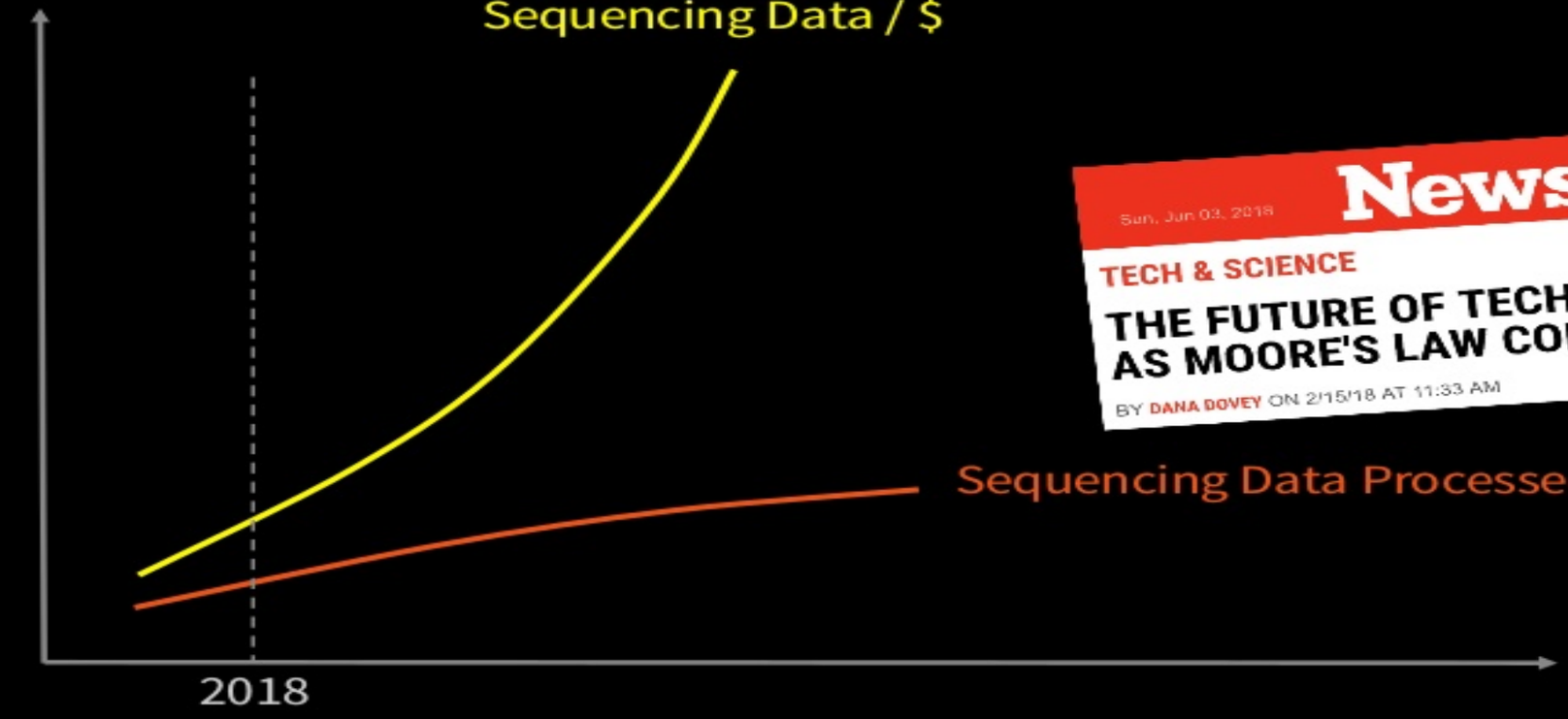

Sun, Jun 03, 2018 **Newsweek**

TECH & SCIENCE

THE FUTURE OF TECHNOLOGY IS UNCERTAIN AS MOORE'S LAW COMES TO AN END

BY DANA DOVEY ON 2/15/18 AT 11:33 AM

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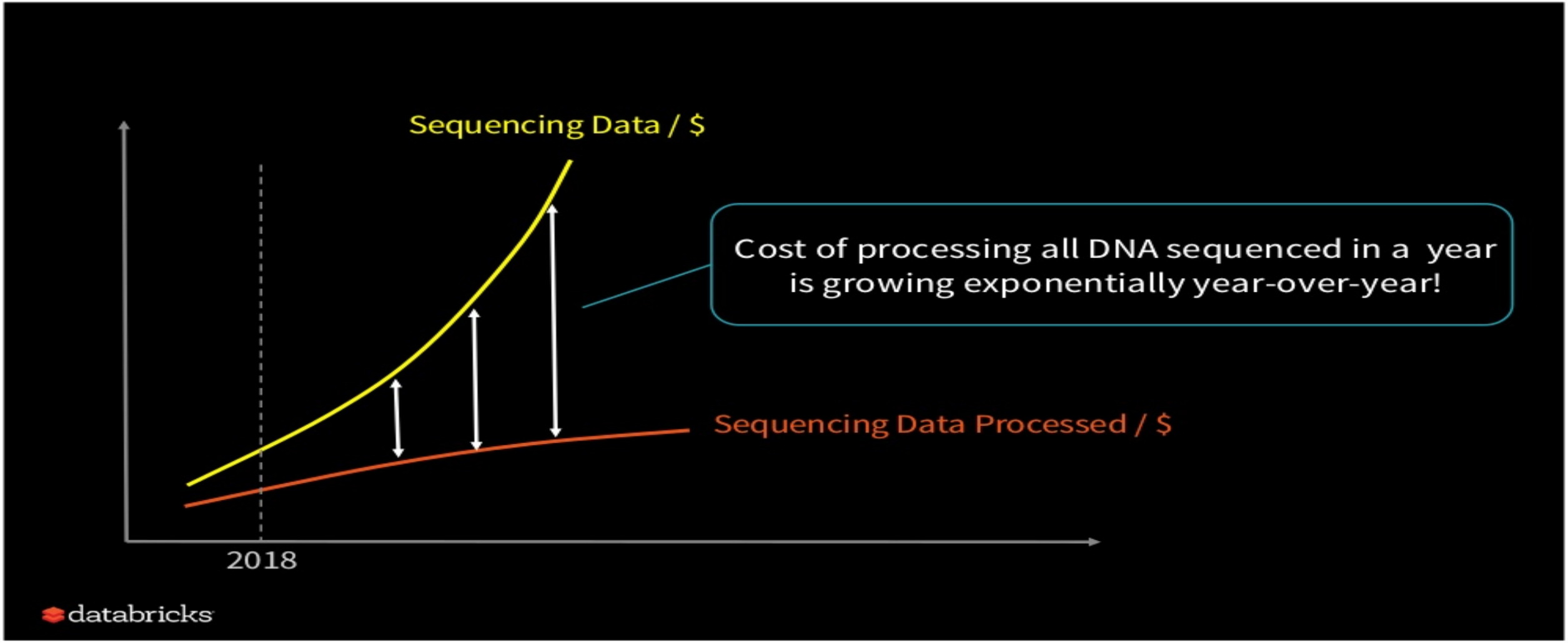
Sequencing Data / $
Cost of processing all DNA sequenced in a year is growing exponentially year-over-year!
Sequencing Data Processed / $
2018
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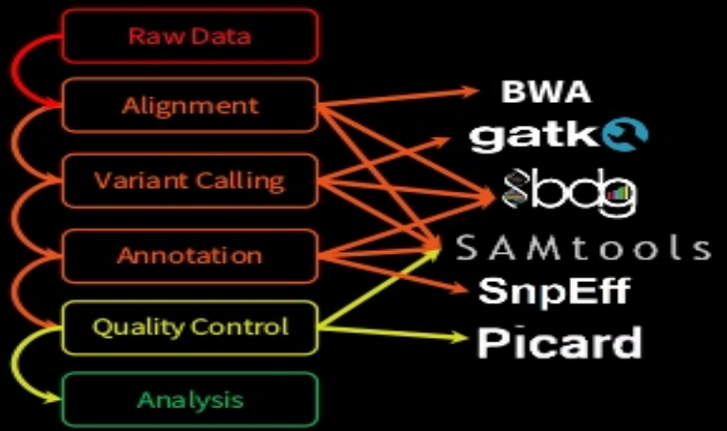
Challenge #1: Complex Pipelines

Complex Genomic Pipelines

Costly and time consuming



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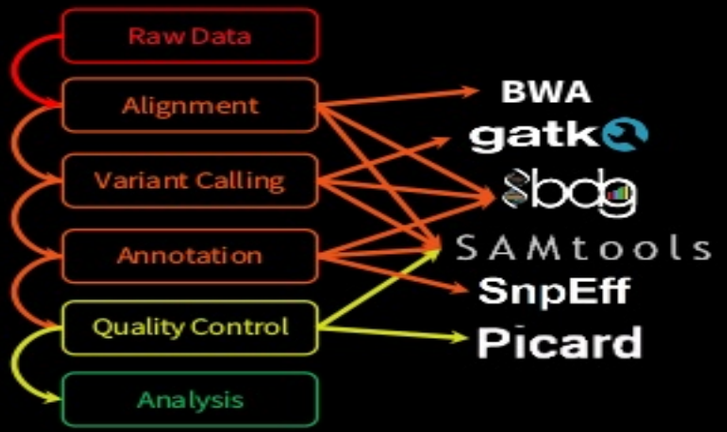
Challenge #2: Rigid Analytics

Complex Genomic Pipelines

Costly and time consuming



Rigid Analytics

Reduced Scope of Research

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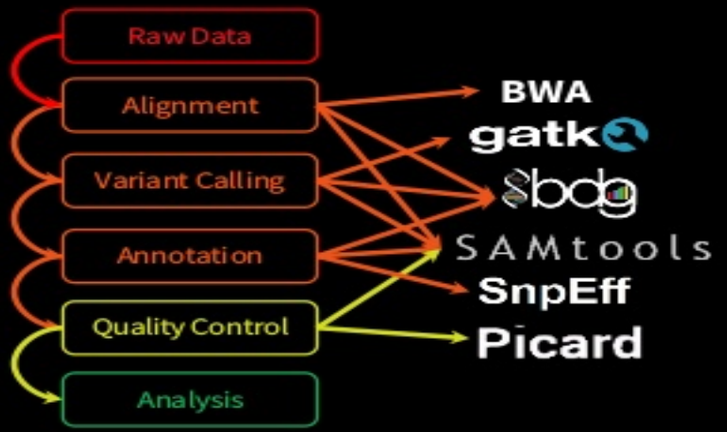
Challenge #3: Siloed Teams

Complex Genomic Pipelines

Costly and time consuming

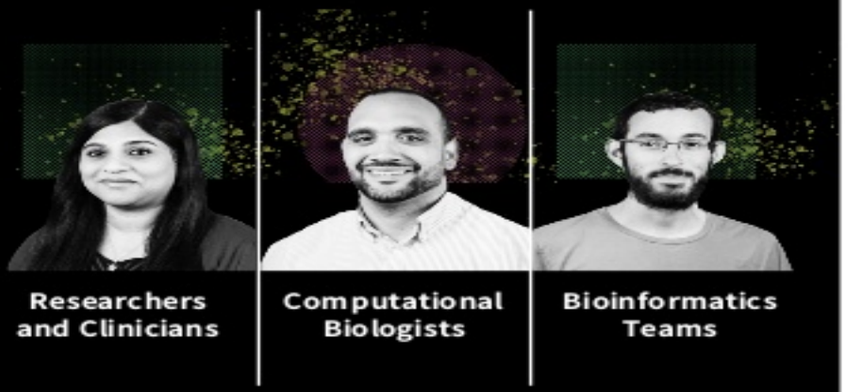


Rigid Analytics

Reduced Scope of Research

Siloed Teams

Lack of Productivity



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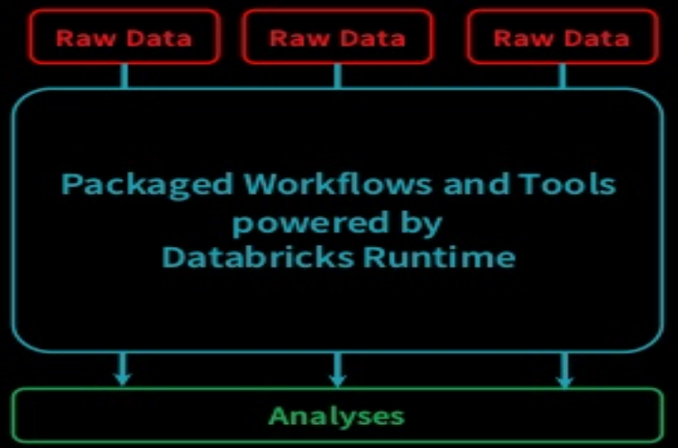
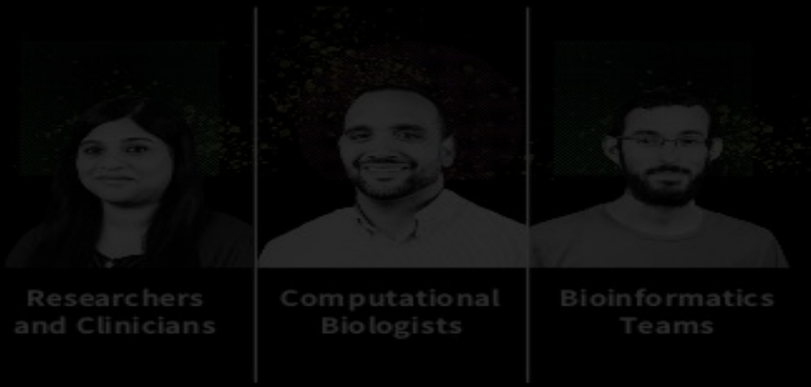
Solution #1: Prebuilt Pipelines

Best Practice Pipelines
"One click" execution



Rigid Analytics
Reduced Scope of Research

Siloed Teams
Lack of Productivity



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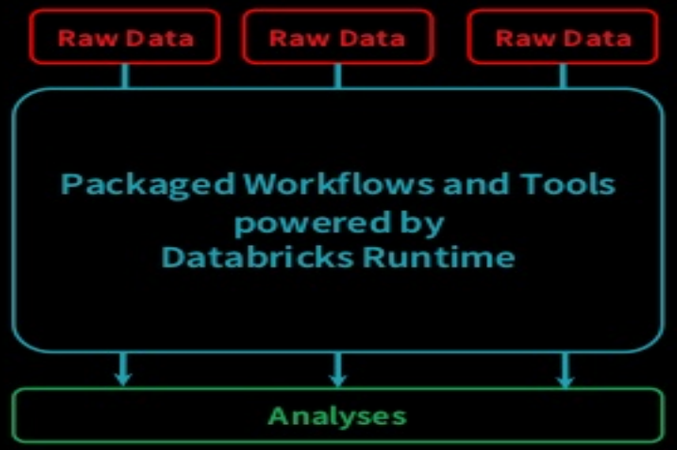
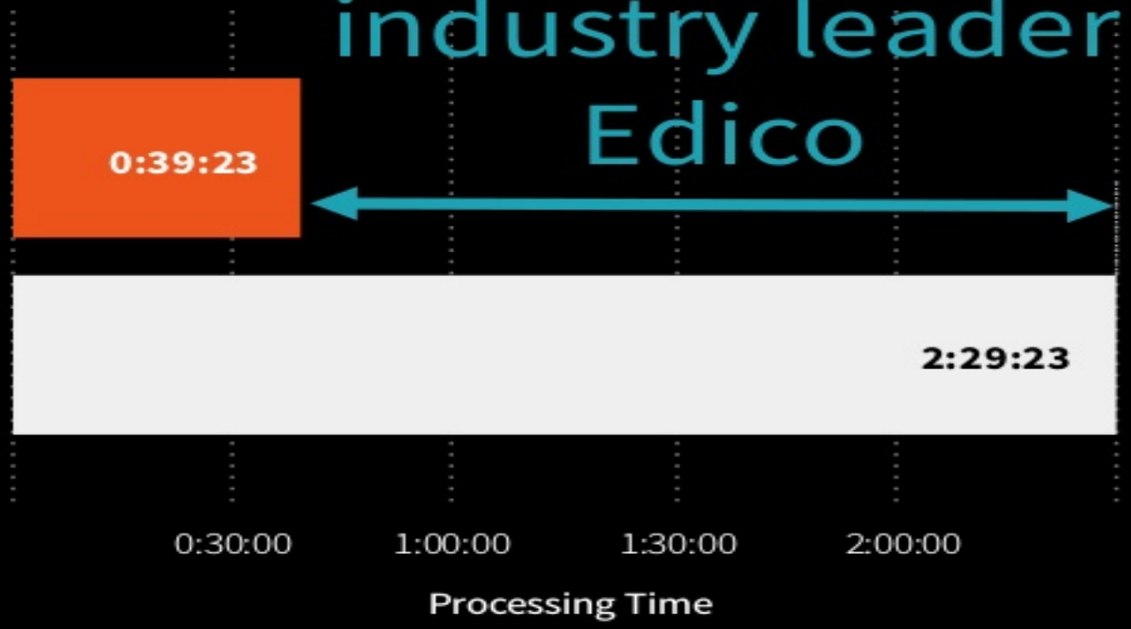


edico genome

3.8x faster than industry leader Edico



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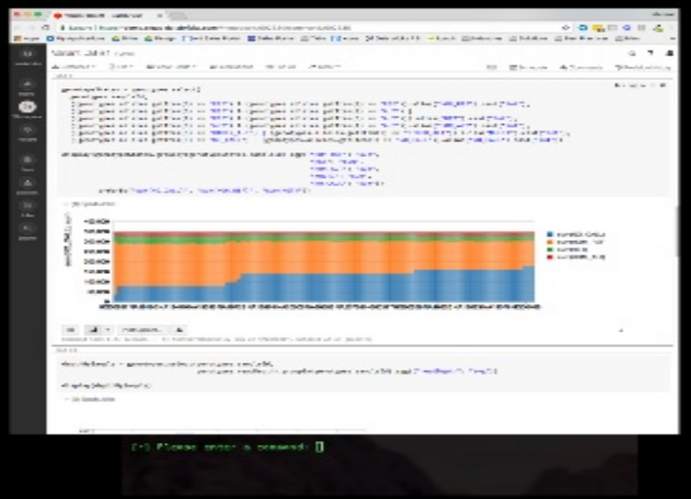
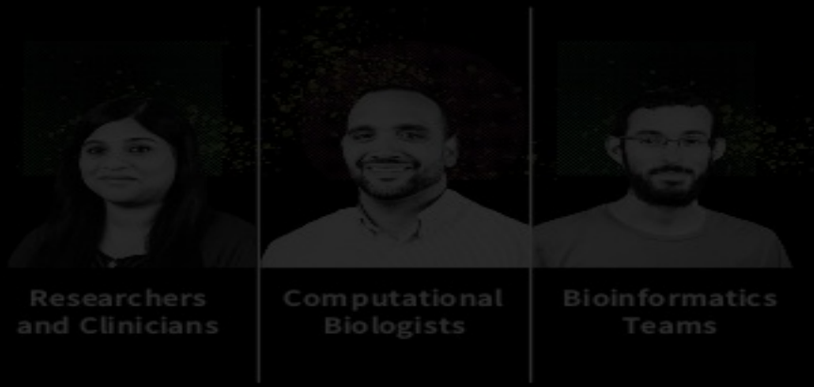
Solution #2: Powerful Analytics

Best Practice Pipelines
"One click" execution

Powerful Analytics
From interactive queries to AI



Siloed Teams
Lack of Productivity



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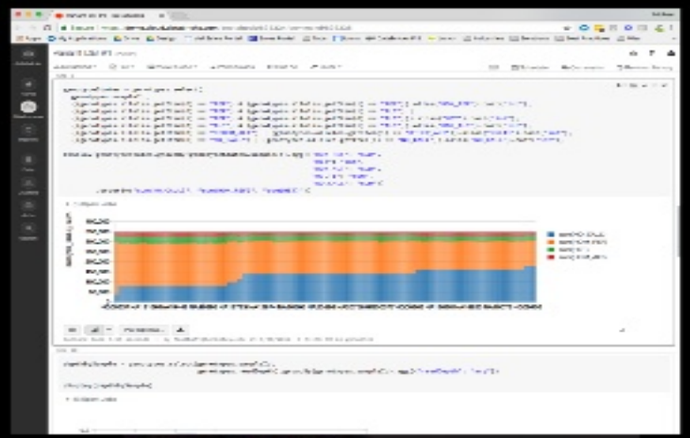
Solution #2: Powerful Analytics

"Queries on 60B+ genome associations in **3 seconds** vs. 30 minutes"

Powerful Analytics
From interactive queries to AI



"Having the data is the first step, enabling drug development teams to answer questions with the data is how we are building the future of drug discovery."

Dr. Jeff Reid, Exec Dir at Regeneron

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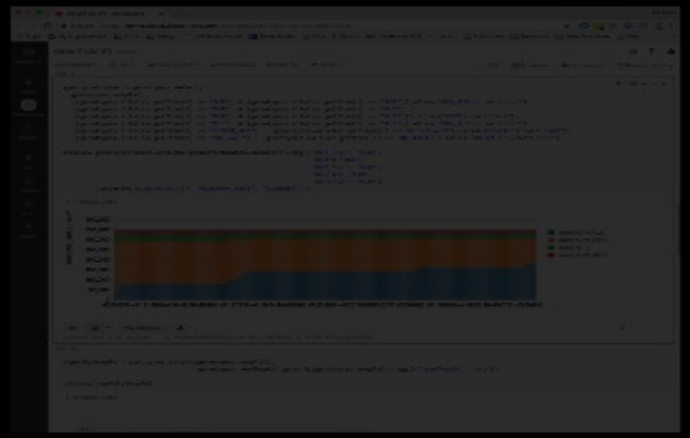
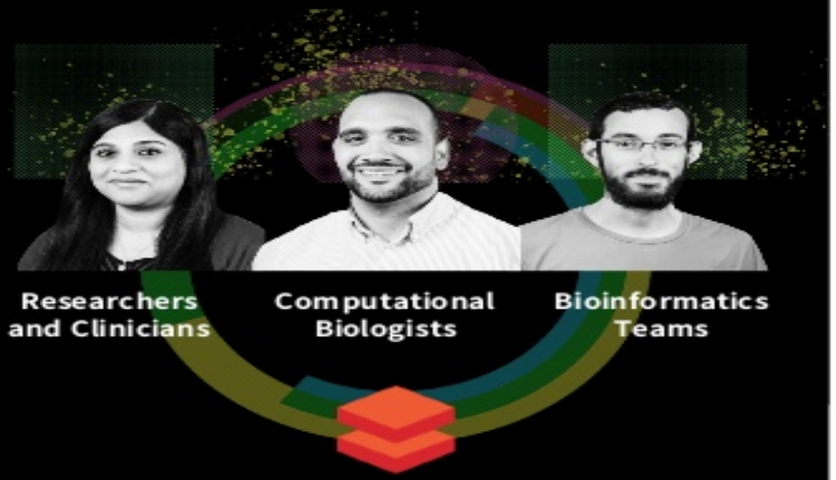
Solution #3: Collaborative Workspaces

Best Practice Pipelines
"One click" execution

Powerful Analytics
From interactive queries to AI



Collaborative Workspaces
Dramatically Improve Productivity



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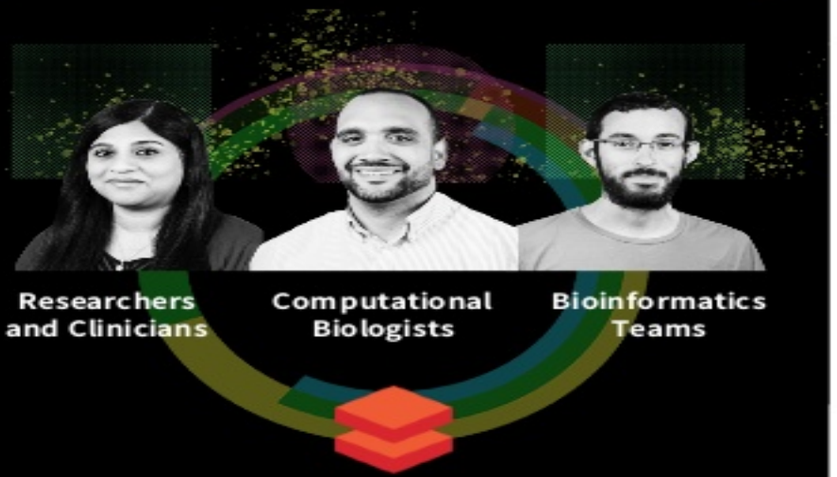
Solution #3: Collaborative Workspaces

"Databricks allows us to take clinical research and turn it into a clinically validated screen in far less time."

Sr. Director of Computational Bioinformatics, Lynn Carmichael

SANFORD HEALTH

Collaborative Workspaces
Dramatically Improve Productivity



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Unified Analytics Platform for Genomics

All Your Genomic Data

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Best Practice Pipelines

Tertiary Analytics and AI at Scale

Collaborative Workspaces

Genomic Analytics (e.g. GWAS, eQTL)

Visualizations

Machine Learning

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Unified Analytics Platform for Genomics

All Your Genomic Da

Genomics-specific optimizations increase performance by up to 100x

Genomic Analytics
(e.g. GWAS, eQTL)

Visualizations

Machine Learning

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Sign-up for the preview
databricks.com/genomics
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Accelerate Discovery


Demo: Preventing Disease
with Genomics at Scale
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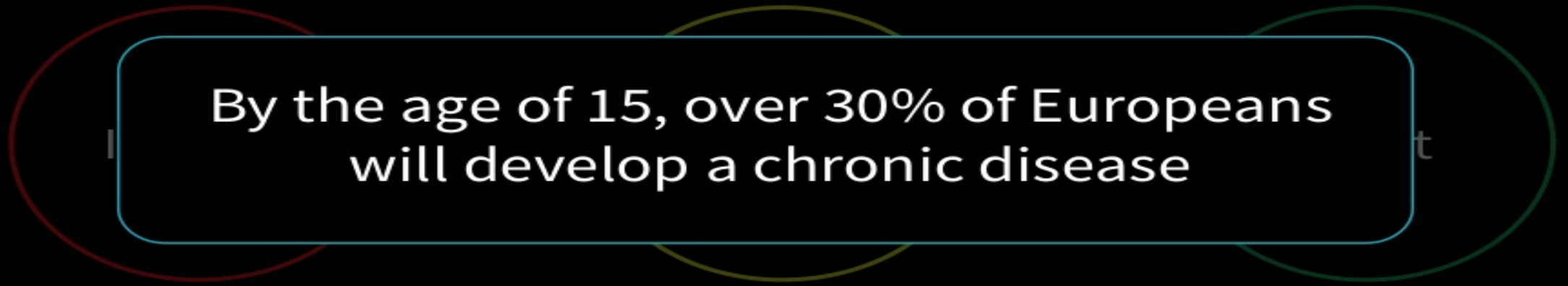
Typical patient intake and treatment

Typical patient intake and treatment

...but this is very reactive and costly.

Typical patient intake and treatment

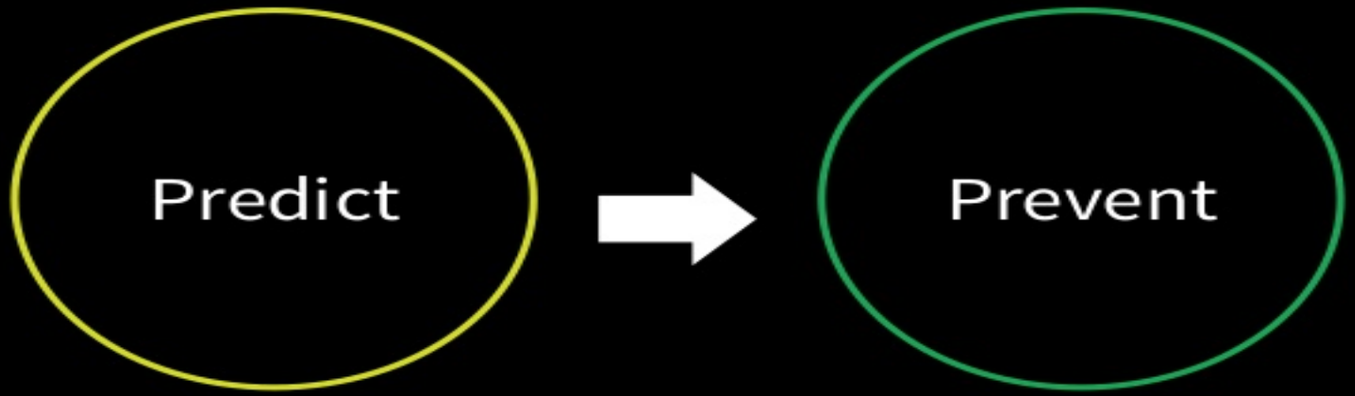


...but this is very reactive and costly.

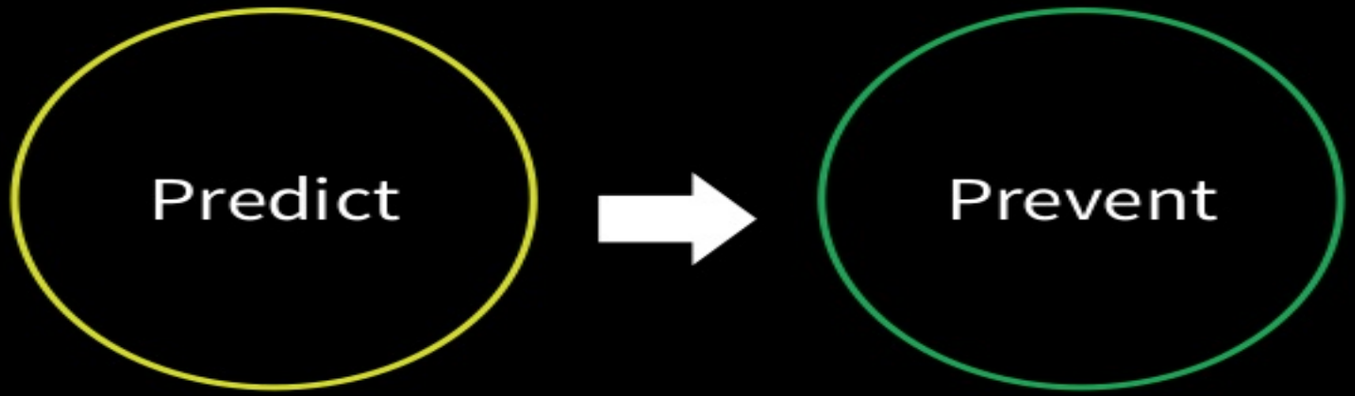
Let’s shift our thinking

What if we could identify an individual’s risk for developing a disease and prevent that disease before it ever occurs?

The preventative care process



The preventative care process



Accelerated treatment improves outcomes

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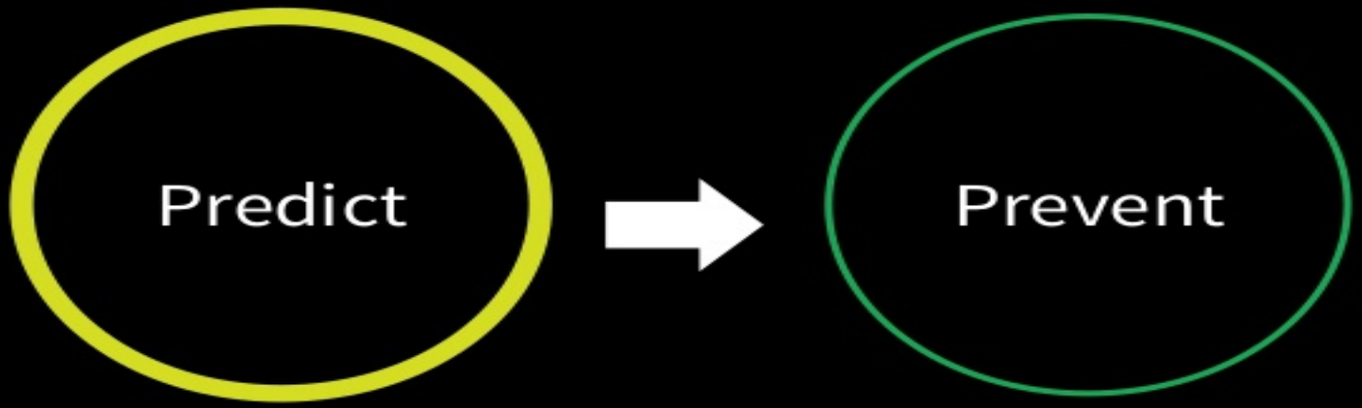
The preventative care process

Huge opportunity for genomics



Accelerated treatment improves outcomes

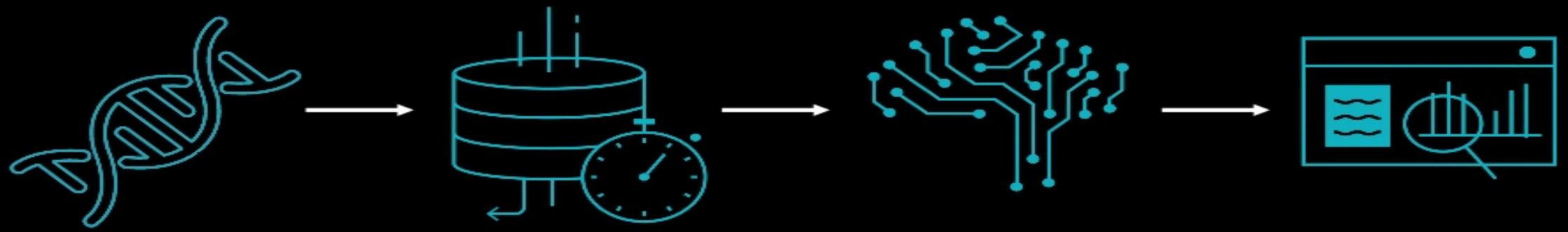
But genomic analysis is really hard

Population Scale Data Arrives (e.g. Biobank)

Process for Analysis

Export Model and Apply to Individual

Generate Dashboard for Clinician



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Let’s try this with the Databricks Unified Analytics Platform for Genomics…


Sign-up for the preview
databricks.com/genomics
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