ATCC® Cell Line Land: An OMICS Data Repository for ATCC® Cell Models that Drives Scientific Innovation and Improves Reproducibility

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About ATCC®

- Founded in 1925, ATCC® is a non-profit organization with HQ in Manassas, VA, and an R&D and Services center in Gaithersburg, MD

- World's premier biological materials resource and standards development organization

- 5,000+ cell lines

- 80,000 microorganisms

- Genomic & synthetic nucleic acids

- Media/reagents

- ATCC® collaborates with and supports the scientific community with industry-standard biological products and innovative solutions

- Growing portfolio of products and services

- Sales and distribution in 150 countries, 20 international distributors

- Talented team of 600+ employees, over one-third with advanced degrees

bsi. ISO 9001 Quality Management

bsi. ISO 13485 Medical Devices Quality Management

ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

Agenda

1 The need for reference-quality OMICS data

2 Development of ATCC® Cell Line Land – a reference OMICS data repository

3 ATCC® Cell Line Land: Simplifying OMICS data exploration and informing decision-making

Common challenges in biopharma R&D

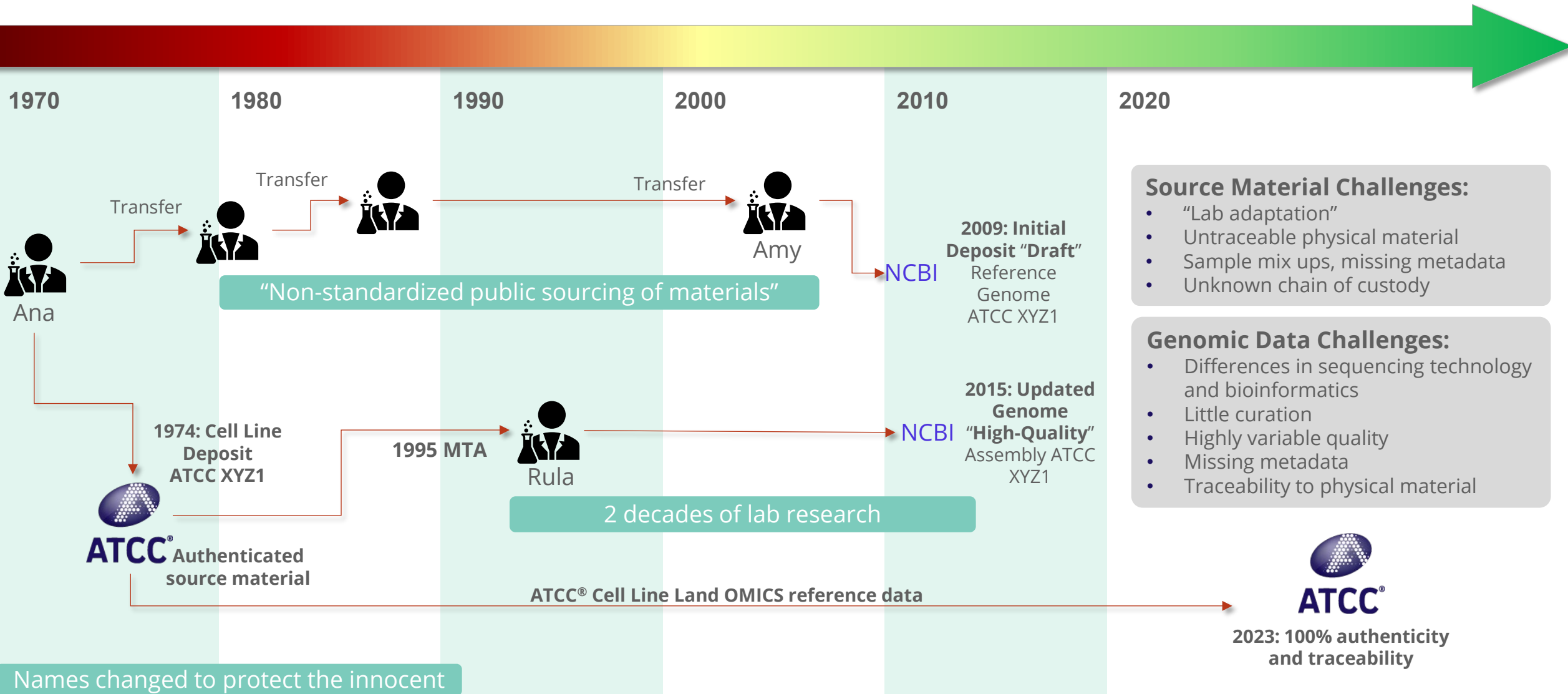*"**Finding the right cell lines** for my research is a challenge."*

*"Many cell types are **not good models** for the disease I'm studying."*

*"Pre-existing results are difficult to reproduce and often **not reproducible**."*
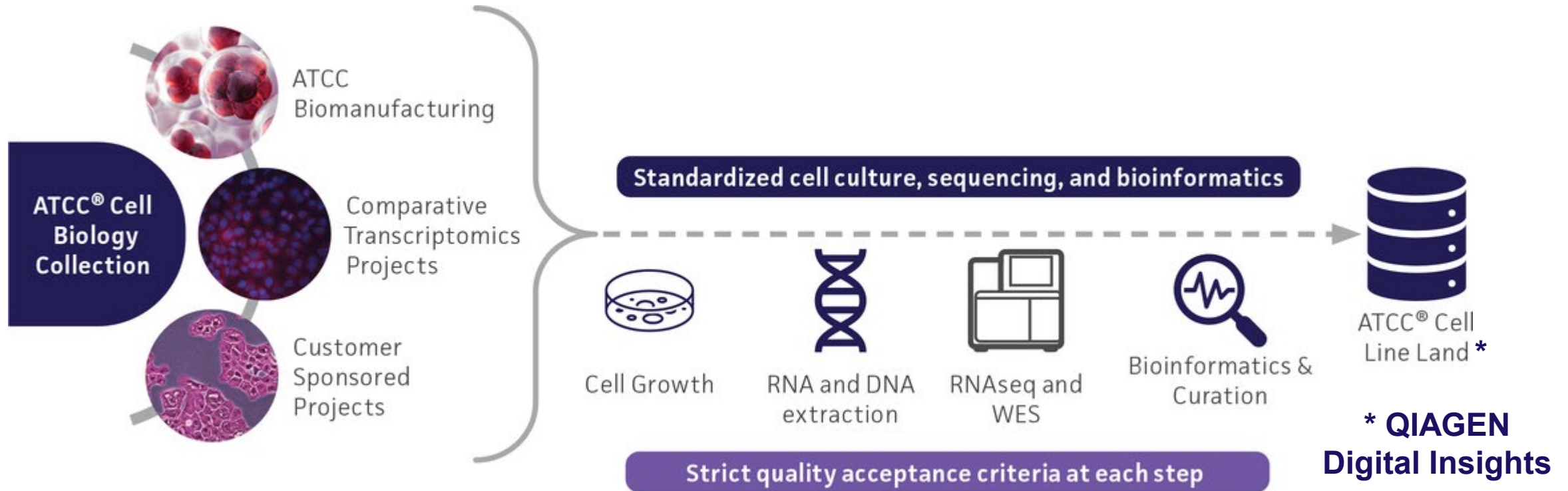
In a 2015 publication by Freedman et al., an analysis of past studies indicated that **50% of preclinical research was not reproducible**. One of the main factors driving non-reproducible research is the use of **unauthenticated biological reagents and reference materials.**

Challenges when using public genomic data

1970   **1980**   **1990**   **2000**   **2010**   **2020**

Transfer   Transfer   Transfer

Amy

2009: Initial Deposit "Draft" Reference Genome ATCC XYZ1

NCBI

"Non-standardized public sourcing of materials"

Ana

1974: Cell Line Deposit ATCC XYZ1

1995 MTA

Rula

2015: Updated Genome "High-Quality" Assembly ATCC XYZ1

NCBI

2 decades of lab research

ATCC® Authenticated source material

ATCC® Cell Line Land OMICS reference data

ATCC®

2023: 100% authenticity and traceability

Names changed to protect the innocent

Source Material Challenges:
- "Lab adaptation"
- Untraceable physical material
- Sample mix ups, missing metadata
- Unknown chain of custody

Genomic Data Challenges:
- Differences in sequencing technology and bioinformatics
- Little curation
- Highly variable quality
- Missing metadata
- Traceability to physical material

ATCC Cell Line Land
Addressing common challenges in biopharma R&D

ATCC® Cell Biology Collection

- ATCC Biomanufacturing
- Comparative Transcriptomics Projects
- Customer Sponsored Projects

Standardized cell culture, sequencing, and bioinformatics

Cell Growth — RNA and DNA extraction — RNAseq and WES — Bioinformatics & Curation

ATCC® Cell Line Land *

Strict quality acceptance criteria at each step

* QIAGEN Digital Insights

Ensuring the highest standards of data quality, reproducibility, and traceability to the existing physical materials.

ATCC cell lines RNA-seq data atlas

Over 600 human cell across various tissue and disease types completed
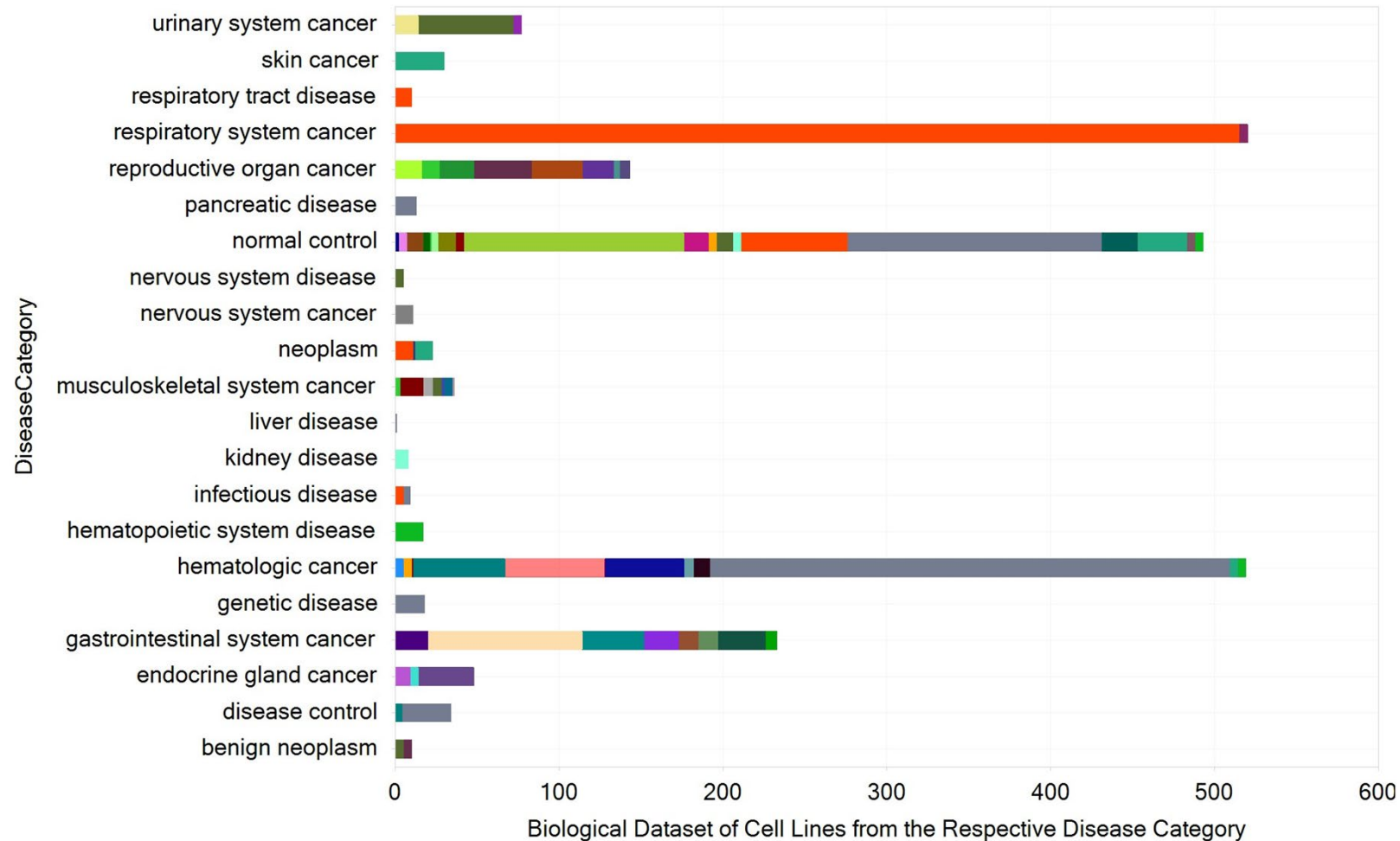
Innovating with ATCC Cell Line Land omics data

Compare gene expression across or within cell lines

Explore precomputed differential gene expression

Analyze pathway and gene interactomes

Discover biomarkers and therapeutic targets

Predict drug treatment responses

Investigate molecular mechanisms of disease pathogenesis

Use as a reference control in your experimental setting

Build hypothesis and design experiments

Make data-driven selections of suitable cell lines

Select cell lines for target gene expression

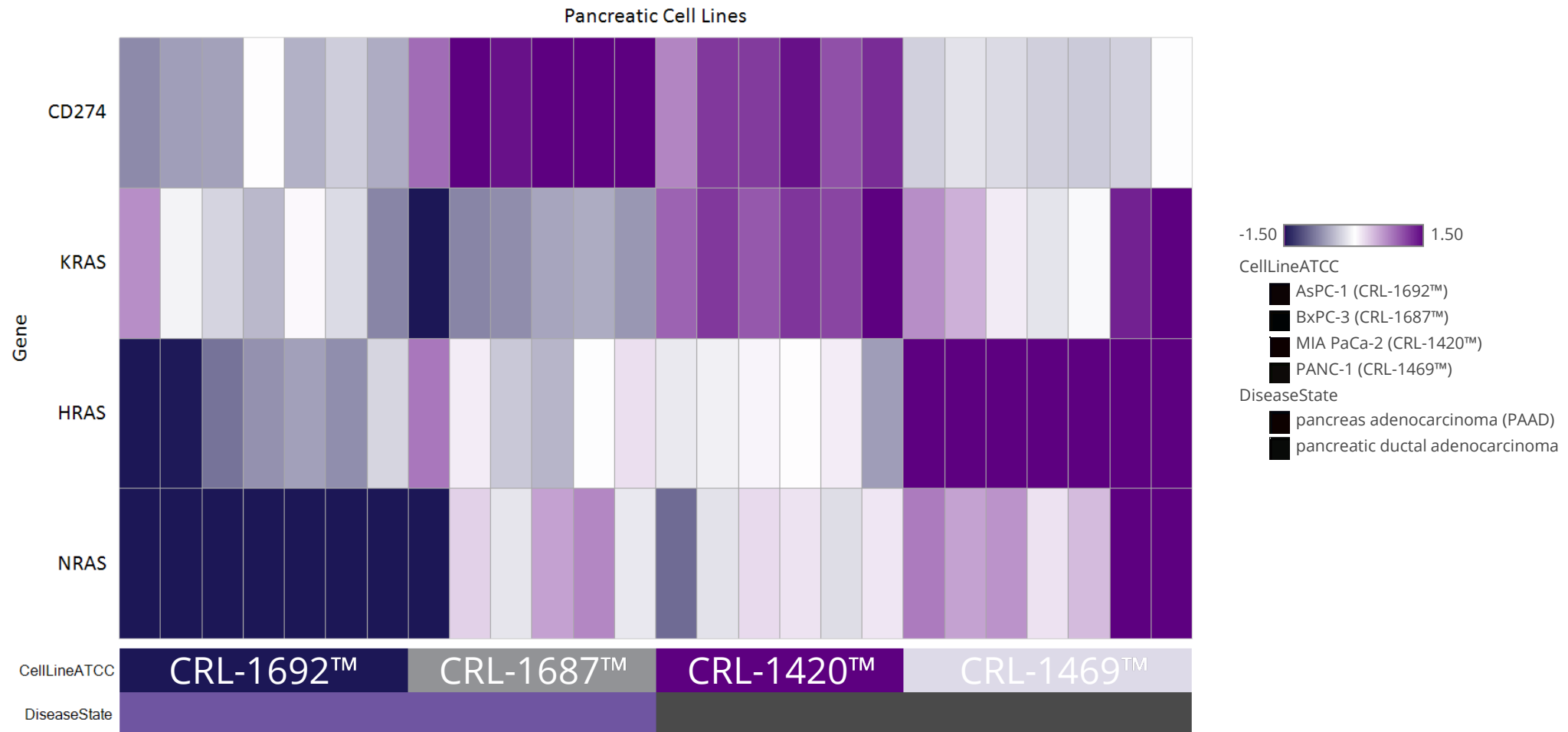## P53 expression profile in acute myeloid leukemia cell lines
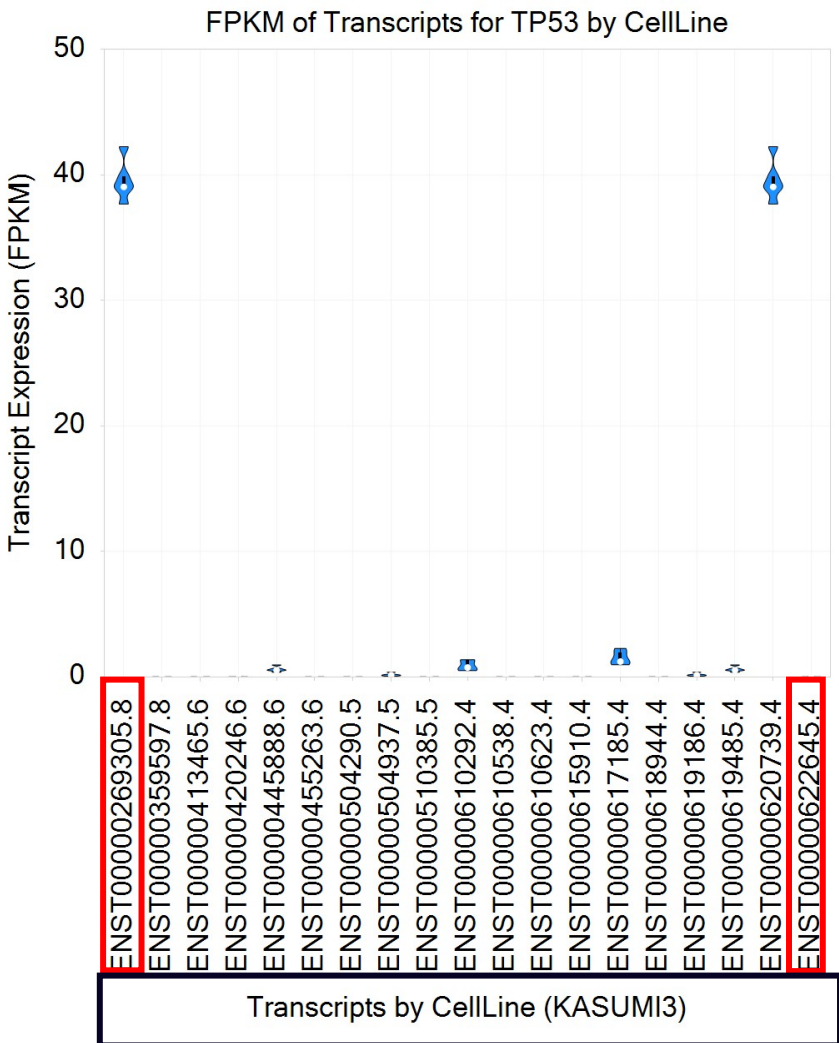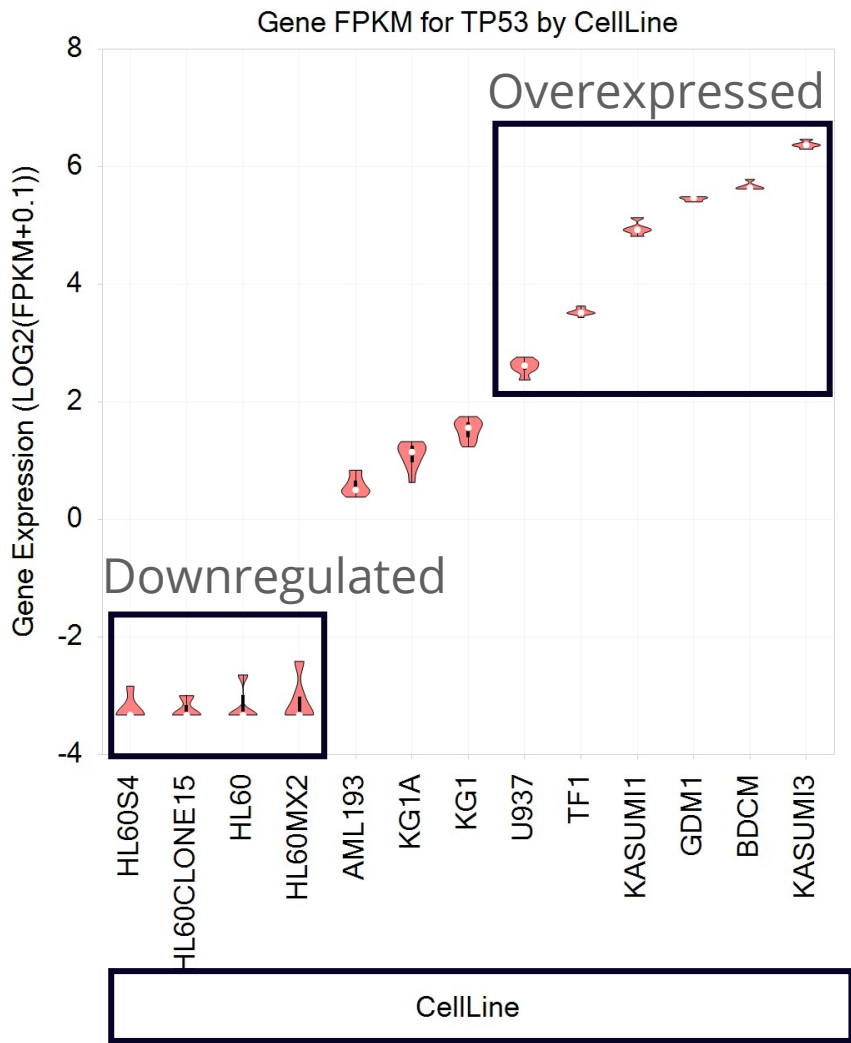
Identify cell lines with specific coding mutations

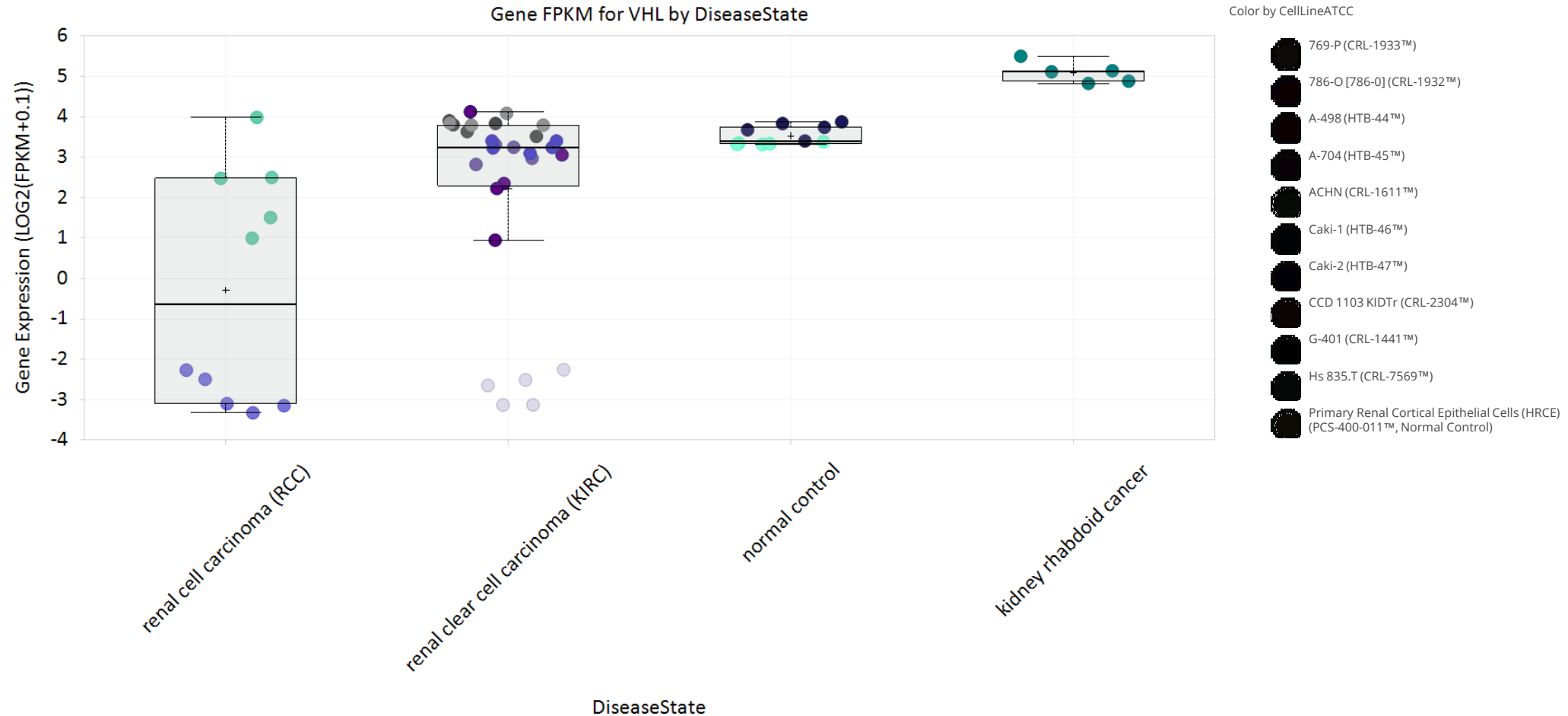**Mutations in TP53 gene are common in various hematological malignancies**

Predict drug sensitivity response of cell lines

Pancreatic Cell Lines

Evaluate differential gene expression analysis
Normal versus cancerous tissues

Gene FPKM for VHL by DiseaseState

Color by CellLineATCC

- 769-P (CRL-1933™)
- 786-O [786-0] (CRL-1932™)
- A-498 (HTB-44™)
- A-704 (HTB-45™)
- ACHN (CRL-1611™)
- Caki-1 (HTB-46™)
- Caki-2 (HTB-47™)
- CCD 1103 KIDTr (CRL-2304™)
- G-401 (CRL-1441™)
- Hs 835.T (CRL-7569™)
- Primary Renal Cortical Epithelial Cells (HRCE) (PCS-400-011™, Normal Control)

Identify key differentially expressed genes
Polycystic kidney disease

ATCC_Human - CellLine => WT97 vs HRCEPIC
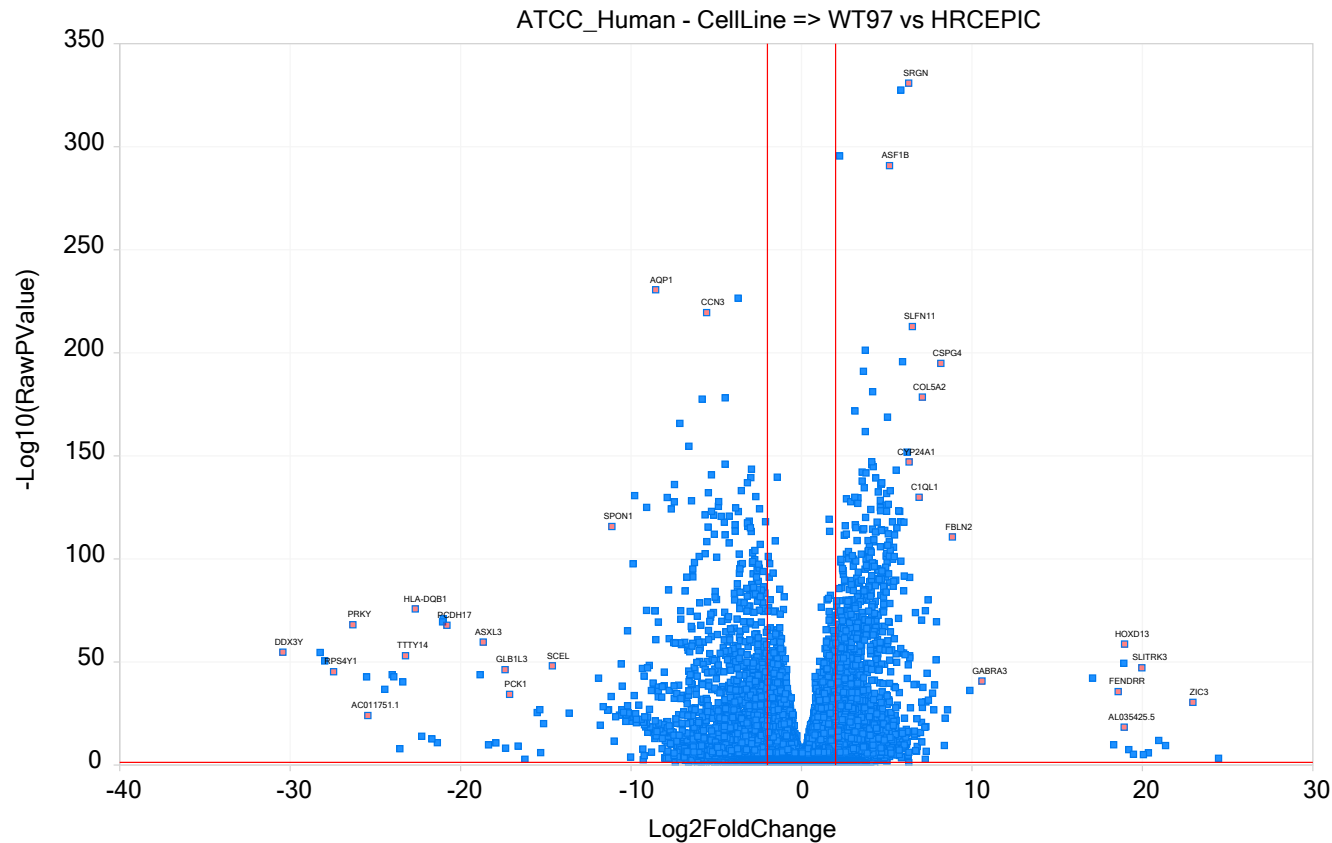
Polycystic Kidney Disease ADPKD, WT- 9-7 (ATCC® CRL-2830™)

Primary Renal Cortical Epithelial Cells; Normal, Human (HRCE) (ATCC® PCS-400-011™)

Chronic kidney disease (CKD) affects more than 840 million people worldwide

Detect dysregulated canonical pathways
Polycystic kidney disease

Ingenuity Canonical Pathways	-log(p-value)	z-score
Cell Cycle Checkpoints	18.6	8.51
Assembly of collagen fibrils and other multimeric structures	14.9	2.828
Activation of the pre-replicative complex	14.6	4.796
Cohesin Chromatin Regulation Pathway	14	-1.588
Collagen chain trimerization	13.9	3.138
Kinetochore Metaphase Signaling Pathway	13.8	4.004
Integrin cell surface interactions	13	2
Extracellular matrix organization	12.3	1.897
Mitotic Prometaphase	12	7.16

Summary

- ATCC® Cell Line Land serves as a reference OMICS data resource traceable to authenticated cell lines from ATCC.

- Combining genomic data with authenticated cell lines enhances innovation and accelerates drug discovery and development.

- The data generation follows a rigorous and standardized ISO 9001–compliant workflow, ensuring reliability and scientific reproducibility.

- ATCC® Cell Line Land is incorporating over 200 cell lines datasets annually through quarterly releases.

Visit ATCC Cell Line Land

Learn more about our transcriptomics data

ATCC®

CREDIBLE LEADS TO INCREDIBLE

Thank You

Visit ATCC at booth #2018