

St. Jude Cloud

Advancing Cures Through
Data and Discovery



Danny Thomas

Our Founder



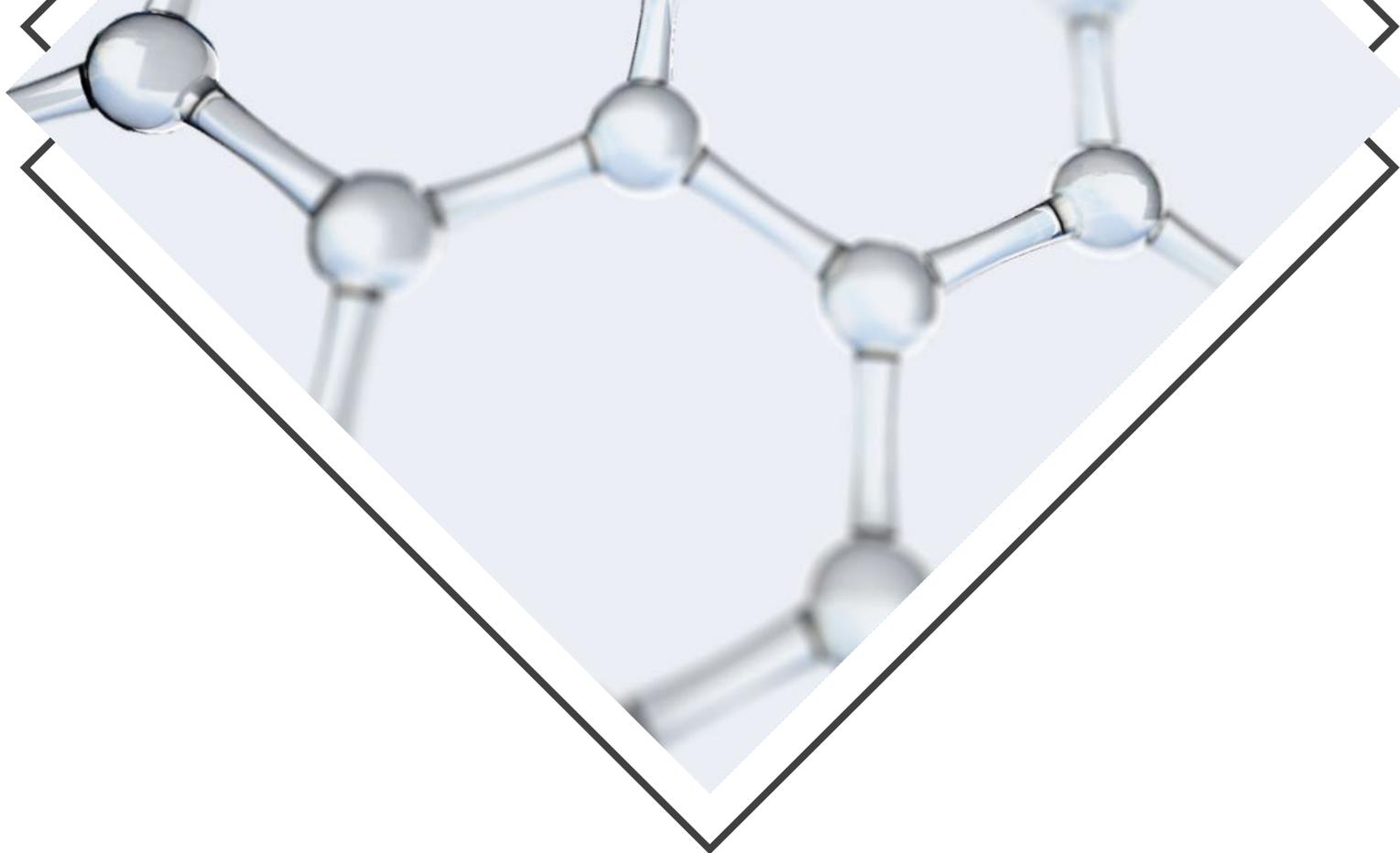
"Show me my way in life," prayed young Danny Thomas, "and I will build you a shrine."

Unsure of his life's direction, a young Danny Thomas sought guidance from St. Jude Thaddeus, the patron saint of hopeless causes. If the saint would point to the path he should take, Danny vowed to build a shrine in his name. Success followed Danny's plea and soon after, the legendary entertainer set about fulfilling his vow to St. Jude. The result was St. Jude Children's Research.

St. Jude Science and Research

- Nearly all patients have a disease under study and part of a clinical trial
- St. Jude's science and research is dedicated to find cures for:
 - Cancer
 - Acquired and inherited immunodeficiencies
 - Infectious diseases
 - Genetic disorders
- Research efforts focus on:
 - Molecular, genetic and chemical bases of catastrophic diseases;
 - Identifying cures for such diseases;
 - And promoting their prevention.





The Opportunity

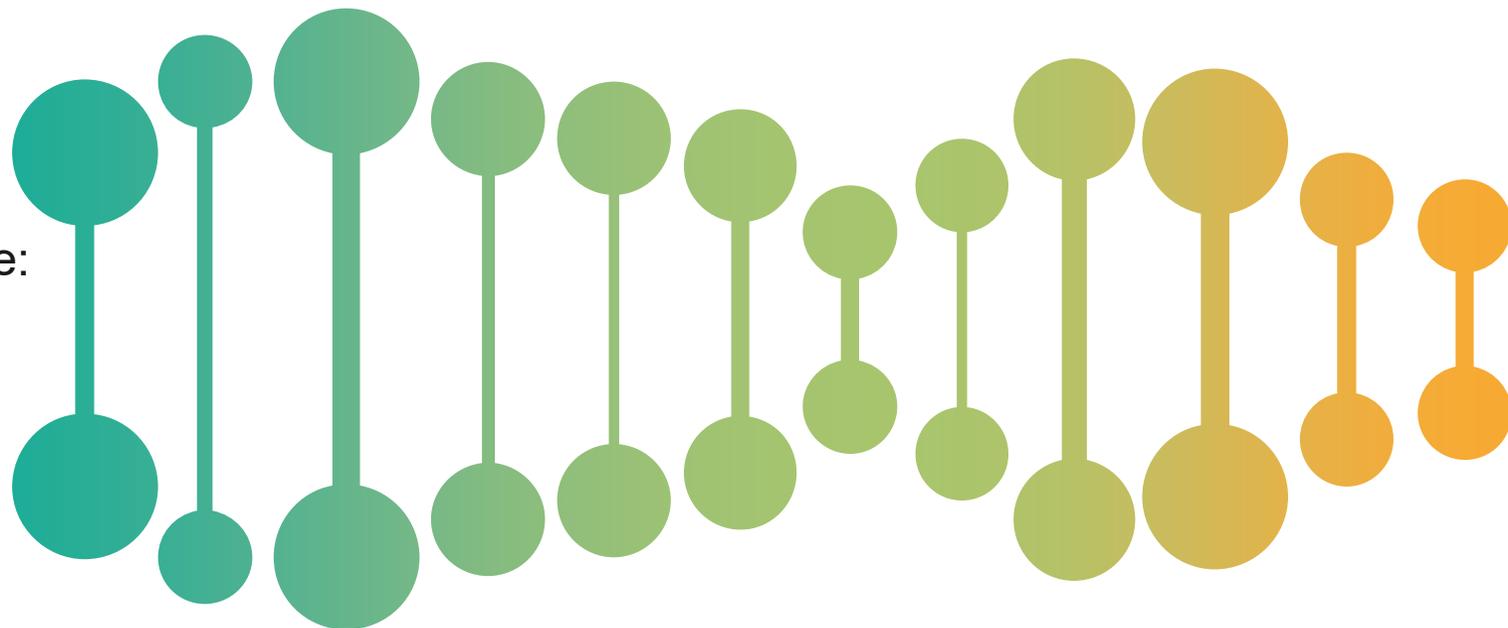
St. Jude needed to build a global hub for pediatric disease data, facilitate massive research collaboration with freely accessible data and analysis and visualization tools, and provide a growing collection of pediatric cancer genomics data.

St. Jude Cloud

We are committed to sharing data with the global research community

Major pediatric cancer sequencing at St. Jude:

- Pediatric Cancer Genome Project (PCGP)
- Genomes for Kids (G4K)
- St. Jude LIFE (SJLIFE)



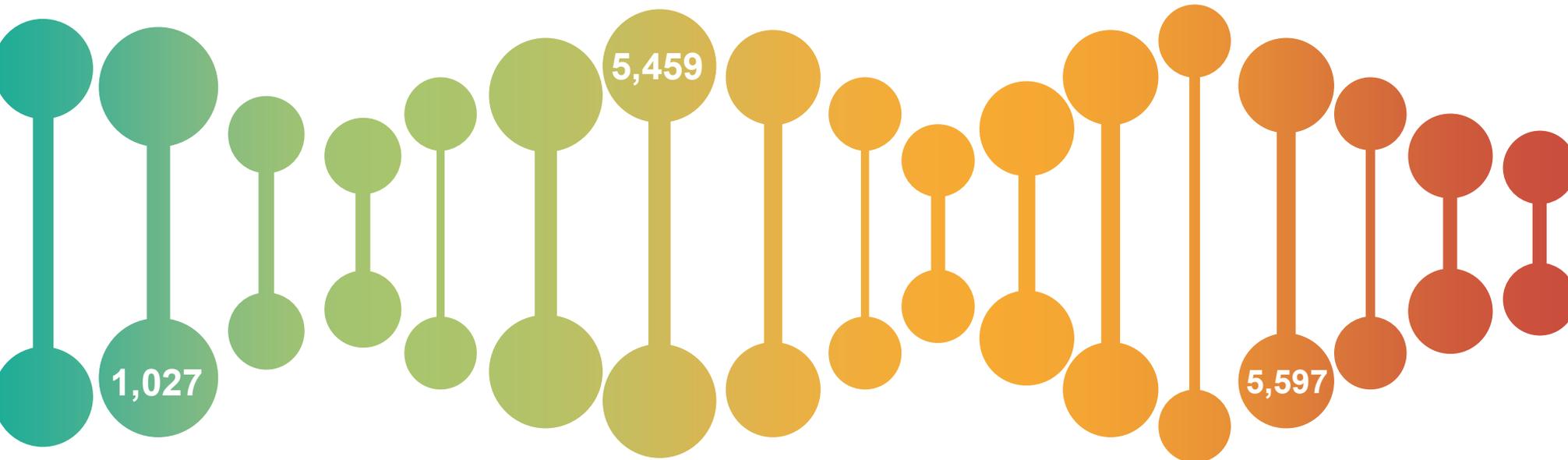
PCGP data stored by EGA; over 300 access requests globally

Challenging to share Terabytes of data

St. Jude Cloud

Whole Genome Sequences

(As of April 2018)



RNA-Seq

(As of April 2018)

Whole Exome Sequences

(As of April 2018)

Focus on Research

Workspace 

Analyze or Explore

Tools

(St. Jude created resource)

Raw Data

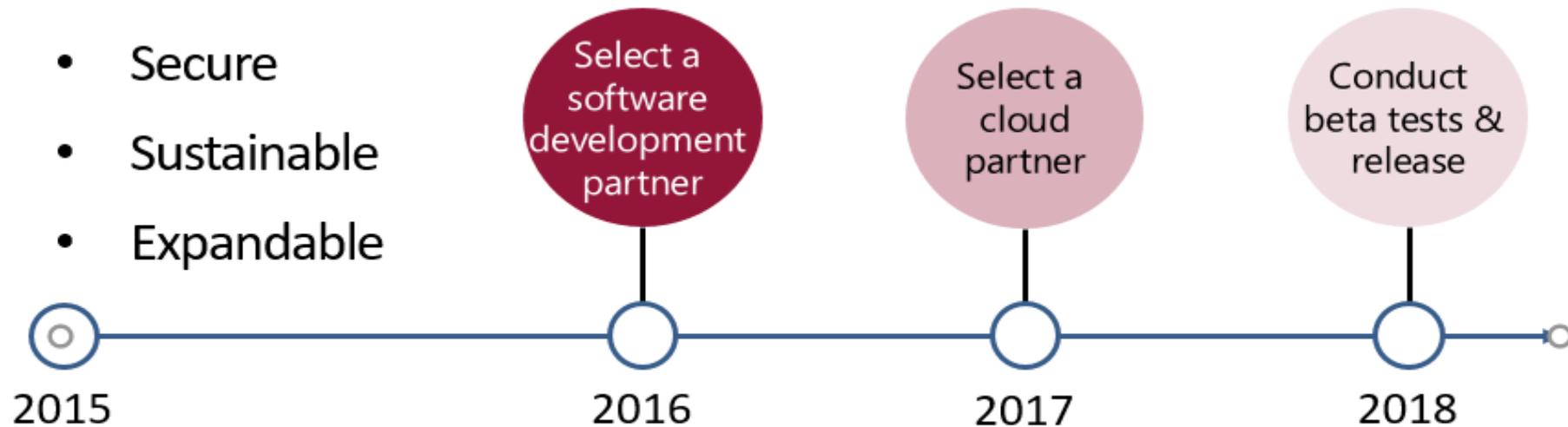
(St. Jude created resource)



St. Jude Cloud Development

Cloud Criteria:

- Secure
- Sustainable
- Expandable



DNAneXus

Microsoft

St. Jude Cloud

Meet St. Jude Cloud



St. Jude Cloud

ADVANCING CURES THROUGH DATA AND DISCOVERY

St. Jude Cloud is a data-sharing resource for the global research community. Explore unique next-generation sequencing data and analysis tools for pediatric cancer and other life-threatening diseases.

Data



Mine one of the world's most comprehensive repositories of pediatric cancer genomics data.

[Access Data](#)

Tools



Analyze genomics data using sophisticated computational pipelines built for speed and ease of use.

[Run Tools](#)

Visualizations



Use our intuitive, field-tested visualization tools to explore data in a secure cloud environment.

[Visualize Results](#)

Tools

**St. Jude Cloud** Platform DATA **TOOLS** VISUALIZATIONS User ▾

Use our unique collection of bioinformatics tools to quickly and privately gain novel insights from complex data. Our powerful algorithms have been thoroughly validated using real data and are designed for ease of use by both non-specialists and experts.

Upload your own data, or use the tools to analyze Pediatric Cancer Genome Project data in new ways. Data and results can be securely shared with collaborators within the platform.

Tools

ProteinPaint
Genomic visualization engine



[View](#)

NeoepitopePred
HLA typing and neopeptide prediction



[View](#)

ChIP-Seq
Broad and narrow peak calling



[View](#)

PeCan PIE
Variant annotation and pathogenicity assessment



[View](#)

WARDEN
RNA-Seq differential gene expression



[View](#)

Rapid RNA-Seq
RNA-Seq fusion gene detection



[View](#)

Our First Months



Visitors



Registered Users



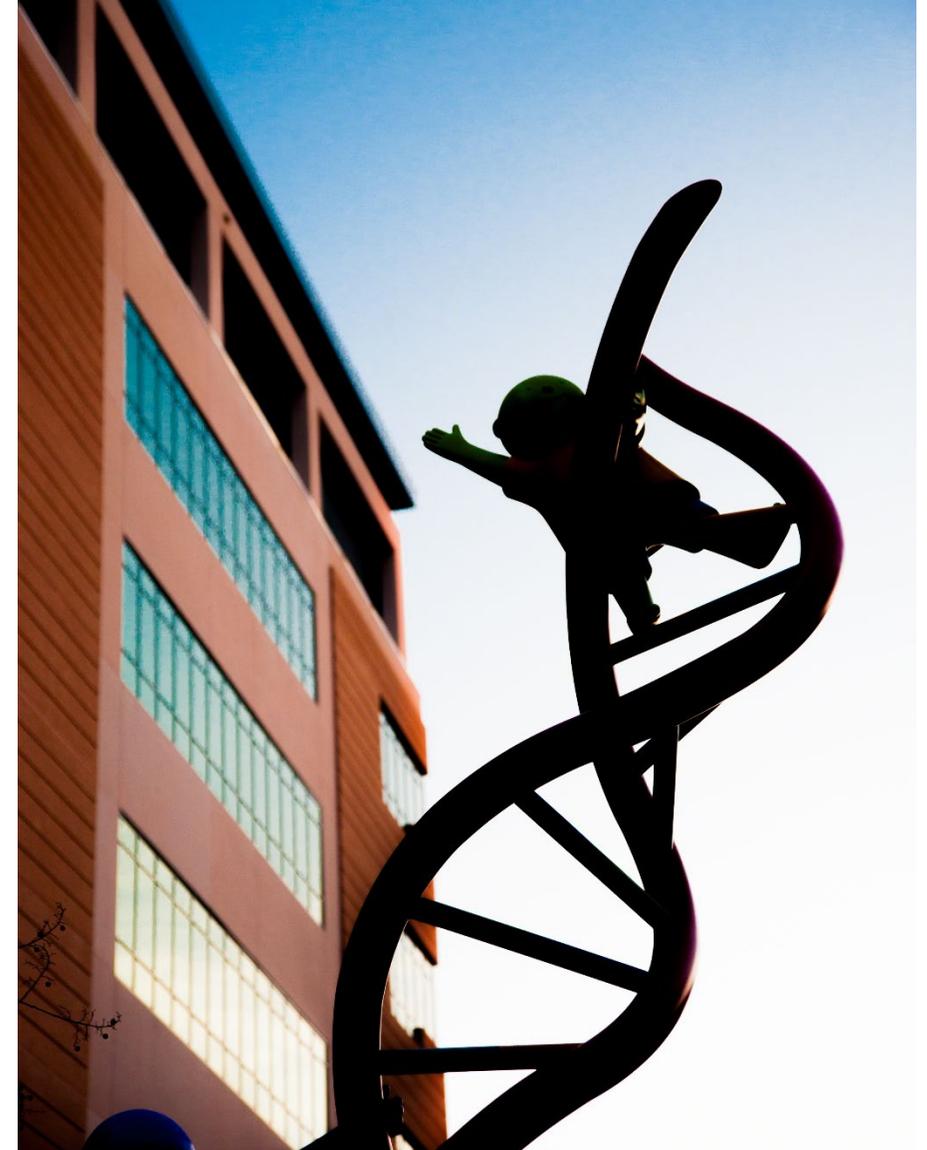
**Countries with access
To our data**



Institutions

Into the Future

- More data. Aim of mapping 10,000 WGS samples
- Collaboration with the National Cancer Institute (NCI) Genomic Data Commons (GDC) to explore a centralized or federated data archiving model
- Continued commitment to pediatric cancer genomics research
- Long-term commitment of “if not St. Jude, then who?”





Challenges & Suggestions

Challenges

- Security
- Legal
- Identifying sustainable partnerships internally
- Organizational structure

Suggestions

- Leverage internal resources
- Return to the question of why often
- Always reassess for longevity



Thank you