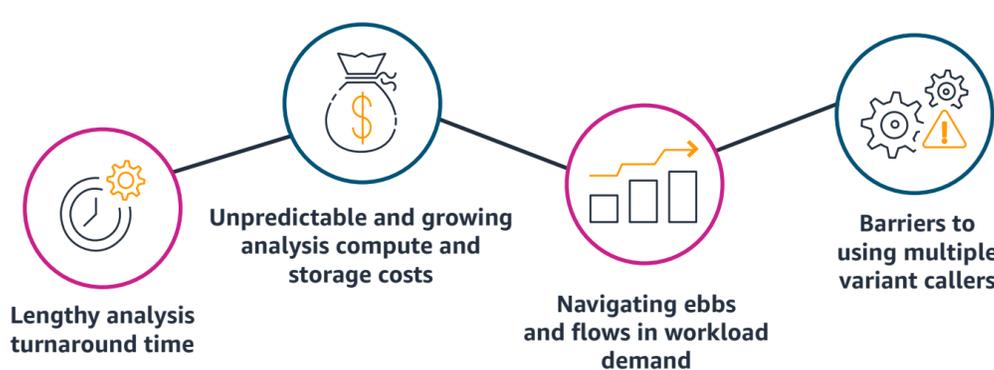aws | NVIDIA.

AWS for Genomics Featured Partner: NVIDIA

Overcoming the challenges faced by Genomics organizations today

Genomics organizations face numerous challenges, including:

Lengthy analysis turnaround time

Unpredictable and growing analysis compute and storage costs

Navigating ebbs and flows in workload demand

Barriers to using multiple variant callers

Adoption of more data-heavy applications, such as single-cell, and the rising popularity of long-read sequencing make these challenges more prevalent. NVIDIA Clara Parabricks on AWS solves common genomic challenges by combining the best of AWS elasticity and cost savings with the power of NVIDIA GPUs.

Running NVIDIA Clara Parabricks on AWS, genomics organizations can:

Accelerate turnaround times
In clinical settings, every minute counts. Clara Parabricks on AWS can analyze a full human genome at 30x coverage in as little as 25 minutes.

Reduce costs at-scale
For large-scale or non-critical workloads, AWS Spot Instances offer significant reductions, costing as little as $2.58 per full human genome at 30x coverage.

Leverage organizational genomics
Many organizations already store sequence data on AWS, which hasn't yet been analyzed. Clara Parabricks enables them to unlock value from this datastore.

Access open genomics datasets
Build a rapid Clara Parabricks proof of concept, using genomics data already available via the Registry of Open Data on AWS.

Benefit from the AWS genomics partner ecosystem
AWS for Genomics offers a robust portfolio of purpose-built AWS and AWS Partner solutions that enable scientists to process more samples, run more complex analyses, and query at scale.

Deploy with ease
Available on the AWS Marketplace, genomics organizations with varying levels of technical expertise can easily deploy Clara Parabricks on-demand.

Scale globally
AWS has the largest global infrastructure footprint of any provider offering increased scalability. As of November 2021, Clara Parabricks is available in 22 AWS regions across the Americas, EMEA and APAC.

Interoperate
Clara Parabricks accelerates over 50 publicly available tools. Organizations can build their own pipelines or use GATK best practice pipelines within the Clara Parabricks framework to generate results that can be reproduced by peers.

Run multiple variant callers
Faster speeds and low analysis costs mean organizations can improve results by running multiple variant callers for the same sample, in less time and at lower cost than a single caller using traditional infrastructure.

NVIDIA Clara Parabricks supports:

- Whole genomes, exomes, and gene panels
- Germline workflows
- Cancer workflows
- RNA-SEQ workflows

Using machine learning and high-performance computing, AWS and NVIDIA solutions turn variant calls into biological insight. Clara Parabricks on AWS uses GPU-acceleration to analyze whole genomes, exomes, and gene panels in a fraction of the time it takes using more traditional infrastructures.

Analyze a 30x whole human genome sequence in as little as 25 minutes – for less than $5

The typical time and cost to analyze a 100GB, 30x human genome, using Clara Parabricks germline pipeline: *

Software and AWS instance type	GATK germline baseline pipeline on a CPU-based Amazon EC2 (m5.24xlarge)		Clara Parabricks on an NVIDIA T4 GPU on Amazon EC2 (g4dn.12xlarge)		Clara Parabricks on an NVIDIA A100 GPU on Amazon EC2 (p4d.24xlarge)	
Time taken	**30 hours**		**76 minutes**		**25 minutes**	
Infrastructure cost	$139 EC2 On-Demand	$52 EC2 Spot	$5.87 EC2 On-Demand	$2.13 EC2 Spot	$13.66 EC2 On-Demand	$4.10 EC2 Spot
NVIDIA Clara Parabricks software cost ($0.30/hour)	$9		$0.45		$0.13	
Combined cost	$148	$61	$6.32	$2.58	$13.79	$4.23

*Costs correct as of November 2021, for AWS US East (N.Virginia) region.

Get started today

1. Go to AWS Marketplace
2. Search for 'NVIDIA Clara Parabricks Pipelines'
3. Subscribe
4. Launch and configure an Amazon Elastic Compute Cloud (Amazon EC2) instance
5. Download sample data, or your organization's data stored on AWS
6. Run the first NVIDIA Clara Parabricks analysis

Learn more about AWS for Genomics ›