



The Next Era of Genomics and Healthcare



## 1 | THE IDEA

The world of healthcare is changing. Two revolutionary technologies, genomics, and blockchain, are poised to significantly improve health and well-being across the globe. Genomic medicine can enhance the understanding and treatment of as many as 7,000 rare diseases, alongside cancers, complex and long-term disease such as cardiovascular and neurodegenerative conditions, and infections. Likewise, blockchain technology will transform both the future of healthcare and the world economy: it is poised to herald the biggest transformation in innovation since the advent of the internet and web 2.0. Shivom is the next evolutionary step in this development, bringing these technologies together to create a revolutionary medical genomics ecosystem that will open up healthcare opportunities for all.

Shivom offers the first ever integrated solution for patients and genome data donors where everybody will be able to have their genome sequenced and securely stored. This ecosystem will provide an open web-marketplace for other providers such as pharmaceuticals, research organizations, governments, patient-support groups and insurance companies to add their apps and services, alongside genomic data analytics and personalized medicine.

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**OUR OBJECTIVE:** CREATE THE LARGEST GENOMIC DATA-HUB ON THE PLANET. CONTRIBUTORS OWN THEIR GENOMIC DATA, THE RIGHT TO ACCESS IT, AND THE OPPORTUNITY TO SHARE OR SELL IT.

The global Shivom platform works on principles of collaboration, openness, integrity, security, and informed choice.

We envision a future where genomic data becomes ubiquitous, with its insights for enhancing healthcare securely available and accessible to all. Shivom is pioneering the omics ecosystem to make this vision a reality by offering a first-of-its-kind investment proposition in the rapidly growing market for personalized medicine, powered by state-of-the-art blockchain technology.

We will additionally build a state-of-the-art and not-for-profit drug discovery and precision medicine organization. Shivom researchers will use data-driven tools and techniques, particularly machine learning methods that underpin artificial intelligence, which will offer promise in improving healthcare systems and services around the globe.

Blockchain technology is our tech partner of choice because it is able to address trust issues, including patient consent, data ownership, data integrity, and authentication. Blockchain can also manage complex data rights and allow fine-grained access using smart contracts.

BLOCKCHAIN GENOMICS WILL USHER IN A NEW ERA OF OPEN, COLLABORATIVE AND DATA-DRIVEN SCIENCE THAT PAVES THE WAY FOR PRECISION MEDICINE.





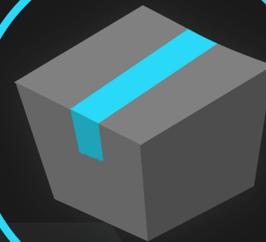
## 2 | WHY SHOULD YOU CHOOSE SHIVOM?

To make the direct-to-consumer business more open, fair, and beneficial to all users, the Shivom platform uses blockchain technology to create a disruptive genomics ecosystem. It ensures data is owned by the data donors themselves. It ensures a transparent and secure bridge to organizations interested in using that data.

- Genome data donors own their data and access rights
- Donors gain rewards for sharing their genomic data on the blockchain by selling access rights directly to third party institutions such as pharmaceutical companies
- Pharmaceutical companies use the Shivom platform to refine drug development
- Shivom users have full and fine-grained control of who can access the data even after a third party institution has had access to it
- Patients get personalized health, well-being, and lifestyle information
- A dynamic ecosystem is created and continuously refined in which the community can identify and remove potential health roadblocks before they become serious

# How Does Shivom Work?

Sign up for  
**Shivom**

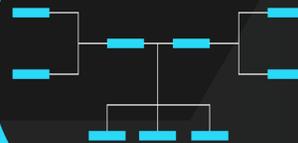


Collect your  
**saliva**



Get a kit in the mail  
or upload your own  
**DNA** sequence

Learn about  
your **ancestry**



Get personal health  
**insights** from your raw  
genetic data

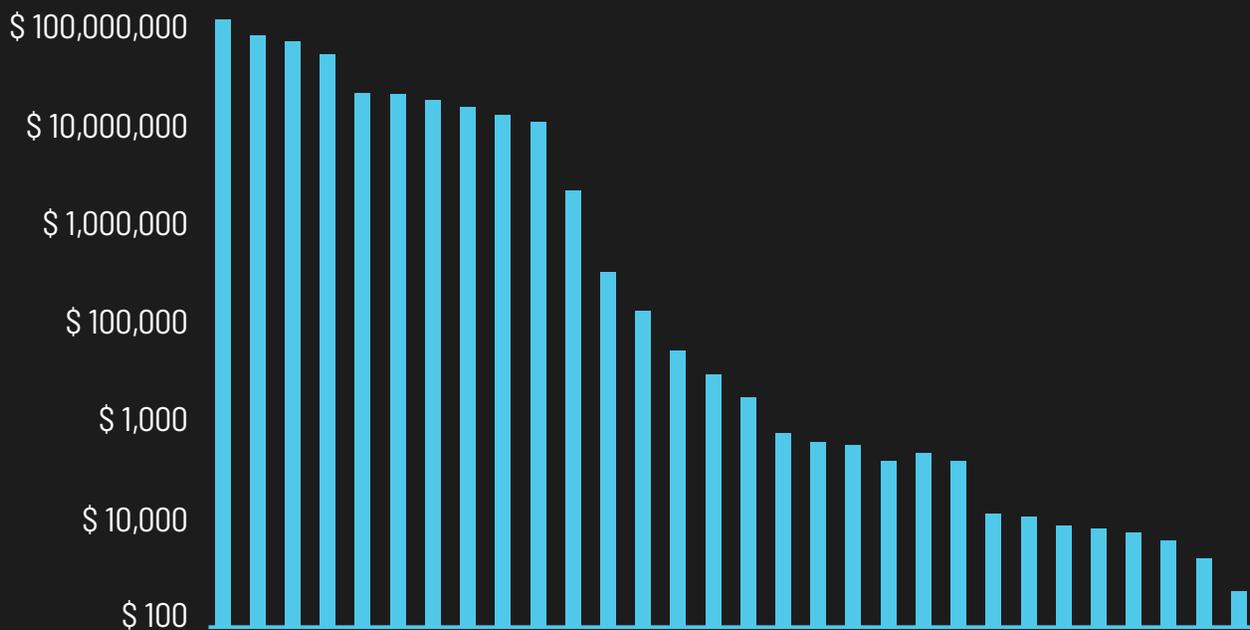
Donate your  
genome to **research**  
for free or profit



### 3 | WHY NOW?

The cost of DNA sequencing has fallen significantly. It is anticipated that by the end of the decade it will be possible to generate a person's entire genome for less than \$100. Looking ahead further, we will see dramatically lower costs for genomic analysis services. This will make personalized healthcare insights accessible to almost all individuals around the globe. As recently as January 2017, the worldwide leading sequencing provider Illumina unveiled a new sequencer, the NovaSeq, that the company reports will eventually provide a whole genome for less than \$100. This presents a new dawn for access to personalized and precision healthcare on a global scale.

## Cost per Genome



Over the last 10 years "Next-Generation" (NGS) DNA Sequencing technologies and data-analytics have led to a dramatic reduction in costs. Shown here using a logarithmic scale.

GENOME SEQUENCING COMPANIES WILL BE COMPETING SOON. THE TIME IS NOW TO JOIN SHIVOM.

Genomic sequencing provides many benefits:

- Identifying the best course of care for patients with a particular condition
- Prevention of disease in healthy individuals
- Prediction of disease risk
- Disease diagnosis
- Treatment, including choice of most effective medication and dosage
- Disease prognosis
- Identifying new drug targets

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PEOPLE WHO GET GENOMIC SEQUENCING WILL BE IN A BETTER POSITION TO MANAGE THEIR HEALTH.



# Will My Data Be Secure?



Your genomic data will always be yours

Blockchain is used to keep it safe



If you want to share it...

A cryptographic key generator is used to generate a pair of keys used by an asymmetric key algorithm



**public**

You encrypt your public key



**private**

Only the holder of the paired private key can access the data...

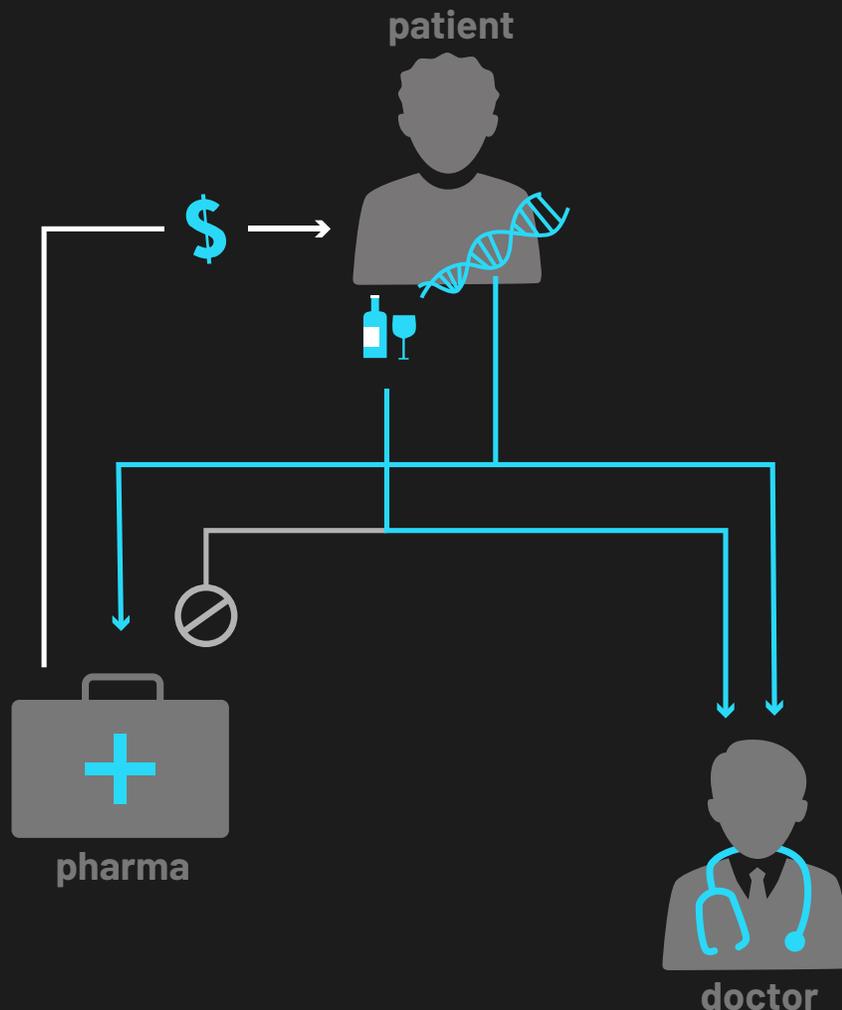
... after you give consent



You choose who sees your data and it always benefits you

## Stakeholder Structure:

Using permission-based smart-contracts, access to genomic information will be authorized by the blockchain while potential incentivization to the user or donor remains secure and anonymized.

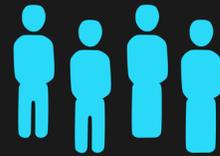


Blockchain technology helps users transmit genomic data or quantifiable lifestyle information to other stakeholders. At the same time, the patient can keep sensitive information, such as substance abuse data, hidden from certain stakeholders. As a result, outcomes of research and precision medicine initiatives can be better supported. In addition, this framework allows stakeholders to incentivize their client's lifestyle change. For example, an insurer could offer to pay for a client to have his genome sequenced.

# Patient Stratification

## Problem

Usually, only small groups of people are studied in clinical trials

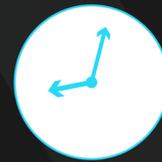


Without a lot of genomic data, it is hard to know who will respond to a certain treatment...



And when they don't respond well, it is hard to know why

This wastes time and resources



## Solution

Use genomic data to inform clinical trials

Researchers and clinicians can use genomic data to figure out which patients are likely to be unresponsive to a treatment



Then, they can target a subgroup of patients that will benefit the most

This allows effective treatments to be available more quickly



patient stratification

## 4 | DRUG DEVELOPMENT

Pharmaceutical, biotech, insurance and data donors  
all within the same hub

Genomics and artificial intelligence present a unique opportunity to revolutionize R&D programs, especially screening for drug targets and corresponding drug candidates. The significant cost associated with drug development is linked to the ability to access high-quality and validated datasets from patients.

We are currently engaging with partners in leading pharmaceutical/biotech companies and clinical research organizations (CROs) to allow access to our services, as well as offer the opportunity to sponsor genomic testing on a mass level.

The data will not be owned by any company, and the Shivom platform will facilitate pharmaceutical companies' use of the data by providing attractive rewards and a market access model that directly engages with data owners. The model will allow access to study and control patients through an app marketplace for phenotypic screening and more.



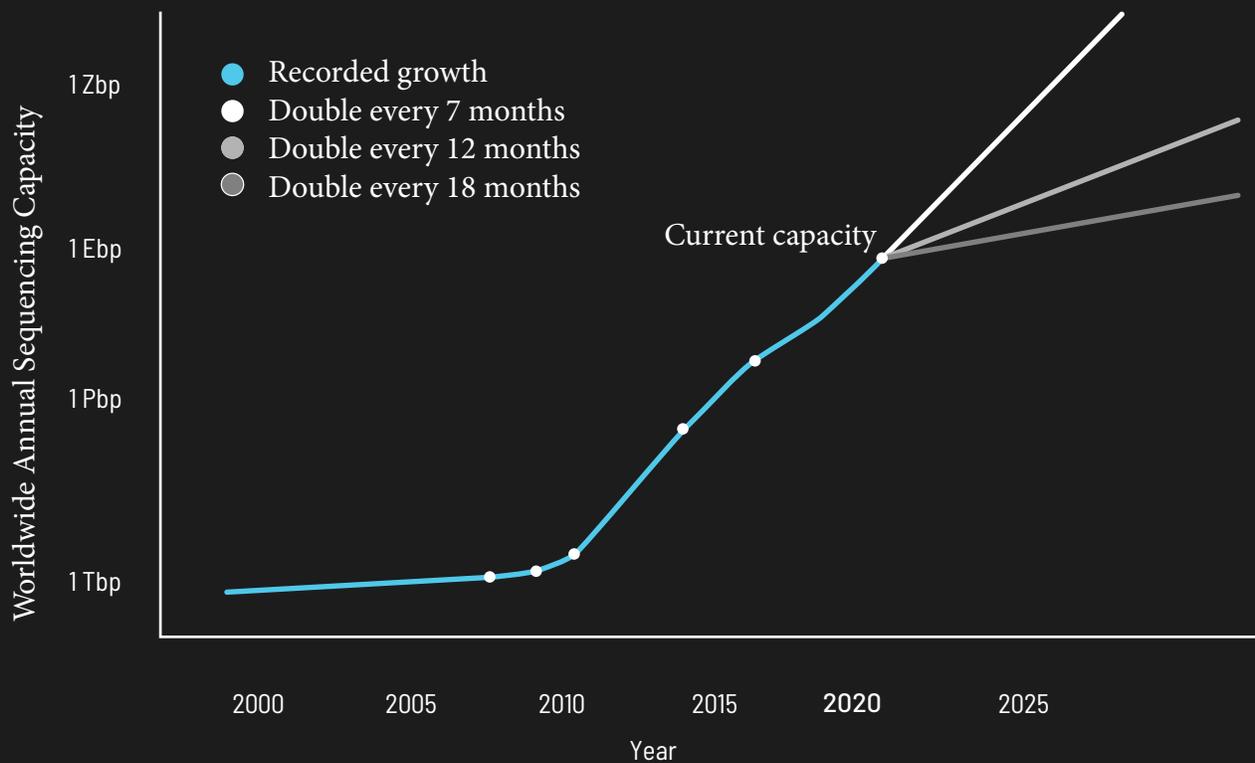
## 5 | GLOBAL GENETIC COUNSELOR NETWORK

| A global network of genomic/health counselors and laboratories.

We aim to build a global network of genetic counselors who can also form a telemedicine ecosystem (in case people in rural areas have no direct access to healthcare). Eventually, most people will undergo genetic testing and counseling, not only those with clearly elevated genetic risks.

Our counselors and laboratories will also work as an information hub. As genomic data become more common in the clinic, it is imperative that clinical scientists and physicians use automated and standardized tools which employ up-to-date methods and curated publications.

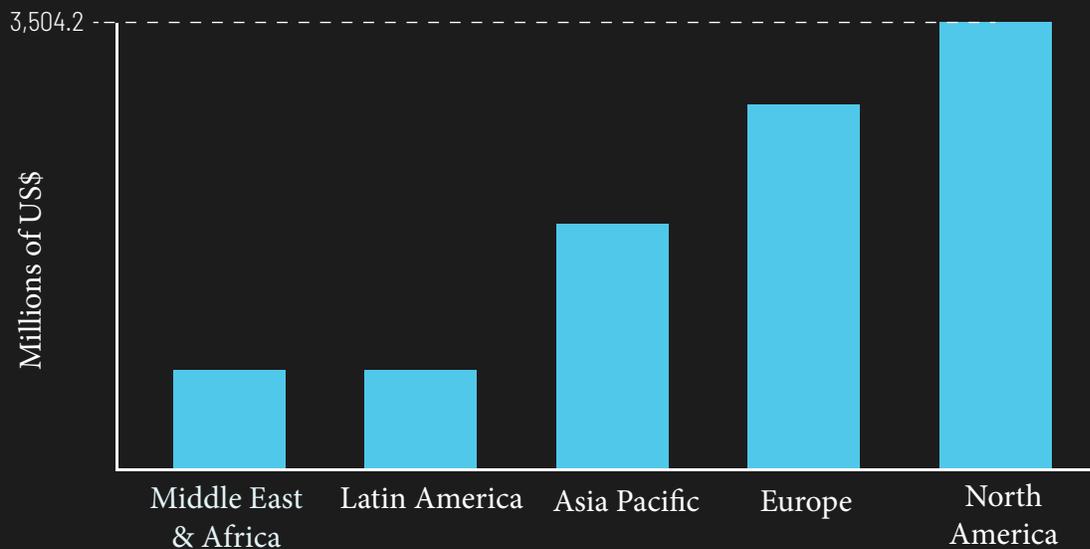
The growth rate of genomic data acquisition over the last decade has been truly astonishing, with the total amount of sequence data produced doubling approximately every seven months.



The plot shows the growth of the worldwide annual DNA sequencing capacity (Tera-basepairs (Tbp), Peta-basepairs (Pbp), Exa-basepairs (Ebp), Zetta-basepairs (Zbps) taken from Stephens et al. The values beyond 2015 represent a projection under three possible growth curves.

Many of the genomes sequenced to date have been the whole exome rather than the whole genome, but it is expected that in the future more and more whole genomes will be sequenced.

# Global Genomics Personalized Health Market Revenue by Region in 2017



The Global Genomics Personalized Health Market is set to be worth the US \$25,112.5 Mn by the End of 2025 (ResearchMoz 2017). This will greatly impact disease areas such as hypertension, heart disease, obesity, dementia, depression, or medical side-effects, and mutation-dependent inheritable diseases.

## TOPLINE NUMBERS

### Global healthcare market

USD\$ 8.7 trillion by 2020

Deloitte 2017 global healthcare sector outlook

**CAGR 14.9% (2017-2025)**

### Precision medicine market

USD\$ 40 billion by end of 2016

CAGR 10-11% by 2025 — expected to reach up to 112.6 billion.

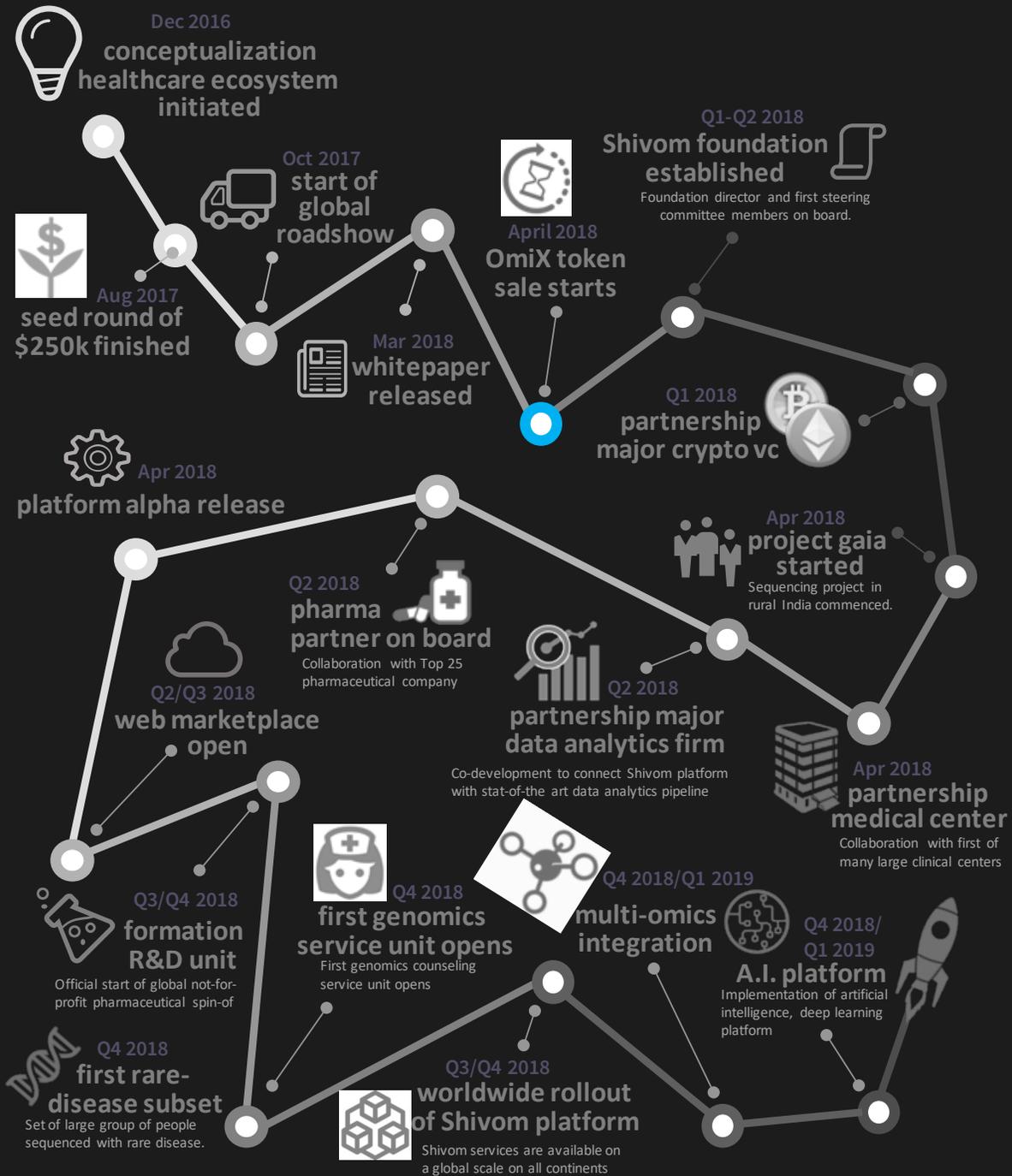
This includes big data analytics, bioinformatics, gene sequencing, drug discovery, companion diagnostics, and more.

Precision Medicine Market Analysis & Trend - Therapeutics, Application- Forecast to 2025

## BLOCKCHAIN SECTOR |

The global combined Blockchain technology market between 2017-2027 is estimated to create revenue of nearly USD 45 Billion according to Research and Markets.

# 6 | ROADMAP



We will consolidate our roadmap as the community grows. After our ICO, we will deploy our first sequencing project together as a proof of concept. This first, viable product will help us grow our ecosystem and raise interest from other parties.

[https://www.researchandmarkets.com/research/8b85nl/global\\_blockchain\)](https://www.researchandmarkets.com/research/8b85nl/global_blockchain)

## The OmiX Token:

The OmiX token is a key component that enables buying, trading, incentivizing and other services. The token is the fuel of the Shivom ecosystem, as well as part of the governance of the system.



## Benefits of OmiX tokens:

- Ability to acquire premium services in the Shivom ecosystem
- Ability to acquire genome sequencing kits
- Ability to sponsor sequencing projects
- Ability to acquire access to health/fitness apps from 3rd party providers
- Ability to access the genome database
- Ability to pay donors for data/participation in research studies
- Ability for service providers to use the platform

YOU CAN ACQUIRE TOKENS DURING THE TOKEN SALE, FROM SECONDARY MARKETS AND FROM REWARDS COLLECTION

# | Shivom will distribute 3 billion OmiX tokens

## Token Sale

990M OmiX tokens will be sold during the ICO process.

## Community

90M OmiX Tokens will be distributed to the community to grow and nurture the Shivom ecosystem, for bounty programs to leverage network effects, and for community initiatives to reward developers, entrepreneurs, and strategists.

## Founders

420M OmiX will be allocated for founders to support the development of the Shivom ecosystem and their continued long-term alignment with the project.

## Advisors

300M OmiX will be allocated for early backers and a global network of advisors.

## Incentivizing Growth Pool

600M OmiX will be secured in a smart contract, allocated to the database, and introduced into circulation as rewards for data generation.

## Company Reserve

600M OmiX will be kept by the Foundation as a reserve fund for future data contribution, running the Foundation and associated non-profit R&D efforts. The Foundation maintains all authority to utilize a few or the majority of the reserve tokens for future external investors.

# TOKEN SALE: USE OF PROCEEDS

The level of funding received dictates the distribution of funds. However, reserve structure allows us to reduce the volatility along the way while achieving long-term objectives.

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## 20% Platform Development

Database building, UI, APIs, and metadata curating. A large part of this budget will be used to make the platform secure and scalable. From there we will implement new features and create the open marketplace.

## 11% Operations & Business Development

Day-to-day operations, team building (developers, geneticists, marketers and product managers). Forming the Foundation.

## 10% Non-Profit R&D Platform

Drug discovery platform combining elements of Big Data analytics, artificial intelligence, genomics, proteomics, lipidomics, and metabolomics.

## 21% Marketing & Forming Partnerships

Ongoing community-building events public communications via traditional marketing channels and persona-based approaches. This also includes educational materials, roadshows, collaboration with other genomics-initiatives, organizing events and conferences, and KOL management.

## 5% Legal

Regulatory compliance for all markets Shivom operates in.

2% Initial PoC

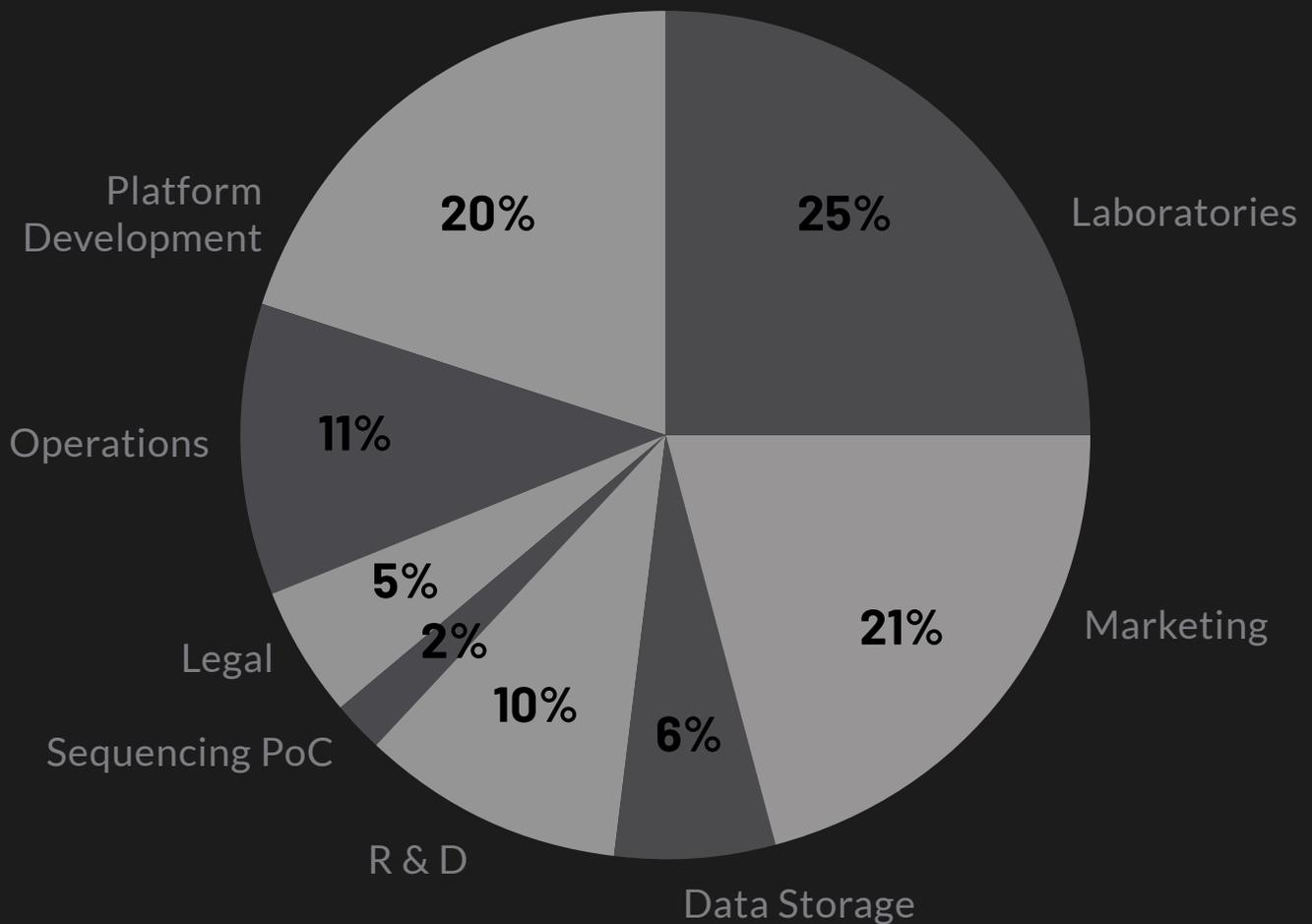
First sequencing project in hospitals in rural India.

6% Data Storage

Forecasted to sustain the platform during the first few years.

25% Laboratories

Setting up a global network of laboratories and counseling services.





**Dr. Axel Schumacher**  
Co-Founder & CEO

Ph.D. in Genetics,  
over 20 years of R&D  
leadership experience  
in genomics,

epigenetics, biomarker discovery, Bio-IT,  
aging & longevity. Author of the 'Blockchain  
& Healthcare Strategy Guide', the standard  
compendium for the healthcare industry.  
Faculty Member, Blockchain Research  
Institute, Toronto.



**Sally Eaves**  
Co-Founder & CMO

Experienced Chief  
Technology Officer, Top  
10 blockchain influencer,  
practicing Professor of

FinTech, Global Strategic Advisor, and  
member of the Forbes Technology Council.



**Akash Gaurav**  
Co-Founder & CTO

Blockchain expert,  
started India's first  
blockchain company,  
Auxesis Group (Top

100 blockchain companies), Blockchain Lab,  
India, and is an advisor to the blockchain  
startup Cashaa (\$15 million raised).

**Gourish Singla**  
Co-Founder & COO

Serial Entrepreneur.  
Background in investment  
banking and wealth  
management. COO for the

#4 company in the digital health space. Single-  
handedly established a unit and drove it \$35  
million revenue.



**Per Lind**  
Co-Founder & CSO

Ex-IOTA foundation.  
Per is an advisor to  
several governments.  
He is an excellent

innovator and strategist.



**Henry Ines**  
Chief Innovation  
Officer

Global executive with  
extensive venture capital,  
cross-border advisory,  
corporate finance and entrepreneur experiences.  
As an investor, he focuses on FinTech / blockchain,  
frontier technologies and ventures based on his  
collective VC experiences to date. An advisor  
to multiple blockchain / ICOs and tech startups  
in Silicon Valley and beyond; and continues  
to maintain a pulse on latest technological  
innovations. Advisor and mentor to accelerators,  
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## CONTACT US

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