# Neurallead Coin (NLEAD)

NeuralLeadQHash



### 1 Introduction

**NeuralLead Coin (NLEAD)** is the world's first integration of cryptocurrency being first with blockchain **Al-based** — NeuralLead with **proof of stake** consensus.

We chose to implement **Proof of Stake** as a modern alternative, leveraging its advantages for the benefit of the **NeuralLead Coin** project, which focuses on different security rules than proof of work, a consensus algorithm that is slow, open to 51% attacks, costly to mine, harmful to the environment, and resistant to scalability. We achieved a unique solution, combining the energy efficiency of Proof of Stake and the security of **Al algorithms** directly and deeply anchored in the blockchain, thinking about NeuralLead Coin technology in the long term.

How does this Engine works?



# 2 Objective of Neurallead Coin



The development of new technologies and treatments often requires significant time, setbacks, and eventual breakthroughs, all of which demand substantial funding. NeuralLead Coin aims to revolutionize how research and innovation are supported by leveraging decentralized technologies. Our mission is to showcase how these technologies can accelerate advancements and protect our future by funding and promoting research in both artificial and natural neurobiology.

But what makes our Funding to R&D different?

### 3 Funding Research and Development

Today, research funding is often **monopolized** by investors, limiting the independence of scientific exploration and subjecting it to the influence of marketing lobbies. Our core mission is to **liberate research** from this monopoly, making it **independent and free** from external pressures. While neuroscience has made great strides in understanding the brain and nervous system, it continues to face significant challenges that need support to enhance quality of life and technological advancement, especially as **Artificial Intelligence** becomes more integrated into our daily lives.

The brain remains an incredibly complex organ, requiring extensive **research and resources**. The number of researchers in the field is growing steadily, but neuroscience research demands substantial investments of time, money, and expertise. However, available funding is often limited and highly competitive, skewing research priorities toward more popular topics.

### 3 Funding Research and Development (Conti.)

**NeuralLead Coin** aims to create a **decentralized system** that allows laboratories, companies, and even independent groups or institutes to request funding for their research. Every **18 months**, the NeuralLead community reviews and selects project proposals supporting research and development, **awarding funding** through the rewards accumulated from NeuralLead Coin's **PoS mining and PoW mining**. This system fosters synergy between investors and research projects, **benefiting** both parties—investors receive rewards for their support, and essential research receives the funding it needs.

Ready to Jump in the Pool of Our Neurallead Community?

### 4 Neurallead

**NeuralLead** exists independently of the **NeuralLead Coin** and is not a product or service. Instead, it is a community of enthusiasts, developers, and researchers in the scientific field, particularly **neuroscience**. Founded in 2019 by **SimonJRiddix**, a company composed of researchers and developers, NeuralLead's mission is to advance and promote neuroscience research while safeguarding all **sentient life forms**—both existing and potential. NeuralLead does not aim for capital maximization. Every registered user automatically becomes part of the community, enjoying access to all available benefits.

Our past Work in **Artificial Intelligence** & **Consciousness** 



### 4 Neurallead (Conti.)

#### a) NeuralLead Maker (2019)

NeuralLead Maker is a powerful no-code visual editor for building and training custom **neural networks**, making it accessible for beginners while offering script support for advanced users. With integrated **2D/3D visualizations**, free cloud services, and support for second- and third-generation Neural network models, users can create, share, and simulate neural networks effortlessly.

#### b) Neurallead Cloud (2019)

Neurallead Cloud is a web **cloud-based community** for sharing neural networks, datasets, or plugins among community members, available in both free and paid modes.

### 4 Neurallead (Conti.)

#### c) DataMining (2023)

NeuralLead's DataMining harnesses the power of connected GPUs to validate massive data, rewarding users with cryptocurrency. All processing is done locally, allowing users to earn continuous crypto rewards based on their **GPU's performance**.

#### d) Serena (2024)

Serena is an advanced AI system that surpasses traditional **LLMs** by offering sensory capabilities and reasoning skills, allowing it to think, pause, and organize its thoughts like a human. It connects through NeuralLead Cloud and interfaces with applications via a free API for versatile task support.

### 4 Neurallead (Conti.)

e) Serena Reasoning Builder (2024)

Serena Reasoning Builder is a user-friendly graphical tool that allows users to **customize** Serena's **reasoning** for specific goals in business, personal life, or hobbies without coding. It supports task automation for various professions and connects to over 1 million applications, including major platforms like Amazon, Facebook, and WhatsApp, through APIs and downloadable libraries.

Ai and Quantum! Dive deep into its Beauty with us!

# 5 Artificial Intelligence and Quantum algorithms

The convergence of Artificial Intelligence (AI) and quantum algorithms within blockchain technology is redefining digital security and computational efficiency, promising a new era of decentralized systems. NeuralLead has taken this innovative approach by merging Proof of Stake (PoS) with advanced neural network technology to create a robust system where neural networks handle the verification, management, and security of transactions and wallets. Simultaneously, quantum algorithms integrated into blockchain, powered by AI, are unlocking unprecedented encryption capabilities, transforming ordinary computing environments into highly efficient, quantum-powered systems.



# 5 Artificial Intelligence and Quantum algorithms (Conti.)

In the core architecture, NeuralLead's PoS model leverages **neural-based hashing algorithms** that are embedded directly within wallet applications. These operate independently, without requiring an internet connection, which not only enhances security and efficiency but also guarantees complete privacy with no external data transmission. On the other hand, quantum computing, when fused with AI, enables the development of advanced cryptographic techniques.

With our quantum algorithm, you can transform your standard computer into a quantum computing powerhouse, all without the need for specialized hardware and while maintaining the same device speed. These technologies work in tandem to accelerate the processing of transactions, optimize hardware usage, and minimize energy consumption, all while significantly boosting security standards through cutting-edge encryption methods.

# 5 Artificial Intelligence and Quantum algorithms (Conti.)



The combined power of Al-driven neural networks and quantum algorithms is revolutionizing blockchain technology. This synergy not only enhances the security, privacy, and efficiency of digital transactions but also ushers in a future where both **neural and quantum systems** redefine the limits of decentralized computing and data integrity.

Time to Level up! Learn how PoW and PoS work!

### 6 Proof of Work (PoW)

Proof of Work is the original consensus mechanism that underpins well-known cryptocurrencies like Bitcoin. It requires miners to solve complex mathematical puzzles, which validates transactions and adds them to the blockchain. This process is resource-intensive, relying on substantial computing power and energy to secure the network. Miners are rewarded with newly minted coins for their contributions.

#### Security and Robustness:

PoW's competitive nature makes it highly secure, as attackers would need significant computational power to manipulate the network. However, this security comes at the cost of high energy consumption.

#### Decentralization:

PoW fosters decentralization by allowing anyone with hardware to participate. However, over time, mining has become centralized in regions with access to cheap electricity and advanced hardware, limiting participation.

### 7 Proof of Stake (PoS)

Proof of Stake, by contrast, offers a more energy-efficient solution. Instead of relying on miners to solve puzzles, validators are chosen based on the amount of cryptocurrency they "stake" as collateral. Validators are rewarded for validating transactions and maintaining the network's security.

### Efficiency and Sustainability:

PoS significantly reduces energy consumption by eliminating the need for power-hungry mining rigs. It also provides a scalable framework, capable of handling more transactions at lower costs, making it a greener alternative to PoW.

### Security Through Staking:

In PoS, security is maintained through staking, where validators put their assets at risk. If they act maliciously or fail to validate correctly, they lose part of their stake. This creates a strong incentive for good behavior, enhancing network security.

### 7 Proof of Stake (PoS) (Conti.)

• Decentralization and Accessibility:

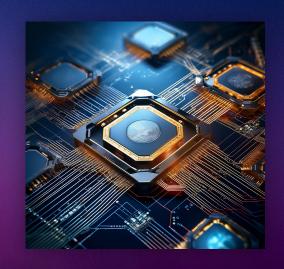
PoS encourages wider participation since validators don't need expensive hardware to participate. This opens up opportunities for a broader range of participants, promoting decentralization.

Neurallead Coin leverages PoS to combine blockchain security with energy efficiency. By integrating neural network technology, it enhances transaction verification and wallet management, offering robust privacy and security features.

Mine Data through GPU. Learn! How to Earn!

### 8 Datamining

Data Mining In today's Al-driven world, data is one of the most valuable resources, powering everything from machine learning to advanced analytics. NeuralLead's DataMining leverages the power of connected GPUs to validate and process vast amounts of data across video, image, audio, and textual formats, all while rewarding users with cryptocurrency. By using their own GPU power, users can participate in this network, contributing to data validation and earning continuous rewards based on the performance of their hardware.



Unlike traditional mining, where specialized equipment is needed, anyone with a capable GPU can join and start benefiting. Initially data validation is centralized for security, NeuralLead's datamining system is designed to become increasingly decentralized over time, reducing reliance on central servers and fostering a more distributed data validation ecosystem. With NeuralLead, **users play** a crucial role in supporting AI and data-driven advancements while simultaneously earning crypto rewards for their **contributions**.

A Tokenomics System Designed for Growth and Innovation! See how!

### 9 Tokenomics



The **NeuralLead Coin** ecosystem is built upon a well-crafted **tokenomics framework** that fuels both economic growth and innovation. The strategic design of its token model focuses on long-term stability, value appreciation, and incentives for participation.

By balancing supply, staking rewards, and research funding, ensures a thriving ecosystem for its **users** and **investors**.

#### a) Investment Tiers and Rewards Structure

We offer a tiered investment structure along Proof of Stake (PoS) that designed to engage a wide range of investors while rewarding larger commitments. The model incentivizes greater participation without excluding smaller investors, creating opportunities for everyone to benefit from staking:

#### Investment Tiers:

- Little Investor: Starting with a minimum of 300 coins, these investors earn 7% of the block reward\*.
- Medium Investor: With 1,100 coins or more, medium investors can claim up to 28% of the block reward\*.
- Big Investor: Investors staking 3,100 coins or more receive up to 84% of the block reward\*, maximizing their potential earnings.

<sup>\*</sup> block reward itself is 75% (100%-25% refer **Special Rewards & Cashback wallet**) of total Fixed Reward that is 60 coins.

- Halving Interval and Timeframe: NeuralLead Coin halving events will take place after every 350,400 blocks, which is projected to occur approximately every 4 years, based on a consistent block generation time of 6 minutes per block.
- Minimum Staking Activation: Staking requires a minimum of 300 coins, ensuring all investors contribute meaningfully to the network's security and stability.
- Maturity Period: Investors must wait for approximately 1,200 blocks before accessing their staked coins, promoting long-term engagement and ecosystem stability.



#### Special Rewards

The NeuralLead Coin (NLEAD) ecosystem incorporates a **Special Rewards** system designed into two distinct parts:

The first component is a static reward, allocating a fixed 21% to critical initiatives such as Research & Development (R&D), DataMining, Marketing 2.0, and contributions from developers.

The **second** component is a dynamic reward, which is based on the residual percentage derived from different types of investments. This dynamic portion is allocated to **Airdrops**, **Marketing**, and **Research**, ensuring that these efforts are adequately funded according to the flow of investment activity.

Note: **Research & Development** refers to the research that is discussed in "Funding Research and Development". Term **Developers**, refers to SimonJRiddix company & Neurallead to develop software & hardware for Neurllead & Neurallead coin, such as Android Wallet, iOS wallet, bug fixes in blockchain, Neurallead hash algorithm, etc. **AirDrop & Marketing**" and "**Marketing 2.0**" refer to the investment in Marketing, exchange listing, advertising, insurance and fidelity with new members.

#### b) Block Time and Confirmation Speed

NeuralLead Coin boasts a swift block time of just **6 minutes**, outperforming traditional blockchains such as **Bitcoin**, which takes 10 minutes. This faster block generation greatly enhances the usability of it, making it highly efficient for real-world applications.

#### c) Gradual Liquidity

To maintain stability and protect the NeuralLead Coin ecosystem, a carefully structured **liquidity model** is in place. Rewards maturing occur over a period of **1200 blocks** before mining the next PoS Block for each wallet address. Wallet automatically reinvest the coins, make your earning more. Investors are encouraged to hold their assets till **7440 blocks (nearly one month)** pass before rewarded coins can be transferred, adding an extra safeguard against market volatility.

#### b) Auto-Transition to Tier of Investment

If the coins during staking reach the minimum amount for the next class, the new rewards of the next class are automatically activated, for example from 'Medium Investor' to 'Big Investor'. Likewise, if coins are removed from the staking wallet, the reward degrades the type of investor, for example from Big to Medium.

#### Example:

If Staking started with Little investment i.e, 300 Neurallead Coins. And during Staking, amount of Coins reached to minimum level for Medium Investment i.e, 1,100 Neurallead Coins, It will start rewarding accordingly. Vice versa for degradation from Higher Tier to Lower Tier Investment.

#### c) Hot staking and Cold Staking

In **Hot Staking**, the wallet address owner need to keep the wallet turned on, 24/7, to stake coins. While in Cold Staking, user delegate the coins to stake to another wallet and the other wallet stake the coins on **behalf of Owner**, in this way, the coins owner can turn off the wallet and watch coins earning while giving 7% of reward to the delegated wallet.

Example in Hot Staking: With a reward of 60 Neurallead Coins, 25% (15 coins) go to First Component of **Special Reward** (slide 20) and **CashBack wallet** (slide 24), while the remaining 45 coins are divided in two parts (84% & 16%), as 84% (37.8 coins) going to the 'Big Investor' and 16% (7.2coins) going to Second Component of **Special Reward** (slide 20).

In the case of Cold Staking for Big Investor, the process is identical to Hot Staking except that 7% (2.6 coins) of the 84% goes to the delegate, while the remainder of the 84% (35.196 coins) goes to the 'Big Investor'.

#### d) CashBack Address Wallet

To maintain uninterrupted operations in NeuralLead Coin's PoS system, the **CashBack Address Wallet** is introduced to address potential blockchain stalls that occur when active staking wallets drop below the 1200-block maturity threshold. This wallet remains active and minimally funded, mining blocks continuously during periods of low staking activity. A portion of each PoS mining reward (4%) is allocated to the CashBack Address Wallet to keep it operational.

Each block mined by the CashBack Address Wallet redistributes its rewards into five, allocated sequentially to other active staking wallets, prioritizing based on subscription order. Initially managed by NeuralLead's cloud servers, this reward distribution will be fully decentralized in future, ensuring stability and resilience for NeuralLead Coin's blockchain.

### **10 Technical Details**



#### a) Framework:

At its core, our PoS leverages the same updated codebase as other cryptocurrencies. The main distinction, however, lies in the consensus algorithm. It utilizes proof of stake along proof of work to achieve consensus. PoS is a unique implementation with various performance and consensus improvements, making it an optimal choice for financial applications such as payments, significantly enhancing network scalability.

b) Staking Requirements

Staking involves holding cryptocurrency in a wallet to help maintain and secure a blockchain network, with participants locking their funds to earn rewards. To stake with PoS, the following conditions must be met:

- 1. Investors are required to wait for maturity before they can access their staked coins.
- 2. The coins must reside in compatible address/transaction types, including:
- Legacy (P2PKH)
- Native Segwit (P2WPKH)

#### c) Block Structure

Proof of Stake (PoS) operates using the PoS V3 consensus algorithm, and blocks must adhere to the following rules:

- Each block must contain only one transaction.
- This transaction must be the second address transaction in the block.
- The coinbase transaction must have a 0 output value with a single empty Vout.
- The block timestamp must have its bottom 4 bits set to 0, meaning the block time is limited to 16-second intervals, reducing its granularity.
- Even PoS has same difficulty architecture like PoW.
- The block hash must be signed by the public key found in the second Vout of the staking transaction. The signature is included in the block, though not part of the formal block hash.
- The signature in the block must follow the "LowS" format, consists of a single, highly compressed piece of data (without extra leading zeros or unnecessary opcodes).
- Most standard Proof of Work rules still apply, such as having a valid Merkle hash, valid transactions, and ensuring the timestamp falls within the allowed time drift.



#### d) Transactions

Proof of Stake (PoS) transactions rely on public and private key signatures, where the public key is verified, and the private key is signed by the sender. In non-PoS blockchain networks, double spending is discouraged due to the lack of incentive to stake on every fork. However, in PoS networks like Bitcoin PoS, there is an incentive to stake on each fork, but this does not increase the likelihood of double-spend transactions. This scenario is often referred to as the "nothing at stake" problem, but it is based on several flawed assumptions that are, in reality, nearly impossible.

For an attacker (or group of attackers) to gain enough backing for a malicious fork, they would need to incentivize a large number of stakers, making the logistics and cost of such an attack prohibitive. In contrast, under the proof of work model, mining cartels do not hold delegated coins or represent the interests of others. Instead, they control disproportionately large amounts of hashrate, which increases the possibility of double-spend attacks if certain parties collaborate. As a result, PoS transactions are well-protected against double-spend attacks.

#### e) Stake Aggregation

To prevent exploitative practices like transaction flooding, where a staker might try to gain an advantage by staking with numerous transactions, PoS combines multiple inputs when generating the staking transaction. This helps create a larger stake for the block. However, to mitigate the negative effects of this input reduction mechanism, which could result in excessively large transaction outputs, any stake that exceeds a certain threshold is split into multiple outputs.

#### f) PoS Block and Halving

In PoS, tokens are minted by stakers, and the emission rate decreases by 25% every 700,000 blocks, starting at block 120,000, which occurs approximately every 4 years. Block rewards up to 120,000 are distributed as follows:

- Blocks 0 to 40,000 receive 60 coins
- Blocks 40,000 to 80,000 receive 30 coins
- Blocks 80,000 to 120,000 receive 15 coins From block 120,001 onward, the PoS block reward is set at 7.5 coins.

Ready To see **NeuralLeadQHash?** 

### 11 NeuralLeadQHash

#### **Technical Overview**

**NeuralLeadQHash** is a hybrid hashing algorithm developed by NeuralLead that combines unique quantum computing and neural network features. It is designed to simulate a quantum processing environment, leveraging the NeuralLead Core technology's power to optimize hashing process security and efficiency. The algorithm uses simulated qubits and neural networks to achieve a high-entropy data mix with resistance to cryptographic attacks.

#### **Algorithm Overview**

**NeuralLeadQHash** operates with an iterative hashing architecture that integrates quantum operations with advanced cryptographic mixing and compression. It's configured to use a minimal number of qubits (set to 2 in the code) and works through a compression scheme divided into multiple rounds. Each round applies quantum and neural transformations to input data, ensuring a high level of statistical dispersion.



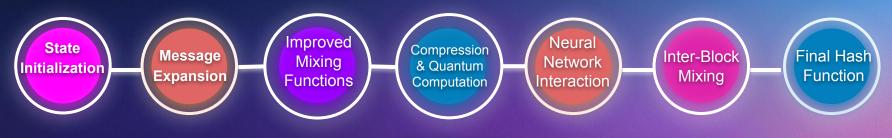


### State Initialization

The algorithm begins by defining an initial state on an array of eight 32-bit integers, using pseudorandom constants to enhance hashing security. This state serves as the base for updates throughout the entire hashing process.

#### **Message Expansion**

To prepare input for hashing, the algorithm uses an expansion process on a 32-bit word array, w[64], creating new data through rotations and XOR operations to increase input complexity and security.



**Key Stages** 

#### **Improved Mixing Functions**

The improvedMix function implements an advanced rotation and mixing mechanism that ensures uniform data distribution per round, increasing resistance to cryptographic attacks.

#### **Compression and Quantum Computation**

The algorithm's core is its compression function, introducing quantum calculations through the qpp library to simulate controlled qubit rotations. The algorithm applies RZ, RX, and RY rotations, followed by CNOT gates to enhance quantum dispersion of output states.

- Controlled Rotations: Applied with intensities dependent on specific values of normalized input data.



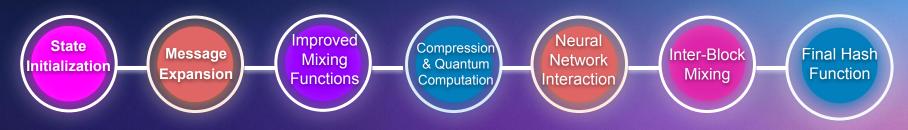
**Key Stages** 

#### **Neural Network Interaction (NeuralLead Update)**

The NeuralLead Update is a crucial stage where state values are converted into normalized inputs for the neural network, which produces outputs used to update the state via XOR operations and rotations. This ensures a bidirectional interaction between the hash state and the neural network, increasing algorithm security against collisions and brute-force attacks.

#### **Inter-Block Mixing**

Between blocks, the algorithm applies an additional mixing phase to further strengthen state uniformity between data blocks, ensuring each block affects the entire state.



**Key Stages** 

#### **Final Hash Function**

At the process's end, the state value is stored as the final hash. Each updated and processed block contributes to a 32-byte output, a result of both quantum operations and neural transformations.

#### **System Components**

NeuralLeadQHash consists of two fundamental components:

- Quantum Module: Simulates a quantum CPU's operations to enhance data compression tasks.
- NeuralLead Neural Network: Uses a custom structure with specialized neurons and grids to process complex data and facilitate additional data mixing and compression.



#### **Quantum Algorithm**

The NeuralLeadQHash quantum module is based on a series of operations involving quantum gates and controlled rotations, followed by qubit state measurement. Quantum computation begins with a |00⟩ qubit state, which is then manipulated through Hadamard gate applications and conditional rotations that depend on the contents of the input state. The process includes:

- Conditional Rotations: Qubit rotations are conditioned by specific values from the algorithm's internal states, derived from variable normalization.
- Measurements: After quantum operations, qubit probabilities and complex states are measured, providing additional inputs to combine with the neural network's output.
- Neural Network Integration: The quantum output is merged with data processed by the neural network, resulting in a compression that adapts based on unique input characteristics.

#### **NeuralLead Neural Network**

The neural network structure comprises:

- **32 Inputs**: state[] bytes are converted to floating-point numbers. A constant (+1) is added to prevent zero values, which could cause inaccuracies in activation functions.
- 5 Outputs: These outputs are mixed with the quantum algorithm to produce the final compression.
- Specialized Neurons:
  - neuronGen: Generates the network's base input.
  - o **neuronRelu**: ReLU activation function.
  - neuronSigmoid: Sigmoid activation function.
  - neuronEXN: A custom XOR function activation neuron developed by NeuralLead.

#### **Neural Network Structure**

The network is divided into three groups:

#### 1. Group InputTo (Input Layer)

- Description: Transforms input data, mapping it to a grid of 32 neurons.
- o Grid: Grid(32, 1, 1)
- Neuron: neuronGen
- Bias: Disabled

#### 2. Group S1 (Hidden Layer)

- **Description**: Intermediate group primarily responsible for data processing through nonlinear activation functions.
- Grid: Grid(81, 1, 1)
- **Neuron**: neuronEXN, specific to NeuralLead, performing the XOR activation function.
- Bias: Disabled.

#### 3. **Group Output (Output Layer)**

- **Description**: Provides the neural network's output, which is later mixed with quantum algorithm results.
- Grid: Grid(5, 1, 1)
- Neuron: neuronSigmoid
- o Bias: Disabled

#### **Network Connections and Weights**

The network is designed to facilitate effective signal propagation through specific layer connections:

- Full Connection between Input and S1:
  - o Type: full
  - Weights: Range from -10 to 10 with scaling factor z = 80.0f / (50.05f \* groupS1->CountNeurons()).
- Random Connections between Input and S1:
  - Type: random, with a 35% probability
  - Weights: Range from -11.0 to +12.0 with scaling factor z / prob.
- Random Connections between S1 and Output:
  - **Type**: random, with a 71% probability
  - **Weights**: Range from -0.315 to +0.315.

#### **Advantages and Security**

NeuralLeadQHash leverages the combined strengths of simulated quantum technology and neural networks:

- **High Entropy**: Quantum transformations and neural mixing ensure high randomness in the hash output, significantly reducing the likelihood of collisions.
- **Cryptographic Resistance**: The interaction between the quantum state and neural network enhances security against collision and brute-force attacks.
- Computational Efficiency: The optimized use of mixing and compression functions lowers computational cost.

With all this Vision, you can also see our Future!

### 12 Future of Neurallead Community and Neurallead Coin

As we look ahead, the NeuralLead Community will continue to expand **beyond** cryptocurrency, fostering a global network of scientists, developers, and innovators who share our vision. This **community-driven** approach is fundamental to ensuring that our innovations in Al and blockchain are aligned with ethical, scientific, and societal needs. The future demands that we do this—not only because it's innovative, but because it's essential for advancing our collective knowledge and securing our place in a technologically driven world.



# 12 Future of Neurallead Community and Neurallead Coin (Conti.)

We are at a pivotal moment where decentralization is going to transform the way we fund, research, and innovate. NeuralLead Coin positions itself as more than just a cryptocurrency—it is a force for **advancing humanity's** understanding of both artificial and natural neurobiology.

As this technology evolves, so does **our mission**: to create an ecosystem where investors are not merely financiers but vital contributors to a grander purpose—accelerating advancements in **science** and **technology**.

Finally, You are here!

### 13 Conclusion

NeuralLead Coin represents a breakthrough in cryptocurrency, merging the efficiency of Proof of Stake with cutting-edge AI and blockchain technology. With its fixed supply of 38 million tokens, it is designed to promote scarcity, ensuring value appreciation over time. The staking rewards system not only secures the network but also fuels a unique Research & Development fund, driving innovation in **AI** and **Neurobiology**.

The ecosystem is built to cater to a wide range of investors, offering various tiers of participation, and ensuring decentralized governance that empowers its community. By maintaining low transaction costs, fast block times, and a thoughtful inflation control mechanism, NeuralLead Coin guarantees stability and long-term growth potential.

Ultimately, We offer a compelling blend of innovation, sustainability, and financial opportunity, making it a promising asset for both investors and contributors to scientific advancement.

### THANK YOU!