2025

Pharmatech AI

AI-DRIVEN NEXT-GEN MED RESEARCH

Whitepaper

Executive Summary

Pharmatech AI is an innovative player in AI-supported drug research, focusing on pain therapy, natural product research (especially cannabinoid research), and nanomedicine with its proprietary "AI Multi-Drug Interaction Predictor (AI-MDIP)."

The company's mission is to revolutionize drug research with AI-MDIP to make the development of new drug combinations and medications faster, more cost-effective, and more precise. Traditional research processes for new active substances incur costs of USD 1 to 2 billion and take 10 to 15 years, as evidenced by data from the Tufts Center for the Study of Drug Development (2023) (Tufts CSDD). Pharmatech AI addresses these challenges through a comprehensive research and development pipeline from data collection to validation. The focus on cannabinoid active substance combinations is supported by proprietary data from the MDIP Practical Laboratory Grow, a 200 m^2 facility completed in January 2025, combining vertical cannabis cultivation with AI-supported research, generating over 15,000 new data points per cycle for competitive data sovereignty. The sustainable research center in Germany (Mecklenburg-Vorpommern), spanning 60 hectares with a 55 MWp photovoltaic system, enables strategic expansion with environmentally friendly practices.

The vision is to fundamentally change drug research through AI and establish Pharmatech AI as a global market leader in cannabinoid-based therapy development. The company aims to significantly reduce development times and costs using AI-MDIP and data from MDIP Practical Laboratory Grow, targeting innovative therapies for pain management, neurodegenerative diseases, and other medical needs based on cannabinoid synergies. Strategic partnerships with leading pharmaceutical companies and academic institutions will accelerate R&D, solidifying its position in precision medicine, with a commitment to sustainable, environmentally conscious research supported by an energy-self-sufficient facility in Germany. Ultimately, the goal is for patients worldwide to benefit from groundbreaking therapies and improved quality of life.

Why Pharmatech AI?

The company stands out with four unique selling proposition (USPs) for public communication:

1 **AI Multi-Drug Interaction Predictor (AI-MDIP)**

A highly advanced AI model using Graph Neural Networks (GNNs) and Transformer architectures to predict interactions between small organic compounds, including complex cannabis active substances, targeting at least 250,000 molecular interaction examples, ideally 5 million, with 50,000 cannabis-specific.

2 **Exclusive Cannabis Data**

Generated in the MDIP Practical Laboratory Grow, a 200 m^2 facility completed in January 2025, combining vertical cannabis cultivation with AI research, generating over 50,000 data points per cycle, offering complete data sovereignty from seed to analyzed flower.

3 **Sustainable Research Center**

The Mecklenburg-Vorpommern research center spans 60 hectares with 120,000 m^2 indoor space, equipped with a 55 MWp photovoltaic system generating 55 GWh annually, ensuring energy self-sufficiency and a positive CO2 footprint, with potential for strategic expansion.

4 **Focused Research Areas**

Concentration on pain therapy, natural product research, and nanomedicine, addressing a vast international market, with specific applications like predicting under-researched interactions between THC, CBD, and other small organic compounds in pain therapy.

Key Figures

Research Site: 60 hectares with 120,000 m^2 indoor space, detailed in sections 4.2 and 5.1, divided into data centers (60,000 m^2), laboratories (20,000 m^2), design rooms (20,000 m^2), testing departments (10,000 m^2), and sustainability areas (10,000 m^2).

Sustainable Energy: A 55 MWp photovoltaic system generating 55 GWh annually, reducing GPU operating costs by up to 70% and meeting ESG criteria, as described in sections 4.2 and 5.

Data Capacities: AI-MDIP aims to integrate at least 250,000 molecular interaction examples, targeting 5 million, including 50,000 cannabis-specific, supported by proprietary data from MDIP Practical Laboratory Grow, generating over 15,000 data points per cycle.

Market Forecasts: The global drug discovery market is expected to reach USD 137.72 billion by 2029, with a CAGR of 6.59% from 2024 to 2029. The innovative drug market is projected to grow from USD 250 billion in 2022 to USD 450 billion by 2030, with a CAGR of about 8.5%. The AI-supported drug discovery market is anticipated to reach USD 7.1 billion by 2030, with a CAGR of 23.72%. The medical cannabis market is expected to grow from USD 15.6 billion in 2022 to USD 41.4 billion by 2030, with a CAGR of 13.6%, as stated in section 2.3.

Business Model: Includes licensing and royalty agreements, platform subscriptions, and a data marketplace, with planned revenues of USD 150-300 million from licensing by 2027, USD 25 million annually from subscriptions starting in 2028, and USD 5 million from the data marketplace.

600k
M^2 OWN DATA CENTERS

$137B
DRUG DISCOVERY MARKET

$3.2T
GLOBAL PHARMA MARKET

$150-300M
OUR LICENSING REVENUE FORECAST IN 2027

$41B
MED. CANNABIS MARKET

AI-driven research, powered by sustainability, for the future of medicine.

2 Market and Industry Analysis

The pharmaceutical research sector is undergoing an exciting transformation phase, driven by the adoption of digital technologies and artificial intelligence. These developments accelerate the discovery of new drugs and enhance the efficiency of the research process. At the same time, researchers face challenges such as high costs, long development timelines, and data-related issues. Particularly in areas like pain therapy, natural product research, and nanomedicine, promising opportunities are emerging that require innovative solutions.

2.1 Status Quo of Global Pharmaceutical Research

Global pharmaceutical research is experiencing a profound transformation, primarily driven by the use of digital technologies and artificial intelligence. These innovations significantly accelerate drug discovery and enhance the efficiency of the entire research process. Cem Özdemir, former German Federal Minister for Food and Agriculture, described AI as a "gamechanger in pharmaceutical research," underscoring the transformative role of this technology. According to a market analysis by Mordor Intelligence, the global drug discovery market is projected to reach USD 137.72 billion by 2029, with a compound annual growth rate (CAGR) of 6.59% from 2024 to 2029. Another report by Verified Market Research forecasts that the innovative drug market will grow from USD 250 billion in 2022 to approximately USD 450 billion by 2030, reflecting an annual growth rate of about 8.5%. This growth is driven by technological advancements, increasing investments in clinical trials, and the rising prevalence of chronic diseases and an aging population. For us, this dynamic market provides an ideal foundation to position our AI-supported platform and meet the demand for data-driven, efficient solutions in pharmaceutical research, particularly in the field of cannabinoid-based therapies.

2.2 AI in Drug Discovery & Multi-Drug Interaction

The use of artificial intelligence in drug discovery is continuously growing and revolutionizing the identification of new active substances through precise data analysis and efficient predictions of molecular interactions. According to a study by Mordor Intelligence, the market for AI-supported drug discovery is expected to reach USD 7.1 billion by 2030, with an impressive compound annual growth rate of 23.72%. AI technologies enable the processing of large datasets, prediction of interactions between active substances and target molecules, and faster identification of potential drug candidates, thereby accelerating the development process and significantly reducing costs. Particularly in the area of multi-drug interactions, which are critical for combination therapies, AI offers decisive advantages by recognizing complex relationships that are difficult to capture with traditional methods.

For Pharmatech AI, this trend represents a key opportunity: with its AI Multi-Drug Interaction Predictor (AI-MDIP), the company specifically addresses these challenges and leverages advanced technologies to deliver precise predictions—especially for cannabinoid-based therapies. Thus, Pharmatech AI actively contributes to accelerating and optimizing drug development.

Total Available Market of $137.72B

2.3 Cannabis-Based Therapeutics – Regulatory Dynamics

Pharmaceutical research in the cannabis sector is expected to gain significant importance in the coming years, as interest in the therapeutic potential of cannabinoids such as THC, CBD, CBG, and CBC grows. The global legalization and acceptance of cannabis, particularly in North America and parts of Europe, are driving investments in the research and development of cannabis-based therapies.

$41.4 Billion

Medical Cannabis Market by 2030

According to Grand View Research, the medical cannabis market is projected to grow from USD 15.6 billion in 2022 to USD 41.4 billion by 2030, with a compound annual growth rate (CAGR) of 13.6%. This growth is supported by the exploration of cannabinoids for applications such as chronic pain, epilepsy, anxiety disorders, and neurodegenerative diseases, as well as the so-called entourage effect, where cannabinoids and terpenes act synergistically.

However, regulatory challenges persist, particularly regarding the safety and efficacy of cannabis-based drugs, which currently limit their widespread use. Pharmatech AI seizes this dynamic development as an opportunity: with its MDIP Practical Laboratory Grow and AI-MDIP model, the company generates proprietary data to overcome regulatory hurdles through standardized, data-driven approaches and accelerate the development of safe, effective cannabinoid therapies.

3 Problem Statement

The pharmaceutical research market faces several challenges that hinder the development of new and safe therapies using innovative and novel active substances. These issues affect both general pharmaceutical research and specific areas such as pain therapy, natural product research (particularly cannabinoid research), and nanomedicine.

3.1 Cost and Time Trap of Traditional R&D

Traditional pharmaceutical research faces the challenge of high costs and long development timelines, which significantly impede the development of new and safe therapies. Developing a new active substance costs an average of USD 1–2 billion and takes 10–15 years, according to the Tufts Center for the Study of Drug Development (2023). A significant portion of these costs arises from failures in late clinical phases, often because unforeseen interactions or side effects only become apparent during expensive laboratory tests or clinical trials. These financial and temporal burdens are exacerbated by the complexity of combination therapies, which are increasingly in demand, such as in pain therapy, where analgesics are combined with cannabinoids, or in nanomedicine, where active substances are used in nanoparticles. Predicting interactions between multiple active substances is extremely difficult, as synergies, antagonisms, or toxic effects are hard to assess.

Traditional methods such as in-vitro tests or animal models are not only time-consuming but also often inaccurate, further extending development timelines and driving up costs. Additionally, safety risks and regulatory hurdles complicate the process: in pain therapy, for example, in the context of the opioid crisis, non-opioid alternatives like cannabinoids are promising, but ensuring the safety of combinations, such as THC with ibuprofen active substances, is challenging, leading to strict regulations and delays in market entry.

3.2 Data Silo Structures & Missing Interaction Models

Drug research suffers from incomplete and heterogeneous databases as well as a lack of models to predict complex drug interactions, which hinders the development of innovative therapies. Public databases such as DrugBank or PubChem often do not provide specific information on rare active ingredients like CBN or CBC or on complex mixtures such as different cannabis active ingredients, which limits data quality. Especially in natural product research, such as with cannabinoids like THC, CBD, CBG, CBN, or terpenes, there is a lack of standardized and comprehensive data, as the composition of cannabis combinations varies greatly depending on the variety, cultivation method, and processing. This makes it difficult to reproduce and compare studies. In addition, entourage effects, i.e., synergistic interactions between cannabinoids and terpenes, are insufficiently researched, which slows down the development of targeted therapies. Clinical data from studies are often not standardized, which further complicates the application of AI models for analysis. In nanomedicine, targeted drug delivery, such as CBG in nanoparticles against bacteria, is promising, but current models cannot adequately represent the complex interactions between nanoparticles, active ingredients, and biological systems, for example, with regard to surface charge or particle size, which limits scalability and precision. These data silo structures and the lack of robust interaction models significantly slow down progress toward more precise and efficient therapeutic approaches.

4 Pharmatech AI **The Solution**

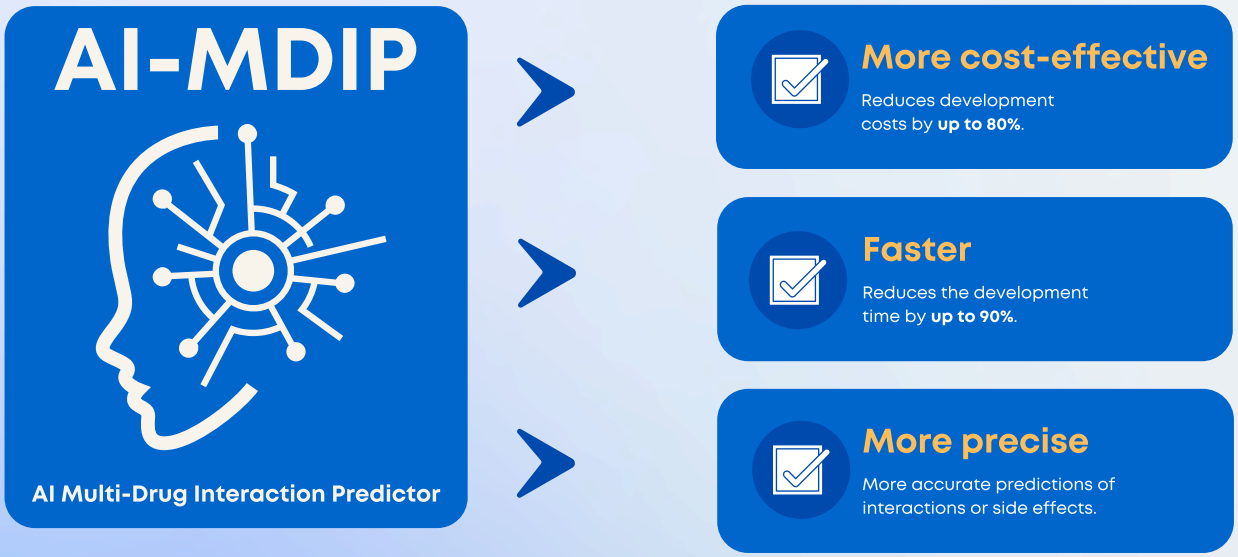
As Pharmatech AI, we offer a groundbreaking solution to the challenges of drug research by using artificial intelligence to make the development of new drug combinations and active ingredients faster, more cost-effective, and more precise. Our approach addresses high costs, long development times, and data problems, particularly in the areas of pain therapy, natural product research, and nanomedicine.

4.1 Value Proposition & End-to-End R&D Pipeline

Our strength lies in our ability to revolutionize drug research through our "**AI Multi-Drug Interaction Predictor**" (AI-MDIP). This model predicts interactions between multiple active ingredients, including complex mixtures of cannabis. By using advanced technologies such as graph neural networks and transformer models, we can quickly and precisely identify promising drug combinations. Our own data from the "MDIP Practical Lab Grow," where we grow and analyze cannabis, gives us a clear advantage over competitors who rely heavily on public data.

Our end-to-end research and development (R&D) pipeline covers all phases of drug development. It begins with data collection from numerous databases and in the MDIP Lab Grow, where we control environmental conditions, nutrients, and CO2 to produce and practically test customized cannabis active ingredient combinations. This data flows into the AI-MDIP model, which uses machine learning to predict interactions and therapeutic effects, with a focus on pain therapy, natural products, and nanomedicine. The predictions are then validated through laboratory tests, including biological assays and clinical trials, to ensure safe and effective combinations. This pipeline can shorten development times from an average of twelve years to a few years, reducing costs and improving the precision of new therapies, ultimately benefiting patients.

Our Groundbreaking AI Model



4.2 Research Center in Germany

Our research center in Germany, Mecklenburg-Vorpommern, covers 60 hectares and offers 120,000 square meters of indoor space. Equipped with a 55 MWp photovoltaic system that generates approximately 55 GWh of electricity annually, the site ensures energy self-sufficiency and a positive CO2 footprint. The campus is designed to meet the high demands of AI-supported drug research, with state-of-the-art laboratories, high-performance data centers, and flexible office spaces.

The location promotes interdisciplinary collaboration between biotechnologists, chemists, computer scientists, and data analysts, enabling innovation through knowledge exchange and shared resources. There are areas for events, workshops, and meetings that strengthen cooperation with industry partners and academic institutions. By locating in Mecklenburg-Vorpommern, we benefit from a supportive regulatory environment, access to qualified professionals, and proximity to European research centers, positioning us as a leading player in sustainable and innovative drug research.

4.3 Ecosystem & Stakeholders

We will operate in a dynamic ecosystem that brings together various stakeholders, all of whom are committed to promoting drug research. Our key partners will include leading pharmaceutical companies and pharmaceutical startups with whom we want to jointly develop and market new therapeutic approaches through new drug combinations (especially cannabinoid-based). These partnerships will be carefully crafted and announced to the community. Such collaboration leverages the expertise and resources of the industry to accelerate market entry and bring the greatest possible benefit to Pharmatech AI.

We are also establishing academic collaborations with renowned institutions to gain access to cutting-edge research and talent. These partnerships enable joint projects, knowledge exchange, and the development of new methods. In addition, we plan to participate in research consortia that promote collaboration between industry, science, and government to address health challenges. Our investor base will include venture capitals, key opinion leaders (KOLs), and participants in public funding rounds who support our vision through financial support and strategic advice. The $PCH token ecosystem involves a community of token holders who participate in decisions through governance and share in profits through staking. This ecosystem ensures that all stakeholders work together to develop innovative therapies for patients worldwide.

5 Our Research Location

Our research location in Germany (Mecklenburg-Vorpommern) is a state-of-the-art facility at the forefront of AI-supported drug research. Covering 60 hectares, the campus integrates advanced laboratories, high-performance data centers, and sustainable energy solutions to create an optimal environment for scientific innovation. The location supports the intensive computational requirements of AI research and promotes collaboration between biotechnologists, chemists, computer scientists, and data analysts. By combining cutting-edge technology with sustainability, our campus serves as a hub for faster, more precise, and cost-effective development of new drugs.

5.1 Current Use & Layout

Our 120,000 square meters of indoor space are carefully divided into specialized zones to meet the diverse needs of AI-supported drug research. In the coming months and years, all areas will be developed and actively used according to the planned zones:

Data Centers and AI Analysis Areas (60,000m²)

These areas house our high-performance computing infrastructure, essential for training and executing complex AI models like AI-MDIP. Equipped with state-of-the-art GPUs and TPUs, these centers process large amounts of data, from genomic sequences to clinical trial results, enabling fast and precise predictions.

Laboratories for Chemistry, Biology, and Cell Research (20,000m²)

These cutting-edge laboratories are where our scientists synthesize new molecules, conduct biological assays, and perform toxicity tests. Automated systems and robotics increase efficiency, enabling high-throughput screenings and the validation of AI-generated hypotheses.

AI-Supported Design and Development Spaces (20,000m²)

In these collaborative spaces, interdisciplinary teams use AI tools to design and model new drug candidates. Advanced software for molecular simulations and virtual screening helps identify promising compounds before physical testing.

Preclinical and Clinical Testing Departments (10,000m²)

Dedicated areas for preclinical studies and the preparation of clinical trials ensure that our drug candidates are thoroughly tested for safety and efficacy. AI is used to optimize study designs and analyze results.

Sustainability and Recreation Areas (10,000m²)

To promote a healthy work environment, we have integrated green spaces, fitness centers, and recreation areas. These facilities support the well-being of our employees and align with our sustainability goals.

This strategic layout ensures that every aspect of the drug development process is supported by the necessary resources and technologies.

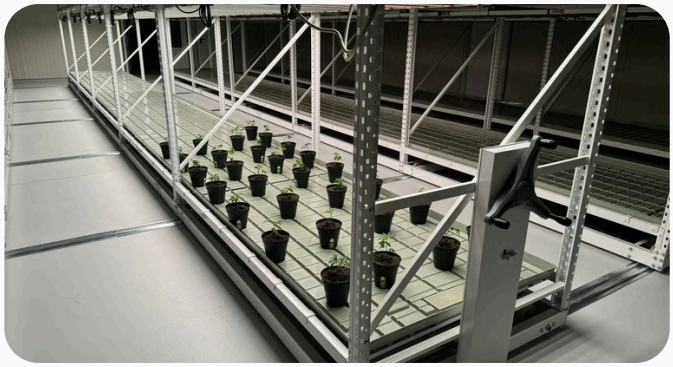
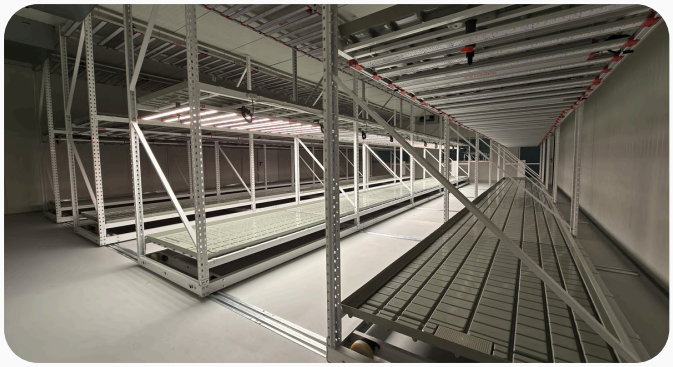
5.2 Our "MDIP Practical Laboratory"

The MDIP Lab Grow is the heart of our cannabinoid research and was **completed in January 2025**. On 200 square meters, the state-of-the-art facility combines innovative plant cultivation with AI-supported drug research. This interplay allows us not only to grow cannabis under controlled conditions but also to develop tailored active ingredient profiles through precise extraction and data analysis, which are crucial for training our AI model AI-MDIP.

High-tech cultivation laboratory for cannabis that generates 50,000 new data points per run.

At the center is a multi-tier vertical cultivation system that maximizes space efficiency through stackable growth units. Specially developed LED modules with adaptive light spectra (including infrared and UV components) precisely control growth phases, increase photosynthetic performance, and induce the formation of secondary plant compounds such as terpenes. This is complemented by an intelligent irrigation and nutrient management system, optimized in collaboration with Dutch agricultural technology experts. Sensor-controlled micro-dosing supplies each plant as needed, adjusted to germination, vegetative phase, or flowering – reducing water and fertilizer consumption by up to 40%. A hermetically sealed CO_2 circulation system ensures continuous enrichment of the air to 1,200–1,500 ppm, increasing biomass production by up to 30%. All environmental parameters such as temperature (22–28 °C), humidity (50–70%), CO_2 levels, and light wavelengths (380–780 nm) are monitored and regulated in real-time via a central IoT control system. These datasets, fed by over 150 sensors, are correlated with phenotypic traits of the plants with millisecond precision to identify algorithmic patterns between cultivation conditions and cannabinoid expressions.



Quality assurance is carried out in our own laboratory area using various analytical methods. This allows us to precisely determine the concentrations of THC, CBD, CBG, CBN, and CBC, while another method quantifies volatile terpene compounds such as myrcene, limonene, and pinene. Through standardized extraction protocols, we obtain reproducible active ingredient combinations used for both pharmacological studies and AI-supported prediction of drug interactions.

Our competitive advantage lies in complete data sovereignty: From seedling to analyzed extract, we generate proprietary information, including complex growth models and detailed yield forecasts. This exclusivity enables AI-MDIP to detect even subtle synergies between cannabinoids and classical pharmaceuticals and active ingredients that remain undiscovered in public datasets due to incomplete metadata. By combining biology, technology, and data science in a closed system, we create not only standardized extracts but also a knowledge platform for personalized cannabinoid therapies. Each cultivation cycle expands our database by over 50,000 new data points, an exponentially growing asset that establishes Pharmatech AI as an innovation leader in cannabis-based medicine.

5.3 Future Opportunities & Potential

Our research campus is designed as a dynamic ecosystem that combines innovation and scalability. On the extensive 60-hectare site, we not only create space for today's cutting-edge research but also lay the infrastructural and conceptual foundations for future expansions. The modular architecture of the campus allows for the integration of new facilities as needed, oriented towards the growing demands of our AI-supported drug research.

A central focus is on expanding the MDIP Practical Lab Grow: Plans include doubling the cultivation areas to grow over 100 cannabis varieties in parallel under variable conditions. This scaling will not only increase production for international cooperation projects but also broaden the data base for AI-MDIP with the aim of systematically researching rare cannabinoid-terpene synergies. In parallel, specialized research laboratories for modern technologies are being established: A cannabinoid laboratory will advance CRISPR-based optimization of cannabinoid biosynthesis pathways, while a center for personalized medicine will develop patient-specific active ingredient combinations.

To manage the growing data streams, we are investing in modern computing infrastructure: High-performance GPU clusters will enable the analysis of all required datasets in the future. These capacities are essential to expand AI-MDIP with multimodal learning approaches and to model even the most complex drug interactions in real-time. An on-site production cluster will accelerate the translational bridge: From the first synthesis of promising drug candidates to certified small-series production, a continuous value chain is created here. This reduces time-to-market for novel therapies by up to 80%, supported by optimized formulation platforms and continuous process optimization.

Through these strategic expansions, we are transforming the location from a pure research center into an integrated technology cluster: Every investment in infrastructure is also an investment in data-driven precision medicine. Pharmatech AI uses this scalability not only to advance its own projects but also to function as a platform for public-private partnerships (e.g., with universities or biotech startups).

In the long term, a self-reinforcing innovation cycle is created: More capacities generate deeper data insights, which in turn feed smarter AI models, and these models define the requirements for the next expansion stage. A consciously controlled progress that sustainably secures our leadership position in AI-based pharmaceutical research.

Our scalable MDIP Practical Lab Grow doubles capacity for 100+ cannabis strains, optimized via AI analytics and CRISPR editing to unlock novel therapeutic synergies.

6. Technological Foundation

The AI Multi-Drug Interaction Predictor (AI-MDIP) is a highly advanced AI-powered model specifically developed for drug research to accurately predict interactions between small organic compounds, including complex mixtures such as cannabis extracts (e.g., THC, CBD). The model integrates Graph Neural Networks (GNNs), transformer-based attention mechanisms, transfer learning, and multi-modal data processing to forecast both therapeutic and adverse effects. Its goal is to accelerate the development of safe and effective combination therapies and to provide new scientific insights into the pharmacology of molecules, particularly cannabinoids. It is versatile and applicable in general drug research as well as specifically in cannabis research.

6.1 The AI Multi-Drug Interaction Predictor (AI-MDIP)

At the core of AI-MDIP is a combination of Graph Neural Networks (GNNs) and transformer architectures designed to model interactions between small organic compounds, including active pharmaceutical ingredients. GNNs represent these compounds as molecular graphs, with atoms as nodes and chemical bonds as edges. This allows the model to process both known active ingredients and novel compounds in drug development, as it relies on molecular structure rather than predefined properties of established drugs.

The GNNs, specifically a Graph Attention Network (GAT) with four layers and eight attention heads each, generate 256-dimensional embeddings that encode the chemical and structural properties of the molecules. These embeddings capture both local (e.g., bond types) and global (e.g., molecular size, polarity) features and are enriched with additional data such as growth parameters from the MDIP Lab Grow. The transformer encoder, consisting of six layers with eight attention heads each, then models the interactions between multiple compounds by using self-attention to capture complex dependencies. This combination enables precise predictions for areas such as pain therapy, natural product research, and nanomedicine, as well as the flexibility to integrate new small organic compounds. This particularly supports the early stages of drug discovery, where new compounds are synthesized and tested.

6.1.1 Model Architecture & Functionality

The functionality of AI-MDIP is divided into several steps that enable precise modeling of molecular interactions:

Molecular Graph Representation

Each small organic compound and cannabinoid is modeled as a molecular graph, with atoms (e.g., carbon, oxygen) as nodes and chemical bonds (e.g., single, double bonds) as edges. Additional features such as atom type, electrical charge, hybridization, bond length, and bond angle are added as node and edge attributes. For cannabis extracts, main components like THC, CBD, CBG, CBN, CBC, and terpenes (e.g., myrcene, limonene) are modeled as separate graphs, with concentrations (e.g., 10% THC, 5% CBD) embedded as weighted features, measured using HPLC and GC-MS.

Graph Neural Networks (GNNs)

A Graph Attention Network (GAT) with four layers and eight attention heads each generates 256-dimensional embeddings that encode chemical and structural properties. These embeddings account for local features (e.g., bond types) and global features (e.g., molecular size, polarity) and are enriched with data from the MDIP Lab Grow, such as growth parameters (light intensity, CO2 concentration) and biological test data (e.g., anti-inflammatory effects of CBG).

Transformer Encoder

A transformer encoder with six layers and eight attention heads combines the embeddings to model interactions, such as how THC might enhance the effect of CBD (entourage effect). It considers contextual information such as dosage (e.g., 5 mg THC, 10 mg CBD) and administration form (e.g., oral, in nanoparticles), derived from laboratory data.

Prediction

A multi-layer perceptron (MLP) with three layers (512, 256, 128 neurons) processes the combined embeddings and outputs predictions in the form of scores (e.g., synergy score 0-1) or categories (e.g., "synergistic," "toxic"). The predictions are specific to core areas: In pain therapy, it predicts whether a mix of THC, CBD, and ibuprofen effectively relieves pain; in natural product research, whether CBN and linalool promote sleep; in nanomedicine, whether CBG in nanoparticles kills bacteria.

Validation and Data Integration

Predictions are validated in the MDIP Lab Grow, for example, through biological assays (pain reduction in animal models, inflammatory markers like IL-6). Results are fed back into the model to continuously improve it, forming an iterative feedback loop.

6.1.2 Unique Proprietary Data Generation

Our MDIP Practical Lab Grow is a state-of-the-art facility specifically designed for generating unique and proprietary data in cannabinoid research. By combining controlled cultivation, advanced analytics, and biological assays, we create a comprehensive data foundation that supplies our AI-MDIP model with the necessary information to make precise predictions about molecular interactions. The following details the types of data we generate and how they contribute to training our AI model.

Chemical Composition

A central focus of our data production is the detailed analysis of the chemical composition of harvested cannabis plants. Using advanced techniques such as High-Performance Liquid Chromatography (HPLC) and Gas Chromatography-Mass Spectrometry (GC-MS), we determine the concentrations of up to 23 different phytocannabinoids, including THC, CBD, CBG, CBN, CBC, and others. Additionally, we identify and quantify a variety of terpenes such as myrcene, limonene, and pinene, which are responsible for the so-called entourage effect. These detailed chemical profiles allow us to understand and document the unique properties of each cannabis strain. Each cultivation cycle provides thousands of data points that reflect the chemical diversity of cannabis and form the basis for further analyses.

Transformer Encoder

Another focus is on generating data about molecular interactions, particularly between cannabinoids, terpenes, and other active ingredients. Through biochemical assays, such as measuring binding affinities to receptors (e.g., CB1 and CB2) or enzyme inhibition tests, we determine how different combinations of molecules can act synergistically or antagonistically. These interaction data are crucial for training our AI-MDIP model, which is designed to identify new and promising drug combinations. For example, through such tests, we can determine how THC and CBD together enhance analgesic effects or how certain terpenes influence the bioavailability of cannabinoids. Combining these interaction data with chemical profiles allows us to develop a comprehensive understanding of molecular dynamics.

Biological Assay Data

To validate the efficacy and safety of the identified molecular combinations, we conduct a series of biological assays, including:

In-vitro Tests

To evaluate anti-inflammatory, analgesic, or other therapeutic effects, e.g., by measuring inflammatory markers like IL-6 or TNF-α.

Cell Culture Tests

To check for cytotoxicity and cell growth, ensuring that the combinations do not have harmful effects on healthy cells.

Animal Models

To assess efficacy and safety in vivo, e.g., by studying pain reduction or neuroprotective effects (optional).

These biological data not only serve to validate the predictions of our AI model but also to generate additional training data. They enable us to align the model's theoretical predictions with real biological outcomes, continuously improving the model's accuracy and reliability.

Integration with AI-MDIP

The data generated from the MDIP Lab Grow are key to the performance of our AI-MDIP model. By integrating chemical profiles, interaction data, and biological assay results, we create a comprehensive and high-quality dataset. This dataset enables the model to predict complex molecular interactions with high precision. Our goal is to integrate at least 250,000 molecular interaction examples, ideally 5 million, of which 50,000 are cannabis-specific. The continuous generation of new data from each cultivation cycle ensures that our model is always supplied with the most current and relevant information.

Scalability and Potential

The MDIP Lab Grow is designed to enable continuous and scalable data production. With each cultivation cycle, we generate thousands of data points that flow into the training database of our AI model. This iterative improvement of the model through new data ensures that it continuously adapts to new insights and further refines its predictions. Additionally, control over the entire cultivation process—from seed selection to analysis of the final products—provides us with complete data sovereignty. This gives us a competitive advantage over other industry players, as we are not reliant on public databases but possess a unique, proprietary data foundation.

Through this unique combination of controlled cultivation, detailed analytics, and biological assays, we not only generate valuable data for our own research but also create a foundation for future discoveries in cannabinoid drug research. Our approach ensures that our AI-MDIP model is trained with the most comprehensive and high-quality data, enabling us to develop groundbreaking therapies and push the boundaries of modern medicine.

6.2 Data Foundation and Volume

The data foundation of AI-MDIP is comprehensive and diverse, designed to enable precise predictions of molecular interactions. It encompasses several critical categories, each covering specific aspects of drug research.

Chemical Structure Data

First, chemical structure data form the basis for modeling. These data are sourced from renowned databases such as PubChem and ChEMBL, which provide detailed information on the atomic composition and bonds of a wide range of molecules. This includes cannabinoids like Tetrahydrocannabinol (THC), Cannabidiol (CBD), Cannabigerol (CBG), Cannabinol (CBN), Cannabichromene (CBC), as well as terpenes like myrcene, limonene, pinene, and linalool. The structure data include atom types, bond lengths, and concentrations, which are crucial for accurately representing the molecules as Graph Neural Network (GNN) components of AI-MDIP. This graph representation allows the model to capture both local and global molecular features, essential for predicting interactions. For example, precise knowledge of bond length and atom type is critical for understanding the reactivity and spatial arrangement of molecules, which in turn influence their interactions.

Pharmacological Data

Second, pharmacological data are central to understanding how these molecules act in the body. Information from DrugBank and SIDER provides insights into known drug interactions, side effects, and mechanisms of action. Additionally, ADME data (Absorption, Distribution, Metabolism, Excretion) are integrated to model how drugs are processed in the body. This is particularly important for predicting the outcomes of multiple drug combinations, as factors like uptake into the bloodstream or breakdown by the liver can significantly affect the efficacy and safety of a combination. For instance, the anti-inflammatory effect of CBD can be enhanced or diminished by its ADME properties, depending on the combination with other molecules.

Clinical and Experimental Data

Third, results from clinical and experimental studies provide empirical evidence for drug interactions. Data from ClinicalTrials.gov and laboratory experiments, such as investigating interactions between THC, CBD, and ibuprofen, offer real-world validation for the model's predictions. Biological assays measuring specific outcomes like inflammatory markers or pain reduction provide quantifiable data that enhance the model's training and accuracy. These data are particularly valuable as they reflect real clinical scenarios and test the model's predictions for practical applicability.

Cannabis-Specific Data

A unique component is the specific cannabis data generated from the MDIP Lab Grow. These proprietary data include chemical profiles of cannabis strains, genetic information, and results from biological tests. By cultivating cannabis under controlled conditions and iteratively validating AI-MDIP predictions with laboratory experiments, the model can be continuously refined to ensure its predictions are both accurate and applicable in practical scenarios. This is especially important for researching rare cannabinoids like CBN or CBC, which may have unique therapeutic properties.

Data Volume Goals

To ensure robust performance, AI-MDIP aims to utilize a substantial data volume. The goal is to integrate at least 250,000 examples of molecular interactions, with an ideal target of 5,000,000 examples. Of these, 50,000 examples should specifically cover cannabis data, including various combinations such as THC+CBD+ibuprofen active ingredients, CBN+linalool, and CBG in nanoparticles. A large and diverse dataset is crucial for training machine learning to generalize effectively and make reliable predictions for new, unseen combinations. Such volume ensures that the model can cover a wide range of scenarios, including rare or complex interactions that may be underrepresented in smaller datasets.

6.3 Results and Potential

AI-MDIP promises a range of novel outcomes in drug research and the development of new active ingredients, particularly in the fields of precision medicine and natural product pharmacology. By leveraging an innovative approach, the model offers precise predictions of molecular interactions, enabling researchers to determine whether combinations are synergistic (mutually enhancing in effect), antagonistic (inhibiting or weakening each other), or toxic (potentially causing harmful side effects) with unprecedented accuracy. This can drastically reduce the development time for new therapies and drugs, potentially from several years to a few months, by identifying promising drug combinations early in the research process. This is especially valuable in this industry, where the costs and time for drug development are often critical. As a result, the market introduction of new therapies can be significantly accelerated.

New Therapeutic Combinations

One of the most exciting prospects is the discovery of new molecular combinations that exhibit improved therapeutic effects. For example, in cannabis research, AI-MDIP can identify specific ratios of cannabinoids and terpenes that produce entourage effects, where the combined effect exceeds the sum of the individual components. Such insights enable the creation of tailored therapies designed to maximize efficacy and minimize side effects, potentially revolutionizing treatment approaches in various medical fields. For instance, the model might reveal that a particular mix of THC, CBD, and myrcene has a stronger pain-relieving effect than any component alone, opening new avenues for pain therapy.

Financial Potential

AI-MDIP offers enormous financial potential through groundbreaking drug discoveries, which are highly sought after in the pharmaceutical industry, a $1.5 trillion market. New drug combinations, such as cannabis-based pain therapies, could generate licensing and sales revenues of $100–500 million per project, particularly in the $26 billion cannabinoid market (CAGR 20%). Research collaborations could bring in $50–80 million annually. The company behind AI-MDIP, with its unique AI, proprietary data, and MDIP Lab Grow, could achieve $750 million to $2 billion in an acquisition, comparable to other AI pioneers. The booming AI market in drug research ($1.5 billion in 2023, $13 billion by 2035) underscores the potential to create new therapies and immense value for the pharmaceutical industry.

6.4 Cloud / HPC & Laboratory Automation

To meet the high computational demands, we use cloud computing and high-performance computing (HPC) with multi-GPU clusters, such as NVIDIA A100 GPUs, optimized for deep learning tasks, in the first development phase. These powerful computing resources allow us to efficiently train large models on extensive datasets. We use distributed training frameworks like PyTorch Distributed to distribute computations across multiple devices, reducing training time from weeks to days, even for 500,000 combinations. In the laboratory, automation plays a crucial role in ensuring consistency and reliability in data collection. The MDIP Lab Grow is equipped with a central control system that monitors and controls growth parameters such as lighting, CO2 supply, irrigation, and nutrient delivery. All data from these systems are logged and can be analyzed to optimize cultivation procedures and correlate growth conditions with the chemical profiles of the harvested cannabis. This integration of automation not only improves efficiency but also the reproducibility of our research, which is essential for scientific rigor.

6.5 Data Governance, Privacy (GDPR) & Security

Given the sensitive nature of the data, particularly with regard to future patient-related information and proprietary datasets, we place great emphasis on data governance, privacy, and security. Our policies are designed to ensure compliance with the European General Data Protection Regulation (GDPR) and other relevant regulations. Key measures include:

- **Strict Access Controls**: Role-based access controls ensure that only authorized personnel can access sensitive data, minimizing the risk of unauthorized access and data breaches.
- **Data Anonymization**: Where possible, personal identifiers are removed from datasets to protect privacy, particularly when handling patient data or data from clinical trials.
- **Encryption**: All data, both at rest and in transit, are protected with standardized encryption protocols to ensure they remain unreadable even in the event of unauthorized access.
- **Secure IT Infrastructure**: Our IT systems are safeguarded by firewalls, intrusion detection systems, and regular security audits to identify and address potential vulnerabilities.
- **Compliance Audits**: Regular audits are conducted to ensure ongoing compliance with GDPR and other regulations, including the review of data processing activities, updating of privacy policies, and training staff in data protection best practices.

By adhering to these principles, we not only protect the privacy of individuals but also ensure the confidentiality of our research data, strengthening the trust of our partners and stakeholders in the pharmaceutical and research community. This commitment to data security is integral to our mission of conducting ethical and responsible research.

7 Business and Revenue Model

Our business model aims to monetize both the research results achieved through our AI and the AI model itself as a platform. We plan to generate revenue through licensing and royalty agreements with major pharmaceutical companies, platform subscriptions, and a data marketplace, while achieving cost savings through sustainable energy solutions to benefit from higher margins. Holders of the PCH token will receive tokenized profit-sharing (through staking), based on the total revenue and resulting profits.

7.1 Sale of Research Results

We will protect the AI-MDIP and the research results it generates through patents and monetize them via exclusive licensing agreements with leading pharmaceutical companies. Our target customers include major corporations such as Johnson & Johnson, Pfizer, AbbVie, Novartis, Eli Lilly, as well as specialized players like Jazz Pharmaceuticals, which focus on cannabinoid therapies. These agreements allow the companies to leverage AI-MDIP's precise predictions of drug interactions, particularly for cannabinoid-based combination therapies, to develop innovative drugs.

Primarily, we will enter into licensing agreements with major pharmaceutical companies. These agreements will be structured with clear upfront payments, milestone payments, and royalties. Based on market standards (e.g., Insilico Medicine's $80 million upfront payment to Exelixis), we aim for upfront payments of $70 to $150 million per contract. Milestone payments will be triggered upon reaching various development milestones, with a total potential of up to $1 billion per project (comparable to Merck KGaA's deal with BenevolentAI/Exscientia). While we will pursue upfront payments, licensing agreements will not be contingent on them.

Another revenue source will be royalties. Upon successful market launch of a product, such as a THC-CBD combination for chronic pain, we aim for royalty rates of 5 to 15% of net sales. Given the revenue of, for example, Epidiolex (2020: over $510 million), a comparable product with a 10% royalty rate could generate $70 million annually. We will actively engage with major pharmaceutical companies to foster collaboration and pursue such partnerships.

7.1.1 Strategy and Revenue Forecast

The process for securing licensing agreements aims to initiate strategic partnerships with leading pharmaceutical companies while conducting independent research to develop innovative drug combinations. These results will also be monetized profitably. We see significant potential to secure multiple licensing agreements by 2027 with a total value of $150 to $300 million, including upfront payments of $50 to $100 million per contract and milestone payments with the potential to reach $300 to $700 million per project. To protect the value of our research, we will file numerous patents for specific drug combinations and prediction models, targeting at least ten patent applications by 2027, in collaboration with experienced patent attorneys from Germany and the United Kingdom. By 2030, we forecast an annual revenue increase of approximately $50 million, reaching total revenues of about $300 million by 2030.

7.2 AI Platform Subscriptions & Decentralized Data Marketplace

We will offer our AI-MDIP as a cloud-based Software-as-a-Service (SaaS) platform for the B2B market. This primarily targets pharmaceutical companies, biotech startups, and academic research institutes, enabling them to simulate drug interactions in near real-time using AI. In parallel, we are developing a data marketplace to monetize proprietary data from the MDIP Practical Lab Grow, such as cannabinoid profiles, growth parameters, and biological test data.

We plan to offer three subscription tiers:

- Basic ($10,000/year for small biotechs, up to 100 predictions/month)
- Professional ($50,000/year for mid-sized companies, 1,000 predictions/month and advanced analytics)
- Enterprise ($100,000/year for pharmaceutical companies, unlimited predictions, real-time validation, and API access)

Core features include GNN- and transformer-based predictions, integration with proprietary lab data (from the Practical Lab), and automated reporting. We plan to launch the platform in Q1 2026 and aim to acquire over 500 subscribers by 2028.

Furthermore, we are establishing a decentralized data marketplace based on our data assets. Our decentralized marketplace, built on a scalable blockchain architecture, offers premium cannabinoid research data including chemical profiles (THC:CBD:CBG ratios), growth conditions (light intensity, nutrient concentrations), and biological test data (e.g., CBG effects), with datasets priced between $1,000-$10,000 each. As a DeSci pioneer, we ensure transparent data provenance, automated licensing through smart contracts, and fair 50% revenue sharing for contributing researchers. By 2027, we aim to facilitate 1,000 annual dataset transactions - fully decentralized, tamper-proof, and interoperable with other scientific blockchain projects to usher in a new era of collaborative research.

7.2.1 Strategy and Revenue Forecast

With 500 subscribers and an average annual fee of $50,000, we expect revenues of $25 million annually from 2028. The data marketplace will generate an additional $5 million through the sale of 1,000 datasets per year, resulting in total revenues of $30 million.

7.3 Token-Bound Cash Flows (Revenue Sharing)

Pharmatech AI directly links the $PCH token economy to the company's real-world success. Starting in 2027, we expect substantial revenues from the monetization of research results, supplemented from 2028 by recurring revenues from platform subscriptions. These real revenue streams form the basis for revenue sharing with the community.

Specifically, **70% of all platform fees (after taxes) will be transferred quarterly in stablecoins to a so-called Revenue Pool**. This pool is exclusively available to qualified token holders who have staked their $PCH with a fixed-term commitment. Distributions are made automatically and transparently, proportional to the relative stake in the pool.

The expected cash flows from 2028 are as follows:

Ø $100 million per year from the monetization of AI-based research results
Ø $20 million per year from AI-MDIP platform subscriptions

As a result, approximately $84 million (70%) will flow annually into the staking-supported revenue-sharing system. This token-bound participation in real-world economic success is a central pillar of the Pharmatech AI vision, creating direct, financially measurable value for active community members.

8 Token Ecosystem

8.1 $PCH – Utility Token & Ecosystem Function

Total Supply

$PCH is capped at a fixed total supply of 1,000,000,000 tokens. Subsequent inflation is contractually excluded; value appreciation arises solely from demand and burn effects.

8.1.1 Primary Utilities

- **IP and Patent Licensing**: Newly discovered molecules or prediction models are auctioned as NFT-like license tokens, with bids exclusively in $PCH. This creates significant, targeted buying demand from pharmaceutical partners.
- **Advanced Staking**: Holders who lock $PCH receive proportional shares of revenue and platform fees (in stablecoins). Longer lock periods and staking durations increase a boost multiplier, enhancing the yield share.
- **Fixed APR Staking**: As a general staking solution, there is an anytime-cancelable pool with a fixed annual yield, funded from the treasury.
- **Governance**: Staked $PCH grants voting rights in Snapshot polls; successful proposals are executed on-chain via multisig.
- **Community Rewards**: A portion of the tokens from the marketing ecosystem is allocated for airdrops to particularly active community members and $PCH-related transactions, fostering an early science-oriented user network.
- **Buy Back & Burn**: A percentage of total revenue flows into a time-weighted buyback routine; purchased tokens are automatically burned, continuously reducing the circulating supply and creating deflationary pressure. The deflationary nature of $PCH provides strong long-term support.

8.1.2 Location Advantage

The Research Center in Mecklenburg-Vorpommern spans 60 hectares, with 120,000 m^2 of indoor space and a 55 MWp photovoltaic system generating approximately 55 GWh of electricity annually.

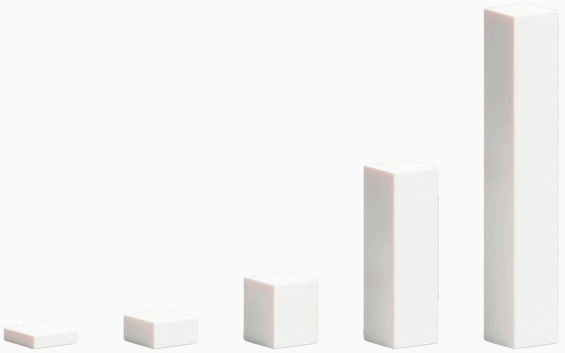
- **Scalability**: The large area allows for near-unlimited expansion of research, production, and computing capacity; each additional lab block increases the demand for platform runs, thereby boosting token revenue.
- **Extremely Low Energy Costs**: On-site power generation reduces GPU operating costs by up to 70%. Higher margins enable larger buyback budgets and more attractive staking yields.
- **Sustainability Profile**: Full reliance on renewable energy meets ESG criteria for modern investors, providing an additional reputational boost that facilitates partnerships.

The interplay of cost-effective operations, increasing usage volume, and aggressive buybacks creates a self-reinforcing value creation flywheel: low operating expenses → high cash flows → larger staking pools & burns → scarcer supply → rising token value → additional incentives to further expand the platform and location.

8.1.3 Token Flow

- Research partners pay for model runs or data downloads in $PCH or stablecoins.
- The smart contract treasury receives the tokens and automatically splits each inflow:
  - 70% goes to the Revenue Pool for Advanced Stakers.
  - 10% flows into the Buy Back Wallet.
  - The remainder covers operations, capital expenditures (CAPEX), and expansion.
- The Buy Back Wallet executes a moving average strategy, sending acquired tokens to a “black hole” address.
- Stakers receive stablecoins from the Revenue Pool in blocks; their yield increases as more platform revenue is generated or tokens are removed from circulation.
- DAO Governance can adjust fee rates, buyback quotas, or pool distributions at any time via voting.

8.1.4 Illustrative Scenario (New Distribution Logic)



Assumptions:

- Annual platform revenue: €120 million
- Average $PCH market price during buybacks: €0.25
- Distribution per incoming payment event:
  - 70% to the Revenue Pool for Advanced Stakers
  - 10% to the Buy Back Wallet
  - 20% to operational costs

Concrete Cash Flows:

- Of the €120 million annual revenue, €84 million (70%) is distributed quarterly as stablecoins to all Advanced Stakers.
- €12 million (10%) goes to the Buy Back Wallet. At a token price of €0.25, approximately 48 million $PCH are repurchased and permanently burned—about 5% of the total supply.
- An additional €24 million (20%) flows into the CAPEX fund, financing additional GPU nodes, lab automation, or expansion of indoor space.

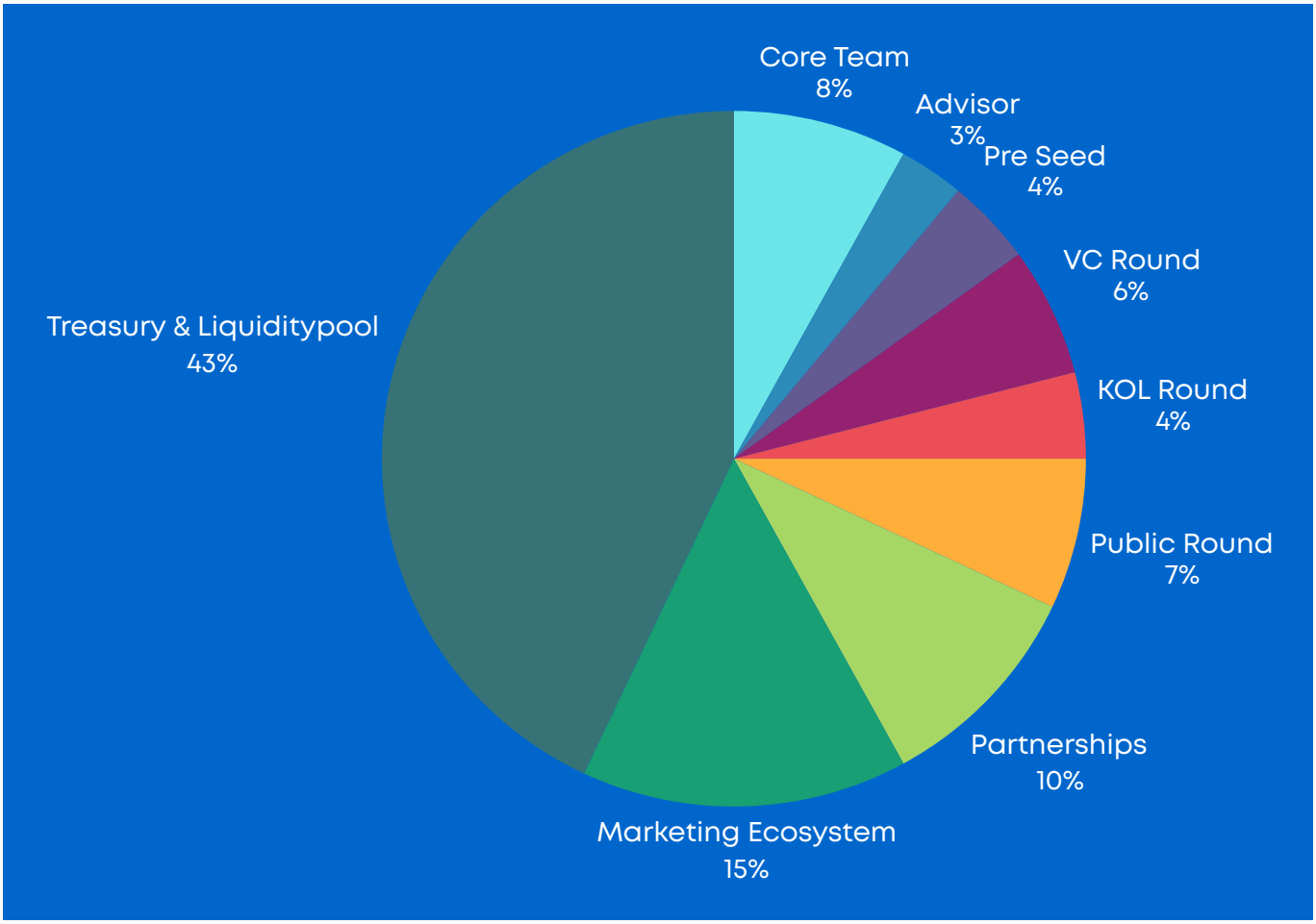
Implications: The heavy weighting of 70% toward the Revenue Pool allows stakers to directly benefit from the platform’s operational success; their real returns increase linearly with each euro of revenue. At the same time, the deflationary effect is maintained, as the buyback volume and burn rate remain steady at 10%. The remaining 10% ensures the scalability of the location, supporting long-term growth that, in turn, enables higher revenues and staking payouts.

This model maximizes near-term cash returns for token holders without neglecting future expansion or the deflationary value mechanism.

70% of revenue is distributed to all stakers.
10% of revenue is allocated for token buybacks.

7.2 Token Distribution & Fundraising Phases

Total Supply: 1,000,000,000 $PCH – permanently fixed, no subsequent inflation.



Fundraising Phases:

Round	Price	Allocation
Pre-Seed	$0.00400	250,000
Seed	$0.00475	498,750
KOL Round	$0.00725	507,500
Public Round	$0.00975	1,316,250

8.3 Token Vesting Plan & Lock-Up Periods

- **Core Team (8%):**
  - 0% at TGE
  - 12-month cliff
  - Linear release over 36 months
  - Daily pro-rata distribution (≈0.5%/day)

- **Advisors (3%):**
  - 0% at TGE
  - 6-month cliff
  - Linear release over 12 months
  - Daily distribution starting from month 4 (≈0.29%/month)

- **Pre-Seed (4%):**
  - 0% at TGE
  - 2-month cliff
  - Linear release over 12 months
  - Daily distribution starting from month 3 (≈0.133%/month)

- **Seed (6%):**
  - 5% at TGE
  - 1-month cliff
  - Remaining 95% linear over 12 months

- **KOL Round (4%):**
  - 10% at TGE
  - No cliff
  - Remaining 90% linear over 12 months

- **Public Round (7%):**
  - 15% at TGE
  - No cliff
  - Remaining 85% linear over 12 months

- **Partnerships/Development (10%):**
  - 3% at TGE
  - Remaining 97% linear over 12 months

- **Marketing Ecosystem (15%):**
  - 5% at TGE
  - Remaining 95% linear over 12 months

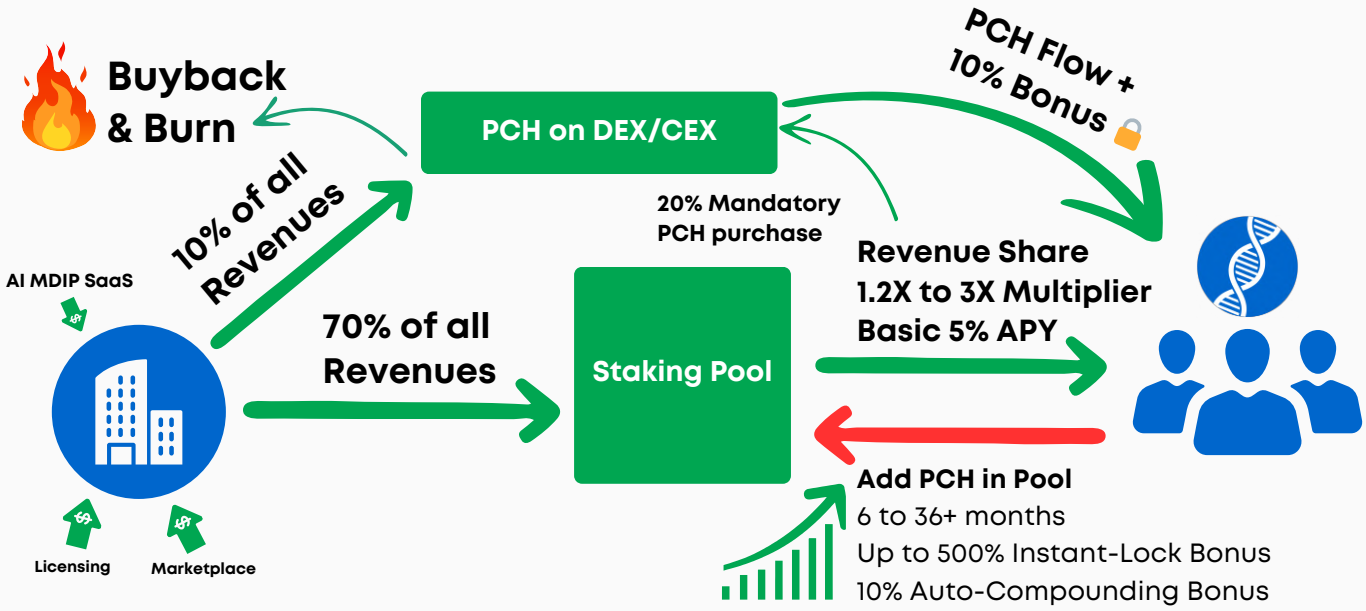
- **Treasury (Treasury incl. Liquidity) (43%):**
  - Initial Treasury Unlock: 40% at TGE
  - Remaining 60% linear over 12 months

8.4 Advanced Staking Model

The Advanced Staking concept of Pharmatech AI directly ties the token economy to the company's real-world success. It rewards commitment, promotes a stable circulating supply, and creates a flexible, security-oriented user experience.

8.4.1 Core Architecture

- Baseline Stake: Any wallet can deposit $PCH without a lock-up period and earn a 5% APR in tokens ("base interest").
- Lock Stake: Alternatively, users can choose a fixed lock-up period (6, 12, 24, or ≥36 months). This unlocks leverage and bonus logic and qualifies for revenue sharing in stablecoins.
- Reward Source: 70% of all platform fees (in stablecoins) flow into a quarterly Revenue Pool (see section 7.1.4). Distributions are made exclusively to qualified Lock Stakers.



8.4.2 Time Phases

- Cool-Off: After depositing, tokens remain inactive for 2–4 weeks. Only then do yields and bonuses begin to accrue.
- Active Staking Phase: Tokens earn APR, leverage rewards, and Revenue Pool shares.
- Cool-Down: Upon unstaking, users must wait 2–4 weeks, during which all rewards are paused.

8.4.3 Dynamic Leverage & Lock Bonus

Leverage (Loyalty Multiplier):

- ≥6 months: ×1.2
- ≥12 months: ×1.5
- ≥24 months: ×2
- ≥36 months: ×3 (cap)

The multiplier applies to the individual share of the Revenue Pool, not the token amount.

Immediate Lock Bonus: Users who choose a fixed lock-up period upfront receive an additional bonus: +25% (6 months), +75% (12 months), +200% (24 months). This bonus stacks with the leverage.
Example: A user locks 100,000 $PCH for 12 months. Effective reward weighting = 100,000 × 1.5 (leverage) × 1.75 (lock bonus) = 262,500 weighting points.

8.4.4 Reward Formula

Quarterly distribution (stablecoins) = *User's weighting points ÷ Total weighting points in pool × Revenue Pool size*

$$\text{Stable-Rewards} = \text{Revenue-Pool} \times \frac{\text{Stake} \times (1 + H + B + R)}{\sum (\text{Stake}_i \times (1 + H_i + B_i + R_i))}$$

H = Leverage Bonus, B = Lock-Bonus, R = Reinvest Bonus (for Auto-Staking)

Additionally, each stake earns a 5% APR token interest (daily linear emission, recorded separately).

8.4.5 Progress Loss & Early Exit Penalty

If unstaked within the first six months, all accumulated bonus rewards are forfeited; the base interest remains intact. This disincentivizes rapid outflows and ensures long-term liquidity.

8.4.6 Compounding & Upgrades

- **Automatic Reinvestment**: Rewards can be opted-in for immediate restaking (new 6-month lock) with a +10% extra bonus.
- **Flexible Upgrades**: An active stake can be upgraded to a longer lock-up period at any time to achieve higher leverage; existing progress is preserved.

8.4.7 Gamification & Status System

Eight purely symbolic levels (Bronze → Platinum) publicly signal the amount of time and capital committed to staking. Community challenges—e.g., a collective goal of 500 million staked tokens—trigger special top-ups to the Revenue Pool.

8.4.8 Insurance Pool

5% of each quarterly distribution can flow into a security fund. For stakers with ≥12-month locks, the fund guarantees a portion of the original USD entry price in extreme market events.

8.4.9 Reinvestment Obligation

10–20% of each stablecoin distribution must be immediately repurchased as $PCH and distributed to the staker. If reinvested with a 6-month lock, an additional 10% bonus is granted.

8.4.10 Anti-Whale Mechanism

A hard reward cap per address prevents excessive influence by large holders and ensures broader distribution of payouts. Specific thresholds are set by the DAO.

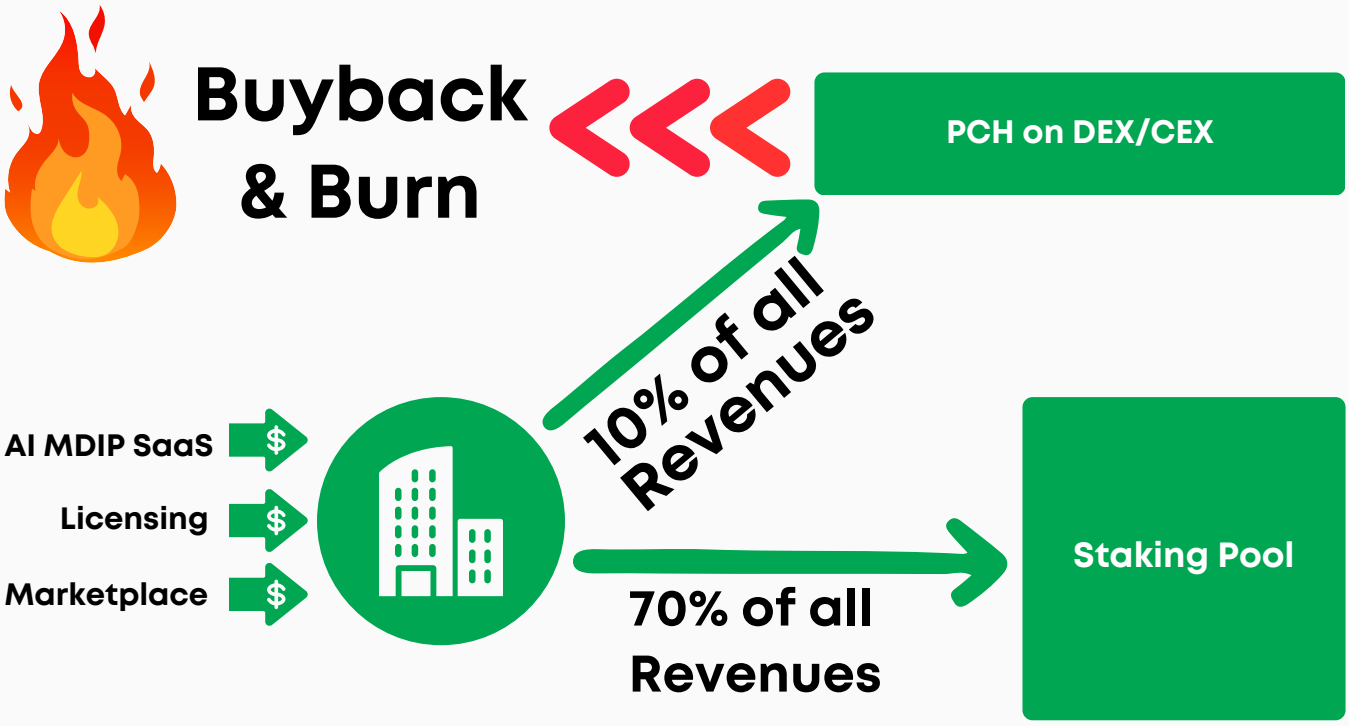
8.5 Buy Back & Burn Strategy

The Buy Back routine is the deflationary core of our token economy. It transforms real revenue into a continuous reduction of the circulating supply, directly aligning the company's success with the token's value.

Upon completion of a payable transaction on the platform, exactly 10% of the net fee in stablecoins is sent to the Buy Back Wallet. This wallet automatically executes a time-weighted Dollar-Cost Averaging (DCA) strategy, purchasing only up to a predefined slippage threshold to minimize market impact. Unspent amounts roll over to the next period.

Purchased $PCH tokens are immediately sent to a null address. Reintroduction to the market is technically impossible, as neither the protocol nor a multisig has access to the burn wallet.

Each purchase triggers an on-chain event containing the timestamp, amount, and average price. The cumulative burn can be tracked in real-time via Dune Analytics. The DAO retains the right to adjust the 10% rate, modify the purchase rhythm, or permit OTC transactions during extreme market illiquidity.



Example Impact: With an annual platform revenue of $50 million, $5 million flows into the Buy Back Wallet. At an average token price of $0.25, approximately 20 million $PCH are burned—about 2% of the total supply. As platform adoption grows, this effect amplifies, while the tokens removed from circulation permanently reduce the distribution base for all staking and governance functions.

The burn program operates in parallel with the 70/10/20 cash flow model: it does not reduce Revenue Pool distributions for stakers or cut the CAPEX budget. Deflation, yield, and reinvestment thus run in a coordinated manner, creating a positive feedback loop: higher revenues → larger staking rewards → growing user base → more platform fees → higher burn volume → scarcer supply.

8.6 Chain Selection & Consensus

Pharmatech AI relies on an EVM-compatible rollup environment to leverage Solidity contracts, existing audit frameworks, and Ethereum liquidity immediately. Three candidates were evaluated based on fees, finality, decentralization level, ecosystem reach, and regulatory signaling as of April 2025:

- **Arbitrum One (Optimistic Rollup):**
  - Highest TVL among L2 networks, stable mainnet history since 2021
  - Embedded "AnyTrust" Data Availability Layer; sequencer decentralization in 2025 roadmap
  - Transaction costs < $0.03 for standard ERC-20 transfers
  - Broad Pharma/DeSci community (MoleculeDAO, VitaDAO) already active—synergy potential for data oracles

- **Base (OP Stack, Coinbase-sponsored):**
  - Extremely low gas fees (< $0.01) and seamless fiat ramps via Coinbase Wallet
  - Still centralized sequencer governance; decentralization in Phase 2 planning
  - Strong U.S. compliance culture—favorable for future FDA-approved data markets

- **Polygon zkEVM:**
  - Zero Knowledge Proof ensures shorter withdrawal finality (≈60 min vs. 7 days for Optimistic)
  - Gas < $0.05, but low TVL; tooling (Open Zeppelin, Hardhat) fully compatible
  - Polygon Labs works closely with EU regulators (MiCA pilot); good match for BaFin oversight

All three networks inherit Ethereum's Proof-of-Stake security; individual blocks are sequenced on L2, bundled at intervals, and anchored on the mainnet. For the launch, this means:

- Transaction finality ≈ 12 seconds (L2 block) + 2 ETH epochs safety buffer ≈ 3 minutes
- 7-day challenge window for withdrawals (Optimistic); short-term mitigation via Liquidity Provider Bridges (Hop, Bungee)
- All Buy Back operations wait for full finality before tokens are burned to eliminate re-org risks

8.7 Treasury Management & Reporting

The Treasury consolidates all platform fees, buyback funds, and CAPEX reserves. Its goal is to secure liquidity for distributions, finance expansion investments, and maintain a transparent, low-risk reserve strategy.

Asset Mix:

- Up to 40% in short-term stablecoins (USDC/DAI) for operating costs and staking payouts
- 30% in liquid core assets (ETH, BTC) as a value reserve
- 20% in on-chain liquidity pools for $PCH (Arbitrum & Base)
- 10% unallocated reserve, which can be directed by DAO vote into further solar expansions, lab robotics, or ESG ETFs

Cash Flow Discipline: No transfer of Treasury funds exceeding the equivalent of $1,000,000 may be executed without a prior DAO majority vote. Urgent operating costs below this threshold are aggregated and disclosed monthly in a consolidated report.

Transparency: All Treasury addresses are recorded in a public Dune Dashboard, where inflows, outflows, and cumulative burn volume can be tracked in real-time. At the end of each quarter, the Finance Round publishes a brief report including:

- Total revenue—broken down by platform fees, license auctions, and grants
- Distribution according to the 70/10/10 model (Revenue Pool, Buy Back, CAPEX)
- Current asset mix versus target allocation
- Runway estimate at constant expenditure levels

9 Partnerships & Funding

Pharmatech AI, as a research-driven company, will establish a robust network of partnerships and funding opportunities to advance research and development in AI-supported drug discovery, particularly for cannabinoid-based therapies. This includes strategic alliances with the pharmaceutical industry, academic collaborations, and the utilization of government and EU funding programs.

9.1 Pharma Alliances & Research Consortia

At Pharmatech AI, we recognize the importance of strategic partnerships in accelerating development, fostering academic knowledge exchange, and commercializing innovative therapies. Therefore, we will forge alliances with leading pharmaceutical companies and specialized players known for their expertise in drug research and cannabinoid therapy research. These partnerships will focus on joint research and development projects, particularly in the areas of pain therapy, natural product research, and nanomedicine, with an emphasis on cannabinoid-based treatments and drug combinations. By sharing resources, market insights, and infrastructure, we can streamline the market introduction of new drugs.

Additionally, Pharmatech AI intends to participate in research consortia that bring together stakeholders from industry, academia, and government. One example is the Innovative Health Initiative (IHI), a public-private partnership program of the European Union that supports collaborative research projects in health and life sciences, including drug discovery. The IHI funds projects that address public health needs and strengthen the competitiveness of the European healthcare industry. By participating in such consortia, we will benefit from shared knowledge, resources, and networks to expand our research capabilities and accelerate the development of groundbreaking therapies.

9.2 Academic Collaborations

Academic collaborations are essential for advancing scientific knowledge and fostering innovation. Therefore, we will actively build partnerships with leading universities and research institutions worldwide. These collaborations will provide access to state-of-the-art research facilities, expertise in pharmacology, artificial intelligence, and data science, as well as a pool of talented researchers and students. We also plan to collaborate with international universities and research institutes renowned for their excellence in relevant fields. Through joint research projects, exchange programs, and co-supervision of doctoral candidates, we will ensure a continuous flow of ideas and innovations. These partnerships will not only enrich our research but also facilitate access to new scientific insights and technologies. We will progressively announce these partnerships through our website and social media channels.

9.3 Government and EU Funding Programs

Government and EU funding programs play a critical role in supporting research and development, particularly in innovative areas such as AI-supported drug discovery. Our company is well-positioned to leverage these programs, including those in Germany, to advance our research goals. In Germany, the Federal Ministry of Education and Research (BMBF) has launched a funding program for the application of artificial intelligence in drug research, titled “Application of Artificial Intelligence (AI) in Drug Research.” Published in early 2025, this program funds interdisciplinary research and development projects that deploy AI methods across the value chain of human drug development, focusing on high medical needs and scientific-technical risks. We will submit applications for this program and other similar initiatives to support our projects.

At the European level, “Horizon Europe” offers numerous funding opportunities under its Health Cluster and other relevant areas. For instance, there are calls for proposals in the fields of Digital Health, AI in Healthcare, and innovative therapies that directly align with our research areas. Additionally, the Marie Skłodowska-Curie Actions provide support for training networks and fellowships, which can strengthen our academic collaborations. One example is the AIDD project (Advanced Machine Learning for Innovative Drug Discovery), funded under Horizon 2020, which promotes AI in drug discovery.

We will also explore funding programs that promote sustainability and green technologies, such as those supporting energy-efficient operations and the use of renewable energy, to further enhance our photovoltaic system and energy-autonomous practices. By actively participating in these funding programs, our company will secure the necessary resources to advance our research and solidify our leadership role in innovative drug discovery.

10. Roadmap

Q3/4 2024

Securement of the Research Center
Concept development and Company Formation
Market research, competitive analysis, and feasibility study
Assembly of the core team
Strategic planning and marketing campaigns

Q1 2025

Establishment of the MDIP Practical Lab Grow
Creation of the whitepaper
Application for cannabis research/cultivation license
Starting Social Media activities

Q3 2025

Commencement of research activities
Big data analysis and data pool creation
Achievement of community milestones
Listing on CoinMarketCap/CoinGecko

Q4 2025

Reaching a minimum number of token holders
Evaluation of cultivation outputs and practical testing
Beta testing of AI-MDIP
Establishment of initial partnerships with pharmaceutical companies
Applications for government and funding programs
Intensification of research activities
Public round on top-tier launchpads
Launch of the $PCH token
Listing on Tier-1 and Tier-2 exchanges
Start of Advanced Staking

Q1 2026

Launch and active use of AI-MDIP
First partnerships with universities
Initial collaborations with research institutes
Continued research activities
Data provision for the data marketplace

Q2 2026

Market launch of AI-MDIP as a B2B SaaS platform
Launch of the data marketplace (Q2 2026)
Further partnerships with universities
Presentation of initial research findings
Continued cultivation in the MDIP Practical Lab Grow
Expansion of token utility

2027–2028

Licensing agreement with the first pharmaceutical company (Q4 2026)
First licensing agreement with upfront payment (Q1 2027)
Five additional licensing agreements with pharma companies (Q2 2027)
Initial product development with a pharmaceutical company (Q3 2027)
500 subscribers to AI-MDIP (by 2028)

11. Competitive Analysis

Pharmatech AI positions itself as an innovator in AI-driven drug discovery, with a unique focus on cannabinoid-based therapies and a sustainable infrastructure. By combining three specialized research areas, an innovative cannabis approach, a highly complex AI model (AI-MDIP), and low-emission, energy-autonomous production, Pharmatech AI distinctly differentiates itself from competitors. The following overview makes it clear that there are no direct competitors offering this specific combination of technology, research focus, and sustainability.

11.1 Competitive Landscape for AI-Driven Drug Discovery

The landscape of AI-driven drug discovery in 2025 includes players such as Insilico Medicine, BenevolentAI, Exscientia, and Isomorphic Labs, which use AI for lead optimization and clinical trials. Technology giants like Google (AlphaFold) and Microsoft also offer AI tools for broader applications in pharmaceutical research.
However, none of these players focus on cannabinoid-based therapies or leverage proprietary cannabis data, as Pharmatech AI does with AI-MDIP. While competitors pursue broad approaches, Pharmatech AI offers a specialized, data-driven solution for pain therapy, natural product research, and nanomedicine, providing a clear competitive advantage.

11.2 Cannabis Research & OEM Players

In the field of cannabinoid research, GW Pharmaceuticals (part of Jazz Pharmaceuticals), Zynerba Pharmaceuticals, and Bedrocan are established players. GW Pharmaceuticals has set standards with Epidiolex and Sativex, while Zynerba develops synthetic CBD gels, and Bedrocan supplies standardized cannabis biomass (Cannabis & Cannabinoid Drug Development). However, these companies neither employ AI nor complex data analytics for drug discovery, relying instead on lengthy traditional methods.

Pharmatech AI stands out with its innovative approach, combining cannabinoid research with AI-MDIP to enable precise predictions of drug interactions. Proprietary data from the “MDIP Practical Lab Grow” and a focus on three specialized research areas position Pharmatech AI as a pioneer without direct competitors in this segment.

11.3 Differentiation Matrix & Market Entry Barriers

Pharmatech AI distinguishes itself through its specialized research focus, innovative cannabis approach, unique AI-MDIP model, and sustainability with associated energy autonomy. We primarily concentrate on three highly relevant areas—pain therapy, natural product research, and nanomedicine—which together address a vast international market. By integrating cannabinoid research with proprietary data on cannabinoids, terpenes, and biological effects from the MDIP Practical Lab Grow, we enable our AI to perform comprehensive analyses, facilitating precise drug combinations and potential combination therapies.

Our AI-MDIP employs Graph Neural Networks and Transformer Encoders, optimized specifically for complex cannabis compounds, offering unmatched prediction accuracy. This unique approach of using AI to investigate drug combinations in three targeted research segments, enhanced by cannabinoid components, makes AI-MDIP a distinctive and highly efficient AI in drug discovery. These results enable novel approaches for international drug development.

Furthermore, a large-scale photovoltaic system at Pharmatech AI's site enables near-emission-free operations with a positive CO2 footprint, while ample space for on-site data centers ensures maximum data security.

Market Entry Barriers:

Market entry barriers for potential competitors in AI-driven drug and cannabinoid research are high, making it extremely difficult for new players to compete with Pharmatech AI. Stringent regulatory requirements for cannabinoid research necessitate complex approvals and compliance, particularly international cannabis cultivation licenses, which are challenging to obtain. Few companies have the capability to conduct targeted breeding and crossbreeding in a specialized cultivation environment like the MDIP Practical Lab Grow to practically implement and validate AI-based research. Access to proprietary cannabis data is another hurdle, as it requires a capital-intensive cultivation and analysis infrastructure. Developing a comparably complex AI model like AI-MDIP demands years of expertise and significant investments in research and computing resources. Additionally, energy-autonomous, low-emission systems, such as Pharmatech AI's large-scale photovoltaic system, are costly and time-intensive, deterring imitators. Pharmatech AI has already successfully overcome these barriers, positioning itself in a robust, nearly uncontested competitive environment through existing licenses, established cultivation infrastructure, a unique AI model, and sustainable energy autonomy.

	Pharmatech AI	Jazz Pharmaceuticals	Isomorphic Laboratories	welshare health
Drug Discovery	✓	✓	✓	✗
AI Model	✓	✗	✓	✓
Revenue Share	✓	✗	✗	✗
Cannabis Research	✓	✓	✗	✗
Research Facility	✓	✓	✓	✗

12 Team & Advisory Board

12.1 Management & Scientific Leadership

Core Team:

- Ercan Hayvali, M.Sc., CEO, Economist, AI Research Manager
- Christian Tonn, Director of Research Cultivation Facilities, Market Access Manager (Pharma)
- Miguel Martinez Bermudez, Lead Cannabis Lab Analyst
- Sebastian Reifegerste, Head of Cannabis Research Alliances and Market Strategy
- Mert Enginer, Data Center Infrastructure Manager
- Philipp Bösch, Agricultural Research Director

Ercan Hayvali, M.Sc.
CEO, Economist & AI Research Manager

As an academically trained entrepreneur with two master's degrees (Business Studies and Economic Behaviour & Governance from the University of Kassel), Ercan Hayvali combines profound economic expertise with extensive leadership experience in IT analysis, AI research, and blockchain solutions. As the founder and CEO of several companies, such as CeBiol Blockchain Solutions GmbH, he drives innovative technologies forward, bridging economic strategies with future-oriented digitalization. His focus areas include artificial intelligence, data-driven decision-making, and data-driven business models.

Christian Tonn
Director of Research | Market Access Manager

As an internationally experienced industry expert with commercial expertise, Christian Tonn combines deep market knowledge with strategic leadership in the regulated pharmaceutical and cannabis sectors. As the founder and CEO of CeBiol GmbH and CeBiol Blockchain Solutions GmbH, he develops forward-looking cultivation concepts and global distribution structures for medical specialty markets. His focus areas include international market development, regulatory compliance, and seed-to-sale supply chain integration.

Miguel Martinez Bermudez
Lead Cannabis Lab Analyst | Pharmaceutical Extraction Expert

As an experienced lab director and CEO of Swiss Cristal Lab AG, Miguel Martinez Bermudez combines in-depth knowledge of pharmaceutical cannabis extraction with years of experience in drug manufacturing. Under his leadership, the lab has become one of Switzerland's leading facilities for high-purity cannabis extracts, focusing on precise analytics, scalable processes, and bridging natural raw materials with pharmaceutical quality. His expertise includes HPLC and CO_2 extraction, terpene profiling, and the development of standardized active ingredient formulations for medical applications.

Sebastian Reifegerste
Head of Cannabis Research Alliances & Market Strategy

As an internationally experienced cannabis expert with a pharmaceutical background, Sebastian Reifegerste combines scientific expertise with years of entrepreneurial practice. Through his numerous globally operating companies and research collaborations with institutions such as the University of Hohenheim, he actively shapes the European cannabis industry. As a strategic leader, he develops innovative cannabis products and drives market expansion. His focus areas include pharmaceutical cannabis applications, product innovation, and international market strategies.

Miguel Martinez Bermudez
Lead Cannabis Lab Analyst | Pharmaceutical Extraction Expert

As an experienced lab director and CEO of Swiss Cristal Lab AG, Miguel Martinez Bermudez combines in-depth knowledge of pharmaceutical cannabis extraction with years of experience in drug manufacturing. Under his leadership, the lab has become one of Switzerland's leading facilities for high-purity cannabis extracts, focusing on precise analytics, scalable processes, and bridging natural raw materials with pharmaceutical quality. His expertise includes HPLC and CO_2 extraction, terpene profiling, and the development of standardized active ingredient formulations for medical applications.

Mert Enginer
Data Center Infrastructure Manager

As a skilled IT infrastructure manager with startup experience, Mert Enginer combines technical expertise with practical solutions for modern data centers. Trained in Istanbul, this specialist has designed and implemented scalable and highly available IT architectures for numerous growth companies. As the responsible leader, he develops future-proof infrastructure solutions that unite performance, security, and efficiency. His focus areas include cloud infrastructures, virtualized systems, and sustainable data center management.

Philipp Bösch
Agricultural Research Director | Cannabis Cultivation Expert

As a seasoned cultivation specialist with over a decade of expertise, Philipp Bösch combines in-depth knowledge of cannabis cultivation with strategic research leadership. This internationally active expert (e.g., for Metamount Schweiz AG and as a consultant in Thailand) has built and optimized production facilities to GACP standards. As the former CEO of Plantevolution Stecklingsfarm, he develops scientifically grounded cultivation methods and scalable production systems. His focus areas include precision-optimized cannabis cultivation, quality management, and international cultivation standards.

12.1 Management & Scientific Leadership

Advisory Board:
Jan Kriegelstein, Chief Executive Officer, Synergy Media

With a background in strategic growth, KOL marketing, and Web3 project development, Jan brings extensive hands-on experience in launching and scaling crypto ventures across international markets. As an active advisor within the DAG advisory board, Jan supports the project with strategic positioning, fundraising guidance, and access to Synergy Media's global network of partners, influencers, and media infrastructure. His role ensures that DAG benefits from high-level advisory while remaining closely connected to the fast-paced dynamics of the Web3 space.

Incubator:
Synergy Media: Digital Media Agency

Pharmatech AI benefits from a strategic incubation framework provided by Synergy Media, the leading Web3 agency in the DACH region. As an incubator, Synergy Media supports Pharmatech AI with a full spectrum of early-stage growth services, ranging from strategic advisory and fundraising support to branding, community building, and KOL onboarding. This partnership ensures that Pharmatech AI's development is backed by real-world experience and an established Web3 infrastructure. By acting as an incubator, Synergy Media not only accelerates Pharmatech AI's market entry but also aligns its long-term strategy with proven industry standards, providing the project with both stability and visibility from day one.

Contact us

Thank you for exploring Pharmatech AI's vision to revolutionize drug research with our AI Multi-Drug Interaction Predictor (AI-MDIP). We are dedicated to accelerating the development of new drug combinations and medications, making the process faster, more precise, and cost-effective through cutting-edge AI technology, proprietary data, and sustainable innovation. For inquiries, partnerships, or further information, please reach out to us:

Email: info@pharmatech-ai.com
Website: www.pharmatech-ai.com
X: x.com/pharmatech_ai
Telegram: t.me/pharmatech_ai
TG Ann: t.me/PharmatechAI_Announcements

Company Headquarter:
Pharmatech AI Ltd.
86-90 Paul Street, 3rd Floor
EC2A 4NE, London
United Kingdom

Research Center:
Libnower Landstr. 1
17390 Murchin
Mecklenburg-Vorpommern
Germany

Join Our Community:
Stay informed about our research milestones, AI-MDIP advancements, and $PCH token ecosystem developments by following our social media channels or subscribing to our newsletter on our website.

Legal Disclaimer
This whitepaper is provided for informational purposes only and does not constitute an offer to sell, a solicitation to buy, or a recommendation of any securities, nor does it constitute investment advice. The information herein is subject to change without notice, and Pharmatech AI Ltd. assumes no liability for inaccuracies or omissions. Potential investors, partners, or stakeholders should conduct independent due diligence and consult professional advisors before making decisions. Participation in the $PCH token ecosystem carries risks, including potential loss of funds, and is subject to applicable laws and regulations. For complete terms and conditions, please visit our website.

Whitepaper Version v2 - Last Update: 7th June 2025