PALLADIN INSTITUTE OF BIOCHEMISTRY, NATIONAL ACADEMY OF SCIENCES OF UKRAINE

# INVESTMENT PROJECT

## MODERNIZATION OF THE CHROMATOGRAPHY CENTER FOR THE PRODUCTION OF INNOVATIVE HEMOSTATIC AND WOUND-HEALING PRODUCTS

Economic Advisory Support:
State Institution “Institute for Economics and Forecasting of the National Academy of Sciences of Ukraine”

*The Palladin Institute of Biochemistry of the NAS of Ukraine holds a long-standing track record of success in developing of original and important medical pharmaceuticals and diagnostics for human and veterinary medicine derived from fundamental research; however, the large-scale transition of these proprietary developments into industrial production has historically remained an untapped opportunity.*
*In our day, developments aimed at the rapid and effective cessation of bleeding in field conditions have acquired particular significance.*
*Leveraging decades of R&D into the hemostasis system, the Institute's scientists have engineered unique hemostatic agents, the deployment of which is a matter of national significance.*
*To support their practical implementation, a large-scale multidisciplinary research initiative has been launched, establishing a robust foundation for the commercialization and market deployment of these innovations.*


***Serhiy KOMISARENKO***
*Director of the Palladin Institute of Biochemistry of the NAS of Ukraine*
*Academician of the National Academy of Sciences of Ukraine*
*Academician of the National Academy of Medical Sciences of Ukraine*
*Professor*


*The commercialization of innovative hemostatic solutions originating from academic research not only delivers critical life-saving impact but also catalyzes new growth vectors for the national economy. Societal value is systematically embedded within investment frameworks and operational decision-making processes, thereby accelerating the translational pathway from laboratory to market deployment.*
*In the current context, the pace of scaling such academic innovations has evolved into a strategic imperative, driven by the exponential trajectory of global scientific and technological advancement. This dynamic increasingly defines a new paradigm of socio-economic development—one in which innovation is effectively converted into the preservation of human capital and the strengthening of economic resilience.*


***Valeriy HEYETS***
*Director of the Institute for Economics and Forecasting of the NAS of Ukraine*
*Academician-Secretary of the Economics Department of the NAS of Ukraine*
*Academician of the NAS of Ukraine*
*Professor*


Scientia potentia est

# NAS of Ukraine Innovations: From Idea to Market

Palladin Institute of Biochemistry,
National Academy of Sciences of Ukraine

# MODERNIZATION OF THE CHROMATOGRAPHY CENTER FOR THE PRODUCTION OF INNOVATIVE HEMOSTATIC AND WOUND-HEALING PRODUCTS

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# Project Summary

## KEY INVESTMENT METRICS:

**50.7**
**UAH mn**
Investment Requirement

**3.8**
**years**
Discounted Payback Period

**10.6 %**
IRR (Internal Rate of Return)

**6.86**
**UAH mn**
NPV (Net Present Value)

**5,4 %**
Global Hemostat Market CAGR (2025–2030)


UN SDG 3 Alignment

*Note: Project performance indicators are presented based on an optimized Value-for-Money scenario.*

The project facilitates the commercialization of the Palladin Institute of Biochemistry's innovative R&D through the "Modernization of the Chromatography Center for the Production of Innovative Hemostatic and Wound-Healing Products."

The project is designed to be implemented through **public investment.**

High commercialization potential has been identified for three innovative hemostatic products:

- **"Carbohemostat"**
  *OEM / ODM (customized)*
- **"Collagen Matrix"**
  *OEM / ODM (customized);*
- **"Fibrin Gel"**

**Project Timeline (2027–2031)**

The project "Modernization of the Chromatography Center for the Production of Innovative Hemostatic and Wound-Healing Products" is scheduled for implementation between 2027 and 2031:

**Investment Phase (1 year, 2027)**: Includes equipment procurement, installation, and certification; facility modernization; completion of R&D; and production launch preparation.

**Operational Phase (4 years, 2028–2031):** Dedicated to the full-scale manufacturing of innovative hemostatic products.

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# Innovative Hemostatic and Wound-Healing Products:

## 1 CARBOHEMOSTAT

The "Carbohemostat" combined hemostatic agent is a high-performance composite consisting of two functional components: a **blood coagulation activator** developed by the Palladin Institute of Biochemistry (NAS of Ukraine) and protected by a patent for invention, and a sorbent dressing based on high-activity medical-grade Activated Carbon Fibers (ACF). This ACF-based material serves as a functional matrix for enzyme activator immobilization while retaining its inherent sorptive, disinfectant, and wound-healing properties. The composite is engineered for the rapid arrest of acute vascular, capillary, and parenchymal hemorrhages.

## 2 COLLAGEN MATRIX


The "Collagen Matrix" is a biomedical material based on Type I bovine collagen, engineered as a three-dimensional scaffold designed to support or replace biological tissues while integrating a **blood coagulation activator**. Developed by the Palladin Institute of Biochemistry, these matrices serve as biodegradable scaffolds for modification with specific effectors, ensuring gradual resorption within the body without toxic effects. The unique value of this development lies in its versatility: the matrix can be functionalized with specific effectors—such as growth factors, peptides, or pharmacological agents—that actively stimulate wound healing and the regeneration of bone or soft tissues.

## 3 FIBRIN GEL

The "Fibrin Gel" is a wound-healing agent, the production method of which was developed by the Palladin Institute of Biochemistry and is protected by a patent for invention. This autologous fibrin gel utilizes a proprietary **blood coagulation activator** instead of thrombin, effectively eliminating the risk of antithrombin autoantibodies. The gel mimics natural blood clotting and tissue regeneration processes, forming a stable scaffold that accelerates healing and reduces infection risks. It is fully biocompatible and undergoes gradual resorption within the body.

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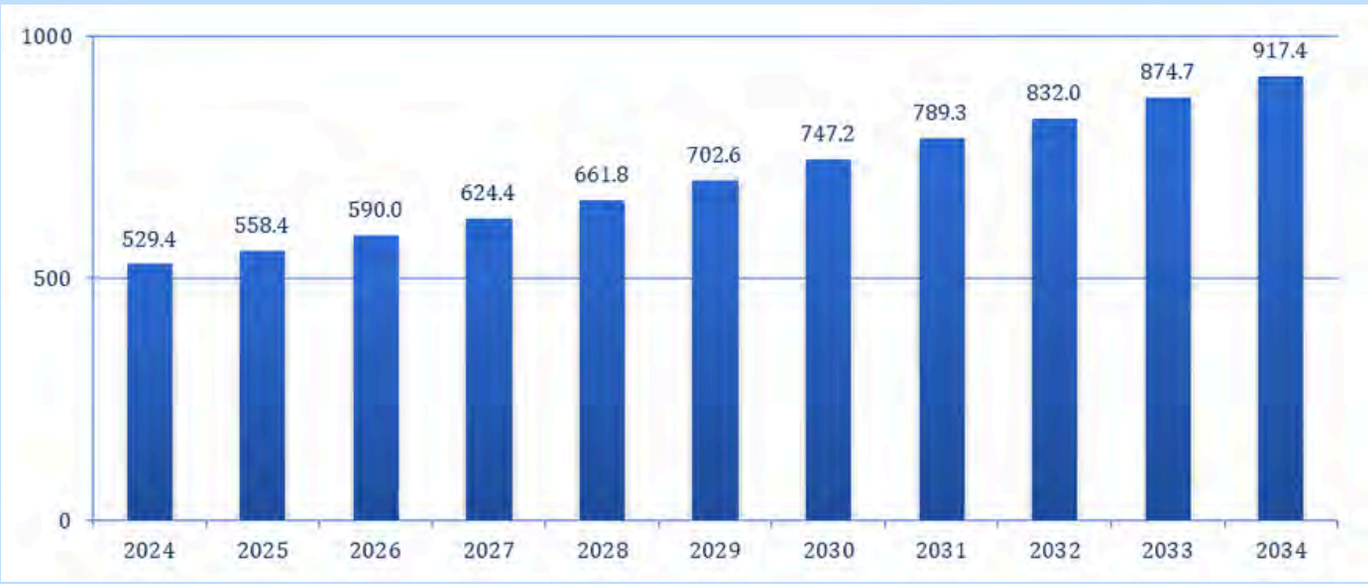
# GLOBAL HEMOSTATIC AGENTS MARKET TRENDS

The global hemostatic agents market exhibits steady growth dynamics with a projected **Compound Annual Growth Rate (CAGR) of 5.4%**.
This trajectory is driven by a structural increase in demand for advanced bleeding control solutions across surgery, traumatology, and emergency medicine.
**Strategic market expansion** is further propelled by demographic shifts - notably an aging global population and the rising complexity of surgical interventions - alongside the rapid adoption of innovative biomaterials and biotechnological hemostatic agents.
Furthermore, the escalation of global military conflicts has intensified the demand for high-performance, rapid-acting hemorrhage control solutions within the defense and field medicine sectors.

## Global Hemostatic Market Growth Forecast to 2034,
USD Billion




The global hemostatic agents market is projected to expand from **USD 529.4 billion in 2024** to **USD 917.37 billion by 2034**, reflecting rapid market scaling and the formation of substantial market capacity.
This trajectory significantly enhances the sector's investment attractiveness and establishes a **highly favorable environment for long-term strategic investment.**

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# ESTIMATED ANNUAL DOMESTIC MARKET REQUIREMENTS IN UKRAINE

| | |
|---|---|
| **CARBOHEMOSTAT** | 3.2 million units |
| **COLLAGEN MATRIX** | 2.3 million units |
| **FIBRIN GEL** | 420,000 PFS |

The annual domestic market demand for hemostatic agents was assessed across five strategic verticals, covering **main consumer segments** and ensuring sales diversification

- **Mass Strategic Sector**
  **Segments: Military and civilian healthcare facilities**
- **High-Tech Surgery**
  **Segments: Specialized surgical and burn centers**
- **Outpatient Dentistry**
  **Segments: Public and private dental clinics**
- **Emergency & Urgent Care**
  **Segments: Emergency medical services (EMS) units and trauma centers**
- **Specialized Therapy**
  **Segments: Hemophilia treatment programs in Ukraine**

**STRATEGIC INSIGHT**

The market landscape is defined by a dual-engine growth model, combining **volume-driven** demand across military, civilian, and emergency segments with **margin-driven** demand in specialized surgery, dentistry, and hematology. This hybrid structure enables effective risk diversification and supports sustainable capital appreciation, ensuring investment resilience and long-term value creation irrespective of macroeconomic volatility.

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# ROADMAP


**The 2025–2031 project roadmap outlines a phased transition from R&D to full-scale international market expansion. This strategic trajectory encompasses a foundational preparatory phase, the commissioning of production capacities, and the systematic penetration of both domestic and global markets.**

## Preparatory and Regulatory Initiation Phase (2025)

The implementation of this phase encompasses the finalization of the Feasibility Study, the compilation of a comprehensive regulatory compliance dossier, the execution of pre-clinical trials, and the delivery of foundational R&D workstreams.

## Clinical Validation and Regulatory Certification (2026)

This phase is centered on clinical performance validation and navigating the certification framework mandated by national regulatory authorities.

## Capital Investment: Infrastructure Modernization and Pilot Validation (2027)

This phase encompasses strategic procurement of production machinery, infrastructure retrofitting, and the certification of manufacturing assets, culminating in the operational launch of the pilot production line

## Industrial Launch and Scaling (2028)

Focuses on reaching target production volumes and transitioning to the scaling of manufacturing capacities.

## Market Expansion and Commercial Scale-up (2029–2031)

This phase follows a dual-track strategy: establishing presence in the domestic Ukrainian market with certified products, while simultaneously aligning manufacturing standards with US and EU requirements to secure international regulatory approvals

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# CAPEX STRUCTURE

**The implementation of the investment project for the production of hemostatic agents necessitates a strictly defined capital expenditure framework. Total CAPEX amounts to UAH 50,770 thousand, with a strategic focus on facility modernization and reconstruction to ensure certified production capabilities and full alignment with national and international standards.**

## CAPEX COMOSINION:

### MODERNIZATION AND RECONSTRUCTION OF THE CHROMATOGRAPHY CENTER FACILITIES

The primary portion of the investment will be allocated to the renovation and modernization of a **200 sq.m. facility** (located within the **Palladin Institute of Biochemistry of the NAS of Ukraine**) to establish a production environment in full compliance with requisite standards. Manufacturing hemostatic agents in Ukraine necessitates **GMP** certification from the State Service of Ukraine on Medicines and Drugs Control, an MOH license, and **ISO 14644-1** certification for cleanroom environments. To enable global market penetration, the project aligns with **ISO 13485:2016, CE Marking (EU MDR)** for the EU, and **FDA QMSR** for the U.S. market.

### PURCHASE OF EQUIPMENT AND OTHER FIXED ASSETS

The procurement of technological equipment for hemostatic agents production constitutes a significant share of the total capital outlay

### REGULATORY COMPLIANCE AND CERTIFICATION

Capital expenditures encompass the complete pre-operational cycle — from regulatory certification to personnel training and IT integration — thereby expediting time-to-market across both domestic and international segments

| Capital expenditures (CAPEX) | Amount, UAH '000 |
|---|---|
| Facility renovation and modernization costs | 25000 |
| Procurement of equipment and other fixed assets | 23350 |
| Additional R&D costs | 800 |
| Engineering and technical design | 500 |
| Commissioning and start-up costs | 200 |
| Production certification costs | 600 |
| Pre-operational quality control and staff training | 220 |
| Specialized software procurement | 100 |
| Total capital expenditures (CAPEX) | 50770 |

## Takeaway

The defined **CAPEX** structure ensures comprehensive readiness of both facilities and equipment for the commencement of hemostatic agent production within the **2027 investment horizon**. This allocation establishes a robust foundation for a stable market entry and facilitates future scalability.

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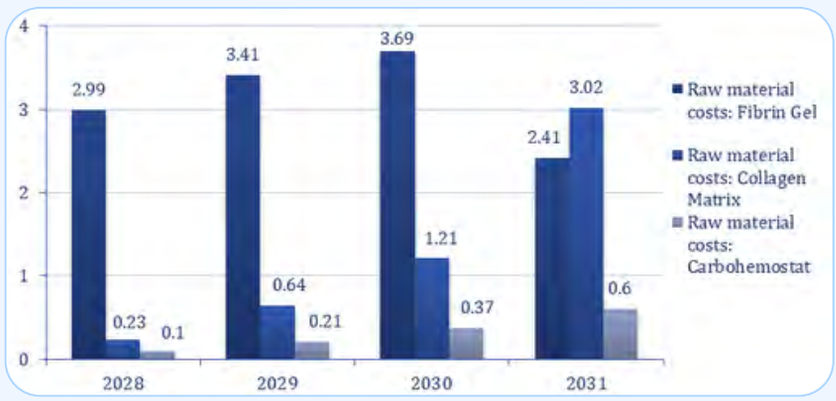
# LOGISTICS AND RESOURCE MANAGEMENT

## INTEGRATED RESOURCE MANAGEMENT AND LOGISTICS

**Supply Diversification:** Mitigating "single-source" risks for materials, specifically collagen and activated carbon fibers, to ensure operational stability.
**Regulatory Verification:** Rigorous supplier vetting based on ISO 13485 and GMP standards to maintain high-quality compliance.
**Strategic Safety Stock:** Establishing a resilient inventory reserve of materials to guarantee an uninterrupted manufacturing cycle.
**Logistics Optimization:** Implementing multimodal logistics strategies to offset potential disruptions at key transportation hubs.

**PROJECTED COSTS**
**for the procurement and delivery of raw materials (venom of *Echis multisquamatus*) for the production of the blood coagulation activator, which is part of the hemostatic biomaterials.**




*All figures in UAH million*

The project's operating model involves the procurement of raw materials — specifically ***Echis multisquamatus*** venom—from the supplier LLC "VIPERA LEBETINA" (Uzbekistan).

To ensure project resilience, several material procurement scenarios have been developed **(for collagen and activated carbon fibers).** For each scenario, a cost analysis of material procurement from various suppliers **(USA, EU, China)** was conducted, accounting for all associated logistics expenditures.

## PROCUREMENT PLANNING SCENARIOS

Based on a comprehensive comparative analysis of procurement costs and supply chain dynamics, three primary material sourcing scenarios have been established.

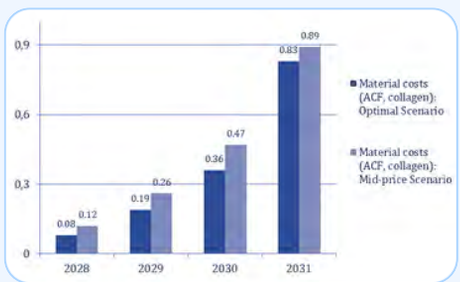
**Scenario-Based Procurement Framework:**

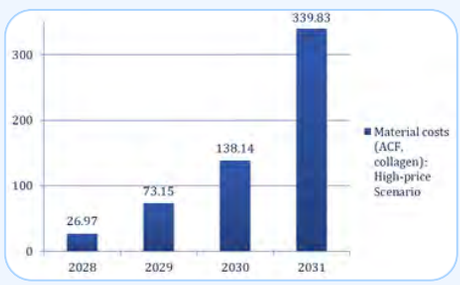
**Optimal scenario** Focuses on sourcing materials from suppliers that offer the most effective balance between cost efficiency and product quality.

**High-price scenario** Assumes material procurement at maximum market prices. This scenario was utilized to evaluate the project's cost ceiling and economic viability, serving as a critical benchmark for the **"Go/No-Go"** decision-making process.

**Mid-price scenario** Based on the procurement of materials at average market rates, reflecting the standard prevailing economic environment.

### PROJECTED SOURCING & SUPPLY CHAIN COSTS




*All figures in UAH million*

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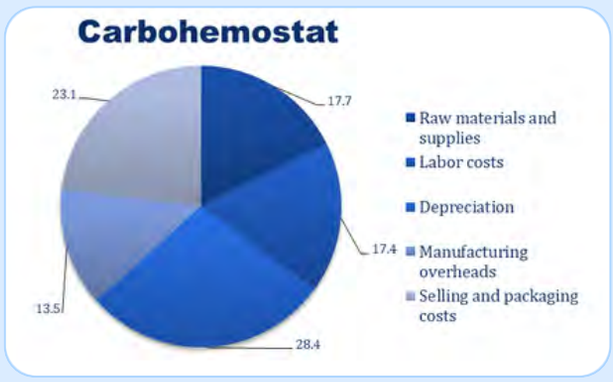
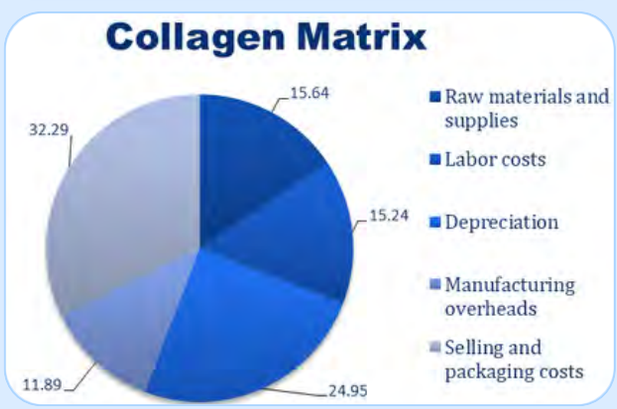
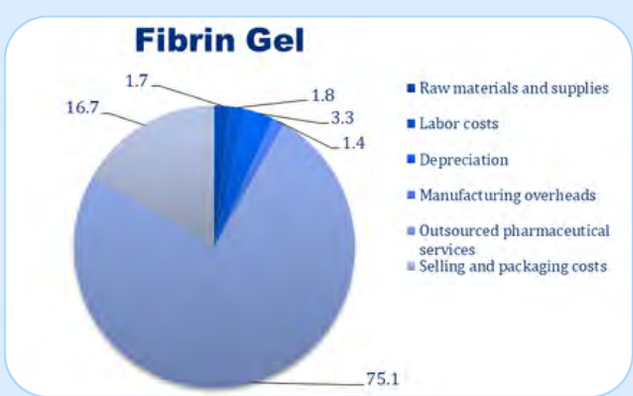
# COST STRUCTURE: UNIT ECONOMICS AND OPEX

**The total cost structure illustrated in the diagrams highlights the relative weight of key cost components and identifies the main drivers of product pricing.**

- The production of **Fibrin Gel** by the Palladin Institute of Biochemistry of the NAS of Ukraine is characterized by **low manufacturing costs**, with minimal expenditure on raw materials and direct labor. The increase in the fully burdened unit cost (UAH 534.18) is primarily driven by the outsourcing of critical aseptic filling and packaging stages.
- The **Collagen Matrix** exhibits a well-balanced cost structure and the **lowest total cost** (UAH 252.78) across the project's product portfolio.
- The **Carbohemostat** exhibits the highest fully burdened unit cost (UAH 616.78), primarily driven by significant depreciation and labor expenditures. As production scales, these factors will enable a substantial reduction in unit cost through the effect of operating leverage.
- Scenario analysis results indicate high **sensitivity** of **Carbohemostat** and **Collagen Matrix** unit costs and pricing to the procurement costs of collagen and activated carbon fibers. Scenarios 1 and 3 result in economically viable cost levels and enable the formation of competitive product pricing.
  In contrast, Scenario 2 demonstrates a critical increase in material costs, leading to a substantial escalation of unit costs and prices for both products, significantly constraining their commercialization potential.

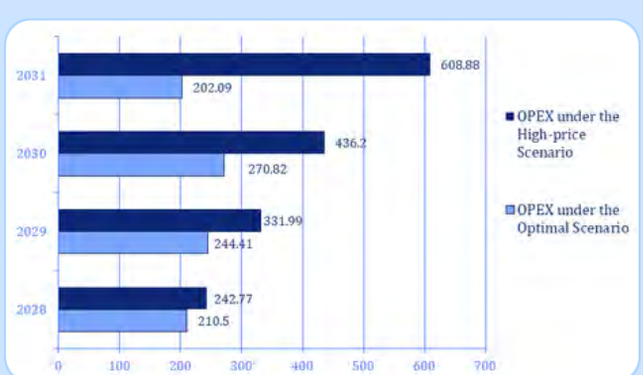



*Figures in %; cost structure based on the optimal scenario.*

## PROJECTED OPEX (2028–2031)




*All figures in UAH million*

The analysis of the **cost structure confirms** the differentiation of the project's operating models: **Fibrin Gel** production relies on external service outsourcing, while the production of the **Collagen Matrix** and **Carbohemostat** is sensitive to the price levels of key raw materials (collagen and activated carbon fibers).

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# PRICING SCENARIO AND SENSITIVITY ANALYSIS

| | FIBRIN GEL | COLLAGEN MATRIX | CARBOHEMOSTAT |
|---|---|---|---|
| Optimal scenario | 534.2 | 252.6 | 616.7 |
| High-price scenario | | 3,899.91 | 1,891.16 |
| Mid-price scenario | | 249.8 | 689.26 |

*All figures in UAH million*

The **Optimal Scenario** has been identified as the most balanced growth vector for the project.
This scenario enables the achievement of substantial sales volumes and revenue generation upon market entry.

**Competitive Advantage:** Pricing under the Optimal Scenario facilitates participation in government and defense procurement (public tenders).

**Market Penetration:** Under the Optimal Scenario, these innovative hemostatic agents will be accessible to a broad consumer base, ensuring rapid market share acquisition.

Pricing under the **High-price Scenario** is driven by the use of high-grade raw materials (collagen and activated carbon fiber) sourced from the USA and EU. While this ensures compliance with the highest quality standards, it significantly constrains long-term commercialization potential.

**Market Entry Barriers:** Pricing under this scenario (Collagen Matrix — UAH 3,899.91; Carbohemostat — UAH 1,891.16) creates substantial barriers to market entry.

**Competitive Positioning:** Compared to leading global brands, this price point limits opportunities for price-based competition and increases the complexity of market penetration and promotion.

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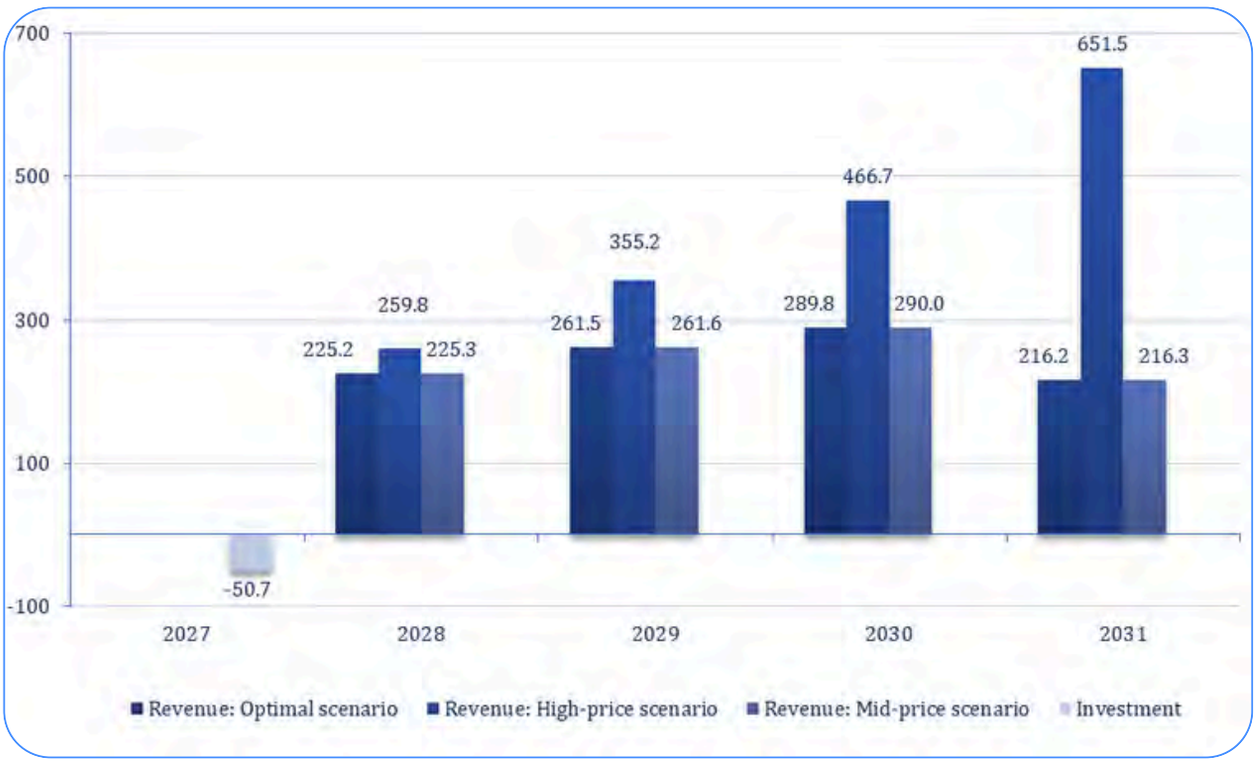
# PROJECT REVENUE




*All figures in UAH million unless otherwise stated*

Projected revenue dynamics indicate variability in cash inflows depending on the selected development scenario. With an initial **CAPEX of UAH 50.7 million** in 2027, the project demonstrates the capacity to generate a stable revenue stream starting from the first year of operations (2028).

Under the **Optimal Scenario,** revenues commence in 2028 and show consistent growth over the first three years of the public investment project: from UAH 225.24 million in 2028 to UAH 261.51 million in 2029 and UAH 289.77 million in 2030. This trajectory aligns with the operational launch phase, characterized by aggressive market entry and increasing sales volumes. In 2031, revenue adjusts to UAH 216.24 million, reflecting a period of demand stabilization.

The **Mid-price Scenario** exhibits revenue dynamics closely aligned with the Optimal Scenario. This correlation suggests that transitioning from the Optimal Scenario to the Mid-price Scenario does not fundamentally alter the project's financial trajectory, identifying both scenarios as financially sustainable frameworks.

The **High-price Scenario** demonstrates the most contrasting dynamics, with revenue growing at a significantly faster pace than the other two scenarios. Notably, the expenditure growth rate under this scenario remains consistent with the baseline trends, potentially enhancing overall profitability.

**The comparative analysis indicates that the Optimal Scenario and the Mid-price Scenario ensure a more predictable and stable revenue trajectory, characterized by moderate growth followed by stabilization, which is typical for the commercialization of research-based innovations and the market introduction of innovative products.**

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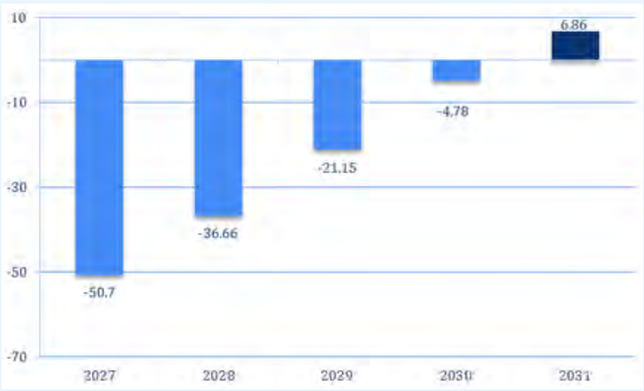
# CUMULATIVE DISCOUNTED CASH FLOW PROJECTIONS

*All figures in UAH million unless otherwise stated*

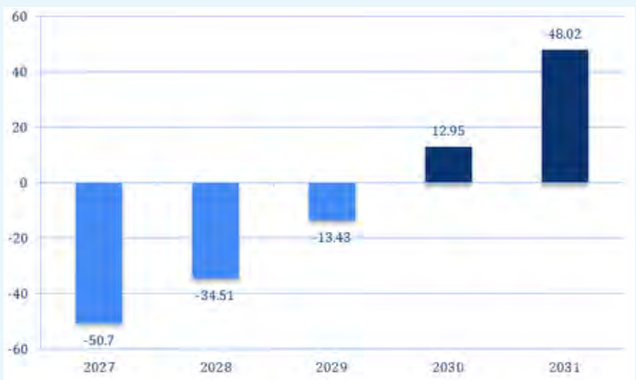
## Optimal scenario

### SDR (5.0%)




### Market Rate (15.0%)


## High-price scenario





**Cash flow analysis across varying discount rates confirms the project's strong financial resilience. Stress testing under both social and commercial discount rates demonstrates a solid margin of safety and full capital recovery.**

### Social Discounting Trajectory (Discount Rate: 5%)

Cash flow analysis for **public investment appraisal** confirms that at a **5% social discount rate**, the project exhibits **strong value accumulation dynamics**.

Under the Optimal Scenario, the project reaches its breakeven point by 2031, achieving a cumulative cash flow of UAH 6.8 million.

The High-price Scenario demonstrates accelerated financial recovery, entering positive territory as early as 2030 and generating a substantial cumulative cash flow of UAH 12.9 million

### Market-Adjusted Trajectory (Discount Rate: 15%)

When applying a **15% market-adjusted discount rate**, a **shift in the breakeven horizon** is observed, reflecting the higher cost of capital for private financing.

Under the Optimal Scenario, the project reaches its breakeven point in 2032, slightly beyond the initial 5-year planning horizon. Despite this extension, the project demonstrates significant long-term resilience, generating a cumulative value of UAH 34.58 million by 2036—a robust performance metric for high-R&D innovative ventures.

Notably, under the High-price Scenario, the breakeven point remains resilient at 2030, highlighting the scenario's superior ability to absorb capital costs and maintain rapid payback dynamics

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# PROJECT FINANCIAL PERFORMANCE

| | Optimal scenario | High-price scenario |
|---|---|---|
| | **Investment Efficiency Assessment – Public Investment Model (5% Discount Rate), 2027–2031** | |
| **NPV** (Net Present Value) | **6.9** UAH mln. | **48.02** UAH mln. |
| **IRR** (Internal Rate of Return) | **10.6 %** | **34.8%** |
| **Discounted Payback Period** | **3.8** years | **2.6** years |
| | **Investment Efficiency Assessment – Private Financing (15% Discount Rate), 2027–2036** | |
| **NPV** (Net Present Value) | **34.6** UAH mln | **224.2** UAH mln |
| **IRR** (Internal Rate of Return) | **14.6%** | **38.03%** |
| **Discounted Payback Period** | **5.6** years | **3.5** years |

A comparative assessment of the project's investment efficiency — benchmarked at a 15% market-adjusted rate and a 5% social discount rate — **highlights the significant sensitivity of project performance to the cost of capital**.

At a **5% SDR**, while absolute NPV values are nominally lower than under the market-based approach, all scenarios maintain a positive NPV. Under the Optimal Scenario, the Internal Rate of Return (IRR) substantially exceeds the social discount rate, establishing a significant margin of financial resilience. In contrast, at a 15% discount rate, these baseline scenarios remain near the threshold of acceptability.

**Benchmarking against international standards** for biomedical and pharmaceutical R&D commercialization confirms the project's high potential. The IRR for the Optimal Scenario (10.66%) at a 5% discount rate outperforms the industry average for medical technology and pharma *(5.9%, Deloitte 2024)*.

The High-price Scenario exhibits the highest investment appeal, with an IRR of 34.8% (at 5% SDR) and 38.3% (at 15% DR). These figures exceed typical venture capital requirements, positioning the project as an attractive target for both private and venture equity. However, it should be noted that the Premium Scenario involves trade-offs regarding price competitiveness in the broader market

**The project is highly efficient under the public investment model, while providing a solid investment case for private partners, with performance metrics closely linked to market dynamics and operational scalability**

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# FISCAL IMPACT & BUDGETARY EFFICIENCY

The investment project under the public investment framework will enhance budget efficiency by generating additional tax revenues during both the investment and operational phases.

| | 2027 | 2028 | 2029 | 2030 | 2031 |
|---|---|---|---|---|---|
| **VAT, including:** | | | | | |
| VAT on capital expenditures | 8.46 | – | – | – | – |
| VAT Optimal Scenario | – | 14.74 | 17.11 | 18.96 | 14.15 |
| VAT High-price Scenario | – | 16.99 | 23.24 | 30.53 | 42.62 |
| VAT Mid-price Scenario | – | 14.74 | 17.12 | 18.97 | 14.15 |
| Personal income tax | – | 0.45 | 0.60 | 0.77 | 0.93 |
| Unified social contribution | – | 0.92 | 1.23 | 1.56 | 1.88 |
| Military levy | – | 0.13 | 0.17 | 0.21 | 0.26 |

*All figures in UAH million*

# JOB CREATION IMPACT

**The project "Modernization of the Chromatography Center for the Production of Innovative Hemostatic and Wound-Healing Products."**
**Palladin Institute of Biochemistry, NAS of Ukraine**

**50.7**
UAH mln
**(1.16 USD million)**
Public Investment

Generates

**21**
High-Value Jobs

**Benchmark: U.S. NIH Public Funding in Research Grants (FY2025)**

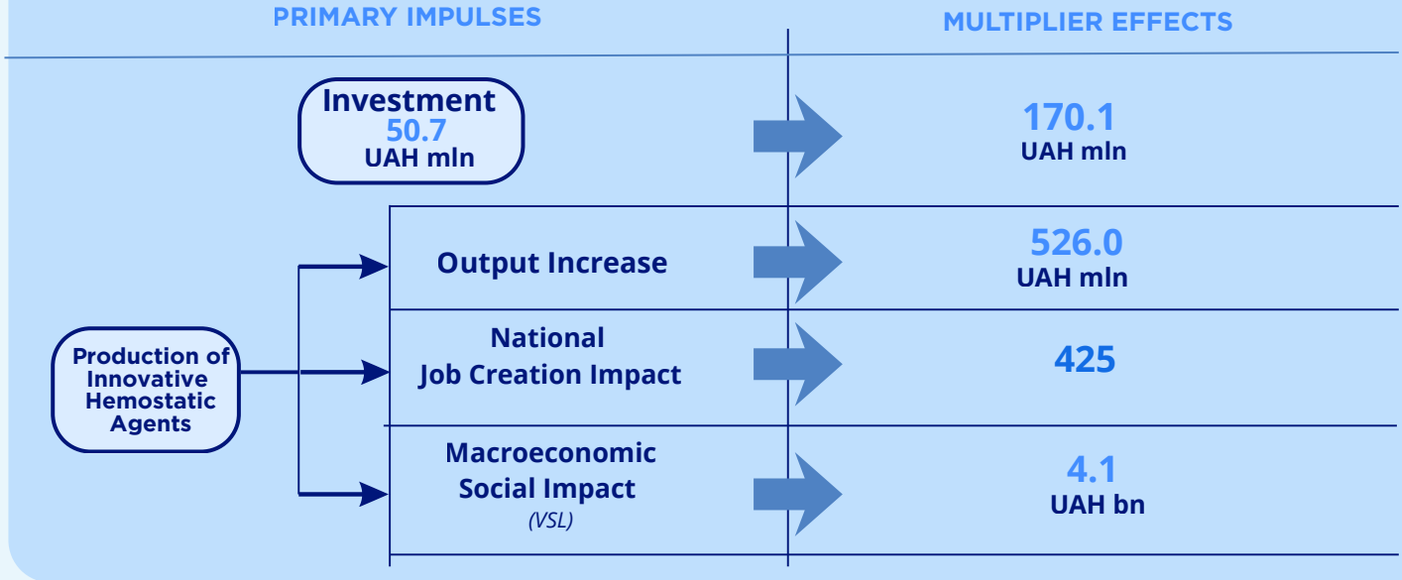
**1**
**USD million**

Generates

**10**
High-Value Jobs

*United for Medical Research. (2026). NIH's Role in Sustaining the U.S. Economy: FY2025 Annual Economic Report*

# PROJECT-DRIVEN MULTIPLIER EFFECTS FOR THE NATIONAL ECONOMY

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# COMMERCIALIZATION STRATEGIES: ADVANCED BIOTECH SOLUTIONS

**for the Palladin Institute of Biochemistry, NAS of Ukraine**

### PUBLIC INVESTMENT ACQUISITION STRATEGY

Given the high social significance of the project, it is advisable to:

submit the public investment project to the “Dream” platform;

submit the project to the “Ukraine Facility” programme;

Integration of the project as a constituent element of a Public Targeted Programme;

securing a public grant for manufacturing entities

### TARGETED GO-TO-MARKET STRATEGY FOR UKRAINE

Fundraising and Capital Mobilisation of private financial resources.

Strategic focus on the domestic Ukrainian market.

Ministry of Health of Ukraine certification and regulatory compliance.

Establishing strategic partnerships with Ukrainian pharmaceutical enterprises for further domestic market scaling

### INTERNATIONAL MARKET ENTRY STRATEGY

Mobilization of foreign direct investment and international grant funding.

International certification for the US and EU markets.

Establishment of a commercial entity in the US and EU for product distribution and market entry.

Establishing a joint venture in Ukraine with foreign capital based on Ukrainian technologies

### BIOMEDICAL CLUSTER INTEGRATION STRATEGY (NAS OF UKRAINE)

Advancing collaboration between NASU institutions, universities, medical organizations, and pharmaceutical companies to ensure a full-cycle development of biotech products — from R&D and clinical trials to certification and commercial manufacturing-

Technology transfer, intellectual property protection, GMP-compliant manufacturing, and clinical research through strategic partnerships with pharmaceutical enterprises-

Promoting the Cluster as a biomedical innovation hub, driving export development, participating in international programmes, and attracting investment-

### TECHNOLOGY TRANSFER STRATEGY

Coordination and legal formalization of intellectual property assets, ensuring their protection in accordance with international standards.

Managing of technology transfer through collaboration between research institutions, medical organizations, and pharmaceutical companies (clinical trials, GMP manufacturing, joint projects, licensing agreements).

Market entry through regulatory certification, investment attraction, public procurement, and expansion into international markets including the EU and US

## PROJECT OUTLOOK AND RISK FACTORS

The implementation of the project in Ukraine is both promising and imperative, as it facilitates the establishment of domestic production for innovative hemostatic and wound-healing agents under martial law.

Project commercialization under a public investment model will facilitate an accelerated lab-to-market pathway and expedite the deployment of innovative hemostatic products in Ukraine, including Carbogemostat, Collagen Matrix, and Fibrin Gel.

The project supports import substitution of hemostatic and wound-healing products currently widely used in Ukrainian healthcare facilities.

Main project risks include ongoing war-related risks, macroeconomic and financial instability, potential supply chain disruptions, and reduced reliability of energy infrastructure.

Commercialization under private financing may result in an extended payback period with a moderate impact on financial flexibility and project performance.

*Economic Advisory Support:*
*State Institution “Institute for Economics and Forecasting of the National Academy of Sciences of Ukraine”*

## Contact Information:


**PALLADIN INSTITUTE OF BIOCHEMISTRY, NAS OF UKRAINE**

**Address:**
9 Leontovycha St.,
Kyiv, 01054, Ukraine

Telephone: +38(044)234-59-74
E-mail: svk@biochem.kiev.ua

**ECONOMIC ADVISORY SUPPORT:**
**STATE INSTITUTION "INSTITUTE FOR ECONOMICS AND FORECASTING OF THE NATIONAL ACADEMY OF SCIENCES OF UKRAINE"**

**Address:**
26 Panasa Myrnoho St.,
Kyiv, 01011, Ukraine

Telephone: +38(044) 280-12-34
E-mail: gvm@ief.org.ua