GNG CELL · INVESTOR RELATIONS

Approved veterinary EV therapies still 0.

GNG CELL takes on the challenge.

Veterinary extracellular vesicle (EV) therapeutics — Cell-based process, not purification

Eight chose workarounds because of structure, not capability. We changed that structure.

5 patents	1 trade secret	Capacity and Purity	Commercialization
3 registered · 2 filed	TFF Purification Yield	Particle / mL -to- RNA μg / mL	CKD clinical trial Phase 3 entry planned

GNG CELL Co., Ltd. (GNG CELL) | September 2026

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Target the root, not individual symptoms

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PART 1

Problem

1

Geriatric syndrome originates from a single root branching into nine paths.

Better to address the root than treat individual symptoms separately

01 Geriatric Syndrome — One Root, Nine Branches

02 Extracellular vesicles — why they are the only option

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Geriatric syndrome — Problem we solve

Nine aging pathways intertwine, manifesting as multiple diseases

Nine Molecular Pathways Driving Canine Aging

① Genomic instability	② Telomere shortening	③ Epigenetic modification
④ Loss of protein homeostasis	⑤ Nutrient-sensing dysregulation	⑥ Mitochondrial dysfunction
⑦ Cellular senescence	⑧ Stem cell depletion	⑨ Changes in intercellular communication

When causes stem from a single root, addressing the root is better than treating individual symptoms separately. This is why we chose a multi-target approach.

MSC-EV Pleiotropic Effect — Simultaneous Action Across Six Axes

Pleiotropic Effect	Mechanism of action	Contributing Factors · Indicators
① Immune modulation	Aged immune cell reprogramming · M1→M2 conversion · Increased Treg	miR-21 · miR-132
② Anti-inflammatory action	NF-κB signaling blockade — dismantling the inflammaging loop	Inflammation ↓
③ Anti-immunosenescence	Delayed immune aging — reduced basis for cancer and age-related diseases	Immunosenescence Marker Improvement
④ Anti-Aging · Reprogramming	Aging pathway inhibition · SASP reduction · Multilineage differentiation capacity restoration	miR-146a · SASP ↓
⑤ Anti-fibrotic · Tissue Regeneration	Fibrosis inhibition · ECM regeneration promotion	miR-140 · miR-let-7c
⑥ Mitochondrial Recovery	Improved mitochondrial function and ATP production	ATP ↑ · ROS ↓

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Extracellular vesicles — why they are the only option

What happens with this inexpensive subcutaneous injection in a single shot?

Perspective	Stem cell therapy	Extracellular Vesicle Therapeutics
Safety	Tumor formation · microvascular occlusion risk	**Cell-free therapy — Tumorigenesis blocked at source**
Supply Method	Culture starts after visit — waiting required	**Off-the-shelf — Immediate Administration**
Storage·Transport	Cold chain essential for cell viability	**Long-term frozen storage · Shelf life 12 months or longer**
Cost	High-priced through small-scale culture	**Cost reduction via large-scale purification**

Mechanism of action after administration — 7 steps

Subcutaneous injection (SC) › Lymph Node Migration › Bloodstream entry › Target-organ homing › receptor binding › Cellular uptake › miRNA release

Pathway	Involved miRNAs	Efficacy
Aged stem cell reprogramming	miR-146a · miR-140 · miR-let-7c	SASP ↓ · Multilineage differentiation capacity restored ↑ · ATP production improved
Aging immune cell reprogramming	miR-21 · miR-132	NF-κB blockade ↓ inflammation · M1→M2 conversion · Treg induction

A mechanism for simultaneously reversing aged stem cells and immune cells with a single dose. Evidence of action on multiple targets, including kidney, heart, diabetes, dementia, joints, and gut Here it is.

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PART 2

Diagnosis

2

Eight sites are on bypass routes.
This was due to structural issues

Two gaps and three workarounds identified in full survey of 9 domestic companies

03 Full survey of 9 domestic companies — two gaps

04 Three Workarounds Chosen by Eight

05 Real Reason for Workaround — Purity–Yield Dilemma

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Two Gaps in Domestic Market

Full survey results: 9 domestic veterinary EV product companies

	Source cells	Content labeling	Development Type
T○○	Human (ADSC)	Protein (μg/mL)	Veterinary pharmaceuticals
V○○	Human (umbilical cord (UC) stem cells)	Medical device for exosome application	Veterinary medical devices
S○○	Human (umbilical cord (UC) stem cells)	Medical-device content labeling can be avoided	Veterinary medical devices
S○○	Human (epithelial cells / iPSC)	Medical-device content labeling can be avoided	Veterinary medical devices
P○○	Human (umbilical cord MSC · NK)	Past : protein (μg/mL) indicated, present : content not indicated	Unconfirmed in publicly available information
E○○	Human (MSC)	Past : protein (μg/mL) indicated, present : content not indicated	Unconfirmed in publicly available information
B○○	Human (BxC iPSC)	Not indicated	Veterinary drug development underway
D○○	Human (ESC-MSC)	NTA Particle Count	Veterinary medical devices
GNG CELL	**Animal (canine adipose tissue MSC)**	**NTA particle count + nucleic acid-based purity**	**Veterinary drug development underway**

All 8 competitors are human-derived · 7 avoid or omit content disclosure
→ GNG CELL alone is animal-derived, with particle-count and nucleic-acid purity metrics

Gap ① — Limits of repeated dosing of xenogeneic (human) EVs

Repeated administration of xenogeneic EVs between individuals leads to recognition as immunologically foreign material. This does not surface after a single dose, but in clinical settings where repeat dosing is essential for geriatric and chronic disease, antibody formation and immune responses prevent efficacy from being sustained. Only allogeneic (canine) EVs secure cross-species compatibility.

Gap ② — Quantitative limitations of protein content labeling

Protein μg/mL alone cannot determine the actual EV dose administered. Culture supernatant contains medium components, by-product proteins, and cell debris alongside EVs, so total protein does not represent EV content. **MISEV2023** prohibits protein-only reporting and recommends the simultaneous reporting of **particle count (NTA) · characteristic markers · purity indicators**. GNG CELL is the only product in Korea that meets this specification.

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Three Workarounds by Eight Competitors

Method brought to market despite two known gaps

Route ①

Medical-device route — 4

V○○ · S○○ · S○○ · D○○

- Approved by Animal and Plant Quarantine Agency as a veterinary medical device
- List EV as device consumables/accessories
- Phase 3 clinical trial · efficacy · content-labeling substantiation procedure avoidance

Limitations — Pharmaceutical efficacy claims prohibited · Prescription advertising prohibited

Route ②

Peptide conversion — 1

T○○

- 「Acellular stem cells = a peptide extract that is neither cells nor EVs
- Veterinary drug marketing authorization obtained (No. 437-1)
- Registered under classification not subject to EV specification requirements

Limitation — Lack of evidence for EV mechanism claims

Route ③

No filing — 3

P○○ · E○○ · B○○

- Stagnation during veterinary drug development
- No clinical trial plan submissions identified
- B○○ focuses on human FDA Ph.1

Limitation — at least 2~3 more years to approval

Common limitations of workarounds — medical devices · peptides: “therapeutic efficacy” cannot be claimed, and such products are the first to come under scrutiny when enforcement against veterinary medicines intensifies, further undermining product credibility.

We have chosen the rigorous path — derived from canine (allogeneic) adipose-tissue MSCs · meeting our internally defined purity-control criteria · pursuing veterinary medicinal product approval, with Phase 3 clinical trial preparation With approval secured, advertising-, prescription-, and insurance-linked revenue channels will open.

※ But why did all eight sites have to take a detour route — the structural reason is explained in the next chapter.

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The Real Reason for the Workaround — EV Developer's Dilemma

Meet purity, lose recovery; preserve recovery, sacrifice purity

EV purity criteria — MISEV2023 provides recommendations only, while developers define their own criteria (particle-to-nucleic acid ratio)

Category	Metrics	Criteria · Meaning	Reference
International guidelines	**MISEV2023**	No figures provided — developer's own criteria required	ISEV
GNG CELL Key Metrics	**particles / µg RNA**	**Nucleic acids first evidence of cell disruption · Below LLOQ**	**Actual measurement**
GNG CELL Support	**particles / µg DNA**	Genome uptake indicator · Below LLOQ	Actual measurement
GNG CELL Co., Ltd. Reference	**particles / µg Protein**	Medium · EV proteins are mixed—interpret with caution	Reference

For purity, additional purification carries costs in three dimensions—the more steps you add, the greater the cost.

① Yield

Lower recovery

Repeated SEC · UF loses EVs on columns and filters. Comparative studies show purity and yield are inversely related [3]. Each added step cuts recovery 20–40%, which can halve clinical batch yield.

② Cost

Cost increase

Columns, buffers, time, validation and labour all add up. One extra step raises per-batch cost nonlinearly and adds process waste, QC samples and records — a main reason cost defences collapse at Phase 3 and commercial scale.

③ Limits

Purity challenges

Extra steps often still miss target purity [4]. EVs, proteins and nucleic acids overlap in size and charge, so one principle cannot fully resolve them — impurities remain even at the cost of yield.
A contaminated upstream (culture · supernatant) cannot be fixed downstream.

Commonality of the two workarounds — The dilemma was addressed "at the purification stage." Because raising purity through purification reduces recovery, they either reduced purification altogether or avoided purity requirements.

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PART 3

Solution

3

If it cannot be removed during purification, reduce its formation from the outset

Patented cell extraction and culture, enabling single-run TFF

06 Order changed — from cells, not purification

07 3 patents and 1 patent without a patent

08 Allogeneic raw material + nucleic acid-based purity control

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We changed the order.

If difficult to remove during purification, minimize impurity formation from the outset

Sources of impurities — much of the impurity in culture supernatant comes from dead or ruptured cells: cytosolic proteins, nucleic acids and membrane fragments overlap in size with EVs, so no purification method separates them fully.

① **Cell extraction · cell banking**
Source cell health determines everything

› ② **Roller bottle culture**
Withstand stress
Less lysate released

› ③ **Centrifugation**
At this point, supernatant condition is key

› ④ **Single-step TFF purification**
If clean, single dose sufficient

› ⑤ **(SEC added)**
Recovery yield and cost collapse upon application

Our strategy — patent ① and ②, end at ④, and eliminate the need for ⑤ altogether. We resolved the dilemma upstream rather than through purification.

Roller bottle culture validation data · Patent 10-2866157 (registered) · PCT/KR2024/009902 (Japan filing)

Measurement items	flask	roller bottle	Meaning
5-day cell proliferation	11-fold	**8-fold**	Controlled proliferation · viability 85% or higher
3-Cycle Perfusion Harvest Stability	100% → 50% → 25%	**100% → 75% → 56%**	Stable harvest after 3 perfusions
Particle count per production unit	Criteria	**2.7x**	Production Efficiency · Economic Viability Secured
NO inhibition (anti-inflammatory)	Approx. 40%	**60% or more**	20% improvement in anti-inflammatory markers
Particle size distribution	100~300nm 95.61%	**96.80%**	90.13% in 100~200nm range
Exosome marker expression	Criteria	**20~50% improvement**	CD105 · CD9 · CD81 — Internal Process Comparison Data

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Three-Asset Entry Barrier

Three were disclosed because disclosure was safe; one was withheld because it was risky.

① **Cell Extraction · Cell Bank**

Multilayer cell-sheet extraction + Wisp-1 boost

2 patents

② **Roller-bottle culture**

Minimal cell lysis under harsh conditions

1 patent + Japan filing

③ **TFF Purification Yield**

Supernatant-specific setup & cleaning

Trade secret

Why Was Purification Not Patented — Technology That Cannot Be Monitored Is Not Protected by Patents

1. TFF equipment is commercially available
2. When a patent is filed, setting values and process conditions Disclosed
3. Even if replicated with the same equipment, as it is inside the factory Cannot be monitored or detected
4. Ultimately disclosed without protection

Then why disclose culturing? — Because competitors lack cell bank development technology.

Conditions	Healthy cell (GNG CELL)	Vulnerable cells
Roller bottle shear stress	**Tolerance — survival rate ≥85%**	Lysis occurs
Serum-free · repeated exposure	**Maintenance**	Accelerated membrane damage · stress vulnerability
After passage 5	**potency·health maintenance**	Rapid dissolution
Required purification steps	**TFF single-use**	TFF + SEC or higher

Without a cell bank, roller bottles become a liability. Our barrier to entry is not the number of patents, but a structure in which patents and trade secrets reinforce one another.

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Product Excellence — Allogeneic + Nucleic Acid-Based Purity

How Our Product Fills Two Gaps

First — Allogeneic MSC-derived

Category	xenogeneic	Allogeneic — GNG CELL
Raw material	Human-derived	**Canine adipose tissue MSC**
Immune recognition	Recognized as a foreign substance	**Immune evasion**
Repeated dosing	Antibody formation · reduced efficacy	**Efficacy Assurance**

Second — Nucleic acid-based purity control criteria

Management Metrics	Empirical evidence	Location
particle-to-RNA	**> 2.62 × 10^{10} /μg**	**Key Metrics**
particle-to-DNA	**> 2.35 × 10^{11} /μg**	**Auxiliary**
particle-to-protein	1.93 × 10^{8} /μg	Note

External test report: Single-run TFF purification · MDimune ROA-23-012

Test Items	Results	Converted Purity
Particle concentration (Zetaview NTA)	**1.1 × 10^{10} particles/mL**	—
Particle size · PDI	154 nm (NTA) · 118 nm · 0.25 (DLS)	—
Total RNA (Qubit 4)	**< 0.420 μg/mL — Below LLOQ**	**> 2.62 × 10^{10} /μg**
Total DNA (Qubit 4)	**< 0.0468 μg/mL — Below LLOQ**	**> 2.35 × 10^{11} /μg**
Total Protein (Qubit 4)	57 μg/mL	1.93 × 10^{8} /μg

Both RNA and DNA are below the quantitation limit. This means little cell lysate entered the supernatant, which is why single TFF purification was sufficient.

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PART 4

Commercialization

4

Making good drugs differs from making drugs that sell

Designed approval pathway and payment structure alongside product development

09 Commercialization Roadmap — 8 Milestones

10 Phase 3 Preparation — External Validation of 8 Items

11 Conditional Approval — Four Evidence Pillars

12 ZERO pet owner payment structure

13 Win-Win Ecosystem — 5 Participants

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Commercialization Roadmap — 8 Milestones

From 2019.12 Cell Bioengineering Lab construction to 2028.01 marketing authorization

Phase 1
Basic research and platform development
2019.12 – 2020.12

Phase 2
Efficacy · Safety · Quality Validation
2021.08 – 2022.04

Phase 3
Clinical Development
2024.06 – 2026.11

Phase 4
Commercialization and market expansion
2026 – 2028.01

#	milestone	Timing	Contents
①	Cell Bioengineering Lab (GMP2) Construction	2019.12	In-house production setup
②	Cell Bank Establishment	2020.06	Consistent raw material cell supply
③	in vitro testing	2020.12	Initial efficacy assessment
④	in-vivo efficacy test	2021.08	Animal Model Efficacy Validation
⑤	Distribution, toxicity, quality tests	2022.04	Establishing safety and quality specifications
⑥	**Phase 1 · 2**	**2024.06**	**Safety and efficacy verification — complete**
⑦	**Phase 3 Approval · Conditional Approval**	**2026.12 ~**	**Revenue begins upon approval**
⑧	**Marketing Authorization · Product Sales**	**2028.01**	**Commercial sales ramp-up**

Building on cell bioengineering research, we have demonstrated efficacy and safety through collaboration with domestic and international specialized institutions and are nearing Phase 3 approval. Upon approval, we will launch sales under conditional approval and target commercial revenue following 2028 marketing authorization.

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Phase 3 Approval Preparation — 8 Items

All 8 items externally validated — not based solely on our data

Item	Preparation Details	Validation Body
1. Facility	KVGMP CMO	Green Cross Veterinary Products Co., Ltd. KVGMP
2. Cell Bank (MCB/WCB)	IACUC approval · establishment of a canine-derived MSC cell bank (cASC MCB/WCB) under KVGMP · sterility · endotoxin · mycoplasma · adventitious virus negative testing	Kyungpook National University College of Veterinary Medicine Green Cross Veterinary Products Co., Ltd.
3. Standard Operating Procedure (SOP)	CMC Standards — ISEV International Society Standards · MFDS and APQA Guidelines · cASC-EVs Manufacturing Process · Quality Specifications · Key Performance Indicators	Tegoscience Co., Ltd. GNG CELL Research Institute
4. Safety, Specifications & Characteristics Analysis	Comprehensive extracellular vesicle test report · CoA · TEM images · Competitor-commissioned cross-check (particle count · size distribution · uniformity · surface markers)	MDimune Co., Ltd. Kyungpook National University College of Veterinary Medicine
5. Mechanism of Action	453 miRNA species analyzed · Proteomics: 1,119 proteins analyzed · Biodistribution study after subcutaneous administration · MOA (anti-inflammatory · immunomodulatory)	Ebiogen Co., Ltd. · Preclina Co., Ltd.
6. Toxicity Testing	Mouse single-dose toxicity study (20/sex) · repeat-dose toxicity study (40/sex)	Dt&CRO Co., Ltd. KIT Safety Evaluation Research Institute
7. Preclinical Studies	Preclinical 1 — Atopic dermatitis efficacy paper published · 1st 36 / 2nd 30 / 3rd 25 animals · Preclinical 2 — Mouse CKD efficacy 30 animals	Dt&CRO Co., Ltd. · Ndic Co., Ltd.
8. Phase 1 · 2 Clinical Trials	Phase 1 — Safety, 18 beagles · Phase 2 — 12 beagles with induced atopic dermatitis, 19 dogs with naturally occurring CKD	Kyungpook National University College of Veterinary Medicine

Green Cross Veterinary Products KVGMP · Kyungpook National University College of Veterinary Medicine · Tegoscience · MDimune · ebiogen · Preclina · Dt&CRO · Ndic · KIT Safety Evaluation Research Institute · Participants

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Conditional Approval — Four Evidence Pillars

Review of Serious Disease Treatment Requirements After Phase 3 Approval

CKD meets conditional-sales criteria on all four dimensions — revenue can begin before marketing authorization, speeding payback.

① **Irreversible progressive disease**

IRIS Stage 3~4
No evidence of stage reversal with conservative management

② **Alternative Veterinary Drug ZERO**

Prescription diets · phosphate binders · IV fluids are limited to symptomatic and conservative treatment

③ **No access to dialysis/transplant**

Dialysis 3,000~25,000 USD
Transplant median survival 24 days

④ **Geriatric comorbidities**

With comorbid heart disease/diabetes
Fluid and antihypertensive therapies mutually constrained

In veterinary pharmaceuticals, requirements for Phase 3 conditional approval are considered met under four evidentiary pillars, including absence of alternative treatments. Actual applicability depends on Animal and Plant Quarantine Agency review.

※ Business implications of conditional sales

Category	Only marketing authorization pending	Upon securing conditional approval
Revenue Start	After 2028.01 marketing authorization	**2026.12 Immediately after Phase 3 approval**
Investment recovery	Non-revenue period until approval	**Shortened payback through early sales**
Market preemption	Potential for competitor entry	**Early securing of Korea's first approved EV therapeutic status**

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ZERO pet owner payment structure

No matter how good the drug, it is meaningless if pet owners cannot buy it

Geriatric syndrome needs repeat dosing — 5 sessions × KRW 150,000 = KRW 750,000, so the payment structure was designed alongside the product.

Means	Savings	Contents
EV Rider Pet Insurance	**– KRW 300,000**	Insurance Rider Coverage — Business Method Secured by Patent 10-2796420
Local Government Vouchers	**– KRW 300,000**	Linkage to Senior Pet Support Program
Pet platform for funeral service company	**Balance offset**	Full-Payment-Linked Mileage

Total treatment cost KRW 750,000 (KRW 150,000 × 5 sessions) → Pet owner out-of-pocket cost approaches ZERO

Prerequisite for this structure — marketing authorization

Approved products

Eligible for insurance rider coverage · Eligible for local government voucher programs · Prescription/advertising channels open

Medical Device/Peptide Workaround

No insurance linkage · Ineligible for voucher programs · Cannot claim therapeutic efficacy

This payment structure is where Chapter 6's cost reduction meets Chapter 4's direct approach. Upstream process optimization enables KRW 150,000 per session, while marketing authorization enables insurance/voucher integration.

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Win-Win — ecosystem: 5 participants

We design "ZERO pet-owner burden," not product supply

9 Ecosystem Components

Components	Role
① KVGMP-produced EV	Supply of approved drugs
② Hub Hospital (Mid-to-Large)	Diagnosis · Prescription · Combination Therapy Procedure
③ Nearby Veterinary Clinics	Accessibility · repeat procedures · aftercare
④ Pet owner	Access and payment via app/subscription service
⑤ Great Combination Center	Combination therapy · RWE · biomarker R&D → EV cloud
⑥ Pet Insurance Rider	**EV Treatment Cost Allocation**
⑦ Funeral service company membership	**Mileage use + discount**
⑧ Local Government Voucher	**Support for elderly, low-income households**
⑨ Pharmaceutical Partnership for Product Rights	Domestic & International Exclusive Sales Rights · Joint Business

3 Partnership Levers — Benefits by Participant

Partnership	Counterparty Benefits
① Pet insurance integration	New-market creation via senior-animal EV rider · ARPU growth
② Funeral Service Company Partnership	Customer retention · expansion through mileage conversion
③ Local Government Voucher	Securing pledge fulfillment via EV voucher

Results by Participant

Participants	Benefits
Pet owner	**Out-of-pocket burden approaches 0 KRW — Treatment access secured**
Veterinary hospital	Procedure + Insurance + Funeral Services Revenue Diversification · Regular Repeat Visits
Pet insurer	New Market: EV Special Coverage for Geriatric Animals
Funeral service company	Customer retention through mileage conversion
Local governments	Securing Means to Fulfill Commitments

Procedure unit price KRW 150,000 · 5 repeat administrations/year — insurance rider + funeral plan mileage + local government vouchers split costs, approaching KRW 0 out-of-pocket

GNG CELL goes beyond being a licensed pharmaceutical supplier, serving as an ecosystem architect that connects insurance · funeral services · local governments to create demand.

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Why Geriatric Syndrome — Target Rationale

Only Target where demand, payment, and policy converge

Point where three structural changes occur simultaneously

1
Accelerating aging

52% of U.S. dog households have senior dogs · over half of Japan's 6.82 m dogs are senior

Demand-based confirmation

2
Payment infrastructure

Korea pet insurance tops KRW 100 bn (+50%) · penetration 2.1% → 3.2% · Japan 21.4%

Securing private payers

3
Access to public funding

2026 local-government support expands · Seoul KRW 500,000/animal · Daejeon premium aid

Securing public payment sources

EV Positioning — Own the “geriatric quality-of-life management” category, not “treatment”

Positioning Axes	Contents
Clinical Superiority	On geriatric comorbidities, multiple multifaceted effects · 0 alternative veterinary drugs · Addressing unmet medical needs
QoL Improvement	Improved QoL in geriatric dogs with comorbidities · Pet owner QoL also improved
Cost effectiveness	KRW 150,000 per session · 5 sessions/year — Using a payment structure to address geriatric syndrome prevention · treatment · improvement · maintenance needs
Translational Research Expansion	Senior-dog data accumulation → linkage to human healthy-aging research and product development

Geriatric syndrome is the only Target with established demand and payment infrastructure, and an unmet medical market with 0 alternative approved medicines.

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Market size — 3 countries, 51.5 million animals

Senior dogs 51.5 million → 10.3–25.75 million exposed to geriatric syndrome

Category	Total animals raised (geriatric proportion)	Senior dog	Geriatric syndrome Exposure: 20%	Geriatric syndrome exposure: 50%
Korea	6 million head (40%)	2.4 million head	480,000 head	1.2 million head
Japan	7 million head (50%)	3.5 million head	700,000 head	1.75 million head
USA	80 million head (57%)	45.6 million head	9.12 million head	22.8 million head
3-Country Total	**93 million head**	**51.5 million head**	**10.3 million head**	**25.75 million head**

Pet insurance penetration by country — payment infrastructure maturity

Korea 3.2%
Exceeded KRW 100 billion · +50% Growth

Japan 21.4%
1.2 trillion won · Mature market

USA 3.9%
Largest Market by Absolute Size

Revenue Realization Roadmap — Domestic Approval › Mature Insurance Market › Sequential Entry into Absolute-Scale Markets

Stage	Timing	Conditions	Expected Revenue Range
1. Korea	2028	Marketing authorization + EV rider launch	**KRW 4–41 billion**
2. Japan	2029	Mature insurance market entry (21.4% enrollment)	**KRW 21.1 ~ 131.5 billion**
3. U.S.	2030	FDA CVM Pathway Expansion	**KRW 83.7 ~ 815.7 billion**

Source: Japan Pet Food Association 2025 · AVMA/APPA · Ministry of Agriculture, Food and Rural Affairs · Korea Insurance Research Institute (KIRI) · Daily Vet · Seoul/Daejeon support programs

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Market-Creating Demand Three-Tier Structure

Existing subscriber riders + EV-driven new enrollment + self-pay·vouchers = Total demand

Layer 1

Existing pet insurance policyholders

[EV rider attached]

Add rider terms to existing contracts

Additional attachment rate 40 ~ 75%

Layer 2

New sign-ups due to EV

[Market Creation · Blue Ocean]

High-cost procedures drive enrollment
New customer inflow to insurers

New inflow + 1 ~ 6%p

Layer 3

Uninsured, out-of-pocket payment

Local Government Voucher Integration

Local-govt · funeral mileage conversion
Absorption of demand outside insurance coverage

Penetration 0.5 ~ 3.0%

Core thesis — An EV rider does not split the existing pet-insurance pie; it gives owners of senior dogs facing high-cost procedures a reason to enroll. Insurers gain new customers and higher ARPU(Average Revenue Per User) , owners carry less out-of-pocket cost, and GNG CELL secures payment infrastructure — net gain for all three.

Self-pay treatment rate calculation logic — triple-gate pass rate, not optimistic assumptions

Logical Steps	Contents
① Willingness-to-pay segment	17% Unlimited Willingness-to-Pay Segment — annual procedure fee of KRW 750,000 is affordable
② Triple-Gate Restriction	**Limited to the share meeting all three: confirmed geriatric syndrome + new drug prescription acceptance + full out-of-pocket payment → Conservative 0.5% · Base 1.5% · Expansion 3%**
③ Price acceptability	KRW 150,000 per session (Gallup-verified) within the “able to pay in interest-free installments” segment (64%) — additional savings when bundled with funeral-service plans and vouchers

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Scenario-based revenue estimate

Assumption: 1 vial KRW 60,000 × 5 times/year = KRW 300,000/animal/year | 3-tier demand total

Scenario definitions — ① Conservative : EV rider attachment 40% + new enrollment rate 1%p + self-funded procedure rate 0.5%
② Base : 60% + 3%p + 1.5% ③ Expansive : 75% + 6%p + 3.0%

Country	Geriatric syndrome exposure		① Conservative scenario	② Base Scenario	③ Expansion scenario	Pet insurance penetration rate
Korea	480,000 head	(20%)	KRW 4 billion	KRW 9.2 billion	KRW 16.4 billion	3.2%
	1.2 million head	(50%)	KRW 10 billion	KRW 23.1 billion	KRW 41 billion	
Japan	700,000 head	(20%)	KRW 21.1 billion	KRW 36.4 billion	KRW 52.6 billion	21.4%
	1.75 million head	(50%)	KRW 52.8 billion	KRW 91 billion	KRW 131.5 billion	
USA	9.12 million head	(20%)	KRW 83.7 billion	KRW 187.1 billion	KRW 326.3 billion	3.9%
	22.8 million head	(50%)	KRW 209.3 billion	KRW 467.9 billion	KRW 815.7 billion	
3-Country Total (20%)	**10.3 million head**		**KRW 108.8 billion**	**KRW 232.8 billion**	**KRW 395.3 billion**	—
Total for 3 countries (50%)	**25.75 million head**		**KRW 272.1 billion**	**KRW 582 billion**	**KRW 988.2 billion**	—

KRW 108.8B ~ 395.3B
3-country total · based on 20% exposure

KRW 272.1 ~ 988.2 billion
3-Country Total · 50% Exposure Basis

KRW 4 ~ 41 billion
Korea 2028 Exclusive

※ These revenue estimates are scenario-based and not firm forecasts. Actual revenue may vary depending on marketing authorization timing, insurance rider product commercialization, scope of local-government program adoption, and competition.

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Company Overview

Established 2018 · Execution-focused biotech company with KVGMP manufacturing system and EV platform

Company Information

Item	Contents
Company Name	GNG CELL Co., Ltd.
Established	April 19, 2018
Industry	Animal/human pharmaceuticals, cosmetics, quasi-drugs R&D
CEO	Lee Sang-su
Employees	R&D 3 · Management 2
Capital	**KRW 1.091 billion**
Guarantee Fund	KRW 1.1 billion (KODIT 1 billion · KIBO 100 million)
Shareholders · VC Investment	**31 shareholders · KRW 1.6 billion**
Headquarters · Research Institute	Uiseong-gun, Gyeongsangbuk-do · Bundang-gu, Seongnam-si

Shareholding Structure

Shareholders	Ownership	Category
CEO	**23.8%**	Management
CTO	**11.9%**	Management
Head of R&D	**7.3%**	Management
VC	13.5%	Financial investor
Daewoong Pet	9.2%	Strategic Investor
Veterinary Hospital Director	7.3%	Industry Partners
Other	27.0%	—
Management Total	**43.0%**	**Operational stability**

Manufacturing Facilities and EV Development Strategy

Category	Contents
Manufacturing Facility	Kyungpook National University College of Veterinary Medicine Lab 103 Cell Bioengineering · Green Cross Veterinary Products Yesan Plant
Development Direction 1	Platform for developing therapeutics for intractable diseases and aging-related Well-aging products [Patent] — ① GNG-MSC Bank ② Large-scale culture process ③ Large-scale purification yield system
Development Direction 2	Development of cytotoxic anticancer drug-loaded extracellular vesicle therapeutics — drug delivery system for solubilizing poorly soluble drugs and enhancing in vivo absorption

Founded 2018 · Paid-in capital KRW 1.091 bn · VC investment KRW 1.6 bn · Management ownership 43% — Execution-driven biotech with a KVGMP manufacturing system and an EV platform

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IP Portfolio — Production · Use · Market · Overseas

4 Registered · 2 Filed — Dual barrier protecting upstream processes and payment structure

Core cost-lowering **production technologies (3 patents)** and payment-barrier-lowering **business method (1 patent)** are protected simultaneously · **Use patents and overseas filings** connect indications to markets.

Protection Structure by Process Stage

① Cell Extraction · Cell Bank

2 patents

- 10-1894486
- 10-3339712

Non-reproducible source, even if disclosed

② Roller bottle large-scale

1 patent + Japan filing

- 10-2866157
- PCT/KR2024/009902

Meaningless without a cell bank

③ Single-step TFF purification

Trade secret

- Process Know-how

Commercial device; external monitoring unavailable

Results — Triple assurance of purity, yield, and cost (1/10 the cost, > 2.62 × 10^{10} /μg)

Business Area Positioning — Four pillars, each secured differently

Manufacturing Technology — 3 reg.

10-1894486 · 10-3339712 · 10-2866157

Purity, yield, and cost secured — Foundational asset lowering upstream costs

Indications — 1 filed

10-2023-0118305

Atopic dermatitis use of canine adipose-derived stem cell EVs — First confirmed indication

Market Access — 1 reg.

10-2796420

Patent insurance-linked payment structure — protect payment barrier itself as business method

Overseas expansion — 1 filed

PCT/KR2024/009902 (Japan)

Japan Entry via Roller Bottle Cultivation — Linking to 7 Million-Animal Market

Note: insurance patent 10-2796420 is not merely an idea, but **a patent-protected business method**.
Upstream-process patents that lower costs **(3 patents)** and a payment-barrier-reducing **insurance business method patent (1 patent)** are protected simultaneously, while the indication **(atopic dermatitis)** and **overseas (Japan)** filings extend this protection.

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Conclusion

The company that changed the order arrives first

① Using patented technology for cell extraction and culture, we produced a clean supernatant

② Thus, TFF was completed in a single run, reducing cost to 1/10 that of cell therapies

③ Lower costs enable insurance/voucher linkage, while approval opens that pathway

2026.12	2028.01	51.5 million head	0 cases
Phase 3 clinical trial approval · conditional sales target	Marketing authorization · Commercial revenue	3-country senior dogs	Approved veterinary EV

Phase 3 approval, December 2026; marketing authorization, January 2028. That position remains vacant.

GNG CELL Co., Ltd. (GNG CELL) · September 2026