KING STEM CELL INTERNAL MANIFESTO
TP53 Respecting Culture Design

HEALTHIER HAPPIER YOU

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- **Purpose**
- **At King Stem Cell, we cultivate cells in environments that preserve their natural genomic protection systems. Central to this is TP53, the gene encoding the p53 protein often called the guardian of the genome. Our responsibility is not to override this system, but to create conditions where TP53 can function normally, without being chronically over triggered or artificially suppressed.**

1. Our Core Principle

- We design culture systems that minimise unnecessary stress,so TP53 can maintain genomic integrity, while avoiding the chronic activation that accelerates senescence and functional decline.
- This principle guides every decision we make from oxygen levels to passage limits to how we handle cells physically.

2. Environmental Fidelity:

- Reduce Upstream Stressors,Physiologic Oxygen, Not Atmospheric.
- We avoid hyperoxic stress that drives ROS accumulation and repeated p53 activation.
- Each cell type receives a defined O_2 range aligned with its native physiology.
- **Stable Culture Conditions.**
- Tight control of pH, temperature, CO_2, and media change timing.
- No oscillations, no surprises, no micro injuries.
- **Metabolic Balance**
- • Media designed to support healthy mitochondrial function and balanced redox signalling.
- • Antioxidant support is physiological, not pharmacologic.

3.Expansion Discipline:

- **Protect the Genome by Respecting Limits**
- **Do Not Over Passage**
- Every cell type has a hard maximum passage number based on senescence risk and genomic integrity data.
- We do not “push” cells past their healthy window for convenience or yield.
- **Controlled Confluence**
- Passaging occurs within a defined confluence window to avoid replication stress, overcrowding, or starvation cycles.
- **Gentle Handling**
- Dissociation, centrifugation, and transfer steps follow low stress SOPs to avoid unnecessary DNA damage signaling.

4. Ethical Growth:

- **We Never Disable TP53 for Performance**
- **We do not use:**

• p53 inhibitors.

• Oncogene like proliferative pushes.

• Reprogramming shortcuts that bypass DNA damage checkpoints.

Any method that works by suppressing TP53 or its downstream pathways is incompatible with King Stem Cell standards.

5. Quality Control:

- **Watch the Behaviors That Reflect TP53 Health.**
- **We Monitor:**
  - Growth curves for predictable, steady proliferation.
  - Morphology for early signs of senescence.
  - Batch specific senescence markers at defined checkpoints.
  - Karyotype genomic integrity for long term validation.
  - If cells show signs of chronic stress or checkpoint activation, the batch is retired no exceptions.

Why King Stem Cell's UC- MSC Platform Sets a New Standard

- **A New Benchmark for Natural, Ethical, High Fidelity Cell Culture.**
- **King Stem Cell's UC- MSC platform is built on a simple but uncompromising principle:** biological fidelity matters.Every decision from medium composition to incubator atmosphere is designed to protect the cell's innate genomic integrity and therapeutic potential.Our protocols follow the guidance of the body's own genomic guardian, TP53/P53, ensuring that every cultured cell remains as close as possible to its natural, physiological state.

- This page explains the scientific foundations behind our approach and why our natural, xeno free, DMSO free,FBS free culture system produces a superior cell compared to conventional market practices.

TP53- Respecting Culture Design

Protecting the Genome, Preserving the Cell.

TP53 often called the guardian of the genome is the cell's central regulator of DNA repair,stress response,and controlled proliferation. Many commercial MSC workflows unintentionally suppress or bypass TP53 pathways through:

- Harsh cryoprotectants.
- Non physiological oxygen levels.
- Animal derived growth accelerants.
- High stress expansion protocols.

King Stem Cell's SOPs are engineered to support, not override, TP53. This ensures:

- Stable genomic integrity
- Lower mutation burden
- More predictable cell behavior
- Higher safety margins for cosmetic and wellness applications
- By aligning culture conditions with TP53 biology, we maintain the cell's natural decision- making and self- protective mechanisms.

100% Natural, Xeno Free, DMSO Free, FBS Free

- **Clean Inputs Create Clean Outputs.**
- **Most MSCs on the market are exposed to fetal bovine serum (FBS), xenogeneic proteins, or DMSO.**
- **These inputs introduce risks such as:**
- Immune reactivity
- Batch variability
- Residual contaminants
- Altered cell phenotype

Our platform eliminates these risks by using:

- Natural, human compatible inhibitors
- Natural, xeno free culture medium
- No DMSO at any stage
- No FBS or animal derivatives

This clean label approach preserves:

- Native receptor expression
- Natural secretome composition
- Consistent batch to batch performance
- Higher safety and comfort for cosmetic and wellness use

Tri Gas Incubation: Mimicking the Human Body

Physiological Oxygen = Physiological Behavior

Standard incubators use atmospheric oxygen (~21%), which is far higher than the natural environment of MSCs (2–8%). High oxygen creates oxidative stress, accelerates senescence, and distorts cell signaling.

Our tri gas incubators maintain:

- Physiological oxygen (hypoxia)
- Precise CO_2 balance
- Stable humidity and pH

This environment:

- Reduces oxidative stress
- Preserves mitochondrial health
- Enhances natural growth factor secretion
- Maintains a youthful, native MSC phenotype
- Cells grown in tri gas conditions behave more like they do inside the human body because the environment is designed to match it.

Natural Inhibitors for Controlled, Healthy Proliferation

Guiding Growth Without Forcing It.

Many commercial MSC systems rely on artificial accelerants that push cells to divide rapidly. This can:

- Increase DNA replication errors
- Trigger premature senescence
- Alter immunomodulatory behavior

King Stem Cell uses natural inhibitors that:

- Support balanced, TP53 aligned proliferation
- Reduce cellular stress
- Maintain long term genomic stability
- Preserve natural differentiation potential
- The result is a cell that grows intelligently, not aggressively.

A More Authentic Secretome and Exosome Profile

Natural Culture = Natural Bioactivity

- The therapeutic value of MSCs comes largely from their secreted factors cytokines, peptides, growth factors, and extracellular vesicles. Culture stress, xenogeneic inputs, and high oxygen conditions distort this profile.

Our natural, low stress culture system produces:

- A cleaner, more physiologic secretome
- Higher bioactivity per cell
- More consistent exosome composition
- Better alignment with human biology

This is why our UC- MSC derivatives perform exceptionally well in cosmetic, tissue support,and wellness applications.

Superior Safety, Reproducibility, and Transparency

Built for Clinics, Consumers, and Regulators

Every step of our SOPs is designed for:

- Reproducibility across batches and facilities
- Regulatory clarity with clean label inputs
- Clinical confidence through genomic stability
- Consumer trust via natural, ethical sourcing

Our platform avoids the shortcuts common in the market and instead prioritises long term safety, biological authenticity, and scientific rigour.

Our Identity:

- King Stem Cell stands for:
- High integrity culture
- Respect for natural genomic protection systems
- Products that reflect biological authenticity, not artificial manipulation.

We do not chase speed or volume at the expense of genomic stability. Our value is built on trust, precision, and biological fidelity.