kosmo science

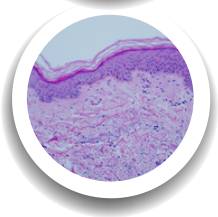
# Preclinical Assays

## Safety and Efficacy Evaluation

## TEST SYSTEMS

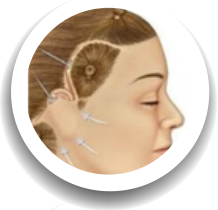


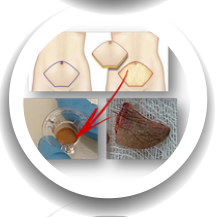




### Cell Cultures

- Keratinocytes
- Dermal fibroblasts
- Melanocytes
- Sebocytes
- Human hair dermal papilla cells – HHDPCs
- Adipocytes
- THP-1 monocytes
- Primary cells from skin and vaginal mucosa
- Gingival fibroblasts







### Ex vivo Skin Cultures

- Skin and Scalp Cultures
- High Availability – Brazil
- We offer assays using native cell cultures that are readily available for immediate use

### Reconstructed Models

- Reconstructed Human Epidermis (RHE)
- Human Corneal Epithelium (HCE)
- Full-thickness 3D Skin Model (dermis + epidermis)

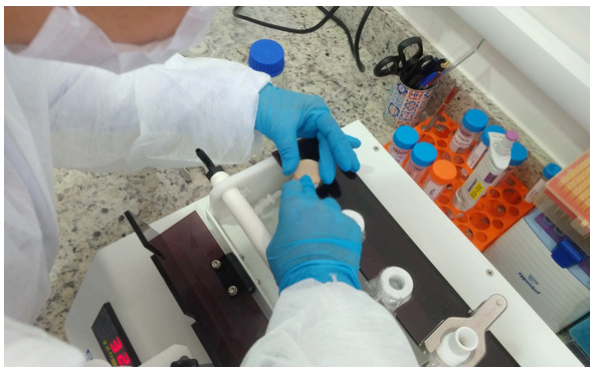
**HUMAN SKIN STUDIES ARE CONDUCTED FOLLOWING APPROVAL BY THE ETHICS COMMITTEE**

## TECHNOLOGICAL PLATFORMS

Spectrophotometry | Fluorescence | Luminescence | Cytology | Histology | Immunohistochemistry
Immunofluorescence | Molecular Biology | RT-PCR | Sequencing | Flow Cytometry | Microscopy
Microbiology | Tissue Microarray (TMA) | Skin Permeation | Metagenomics

## SAFETY ASSAYS

- Skin Irritation - OECD 439 | ISO 10993-23
- Skin Corrosion - OECD 431
- Eye Irritation and Corrosion - OECD 491 | OECD 492
- Acute Oral Systemic Toxicity - OECD 129
- Phototoxicity - OECD 432 | OECD 498
- Skin Sensitization - OECD 442E | ISO 10993-10
- | OECD 442C
- Cytotoxicity - ISO 10993-5
- Skin Permeation - OECD 428
- Genotoxicity - OECD 471



## IN-HOUSE MODELS

Screening of phototoxicity, irritation, corrosion and skin sensitization in ex vivo human skin, according to OECD 498, 439, 431 and 442D;

Prediction of intestinal toxicity in intestinal barrier models: analysis of intestinal functionality markers;

Inhalation toxicity: Air-liquid culture of A549 cells. Evaluation of cytotoxicity, apoptosis, cell death and inflammatory response;

Prediction of liver toxicity in hepatic spheroid models: analysis of liver functionality markers.

# EXPERIMENTAL MODELS FOR EFFICACY ASSAYS

Solar photoexposure, environmental pollution, cigarette smoke, atopic dermatitis, thermal stress, oxidative stress, inflammatory stress, irritative stress, glycation, nutritional deprivation, acne, hair loss, senescence, psoriasis, microneedles, tissue injury, laser burns, exfoliation, periodontal diseases

## Anti-aging - Radiation, UV, Infrared, Visible light, Blue light

• Extracellular matrix • MMPs • TIMPs • Free radicals • Inflammation/inflammaging • Melanogenesis • Opsin-3

## Longevity | Senescence

• Senolytics (p16, p21, p53, Bcl-2) • Senomorphics (IL-6, IL-8, MMPs, Sirtuins) • β-Galactosidase • Cell cycle • Genomic stability • Zombie cells

## Melanogenesis Control – Whitening, Pigmentation and Hair Graying

• Melanin • Tyrosinase • Endothelin-1 • α-MSH/POMC • TYRP-1 • TYRP-2 • MITF-M • MC1-R • VEGF

## Skin Barrier Repair | Hydration | Sensitive Skin

• Filaggrin • Involucrin • Loricrin • Keratins • Ceramides • Aquaporins • Desmoglein • Laminin • Cytokines • Kallikrein • Histamine • TRPV-1 • Neurogenic inflammation

## Anti-pollution | DNA Protection

• AhR - aryl hydrocarbon receptor • GADD45a • 8-OHdG • CPD/6-4PP - cyclobutane pyrimidine dimers/pyrimidine (6-4) pyrimidine by photo-induced damage

## Antioxidant

• Determination of free radical production – DPPH, ABTS, ORAC • Measurement of redox enzyme homeostasis – SOD, CAT, GLU • Measurement of ROSmit and DCFH-DA (fluorescent probes)
• Lipid peroxidation – MDA • Nuclear transcription factor that activates antioxidant defenses - NRF-2
• Root protection factor and radical status factor

## Healthy Aging | Well-aging

• Cortisol • β-endorphin • Oxytocin • Dopamine • Enkephalin

## Acne Control | Sebum

• Dihydrotestosterone • Testosterone • 5α-reductase • TLR receptors • Inflammatory cytokines • Sebum production • *Cutibacterium acnes*

## Hair Metabolism

• β-Catenin • Keratins • VEGF • Collagen 17a1 • IGF-1 • FGF-7 (hair growth, anchorage, hair aging, premature graying)

## Wound Healing | Tissue Repair | Re-epithelialization

• Skin regeneration • Cell migration • Cell contraction • Epidermal renewal • Epithelialization • Growth factors: TGF-β, EGF

## Skin Defenses | Microbiota

• Antimicrobial peptides • Microorganism identification from swabs (RT-PCR) • Metagenomics

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