



**More human, more consistent *in vitro* models
for cosmetics and dermatology research**

iPSC-derived cells and service projects

www.axolbio.com

Quicker, more diverse, more reproducible beauty studies, with iPSC-derived cells

The Skin

The skin acts as a barrier against pathogens, UV radiation, and chemicals, while also regulating body temperature, preventing dehydration, and producing vitamin D. The skin not only shields against environmental stressors and microbial threats but also regulates body temperature and acts as a sensory interface.

A Scientific Approach to Beauty

Advanced models offer unparalleled insights into skin physiology, paving the way for effective, scientifically validated skincare solutions. As consumer demand for wellness-driven skincare continues to grow, so does the need for rigorous scientific validation. By integrating cutting-edge cell science with cosmetic innovation, we are redefining skincare—making it not only about appearance but also about true, long-lasting skin health.

iPSCs, the next step on from Primary Cells

Induced Pluripotent Stem Cell (iPSC) technology is a powerful tool for dermatology research and testing because it enables the creation of human skin models that closely mimic the physiology and responses of skin.

Unlike primary cells, iPSC-derived cell lines can be used to produce a consistent supply of functional end-point cells, at high throughput, meaning you don't have to waste time validating new batches of primary cells. As well as saving validation time, iPSC-derived cells are assay-ready more quickly than primary cells.

Better representing Ethnic and Gender Diversity

Axol's iPSC-derived sebocytes and melanocytes are derived from multiple Caucasian, African, Asian and albino donors lines, both male and female, and can be used to validate specific claims.

Axol Bioscience products and services are used by leading biopharma and cosmetics companies to fuel advanced *in vitro* models.

Greater consistency

Quicker results

More diversity

Scalable to high throughput

From Axol, you can purchase
iPSC-derived cells

- Melanocytes
- Sebocytes
- Sensory neurons



At Axol, we can run your
screening and research projects

- Modelling acne & hyperseborrhea
- Modelling pain and touch
- Modelling skin pigmentation

Using iPSC-derived cells for cosmetics and dermatology

Our high-throughput tests screening services can be used to identify and characterize active ingredients with our models based on iPSC-derived sebocytes, melanocytes and sensory neurons.

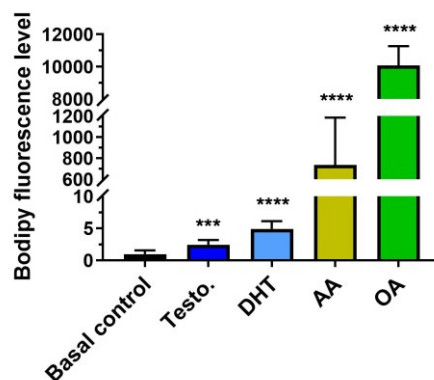
Modelling acne & hyperseborrhea with sebocytes

Compared to primary cells, **iPSC-derived sebocytes** are:

- Reproducible and consistent
- Suitable for use in high throughput 96-well plates
- Easier to prepare – consistent, high throughput production
- Assay ready in <4 days (primaries are assay ready in 7 days)

Axol's iPSC-derived sebocytes

- Form a **monolayer epithelium**
- Express **key markers** - PPAR γ , KRT7 and MUC1
- Produce **sebum**
- Exhibit **intracellular lipid droplets**.



Inducible sebogenesis: Lipid content of cultured iPSC-derived sebocytes treated or not (Basal control) with Testosterone (Testo.), Dihydrotestosterone (DHT), Arachidonic Acid (AA) or Oleic Acid (OA) for 48h (AA & OA) or 96h (Testo. or DHT).

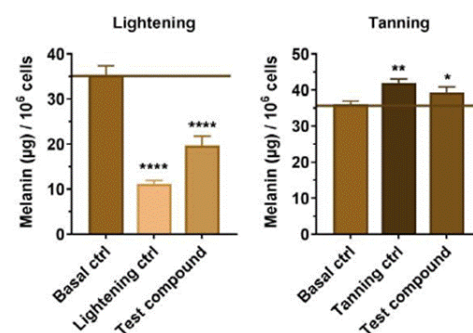
Modelling skin pigmentation with melanocytes

Compared to primary cells, **iPSC-derived melanocytes** are:

- Reproducible and consistent
- Suitable for use in high throughput 96-well plates
- Easier to prepare – consistent, high throughput production
- Functional end point through melanogenesis
- Assay ready in 5 days (primaries are assay ready in 7 days)

Axol's iPSC-derived melanocytes are:

- **Dendritic and pigmented**, adherent cells
- Express **key melanocyte markers** - PAX3, MITF, PMEL17, TRYP1
- Produce **melanin**
- Demonstrate **melanosome transfer** to keratinocytes

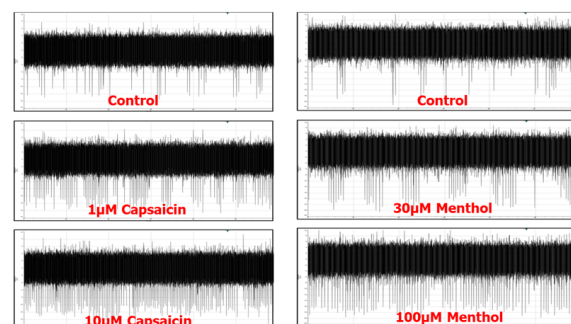


iPSC-derived melanocytes were cultured for 5 days in complete PhenoCULT-MEL medium, then treated for 4 days with vehicle or lightening or tanning agent as controls

Modelling pain and touch with sensory neurons

With Axol's iPSC derived cells you can screen the effects of ingredients on toxicity and sensation. Our cells:

- Express **key nociceptive ion channels** including Nav1.7, Nav1.8, Nav1.9, TRPV1, TRPM8 and TRPA1
- Exhibit **thermoception**, and responses to **capsaicin, menthol, mustard oil, ATP and Paclitaxel**
- Are used by leading Biopharma and academic institutions around the world to fuel robust **microfluidic platforms and models**



axoCells Sensory Neurons were challenged with capsaicin and menthol at 22 and 27 days respectively and measurements were made on a multi-electrode array (MEA) platform demonstrating functional response.

About Axol Bioscience iPSC-derived cells and testing services

Axol Bioscience have **more than a decade of experience** in the iPSC space and are recognized as **leaders** in the **manufacturing of high quality, functional iPSC-derived cells**. Axol Bioscience products and services are used by leading biopharma and cosmetics companies to fuel **advanced *in vitro* models** for **cosmetics research, toxicology and drug discovery**.

The use of iPSC-derived cells in research:

iPSC-derived cells are the **most robust and relevant tool** for the execution of **screening** campaigns and R&D projects, due to their **high genomic stability, availability** in unlimited quantities and high level of inter-batch **reproducibility**.

- **Highly characterized**, including **functional characterization** to ensure they behave like “normal” cells
- **Normal karyotype** – unlike many immortalized cell lines
- **Large batch productions runs** – to provide consistent purity throughout your study
- Available in **large quantities** for high throughout screening

Compound testing services

Identify and characterize active ingredients with our testing services:

With our iPSC-derived melanocytes we can assess:

- Cell toxicity & cell survival
- Oxidative stress
- Melanogenesis related markers (e.g. Pmel17, TYR, TRYP1, MITF)
- Melanin synthesis (pro and anti-pigmentating effect)

Our iPSC-derived sebocyte model is used to measure:

- Cell toxicity & cell survival
- PPARs activation
- Androgen receptor activation
- Inflammation response to LPS, Arachidonic acid, *C. acnes*
- Sebogenesis and lipid synthesis
- Response to cannabinoids

With our iPSC-derived sensory neurons we can assess:

- Sodium ion channel expression
- Capsaicin and menthol responses
- TTX-resistant Nav1.8 and Nav1.9
- Mustard Oil and ATP treatment
- Thermoception
- Paclitaxel

* Custom services also available



Brigitte Onteniente
Head of Site and
R&D Lead



Duncan Borthwick
Head of Sales &
Marketing



Sapna Vyas
Project Manager



Sian Humphreys
Project Manager



Célian Soula
R&D Technician



Hélène Leménager

Head of Dermo-Cosmetics



is part of the Axol Bioscience family
— stem cells for better drugs —

iPSC? How can we help?

Your dedicated
dermatology team is here
to support your work.



Contact operations@axolbio.com