

# BIOHIVE

Innovations

**The future is organoid**

**Cécile Nait, PhD - Founder & CEO**

"Using inadequate in vitro models is a major cause of failure and wasted resources"

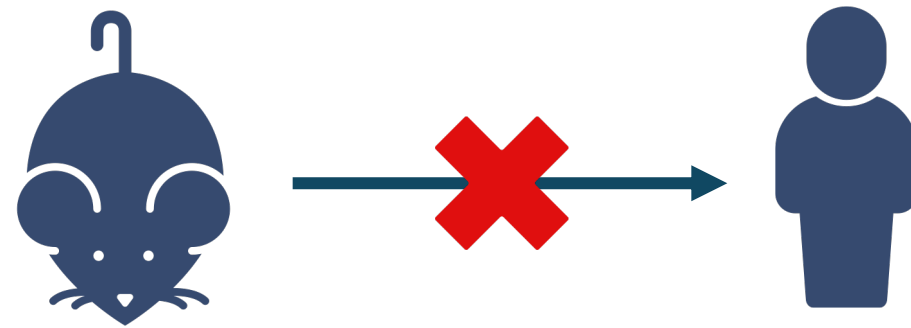


Janet Woodcok,  
Principal Deputy  
Commissioner



+75%

Findings in mice cannot be extrapolated to humans

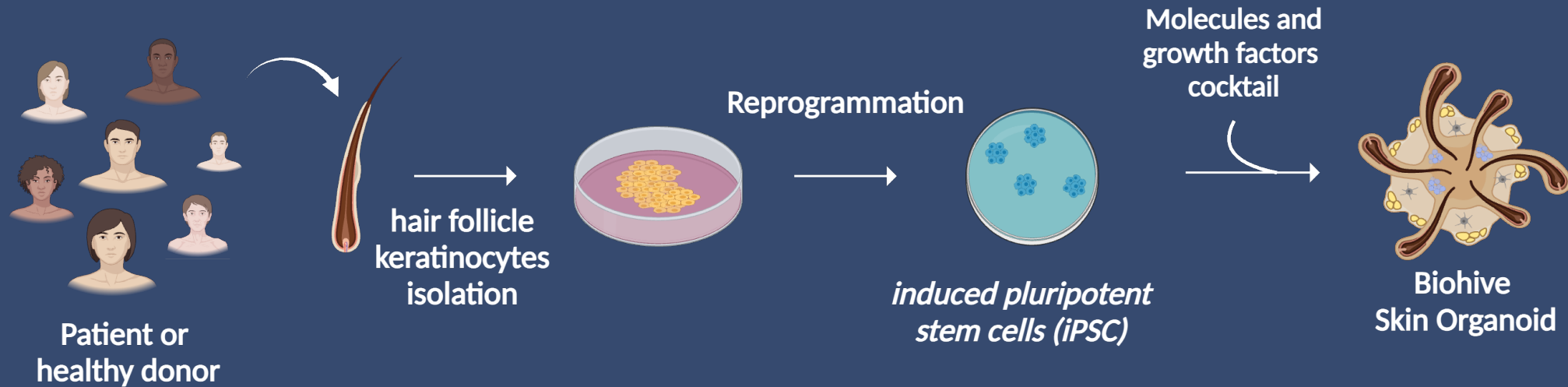


1.5billions USD

lost/molecule

Critical need of **HUMAN** models

## 2. From hair follicle to BioHive skin organoid:



**Combining multicellular, tissue-like skin organoids with patient-specific genetic diversity to identify pathogenic drivers and predict therapeutic response.**

## 2. BioHive organoids:

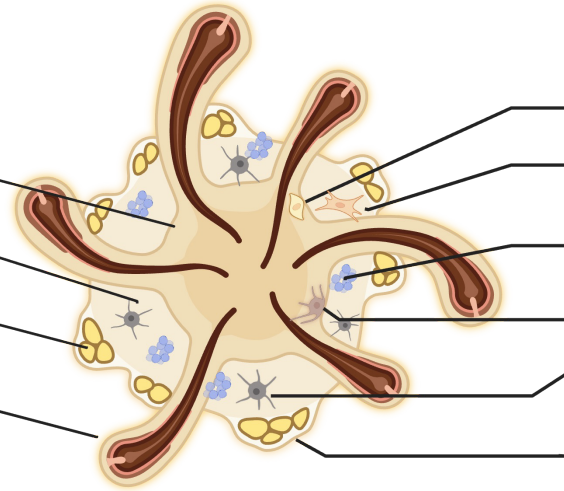
### Skin Organoid:

Lab-engineered cellular model, **derived from stem cells**, that reproduce the structure and function of the skin.

#### BioHive Organoid:

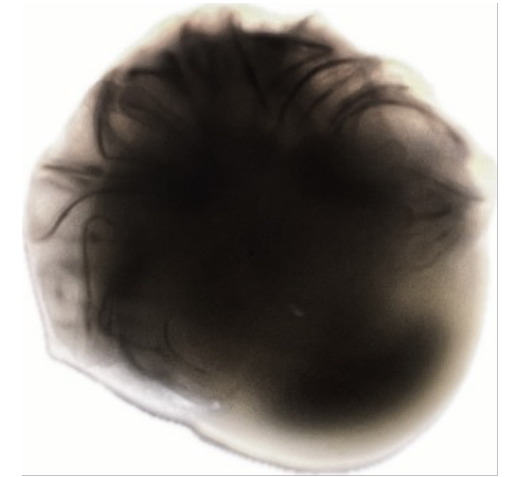
##### Structure:

Epidermis  
Dermis  
Hypodermis  
Hair Follicle



##### Cell types:

Keratinocytes  
Fibroblasts  
Sebocytes  
Melanocytes  
Neurons  
Adipocytes



Organoid size = 0.2-0.5cm

1

### Physiologically relevant

*Hair Growth, Pigmentation, inflammation, ECM production (...)*

2

### Highly reproducible

>80% reproducibility for consistent, comparable data

3

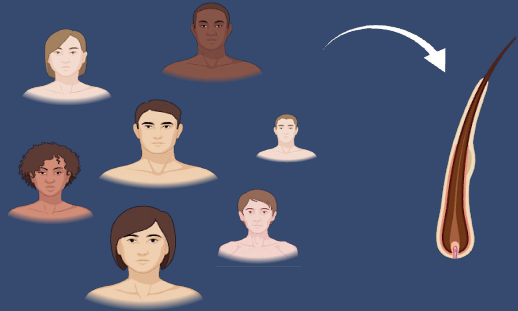
### Scalable production

Unlimited organoid supply from induced pluripotent stem cells

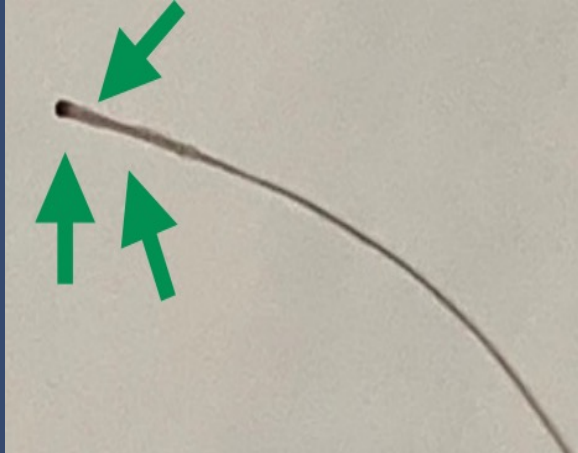
FDA

In line with the FDA Modernization Act 3.0, which explicitly enables the use of human-relevant alternatives to animal testing, organoid-based models are increasingly integrated into drug development strategies.

# Exclusive access to BioHive Biobank



Patient or  
healthy donor



*Hair picking*



*Hair follicle in cultivation for ORS isolation*

## Area of interest:

- Atopic Dermatitis
- Alopecia Aerata
- Androgenetic alopecia
- Epidermolysis bulbosa
- Rosacea
- Vitiligo
- Prurigo nodularis

## Access to partner biobanks with clinically phenotyped donors:

- **Cohort design**
- **Targeted patient selection** based on **clinical phenotyping and metadata**
- **Direct access to primary patient-derived samples** via hospital partnerships\*

**\* Partnership with hospital:**

| Signed/in signature                                     | Additional partnerships in progress                                                    |
|---------------------------------------------------------|----------------------------------------------------------------------------------------|
| Saint Louis Hospital (Paris)<br>Necker Hospital (Paris) | University Hospital of Brussels,<br>Henri-Mondor Hospital, Lyon<br>University Hospital |

# BioHive's Skin Organoid benefits :



More faithful representation of human skin physiology



Biobank for disease modeling & Personalization



Multicellular interaction and better modeling of tissue responses



Identify pathogenic drivers and predict therapeutic response



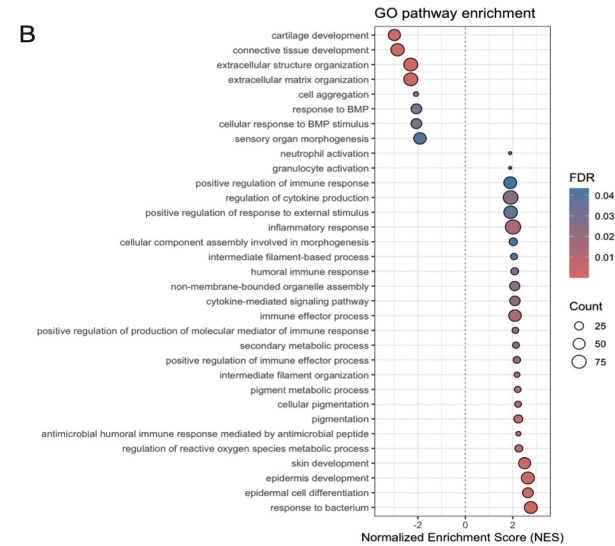
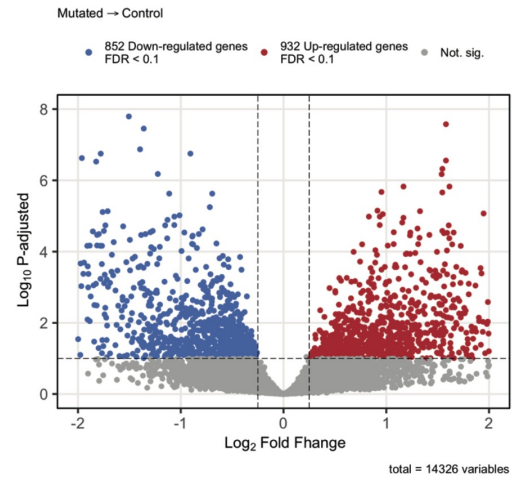
Scale for molecule screening



Study of long-term essays, up to 80 days

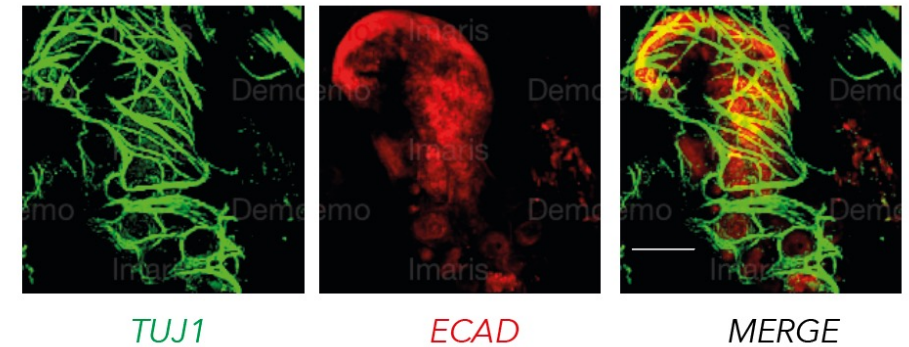
# BioHive core competencies

## Differential gene expression:



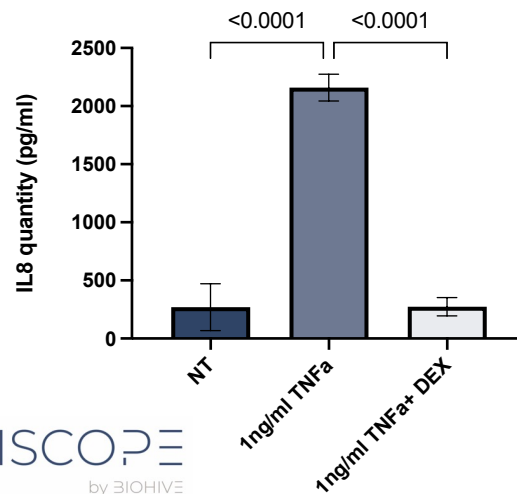
## Morphological characterization; (3D high resolution confocal imaging)

Neural network

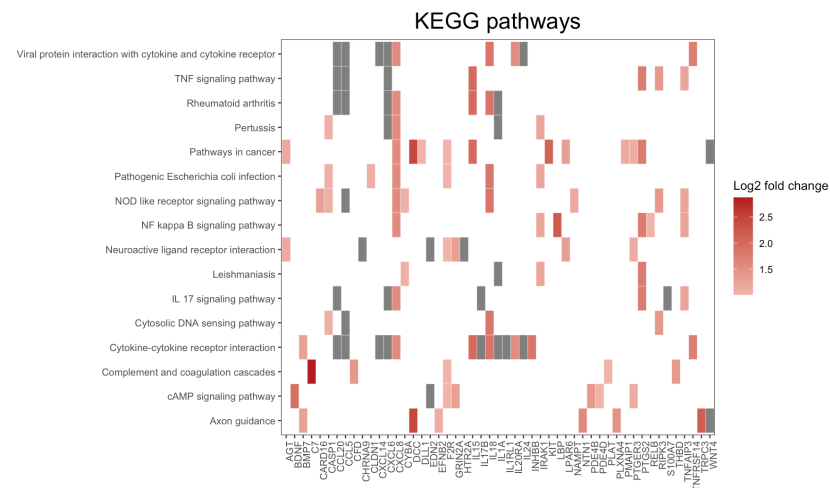


## Inflammatory response:

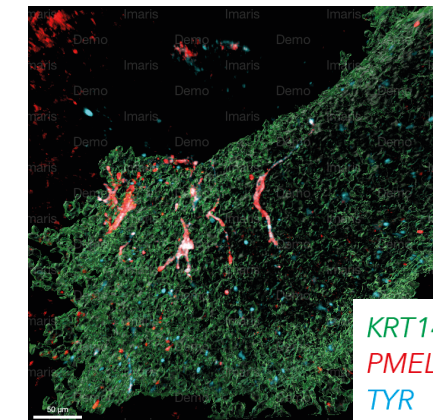
ELISA:



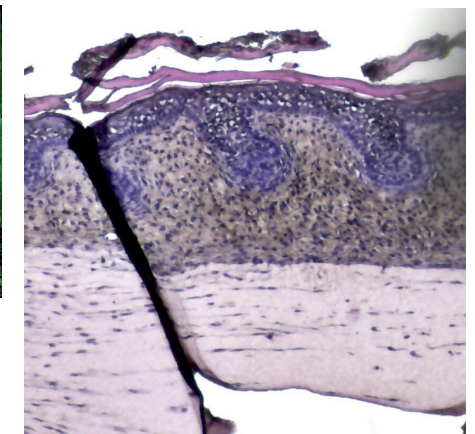
RNAseq analysis:



Pigmentation



Structure (HE coloration)



# How to work with BioHive?



|              | Co-development of disease models                                                                                                        | Organoid-based service offering                                                                                   |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| What it is   | <b>Creation of pathology-specific skin organoids</b> (HS, AD, psoriasis, alopecia...) from patient cells or targeted lines              | Evaluation of candidate molecules (pipeline compounds or repositioned drugs) on healthy or pathological organoids |
| What you get | <b>Custom, patient-relevant models</b> tailored to your R&D questions                                                                   | Multi-omic data, 3D imaging, biomarker read-outs, delivered as R&D-ready reports                                  |
| Benefits     | <b>Exclusive access to novel models, deeper understanding of mechanisms, identification of new biomarkers &amp; therapeutic avenues</b> | Rapid exploratory screening, robust go/no-go decision support, reduced reliance on animal models                  |

# From patient samples to actionable data: a clear roadmap for working with BioHive



## 1. Initiation

- Define study scope with your R&D team
- Rapid access to patient samples via hospital partners or biobank

→ Fast setup and patient relevance



## 2. Partnership

- Research collaboration (co-publication, co-funding)
- Service projects with defined deliverables
- Licensing / exclusivity on models

→ Flexible models tailored to your needs



## 3. Deliverables

- Multi-omic datasets and 3D imaging
- Comparative analysis (candidates vs. controls)
- Scientific report + results presentation

→ Robust, actionable data for your pipeline

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