CBI

Imiquimod Induced Psoriasis in Mice

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COMPARATIVE BIOSCIENCES, INC.

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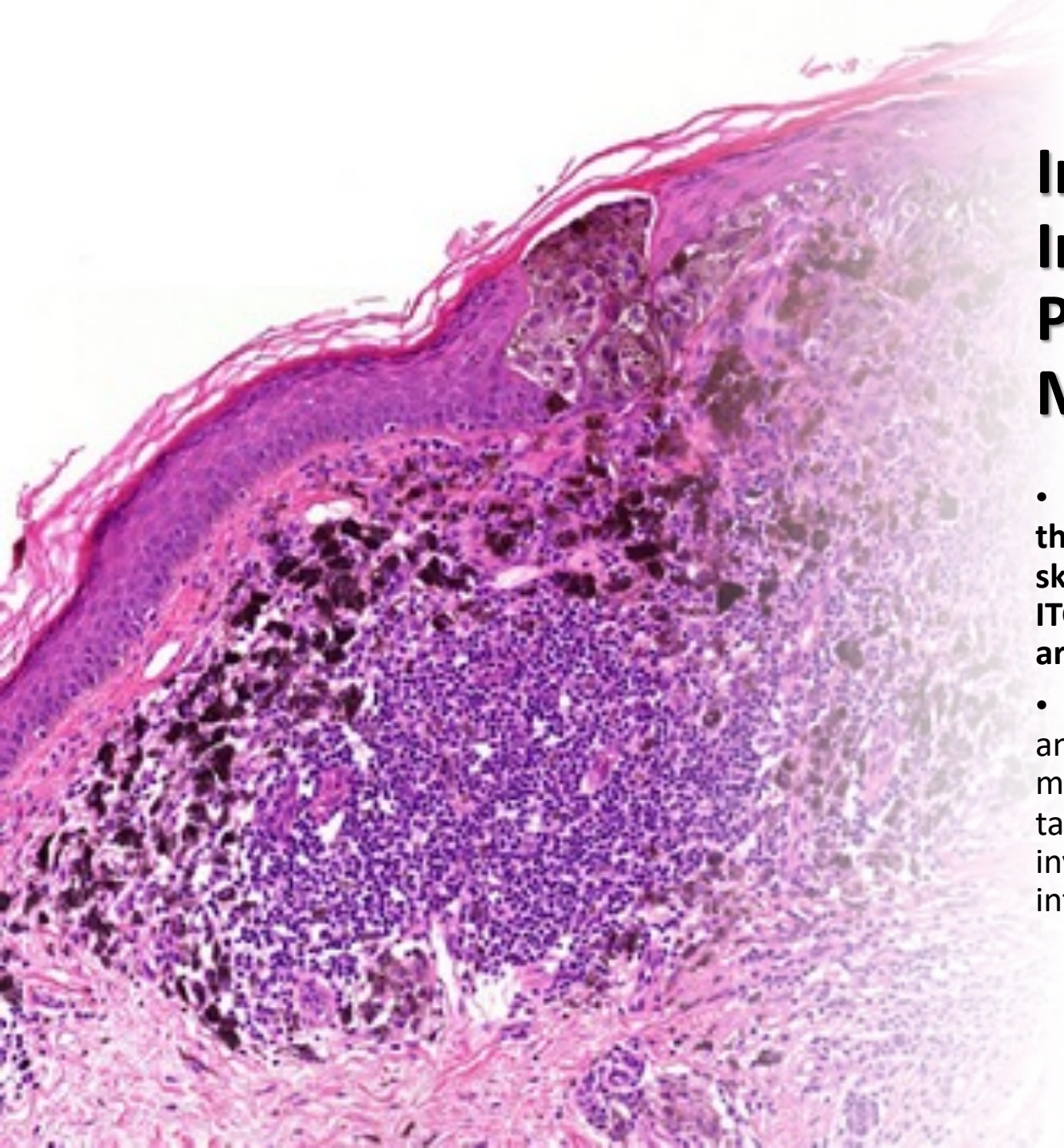


Imiquimod Induced Psoriasis in Mice

- **Mice develop a condition that resembles inflammatory skin disease when the ITGB2, ITGAE, IL1RN and IRF2 genes are knocked out**.
- However, cell-type-specific and inducible (single gene or multiple gene) knock-outs targeting the cells likely to be involved in psoriasis are highly informative and relevant.

What About Celebrities with Psoriasis?

Kim Kardashian

has been open about her battle with psoriasis, which is a skin disease that causes red, itchy scaly patches. The flare ups most commonly occur on the knees, elbows, trunk and scalp.

"It's similar to arthritis that can stem from psoriasis and it can come and go. "It's still painful and scary, but I was happy to have a diagnosis. No matter what autoimmune condition I had, I was going to get through it, and they are all manageable with proper care."

Cyndi Lapner

reveals details about her painful battle with psoriasis for the first time.

Cyndi, 62, has suffered from the skin condition, which causes cell build-up on the skin in the form of dry, itchy patches, for many years.

She is now working with the National Psoriasis Foundation to try and raise awareness about the disease and help others to seek treatment.

Britney Spears

has had the skin condition for a long time, but it only flares up when she's under extreme pressure. It can appear on any part of the body and is often itchy.

The condition occurs when skin cells grow at an excelled rate due to the immune system sending out faulty signals. It appears on the skin's surface as red and white scaly patches, although some patients show no dermatological signs and it is not contagious.

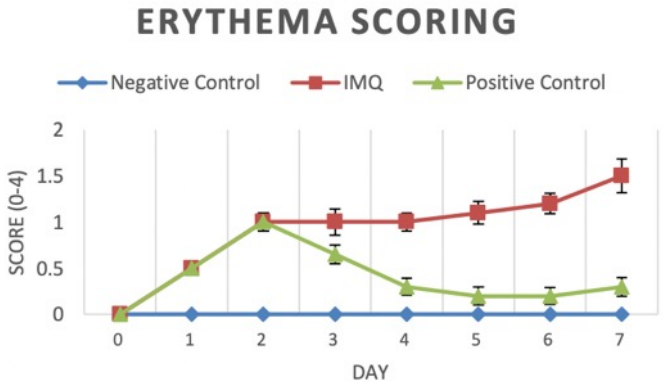
Imiquimod Induced Dermatitis. A Model of Psoriasis

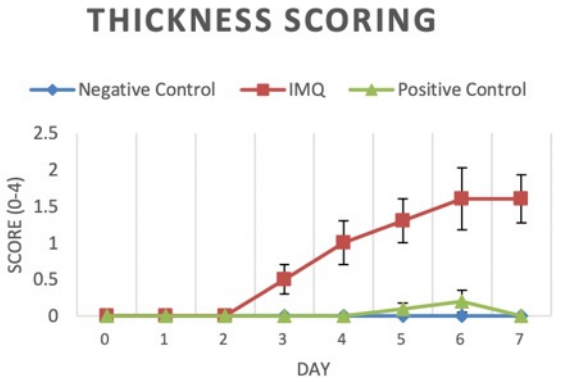
- Imiquimod is an immune modifying toll-like receptor agonist
- Topical application of IMQ to susceptible BALB/c mice rapidly induces a psoriatic skin inflammation
- Lesions similar to man
- Erythema, swelling and scaling
- Histologically similar to man
- Responds to similar human therapies

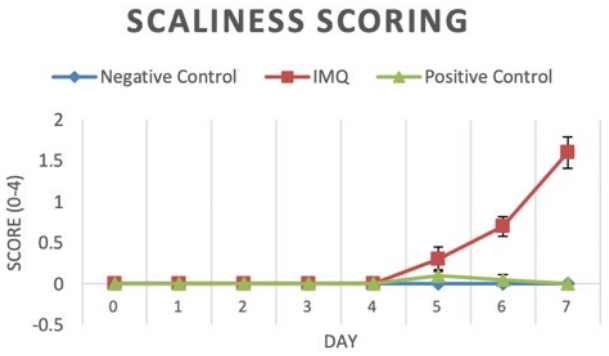
Imiquimod Induced Dermatitis in Mice

Dermal Clinical Assessments

Imiquimod produces increases in dermal thickness, erythema and scaliness. The positive control (clobetasol) reduces the clinical signs.

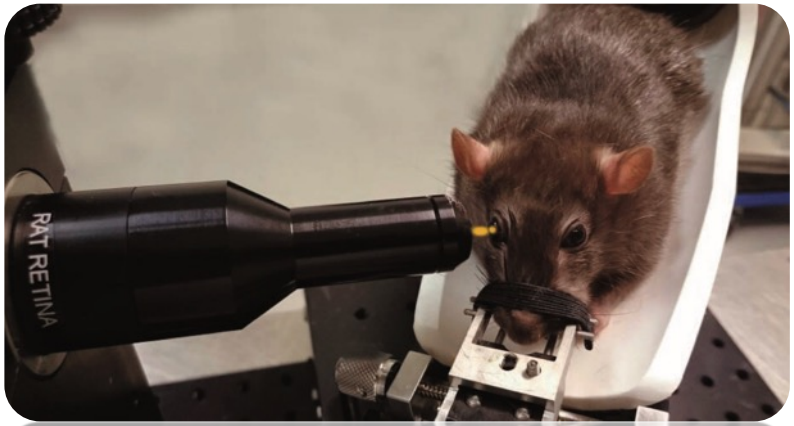






Optical Coherence Tomography

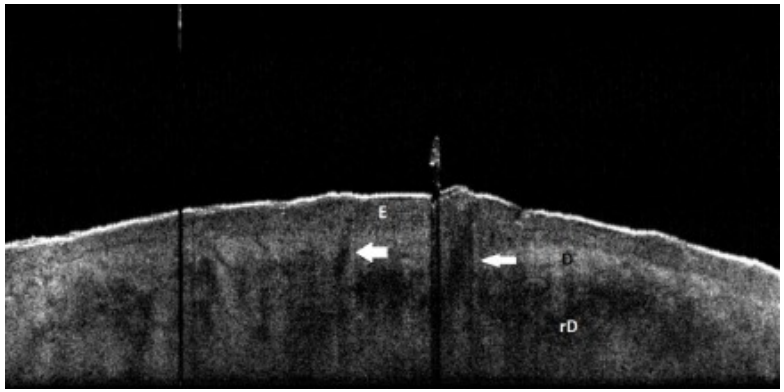
Dermal OCT Assessments



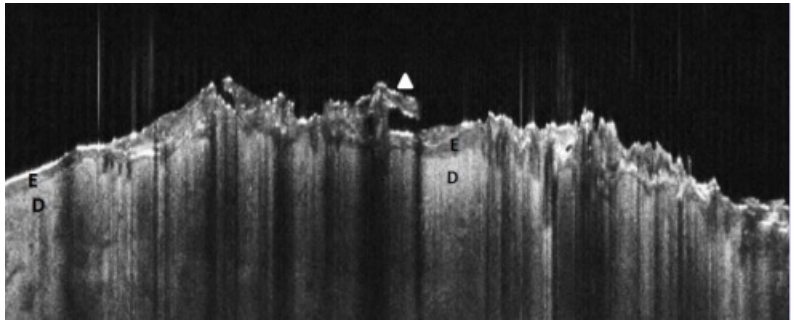
Bioptigen Envisu R-Class system for preclinical studies

OCT should always be included in dermatologic ocular toxicology, pharmacokinetic and pharmacology studies.

- Noninvasive and only requires brief immobilization
- Facilitates longitudinal, real time and repetitive tracking of skin ocular changes, in particular, dermal fibrosis, epidermal thickness changes, injection material, stem cell implants, intraocular implants, and tumors.
- Contributes to improved clinical trial design



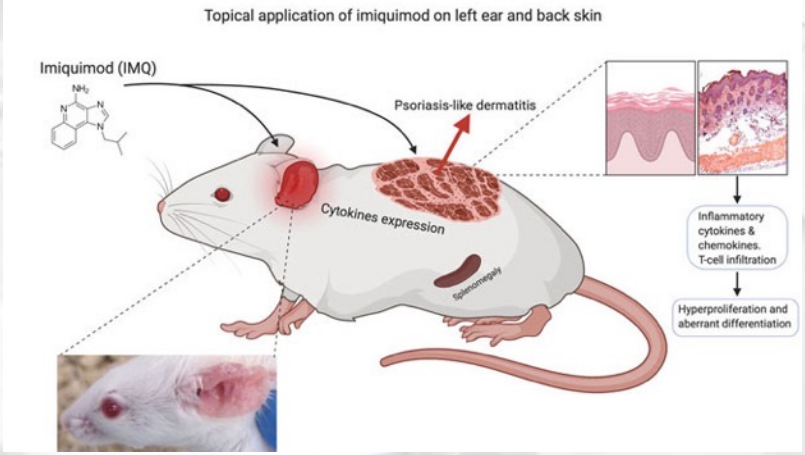
Normal skin, OCT aspect. Extensor aspect forearm, 53 year old male; E epidermis, D Dermis, rD reticular dermis, white arrows: hair follicles



Psoriasis, OCT aspect. Epidermis (E) is hypo–dense and in the lesional area (left) is markedly thickened, with elongated protrusions in underlying dermis (D); overlying marked focal hyperkeratosis, as dark band, with scales protruding (arrowhead). There are longitudinal bands of signal attenuation corresponding to scaling

The Imiquimod-induced Skin Inflammation Model of Psoriasis (Ps) in Mice

Imiquimod induced Psoriasis



The most commonly used model for the disease is the Imiquimod-induced skin inflammation model (IMQ-model). In the IMQ model, Aldara cream (containing 5% IMQ) is applied topically to the ear and shaved back skin on mice daily. IMQ is a potent immune activator and a Toll-like receptor (TLR7/8) agonist that elicits erythema, scaling, keratinocyte proliferation and differentiation as well as dermal T cell infiltrations upon administration.

- CBI offers a robust and validated murine model of psoriasis induced by dermal application of imiquimod, an immune modifying toll-like receptor agonist

- Topical application to susceptible BALB/c mice rapidly induces a psoriatic skin inflammation that responds to standard treatment with clobetasol

- Lesions similar to man and characterized by application site increases in erythema, dermal thickness and scaling that is similar histologically to psoriasis in patients.

Service and Quality

- ***Thoroughness in planning and execution is key to a successful study***. All protocols are vetted and approved by multiple personnel. Our QAU has a rigorous training program. All non-GLP studies are conducted in the spirit of GLP.
- ***We believe in sound science.*** Our ratio of scientists to non-scientists is one of the highest in the industry. Every study director is a PhD-level scientist.
- ***We believe in communication.*** Timely responses to your inquiries and frequent updates on your study are mandatory.
- ***We welcome visitors.*** You are always welcome at CBI to meet the staff, tour the laboratory and discuss the progress and results of your study.