

living armor, evolving identity

Created by:

Modified and Toured by:





CALIFORNIA ACADEMY OF SCIENCES



DRAFT: Some components are subject to change



FEATURES

- 4,000—5,000 sq ft (370—465 sq m)
- Deep content rooted in bold science
- Dozens of specimens from
 world-class research collections
- Open, casual, non-threatening environment for important conversations
- Educational materials for on-site and community use
- Flexible community outreach/promotions toolkit
- 100% bilingual
- An exhibitor friendly, turnkey operation
- SMM tour tech lead included in rental fee

AVAILABILITY

Summer 2021 and beyond

CONTACT

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Skin: Living Armor, Evolving Identity

This exhibition showcases the amazing properties of skin across an array of organisms. From hyper-sensing skin receptors in crocodilians to the super-thick skin of whales, skin acts as an interface between organisms and their environment.

Featuring a range of collections and engaging interactive experiences, visitors will explore the shape-shifting, color-changing, and adaptable nature of skin and the technological innovations it inspires. They will discover the incredible properties of their own skin and examine the layers of meaning humans have associated with skin color.





Main Message

Skin is a living interface between an organism and its outside world. It shapes physical and social interactions with other organisms and the environment, adapting, regenerating, and protecting each individual.

Secondary Messages

- » Across life on Earth, each species' outer covering is shaped by the environment and can look and function very differently.
- » Skin protects an organism through its ability to sense, adapt to the environment, and rapidly regenerate.
- » Skin's characteristics teach us about evolution, including human adaptations to the environment.
- » Skin is an important cultural interface.
- » Skin's incredible properties and abilities inspire high-tech innovation.



Visitor Experience Objectives

Visitors to the exhibit will:

Learn

- » In many organisms, skin is one of the largest organs, adapted to deal with the stresses of the environment.
- » Skin can protect itself with chemicals, pigments, or structures including feathers and scales.
- » Skin has the ability to sense small changes in the environment.
- » Skin changes with age, but it doesn't wear out; it continues to regenerate and heal.
- » Human skin evolved to meet the challenges of the environment, but the cultural meanings given to variations in skin color have important social consequences.

Feel

- » Wonder for all of the things that skin can do to protect different organisms.
- » Excitement, surprise, and pleasure at seeing a variety of specimens.
- » Appreciation for the diversity and importance of life on Earth.
- » Openness to wrestle with complex and challenging concepts of race and color in our society.

Experience

» Specimens and media that offer opportunities to explore the diversity of skin.

» Hands-on, multisensory components that foster curiosity and prompt questions.

» Surprising discoveries about what lives on each visitor's own skin and the relationship of this flora and fauna to our health.

» Creative, tactile interactives where visitors can feel the skins of different organisms.

Skin **Bubble Diagram**

Main Message

Skin is a living interface between an organism and its outside world. It shapes physical and social interactions with other organisms and the environment, adapting, regenerating, and protecting each individual.

Interacting with Environments

- » Sensation
- » Regeneration
- » Protection
- » Skin as Environment

What Is Skin?

- » Skin Diversity
- » Layers and Products
- » Largest Organ

Human Pigment and Culture

» Science of Skin Pigment » Race is a Social Construct » Social Effects of Skin Color

Skin **Exhibit Floor Plan**



Skin **Bird's Eye View**

A meandering scrim will curve through the gallery, changing transparency and texture as visitors follow it deeper into the space. Dramatic changes in light and color will enhance the sensation of crossing from one distinct environment into another.





Curving, central fabric wall



Structural opening inspiration

Exhibit Entrance

Large silhouettes and beautiful skin textures welcome visitors, alluding to both the human and non-human animal themes in the exhibit. This entry wall provides an exhibit introduction, presented in English and Spanish.







100 What is Skin?

Area Overview

Skin serves as an interface between an organism and the world. This complex, multi-layered organ has evolved an incredible diversity of structures and forms, from downy feathers to sharp spines. This area celebrates skin's diversity, highlighting striking similarities and stunning differences between organisms.



110 Skin Diversity

Visitors entering the exhibit are encouraged to touch a wall covered with an array of textures. Different types of fabrics, materials, and designs evoke scales, fur, and other elements of skin. This introduction sets the tone for a highly hands-on and multisensory experience.







100 What is Skin?

120 Layers of Skin

A large projected animation highlights human skin's multiple layers, some living and some not. Visitors engaging with the exhibit can traverse the layers and follow the four-week life cycle of a single cell through the epidermis. Adjacent graphics compare the layers in human skin to those found in other organisms including birds, amphibians, and fish. Models show fascinating adaptations of skins, from the sensitive whiskers of a tree-living mouse to the moisture absorbing skin of a frog.







100 What is Skin?

130 Products of Skin

A rhinoceros invites guests to explore the remarkable products that skin can produce. Visitors will learn about conservation efforts to protect rhinos and stop the trade of their unique keratin-based horns. An adjacent display will showcase keratin-based feathers, furs, and quills, and invite guests to touch snake skin, otter fur, and technologically inspired insulation: wetsuit material.



Touchable elements







140 The Largest Organ

Stretched fabrics suspended overhead allow visitors to compare the average surface area of adult human skin to that of an Indian elephant and a raven. For humans, skin is our largest organ, making up roughly 16 percent of our body weight. A touchable model allows visitors to compare their skin to the incredibly thick skin of a bowhead whale.

Rhino horn cross-section



Area Overview

From the tough scales of a snake to the smooth, hairless surface of a dolphin, an animal's skin is shaped by its environment. Skin offers protection from predators and parasites—providing a self-healing barrier—and it senses changes in its environment including shifts in temperature and vibration.





210 Regeneration

When cut, specialized skin cells in fish respond by literally crawling to fill in the gap. Visitors learn about this rapid healing response through an animated video. Nearby graphics discuss how this regeneration differs from the healing of human skin and what happens to human skin as we age. Academy specimens highlight the dramatic way skin is replaced in a variety of animals, from a shed snake skin to bird plumage that varies with age.









220 Sensation

An interactive exhibit invites visitors to experiment with their response to pressure, heat, vibration, and texture to learn about their skin's ability to perceive the environment through sense of touch. Accompanying graphics describe how our brains are involved in our sense of touch, and compare humans' sensory receptors to those of other animals.





230 Skin as Environment

Skin is an ecosystem unto itself. Visitors will learn about emerging science showing how microbes living on the skin may interact with our immune system to influence our health. And they'll come face-to-face with human face mites — a special inhabitant of their own skin — which offer new ways to learn about human evolution. Visitors will glimpse these arthropods under a microscope, in a video highlighting Academy research, and in projected animations.









233 Whales and Barnacles

Visitors will discover a connection between human face mites and whale barnacles. Surprisingly, both skin inhabitants can teach us about the migration of each species.





240 Protection

Skin is how an animal faces its world. Striking specimen displays demonstrate how skin offers physical protection, from bone-like structures that grow within the skin of crocodiles, to hard shells secreted by the skin of mollusks, and pigment and fur that protect mammals from the Sun's damaging UV radiation. Visitors will be able to experience a small portion of the diversity of scales in fishes. They can touch larger-than-life 3D printed models of fish scales as well as real shark skin, and view shark scales under magnification.











Area Overview

Humans are a highly visual species. The diversity we see in human skin is rooted in evolution and generations-long adaptations to our environments. Yet the meanings that humans impose upon skin color are entirely cultural.





310 Science of Skin Color

A visually impactful mural of human faces celebrates human skin's beautifully diverse "sepia rainbow." Visitors will engage with an interactive map to uncover the role that melanin has played in the evolution of human skin colors. The variation in human skin tones evolved to balance protection from ultraviolet rays and the benefits of vitamin D on different parts of the globe. Guests will discover that much remains unknown about the underlying genetics of human skin color.









320 Race is a Social Construct

Skin color is often associated with ideas of race, but how did these concepts come to be? An object-rich timeline delves into US history to examine how race has been constructed from colonial times to present day. Visitors learn how science and economics helped shape notions of—and meanings associated with—skin color and race. Historical events are paired with objects, photographs, or mini-dioramas.







322 Race: A Shifting Idea

An adjacent interactive highlights society's ever-shifting thinking about the constructed categories of race using the US Census as a guide. Visitors may move through time, discovering how an individual's race was classified at different times. Guests will explore how the social and political climate of the era helped to shape those fluid categories.





330 Social Effects of Skin Color

Dimensional and sculptural data visualizations will engage visitors in considering the social power of meanings associated with skin color and some important consequences of racialized ideas. This sculptural data will invite conversation and reflection around topics of health, criminal justice, and housing. Visitors—both young and old—can participate in a hands-on activity that allows them to build their own neighborhood and reflect upon it.







332 Changing the System

The concluding exhibit element will leverage some of the themes of the entire exhibition as metaphors. These metaphors prompt visitors to think about positive futures and how we can engage with each other in our communities. Visitors can watch videos of inspiring local change-makers and have an opportunity to leave their own thoughts and stories on how to make positive change.



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BOOK YOUR SPOT TODAY

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