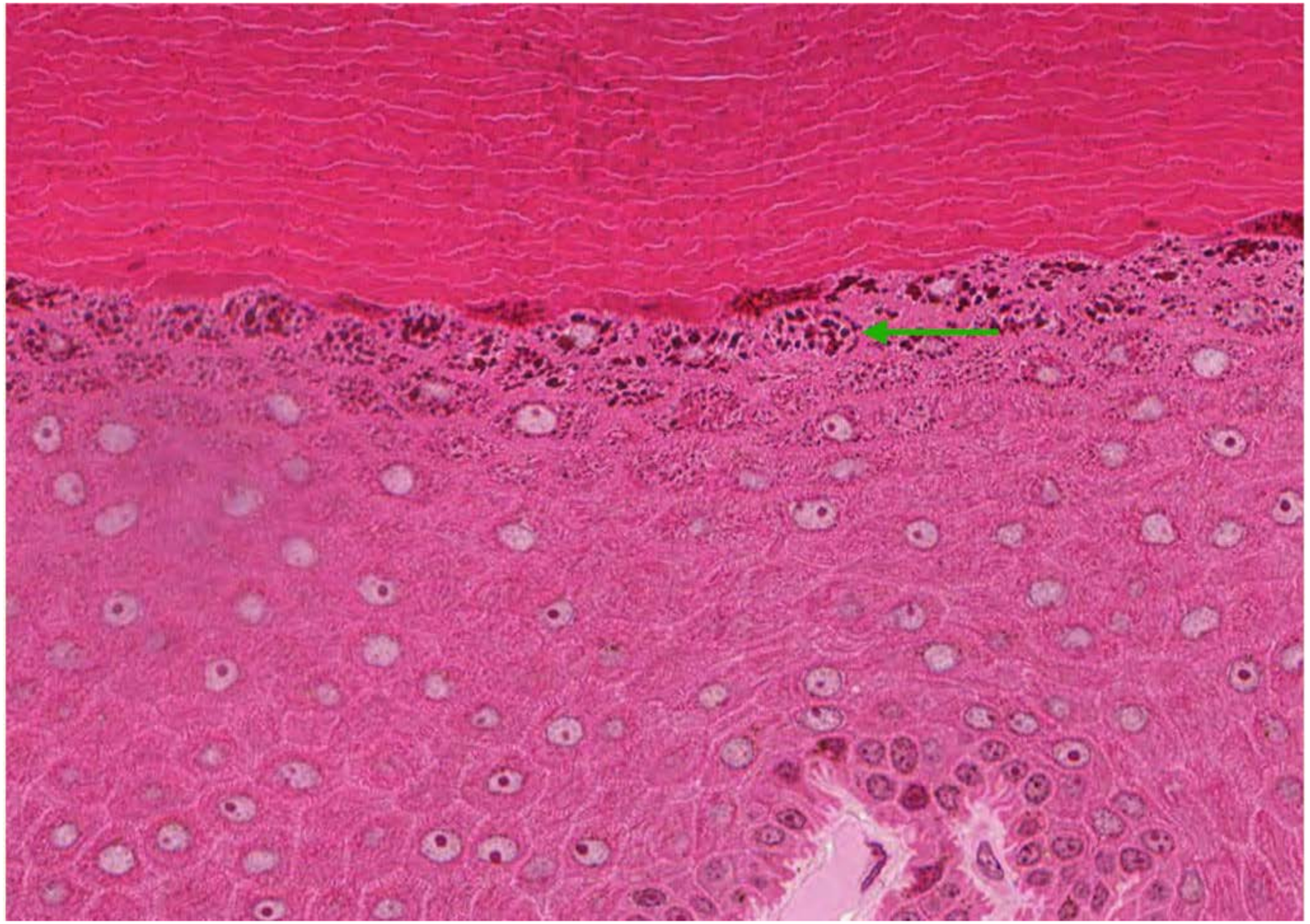
Skin TBL

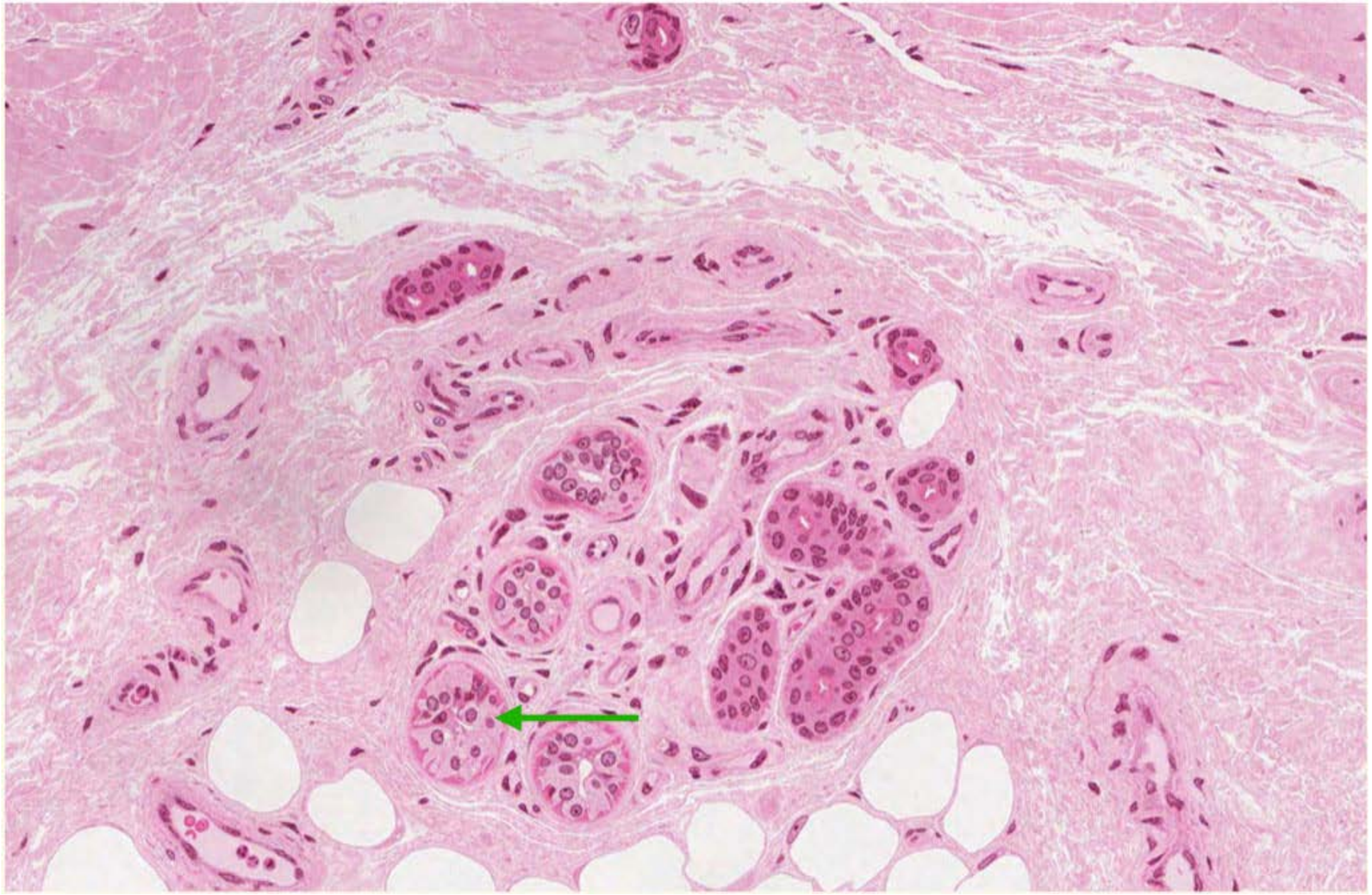
Readiness Assessment Questions

1. What is the function of the cells in the layer indicated by the arrow?
    - Synthesize melanin
    - Engulf pathogens
    - Detect small stimuli
    - Form keratin and lipid for the corneum

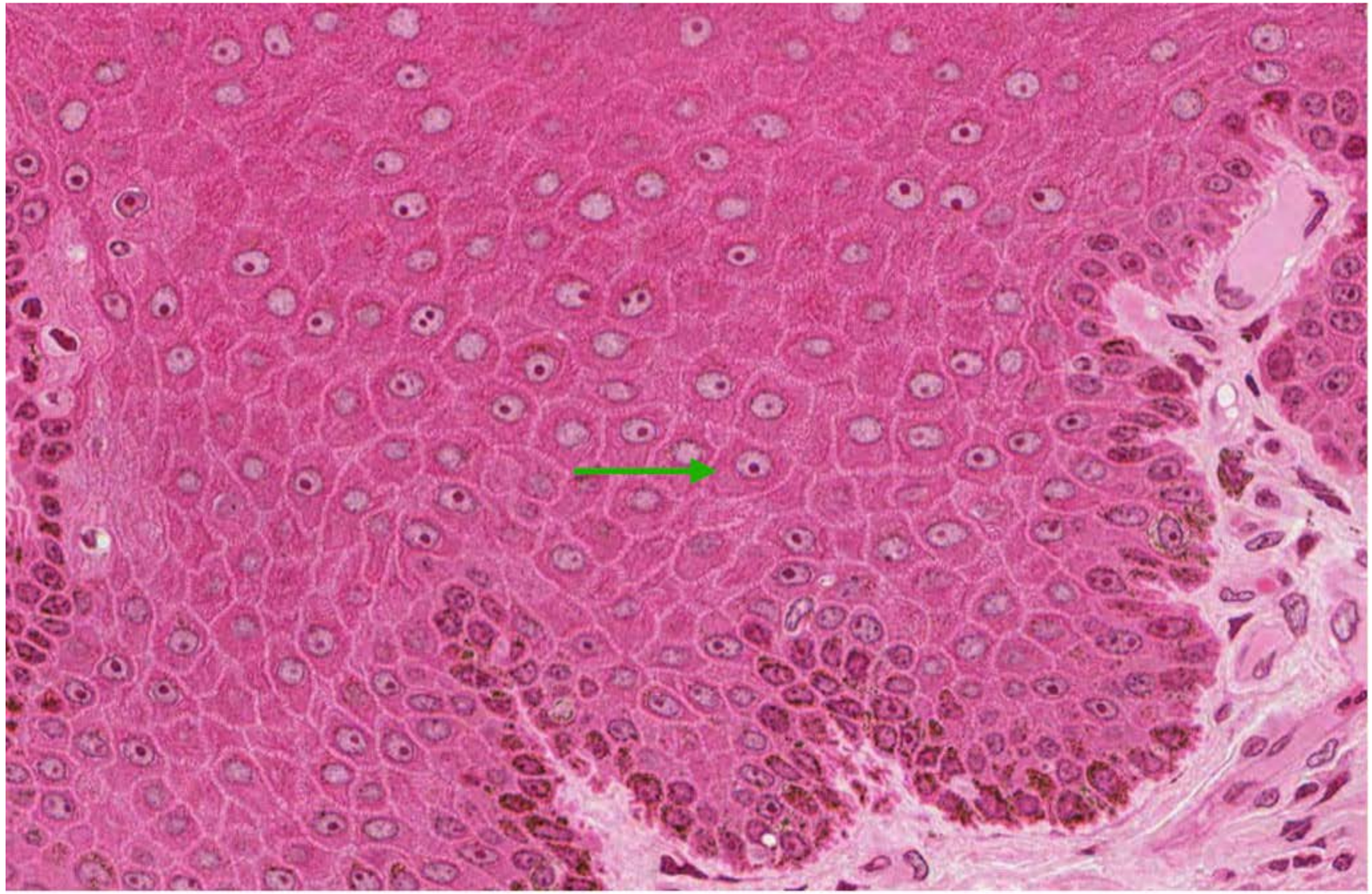


2. Which best describes the fluid produced by these cells?

- Oily
- Isotonic
- Hypertonic
- Hypotonic

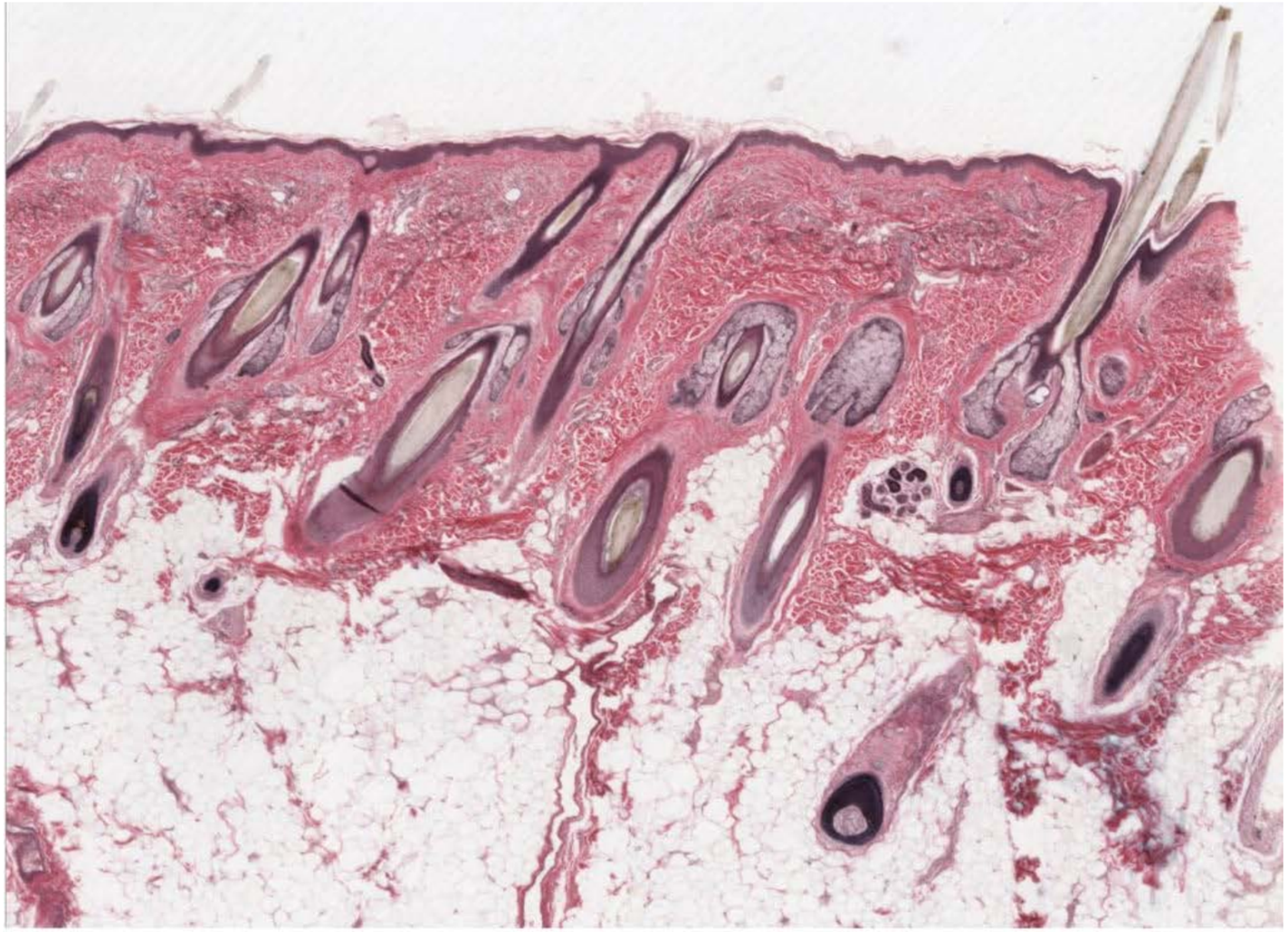


3. A mutation in a gene encoding which protein would most significantly compromise the mechanical integrity of this region?
    - Integrin
    - Connexin
    - Cadherin
    - Occludin



4. This section of skin was likely taken from which region of the body?

- Palms
- Finger tips
- Soles of feet
- Scalp

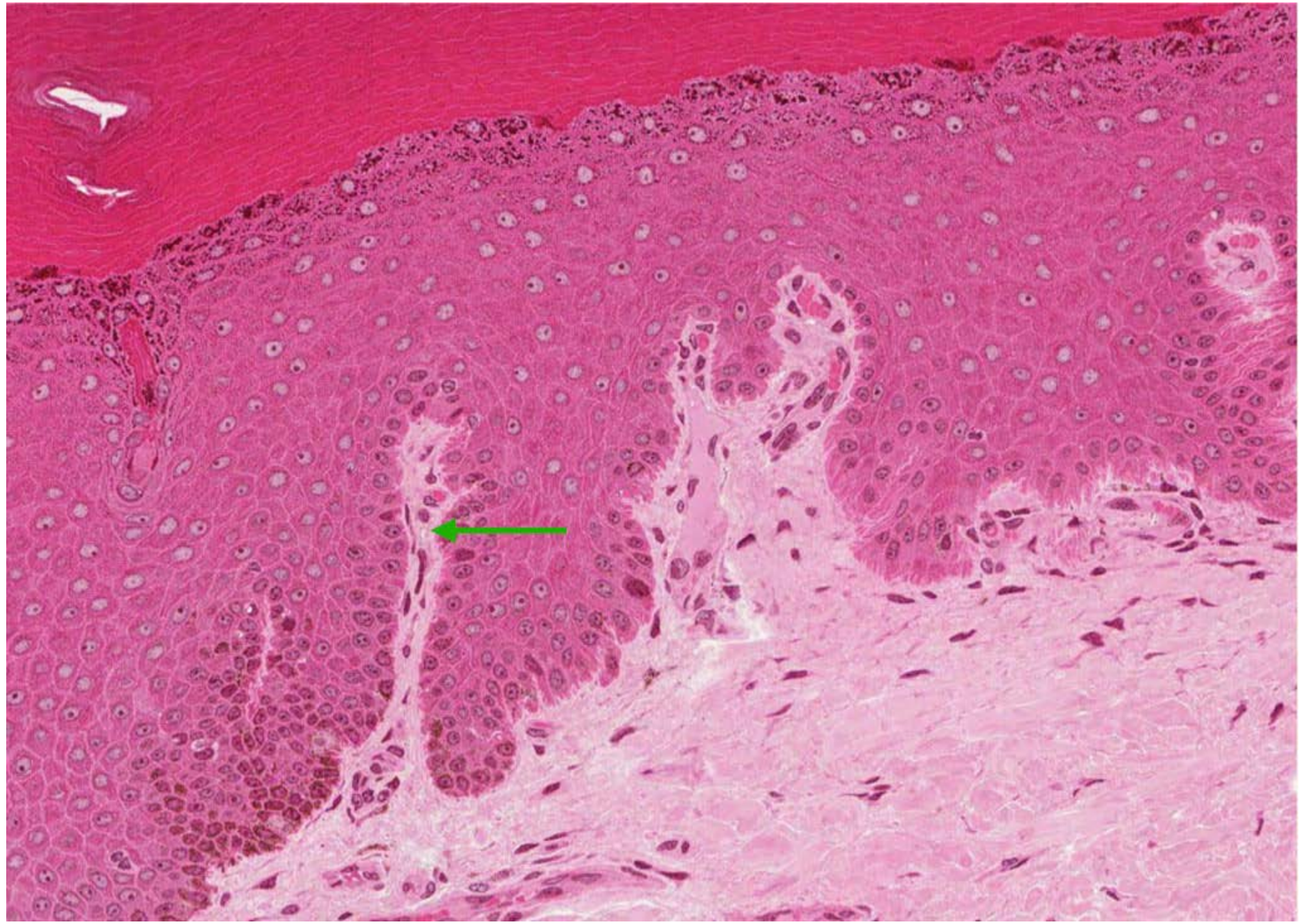


5. What is the primary function of the cell indicated by the arrow?

- Generate an immune response
- Generate new keratinocytes
- Synthesize cytokeratin
- Synthesize melanin

6. If you wanted to stain this region with an antibody for diagnostic purposes, an antibody protein would work best?
    - Type I collagen
    - Type IV collagen
    - Cadherin
    - Keratohyaline

7. What best describes the function of this projection of the dermis?
    - Promote more efficient delivery of nutrients to epidermis
    - Promote delivery of sweat to surface of epidermis
    - Promote adhesion with epidermis
    - Promote turnover of epidermis



Application Questions

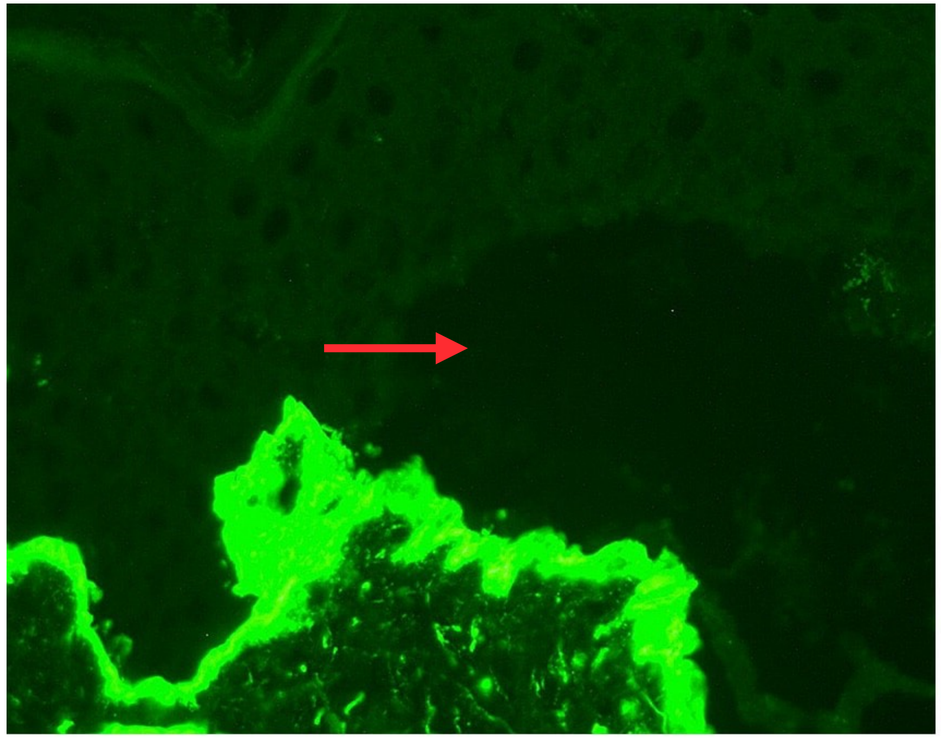
Question One

You are working in a clinic that treats infants and children who have moderate to severe blistering of their skin. An example of an infant with severe blistering is shown below.

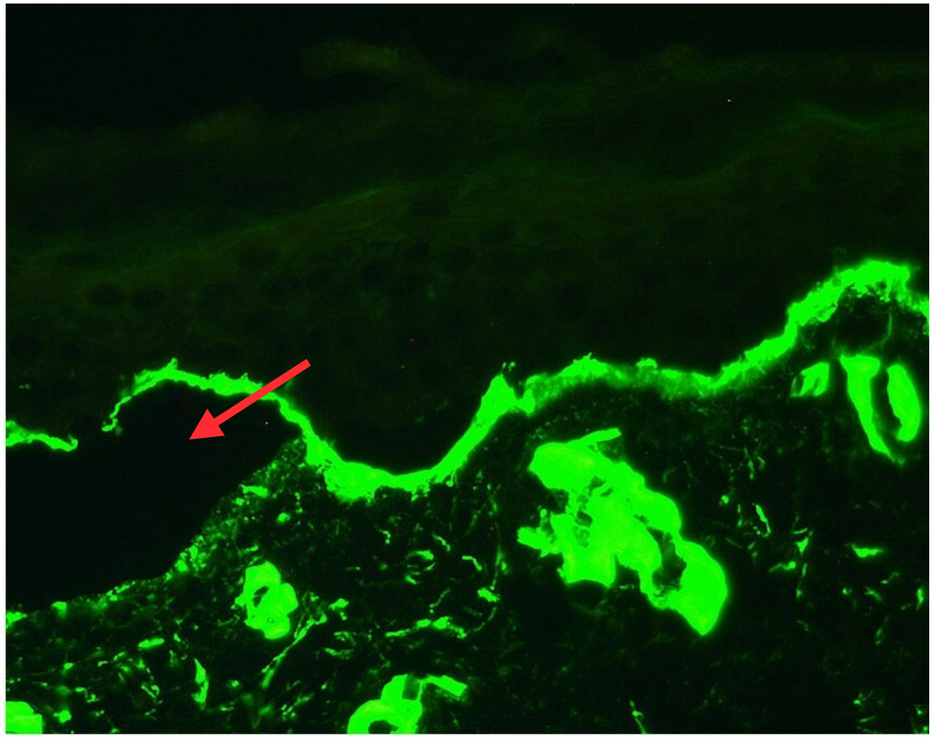
To understand the pathology and cause of blistering, standard practice is to examine the proteins important for the integrity of skin by immunofluorescence. Immunofluorescence uses fluorescently-labeled antibodies against specific proteins to reveal their location and amount in a tissue. Below are biopsies from two different patients who suffer from blisters. The biopsies have been stained with an antibody against type IV collagen. Arrows point to the blistering sites.

What does the location of type IV collagen relative to the blister reveal about the pathology of the blister? For each patient list which protein(s) you would stain for next to identify the cause of the blistering?

Patient One



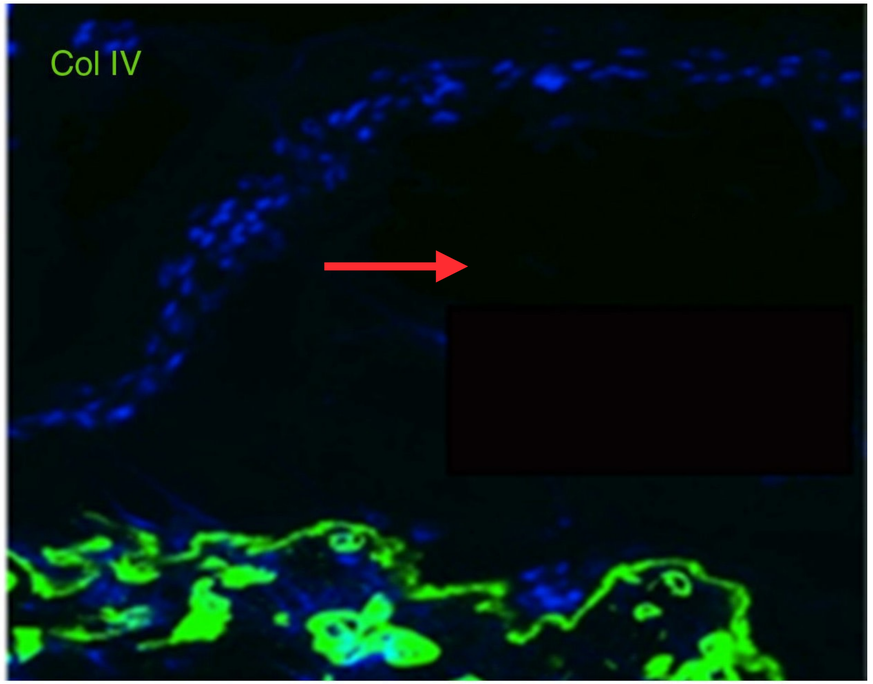
Patient Two



Question Two

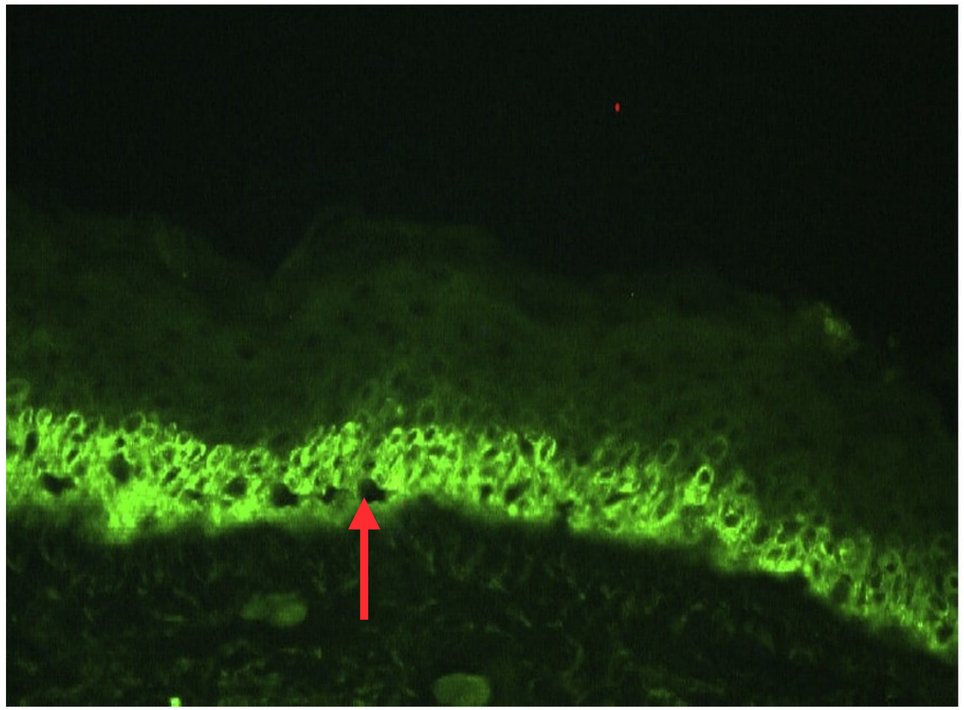
You also treat patients with milder blistering. An example is shown below. Biopsies from several patients are obtained and stained for type IV collagen (blue shows the nuclei of cells).. All samples show a similar pattern as shown below.

Type IV Collagen

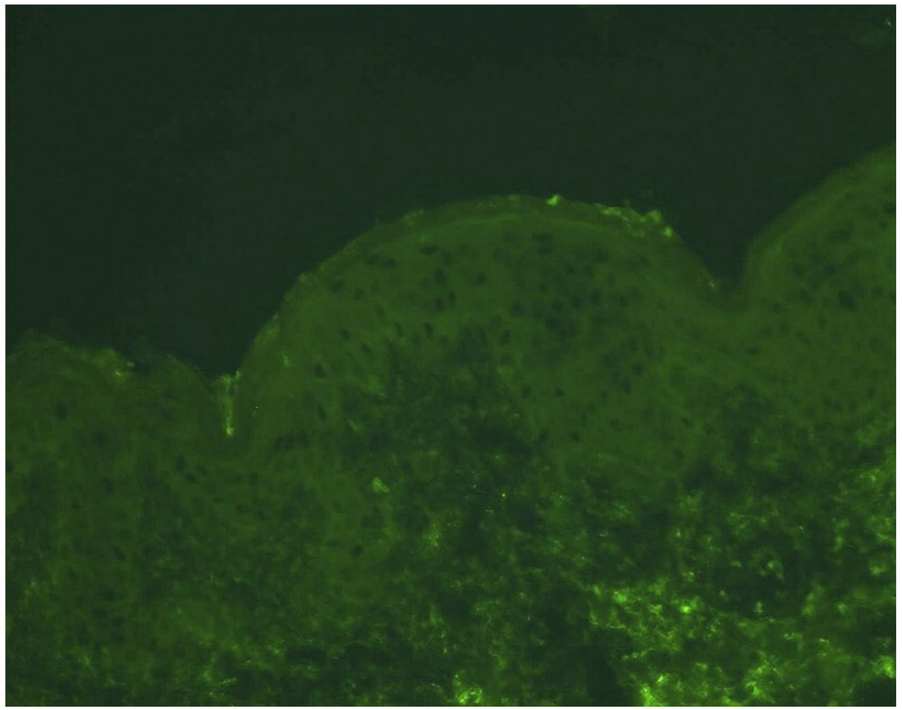


To understand the pathology and cause of the milder blistering, you analyze biopsies from patients with immunofluorescence using antibodies against keratin 14. Below are biopsies from two different patients that have mild blistering. The arrow points to a blister site in patient one. Antibodies to other skin proteins show little or no changes. How do the results explain the blistering in the patients?

Patient One



Patient Two



To better understand the nature of the genetic mutation and potentially identify other affected individuals, you perform a pedigree analysis for both patients. Examples are shown below. Which pattern best matches each patient?