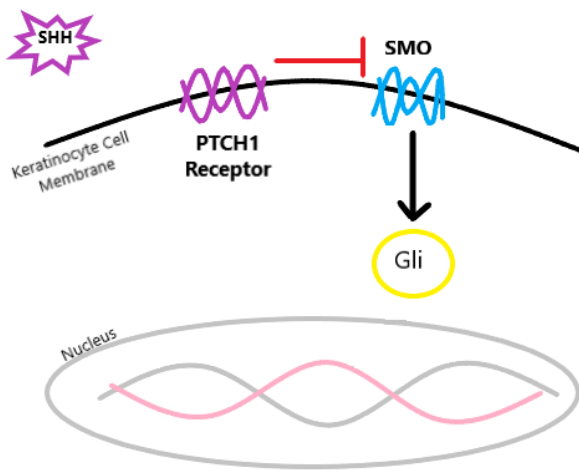


# 16- Basal Cell Carcinoma

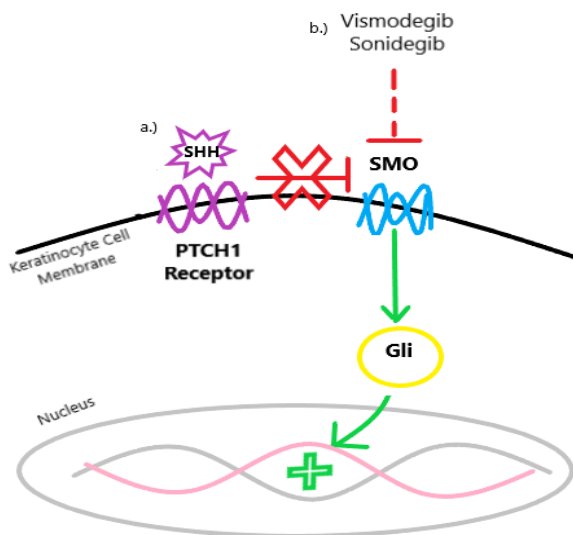
## Background:

- Most common skin cancer (Incidence ~ 2 Million cases annually in U.S.)
- Risk Factors
  - o Fair Skin
  - o Intermittent sun exposure
  - o Sex (Females > males)
  - o Old Age
  - o Immunosuppression
- Four Main Clinical Subtypes:
  - o **Nodular**
  - o **Superficial**
  - o **Morpheaform**
  - o **Fibroepithelial**

## Pathogenesis: Sonic Hedgehog Pathway



**Figure 1.** Under nonproliferative conditions, the PTCH1 receptor, a tumor suppressor, is not bound to its Sonic Hedgehog ligand and is blocking the Smoothed protein. Smoothed is an oncogene that turns on gene transcription via Gli during proliferative states.



**Figure 2.** a.) A proliferative state occurs after either Sonic Hedgehog binds and turns off the tumor suppressor PTCH1, or PTCH1 is mutated, which occurs in around 1/3 of BCC's. This allows Smoothed to activate Gli transcription factors, leading to cell growth and basal cell cancer. b.)

Smoothed inhibitors, Vismodegib and Sonidegib, block smoothed and prevent downstream activation of Gli transcription factors.

**PEARL:** Mutations that inactivate tumor suppressor, **PTCH1**, or active SMO can lead to the development of sporadic BCC's

- PTCH1 is mutated in **Basal Cell Nevus Syndrome** (Gorlin Syndrome)
- 2 *major* or 1 *major* + 2 *minor* criteria

### BCNS Major Criteria:

- o >2 BCCs (~20 y/o)
- o > 3 Palmoplantar pits
- o Calcification of falx cerebri
- o Odontogenic keratocysts of jaw
- o Bifid ribs
- o 1<sup>st</sup> Degree Relative w/ BCNS

### BCNS Minor Criteria:

- o Macrocephaly
- o Congenital Malformations
- o Skeletal Abnormalities
- o Bilateral Ovarian Fibroma
- o Medulloblastoma

## Clinical Presentation & Histology

- **Nodular** (50-80% of cases)
  - o Smooth, shiny papule or nodule w/ arborizing vessels and a rolled border
  - o Blue islands of basal cells w/in dermis w/ peripheral palisading, retraction artifact, fibromyxoid stroma
- **Superficial** (10-30% of cases)
  - o Erythematous macule or patch that may have a subtle crust/scale
  - o Blue buds of basal cells stemming from the epidermis, which do not go any deeper than the papillary dermis
- **Morpheaform**
  - o Indurated, scar-like appearance
  - o Up to 7mm of subclinical spread (**Aggressive**)
  - o Strands of basal cells cutting into dermis, eventually tapering to one cell thick
  - o Jagged pattern
  - o Pink desmoplastic, scar-like stroma
  - o Lacks peripheral palisading and retraction artifact
- **Fibroepithelioma**
  - o Slow growing, raised, pedunculated, fleshy nodule found on the lower back (can be mistaken for a skin tag)
  - o Thin strands of blue cells interconnecting to form a web-like structure
  - o Fibromyxoid stroma
  - o Less peripheral palisading & retraction

## BCC Histological Variants

- Micronodular

- Erythematous macule, papules, or plaque
- Can have subclinical extension (**Aggressive**)
- **Small** blue islands of basal cells w/ **subtle palisading** and **retraction** artifact
- Infundibulocystic
  - Pearly pink papule on the head and neck
  - **Anastomosing pink strands** and **blue** basal buds w/ **horn cysts intermixed**
- Basosquamous
  - Non-specific clinical presentation
  - $\leq$  5% chance of metastasis
  - Features of **both classic BCC & SCC** histology
- Radiation Therapy
  - BCC (Unspecified)
    - Primary Cure Rate = 92%
    - Recurrent Cure Rate = 90%
- Intralesional or systemic chemotherapies

### Important Histology Descriptors

*\*Peripheral Palisading: outer most cells in tumor island line up along the periphery*

*\*Retraction Artifact: clear space between tumor island and surrounding stroma*

*\*Fibromyxoid stroma: blue-grey mucinous background*

### Diagnosis:

- **Biopsy**

### Treatment:

- **Cryosurgery**
  - Superficial BCC
    - Cure Rate = 95%
  - BCC (unspecified)
    - Cure Rate = 91-95%
  - Reserved for small lesions or pt w/ comorbidities who cannot tolerate surgery
- **Topical Imiquimod or 5-fluorouracil (5-FU)**
  - Superficial BCC's
    - Imiquimod Cure Rate = ~78%
    - 5-FU Cure Rate = ~68%
  - Considerations: Irritation
- **Electrodesiccation and Curettage**
  - BCC (unspecified)
    - Cure Rate = 91-97%
  - Cannot perform on Scalp. BCC's can track down into hair follicle.
  - Considerations: Coin shaped scar + hypopigmentation
    - Avoid in cosmetic sensitive areas
- **Wide Local Excision (4mm margins)**
  - BCC (Unspecified)
    - Primary Cure Rate = 95-99%
    - Recurrent Cure Rate = 83%
  - Considerations: Longer Procedure & physical limitations post-op
- **Mohs Micrographic Surgery**
  - See Mohs appropriate use criteria and download the Mohs AUC app
    - Primary Cure Rate = 99%
    - Recurrent Cure Rate = 95%
  - Considerations: Cost & Time