23% to 56% of lower limb amputees experience hyperhidrosis (excessive sweating) that impedes prosthetic use and causes discomfort. Potential skin conditions include:
- Foul odors
- Maceration
- Dermatitis
- Fungal Infection
- Ulceration
- Blistering
- Chafing
- Prosthetic limb falling off

Current solutions include antiperspirant sprays, which are inexpensive but ineffective, Botox injections in the residual limb, which are more effective but very expensive and not approved by the FDA.

**Proposed Design**
- Inner silicone layer (black) with channels
- Channels are filled with absorbent fabric that carries moisture up through capillary action (not shown)
- Moisture is carried through the channels into a full layer of absorbent fabric (gray)
- An outer sleeve (red) holds everything in place and interfaces with the prosthetic

**Patentability and Costs**

**Patentability**
- Patents exist for other liners as an interface between amputee and prosthetic limb
- Our design still has the novel form and function to be patentable
- Channels in the silicone
- Use of capillary action to move moisture to a reservoir

**Cost**
- We expect a moisture-wicking prosthetic liner to be covered by Medicare.
- Current liners without moisture-wicking properties are covered
- Goal is to maintain a price similar to that of current liners, should be included under the code for the prosthetic sheath/sock.
- Expected cost of manufacturing is $100 per liner

**References**
- K. Sasaki et al. (2019)
- Rachel Fuechtman
- Kriya Ramkumar
- Alan Gallardo
- Karen Whirley

**Background**

A practical, low cost prosthetic liner for lower limb amputees fabricated from materials that will reduce heat build up between the prosthetic and the limb, minimizing moisture accumulation, risk of infection, and pain/discomfort due to sweat and use.

**Needs Statement**