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### Investigating the Underlying Mechanisms Responsible for the Effectiveness of Behavioral Cough Therapy

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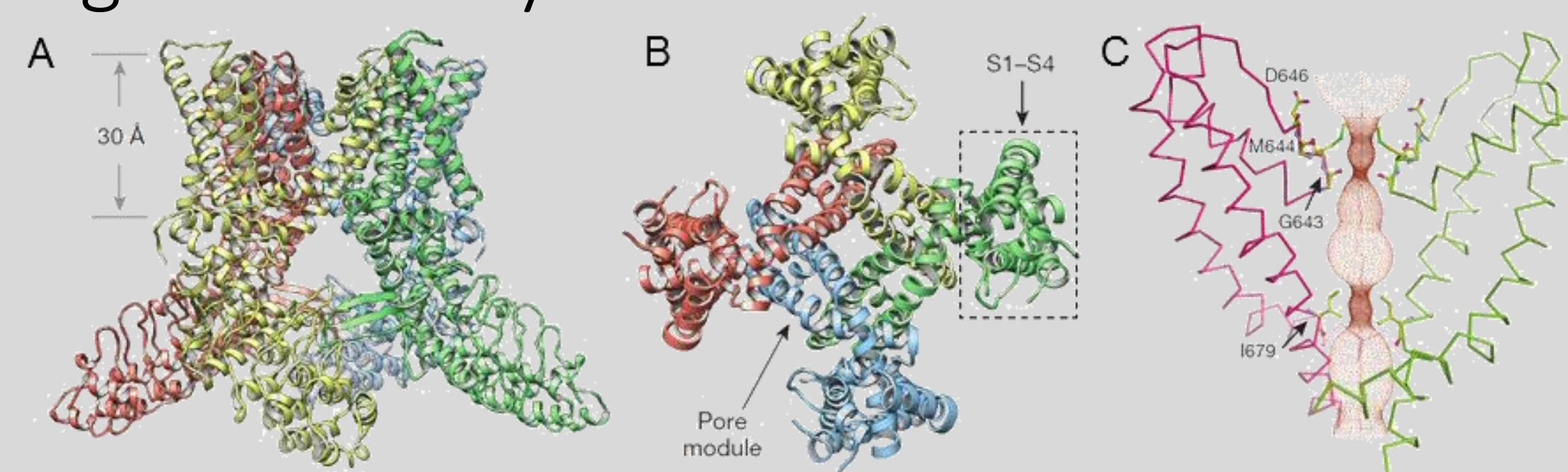
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# Investigating the Underlying Mechanisms Responsible for the Effectiveness of Behavioral Cough Therapy

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## Introduction

Chronic cough (CC), a cough that lasts more than eight weeks, is the number one complaint of adults seeking non-emergent medical care<sup>1</sup>. An estimated 20% of patients with CC do not respond to medical treatment, and are said to have refractory chronic cough (RCC)<sup>1-3</sup>. Several studies provide evidence that RCC is caused by hypersensitivity of sensory protein receptors in the airway epithelium known to regulate cough<sup>1-12</sup>. The primary sensory receptors are the transient receptor potential vanilloid (TRPV)<sup>4-8</sup>. These receptors can be found in the epithelial layer of the bronchus, larynx and nose<sup>9</sup>. These receptors are very plastic; in other words they are easily influenced by endogenous and exogenous factors, such as inflammation and chemical or mechanical stimulation. Behavioral cough therapy (BCT), which is provided by speech-language pathologists, has been shown to result in reduced cough sensitivity<sup>10-13</sup>. However, the underlying mechanism that results in reduced cough sensitivity is unknown.



Taken from: <http://www.guidetopharmacology.org/GRAC/FamilyIntroductionForward?familyId=78>

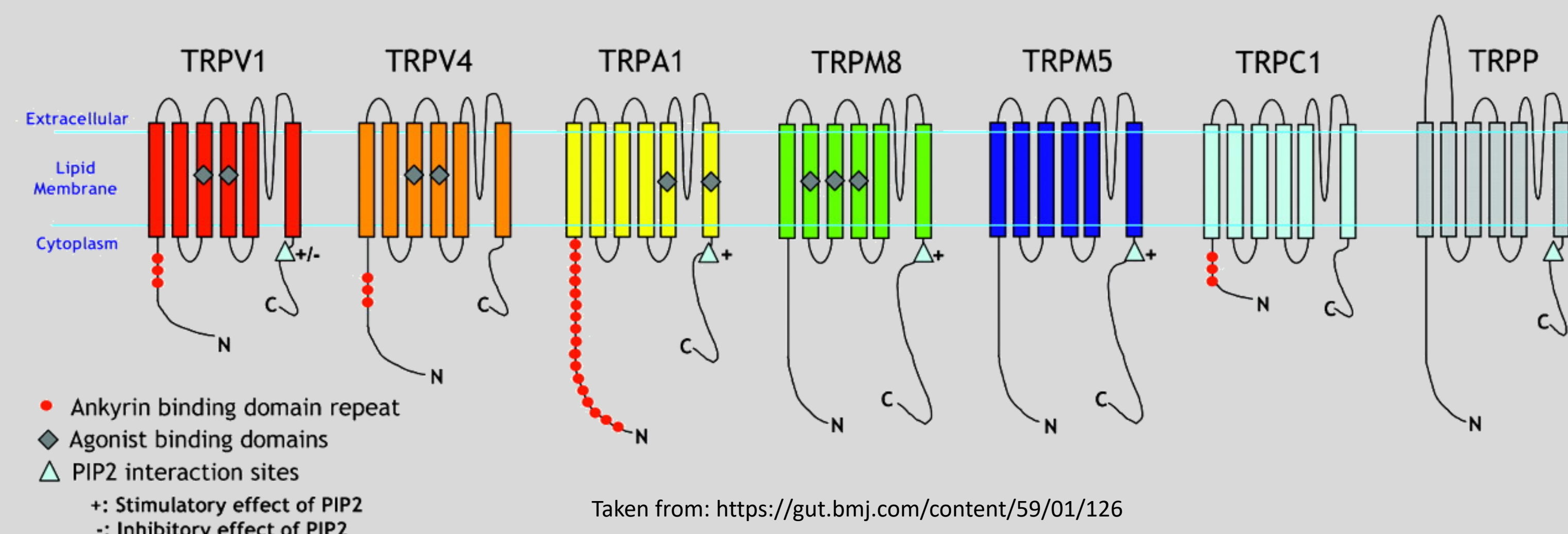
## Rationale

- Establish feasible methods
- Explore neuroplastic mechanism of reducing cough hypersensitivity

VOICES (Voice Outcomes and Inquiry of Cough and Essentials in Swallowing) Lab

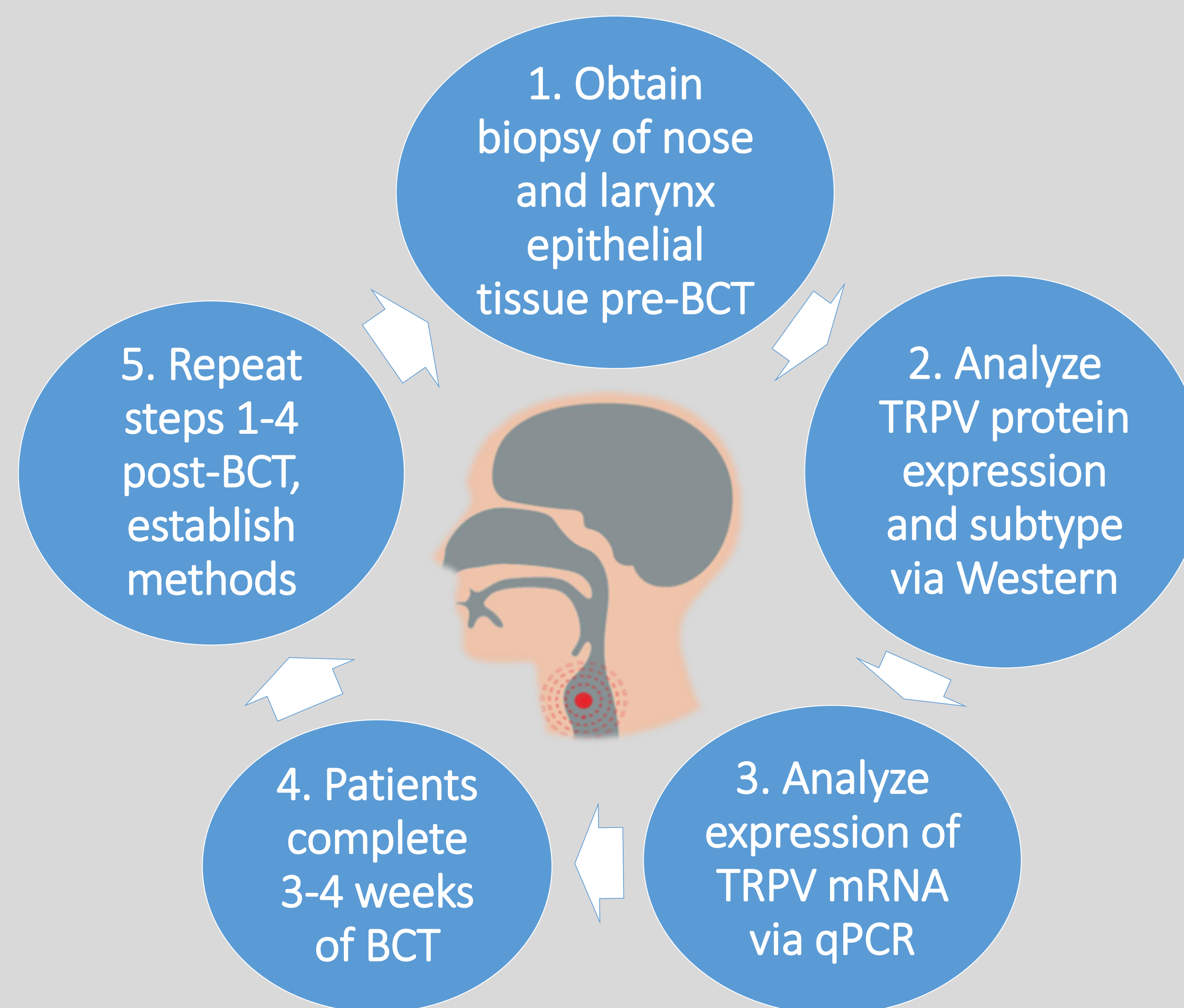
## Hypothesis

The reduction in cough sensitivity is due to down-modulation of TRPV receptors through a neuroplastic mechanism.



Taken from: <https://gut.bmj.com/content/59/01/126>

## Methods



## BCT

### Cough Suppression Strategies

- Cough control breathing
- non-medicated lozenge
- sip water
- hard swallow
- breath hold



## Implications

Examining the expression of TRPV before and after BCT will potentially explain the mechanism of the effect of BCT, which may increase its application in the clinic as well as open doors to other potential treatments for RCC.

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