

Introduction

- Sensitive skin (SS) is characterized by stinging, tingling, burning, tightness, pain, or pruritus in response to typically innocuous stimuli and occurs independently of other skin conditions.
- While SS has been largely studied in light skin tones, emerging data suggest a prevalence in darker skin tones, though the underlying mechanisms are poorly understood.¹⁻³
- This study assessed whether skin type is a high risk factor for SS using Q-Finder, a credible subgroup discovery algorithm.⁴

Materials and Methods

- An online survey (IRB# NCR256416) was distributed across 12 countries.
- Skin sensitivity was assessed using a 4-point Likert scale, and participants self-selected skin tones corresponding to their complexion.
- Selected tones were mapped to Fitzpatrick phototypes, and an expanded alphanumeric skin tone scale ranging from A1 (lightest) to C3 (darkest) was implemented (Figure 1).
- Participants were stratified into two cohorts: Cohort 1 included individuals with self-reported “not sensitive,” “sensitive,” or “very sensitive” skin (N = 11,338), while Cohort 2 applied the same criteria but excluded participants with prior skin conditions (N = 6,118).
- Both cohorts were analyzed using Q-Finder, with statistical significance defined as OR ≥1.2 and Bonferroni corrected p <0.05.

Study Design

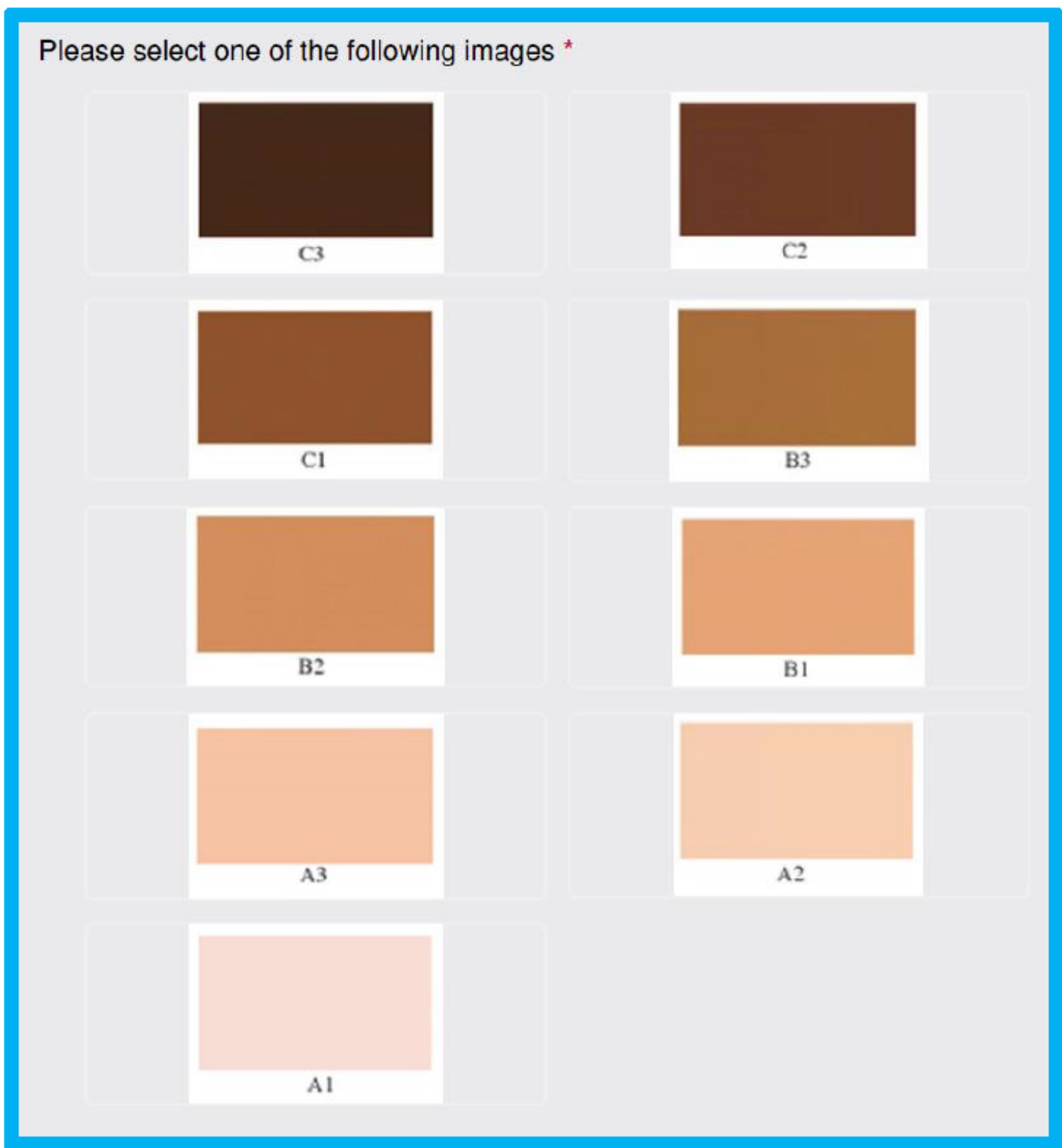
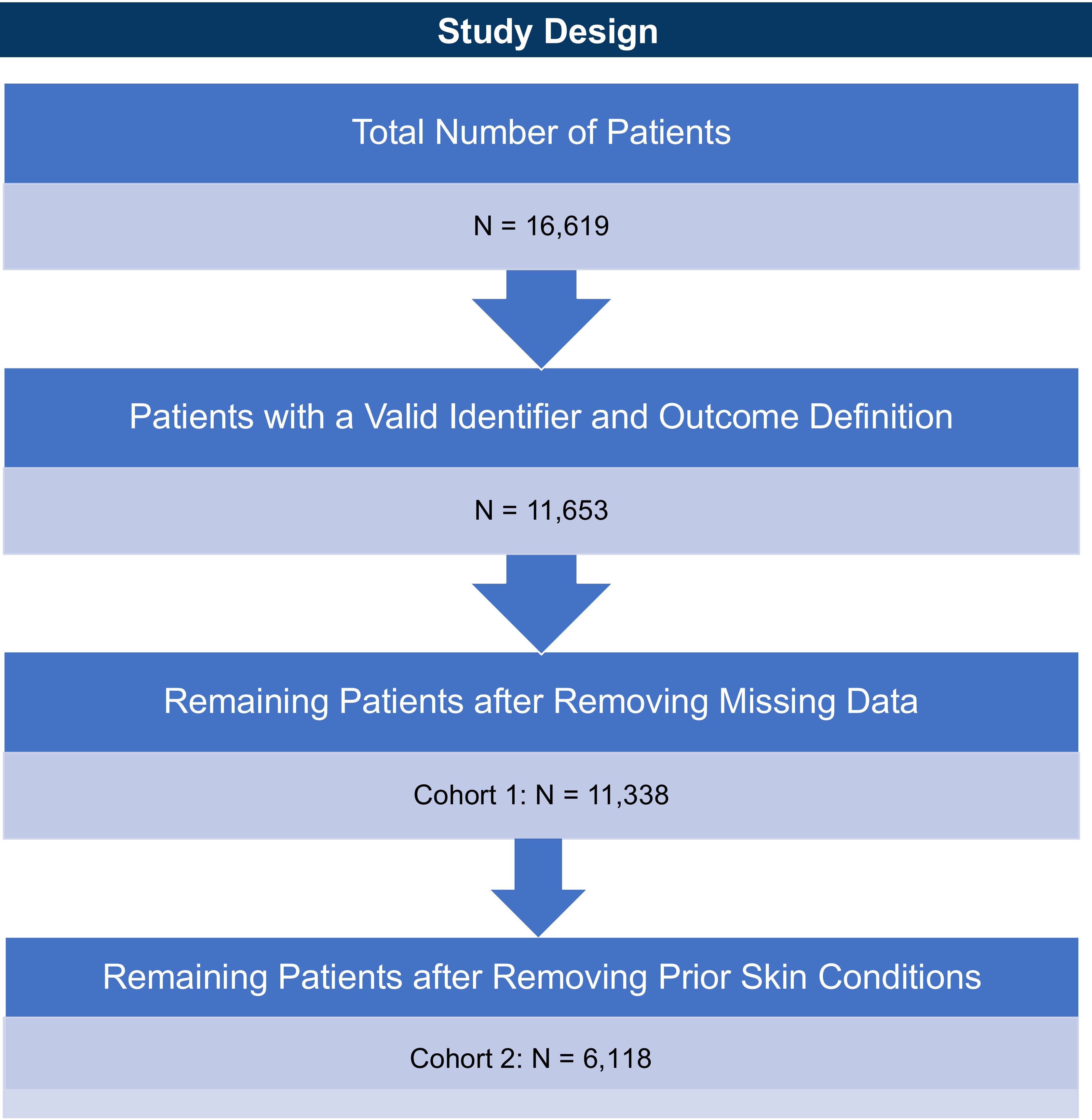


Figure 1. Alphanumeric skin tone scale (A1-C3) used in the survey for participant self-assessment of skin tone.

Study Design



Results

	% Dark Skin Phototype (VI + C2; C3)	Odds Ratio [95% Confidence Interval]
Cohort 1 (N = 11,338)	13%	1.9 [2.3-3.3]
Cohort 2 (N = 6,118)	13%	1.9 [2.3-3.3]

Conclusions

- Darker skin tones emerged as a high-risk factor for SS in this global analysis, expanding on prior research focused primarily on lighter skin tones.²
- Potential mechanisms include differences in stratum corneum structure and lipid composition that may impair barrier function and increase irritant penetration, and TRP channel polymorphisms, particularly TRPV1 and TRPV4, that may contribute to altered pain, itch, and heat transduction.⁵⁻⁷
- This study increases awareness of an underrecognized SS risk factor and underscores the need for future studies to clarify the relationship between SS and skin tone, with the goal of informing targeted management of high-risk individuals.

Works Cited

1. Misery et al. *J Eur Acad Dermatol Venerol*. 2016;30(Suppl 1):2-8. 2. Dubin et al. *J Drugs Dermatol*. 2020 Jul 1;19(7):699-701. 3. Vidal et al. *Eur Acad Dermatol Venereol Congress*; 2025 Sep; Paris, FR. 4. Esnault C, Gadonna M-L, Queyrel M, Templier A and Zucker J-D (2020) Q-Finder: An Algorithm for Credible Subgroup Discovery in Clinical Data Analysis — An Application to the International Diabetes Management Practice Study. *Front. Artif. Intell.* 3:559927. 5. Wesley et al. *Am J Clin Dermatol*. 2003;4(12):843-60. 6. Nickerson et al. *BMC Med Genomics*. 2022;15(1):9. 7. Ono et al. *Sci Rep*. 2017;7(1):9181.

Disclosures

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