SUPPLEMENTARY MATERIAL 1
Measurements

General Questions: (pre and post-CURE)

1. I am 18 years or older
    a. Yes
    b. No

2. I have been given a copy of the consent form
    a. Yes
    b. No

3. I have read the above information. I have asked questions and received answers. I am consenting to have my data be used as part of this research study.
    a. Yes
    b. no

4. Type in the digit of the day of the month you were born. For example, if you were born on March 5th you would enter “5”. If you were born on March 20th, you would enter “20”.

5. Enter the first letter of your middle name. If you have multiple middle names, put the first letter of your first middle name. If you do not have a middle name, put the letter “X”.

6. What is the last digit of your phone number? For example, if your phone number is 123-456-7899, you should enter a “9”.

General Questions: (pre-CURE only)

7. Please select your gender

    a. Man
    b. Woman
    c. Non-binary, genderqueer, gender non-conforming
    d. A gender not listed here

8. If the option “a gender not listed here” was chosen above, please specify your gender below

9. What is your Race and Ethnicity (select all that apply)?

    a. Alaskan Native
    b. American Indian
    c. Asian American
    d. Black or African American
    e. Filipino
    f. Foreign National
    g. Hawaiian
    h. Hispanic/Latino
    i. Pacific Islander
    j. White
    k. Prefer not to answer
    l. Other

10. If you chose “other”, specify below

11. What is your current educational status?

    a. I am a high school student
    b. I am a first-year college undergraduate
    c. I am a second-year college undergraduate
    d. I am a third-year college undergraduate
    e. I am a fourth-year college undergraduate
    f. Not Applicable/ Prefer not to answer

12. Have you declared your major?
    a. Yes
    b. No

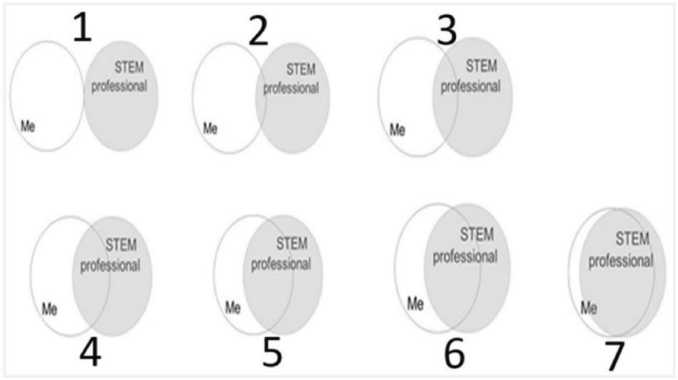
13. If you have declared your major, what is your major. Double majors identify both majors. If undeclared say “n/a”.

14. If you have not declared a major or concentration, please indicate if you are considering a major/concentration in the sciences

    a. Definitely yes
    b. It is likely
    c. I am not sure
    d. It is unlikely
    e. Definitely no
    f. Prefer not to answer

STEM identity: (same for pre and post-CURE)

Select the picture that best describes the current overlap of the image you have of yourself and your image of what a STEM professional is.



Content Test (same for pre and post-CURE)

Correct answers and point values indicated in bold. **Questions in red (5)** had an error where only one answer could be selected even though multiple answers were correct and was omitted from analysis.

LO1: Questions

1. A chemical that activates the T2R38 on a taste cell will cause (select all that apply) (**1pt)**

    a. Sour taste
    b. Bitter taste
    c. Sweet taste
    d. Savory taste (umami)
    e. Salty taste

2. Select all of the following statements that are true of folks that are supertasters (select all that apply: **(+.5 per correct, -.5 incorrect**, **2 pts. total**)

    a. Have larger papillae
    b. Have the AVI/AVI polymorphism for T2R38 receptor
    c. Are less likely to smoke
    d. More likely to consume alcohol
    e. Protected against upper respiratory infection
    f. Find green vegetables (broccoli, kale) more bitter

3. Which of the following cell types expresses the T2R38? **(1pt)**
    a. Club cells
    b. Ciliated Cells
    c. Tuft cells
    d. Goblet cells
    e. Basal cells

4. You read a research article where scientists report that sweet taste receptors and bitter taste receptors are able to generate innate immune responses to microbial infection. Based on this information, which organ(s) do you expect to generate the greatest innate immune response if only the sweet and bitter taste receptors are activated? (+.5 pts -.5 incorrect, **1 pt. total)**

    a. Colon
    b. Lungs
    c. Trachea
    d. Brain
    e. Stomach

5. A patient has a bacterial infection in their nose. The bacteria only release bitter compounds that cannot be detected by T2R38. Which of the following outcomes are likely *(select all that apply)*? (**+.5 pts -.5 incorrect, 1 pt total**)

    a. The patient's nasal epithelial cells will generate an immune response
    b. The patient's ciliated lung epithelial cells will generate an immune response
    c. The patient's nasal epithelial cells will not generate an immune response
    d. The patient's ciliated lung epithelial cells will not generate an immune response
    e. A and B

LO2 Questions:

6. According to Table 1, what are some conclusions you can draw (*select all that apply)*? (**+.5 pts -.5 incorrect, 1 pt. total**).

   a. Supertasters are likely female
   b. Nontasters tend to have longer hospitalizations from COVID-19 infection
   c. Supertasters tend to have symptoms for longer from a COVID-19 infections
   d. Tasters tend to have the lowest likelihood of getting infected with COVID-19

Table 1. Classification of Participants

Characteristic	Participants, No. (%)				*P* value
	Overall	Nontaster	Taster	Supertaster	
No. (%)	1935 (100)	510 (26.4)	917 (47.4)	508 (26.3)	NA
Baseline characteristics					
Age, mean (SD), y	45.5 (13.9)	49.1 (15.9)	45.6 (13.4)	41.6 (11.2)	<.001
Sex					
Female	1101 (56.9)	290 (56.9)	467 (50.9)	344 (67.7)	<.001
Male	834 (43.1)	220 (43.1)	450 (49.1)	164 (32.3)	
Outcomes					
Positive SARS-CoV-2 test result	266 (13.7)	147/266 (55.3)	104/266 (39.1)	15/266 (5.6)	<.001
Hospitalization[a]	55 (20.7)	47/55 (85.5)	8/55 (14.5)	0/55	<.001
Symptom duration, mean (SD), d[a]	18.7 (7.7)	23.7 (5.2)	13.5 (4.8)	5.0 (2.0)	<.001

7. Given the data in Table 1 (Barham et al. 2021), who is most protected from COVID-19 infections: nontasters, tasters, or supertasters? **(½ for correct taster; 1½ point for correct justification, 2 pts. total**)

   a. Nontasters
   b. Tasters
   c. Supertasters

   Why do you think this is the case? (.**75 pt for each element**)

   - **Supertasters > others because its T2R38 better able to recognize the virus better**
   - **Supertasters > others because then better immune response**
   - **Minus .5 for distraction answers (papillae, etc)**

8. If there are differences in COVID-19 outcomes based on being a nontaster, taster, or supertaster, could knowing someone's taste status be helpful in thinking about someone's risk from COVID-19? Why or why not? (**1pt. total**)

   - **If you know a patient is a supertaster → less at risk (½ pt.) BECAUSE better protected (½ pt.)**
     OR
   - **If you know a patient is a nontaster → more at risk BECAUSE (½ pt.) less protected (½ pt.)**

9. What behavior do supertasters tend to engage in far less than nontasters that might influence COVID-19 infection severity (**1pt. total**)? **1 pt. if mentioning smoking, ½ pt. off if they mention smoking and an incorrect response; 0 pts. if smoking not mentioned**

COVID and Smoking Questionnaire: Pre-CURE only

1. Have you every tested positive for COVID (that is confirmed by any COVID test?)
    a. Yes
    b. No

2. Were you vaccinated (even partially) when you got COVID?
    a. Yes
    b. No

3. If you were vaccinated at the time, what was your vaccination status?
    a. One dose
    b. Two doses
    c. Two doses and booster

4. Have you smoked a tobacco cigarette (electronic or combustible) in the last 30 days?
    a. yes
    b. no

5. If yes, how many days per month do you smoke?
    1. 1 or 2 days
    2. 3-9 days
    3. 10-29 days
    4. Everyday

Science Attitude questions

For each item below please rate your agreement with the item:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
Even if I forget the facts, I'll still be able to use the thinking skills I learn in science.	○	○	○	○	○	○
The process of writing in science is helpful for understanding scientific ideas.	○	○	○	○	○	○
I wish science instructors would just tell us what we need to know so we can learn it.	○	○	○	○	○	○
Creativity does not play a role in science.	○	○	○	○	○	○
Science is not connected to non-science fields such as history, literature, economics, or art.	○	○	○	○	○	○
I get personal satisfaction when I solve a scientific problem by figuring it out myself.	○	○	○	○	○	○
Science is essentially an accumulation of facts, rules, and formulas.	○	○	○	○	○	○
I can do well in science courses.	○	○	○	○	○	○
There is too much emphasis in science classes on figuring things out for yourself.	○	○	○	○	○	○
Explaining science ideas to others has helped me understand the ideas better	○	○	○	○	○	○
If an experiment shows that something doesn't work, the experiment was a failure.	○	○	○	○	○	○

Classroom Skills (post-CURE only)

Please rate how much learning you gained from each element you experienced in this lab. The scale measuring your gain is from (no or very small gain) to (very large gain). Some elements may not have happened at all. If the item is not relevant or you prefer not to answer, please choose the "not applicable option"

	No gain or very small gain	Small gain	Moderate gain	Large gain	Very large gain	N.A./prefer not to answer
a scripted lab or project in which the students know the expected outcome.	○	○	○	○	○	○
a lab or project in which only the instructor knows the outcome.	○	○	○	○	○	○
a lab or project where no one knows the outcome.	○	○	○	○	○	○
at least one project that is assigned and structured by the instructor.	○	○	○	○	○	○
a project in which students have some input into the research process and/or what is being studied.	○	○	○	○	○	○
work individually.	○	○	○	○	○	○
work as a whole class.	○	○	○	○	○	○
work in small groups.	○	○	○	○	○	○
become responsible for a part of the project.	○	○	○	○	○	○
read primary scientific literature.	○	○	○	○	○	○
collect data.	○	○	○	○	○	○
analyze data.	○	○	○	○	○	○
present results orally.	○	○	○	○	○	○
present posters.	○	○	○	○	○	○
critique the work of other students.	○	○	○	○	○	○
listen to lectures.	○	○	○	○	○	○
read a textbook.	○	○	○	○	○	○
work on problem sets.	○	○	○	○	○	○

Research Skills (post-CURE only)

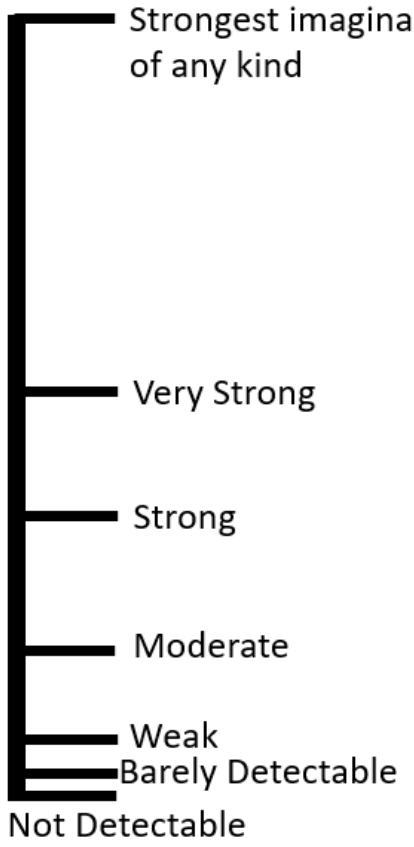
In this section of the survey you will be asked to consider a variety of possible benefits you may have gained rom your research experience. If for any reason you prefer not to answer, or consider the question irrelevant to you, please choose the “Not applicable/ Prefer not to answer” option.

	No gain or very small gain	Small gain	Moderate gain	Large gain	Very large gain	N.A./ Prefer not to answer
Clarification of a career path	○	○	○	○	○	○
Skill in the interpretation of results	○	○	○	○	○	○
Tolerance for obstacles faced in the research process	○	○	○	○	○	○
Readiness for more demanding research	○	○	○	○	○	○
Understanding how knowledge is constructed	○	○	○	○	○	○
Understanding of the research process in your field	○	○	○	○	○	○
Ability to integrate theory and practice	○	○	○	○	○	○
Understanding of how scientists work on real problems	○	○	○	○	○	○
Understanding that scientific assertions require supporting evidence	○	○	○	○	○	○
Ability to analyze data and other information	○	○	○	○	○	○
Understanding science	○	○	○	○	○	○
Learning ethical conduct in your field	○	○	○	○	○	○
Learning laboratory techniques	○	○	○	○	○	○
Confidence in my potential to be a teacher of science	○	○	○	○	○	○
Skill in how to give an effective oral presentation	○	○	○	○	○	○
Skill in science writing	○	○	○	○	○	○
Self-confidence	○	○	○	○	○	○
Understanding of how scientists think	○	○	○	○	○	○
Learning to work independently	○	○	○	○	○	○
Becoming part of a learning community	○	○	○	○	○	○

Taste Test (Pre-CURE only)

Students were instructed to place test strip “A” (PTC) onto their tongue followed by test strip “B” (control). Students self-directed how long to put the strip on their tongue, but they were asked to put the entire strip on their tongue. Students were then asked to select one of the items on the visual a

nalog scale (VAS) (below), adapted from (Bartoshuk et al. 2004)



References

Barham, H. P., M. A. Taha, S. T. Broyles, M. M. Stevenson, B. A. Zito and C. A. Hall (2021). "Association Between Bitter Taste Receptor Phenotype and Clinical Outcomes Among Patients With COVID-19." JAMA Network Open **4**(5): e2111410-e2111410.

Bartoshuk, L. M., V. B. Duffy, B. G. Green, H. J. Hoffman, C. W. Ko, L. A. Lucchina, L. E. Marks, D. J. Snyder and J. M. Weiffenbach (2004). "Valid across-group comparisons with labeled scales: the gLMS versus magnitude matching." Physiol Behav **82**(1): 109-114.