GASTROPOD

A REPORT AND FINDINGS

Tracking and Increasing the Representation of Diverse Voices

This initiative was made possible thanks to support from the Alfred P. Sloan Foundation Program for the Public Understanding of Science and Technology.

ALFRED P. SLOAN
FOUNDATION

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1. Executive Summary

THE NEED

Podcasts, and particularly science podcasts, have a responsibility to help combat pervasive bias against women and Black, Indigenous, and People of Color (BIPOC) in our society and our field. One way we can do so is by ensuring our guests represent a wide diversity of voices. To date, no podcast has publicly and transparently demonstrated the ways in which they have gone about doing so.

QUANTIFYING REPRESENTATION

This report outlines a novel metric and method for quantifying that representation—a way of measuring our performance against our real goal, which is increasing the diversity of *voices heard* as opposed to simply the diversity of guests on the show. In our appendices, we share our surveys and tools, in order to help other radio shows and podcasts to do the same in the future.

SETTING DIVERSITY GOALS

The question of what success should look like is central to any initiative. We explore two options for goal-setting: (1) improving on existing performance, or (2) setting goals to match the demographic make-up of the country in which the podcast is produced, or within the field covered by the podcast (in our case, science).

STRATEGIES FOR FINDING DIVERSE SOURCES

We share a list of the strategies we developed to find diverse sources and have assessed their efficacy, as a means to continue to improve our own performance, as well as help others.

LESSONS LEARNED

One important, if obvious, lesson is that improving the diversity of voices is not a quick fix, and requires a long-term investment of effort, in a variety of ways, in order to achieve results down the line. Another, similarly unsurprising, lesson is that tracking performance helps improve results. At a more granular level, some strategies are significantly more successful than others. These include prioritizing BIPOC and women guests who can describe the science, even if they are not the lead author or most well-known scientist in a particular discipline, as well as deliberately building episodes around the expertise of women and BIPOC individuals, rather than choosing topics and then looking for experts to interview.

2. Context

Gastropod is an award-winning and popular podcast that looks at food through the lens of science and history. Founded in 2015 by seasoned journalists Cynthia Graber and Nicola Twilley, Gastropod differs from many similarly successful podcasts in that it is independent, rather than part of a network or media conglomerate. Every aspect of its operations is conducted by Cynthia and Nicola, with the exception of advertising sales, for which we partner with Midroll. Gastropod is supported by a combination of advertising revenue, listener donations, and grant funding. Every other week, Gastropod produces a fresh, carefully reported and scripted episode with professional production values. Each episode takes listeners on a deep dive into a specific topic, from cutlery to communal eating, and from pizza to pawpaw.

The **Alfred P. Sloan Foundation** is a New York based, philanthropic, not-for-profit institution that makes grants in three areas: research in science, technology, and economics; quality and diversity of scientific institutions; and public engagement with science. Sloan's program in Public Understanding of Science and Technology, directed by Doron Weber, supports books, radio, film, television, theater, and new media to reach a wide, non-specialized audience. Learn more about the Foundation at Sloan.org or by following the Foundation on Twitter and Facebook at @SloanPublic.

In 2017, Gastropod was awarded its first grant from the Alfred P. Sloan Foundation. Part of that grant was set aside for an ambitious diversity initiative, the results of which are laid out in this report.

3. The Need

This initiative arose from our belief that podcasts, and particularly science podcasts, have the responsibility to help combat pervasive bias against women and Black, Indigenous, and People of Color (BIPOC) in our society and our field. One way we can do so is by ensuring our guests represent a wide diversity of voices. To date, no podcast has yet publicly and transparently demonstrated the ways in which they have gone about doing so.

Our hope is that this report will provide a framework that other shows can use or adapt to structure their own attempts at self-evaluation, in an attempt to improve the diversity of voices across the entire field of audio journalism.

The need is clear. According to the **National Science Foundation**, women make up only 28 percent of employed scientists in the United States, and only one third of all scientists are non-white (compared to 40 percent of the total population). Black, Hispanic, and Native American professionals make up just 6 percent of the science workforce, and Black scientists are far less likely to receive grants from the National Institutes of Health—they received just 1 percent of NIH research grants **in 2018**.

This bias is then amplified by science reporting. According to the Global Media Monitoring Project, **only 19 percent** of the experts quoted in science and health stories are women; the percentage is even lower for underrepresented communities. The problem is, to a large extent, circular: science reporting that underrepresents women and BIPOC reinforces the kind of biases that stop these groups from pursuing science careers or from rising to the highest levels in their fields. In the end, we are all worse off; **a lack of diversity** has been shown to reduce the quality and relevance of scientific research.

While certainly many journalists are aware of this issue and do make an effort to ensure a diversity of interviewees, we were not able to find any publications or podcasts that publicly track their performance on this issue. Two individual print science and technology journalists have conducted these sorts of surveys of their own coverage with regards to gender balance: *The Atlantic*'s technology reporter Adrienne LaFrance and science reporter Ed Yong. LaFrance found that she only quoted women **25 percent** of the time during the two years' of stories she analyzed, in 2013 and 2015. Inspired by LaFrance, Yong found that, in the **23 articles** he had published in early 2016, only 24 percent of the quoted sources were women, and 35 percent featured no women's voices at all. (He then detailed his efforts to improve, and was able to reach an average of 50 percent.) Yong said that his non-white sources vary from 15 to 42 percent month to month. To the best of our knowledge, no podcast, including any existing science podcast, has attempted to publicly quantify the diversity of guests on their show, as well as develop and share explicit strategies and metrics through which to track and improve it.

> We have developed and implemented the first objective metric to assess the amount of time different voices are actually heard.

Through this process, we have developed and implemented the first objective metric to assess the amount of time different voices are actually heard. Our initiative, we hope, will provide the impetus, as well as tools and strategies, to help other podcasts (including those that have already benefited from Sloan funding) focus on this issue.

By publicly exposing our own performance and process in this way, our goal is to not only improve our own performance, but also spur other radio shows and podcasts to do the same, even if only internally. Ultimately, we hope to help boost the diversity of voices in audio reporting across the board.

4. An Overview of our Process

Our process included a multi-step data-gathering and statistical analysis component, a strategic component that involved setting goals and then developing and implementing concrete initiatives to achieve those goals, and a review component, all leading to this final report.

Throughout the process, we were guided by the advice and expertise of our four-person advisory committee. Our first step was to recruit advisors who brought statistical expertise as well as hands-on experience in expanding representation in the sciences and science communication. (See Appendix 1 for their names and biographical details.) We drew on our committee for feedback, advice, and analysis throughout the duration of the project; this project would have gone nowhere without them, especially statistician Kristi Lemm, who wrangled all our data.

In order to have a benchmark against which to improve, we needed to evaluate our performance to date. We decided to evaluate two years worth of Gastropod episodes, from October 2016 through September 2018, to set that benchmark. While evaluating that data, we also set goals for the project year—October 2018-September 2019.

During the project year, we developed and implemented a variety of strategies to improve the diversity of voices on the show. We embarked on this project with a number of ideas about how to do so, and we also consulted with our advisory committee to come up with other potential methods.

We continuously tracked our performance over the project year using the same methodology used to establish our baseline. At the end of the process, in October 2019, we provided the data to Kristi Lemn, a member of our advisory committee, who performed the analyses and determined our results.

With those results in hand, we were able to evaluate our progress. Based on our results, we assessed which strategies worked, which did not, and what we learned.

5. Determining Metrics

In order to analyze the diversity of voices on Gastropod, we quickly determined that we needed to extend our analysis beyond counting—that is, beyond a simple tally of guests on the show by gender and race. Such a simplistic analysis would fail to capture the fact that one interviewee might contribute just a brief quote, while another might speak for a substantial portion of the entire episode.

Our goal—to track and increase the diversity of voices represented on our podcast—suggested that we needed to more accurately measure the platform given to each voice. On the surface, this seemed simple: we could simply count and compare the amount of time guests of different demographic categories spoke, overall.

Audio reporting differs from print in providing this more straightforward metric. In audio, the subject's own voice is often employed to a much greater extent than, say, just a few short quotes in print surrounded by much longer exposition. Certainly that's true for Gastropod. Nonetheless, we are a scripted, edited podcast, so we use excerpts from interviews with our guests, which are called "cuts" in audio journalism, and then talk around them. Thus, the amount of time for which a guest actually speaks doesn't capture the amount of time that we, the hosts, spend discussing their work. Should that count in the analysis?

After discussion with our advisory committee, we determined that the best metric to match our goal—increasing the diversity of ***voices heard*** as opposed to simply the diversity of guests on the show—was to count the amount of time for which each guest's voice was actually heard. We set up a spreadsheet and

entered the timecodes for each cut we used to arrive at a total speaking time for each guest.

Next, we needed to determine how to gather and analyze our guests' gender and race data. Based on suggestions from our advisory committee, we designed a brief questionnaire that gave guests the option to check as many boxes as applied for both gender and race, as well as the option to self-describe. This was sent to all guests from our baseline survey, as well as guests who appeared on the show during the project year. (See Appendix 2 for our survey design.)

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We also knew that not everyone would answer the survey, and thus, before we began, we devised a method to deal with that eventuality. First, for gender, we decided that, for the purposes of our analysis, we would use gender expression as our guide: how that person had chosen to present publicly and on our show. Although there are certainly people who present one gender to the world and identify as either the other or as nonbinary, this at least captured the diversity of gender expression as it was represented on the show.

Secondly, in terms of race, we planned to first search for examples of the individual's self-expression wherever possible. For instance, one non-responder clearly self-identifies as a Black man on social media and in his published work, so we classified him as a Black man for the purposes of our analysis. If we could not find such examples of self-expression, and, if the person presents as white, we would default to that option. This was not ideal—and certainly we know that appearance does not necessarily correlate to identity—but we determined that, at the least, it would prevent us from

inflating the results in our favor and appearing to have a greater diversity of guests than we actually do.

We provided guests several opportunities to respond to this very short survey, and approximately 58 percent of them did. For the 42 percent that did not, we followed the formula outlined above.

Even with a full set of data in hand, we still had some work to do to organize individual responses into a format that we could send, de-identified, to the members of our committee in charge of the statistical analysis. As an example, two people, in their responses, self-described as "Jewish-American/Ashkenazi" instead of white. While we understand that Jews of all races have been subjected to a long history of persecution, as Ashkenazi Jews move through the U.S. today, they are typically externally identified as white. Thus we categorized those two respondents as white.

Many specific race and ethnic groups were represented in the sample, including African American/Black, Hispanic/Latino, East Asian, South Asian, Middle Eastern, Native American, and others. Because the number of people within each specific group was small, members of all of these groups were combined into a single BIPOC category for reporting and statistical analyses, though we evaluated the division within the BIPOC category ourselves to note strengths and weaknesses in representation.

Finally, for this analysis, we also wanted to narrow in on science coverage in particular. Gastropod is a show that explores food through the lens of science and history; however, this initiative was funded by the Sloan Foundation, and their support is for our coverage of science, technology, and economics.

The two hosts made the decision about whether the guest was discussing science or what we classified as "other" (history or culture). This was usually fairly easy to determine, but in some episodes the same guest might have mostly been talking about culture, but occasionally described the science of, say, cattle breeding. In those cases, we went back through the actual transcripts of the show to correlate a given time code with "science" or "other."

As a result, we created two sets of documents, one for the baseline two years, and then another set for the year of the grant period. Each set contained three documents:

1. A spreadsheet that included a separate tab for every episode over the time period. The spreadsheet had the name of the speaker, the amount of time they spoke in seconds, and whether that time segment was “science” or “other.”

2. A spreadsheet that included all the names of all the guests in every episode in the time period, with their name associated with a number, as well as their gender and race.

3. A version of each document prepared for the statistical analysis, with the names removed from spreadsheet 2, and the identifying numbers from that document used to replace the names in spreadsheet 1.

The analyses included simple counts of the number of speakers and number of guest appearances by members of different groups, as well as the total time speaking by members of different groups across all episodes within each phase of the project (baseline and implementation year).

In order to test whether group differences were statistically significant, Kristi Lemm, our advisory committee statistician, computed the average speaking time per episode for each speaker. With a sample size of 44 episodes in Phase 1 and 25 episodes in Phase 2, this allowed her to test for statistically significant differences in average speaking time between men and women and between white and BIPOC speakers, to test whether diversity in Phase 2 differed from Phase 1, and also to test whether the percent of speaking time by women and BIPOC speakers was significantly different from stated goals.

6. Our Goals

Due to the way this grant support was structured, we began our diversity improvement initiative immediately upon receiving the grant. This meant that we began quantifying our grant-year performance immediately, before we had analyzed our past performance—which, in turn, meant that we needed to set our goals even before we knew our baseline results.

Rather than improve on existing performance (which we didn't yet know), we thus decided, in conversation with our advisory committee, to set our goals with reference to existing representation, within the country and within the field of science, our particular focus.

Within the United States, the **Census Bureau** estimates that the population is 51 percent women and 49 percent men. The population breaks down as 60 percent white, 18 percent Hispanic and Latino, 13.4 percent Black or African American, 6 percent Asian, and 1.5 percent Indigenous.

OUR GOALS

40

PERCENT WOMEN

40

PERCENT BIPOC

Meanwhile, as we outlined above (See Section 3: The Need), according to NSF data, only 28 percent of scientists are women and only 33 percent non-white.

Based on those numbers, we set ambitious but, we hoped, achievable goals: 40 percent of speaking time about science on Gastropod should be women's voices as opposed to men's; similarly, 40 percent of speaking time about science on Gastropod should be BIPOC voices.

These goals overrepresent women's and BIPOC voices based on the field, even though they still underrepresent them based on the population of the United States as a whole. We imagined that they would thus be a stretch. As it happens, although we did not know this when we set the goals, we had already exceeded them in our representation of women on the show in previous years, although we had not achieved them in terms of BIPOC voices.

7. Our Strategies

With the assistance of our advisory committee, we developed and implemented the following broad strategies to reach or exceed our goals of 40 percent women and 40 percent BIPOC voices on the show during the project year.

Soliciting suggestions of BIPOC and women guests from our audiences
We told our audience that we were looking to increase the diversity of voices represented on the show, and we welcomed suggestions of women and BIPOC that might make great Gastropod guests. We made this announcement on the show, in pre-roll, as well as on social media. We are aware of the argument that asking for suggestions to improve diversity simply shifts responsibility, but, as this call was made as part of a larger initiative on our part, in which we were actively making significant efforts to identify women and BIPOC scientists, we felt it was justified and potentially helpful.

Soliciting suggestions of BIPOC and women guests from our previous guests
When we reached out to previous guests with our questionnaire, we described the goals of the project and asked for their suggestions of BIPOC and women colleagues or peers who might make great Gastropod guests.

Searching through databases of BIPOC and women scientists to find ones whose research might inspire/fit a Gastropod episode
Through our own research and based on suggestions from our advisory committee as well as our colleagues, we found a handful of databases that list women or BIPOC scientists. These are typically designed to be used in a reactive way (i.e. when a journalist needs a quote for a story they're working on, and is in danger of defaulting to the white men who are usually cited as expert

sources on this topic), but could we also comb through them to find researchers who seemed to have Gastropod-adjacent interests, and then dig deeper to see whether their work could inspire an episode?

Reaching out to organizations that provide a network for women or BIPOC scientists for advice on reaching their members
Would these organizations be able to provide searchable lists that we could mine for inspiration, as above, or, at a minimum, ask their members to self-nominate or suggest others?

Reaching out to organizations of food-related scientists to ask for advice on reaching their women or BIPOC members
Would these organizations be able to provide searchable lists that we could mine for inspiration, as above, or, at a minimum, ask their members to self-nominate or suggest others?

Digging down a layer with papers or labs
When we found a paper or lab whose research we wanted to feature on the episode, but whose lead author or lab leader was white/male, could we do some additional digging to find BIPOC or women members of that lab or additional authors, who would likely also be able to describe the research?

Building episodes around women and BIPOC individuals
When we came across women or BIPOC individuals doing interesting work that was not necessarily sufficient to fuel a Gastropod episode in and of itself, could we come up with creative ways to build a larger episode that would include their work?

Waiting on topics of interest until we found women or BIPOC experts to help us tell the story
With certain subjects—either particularly broad topics or ones that seemed to us to have particular resonance for women or BIPOC individuals—could we simply hold off on making an episode until we found the right woman/BIPOC expert?

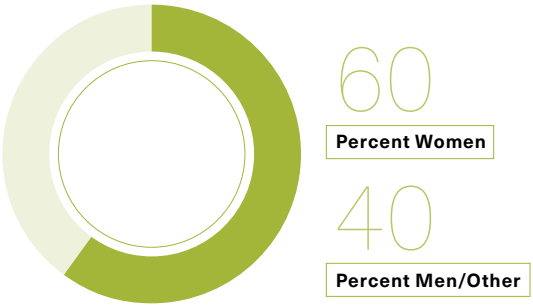
In addition to executing these strategies, we consciously kept an eye open for women and BIPOC experts in our social media and news feeds—as we had been doing before, but with the added pressure of our ambitious goals.

8. Our Baseline Survey Results

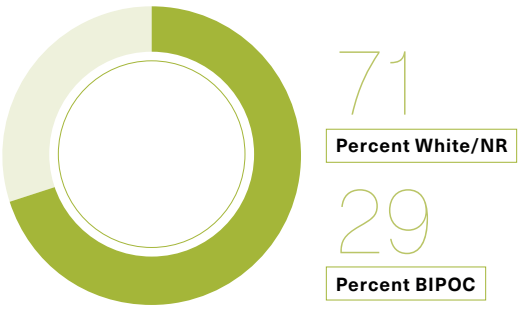
Our preliminary analysis covered the two years prior to the start of the grant time period, from October 2016 to October 2018, encompassing 44 episodes and 209 guests. A small number (5) guests appeared on two episodes, and one spoke on three episodes, so there were a total of 215 guest appearances. For context, Gastropod's hosts are both white women. Our speaking time is not included in this data and analysis.

We were delighted to find that, overall, our performance in terms of gender representation was already excellent. Of those 215 guest appearances, more than half (51.2 percent) were women. (47.4 percent were men, and three people, or 1.4 percent of total guests, either chose not to respond to the gender question or identified as "other.")

SPEAKING TIME ON SCIENCE



The amount of time for which guests spoke followed a similar pattern. Overall, women spoke more than men did, for 53 percent of the total airtime, compared to 44 percent. Even more surprisingly, given the relative dearth of women science experts represented in the general media, as detailed in our introduction, women spoke about science nearly 60 percent of the time.



When it came to race, our statistics were not as good. Overall, the guests broke down to 77 percent white, 21 percent BIPOC, and 1 percent non-responding. Altogether, white interview subjects spoke 82 percent of the time, compared to 15 percent of the time for the BIPOC guests. This is far below the goal we set of

“Just over 21 percent of our guests identified as BIPOC, but about half of those fit into categories (East Asian, South Asian, Asian) that cover the greater continent of Asia.

40 percent BIPOC representation. (We haven't yet revisited the episodes in question, but one explanation for this result could be that the BIPOC experts were speaking about a topic that formed a smaller part of an overall episode. For instance, in our “We Heart Chocolate” episode, one guest was an Asian-American man whose research only addressed the health benefits of chocolate, and thus only formed a small segment of a longer episode about chocolate.)

That said, when it came to science, BIPOC voices were heard nearly 30 percent of the time. That's not quite at our 40 percent goal, but, as Lemm wrote, “not significantly lower.”

Though this final analysis appears somewhat promising, a closer look points to additional weaknesses. Just over 21 percent of our guests identified as BIPOC, but about half of those fit into categories (East Asian, South Asian, Asian) that cover the greater continent of Asia. A far smaller percentage of our guests identified as African American/Black (3 percent) or Hispanic/Latino (4 percent). As these two categories are the largest non-white groups in the U.S., we could see that we needed to improve representation in these areas.

9. Our Results

In the year-long implementation phase of the project, there were 113 guest speakers in 22 episodes. Eight appeared on two different episodes, and one on three episodes, making 122 total guest appearances. This year in particular included a number of pre-recorded clips from news broadcasts or comedy archives, and for those we either reported white or unknown ethnicity.

Once again, women were represented slightly more frequently than men—overall, 54 percent of the guests were women. And once again, women also spoke on the show proportionally more than men did, at 57 percent of the time. When it came to women speaking about science, it was nearly exactly equal, just under 50 percent. This is slightly less than the baseline two years, but this is still above our stated goal of 40 percent. (That said, Lemm noted that 50 percent isn't statistically significantly higher than 40 percent in this data set, because the sample size is too small.)

With regards to race, 23 percent of our guests identified as BIPOC, which is only slightly higher than the baseline (21 percent). In terms of speaking time per episode, the average percentage was 20 percent BIPOC, which did not meet our goal, but is indeed an increase over the 15 percent from the baseline. BIPOC individuals speaking about science unfortunately decreased down to 15 percent (from the baseline of 30 percent); more of the BIPOC guests we interviewed this particular year covered history and culture rather than science. We also saw small (but not statistically significant, given our sample size) increases in the proportion of our guests who identified as African American/Black (3.5 percent, up from our baseline of 3 percent) or Hispanic/Latino (4.4 percent, up from our baseline of 4 percent).

Overall, we met our goal that 40 percent of speaking time about science on Gastropod should be women's voices as opposed to men's, but we did not come close to our goal that 40 percent of speaking time about science on Gastropod should be BIPOC voices.

10. Discussion

In this section, we will review which of our strategies were more successful than others, but also explore some of the larger conclusions we have taken away from this project.

The lowest effort strategy—soliciting suggestions—was only slightly successful. We received about forty suggestions from our audiences and previous guests. The majority of those that we received were not immediately useful: several of them were experts in topics we had already made episodes about; some of them were working on projects that were only very tangentially food-related (e.g. algae for fuel).

No guests in the project year came out of this strategy. However, subsequently, we have featured two suggested interviewees as guests on the show. One listener suggested we should interview Kevin Kim, a PhD student working on a thesis about "kimchi diplomacy." We reached out to Kim, interviewed him, and ended up including his research as part of a larger episode about kimchi that aired in December 2019, just outside the scope of the project year.

We also interviewed another expert, Leah Penniman, who was suggested by a listener, for an episode released in June 2020, well beyond the project year. This points to a larger takeaway: for a show that puts out one episode based on one topic only once every two weeks, the ramp-up from launching this more concerted approach to finding BIPOC subjects and then either including them in existing topics or creating episodes around them often takes longer than a year.

The strategy of reaching out to organizations—those who provide a network for women or BIPOC scientists or those who have a large membership of food-related scientists—was less successful, for a variety of reasons. For example, we emailed and then had a conference call with an association of food scientists, in order to ask their advice on how to reach their BIPOC and women members. They did not feel that it was in their interest to help us without receiving additional benefits in return, and so that avenue remained closed to us.

Other outreach efforts failed for lack of follow-up on both sides. For example, we reached out to an organization for BIPOC scientists, to ask if they could pass along a message to their membership. We received an initial email from them in response, but, after sending them the message to pass on to their members, we did not receive a further response, and we failed to follow up. We assume that, on their end, they may have been overwhelmed and under-resourced, and that perhaps our request was a low priority for them, which is quite understandable. On our end, the failure to follow up likely was a result of the fact that we were overstretched: one of the major, if unsurprising, conclusions of this project is that taking on a project of this scope, however important and necessary, was, as a team of two who already struggle to manage and produce the podcast, a lot to add to our plates. Even though the funded scope of the project has passed, we have since been able to fund a part-time paid fellowship position; assigning that fellow to work on some of these strategies has helped us to continue our effort to improve diversity beyond the span of the grant-funded project.

One of our most successful strategies was to deliberately build an episode around a woman or BIPOC individual's research. For example, we had learned (via our own networks) that female scientist Lisa Mosconi was doing innovative work on Alzheimer's and diet, and so we created an episode focused on that research. Similarly, we read a one-paragraph profile on Twitter of Fawn Weaver, the African-American woman who was digging up the story of Nearest Green and Jack Daniels, and we quickly reached out to her to book an interview. (Of course, Ms. Weaver was not discussing science, so, for the specific focus of this particular Sloan-funded project, this did not improve representation; nonetheless, it helped boost the diversity of voices on the show overall.)

Once again, this strategy has proven to be one with a long-term payoff: since the end of the project year, we have made episodes focused around Asian-American chef and invasive species expert Bun Lai, Asian historian Ai Hisano, African-American historian Marcia Chatelain, Native American tribal councillor and cockle expert Robin Little Wing Sigo, Black soil biogeochemist Asmeret Asafaw Berhe, and female plant geneticist Joyce van Eck, among others.

As our guest list indicates, however, we did much better at finding BIPOC individuals with expertise in food history and culture, as opposed to BIPOC scientists. In part, this is because our focus on making episodes that we knew would center on BIPOC individuals meant that we covered more history and culture in general, as a percentage of our 25 episodes. In part, we suspect this is because we allowed our focus on representing women's voices to reduce the pool

of BIPOC scientists still further. After all, women already only make up 28 percent of the science and engineering workforce: of that already small number of women, just 5.7 percent are Black or African American, 6.4 percent are Hispanic or Latino, and 0.2 percent are Indigenous, according to **NSF data**. What that means is, for example, just 1.6 percent of all scientists are Black or African-American women. In other words, in order to feature more BIPOC voices talking about science on the show, we might need to feature fewer women scientists. Given the importance of reaching our diversity goals, and given our existing success in reaching gender parity, we are planning to shift our effort in this regard.

One additional observation from reviewing the BIPOC individuals we included is that it—again, unsurprisingly—proved easier to find a BIPOC guest with expertise in specifically BIPOC-related topics, such as the Mexican sauce mole or soul food, as opposed to a BIPOC guest who studies, say, the gut, or space agriculture, to name two of the episode topics during our project year.

> “One of our most successful strategies was to deliberately build an episode around a woman or BIPOC individual’s research.

A strategy that helped address that challenge was our decision to dig deeper and prioritize BIPOC or women scientists over the lead author, lab director, or even the most well-known scientist in a particular field (still usually a white male). For example, for our episode on French fry science and history, we could have interviewed a male scientist who had written a book on the science of frying. Instead, we chose to interview Kanthe Shelke, a food scientist, repeat Gastropod guest, and female POC. Shelke was more than qualified to tell us what we needed to know for the episode about the science of crispy fries, and we already knew she was a great speaker. Our fry episode was better, and no less scientifically rich, for our decision.

Another strategy we consciously employ to address these issues is to pay attention to representation in the writing and editing of our scripts, after we’ve conducted the interviews. For instance, in a recent episode about a surge in vegetable gardens in the time of COVID and a deep dive into the history and science of urban farming, we paid deliberate attention to letting the two Black women’s voices take up space on the episode, and, if we needed to cut for time,

to trim the quotes from the other guests first. That way, though only two of the six guests were BIPOC, we made a deliberate effort to center the two Black voices on the show.

In some cases, our efforts to include BIPOC voices complexified both our workload and our episodes. We are certainly not the first to point out that men are often happy to describe the work and summarize the findings of their colleagues, while women are often only comfortable speaking about their own work specifically. In practice, this means that including more BIPOC individuals and women often translates to doing more interviews and weaving more expert voices into an episode. For example, in our pawpaw episode, we reached out to a Native American expert on indigenous foods, even though the relationship between Native Americans and the pawpaw fruit had already been covered in our interview with a white man, the author of a book on the pawpaw. We felt that it wasn't appropriate to only have a white man discuss Native American history, and we felt that the resulting episode was much better and richer with the additional interview, making the extra workload and narrative complexity worthwhile.

Overall, our experience has proven that improving the diversity of voices on Gastropod is not a quick fix, and requires a long-term investment of effort, in a variety of ways, in order to achieve results down the line. Coming out of this project, we have continued to use many of the strategies we employed. In particular, we have continued to dig deeper and prioritize BIPOC and women guests who can describe the science, even if they are not the lead author or most well-known scientist in a particular discipline. We have also consciously built several episodes around the expertise of BIPOC individuals and women, rather than choosing topics and then looking for experts to interview. We have also recognized that, given our success in featuring women's voices, our failure to hit our goals with respect to BIPOC voices, and the small pool of women BIPOC scientists, we need to shift our priorities to focus on BIPOC voices in general, even if that means our percentage of women's voices drops slightly.

Continuing to track and analyze our performance with the level of accuracy and detail that we did during the project year is unsustainable for a two-woman team, but is something that we found extremely helpful, not to mention motivating. We recommend it as an exercise and will find a way to repeat it in the future ourselves. That brings us to our final takeaway: truly improving the diversity of voices represented on the show requires the investment of dedicated staff time against that goal. If, as we hope, Gastropod continues to grow to the extent that we are able to hire additional staff members, we plan to do exactly that.

In addition to understanding and improving our own performance, we hope that this report will serve both as a spur and a resource to other podcasts and radio shows, as well as print and video media outlets. Based on our experience, the gender disparities that have already been recognized in the media (and referenced by Yong and LaFrance, as described above) should be at least relatively easy for producers and journalists to rectify. It does still take an effort, but we expect the strategies we've outlined above would prove effective for others.

It's possible that this is one reason that the little public analysis of diversity of sources that has taken place to date has been focused on gender diversity in particular, and it's likely one of the reasons we've been successful in achieving our goal of gender diversity on Gastropod. Nonetheless, the levels of representation we've achieved on Gastropod are still not yet shared by most of the media, and are thus still very much worth addressing; we believe that all podcasts can and should take immediate steps to interrogate and then improve, if necessary, the gender diversity of their sources.

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In addition to understanding and improving our own performance, we hope that this report will serve both as a spur and a resource to other podcasts and radio shows, as well as print and video media outlets.

Improving the racial diversity of sources is equally essential, but brings some extra considerations. One point we've already made is that, if a show is focused on improving both gender and racial diversity at the same time, the proportion of BIPOC women in science is even smaller than BIPOC men. Another issue is that it's often more difficult to know how someone self-identifies in terms of ethnicity, and, even if the podcast makes time to conduct surveys, many interviewees will not choose to respond. Assessing diversity by using such markers as names or skin tone is, undoubtedly, an imperfect measure. Nonetheless, an imperfect tool is better than nothing: we and our fellow journalists can and should assess and improve the use of BIPOC sources.

APPENDIX 1:
Advisory Committee

The Gastropod advisory board is a distinguished group of scientists who were selected based on their ability to assist Gastropod in its efforts to strengthen and amplify the diversity of scientists on the show, based on their own track records of advocating for scientific diversity. Two of them, in particular, were also chosen for their statistical expertise, in order to also help quantify that effort. We are grateful to them for their insights and assistance—in particular, Dr. Kristi Lemm, who led the statistical analysis.

Dr. Raychelle Burks is an analytical chemist at American University who specializes in forensic science. She is a member of the American Academy of University Women, the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, the Society for the Advancement of Chicano/Latino and Native Americans in Science, the Royal Society of Chemistry, the National Association of Science Writers, the American Chemical Society, and the National Science Teachers Association. She's also a member of the Broadening Participation Task Force for the Center for Advancement of Informal Science Education; she writes a monthly forensic science column for Chemistry World called Trace Analysis; and she appears on the Science Channel's "Outrageous Acts of Science" videos.

Dr. Leslie B. Vosshall is a molecular neurobiologist who studies how behaviors emerge from the integration of sensory input with internal physiological states. She is the Robin Chemers Neustein Professor, head of the Laboratory of Neurogenetics and Behavior, and director of the Kavli Neural Systems Institute at The Rockefeller University. She is a member of the board of bioRxiv, and is a proponent of pre-prints and open science, as well as a strong supporter of initiatives to increase diversity in STEM. She is the recipient of the 2008 Lawrence C. Katz Prize from Duke University, the 2010 DART/NYU Biotechnology Award,

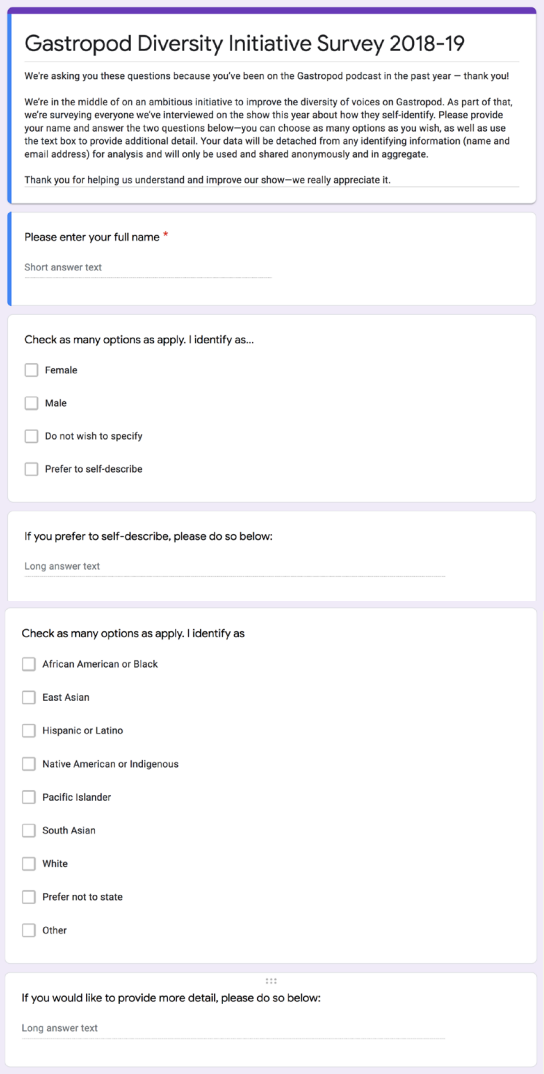
and the 2011 Gill Young Investigator Award. Vosshall is an elected fellow of the American Association for the Advancement of Science, and was elected to the National Academy of Sciences in 2015.

Dr. Robin Mejia manages the statistics and human rights program at the Center for Human Rights Science at Carnegie Mellon University, and she holds a special faculty appointment in the department of statistics and data science. She's a member of the Center for Statistics and Applications in Forensic Evidence, and she partners with researchers at the Human Rights Data Analysis Group, the Harvard Humanitarian Initiative, and the U.S. Department of Labor. She also worked as a journalist for more than a decade, and she assisted Gastropod co-host Cynthia Graber in analytical methods and statistical analysis for the Science Byline Counting Project.

Dr. Kristi Lemm is a psychology professor at Western Washington University. She's published extensively about implicit bias, reproducibility in science, and priming, is a member of the Society for Personality and Social Psychology, and served on the editorial board of the Canadian Journal of Behavioural Science. She assisted The Open Notebook, the online resource for science journalists, in their statistical analysis for a project on the ways in which men and women differ in pitching stories to science journalism publications.

APPENDIX 2: Survey

We created a survey in Google Forms, shared below in the interests of transparency but also in the hope that it might be useful as a template for other podcasts seeking to quantify their own representation. We sent the initial email with the survey link and subsequent reminders out to each interviewee individually, from our personal email accounts, rather than blasting a list, in the hope of avoiding spam filters and encouraging a higher volume of responses. With hindsight, sending this survey immediately after the interview took place, as opposed to waiting till the end of the year, might have resulted in a still higher response rate.



Gastropod Diversity Initiative Survey 2018-19

We're asking you these questions because you've been on the Gastropod podcast in the past year — thank you!

We're in the middle of on an ambitious initiative to improve the diversity of voices on Gastropod. As part of that, we're surveying everyone we've interviewed on the show this year about how they self-identify. Please provide your name and answer the two questions below—you can choose as many options as you wish, as well as use the text box to provide additional detail. Your data will be detached from any identifying information (name and email address) for analysis and will only be used and shared anonymously and in aggregate.

Thank you for helping us understand and improve our show—we really appreciate it.

Please enter your full name *

Short answer text

Check as many options as apply. I identify as...

- [ ] Female
- [ ] Male
- [ ] Do not wish to specify
- [ ] Prefer to self-describe

If you prefer to self-describe, please do so below:

Long answer text

Check as many options as apply. I identify as

- [ ] African American or Black
- [ ] East Asian
- [ ] Hispanic or Latino
- [ ] Native American or Indigenous
- [ ] Pacific Islander
- [ ] South Asian
- [ ] White
- [ ] Prefer not to state
- [ ] Other

If you would like to provide more detail, please do so below:

Long answer text

APPENDIX 3:
Sample Time Codes

NAME	TIME SPEAKING	TOPIC
Myles Karp	13	Other
Myles Karp	22	Other
Myles Karp	16	Other
Myles Karp	15	Other
Myles Karp	19	Other
Sohail Hashmi	4	Other
Sohail Hashmi	6	Other
Sohail Hashmi	9	Other
Sohail Hashmi	4	Other
Sohail Hashmi	12	Other
Sohail Hashmi	16	Other
Sohail Hashmi	14	Other
Rhitu Chatterjee	17	Other
Rhitu Chatterjee	5	Other
Myles Karp	9	Other
Sohail Hashmi	9	Other
Sohail Hashmi	5	Other
Sohail Hashmi	3	Other
Sohail Hashmi	14	Other
Sohail Hashmi	6	Other
Rhitu Chatterjee	24	Other
Rhitu Chatterjee	11	Other
Rhitu Chatterjee	5	Other
Myles Karp	8	Other
Myles Karp	16	Other
Myles Karp	20	Other
Myles Karp	9	Other
Myles Karp	17	Other
Myles Karp	7	Other
Myles Karp	23	Other
Myles Karp	22	Other
Myles Karp	22	Other
Myles Karp	5	Other
Myles Karp	19	Other
Myles Karp	14	Other
Myles Karp	6	Other
Myles Karp	16	Other
Myles Karp	3	Other

NAME	TIME SPEAKING	TOPIC
Rhitu Chatterjee	3	Other
Sohail Hashmi	17	Other
Rhitu Chatterjee	17	Other
Rhitu Chatterjee	22	Other
Sohail Hashmi	34	Other
Myles Karp	8	Other
Myles Karp	11	Other
David Kuhn	13	Other
David Kuhn	11	Other
Myles Karp	6	Other
David Kuhn	17	Other
David Kuhn	7	Other
Myles Karp	11	Other
Noris Ledesma	11	Other
Noris Ledesma	5	Other
Noris Ledesma	9	Other
Noris Ledesma	4	Other
David Kuhn	10	Other
Noris Ledesma	21	Other
Noris Ledesma	5	Other
Noris Ledesma	8	Other
Noris Ledesma	19	Other
Noris Ledesma	14	Other
David Kuhn	9	Other
David Kuhn	20	Other
David Kuhn	4	Other
David Kuhn	4	Other
David Kuhn	7	Other
Barbie	10	Other
David Kuhn	6	Other
Noris Ledesma	34	Other
Noris Ledesma	9	Other
Noris Ledesma	8	Other
Noris Ledesma	8	Other
Noris Ledesma	9	Other
Noris Ledesma	24	Other
Noris Ledesma	15	Other
Sohail Hashmi	18	Other

APPENDIX 4:
Episode List

TIME OF ANALYSIS, TWO YEARS, OCTOBER 2016-SEPTEMBER 2018

Counting Fish, October 4, 2016
Oysters: History and Science on the Half Shell, October 18, 2016
What is Native American Cuisine? November 1, 2016
The Buzz on Honey, November 15, 2016
The Spice Curve: From Pepper to Sriracha with Sarah Lohman, November 29, 2016
Getting Fizzy With It, December 12, 2016
Inventing the Restaurant: From Bone Broth to Michelin, January 16, 2017
We Heart Chocolate, January 30, 2017
To Eat or Not to Eat Meat, February 14, 2017
Cork Dork: Inside the Weird World of Wine Appreciation, February 28, 2017
Hacking Taste, March 14, 2017
V is for Vitamin, April 10, 2017
Meet Koji, Your New Favorite Fungus, April 24, 2017
Better Believe It's Butter, May 9, 2017
Here's Why You Should Care About Southern Food, May 22, 2017
Fake Food, June 6, 2017
Peanuts: Peril and Promise, June 20, 2017
It's Tea Time: Pirates, Polyphenols, and a Proper Cuppa, July 31, 2017
The Birds and the Bugs, August 15, 2017
Sour Grapes: The History and Science of Vinegar, August 28, 2017
Lunch Gets Schooled, September 11, 2017
What the Fluff is Marshmallow Creme: September 25, 2017
Eataly World and the Future of Food Shopping, October 9, 2017
Cannibalism: From Calories to Kuru, October 25, 2017
Crantastic: The Story of America's Berry, November 6, 2017
Women, Food, Power...and Books! November 21, 2017
Green Gold: Our Love Affair with Olive Oil, December 4, 2017
Secrets of Sourdough, December 18, 2017
Meet Saffron, the World's Most Expensive Spice, January 15, 2018

We've Lost It: The Diet Episode, January 30, 2018
Remembrance of Things Pasta: A Saucy Tale, February 12, 2018
Cutting the Mustard, February 26, 2018
Cooking the Books with Yotam and Nigella, March 12, 2018
Marching on our Stomachs: The Science and History of Feeding the Troops, March 26, 2018
Who Faked My Cheese? April 9, 2018
Meet the Man Who Found, Finagled, and Ferried Home the Foods We Eat Today, April 23, 2018
Ripe for Global Domination: The Story of the Avocado, May 7, 2018
Feed The World: How the U.S. Became the World's Biggest Food Aid Donor—And Why That Might Not Be Such a Great Thing, May 22, 2018
Hotbox: The Oven From Turnspit Dogs to Microwaves, June 5, 2018
Out of the Fire, Into the Frying Pan, June 19, 2018
Watch It Wiggle: The Jell-O Story, August 13, 2018
Keeping it Fresh: Preservatives and The Poison Squad, August 27, 2018
Mango Mania: How the American Mango Lost Its Flavor—and How it Might Just Get it Back, September 11, 2018
Why These Animals? September 24, 2018

TIME OF PROJECT, ONE YEAR, OCTOBER 2018-SEPTEMBER 2019

Espresso and Whiskey: The Place of Time in Food, October 8, 2018
The Incredible Egg, October 23, 108
How the Carrot Became Orange, and Other Stories, November 5, 2018
Who Invented Mac and Cheese? November 13, 2018
The Truth is in the Tooth: Braces, Cavities, and the Paleo Diet, November 19, 2018
Souring on Sweet: The Great Soda Wars, Part 1, December 4, 2018
Dirty Tricks and Data: The Great Soda Wars, Part 2, December 17, 2018
Sweet and (Low) Calorie: The Story of Artificial Sweeteners, January 15, 2019
The Secret History of the Slave Behind Jack Daniel's Whiskey, January 28, 2019
Eating to Win: Gatorade, Muscle Milk, and...Chicken Nuggets? February 12, 2019
Pick a Pawpaw: America's Forgotten Fruit, February 26, 2019
Seeds of Immortality, March 4, 2019
Can Diet Stop Alzheimer's? March 11, 2019
The Bagelization of America, March 26, 2019
The Curry Chronicles, April 9, 2019
Potatoes in Space! April 23, 2019
The Great Gastropod Pudding-Off, May 6, 2019
Guts and Glory, May 21, 2019
Eat This, Not That: The Surprising Science of Personalized Nutrition, June 10, 2019
Super Fry: The Fight for the Golden Frite, June 18, 2019
Meet Sharbat, the Ancestor of Sorbet, Syrup, Sherbet, and Everything Cool, August 6, 2019
Omega 1-2-3, August 12, 2019
Running on Fumes: Strawberry's Dirty Secret, August 27, 2019
Celebrate Mexico's True National Holiday with the Mysteries of Mole, September 10, 2019
Happy Birthday to Us: Gastropod Turns Five, September 24, 2019

APPENDIX 5:
Data & Analysis

The full data for this report are available for download online at our website.
https://gastropod.com/books-and-reports

APPENDIX 6:
Resources for Finding Diverse Sources

Numerous lists and databases exist to help journalists find diverse sources, including dozens that have emerged since our project year. Some, such as **Diverse Sources** and **WMC's She Source,** are searchable; others are simply lists of, say, **inspiring black scientists** or **women in microbiome research.** The best and most thorough guide that we have found to finding diverse sources in science was published in **June 2020 by The Open Notebook.** As we mention in our discussion section, we have had more success when we consciously built episodes around the expertise of BIPOC and women individuals, rather than choosing topics and then looking for experts to interview: in the case of these lists, that means building in time to sift through these resources before season planning sessions.