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NISE Network Bilingual Forums
Formative Evaluation

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Acknowledgements

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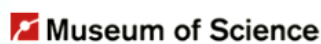# Table of Contents

Executive Summary

The NISE Network Forums were created to provide an in-depth learning experience that would (1) enhance participants' understanding of nano and its potential impacts; (2) increase participants' confidence in participating in public discourse about nanotechnologies; and (3) build informal science educators' knowledge and ability to conduct this type of programming at their institution (NISE Network Public Forums Manual, 2007). In an effort to reach out to a more diverse audience, the NISE Network Forums Team translated into Spanish the existing NISE Net forum "Nanomedicine in Healthcare" to engage individuals within the community who spoke both English and Spanish. As part of the development of this event, focus groups were conducted to provide the Forums Team with an understanding of how the program could be improved to more effectively engage and meet the needs of a bilingual audience.

Between winter 2009 and summer 2010, the Exploratorium and the Oregon Museum of Science and Industry (OMSI) attempted to recruit bilingual individuals from the National Association of Hispanic Nurses to participate in a "Nanomedicine in Healthcare" forum. Because both institutions had significant difficulty in recruiting a bilingual audience, the actual forum did not take place and the scope of the formative evaluation was adjusted accordingly. Rather than collecting evaluation data from forum attendees, focus groups were conducted with bilingual individuals to gather feedback on the forum materials that NISE Net had translated into Spanish and to learn about Latinos' perception of the bilingual forum. The data from the resulting focus groups provide unique insight into the thoughts and reactions of potential bilingual forum attendees upon receiving an invitation to attend the event. Highlighted below are several key findings derived from participant feedback that those creating or conducting a bilingual forum may wish to consider when planning such an event.

- Participants felt that the Nanomedicine forum would most likely attract individuals with professional backgrounds in medicine, healthcare, and education.
- There was no consensus reached regarding whether to conduct the forum in English, Spanish, or both languages. Participants recommend that the language of the forum should be chosen according to what would best support learning among the attendees. For example, bilingual individuals who were equally comfortable communicating in both English and Spanish would likely prefer to attend the forum in English.
- Participants felt that the language used in the forum materials was too difficult. For example, even though participants were highly educated, some individuals did not know the meaning of "nanotechnology" and "forum."
- Participants across focus groups were generally confused about the purpose and objectives of the forum. Confusion led to speculation that the "real intent" of the program was to collect information to help companies sell products to this audience type.
- Participants were generally not in favor of the small group discussion format as they felt there was not enough time given to have a meaningful discussion, and that the format could make some attendees feel uncomfortable. In general, participants felt that the forum agenda did not give adequate time to any of the agenda items.

Introduction

Overview of NISE Network public forums

The NISE Network created public forums to engage adults and older youth in discussion about the societal and ethical implications of nanoscale science, engineering, and technology. The forums also provide public audiences with "a vehicle for people of diverse views and backgrounds to deliberate on difficult issues and to seek a more comprehensive understanding of the topic" (NISE Network Public Forums Manual, 2007, p. 6). The NISE Network Public Forums Manual further states the overarching goals of the forums, namely (NISE Network Public Forums Manual, 2007):

- *Enhance the participants' understanding of nanoscale science, technology and engineering and its potential impact on the participants' lives, society, and the environment.*
- *Strengthen the public's and scientists' acceptance of, and familiarity with, diverse points of view related to nanoscale science, technology, and engineering.*
- *Engage participants in discussions and dialogues where they consider the positive and negative impacts of existing or potential nanotechnologies.*
- *Increase participants' confidence in participating in public discourse about nanotechnologies and/or the value they find in engaging in such activities.*
- *Attract and engage adult audiences in in-depth learning experiences.*
- *Increase informal science educators' knowledge, skill, and interest in developing and conducting programs that engage the public in discussion, dialogue, and deliberation about societal and environmental issues raised by nanotechnology and other new and emerging technologies.*

The public forums generally follow a standard format of presentation and last about two hours. During the first hour, the moderator welcomes forum participants to the event and introduces one or two forum speakers/experts. Typically, one speaker then introduces nanoscale science and the other speaker discusses the societal and ethical implications of nanotechnology. Following the speakers, participants have about five minutes to ask clarifying questions (NISE Network Public Forums Manual, 2007).

Accompanying each forum is a set of materials that includes scenarios related to the forum topic. During the second hour of the forum, participants break into small groups to discuss the scenarios. The discussion is followed by individual or group reflection during which time groups report-out on what they discussed. At the conclusion of the forum, participants usually complete a post-forum survey.

Purpose of the evaluation

The "Nanomedicine in Healthcare" forum explores nanotechnology-enabled medical technologies, their potential to transform healthcare, and the societal and ethical implications of these emerging technologies. In order to reach a broader audience (particularly individuals within the community who spoke both English and Spanish), the NISE Net Forums Team began to translate the "Nanomedicine in Healthcare" forum materials into Spanish in 2009. This particular forum was chosen for translation because it had been summatively evaluated and the

Forums Team felt that the topic would be of most interest to an English-Spanish bilingual audience.

To assist the Forums Team in understanding how the program could more effectively achieve its goals and better meet the needs of program stakeholders (bilingual adult learners, museum educators, and the expert presenters), the Research and Evaluation Department at the Museum of Science conducted a formative evaluation of the bilingual forum. Forums Team members planned to host the bilingual forum at the Exploratorium and OMSI, at which time the forum would be formatively evaluated. Due to the substantial difficulty the Exploratorium had in recruiting a sufficient number of bilingual individuals to attend the forum, the scope of the evaluation plan was changed. Rather than evaluating individuals who attended a bilingual forum to learn about their experience, the Forums Team decided to conduct two focus groups with bilingual individuals who had not attended a NISE Net forum. These individuals were provided with the translated forum materials before the focus group and asked to provide feedback about the materials and the forum concept more generally. This report presents findings from the focus groups and suggests modifications to the program in order to improve its delivery and impact.

Methods

One focus group at the Exploratorium and a second at OMSI were conducted in August 2010. As stated above, the purpose of the focus groups was to get feedback from bilingual participants about the "Nanomedicine in Healthcare" forum materials that had been translated into Spanish and to learn how the NISE Network could improve forums for bilingual or monolingual Spanish-speaking audiences. The comments focus group participants provided are particularly useful to forum developers as they give insight into the factors bilingual individuals might consider upon receiving an invitation to attend a NISE Net forum.

Implementation of focus groups

Staff at the Exploratorium and OMSI used similar strategies to recruit individuals to participate in the study. At the Exploratorium, focus group organizers looked to recruit bilingual individuals who would likely be interested in the topic of nanomedicine. The institution partnered with an individual who recruited a number of highly-educated bilingual acquaintances, the majority of whom worked in the bio tech and nano tech industries. The Exploratorium offered individuals food, a 50 dollar gift card, and free museum passes as an incentive to participate in the evaluation.

Focus group organizers at OMSI aimed to attract a broader Latino audience to participate in a bilingual forum focus group. Like the Exploratorium, OMSI partnered with an individual at the institution who was previously involved in a number of bilingual programs. This individual recruited focus group participants drawing on her connections with professionals from the bilingual community who worked in science, business, and education. OMSI offered a 50 dollar gift card as an incentive to participate in the bilingual forum focus group.

Study participants at both institutions received several materials in Spanish to read before participating in the focus group (see Appendices B-D for materials). The materials included a marketing flyer that described the forum topic and outlined the forum agenda. The flyer specified that no prior knowledge was required to attend the forum. Focus group participants also received two small group discussion scenarios about nanotechnology in personal care products and the use of nanotechnology in diagnosing and treating cancer, which were intended to guide the small group discussion. Several questions were included in the scenarios to foster small-group discussion during the event. The materials that focus group participants received were materials that are generally made available to NISE Net forum attendees.

During each focus group, participants were asked to give feedback about the format and agenda of the forum as well as the discussion questions and scenarios. Focus group moderators were particularly interested in learning if the forum would appeal to bilingual or monolingual Spanish-speaking audiences and whether the forum should be conducted in English, Spanish, or both languages.

OMSI and the Exploratorium recruited 14 and 13 bilingual Latinos respectively to participate in the evaluation. The Exploratorium was the first institution to conduct the forum focus group. After the event, the Exploratorium focus group facilitator shared her experience conducting the focus group and the relevant themes that emerged from the group discussion with OMSI colleagues.

Participant demographics

Participants were asked to fill out a brief survey at the end of each focus group (see Appendix E). The purpose of the survey was to gather demographic information (gender, age, race, level of education, etc.) and to assess how much participants already knew about the topics of the proposed bilingual forum (nanotechnology and medical technologies) before the focus group. Compared to OMSI, focus group participants at the Exploratorium had a higher level of education (although both groups were well-educated), were more likely to speak both Spanish and English at home, and had a greater understanding of medical technologies. The survey data presented below provide context to participant comments discussed later in the report.

Gender of participants

A total of 27 individuals participated in the two focus groups held at the Exploratorium and OMSI. In the overall sample, there were twice as many females (18 of 27) as males (9 of 27) (see Table 1). Examining gender by institution, the Exploratorium focus group had a nearly equal gender balance. Within the OMSI focus group, however, there were only two male participants out of a total of 14 individuals.

Table 1. Gender of bilingual forum focus group participants split by institution (N=27).

		Male	Female
OMSI (n=14)	Number of participants	2	12
	% within Institution	14.3%	85.7%
EXPLO (n=13)	Number of participants	7	6
	% within Institution	53.8%	46.2%
Total	**Number of participants**	**9**	**18**
	% of Total	**66.7%**	**33.3%**

Primary language spoken at participants' homes

Overall, the majority of focus groups participants (15 of 27) indicated that Spanish was the primary language spoken in their home while English-only households comprised just 15% (4 of 27) of the total sample. Within each institution, the primary language spoken in participants' homes varied (see Table 2). Focus group participants at the Exploratorium were almost evenly split between speaking Spanish only at home (6 of 13) and speaking both Spanish and English (5 of 13). However, among OMSI participants Spanish-only households made up nearly two thirds of the sample (9 of 14).

Table 2. Primary language spoken at home (N=27).

		Spanish	English	Both
OMSI (n=14)	Number of participants	9	2	3
	% within Institution	64.3%	14.3%	21.34%
EXPLO (n=13)	Number of participants	6	2	5
	% within Institution	46.2%	15.4%	38.5%
Total	**Number of participants**	**15**	**4**	**8**
	% of Total	**55.6%**	**14.8%**	**29.6%**

Highest education level of participants

Focus group participants at both institutions were well-educated. All individuals in the sample had earned at least a college degree. As shown in Table 3, nearly 77% of individuals (10 of 13) in the Exploratorium focus group also held a graduate degree. In contrast, the majority of individuals (9 of 14) in the OMSI focus group held only a college degree, see Table 3. The high level of education of participants in both groups is not surprising considering that professionals with science and engineering backgrounds were specifically recruited to participate in the focus groups.

Table 3. Highest level of education (N=27).

		College degree	Graduate degree
OMSI (n=14)	Number of participants	9	5
	% within Institution	64.3%	35.7%
EXPLO (n=13)	Number of participants	3	10
	% within Institution	23.1%	76.9%
Total	**Number of participants**	**12**	**15**
	% of Total	**44.4%**	**55.6%**

Participants' reported understanding of nanotechnology and medical technologies

Nearly 60% of the overall sample (16 of 27) disagreed or strongly disagreed with the statement "I have a very good understanding of nanotechnology." It is interesting to note that reported degree of understanding varied little across institutions. By combining categories to form only two categories, "Strongly Disagree/Disagree" and "Strongly Agree/Agree," it is found that about 43% of OMSI focus group participants (6 of 14) agreed or strongly agreed that they understood nanotechnology well compared to 39% of individuals (5 of 13) at the Exploratorium, see Table 4.

Table 4. Understanding of nanotechnology (N=27).

		Strongly Disagree	Disagree	Agree	Strongly Agree
OMSI (n=14)	Number of responses	3	5	4	2
	% within Institution	21.4%	35.7%	28.6%	14.3%
EXPLO (n=13)	Number of responses	1	7	3	2
	% within Institution	7.7%	53.8%	23.1%	15.4%
Total	**Number of responses**	**4**	**12**	**7**	**4**
	% of Total	**14.8%**	**44.4%**	**25.9%**	**14.8%**

A greater number of individuals in the overall sample reported a strong understanding of medical technologies. About 42% of respondents (12 of 26) agreed or strongly agreed with the statement, "I have a very good understanding of medical technologies." Comparing responses by institution, participants in the Exploratorium focus group were more likely to indicate that they had a strong understanding of medical technologies (see Table 5). Combining the categories as demonstrated above reveals that 54% of Exploratorium participants (7 of 13) felt they had a strong understanding of medical technologies compared to only 38% of the OMSI participants (5 of 13).

Table 5. Understanding of medical technologies (N=26).

		Strongly Disagree	Disagree	Agree	Strongly Agree
OMSI (n=13)	Number of responses	2	6	3	2
	% within Institution	15.4%	46.2%	23.1%	15.4%
EXPLO (n=13)	Number of responses	1	5	5	2
	% within Institution	7.7%	38.5%	38.5%	15.4%
Total	**Number of responses**	**3**	**11**	**8**	**4**
	% of Total	**11.5%**	**42.3%**	**30.8%**	**15.4%**

Data analysis

Evaluators coded the focus group data according to emerging themes and patterns that were observed in the data. In order to reduce the chance that translation would change the meaning of collected feedback, data were coded in Spanish; however, the focus group comments that were included in this report were translated into English because the intended recipients of this report most likely do not speak Spanish. Data analysis focused on identifying feedback and comments that could guide the Forums Team in creating and delivering a forum event to a bilingual Latino audience. It was evident from the data that ideas and comments across the two focus groups did not substantially conflict or contradict each other. Therefore, the data from both groups were analyzed together and in most cases, the thoughts, feelings, reactions, and comments of focus group participants were not delineated by institution.

Study limitations

A total of 27 individuals participated in the bilingual forums study. Due to the targeted recruitment of bilingual professionals and the small sample size, the findings from this study are not generalizable to the broader bilingual audience. Findings from the study can be used to inform the continued development of the bilingual forum format, but given the limited scope of the evaluation and the homogenous sample, the data from this study are limited in their ability to predict the outcomes of other NISE Net bilingual programs. Additionally, readers of this report should note that study participants did not actually participate in a forum event. Therefore, participants' opinions and suggestions related to the bilingual forum are not informed by personal experience but only by reading the bilingual focus group materials.

Results and Discussion

The following section seeks to describe participants' thoughts and feelings regarding the content and format of the NISE Net bilingual forum. These data are organized according to the primary themes that emerged during the focus groups, which include the following:

1. Participants felt forum content and language should be chosen based on the needs of the target audience.
2. Participants felt they would attend the bilingual forum because of general curiosity about and interest in the topic.
3. Participants felt the content, location, and timing of the event would impact who attends the bilingual forum.
4. Participants felt that the agenda should be changed to allow more time with the speakers and that the small group discussion should either be lengthened or removed.
5. Participants felt there was a need to clarify and further explain the information provided on the NISE Net bilingual forum materials.

1. Participants felt forum content and language (Spanish or English) should be chosen based on the needs of the target audience.

A primary reason for conducting focus groups with bilingual Latinos was to determine in which language the NISE Net bilingual forum should be conducted. When asked whether the event should be held in English, Spanish, or both languages, focus group participants at OMSI and the Exploratorium agreed that the language in which the forum is presented depended on the type of audience NISE Net wanted to attract. Participants within focus groups did not reach a consensus regarding the appropriate language for the event, and throughout the course of the discussion, some focus group participants offered opinions in conflict with their previous statements about language and audience. However, even though participants had difficulty agreeing on the language of the bilingual forums, they generally shared similar opinions about the appropriate audience to target.

Several individuals in both focus groups felt that different forums should be held for different audiences because "not all communities are the same and not all ways of learning in the communities are the same." Focus group participants specified that these different audiences could include advanced academic groups, healthcare workers, high school students with their parents, families, and college students.

Individuals in the focus groups generally believed that forums should be modified according to the educational background of various audiences to ensure that forum attendees understood the content and concepts presented during the event. Most individuals felt strongly that the forum was not for the recently arrived Latino immigrant population. As one individual stated, "I work with a population that has difficulty, and they basically have 90% poverty. They are immigrants who have recently arrived, and it's different [for them]. And I understand that this material presented as it is, is almost impossible [for them]."

However, one individual in the Exploratorium focus group spoke out strongly against restricting the forum to an educated audience, saying:

Here is a problem. Sometimes it is serious and we all do it, in one way or another. [The problem] is that we stereotype. Not everyone in the Mission [District] has no education; not everyone in West Oakland has no education. And there are many people who have no education, and they are more intelligent than those who have it. I am concerned, and this is a debate in all groups, there is a fine line when we stereotype and we put [people] in a box and say, 'Because they come from Timonchin, Michoacán they will not understand anything about nanotechnology.' A test, I repeat, in small schools in California have found that parents who come regardless of their education... they can fully process and understand what they are given, depending on [how it is done], and it depends on each person.

Initially, a majority of focus group participants (13 of 15 individuals) at the Exploratorium were in favor of presenting the forum in Spanish. Those who were in favor of holding the forum in Spanish gave several reasons to support their vote. These people felt that if the forum audience does not speak English well it would be difficult for them to learn about a complex topic like nanotechnology if the forum were in English. One participant expressed this feeling stating, "I am a well-educated person who perhaps doesn't speak [English]. If they start talking to me about nanotechnology and nanomedicine using technical language I'm not going to understand absolutely anything." Another woman commented that a forum in English could be intimidating and Spanish-speakers with limited English who may consider attending the event might say to themselves "...first, English isn't my language. Second, if I go [to the forum] I'm going to have to speak in English and I don't even understand anything [about nanotechnology]. How am I going to ask questions if I don't know what to ask?"

Among focus group participants there was a strong consensus that the type of audience invited to the forum should determine the language of the event. Generally speaking, participants felt that if the forum audience was composed of educated bilingual speakers like themselves "we would want the scientific information in English because it's produced in English and we don't want [the information] translated." One woman said that for her, it would not matter if the forum were in English or Spanish, she would participate in either language; however, she questioned the necessity of holding the forum in Spanish if the audience was bilingual. She suggested the forum developers consider the effort and money it requires to develop a forum in Spanish and then to ask themselves if it is necessary given the audience they are planning to invite.

Later, individuals who voted in favor of conducting the forum in English presented sufficiently convincing arguments to change the opinion of several participants who had originally voted for a Spanish-only forum. Those who advocated for hosting the forum event in English argued that even though Spanish speakers may use Spanish in the home, their day-to-day activities outside the home are conducted in English. In support of this argument, one participant said, "... leave [the forum] in English, we are here" in the United States and "nothing here is in Spanish." Additionally, one man explained that if he went to a conference about nanotechnology in Spanish then he would not be able to understand nanotechnology when he heard about it in English, saying:

...I'm going to get home and read [a newspaper] and everything is going to be in English. What good did it do me? Everything that I heard [at the conference] won't help me understand what's happening in this [newspaper]...If I go to Mexico, then it's all well and good, but I live here in the United States. What am I going to learn about nanotechnology if all the commercials that I'm going to see I'm not going to understand

> *what they're saying to me about the products? I'm not going to understand anything…Nothing is in Spanish.*

In support of this argument, another participant commented that because the content of the forum is appropriate for more educated audiences, attendees would likely want to hear a scientist from a university present in English. Even if attendees are not very educated and do not know much about the topic, "if you give them something in English, even if it's just the introduction, then [attendees] will be able to read at home or on the Internet [about the topic]….But if you give everything in Spanish then this doesn't match the reality of living in the United States."

Other arguments in favor of holding the forum in English were that in translating the forum into Spanish, "you are going to lose the value of the expert." Another participant with a background in nanotechnology mentioned that nanotechnology is very "complex in which different terminology is used that is difficult to translate."

Several comments were made within the OMSI and the Exploratorium focus groups suggesting that if the forum is held in English, then subtitles or simultaneous translation should be provided for attendees who are more comfortable communicating in Spanish. In response to these suggestions, it was pointed out that translation and subtitles could be very expensive. As discussed later in this report, a few individuals at the Exploratorium recommended that forum developers and scientists work together to create a forum script. Creating a script would negate the need to find bilingual scientists to conduct a forum and ensure that the same message about nanotechnology and nanomedicine was conveyed at forums nationwide.

While participants debated the value of conducting the forum in English, Spanish, or both languages, one woman pointed out that, "The barrier to understanding nanotechnology is not the language…but the concept" and "the language is just the vehicle in which you will transmit the message and concept." Furthermore, it was noted that not all communities are the same and not all learning styles are similar and the language of the forum should change when adapting the forum for a different community or a new location.

In summary, most participants at the Exploratorium believed the forum should be conducted in Spanish if this is the language forum attendees are most comfortable using. Despite initially advocating for Spanish-only forums, several individuals were persuaded by fellow participants that the event should be held in English. Arguments for English-only forums included the importance of learning the terminology of nanotechnology in the dominate language of the area and maintaining the quality of the content of the forum by not translating it into Spanish. One individual emphasized the importance of recognizing the diversity within the Latino community and advocated for flexibility regarding the language used depending on the audience and location of each forum event.

2. Participants would attend the bilingual forum because of general curiosity about the topic, and they felt that individuals with professional backgrounds in healthcare and education would be most attracted to the event.

A majority of focus group participants indicated that they would be interested in attending a NISE Net forum related to the use of nanotechnology in topical products and medicine. At the

Exploratorium, the focus group facilitator quickly polled participants finding that eight individuals (out of 13) would attend a forum "for sure," five were "not sure," and two would "definitely not go." No participants in the OMSI focus group specifically indicated that they would not attend the program; however, one man said he would go only because he was invited by the focus group facilitator, who was his friend: "If you have [the marketing flyer] and read it, no one is going to come [to the forum].Well, excuse me,…yes, I would come, but it depends. If you invited me I would come because, not only because it's you [asking me], it's actually an interesting topic."

2.1 Reasons why participants would attend a bilingual nano forum

Several individuals who expressed interest in attending a forum said that the primary motivation for attending would be a general curiosity and the opportunity to gain knowledge about an unfamiliar subject. For example, one woman said, "…just reading [the flyer] prompted curiosity to know what this is and what's going to happen. And this would be the reason why I'd come." Another individual said he would attend because he felt that nanotechnology was a very important topic that had an impact at a national level. These findings are similar to those reported in the chapter about societal and ethical implications from the *Review of NISE Net Evaluation Findings: Years 1 - 5*. According to this chapter, an analysis of formative evaluation data found that 82% of survey respondents decided to attend a forum because they were interested in learning more about nanotechnology and 49% of survey respondents decided to attend because they wanted to learn more about a specific forum topic (Reich, Goss, Kollmann, Morgan & Nelson, 2011).

A few women in both focus groups mentioned that they were particularly interested in attending a forum to learn more about how nanotechnology is used in cosmetics and topical beauty products. While this was an attractive topic for women, two male participants at the Exploratorium were vocal about their disinterest in "beauty products" saying that the phrase "cuidado a la salud" or "health care" was a "palabra de mujeres" or "woman's issue." One of the men noted that, "…for a lot of men 'personal care' isn't an appealing topic." Aside from the men's expressed disinterest in "beauty creams," one female participant suggested that a Latino audience might not be interested in learning about nano in sunscreen saying that, "…a Latino living in the United States doesn't use sunscreen as much as a white European because we don't need to…." This woman felt that a forum that addressed the use of nano in medical technology would be a more relevant topic.

2.2 Reasons why participants would not attend a bilingual nano forum

While some focus group participants discussed their interest in attending the forum, several participants expressed ambivalence regarding whether they would attend a forum about nanotechnology or nanomedicine. One participant at the Exploratorium said that if the forum flyer he received did not more clearly state the purpose and the agenda of the forum, then he would likely not attend. He, along with several other individuals wanted to know exactly "what's in it for me?" The need for the forum topic to be relevant to the audience was also expressed by participants in a study of public forums conducted by Chin & Reich (2007). In this study, participants reported that their lives were busy and they were very selective in how they chose to spend their free time. Since the Forums Program competed with other activities like the movies, participants felt it was essential that the forum topic merit their attendance (Chin & Reich, 2007).

Other participants in the Exploratorium focus group said they would hesitate to attend the forum because the marketing flyer seemed to emphasize the risks of nanotechnology and to present a negative view of the topic:

> *I'll give you my perspective. I said that I wasn't sure if I would come or not and it's because of the following…when I have the invitation then I am extremely skeptical of the agenda of what I'm being given and if I can actually trust that it's going to be an impartial forum. So usually when I get something…I don't read it…I didn't read this. But in reading only one of these sentences here it gave me the feeling of a negative attitude toward nanotechnology…if someone comes to me with a message and tries to convince me that it's bad, automatically I have a defensive attitude. I like the agenda that automatically identifies that there are two doctors that are coming…this makes it more credible for me.*

In contrast to this statement, two focus group participants said they felt that the flyer and supporting materials presented a neutral view of nano and one woman said that as she searched the internet for information about nanotechnology and nanomedicine, her interest was piqued when she learned of the controversies surrounding these topics: "Because when I saw that some of it was a little negative then it immediately generated my curiosity. I'm here. It got me up to come."

2.3   *Participants felt the forum would most likely attract individuals with professional backgrounds in medicine, healthcare, and education.*

When asked by focus group facilitators to identify the type of audience they felt would be best served by and most interested in attending a nano forum, most participants agreed that the forum should be targeted to individuals with professional backgrounds in medicine, healthcare, and education. In general, participants felt that an audience with a high level of education would benefit the most from the forum. For example, one participant commented that the forum attendee "has to be an educated person who was smart, because they will have to have a level of education such that the person will be able to understand the material and participate in the questions." One individual mentioned that the forum materials seemed to target "people who are in medicine or have a lot of knowledge about the topic and not the general public."

Many focus group participants in both groups had questions about the target audience of the forum. When looking at the forum materials, one participant at the Exploratorium asked, "Who is your audience really?" and suggested that the museum should take time to develop the forum based on the audience they wanted to target. Several other comments were made regarding the importance of identifying the target audience and knowing the target market well in order to host a successful event.

A research study conducted by Chin & Reich (2007) to explore various groups' perceptions of the Forum Program provides some insight into the type of audience that would likely be attracted to a forum experience. As one study participant succinctly stated, "what types of topics you talk about drives who comes" (p. 15). When participants were asked about the types of topics they would be interested in learning about, their responses generally reflected interest in national "hot topics" or issues covered by the media and topics related to the work they were engaged in or the identity groups to which they belonged (Chin & Reich, 2007).

3. The timing and location of the forum should be determined based on an institution's resources and the audience it plans to target.

Regarding the time and location of the event, focus group participants were asked whether the forum should be held during the week or weekend, at a university or the museum. No consensus was reached by either group about the best day of the week to hold the event. One individual suggested that the forum be held earlier in the evening so that attendees could go to the forum directly from work without having to return home first. Participants generally felt that the location of the event would depend on the type of audience that the museum wanted to attract. For example, if the museum would like to attract a very educated audience, then it would be best to hold the forum at a nearby university. Participants also suggested schools, libraries, and churches as possible locations for the forum if the museum wanted to reach out to a local audience. However, value was also perceived in holding the forum at the museum so as to make it a part of the institution's calendar of regular events. One female participant summed up participants' sentiments stating:

> *For me, you can answer this question according to the resources you have, and your level of outreach, and how actively you want to reach out to the community. In reality, if you want something passive and you don't have many resources, people should definitely come to the museum. But if you actually want this issue to be disseminated, you should go everywhere, if you have the resources for this.*

4. Participants felt that the agenda should be changed to allow more time with the speakers and that the small group discussion should either be lengthened or removed.

Participants in both focus groups expressed concern over the limited time given to each of the forum components (introduction, speakers' presentation, small group discussion, question and answer session). In addition, participants were generally disinterested in participating in a small group discussion and suggested that the museum develop a standardized message about nano through a video format that could be disseminated to museums nationwide. In addition, two participants, one from each focus group, felt that a panel discussion could also be an effective format for delivering nano content and answering questions.

4.1   Participants felt there was not adequate time in the agenda to sufficiently address all agenda items.

Looking over the forum agenda that was included in the materials packet, several focus group participants expressed concern that a 10 minute introduction did not give the forum moderator sufficient time to present the agenda of the event and to adequately define nanoscale science, engineering, and technology. Additionally, a number of participants suggested that the moderator concretely define nano during the introduction and present the objective, purpose, and implications of the event. One focus group participant said, "You have the introduction, then you have the 'therefore' of the forum, then the objective of the forum, and an explanation of what is going to be discussed."

Both focus groups gave a significant amount of feedback about the timing of the small group discussion. A number of participants felt that 15 minutes was not long enough to have a

thoughtful small group discussion, especially considering the time it would take to form the small groups and the number of questions presented for discussion. For example, one participant at OMSI said that because of limited time "you are not going to get a lot of depth; you are going to get immediate reactions." In support of this comment another woman stated, "It just seems like such a great subject and such a small amount of fragmented time that it seems that you are not going to get a lot accomplished. So for me, it would be better to focus more time on the introductory topics." A similar opinion was expressed by an individual in the Exploratorium group who said, "… it seems to me that there are so many different questions that this isn't going to cover everything, and that you're not going to cover everything in 15 minutes." Echoing this opinion, another participant said, "It's true that you only have 15 minutes for each case and this isn't enough time for each person to feel like they fit in with the group. We're Latinos. Come on."

The last point of feedback participants gave as to the forum agenda was in regards to the question and answer session. Participants generally expressed that 10 minutes was not enough time to sufficiently answer all the questions the audience might ask and one individual commented that the time would likely be dominated by people who had more knowledge about nanotechnology. A couple of participants suggested that the question and answer session take the form of a panel in which experts discuss both the pros and cons of nano and answer audience members' questions.

4.2   *Participants were not in favor of the small group discussion component.*

Participants in the Exploratorium focus group did not generally like the idea of the small group format. One individual stated, "I still don't see the purpose of the small groups. You can have them, but their purpose isn't clear to me." Another individual expressed that the format seemed strange and it is likely that small group discussion is just going to be speculation or off topic since group members may not have much knowledge about nanotechnology. Focus group participants also expressed confusion about the questions listed in the scenarios. One participant wanted to know if all the questions had to be answered in the groups. A staff member responded saying that scenario materials presented information to be considered by small group participants and they could choose what to discuss together. The participant then suggested conveying this to the groups, and it would be better if the questions were presented, "…in this form. You say, 'scientists are asking themselves these questions.'" He felt that if this was added, then forum attendees will not feel that they are supposed to come up with one right answer. Lastly, a few participants felt that the smaller questions presented in the scenarios were disconnected from the larger overarching question that came later in the forum agenda: "It feels a little disjointed because you have to list the questions within the scenario and you have a big question that you want answered, and there is a disconnect between both."

Ten of thirteen focus group participants at the Exploratorium were in favor of removing the small group component from the format of the event. It is interesting to note that in their study of the Forums Program, Chin & Reich (2007) also found that some study participants were not in favor of the small group discussion format. Small group discussions were generally not perceived to be a particularly attractive component of the program. Study participants asserted that they could have discussions anywhere: "I can talk to my friends and family about things at home" (Chin & Reich, 2007, p. 7). Similarly, survey findings from a related study of public forums provide evidence that the small group discussion component is not a motivator to attend a forum. However, these survey findings further demonstrate that forum attendees who do

participate in a small group discussion are more satisfied with this program component than they had anticipated (Reich, Chin & Kunz, 2006; Reich et al., 2011).

4.3   Some individuals supported the idea of creating a video presentation to replace forum speakers.

Suggestions to improve the format of the speaker presentations were offered by a number of individuals. Participants generally felt that 40 minutes was insufficient time for two people to give presentations and most focus group participants at the Exploratorium favored a video presentation replacing the speaker. They felt that not only would the video be more effective in engaging the audience, but it would ensure that a standard message about nanotechnology could be broadcast to audiences nationwide. In addition, a video would remove the difficulty of finding a Spanish-speaking presenter who was also an expert in nano.

Not all participants were in favor of a video, however. One participant described the challenge of presenting a video saying that while it would disseminate a standardized message regarding nano, the Latino community itself was fractured. He said:

> *Before we continue with the video concept and all, we must keep in mind that there are an unlimited number of Spanish-speaking audiences that we want to approach and putting all Latinos into the same group, in the same group as ourselves, our experience has shown us that this effort is likely to fail right away because not everyone is going to understand the same. A woman in Puerto Rico, in New York, is very different from a Mexican woman in Las Cruces, New Mexico.*

5. Participants felt there was a need to clarify and further explain the information provided on the NISE Net bilingual forum materials.

Focus group participants at both OMSI and the Exploratorium felt strongly that the NISE Net bilingual forum materials did not clearly explain the purpose and objectives of the event. This lack of clarity led to speculation among participants' about the "real intent" of the forum. Some participants questioned whether the purpose of the forum was a format to gather information to inform technology companies about how to better market their products.

5.1   Focus group materials should better define the intention and purpose of the "Nanomedicine in Healthcare" forum.

Prior to the focus group, participants received a packet of materials in Spanish that included a flyer that briefly described the nanomedicine forum and the forum's agenda and two scenarios to be used to prompt small group discussion during the event. Since participants had not actually attended a forum event, they had many questions regarding the purpose and objective of the forum based on a review of the materials they were given.

Across the focus groups, participants felt that the flyer did not adequately define nanotechnology or describe what a forum was. One woman summed up the general sentiment about the lack of clarity stating, "...when I read 'nanotechnology' it's like it's speaking Chinese." Another participant agreed saying that she had no idea what the forum was going to be about because she did not know what "nanotechnology" meant. Another participant questioned, "Why doesn't OMSI spend a little bit more time explaining to the public what is nano, nanotechnology?" One man described how when he received the flyer he had to look up

"nanotechnology" on Wikipedia to learn what the term meant and even after reading through the two scenarios he still did not understand the content of the materials. Similarly, one woman stated, "I have a doctorate in chemistry and I found that here there isn't enough information. How can we include enough information using language that almost any audience could understand?" Many individuals felt that nanotechnology and nanomedicine should be clearly defined in the flyer using language that is accessible to a general audience: "I would like something that said to me, 'Nanotechnology is blah blah blah blah. It has implications for blah blah blah blah blah.' You are invited to this forum."

Besides requesting a definition of the term nanotechnology, nearly all participants in both focus groups expressed that there was a significant lack of clarity about the purpose of the forum, and they spent a substantial amount of time speculating about the reasons why OMSI and the Exploratorium would host a forum on the topic of nanomedicine. Several focus group participants at both OMSI and the Exploratorium asked the focus group facilitators:

- "What is the purpose [of the forum]?"
- "What is the final objective?"
- "What is the intention of the forum?"
- "Why do you want to teach someone about nanotechnology?"

During the Exploratorium focus group, even after the facilitator explained the purpose of the forum to participants, one individual stated that in the forum materials, "You have absolutely not mentioned anything about the message and why you want to present this to people who have absolutely no education about the issue." Participants suggested that the purpose of the forum should be stated more clearly on the flyer and that the flyer should mention what forum attendees would learn from the event.

Several individuals commented that the flyer was "boring" and it did not capture their attention. In addition to making the flyer more visually attractive, one individual suggested that the flyer include a "hook" to capture the reader's attention. The hook could be in the form of an intriguing question. One individual commented that rather than having the questions on the flyer be so scientific, the flyer could say something like, "Did you know that your sunscreen has something called nanoparticles in it? Do you want to learn more?" One man suggested looking at how the Papalote Museo del Niño in México advertises their attractions for ideas about how to improve the appeal of the forum marketing materials.

In addition, comments were made relating to the language used in the flyer. One individual felt that the use of the verb "discutir" was inappropriate within the context: "'Discutir' in Spanish is very strong. It's like 'argue' in English. This is very bad." In addition, one man commented that using the phrase "la nanotecnología en el diagnóstico y tratamiento del cuerpo" sounded strange. He suggested that the phrase be revised to say, "diagnóstico medico y tratamiento corporal" or "productos en el cuerpo." Using the word "escenario" was also criticized because Spanish speakers may associate this word with "stage." It was suggested that "caso" or "ejemplo" would be more appropriate to use instead. In addition, focus group participants had difficulty

with the word "tópico": "Excuse me. What are 'próductos tópicos?' We aren't familiar with the word 'tópico.'"[1]

5.2   Lack of clarity about the purpose of the forum led some participants to speculate about the "real intent" of the event.

Because of the lack of clarity in the forum materials, many individuals expressed mistrust of the forum event. Participants wondered if the purpose of the forum was to gather feedback about the individual products discussed. One individual questioned whether forum facilitators were "going to give us the basics so that we can help you to better pass on the information [about the topical products] to other people." Another participant in the Exploratorium group asked, "Are you working for the company that makes the cream or who are you working for?"

Individuals at OMSI similarly questioned the "real intent" of the forums and speculated about how the information provided by forum attendees might be used. For example, one woman asked, "What is going to be done with the information? How do you use the information? What happens after the forum?" Nanomedicine was also described as being a particularly controversial topic, especially among Latinos because, as one man stated, "many times they have used us like rats."

One individual in the focus group at OMSI summed up the mistrust expressed by both groups when she questioned:

> *Does NISE Net have an agenda? In other words, I am wondering whether this is just really like an open question to the community about what matters to you? Whether this information is important? Whether the dangers are important? Whether the fact that we don't know if there is any danger is important to the world? Or does NISE have an agenda with the people who are marketing this technology without letting people know that it's happening…?*

The lack of clarity regarding the purpose and goals of the forum inhibited focus group participants from providing precise answers to questions about the appropriate language to be used for the bilingual forum and the type of audience that would be attracted to and most benefit from the event. One participant said "we are limited in trying to define a strategy [for language and recruitment] when we do not know the motivation behind all of this for all of this." Overall, participants felt that it was essential for the materials to clearly state the purpose and goals of the nanomedicine forum. One participant suggested stating the objective of the forum and how the information from the forum would be applied directly in the materials. She further explained, "If you say that upfront, I think you are going to eliminate all of these questions." Additionally, she thought it was important to explain the consequences of participating in the forum so that participants do not ask themselves, "What is going to be done with the information?" and "What [does the facilitator] do [with the information from] the discussions?"

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[1] Participant responses are purposefully included here in Spanish so that forum developers know what words and phrases focus group participants struggled with, and their suggestions for improving the Spanish translation of the forum flyer.

5.3   Several participants felt that the overall tone of the forum materials was negative.

Considering the materials overall, several participants felt that the materials had a negative overtone. A vote was taken in the Exploratorium focus group to determine how many participants felt this way. Five out of thirteen participants indicated that the materials presented a negative view of nanotechnology. Instead of talking about the risks and benefits, one individual suggested the flyer say something to the effect of, "...do you want to learn more about the possibilities and the exciting things about nanotechnology? Come with us to participate in the forum."

Participants in focus groups conducted by Chin & Reich (2007) as part of their study of the Forums Program also stressed the importance of maintaining a balanced perspective throughout the program. A focus group of Republican participants emphasized the need for forums to take a multidisciplinary approach and to have forum speakers represent different perspectives and areas of expertise. Similarly, other focus group participants felt that is was important to share a diversity of perspectives if the forum addressed a controversial topic.

Conclusion

The NISE Network developed public forums to provide an in-depth learning experience for public audiences that would (1) enhance participants' understanding of nano and its potential impacts; (2) increase participants' confidence in participating in public discourse about nanotechnologies; and (3) build informal science educators' knowledge and ability to conduct this type of programming at their institution (NISE Network, 2007). Seeking to reach a more diverse audience, in 2009, the Forums Team translated an existing forum about nanomedicine into Spanish. Focus groups were conducted with bilingual individuals at the Exploratorium and OMSI to gather input regarding the appropriate target audience and language for the forum, and to solicit feedback about the event logistics and forum materials. An analysis of the focus group data suggests that forum developers consider the following points when creating or revising a bilingual forum:

- The language of the forum should be picked according to what best supports participant learning. Forum developers should keep in mind that although Latinos may speak Spanish at home, day-to-day interactions outside the home often occur in English. Additionally, while individuals whose dominant language is Spanish may better understand the content of the forum if it is conveyed in Spanish, there are advantages to learning about nanotechnology in English especially since the information they access about nanotechnology outside of the forum will likely be in English. Finally, forum developers should consider the diversity of the Latino community and select the language of the forum depending on the type of audience they are seeking to attract. Bilingual speakers who are equally comfortable speaking English and Spanish may prefer to attend the forum in English so that the integrity of the information is not lost due to translation.

- Forum developers should identify their target audience in order to create a successful event. Participants generally felt that individuals with a high level of education and professional backgrounds in science, medicine, and education would likely be most interested in attending a NISE Net forum. Due to the complexity of the forum topic, recently arrived immigrants and individuals with lower levels of education would likely not understand the content of the forum.

- The forum flyer should clearly state the purpose and objectives of the forum in order to adequately convey the reason for the event to potential attendees. At the beginning of the program, the forum moderator should specify that the intention of the forum is not to market products to attendees and explain how any information collected through the forums will be used.

- The nanomedicine forum materials, especially the flyer, should be improved to better market the event and convey the message of the forum. A few participants felt the flyer and other materials were "boring" and the language used on the flyer was too difficult. Upon receiving the flyer, several individuals had to look up the definition of "nanotechnology" and "forum."

- The Forums Team may want to reconsider the format and agenda of the forum event. In general, participants felt that there was not enough time given to adequately address all the agenda items (e.g. introduction, presentation, discussion, questions). Additionally,

most participants were not in favor of the small group discussions. It was also suggested that the forum speakers be replaced by a video presentation. In general, participants felt that there was not enough time given to adequately address all the agenda items (e.g. introduction, presentation, discussion, questions).

References

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Appendix A: Bilingual Forum Flyer

Foro bilingüe de nanomedicina

La nanotecnología en el cuidado de la salud: posibilidades, riesgos y beneficios

Lugar: Exploratorium
Fecha: Martes, 9 de febrero
Hora: 7-9 p.m.
> **GRATIS – incluye estacionamiento, cena ligera y dos boletos de admisión al museo para una visita futura**

La nanotecnología médica tiene el potencial de transformar el cuidado de la salud de la forma en que ahora lo conocemos. Sin embargo, ¿deben las nuevas aplicaciones estar disponibles antes de que comprendamos sus posibles riesgos?

Las investigaciones que se llevan a cabo en la actualidad en el campo de la nanotecnología médica están produciendo productos revolucionarios y nuevos e increíbles descubrimientos. Estos avances tienen potencialmente inmensos beneficios, pero también tienen posibles impactos negativos a nivel social, ético, ambiental y económico. Infórmese sobre el futuro de la nano medicina, haga preguntas a los expertos, y discuta de qué manera debería proceder la nanotecnología. No se requieren conocimientos previos.

Agenda

7:00 p.m. Introducción

7:10 p.m. Presentación de los conferencistas
> *Dr. Tejal Desai, UCSF*: Introducción a las aplicaciones de la nanotecnología y la nanomedicina

> *Dr. Michael Gallagher, UC Berkeley:* Implicaciones sociales y éticas de la nanotecnología

7:50 p.m. Sesión de preguntas y respuestas con los presentadores

8:00 p.m. Escenario A - discusión en grupos pequeños
La nanotecnología en productos tópicos de cuidado personal

8:15 p.m. Escenario B - discusión en grupo pequeños
La nanotecnología en el diagnóstico y tratamiento del cuerpo

8:30 p.m.   Pregunta de debate general

Dados los beneficios potenciales y los riesgos desconocidos, ¿Bajo qué condiciones deberían hacerse disponibles al público las aplicaciones nanotecnológicas de la medicina y los productos de cuidado personal? ¿Por qué?

8:40 p.m. Discusión en grupo completo

8:50 p.m. Resumen y conclusiones

9:00 p.m. Encuesta

Appendix B: Small Group Discussion Scenario A

Escenario A: La nanotecnología en productos tópicos de cuidado personal

♦ Los fabricantes están utilizando actualmente nanopartículas de óxido de zinc en bloqueadores solares. Esta fórmula es tan o más efectiva que el bloqueador solar tradicional de óxido de zinc, y el tamaño de las partículas hace que el bloqueador sea invisible, ahorrándole a los consumidores la capa blanca que el tradicional óxido de zinc dejaba en la piel. Esto podría motivar a las personas a ser más constantes en la aplicación de bloqueador solar para protegerse del cáncer de piel.

♦ Además de bloqueadores solares, existe una gran variedad de lociones para la piel, productos cosméticos, acondicionadores, cremas anti-arrugas y otros productos que ya están en el mercado y que contienen nanopartículas para incrementar su efectividad.

Preguntas y contextos a considerar que pueden ser útiles para el grupo:

¿Qué impacto pueden tener a largo plazo estas nanopartículas en el cuerpo y el ambiente?
¿Sabemos si la piel absorberá estas nanopartículas y se acumularán más profundamente dentro de los tejidos y las células por ser tan pequeñas? Si es así, ¿podrían causar daño a esas células o tejidos? ¿Qué sucede cuando estas partículas llegan a los desagües y corrientes de desecho? A diferencia de los alimentos y las medicinas, los cosméticos tópicos no necesitan la aprobación de la FDA (Administración de Drogas y Alimentos) para entrar en el mercado.

¿Qué tipo de información pública es necesaria?
No hay regulaciones que obliguen a reportar los nano-cosméticos. Esto significa que los fabricantes pueden decidir si anunciar o no la nanotecnología en sus productos. ¿Deberían los productos que contienen nanopartículas ser identificados de manera diferente?

Contexto histórico: Muchos consumidores se sienten frustrados porque los alimentos transgénicos (modificados genéticamente) no requieren etiquetas, negándole a los consumidores la oportunidad de tomar decisiones informadas a la hora de comprar. Otros señalan que aquellos que no quieran alimentos transgénicos pueden comprar alimentos orgánicos. Lo mismo se aplicaría a los bloqueadores solares. Los fabricantes de bloqueadores solares sin nanopartículas podrían voluntariamente etiquetar sus productos como no-nano.

¿Cuáles son las consecuencias de no utilizar esta tecnología?
Uno de cada cinco norteamericanos desarrollará cáncer de piel en algún momento de su vida. Los costos, tanto sociales como fiscales del cáncer de piel son inmensos y algunas personas debaten que los bloqueadores solares se usan más a menudo cuando son invisibles.

Appendix C: Small Group Discussion Scenario B

Escenario B: La nanotecnología en el diagnóstico y tratamiento del cuerpo.

♦ En investigaciones actuales hay una técnica de diagnóstico que incluye inyectar nano partículas de óxido de hierro en el torrente sanguíneo antes de una IRM (Imagen por Resonancia Magnética). La presencia de las nanopartículas de óxido de hierro sirve para aumentar la habilidad de la IRM para detectar la propagación del cáncer desde su punto de origen hacia los ganglios linfáticos del cuerpo. Las investigaciones clínicas con seres humanos muestran que esta nueva tecnología mejora sustancialmente el diagnóstico en una variedad de cánceres pélvicos, incluyendo el de próstata, vesícula y el cáncer cervical. El cuerpo maneja las nanopartículas de hierro de la misma forma que maneja el hierro de las vitaminas y los suplementos minerales.

♦ Los investigadores están desarrollando actualmente una variedad de soluciones novedosas en el diagnóstico y tratamiento médico, que incluye el uso interno de nanopartículas dirigidas. Las inyecciones de nano-cascarones de sílice recubiertos de oro están siendo probadas en ratones. Los nano-cascarones se acumulan en los tejidos del tumor. Los nano-cascarones se pueden calentar de forma selectiva cuando se iluminan desde afuera del cuerpo con una luz parecida a la infrarroja. El calor destruye el tejido del tumor.

Preguntas y contextos a considerar que pueden ser útiles para el grupo:

¿Cuáles son las repercusiones de las nanopartículas en el cuerpo a largo plazo?
Se pensaba que las nanopartículas de óxido de hierro eran seguras, pero en investigaciones recientes se ha descubierto que las partículas pueden ser tóxicas para las células nerviosas. ¿Podrían existir aún más efectos a largo plazo que no podamos ver por muchos años? ¿Se pueden acumular en lugares no deseados del cuerpo?

¿Podría el costo de las nuevas tecnologías limitar su uso injustamente?
Algunas personas están preocupadas que cualquiera de las nuevas tecnologías médicas serán tan costosas que incrementarán aún más el costo de la atención médica y los seguros de salud. Otros dicen que la detección temprana podría reducir tremendamente el costo del tratamiento.

¿Cuáles son las consecuencias de no utilizar o retrasar estas tecnologías?
La detección temprana y precisa de enfermedades como el cáncer puede ahorrar dinero y salvar vidas. El tratamiento puntual de tumores puede ahorrarle al paciente los dañinos efectos secundarios de la radiación y la quimioterapia. Sin embargo, el proceso de aprobación de la FDA puede tardar años para poder responder a todas las preguntas que pueden surgir acerca del nuevo procedimiento médico.

Appendix D: Focus Group Demongraphic Survey

1. ¿Con qué frecuencia visita instituciones culturales tales como: museos, acuarios, zoológicos o teatros?
❑ 5 ó más veces al año
❑ Entre 2 y 4 veces al año
❑ Una vez al año
❑ Una vez cada varios años
❑ Una vez cada 5 ó 10 años, o menos

2. ¿Cuándo fue la última vez que visitó el Exploratorium?

❑ Nunca   ❑ Entre 2 y 5 años
❑ En los 3 últimos meses   ❑ Entre 5 y 10 años
❑ Entre 3 y 6 meses   ❑ Hace más de 10 años
❑ Entre 6 meses y 1 año   ❑ No estoy seguro
❑ Entre 1 y 2 años

3. ¿Cuál de las siguientes categorías representa su nivel educativo más alto?

❑ Algo de preparatoria (secundaria)   ❑ Algo de post-grado
❑ Diploma de preparatoria (secundaria) ❑ Título de post-grado
❑ Algo de Colegio/Universidad   ❑ Otro_____
❑ Título de Colegio/Universidad

4. ¿Qué idioma se habla principalmente en su casa? (Por favor marque uno)
❑ Inglés
❑ Español
❑ Ambos, inglés y español
❑ Otro: _____

5. Por favor cuéntenos acerca de usted:

Género:	**Edad:**	**Raza/Origen étnico:**
❑ Masculino	❑ < 18	**(Marque todos los que correspondan)**
❑ Femenino	❑ 18-24	❑ Afroamericano
	❑ 25-34	❑ Indígena de EE.UU./Nativo de Alaska
	❑ 35-44	❑ Asiático-americano
	❑ 45-54	❑ Hispano/Latino
	❑ 55-64	❑ Blanco, de origen no-hispano
	❑ 65-74	❑ Otro: _____
	❑ 75-84	
	❑ 85+	

6. ¿Tiene usted alguna discapacidad permanente o temporal de las que se mencionan a continuación?
(Marque todas las que aplican)

❑ No, no tengo una discapacidad temporal o permanente   ❑ Visual
❑ Movilidad   ❑ Auditiva
❑ Cognitiva   ❑ De aprendizaje
❑ De otro tipo: _____

7. Por favor califique si está de acuerdo con las siguientes afirmaciones:

	En completo desacuerdo	En desacuerdo	De acuerdo	Completamente de acuerdo
Comprendo la nanotecnología muy bien.	❑	❑	❑	❑
Comprendo las tecnologías médicas muy bien..	❑	❑	❑	❑

Appendix E: Focus Group Protocol

FORO BILINGÜE DE LA RED NISE*

* NISE (Nanoscale Informal Science Education Network o Red Informal de Educación Científica a Nanoescala, NISE, por sus siglas en inglés).

GUÍA DEL GRUPO DE DISCUSIÓN DE NANOMEDICINA

Tiempo proyectado para la discusión en grupo:

Con preguntas opcionales: 2 horas; Sin preguntas opcionales: 1 hora, 25 minutos

A. Bienvenida (10 minutos)

- Agradecer la presencia de los participantes.
- Presentarse, describir la Red NISE, y lo que hacen los departamentos de investigación y evaluación del Exploratorium, OMSI y el Museum of Science.
- *Propósito del grupo de discusión*: Los miembros de la Red NISE han dedicado los últimos cinco años a crear foros para el público en los que se anima a los participantes a hablar sobre las implicaciones sociales y éticas de la nanotecnología. Puesto que esperan llegarle a una audiencia más amplia, se ha comenzado a traducir al español algunos de los foros que realizan. El propósito del grupo de discusión en el día de hoy es conocer sus reacciones y saber qué piensa del foro de nanomedicina, y cómo cree usted que la Red NISE puede mejorar los foros que se ofrecen a las audiencias bilingües o monolingües de habla hispana..
- *Plan para el grupo de discusión, recibir retroalimentación sobre cada punto a medida que se va avanzando*:
    o   Hable sobre las impresiones personales que le produjeron el formato y la agenda del foro
    o   Hable sobre lo que piensa acerca de las preguntas a discutir y los casos presentados en el foro.
    o   Hable sobre cómo cree usted que funcionaría el foro ante una audiencia bilingüe o sólo de habla hispana
    o   Reflexiones finales
- *Cómo funcionará el grupo de discusión*:

- o Autorización: Los formularios de consentimiento firmados antes de la iniciación del foro, tienen como propósito obtener su autorización para poder hacer grabaciones de audio, con el fin de ayudarnos en nuestras investigaciones. Al grabar este grupo de discusión, tendremos una grabación exacta de sus comentarios y observaciones. (Es necesario asegurarse que todos los participantes estén de acuerdo, de otra manera, no se puede grabar)
- o Mi función es la de captar sus pensamientos, opiniones y sugerencias de modo que sus apreciaciones y reacciones puedan utilizarse para mejorar los foros de la Red NISE, especialmente en la versión bilingüe inglés/español que ustedes acaban de experimentar.
- o Sus respuestas permanecerán anónimas, por lo tanto, por favor responda con honestidad.
- o Por favor tomen turnos para hablar. Deseamos que todos tengan la oportunidad de hablar y de ser escuchados.
- o Deseamos escuchar a todas las personas que están presentes en el día de hoy. Su perspectiva es muy importante.
- o Quisiéramos crear un espacio para conversar de una manera honesta, por consiguiente son bienvenidos los comentarios tanto positivos como negativos.
- o No hay respuestas correctas o incorrectas.
- o Si hay palabras que no son claras o no tienen sentido, si estoy hablando muy rápido, o si no pueden escucharme bien, por favor díganmelo, lo tendré en cuenta.
- o Ubicación del baño / Pueden servirse refrescos.
- o Ustedes recibirán [un pequeño regalo de agradecimiento] al terminar la sesión del grupo de discusión por su participación.
- ¿Preguntas?
- *Breve introducción de los participantes del grupo de discusión:* nombre y razón por la cuál decidió participar hoy.

B. Impresiones personales sobre el folleto del foro de nanomedicina

(Con preguntas opcionales: 25 minutos; Sin pregunta opcional: 15 minutos)

En primer lugar me gustaría hablarles sobre el folleto del foro de nanomedicina. Antes de iniciar la discusión en grupo han recibido un folleto en el que se describe el formato y la agenda

del foro. [Mostrar la agenda del foro y analizar con los participantes las secciones y la cantidad de tiempo calculada para cada uno de los segmentos del evento.]

- ¿Qué tan probable es que usted asista a este evento?
  - Es probable / No está seguro / Definitivamente no
  - ¿Por qué?
- ¿Es probable que otras personas de su comunidad asistan a este evento? ¿Por qué sí o por qué no?
- ¿Qué cree usted que va a suceder durante el foro?
- ¿Qué preguntas tiene sobre el foro después de haber leído la información suministrada en el folleto?
  - [Pregunta opcional] ¿Qué le parece confuso o poco claro acerca de esto?

C. Impresiones personales sobre las preguntas a discutir y los escenarios presentados en el foro

(Con una pregunta opcional: 20 minutos; Sin pregunta opcional: 10 minutos)

Ahora me gustaría hablarles acerca de los escenarios presentados y las preguntas a discutir en el foro de nanomedicina. Antes de la discusión en grupo, se les entregó un borrador de estos materiales en inglés y en español. [Mostrar la pregunta a discutir y los escenarios presentados a los participantes; describirlos brevemente.]

- ¿Qué tipo de temas espera que se traten durante la discusión?
- ¿Qué preguntas tiene sobre la discusión basándose en las preguntas a discutir y la información suministrada en los escenarios presentados?
  - [Pregunta opcional] ¿Qué le parece confuso o poco claro acerca de ellos?

D. Impresiones personales sobre el foro de nanomedicina en general

(Con una pregunta adicional: 20 minutos; Sin pregunta opcional: 15 minutos)

Para contestar a las siguientes preguntas, quiero que piensen en el foro de medicina en general. Por lo tanto, cuando contesten estas preguntas piensen en el folleto del foro y en los escenarios presentados, y también en las preguntas a discutir.

- ¿Cómo le pareció la calidad y accesibilidad de las traducciones al español?
  - ¿El folleto?
  - ¿Las preguntas y escenarios de la discusión?
- Si el foro se presenta en español e inglés de tal manera que algunas partes estén en un idioma o en otro, y algunas estén solamente en inglés, ¿qué partes del foro cree usted son las más importantes para traducir o interpretar al español? ¿Por qué?
- [Pregunta opcional] ¿Qué partes del foro cree usted se podrían presentar solamente en inglés? ¿Por qué?

**E. Reflexiones sobre la reacción de la comunidad al foro de nanomedicina
(Con preguntas opcionales: 40 minutos; Sin preguntas opcionales: 30 minutos)**

Ahora bien, quisiera preguntarles cómo podríamos mejorar el foro de nanomedicina para las comunidades bilingües o las que sólo hablan español. Al responder a estas preguntas quiero que piensen en gente bilingüe que ustedes conocen o en personas que solamente hablan español – posiblemente miembros de su familia, amigos, compañeros de trabajo, y/o usted mismo.

- ¿Qué podría hacerse para ayudar a esta comunidad a sentirse más cómoda al hablar sobre nanotecnología?
    - ¿Hacer cambios en el formato o en la agenda?
    - ¿Hacerle cambios a la pregunta a discutir y a los escenarios presentados?
- ¿A quién cree usted que le debemos ofrecer este evento? ¿Por qué?
- ¿En dónde y cuándo debemos llevar a cabo el foro? ¿Por qué?
    - ¿Entre semana o durante los fines de semana?
    - ¿Durante el día o por la noche?
    - ¿En el museo o en otro lugar?
- [Pregunta opcional] ¿Qué otra cosa debemos tener en cuenta al planear este evento?
- [Pregunta opcional] ¿Sería más atractivo para los miembros de esta comunidad si el foro de nanomedicina fuera bilingüe (inglés y español) o solamente en español? ¿Por qué?
- ¿Qué otras cosas pueden hacer [el Exploratorium y OMSI] para servir mejor a las comunidades bilingües o de habla hispana?

F. Conclusión (5 minutos)

- ¿Hay algo más que desearían agregar?

- ¿Tienen preguntas?

- Gracias por venir.

- Repartir regalos de agradecimiento por haber participado.