

Giant Chromosomes Demonstration

Jackie Wong and Joyce Ma

April 2004

THIS IS NOT A DEFINITIVE FINAL REPORT

FORMATIVE evaluation studies like this one often:

- **are conducted quickly**, which may mean
 - small sample sizes
 - expedited analyses
 - brief reports

- **look at an earlier version** of the exhibit/program, which may mean
 - a focus on problems and solutions, rather than successes
 - a change in form or title of the final exhibit/program

Imaging Station – Formative Evaluation Giant Chromosomes Demonstration

Jackie Wong and Joyce Ma
April 2004

PURPOSE

This study looks at visitors' experiences at the first prototype of an Imaging Station demonstration. The goal of this study is:

- To identify points of confusion in the demo
- To solicit visitor questions about what they saw and heard
- To identify activities and content that visitors find interesting
- To identify connections visitors made between the demonstration and themselves

METHOD

Recruitment

Around 5 minutes before the start of each demonstration, an evaluator approaches visitors in the Traits of Life area and invites them to attend a new demonstration on Giant Chromosomes. At this point, the visitors were NOT asked to provide feedback after the demonstration.

The evaluator would approach as many visitors as possible. There is no selection criterion.

Observations

During the demonstration, the evaluator makes notes of any questions that visitors ask the demo facilitator. S/he also notes the groups that are present for more than half the demo. These groups will be approached for interviews afterward.

Uncued Interviews

- Only groups who stayed for at least half the duration of the demo will be interviewed. Some of these groups might be present during the beginning half, while other groups might be there for a later portion.
- Up to 3 visitors from each group may stay for the interview.
- The evaluator approaches one group at a time as the groups leave the demonstration and continue to other parts of the museum. All the interviews were completed within 30 minutes from the end of demo.

DATA COLLECTED

Time and Date

Data was collected for demonstrations at 12:15pm, 12:45pm, and 2:45pm on the following days:

Wed, March 31
 Sat, April 10
 Sun, April 11
 Wed, April 14

Participants

Demographics reflect the main interviewee of each group.

Gender	Count
Female	14
Male	8
Total	22

Age Group	Count
Under 8	1
Child over 8	1
Teen	2
Adult	16
Senior	2
Total	22

Group type	Count
Lone visitor	3
Family/Friends	18
School	1
Total	22

FINDINGS

How interesting is the demo?

Rating	Count
Interesting	15
Somewhat interesting	5
Neutral	2
Somewhat uninteresting	0
Uninteresting	0
Total	22

What makes the demo interesting?

Reason	Count
Seeing the process, Seeing it live	11
Never seen it before	7
Learned it in school, Visualize what I know already	6
Seeing with microscope, magnified	4
Seeing flies, interested in animals in general	3
Facilitated, Staff explaining, Can ask questions	3
Relevant/interesting topic	2

What makes the demo not interesting?

Reason	Count
Familiar with this already	2
Too specialized/complicated, no prior knowledge	2
Couldn't hear	1
Should explain more during demo	1

What questions do visitors have? (Recurring questions are in bold)

- **How many chromosomes do flies have?/ How many do people have? How do you find the 4 chromosomes? Why is the chromosome in a clump (versus the X's seen in many common diagrams)?**

- **What is the magnification?/How many times enlarged?**
- **Why use fruit fly? / Why scientists always use flies?**
- **How many copies of chromosomes are there?**
- How do you get DNA from chromosome? (What's the relationship between DNA and chromosome?)
- Why the glands? What's a gland?
- Is that clump of chromosomes from one nucleus?
- What was the dye?/How does it work?
- Genetic Engineering
- How do they test our DNA/ How to tell paternity?

Suggestions to improve the demonstration? (Recurring suggestions in bold)

- **More info, diagrams, visuals, outlines of process**
- **Speakers/mic, hard to hear**
- **Pointer, additional screen for facilitator so s/he can see what visitors see without leaning over or turning away the screen.**
- **State magnification at different stages**
- Include hands-on: let visitors hold jar of flies/slides, let visitors participate in process
- More explanation of what's happening (why is the larvae floating, etc)
- More seating
- Backup slide with good result in case the current slide doesn't look good.
- Explain big words
- Explain motivation of "torture", why do scientists kill bugs?

Personal connections to the demonstration? (Recurring connections in bold)

- **Helps to visualize/learn what's in books/schools**
- **DNA is always in the news, applications of DNA research, genetically modified crops, fertility issues, diseases**
- **Important to learn about DNA, understand human body better**
- Appreciate the research process/science
- Learned something new / Increase knowledge

SUMMARY with recommendations

- Visitors' interest in the slide preparation process
Half of all the groups interviewed indicated that they found the slide preparation process interesting. This seems to be a good vehicle for engaging visitors in the content we want to present. Perhaps we can also weave in answers to FAQ into the process (why use flies? Why glands? Magnification/scale? Etc).
- There were no questions or comments about "Giant Chromosomes" or the fact that what was seen was an exceptional case. If this is an important point of the demo, it might need to be more articulated. If this isn't a major point, it might still be a good thing to note that "we can't normally see chromosomes this way....." etc. For example, a good place to note this might be at the introduction when you explain why fruit fly larvae were used.
- A large portion of visitors mentioned that it was difficult to hear. In general, the acoustics at the demo space isn't very good. Speakers and microphones might be necessary.
- Multiple visitors expressed that visuals and diagrams would be helpful in understanding the demo. One suggestion was to outline the process in pictures, including scale/magnifications of the images.

ACKNOWLEDGEMENTS

This material is based upon work supported by the National Institutes of Health Grant R25 RR15627 and the David and Lucile Packard Foundation (Grant 4365).



Department of Health and Human Services • National Institutes of Health

Supported by a Science Education
Partnership Award (SEPA) from the
National Center for Research Resources

APPENDIX

Interview questions

1. How interesting would you say the demonstration was to you? Would you say it was ...

Uninteresting	Somewhat uninteresting	Neutral	Somewhat interesting	Interesting
1	2	3	4	5

2. Could you say what it was about the demonstration that made it _____ for you?

3. Was there anything about the demonstration that was confusing? If yes, could you tell me what? [Probe to exhaustion]

4. Do you have any questions about what you saw or heard at the demonstration? [Probe to exhaustion]

5. Do you have any suggestions for how we might improve the demonstration? [Probe to exhaustion]

6. Did you find out anything at the demonstration that you thought was particularly meaningful or important in your own life?