

# Axiovert – Amoeba Live Image and Label

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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 **Axiovert – Amoeba Live Image and Label**

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## **PURPOSE**

To determine

- How interested visitors are in watching amoeba
- What questions visitors have about what they see
- How interested visitors are in the text explanation of amoeboid movement
- What visitors find confusing about the explanation
- Whether or not visitors understood the text explanation of amoeboid movement

This evaluation serves to inform the interpretative content to accompany the live images of the amoeba specimen visitors will see with the Axiovert200M.

## **METHOD**

- Cued Interviews (N=13)
- Visitors were recruited individually from the Life Sciences Area on the Mezzanine of the Exploratorium
- Each visitor was asked to look at a live video image of the amoeba underneath the microscope. An evaluator adjusted the stage position so that at least one moving amoeba was always in view and in focus.
- The evaluator then asked each visitor to comment on how interesting the image was and solicited visitor questions about what s/he saw.
- Each visitor was then asked to read accompanying text that provides an explanation of how the amoeba manages to move and why an amoeba moves. The text can be found in Appendix A.
- When the visitor finished reading, the evaluator asked the visitor a set of questions about the explanation s/he just read.

**DATA COLLECTED**

- **Times.** The interviews were conducted on Wednesday, Oct 30 and Wednesday, Nov 13, 2002 in the afternoons.
- **Demographics**

<b>Gender</b>	<b>Count (out of 13)</b>
Male	10
Female	3

<b>Age Group</b>	<b>Count (out of 13)</b>
Adult	9
Teen	2
Child (8-12)	2

**RESULTS****Visitor Interest in the Image**

A majority of the visitors (77%) thought the image of the amoeba was somewhat interesting or interesting

<b>Interest Rating</b>	<b>Count (out of 13)</b>
not interesting	1
somewhat not interesting	1
neutral	1
somewhat interesting	8
interesting	2

Many of these visitors (8/13) were drawn to the amoeba's movement. Alternatively, the visitors who found the image not interesting (3/13) complained that there was not enough accompanying information to make the image interesting or somewhat interesting.

**Visitors' Questions about What They Saw**

Visitors were interested in finding out more about what they saw:

What is it?

- What is it doing?
- What's it going to become?
- How does it work?
- What is its make-up?
- What are its effects on humans, animals and plants?
- What are the things swimming around?

### Visitor Interest in the Explanation of Amoeboid Movement

A majority of the visitors (85%) found the accompanying explanation of amoeboid movement somewhat interesting or interesting.

Interest Rating	Count (out of 13)
not interesting	0
somewhat not interesting	0
neutral	2
somewhat interesting	6
interesting	5

In particular, visitors thought that the text was interesting because it:

- Explained how the organism moves (6 visitors)
- Identified what they saw (3 visitors)
- Explained it was a single-cell organism (2 visitors)
- Gave them some (unspecified) information about what they saw (2 visitors)

### Visitor Assessment of the Explanation – Was it difficult to understand?

Most visitors thought the text was easy or somewhat easy to understand.

Difficult Rating	Count (out of 13)
difficult to understand	0
somewhat difficult to understand	0
neutral	5
somewhat easy to understand	2
easy to understand	6

However, a few visitors (3/13) pointed out that they had difficulty with the ‘big words’, such as *actin*, that were used in the explanation.

## How Visitors Explained Amoeboid Movement after Reading the Text

Visitors' explanations were coded according to the level of detail they included:

Level 0 – Visitors gave no explanation of how the amoeba moved.

Visitor: There's a big blob and it's moving around.

Interviewer: Would you like to add anything else?

Visitor: You see all this stuff and it's really just one cell, and it's moving.

Level 1 - Visitors described the movement but did not talk about the mechanism of how the cell moved

Visitor: slowly. It moves differently. It spreads out and divide into parts. It changes shape. [points to the display and amoeba as he speaks]

Level 2 - Visitors described a process internal to the cell that caused the movement

Visitor: [It moves] like a worm. The front moves and the back follows it. Molecules inside are moving them around.

Level 3 – Visitors describe the process on the subcellular level and include specific subcellular parts in their description

Visitor: It's got filaments called actin and it contracts to cause one side to move.

Interviewer: So, this one is moving in that direction. What's contracting then?

Visitor: The middle is contracting /points to the middle of the amoeba/.

Note the above coding scheme does not consider if the visitor's explanation was scientifically correct or incorrect.

A tally of the level of description visitors gave after reading the text is as follows:

Level	Count (out of 13)
Level 0	7
Level 1	3
Level 2	2
Level 3	1

Only 1 out of 13 visitors tried to describe the process on the subcellular level. A majority of the visitors did not give any details about how the amoeba manages to move. That is, they did not describe the mechanism by which the microorganism crawls, but instead gave descriptions of the movement (e.g. moving to the left) they saw on the monitor.

## SUMMARY

- Most visitors found the amoeba interesting to watch. They were particularly attracted to the movement they saw on the monitor.
- Although most visitors found the explanation of amoeboid movement easy to understand and interesting, few visitors were able to explain the mechanism of amoeboid movement after reading the text explanation. Instead, most visitors were either unable to explain how the amoeba moves or simply described the movement they saw on the monitor without causal details.

These findings suggest that visitors focus on what they are able to see, and since they cannot see the subcellular structures (e.g., actin) that explain the mechanism of how amoeba crawl, they do not retain or perhaps even understand the more detailed explanation we provided in the text. Making the process and mechanism visible may be the key to building visitor understanding.

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