# Data Collection Phrase for Think-Aloud Method on Foldit Drug Design

**Final Goal:**

Foldit Drug Design is a brand new expansion of Foldit. So in order to make it more easy and accessible for existing players and potential new players with no prior Foldit experience, this study aims to figure out what changes need to be made to Foldit so players can “intuitively” identify the goal and easily view, navigate and control in the game to accomplish their goals.

**Phase Goal:**

To record participants’ thinking process and information retrieval process for later analysis.

**Procedure:**

Participants are expected to work on Foldit Drug Design problem and speak out what they are looking for or what they are thinking continuously.

**Number of Participants:**

4 participants with no prior Foldit background

(Ideally, one graduate with biology background, one undergraduate with biology background, one graduate without biology background, one undergraduate without biology background.)

**Participation Incentives:**

Candies or chocolates

**Participants Selection:**

Vanderbilt Students. The ones with biology background are from chemistry/biochemistry departments. The ones without biology background are from Engineering.

**Locations:**

Center for structural biology library MRB III 5139

**Length:**

30 mins

**Tools needed**

Camera that can record video for the whole process (including pre-game explanation and post –game questions) at least 30 mins (Lance’s phone Huawei Honor).

A stand to hold the camera.

Computer that has Foldit installed (Lance’s laptop, Acer V15). It should have a software t record mouse movements and voices ([OBS Studio](https://www.techradar.com/reviews/obs-studio)).

Disposable cups and water for participants.

**Settings:**

Camera should be placed by the laptop and in a position that can record participants’ face.

The actual problem starts from the screen where it shows the problem. Instruction about not clicking “exit to main” should be given. The participants can explore how to interact with the mouse, keyboard to control and navigate.

The experimenter is sitting by the side of the participant in a direction that the experimenter can the screen. This way when conditions mentioned in the later sessions, the experimenter can interrupt and keep the participant on track.

**Material:**

1573b HIV Protease Inhibitor Small Molecule Design: Round 3

**Experiment Guidelines:**

Experimenters are expected not to interrupt after giving the initial instructions except for simply using the utterance “keep talking” after 15 seconds of silence, or the participants triggered some certain conditions.

**Initial Instructions for participants:**

In the following 30 mins, you will be given a drug discovery problem in a game. This is an exploratory process so you are free to click around.

You will NOT be given instructions on how to control components and how to navigate, so you should explore the game by yourself. Your goal is to find a good combination of position and structure that can give you as high score as possible in 30 mins.

During the gaming procedure, you are expected to speak out aloud about what you are looking for, what puzzles you, what you are thinking constantly as you were alone in this room. The software on the computer will record your mouse movements and a camera will record your facial expression as well as your voice

The experimenter will NOT answer your questions related to the game and will only use the utterance ‘keep talking’ to break silences after a fixed interval of 15 s of silence or when certain conditions have been made.

Feel free to drink water by you side. Good luck.

Addtion Notes:

You should explore the following all by yourself:

1. What is the goal of the game

2. figure out how to navigate and manipulate components in the game.

**Conditional Instructions:**

In order to keep participants on track, certain guidance will be given on conditions. Time is counted from the beginning of the game unless otherwise noted.

1. When the participant is about to click or have clicked “exit to main”:

* Tell him not to or help him go back to the game.

2. When the participant has not figure out how to change his view (Zoom, Pan, Rotate) after 5 mins:

* Give hints on how to change his view (Wheel for zooming, right click to pan, left click to rotate)

3. When the participant has not figured out how to manipulate the residue (rotate) within 5 mins

* Hint on dragging the sidechain

4. When the participant has not figured out there is a ligand and the fact that he needs to interact with the ligand within 10 mins.

* Tell him that there are two parts in the main game scene. He needs to find the small part and interact with it.

5. The participant still cannot find the ligand within another 5 mins after the above hint.

* Point out where the ligand is.

6. After the participant has found the ligand, but has not found how to manipulate it within 5 mins.

* Gives him hints on how to manipulate(left click and drag)

7. The participant has not found the he can add or delete atom on the ligand within 10 mins after he sees the ligand

* Gives him hints on the ligand design panel

8. The participant has not found how to better see ligand after he start designing ligand within 10 mins

* Gives him hints on X-ray tunnel view

7. Other misc stuck for 10 mins (e.g don’t know how to reset or go back to a previous state)

* Give corresponding hints

**Post-completion questions:**

1. Did you figure out what the game goal is?

2. What is/are difficult aspect(s) of the game for you?

2. Do you enjoy the game?

3. Any other thoughts?