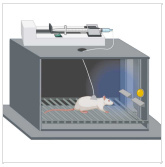

May 17, 2021

Cocaine IV Self-Administration

Lani Tieu[1], Brent Boomhower[1], Molly Brennan[1], McKenzie Pavlich[1], Giordano De Guglielmo[1], Olivier George[2]

[1]UCSD; [2]University of California, San Diego

George Lab @ UCSD
Tech. support email: olgeorge@ucsd.edu

Lani Tieu

ABSTRACT

This protocol outlines the procedure of conducting intravenous cocaine self-administration for the GWAS experiment.

Timeline of experiment:
After animal arrival and 2 weeks of quarantine, animals will go under intravenous catheterization followed by 1 week of recovery from surgery. After recovery, animals will undergo 10 days of short access (2h/day) cocaine self-administration under a fixed ratio schedule (FR1). The animals will then run a session under a progressive ratio schedule of reinforcement. Next, the animals will undergo 14 days of long access (6h/day) cocaine self-administration (FR1) followed by another session under the progressive ratio schedule. In the next phase, self-administration will be tested under adverse consequences (i.e. footshock).

PROTOCOL CITATION

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intravenous self-administration, cocaine

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GUIDELINES

Before surgery, animals are handled and weighed. Each animal is scanned by their RFID and assigned an animal ID.

Weigh the animals on a weekly basis throughout the experiment to ensure proper dosage of cocaine (0.5 mg/kg/infusion).

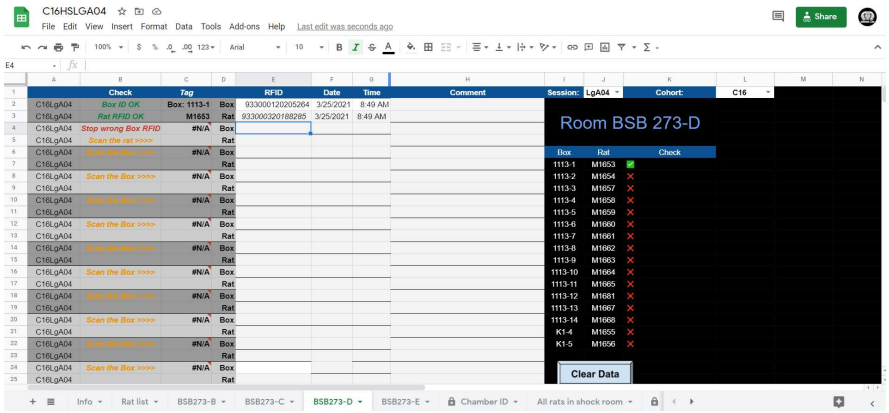
Each self-administration session is done during the animals' dark cycle and at the same time for each test day.

Session Setup

1 Bring animals to the experimentation room where you will run self-administration.

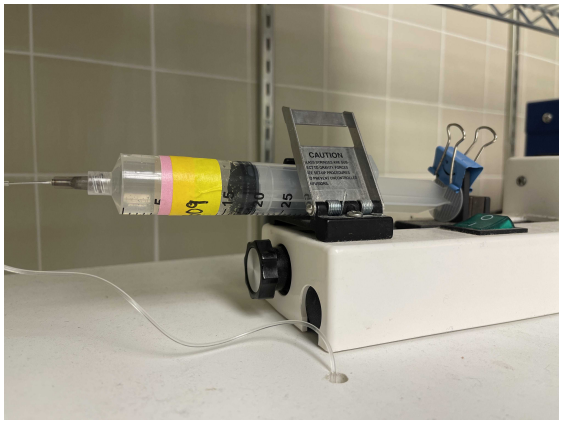
2 Pick up the animal from its cage and place it in operant chamber.

3 With a microchip reader, scan RFID on the chamber door then scan the rat. Animals must be scanned each test day to ensure that they run in the same operant chamber throughout the experiment (a green check mark appears when animal is in correct chamber).



This page is on a separate computer for scanning. Highlight cell E2 then scan the RFID on chamber door with a microchip reader. The next cell highlighted will be E3, here, scan the rat. A green check mark appears confirming that the animal is in the correct box.

4 Flush the line by turning the knob on the pump to clear away any air bubbles.
Make sure that drug stops dripping from the line before connecting to the catheter.



5 Pick up the animal and remove the cannula protector (a metal cap) and hoodsie (catheter port cover) from the catheter mounted on the back of the animal.

6 Carefully flush the catheter with 0.1-0.2 ml heparinized saline containing cefazolin (20 mg/0.2 ml).

7 Connect the line to the catheter port on the animal then screw the metal cap onto the cannula.

8 Close the chamber door and outer chamber doors.

9 When all animals are loaded, set up MedAssociates program and start the session

The retractable active and inactive levers will protract when the session is initiated. An active lever press (FR1) results in a 0.1 ml infusion of cocaine in saline (0.5 mg/kg/infusion) over 4 seconds and a light that remains lit for 20 seconds during which another active lever press does not deliver cocaine. An inactive lever press produces no results.

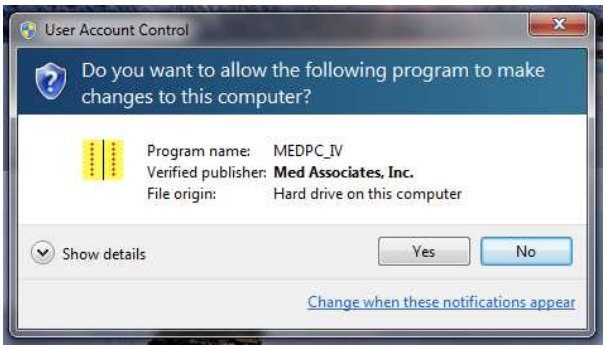
10 Leave the room and keep the lights off during the testing session.

MedAssociates Setup

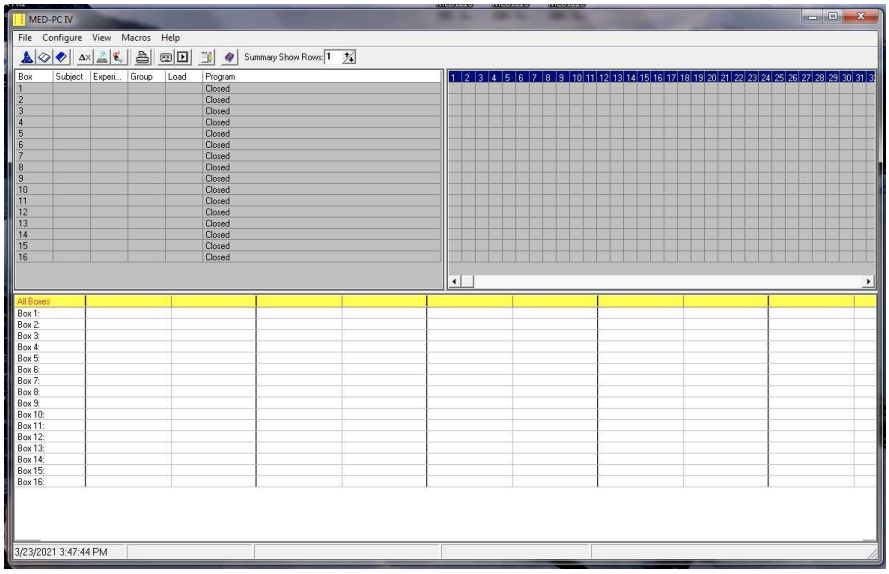
11 After loading animals in operant boxes, open the MedAssociates Program on computer.

MedAssociates software shortcut

11.1 Click 'Yes' when the following prompt appears:



12 Go to 'File' on the top left corner then 'Open Session' (or click the open book icon).



This window opens when you open the MedAssociates software.

12.1 Click the dropdown under 'Procedure' and select the program that is designed for the session you want to run.

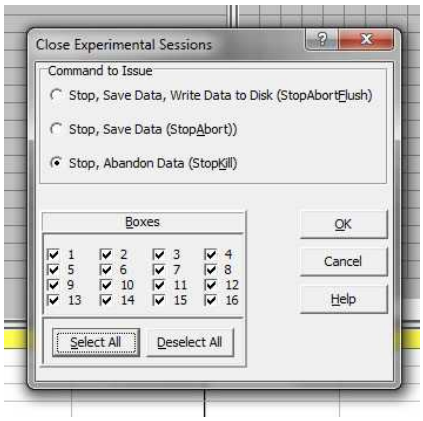
Session	Program
Short Access	GWAS 2HNEW
Long Access	GWAS 6H
Progressive Ratio	GWAS PR
Pre-shock and Shock	SHOCK GWAS

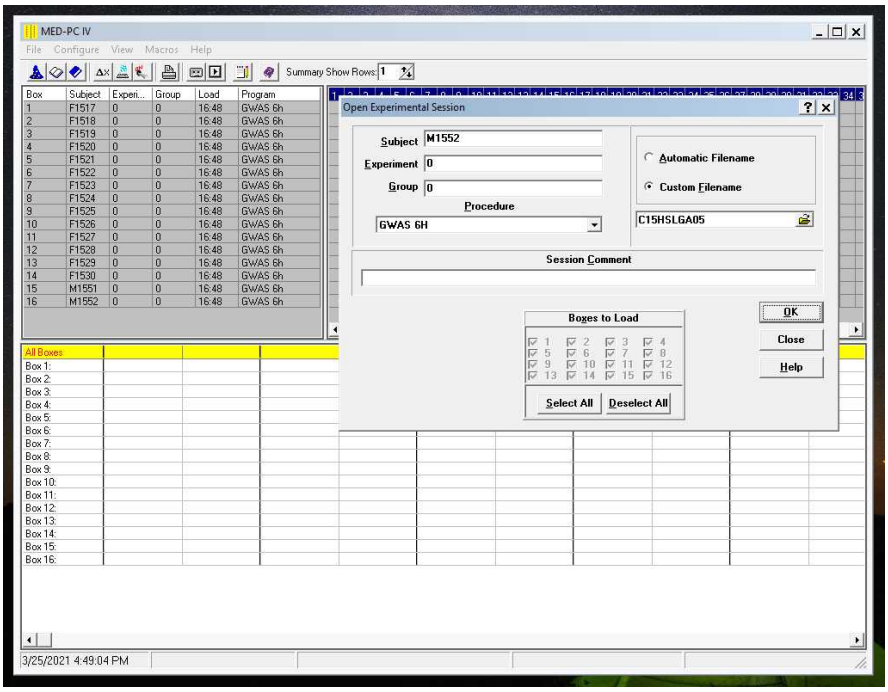
Programs to run for each type of session

12.2 Select 'Custom Filename' and name file with cohort #, project, session day

12.3 Starting with Box 1 under 'Boxes to Load', enter the animal ID in 'Subject' field then click 'OK' and load the next box. Enter '0' for animals that are absent in the study.

If you mistype the animal ID while loading the boxes, click ‘Close Session’ (closed book icon or under ‘File’), select ‘Stop, Abandon Data (StopKill)’, select all boxes then click 'OK'. Repeat step 12 to reload the boxes.





Example of program setup with all animals loaded for a long access session

12.4 Click ‘Close’ when all boxes are loaded.

13 Go to ‘Configure’ > ‘Signal’

13.1 Click ‘Select all’ under ‘Boxes’ to initiate all the boxes at the same time

13.2 Click ‘Issue’ to begin session

Post-session

14 Enter the room and turn on the lights.

15 Open the chambers, pick up the animal and disconnect the metal cap and line from the catheter.

16 Place the hoodsie and cannula protector back onto the catheter port.

17 Return the animal to its cage and bring all the animals back to their housing room.

18 Pull out the tray from the operant chamber, discard the dirty bedding, clean the tray with quatricide (disinfectant), then replace with clean bedding.

18.1 Before placing tray back into the chamber, clean out any bedding in the corners and sides with a duster or brush.

19 Clean the interior of the chamber with quatricide and wipe down with paper towels.