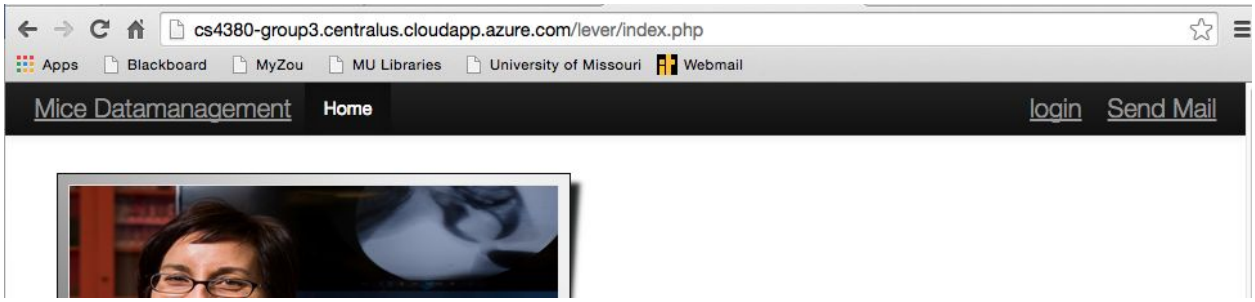
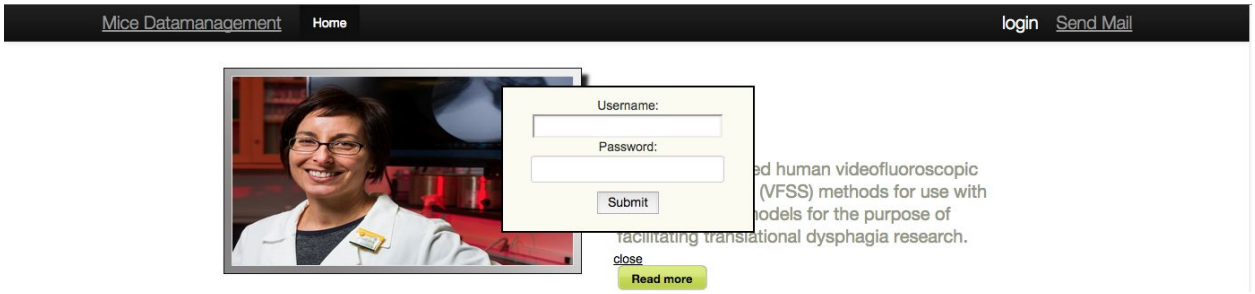
1. Index page and login

   URL: cs4380-group3.centralus.cloudapp.azure.com/lever

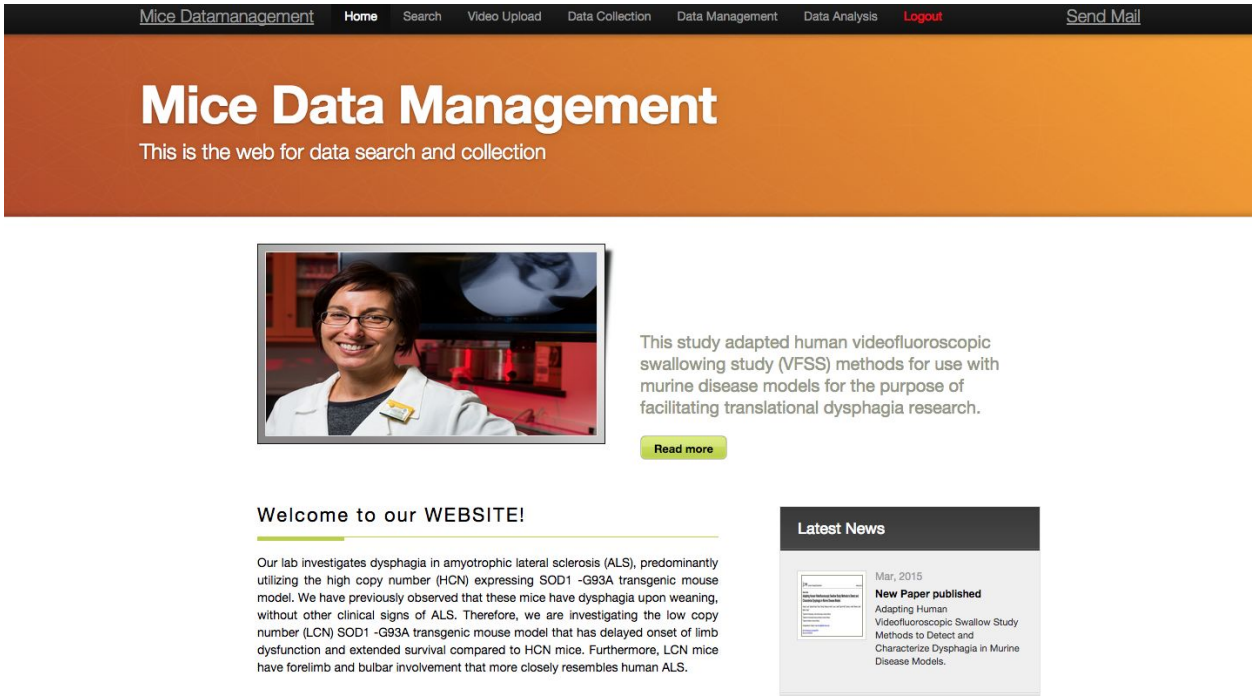
   The index page shows basic information of Lever's lab, latest news and published papers.
   By clicking the login button on the top banner, you will see the login window.





   Our system allows two types of accounts: supervisor account and student account. Dr. Lever has all privileges. Students (e.g., Peng) only have limited privileges.

2. Home page after login



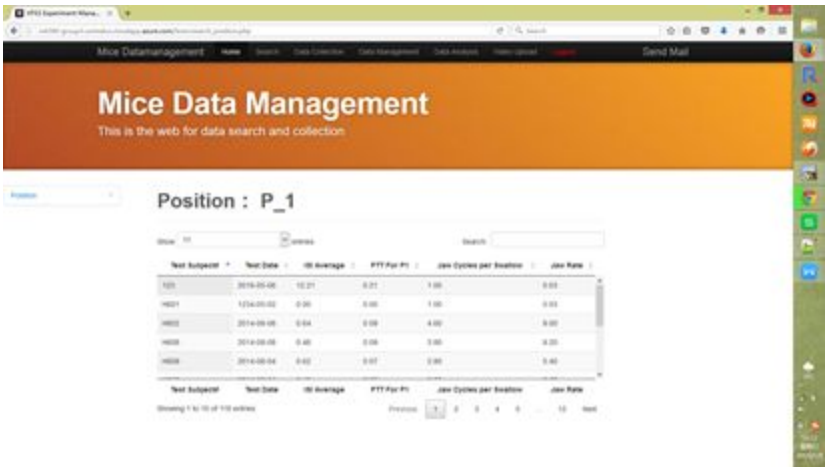
3. Search
   a. Search by mouse id:

   This is the main search page of mice. It will pull out all the information of a mouse, such as the videos, genotype, phenotype, colony, publication and behavior observation consented data. More information will be added such as treatment and surgery.

   For example, search mouse ‘H601’:

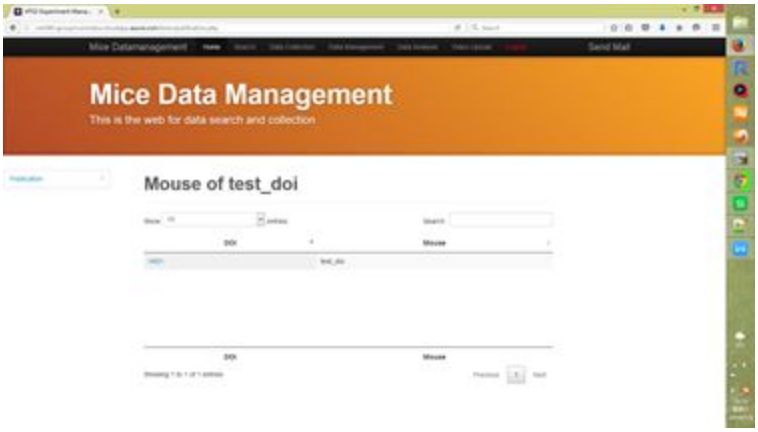
b. Search by position:

Videos were recorded on three positions, the throat, stomach and bolus area. User are allowed to selected an position and view the average record within the position. More information can be found in summary page. Below are an example of the record of mouse throat.



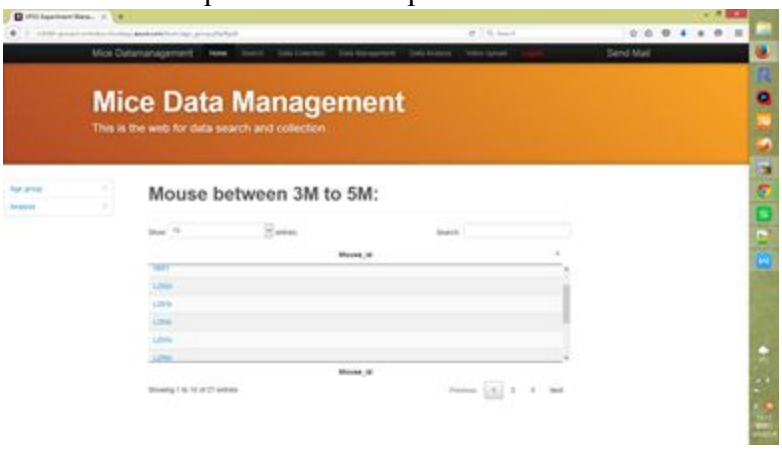
c. Search by publications:

Users will be interested to know which mouse has been cited in which publication and this page will allow user to find those information. The mouse id is hyper-linked to search-by-mouse page.



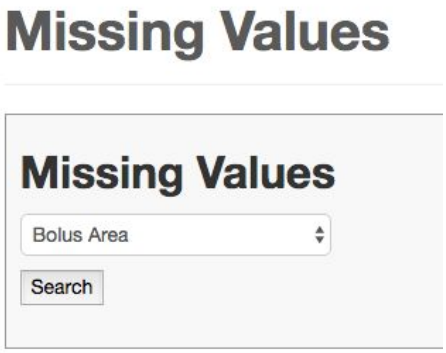
d. Search by age group:

This page allows users to search mouse information within a selected age group and this will help to detect unexpected death of mouse.



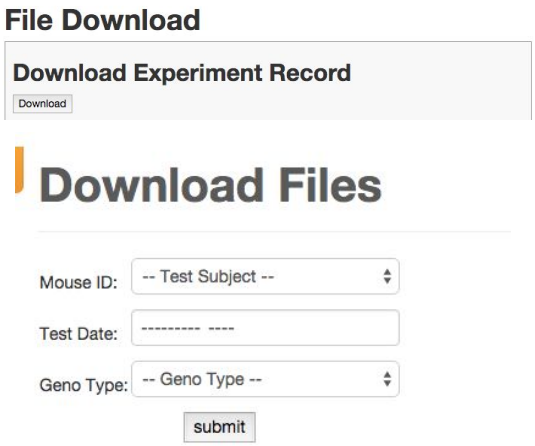
e. Search missing values

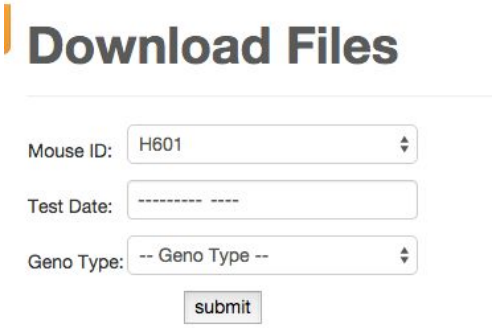
This allows to search records with missing values in different tables.

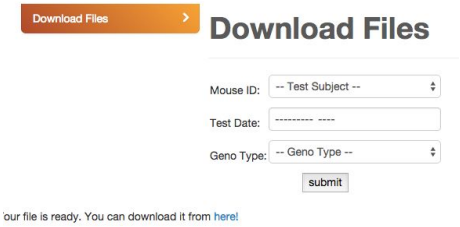


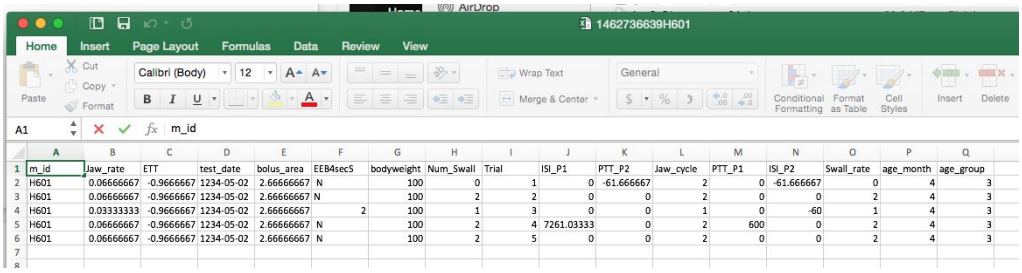
f. File download

You can use mouse ID, test date or mouse's genotype as search keywords to filter out record and export them in csv format.



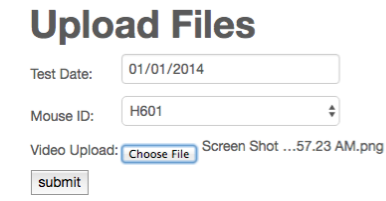


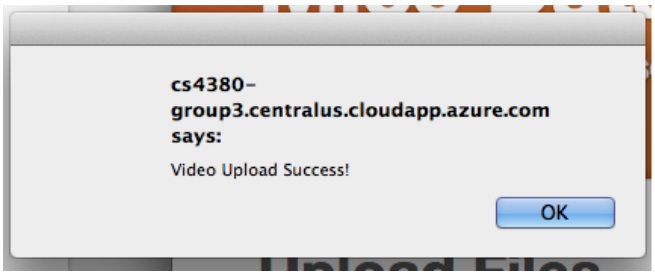




	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	m_id	Jaw_rate	ETT	test_date	bolus_area	EEB4secS	bodyweight	Num_Swall	Trial	ISI_P1	PTT_P2	Jaw_cycle	PTT_P1	ISI_P2	Swall_rate	age_month	age_group
2	H601	0.06666667	-0.9666667	1234-05-02	2.66666667	N	100	0	1	0	-61.666667	2	0	-61.666667	0	4	3
3	H601	0.06666667	-0.9666667	1234-05-02	2.66666667	N	100	2	2	0	0	2	0	0	2	4	3
4	H601	0.03333333	-0.9666667	1234-05-02	2.66666667	2	100	1	3	0	0	1	0	-60	1	4	3
5	H601	0.06666667	-0.9666667	1234-05-02	2.66666667	N	100	2	4	7261.03333	0	2	600	0	2	4	3
6	H601	0.06666667	-0.9666667	1234-05-02	2.66666667	N	100	2	5	0	0	2	0	0	2	4	3
7																	
8																	

4. Video Upload
   Our client can upload video files to the server so that they can be reviewed later to extract raw experimental data. Each video is identified by its test date and the ID of the tested mouse.

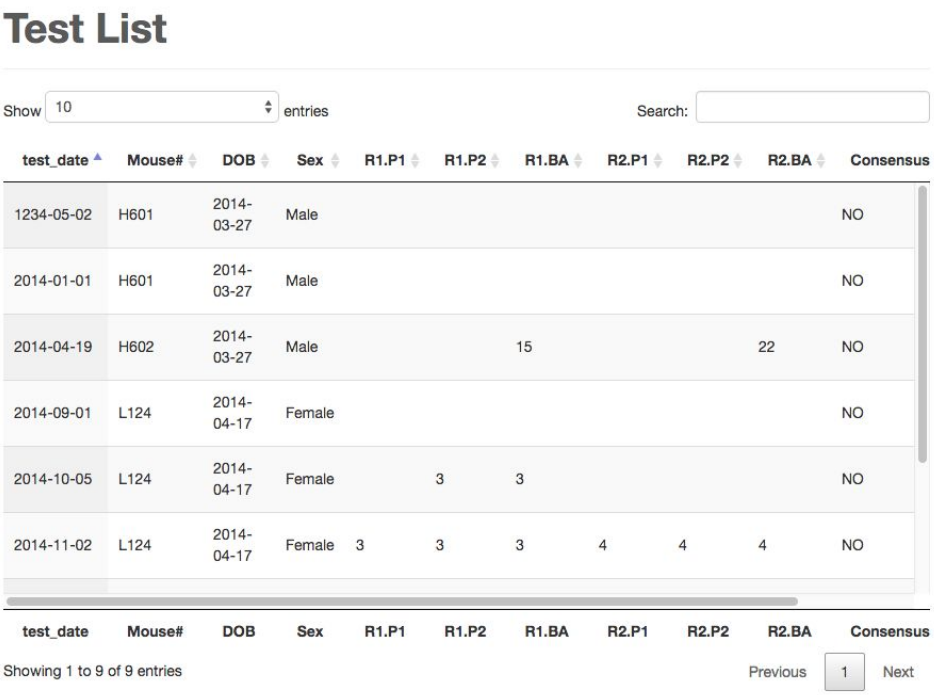




5. Data collection
   a. Test list:
      The test list summarizes review progresses for all experiments. The underlying "engine" of this list is a view ("review_view") which extracts information from several record tables.

      R1 represents the first reviewer of one video. R2 represents the second reviewer of the same video. Consensus represents whether the review records by R1 and R2 have been consented or not.

      There is one button next to "Consensus" called "details". Please scroll to the end of the table to find it. By clicking "details" button, you can initiate the data collection of the given record.



b. For reviewer 1

It can be seen from the following figure that R1.P1 to R2.BA are not filled out. It means this video has not been reviewed yet. The reviewer clicking “Details” for the first time will be labeled as R1.

The video player is pre-loaded with the corresponding video on the server.

The reviewer is required to input some basic information of the experiment. While watch the video, the reviewer can record the raw data for each position and each trial. Click submit button after done.

Basic Information

Reviewer: Peng Zhao

Review Date: 05/08/2016

Mouse ID: H601

Cage #: 1234

Test Date 1234-05-02

Sex: Female

Colony: C57_C57

Test Items: Thin Liquid

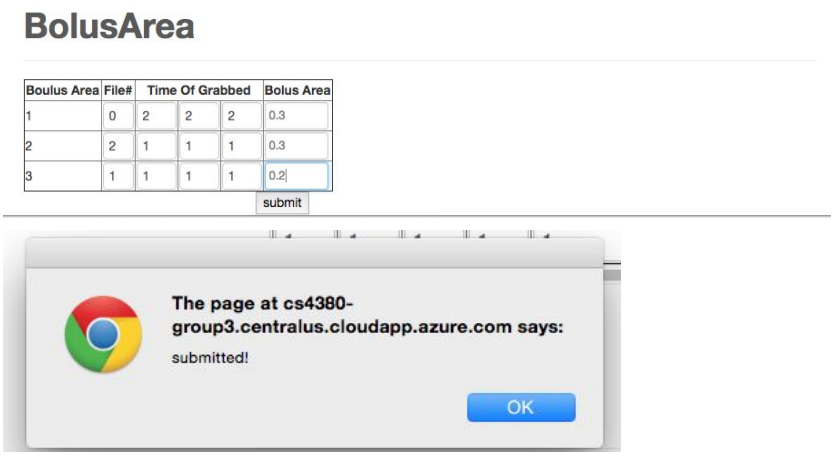
Food: Food

Position1

Frame		2nd Swallow onset			Jaw cycle per swallow	2sec from swallow onset			Swallow per 2sec	Lick onset Frame			Lick end Frame			Jaw cycle
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	2	2	2	2	2	2	2	2	2	21	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	12	2	2	2	2	2	2	22	2

Position 2

T start Frame		PTT end Frame			ETT end Frame			Pharyngeal Residue	Esophageal Residue	2nd Swallow start Frame			Esoph Empying Prior To 2nd Swallow	Number Of Swallow To Clear Esophagus	Swallow Inhibition
1		1	1	1	1	1	1	N	N	1	1	1	N	1	N
1	1	1	1	1	1	1	1	N	N	1	1	1	N	1	N
1	1	1	1	1	1	1	1	N	N	1	1	1	N	1	N
1	1	1	1	1	1	1	1	N	N	1	1	1	N	1	N
1	1	1	1	1	12	2	2	N	N	2	2	2	N	2	N

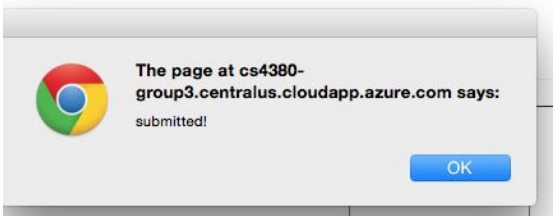


Then the page will redirect to the test list page. And you will see that the information for this experiment has updated and it shows that P1, P2 and BA's record have been reviewed by a reviewer whose id is 3.
(PS. Since the test list is based on a view that joins lots of table, when new information is input into database, it will need some time to update the test list. So please be patient and wait until the page redirects to the test list page.)

c. For reviewer 2

If another reviewer reviews the same video, a label of "R2" will be assigned to this reviewer. Again, by clicking the "Details" button, the reviewer can go to the data collection page. The second reviewer can not see the first reviewer's record except for the file number for the experiment that the first reviewer has already written. This design helps to reduce bias.

This time, the reviewer only needs to choose their name and review date in the basic information part.



Basic Information

Test Date: 1234-05-02
Test Mouse: H601
Reviewer: -- Observer --
Review Date: mm/dd/yyyy

Position1

Frame	2nd Swallow onset			Jaw cycle per swallow	2sec from swallow onset			Swallow per 2sec	Lick onset Frame			Lick end Frame			Jaw cycle
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Position 2

T start Frame		PTT end Frame			ETT end Frame			Pharyngeal Residue	Esophageal Residue	2nd Swallow start Frame			Esoph Empying Prior To 2nd Swallow	Number Of Swallow To Clear Esophagus	Swallow Inhibition
1	1	1	1	1	1	1	1	N	N	1	1	1	N	1	N
1	1	1	1	1	1	1	1	N	N	1	1	1	N	1	N
1	1	1	1	1	1	1	1	N	N	1	1	1	N	1	N
1	1	1	1	1	1	1	1	N	N	1	1	1	N	1	N

BolusArea

Boulus Area	File#	Time Of Grabbed			Bolus Area
1	1	1	1	1	1
2	1	1	1	1	1
3	1	1	1	1	1

The page at cs4380-group3.centralus.cloudapp.azure.com says:

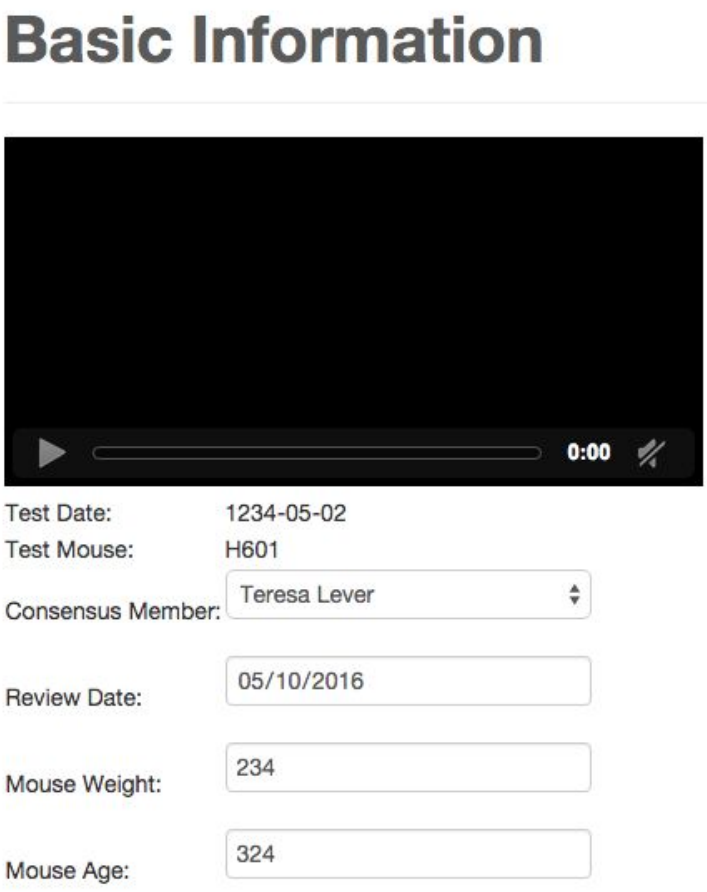
submitted!

After the second reviewer has viewed the video and has submitted the recorded raw data, the page will redirect to the test list again.
The information of R2 will update accordingly. The second reviewer's id shown on the check list.

test_date	Mouse#	DOB	Sex	R1.P1	R1.P2	R1.BA	R2.P1	R2.P2	R2.BA	Consensus
1234-05-02	H601	2014-03-27	Male	3	3	3	4	4	4	NO

d. For consensus member

Consensus members are different from student reviewers. Consensus member need to input some basic information of the experiment.



The consensus member can see the first and second reviewers' records. If there is large discrepancy between them, the consensus field will be empty and the consensus member will need to re-record the data. If the records are equal, the consensus field will be filled with the same value and the consensus member does not need to do further changes.

For bolus area, consensus member can see the average bolus area recorded by the first and second reviewers.

Position1

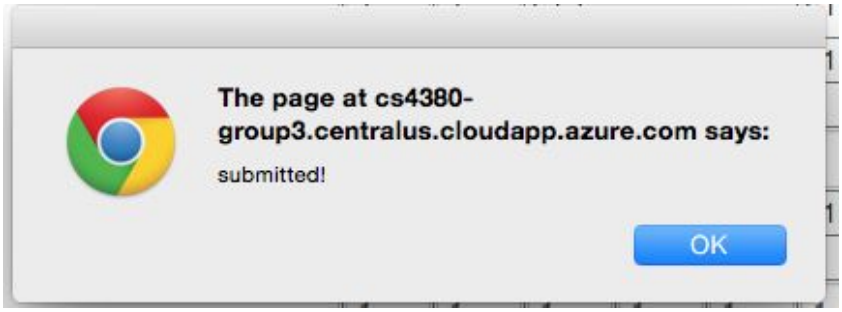
Trail#	Reviewer	Swallow onset Frame	PTT end Frame	2nd Swallow onset	Jaw cycle per swallow	2sec from swallow onset	Swallow per 2sec	Lick onset Frar
1	R1	1:1.1	1:1.1	1:1.1	1	1:1.1	1	1:1.1
1	R2	1:1.1	1:1.1	1:1.1	1	1:1.1	1	1:1.1
1	C	1:1.1	1:1.1	1:1.1	1	1:1.1	1	1:1.1
2	R1	1:1.1	1:1.1	2:2.2	2	2:2.2	2	2:21.1
2	R2	1:1.1	1:1.1	1:1.1	1	1:1.1	1	1:1.1
2	C	1:1.1	1:1.1					
3	R1	1:1.1	1:1.1	2:2.2	2	2:2.2	2	2:21.1
3	R2	1:1.1	1:1.1	1:1.1	1	1:1.1	1	1:1.1
3	C	1:1.1	1:1.1					
4	R1	1:1.1	111:1.1	1:1.1	1	1:1.1	1	1:1.1
4	R2	1:1.1	1:1.1	1:1.1	1	1:1.1	1	1:1.1
4	C	1:1.1		1:1.1	1	1:1.1	1	1:1.1
5	R1	1:1.1	1:1.1	1:1.1	1	1:1.12	2	2:2.2
5	R2	1:1.1	1:1.1	1:1.1	1	1:1.1	1	1:1.1
5	C	1:1.1	1:1.1	1:1.1	1			

Position1

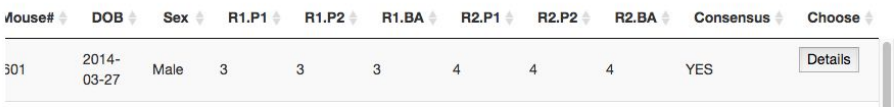
Frame	2nd Swallow onset	Jaw cycle per swallow	2sec from swallow onset	Swallow per 2sec	Lick onset Frame	Lick end Frame	Jaw cycle
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	2:2.2	2	2:2.2	2	2:21.1	1:1.1	1
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	1	1	1	1	1	1:1.1	1
	2:2.2	2	2:2.2	2	2:21.1	1:1.1	1
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	1	1	1	1	1	1:1.1	1
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
1	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	1:1.1	1	1:1.12	2	2:2.2	2:2.22	2
	1:1.1	1	1:1.1	1	1:1.1	1:1.1	1
	1:1.1	1	1	1	1	1	1

BolusArea

Trail#	Reviewer	Time Of Grabbed	Bolus Area
1	R1	2:2.2	0.3
1	R2	1:1.1	1
Trail1 Average			0.65
2	R1	1:1.1	0.3
2	R2	1:1.1	0.3
Trail2 Average			0.3
3	R1	1:1.1	0.2
3	R2	1:1.1	1
Trail3 Average			0.6
Bolus Area Average			0.51666666666667

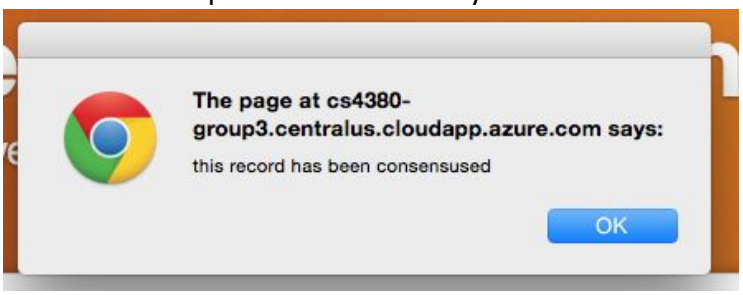


After clicking submit button, you will be redirected to test list page and see the consensus has become into 'YES'.



e. For experiments that have already be consented

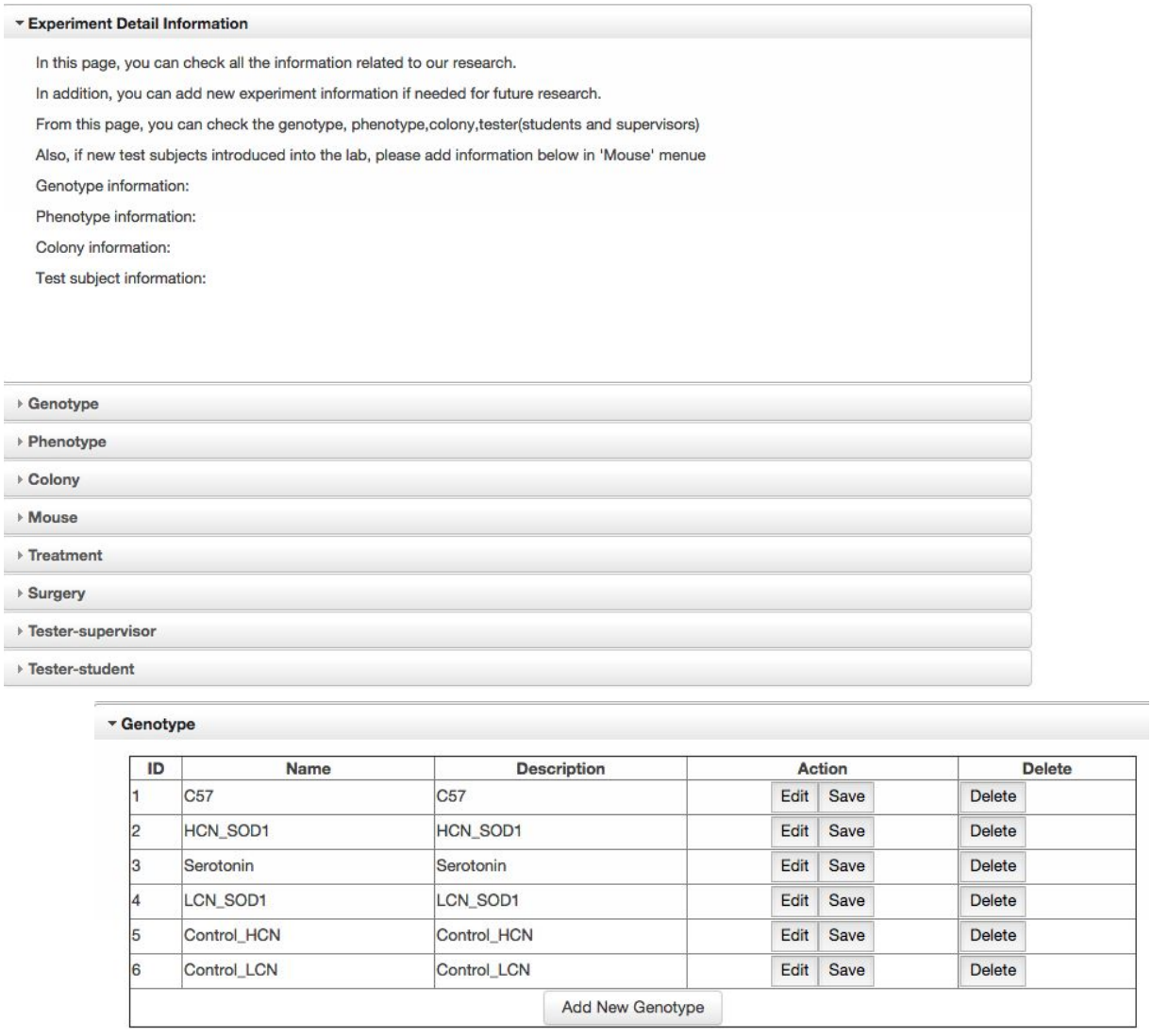
If the "consensus" has the value of 'YES' and you click the details button, it will alert that the experiment has already been consented.

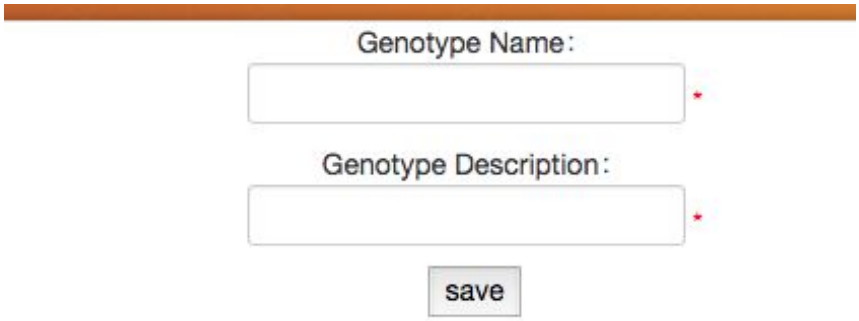


6. Data Management
   This page is for experiment settings management.
   Dr. Lever and Kate have privileges to add genotype, phenotype, colony, mouse information, treatment, surgery, supervisor and student information.

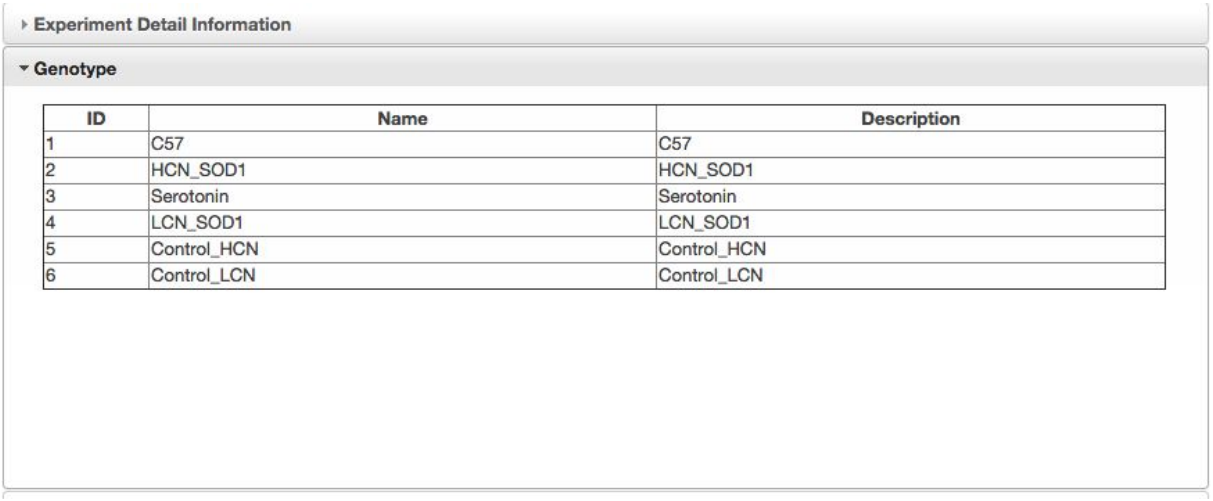
   Other users can only see the experiment settings but cannot make any changes.

   - The following screenshot is captured under Dr. Lever's account. Note that she can add, edit and delete information.





- The following screenshot is captured under Peng's account (student account). Note that he can view the information.

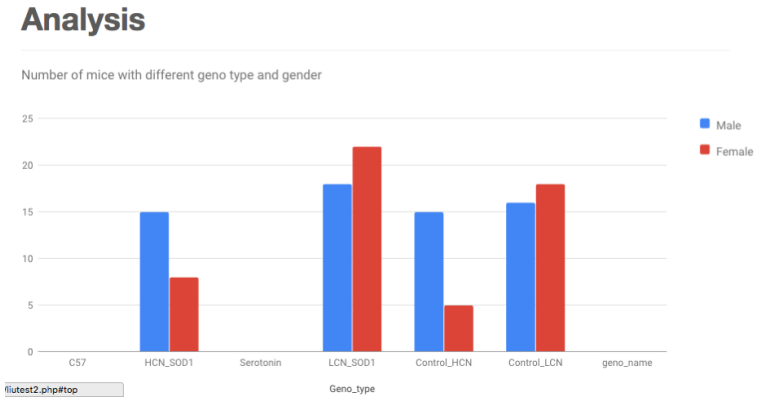


ID	Name	Description
1	C57	C57
2	HCN_SOD1	HCN_SOD1
3	Serotonin	Serotonin
4	LCN_SOD1	LCN_SOD1
5	Control_HCN	Control_HCN
6	Control_LCN	Control_LCN

7. Data Analytics

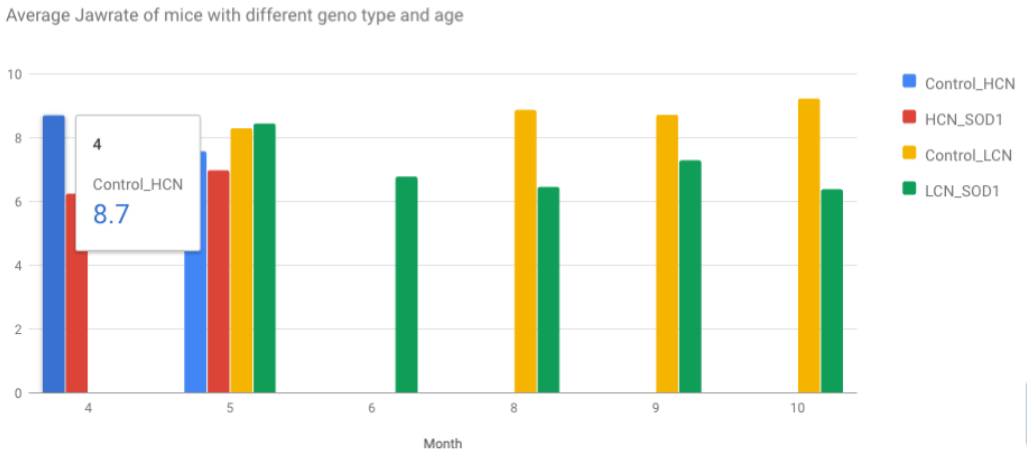
We support five types of data analytics for the experiment.

- **For each genotype, compare the number of male and female subjects:**



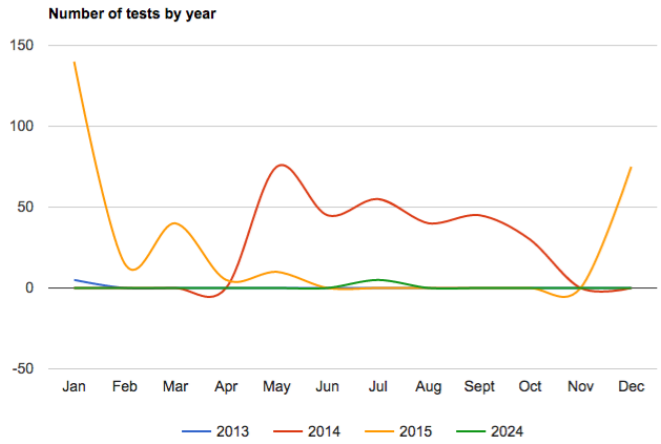
- **Average jaw rate of mice with different genotype and age**

Analysis

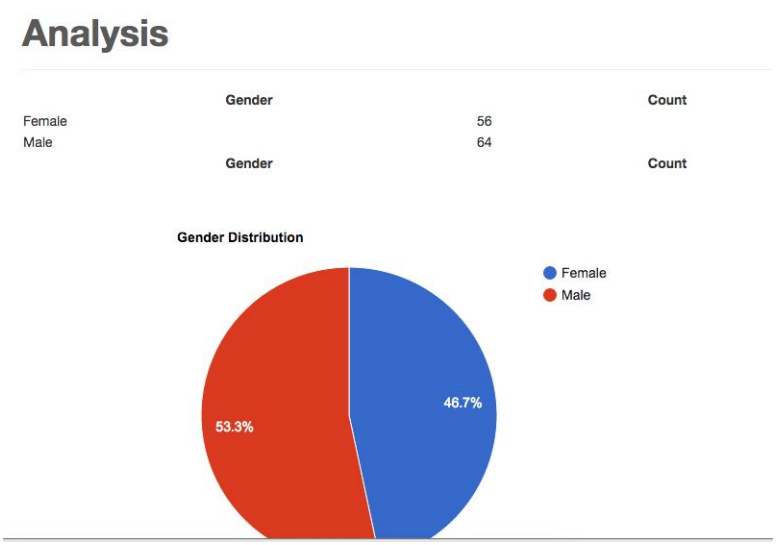


- **Time series analysis: number of tests by year and month**

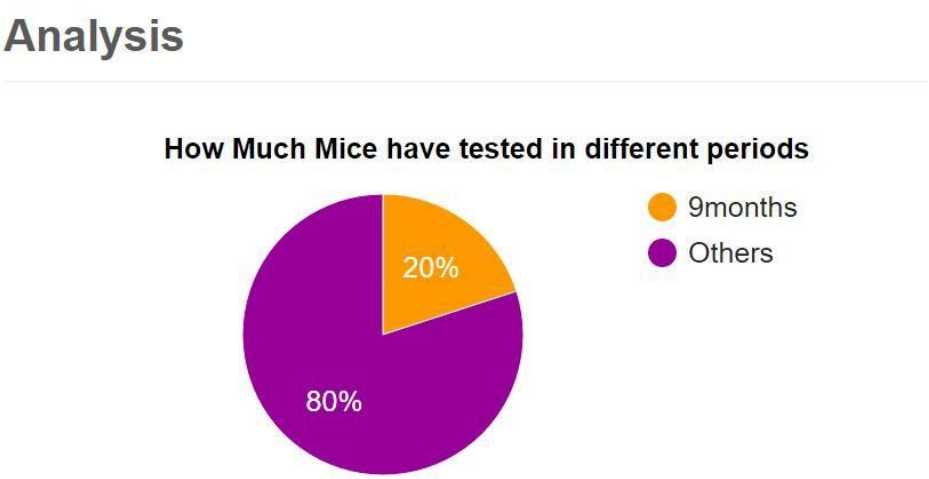
Analysis



- **Gender distribution**



- **Number of mice tested in different periods**



All visualizations are interactive.

8. Logout and contact

User can logout by clicking the logout button on upper right of the top banner. By clicking the send email button, you can send an email to Dr. Lever.