

GREATER SAN DIEGO SCIENCE & ENGINEERING FAIR (GSDSEF)
PROJECT PROPOSAL/SIGNATURE* FORM (GSDSEF-1, 2015)

This form must be completed and signed prior to starting project work. It must be placed in the student's notebook with an ABSTRACT OF THE PROJECT for the GSDSEF Screening Fair. (Use the "Tab" key to move from line to line)

1. Project Title Length of Memory for a Tetra of a Simulated Migration Route

Is this a continuation of a previous project? Yes No

2. STUDENT'S NAME (Last, First, Middle) Wu, Xi-Kai, Isaac

2a. Partner's Name (for Senior Division 2 person projects only) _____

EACH SENIOR DIVISION PARTNER MUST SUBMIT A SEPARATE PROJECT PROPOSAL FORM.

3. Address, City, Zip 10322 Scripps Poway Parkway #27, San Diego, 92131

4. Phone 8582310505 email animal.wu@gmail.com

5. School Marshall Middle Grade 8

6. Teacher Elaine Gillum

7. This project involves (check all that apply):

- Live Vertebrate Animals (GSDSEF-2, 2015)
- Humans as subjects, helpers, or interviewees (GSDSEF-3, 2015)
- Hazardous Substances (anything that could cause injury) (GSDSEF-4, 2015)
 - Chemicals
 - Infectious Agents
 - Bacteria, Fungi and/or Molds
 - Mutagenic Agents
 - Carcinogenic Agents
 - Teratogenic Agents
- Human or Other Vertebrate Tissue (GSDSEF-5, 2015)

8. WHERE REQUIRED (see #7 above), the following supplemental forms must be completed and included with the project proposal form (CHECK ALL THAT APPLY):

- Certification of Humane Treatment of Live Vertebrate Animals (GSDSEF-2, 2015)
- Certification of Compliance of Research Involving Humans (GSDSEF-3, 2015)
- Certification of Hazards Control (GSDSEF-4, 2015)
- Certification of Vertebrate Tissue Source & Safety (GSDSEF-5, 2015)

9. Location where experimental procedures will take place: Rm. 1608, Building 2, Xinde Garden,

Courtyard 1, Yaziqiao Road, Xicheng District, Beijing, 100053

10. People, companies, etc. providing equipment, materials, workspace: Gao family

11. Describe, in 200 – 250 words, the planned project/experiment and the procedures to be used:

The experiment will test the length of time different species of fish can remember how to get through a migration route. Three species of tetra, Ember, Neon, and Flame, 20 of each, will be tested on, in two mazes, one with color/visual cues and one without. The mazes will be made out of Styrofoam, one painted and one not. The fish will be bought 1 week beforehand. The fish will be tested on different time intervals, to test length of memory. The time intervals will be 0 (control) days, 1 day, 2 days, 1 week, and 2 weeks, all after each other. On Day 0, the fish will be guided through the maze twice, before being put back into the starting point of the maze. Once the fish begins, it will have its time till completion, amount of stops, and amount of bumps into dead ends recorded. On the days following, the fish will be put into the starting point of the maze, and the time till completion, amount of stops, and amount of bumps into dead ends will be recorded. The data will then be put into an excel document. Bar and Line graphs are then created to represent and compare different parts of the data. Then, the data will be compared and interpreted against each other to come up with a conclusion.

Just before the screening fair, attach a 200-250 word ABSTRACT of your project to this form.

GREATER SAN DIEGO SCIENCE & ENGINEERING FAIR
(GSDSEF) PROJECT PROPOSAL/SIGNATURE FORM (GSDSEF-1, 2015)
REQUIRED SIGNATURES:

Student:

I have read the *Rules and Regulations* of the GREATER SAN DIEGO SCIENCE AND ENGINEERING FAIR and certify that my project complies with them. I understand that failure to meet the terms of these rules and regulations will result in the disqualification of my project.

SENIOR DIVISION: GSDSEF forms meet the requirements of California law; therefore, all Senior Division students agree that, should they be selected to compete at the 2015 *Intel International Science and Engineering Fair (Intel ISEF)*, when they sign all required *Intel ISEF* forms they will predate them to agree with the date on this form.

Ki-Kai Wu 6/15/14

Student Signature/Date

Parent/Guardian:

I am aware of all potential safety hazards connected with this project, approve the precautions being taken to ensure my student's safety and will, when appropriate, provide guidance and/or supervision. I understand that failure to comply with *Rules and Regulations* of the GREATER SAN DIEGO SCIENCE AND ENGINEERING FAIR will result in the disqualification of the project.

[Signature] June 15, 2014

Parent Signature/Date

Teacher:

I approved this project prior to the student beginning work on it and verified that it complies with the *Rules And Regulations* of the GREATER SAN DIEGO SCIENCE AND ENGINEERING FAIR. Any concerns about the project's design, appropriateness, safety, or legality were submitted to the GSDSEF Scientific Review Committee (SRC) for approval prior to allowing the student to proceed. I understand that failure to comply with the Fair's *Rules And Regulations* will result in the disqualification of the project. I will provide all needed supervision (other than that specified on other included forms) and will ensure that this proposal and all required supplemental forms are included in the student's notebook at the screening fair. I will have the student, if invited to apply for entrance to the GSDSEF, submit all SRC requested certification forms with their 2015 *Application for Entrance*.

ESPOH 9-1-14

Teacher Signature/Date

Additional Advisor (if required)

When certification forms (*GSDSEF 2, 3, 4 or 5, 2015*) are signed by someone in addition to the science teacher, a signature here ensures that the procedures described on these forms will be followed.

[Signature] 15 JUN 2014

Additional Advisor Signature/Date