61st Annual State Science and Engineering Fair of Florida
March 29-31, 2016 The Lakeland Center, Lakeland

Place Participant Label Here

FFFS Office Use Only

SSEF ENTRY Form (Page 1)

Only original Entry Forms are accepted

Step #1: Choose Section: *double check to make sure you select the correct level of competition.*

- ☒ S Senior Section (Grades 9-12)
- ☐ J Junior Section (Grades 6-8)

Is this a TEAM PROJECT?
☒ YES ☐ NO

Step #2: Project Information: *double check to make sure you select the correct category.*

Project Category:

Animal Sciences	☐ ANIM	Earth & Environmental Sciences	☐ EAEV	Mathematics & Computational Sciences	☐ MACO
Behavioral & Social Sciences	☐ BEHA	Engineering	☐ ENMS	Microbiology	☒ MICR
Biomedical & Health Sciences	☐ BMED	Environmental Engineering	☐ ENEV	Physics & Astronomy	☐ PHYS
Cellular/Molecular Biology & Biochemistry	☐ CMBI	Intelligent Machines, Robotics & Systems Software	☐ IMRS	Plant Sciences	☐ PLNT
Chemistry	☐ CHEM				

Project Title: (must match ABSTRACT title): Bacterial analysis of the mouths of pets and their owners

Project Arrangement: COMPLETE ACCURATELY – **table configuration CANNOT be changed on site.**

☒ TN	Table/No Electricity	☐ TE	Table/Electricity*	Please select method of payment for electricity ($70):
☐ FN	Floor/No Electricity	☐ FE	Floor/Electricity*	☐ Check ☐ Money Order ☐ Purchase Order

- *Electricity ($70) payment must accompany this form. Personal checks, school checks, purchase orders, and money orders must be made payable to the University of Central Florida/FFFS/SSEF. Electricity for lighting purposes will not be allowed.*

Step #3: Personal Information for Individual Registrant or Team Leader of a Team Project
Note: if this is a TEAM PROJECT, Team Members complete additional pages 3 and 4.

Registrant's (Team Leader) Name: Trisha (First Name) A. (Middle Initial) Smith (Last Name) _____ (Sir Title (Jr., II, etc))

Phonetic Spelling: _____ (First Name) _____ (Last Name) Gender: ☐ Male ☒ Female

Email address (required): smitht@SFexample.com

Mailing Address: 2396 Causeway Drive (Number and Street) Bradenton (City), FL 34202 (Zip+4)

Home Phone #: 941 - 555 - 1248 Date of Birth: 04 / 29 / 2001 Grade in School: 9

Ethnicity:
☐ African American ☐ American Indian/Alaskan Native ☐ Asian or Pacific Islander
☒ Caucasian ☐ Hispanic ☐ Other _____

SSEF ENTRY Form (Page 2)

61st Annual State Science and Engineering Fair of Florida
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Step #4: School Information

Regional Science and Engineering Fair: Lockheed Martin Manatee RSEF

Full School Name: The Academy High School

Mailing Address: 1293 Palm View Road (Number and Street) Bradenton (City), FL 34202 (Zip+4)

Phone #: 941 - 555 - 4567 County: Manatee Public: ☐ Non-Public: ☒

Teacher's Name: Mr. Robert Smith (Dr., Mr., Mrs., Ms., etc / First Name / Last Name)

Step #5: Signatures (*must be originals and use blue ink for signatures)*

Certification:

"I hereby state that this exhibit was prepared during the current school year OR is a continuing study and that it is my own work. I have read and agree to abide by the rules and regulations of the State Science and Engineering Fair of Florida."

Trisha Smith — Student Registrant's or Team Leader's Original Signature — 11/30/15 — Date

"I hereby certify that this exhibit or continuing study was prepared during the current school year and that it has my consent as an approved Science and Engineering Fair Project. To the best of my knowledge, it is the student's own work."

Robert Smith — Teacher's Original Signature — 11/30/15 — Date

"I hereby certify that I have reviewed the questions on the RSEF/FFFS Regional Director's Checklist and have ascertained that all materials are present as required. I further declare that the Regional Fair's SRC/IRB has certified that this project meets all requirements and regulations of the International Science and Engineering Fair (ISEF) and the State Science and Engineering Fair (SSEF) of Florida."

RSEF Director's Original Signature — Date

Release: *The following signatures are required for photographs, videotaping, and media interviews.*

"For value received and without further considerations, I hereby consent that all photographs and/or video tape images taken of me and/or recordings made of my voice and/or written extraction, in whole or in part, of such recordings at the State Science and Engineering Fair of Florida, by the Florida Foundation for Future Scientists (FFFS) or the University of Central Florida (UCF), may be used by FFFS and UCF and/or others with the consent of the FFFS and UCF for the purpose of illustration, advertising, or publication in any manner."

Trisha Smith — Student Registrant's or Team Leader's Signature — 11/30/15 — Date

Robert Smith — Parent's/Guardian's Signature — 11/30/15 — Date

Has your Regional Fair selected you to attend the Intel International Science and Engineering Fair during May? _____

SSEF ENTRY Form (Page 3)

61st Annual State Science and Engineering Fair of Florida
March 29-31, 2016 The Lakeland Center, Lakeland

If this is a TEAM PROJECT, additional Team Members complete the following.

Step #6: Signatures ***(must be originals and use blue ink for signatures)***

Member #2 Name: John (First Name) B. (Middle Initial) Williams (Last Name) (Sir Title (Jr., II, etc))

Phonetic Spelling: _____ (First Name) _____ (Last Name) Gender: ☒ Male ☐ Female

Email address williamsb@SFexample.com

Mailing Address: 4597 Eastview Lane (Number and Street), (City) FL 34202 (Zip+4)

Home Phone #: 941 - 555 - 2137 Date of Birth: 12 / 01 / 2001 Grade in School: 9

Ethnicity:

☒ African American ☐ American Indian/Alaskan Native ☐ Asian or Pacific Islander
☐ Caucasian ☐ Hispanic ☐ Other _____

Certification:

"I hereby state that this exhibit was prepared during the current school year OR is a continuing study and that it is my own work. I have read and agree to abide by the rules and regulations of the State Science and Engineering Fair of Florida."

John Williams — Team Member #2 Signature — 11/27/15 — Date

Release: *The following signatures are required for photographs, videotaping, and media interviews.*

"For value received and without further considerations, I hereby consent that all photographs and/or video tape images taken of me and/or recordings made of my voice and/or written extraction, in whole or in part, of such recordings at the State Science and Engineering Fair of Florida, by the Florida Foundation for Future Scientists (FFFS) or the University of Central Florida (UCF), may be used by FFFS and UCF and/or others with the consent of the FFFS and UCF for the purpose of illustration, advertising, or publication in any manner."

John Williams — Team Member #2 Signature — 11/27/15 — Date

Martin Williams — Parent's/Guardian's Signature — 11/27/15 — Date

SSEF ENTRY Form (Page 4)

61st Annual State Science and Engineering Fair of Florida
March 29-31, 2016 The Lakeland Center, Lakeland

If this is a TEAM PROJECT, additional Team Members complete the following.

Step #6: Signatures ***(must be originals and use blue ink for signatures)***

Member #3 Name: Sandra (First Name) M. (Middle Initial) Montalvo (Last Name) (Sir Title (Jr., II, etc))

Phonetic Spelling: _____ (First Name) _____ (Last Name) Gender: ☐ Male ☒ Female

Email address: mont112@gmail.com

Mailing Address: 3436 Bridgetender Drive (Number and Street) Bradenton (City), FL 34202 (Zip+4)

Home Phone #: 941 - 555 - 6589 Date of Birth: 01 / 12 / 2001 Grade in School: 9

Ethnicity:
☐ African American ☐ American Indian/Alaskan Native ☐ Asian or Pacific Islander
☐ Caucasian ☒ Hispanic ☐ Other _____

Certification:

"I hereby state that this exhibit was prepared during the current school year OR is a continuing study and that it is my own work. I have read and agree to abide by the rules and regulations of the State Science and Engineering Fair of Florida."

Sandra Montalvo — Team Member #3 Signature — 11/30/15 — Date

Release: *The following signatures are required for photographs, videotaping, and media interviews.*

"For value received and without further considerations, I hereby consent that all photographs and/or video tape images taken of me and/or recordings made of my voice and/or written extraction, in whole or in part, of such recordings at the State Science and Engineering Fair of Florida, by the Florida Foundation for Future Scientists (FFFS) or the University of Central Florida (UCF), may be used by FFFS and UCF and/or others with the consent of the FFFS and UCF for the purpose of illustration, advertising, or publication in any manner."

Sandra Montalvo — Team Member #3 Signature — 11/30/15 — Date

Ricardo Montalvo — Parent's/Guardian's Signature — 11/30/15 — Date

61st State Science & Engineering Fair of Florida
OFFICIAL ABSTRACT AND CERTIFICATION

61st Annual State Science and Engineering Fair of Florida
March 29-31, 2016 Lakeland Center, Lakeland

Title: Bacterial analysis of the mouths of pets and their owners

Student\Team Leader: Trisha Smith
School, City, State: The Academy High School, Bradenton, FL

Do pets or their owners have the dirtiest mouth? Often pet owners will state sores licked by their pets would heal faster than sores treated in other fashion. Dental products are available for pets and humans but it depends on how often it is used whether it would decrease bacteria in the mouth. We expected that both cats and dogs would have fewer bacteria than their owners.

We collected swabs from the mouths of 32 adult humans, 17 dogs and 19 cats. After 48 hours the plates were checked and the number of colonies counted before proper disposal. The average number of colonies in humans was 77 which was significantly higher than the dogs with 59 colonies and the cats with 35 colonies.

Brushing teeth after eating did reduce the number of bacterial colonies in the humans and also in dogs after using dental care products.

Based on our findings we can clearly state that cats had the cleanest mouths. The use of dental care products for cats didn't make a difference. The gender of the animals and humans didn't make a difference in the number of colonies in the mouth and neither did the number of times humans brushed their teeth in a day.

Select one Category
Mark an "X" in box at right

- Animal Sciences ☐
- Behavioral & Social Sciences ☐
- Biomedical & Health Sciences ☐
- Cellular/Molecular Biology & Biochemistry ☐
- Chemistry ☐
- Earth & Environmental Sciences ☐
- Engineering ☐
- Environmental Engineering ☐
- Intelligent Machines, Robotics & Systems Software ☐
- Mathematics & Computational Sciences ☐
- Microbiology ☑
- Physics & Astronomy ☐
- Plant Sciences ☐

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):
   ☑ human subjects ☑ potentially hazardous biological agents
   ☑ vertebrate animals ☑ microorganisms ☐ rDNA ☑ tissue
2. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only. ☑ Yes ☐ No
3. I/we worked or used equipment in a regulated research institution or industrial setting. ☑ Yes ☐ No
4. This project is a continuation of previous research. ☑ Yes ☐ No
5. The display board includes non-published photographs/visual depictions of humans (other than myself): ☑ Yes ☐ No
6. All photos on display were taken by: (check ALL that apply):
   ☑ Researcher(s) ☐ Research Teacher(s)
   ☐ Parent(s) ☐ other **Citation required on display**
7. All charts/graphs/illustrations were produced by the researcher(s).
   ☑ Yes ☐ No **Citation required on display**

FOR SSEF OFFICIAL USE ONLY

I/We hereby certify that the above statements are correct and the information provided in the abstract is the result of one year's research. I/We also attest that the above properly reflects my/our own work.

Trisha Smith 11/30/15

Finalist or Team Leader Signature Date

Checklist for Adult Sponsor (1)

This completed form is required for ALL projects.

To be completed by the Adult Sponsor in collaboration with the student researcher(s):

Student's Name(s): Trisha Smith, John Williams & Sandra Montalvo

Project Title: Who has the cleanest mouth?

1. ☑ I have reviewed the Intel ISEF Rules and Guidelines.
2. ☑ I have reviewed the student's completed Student Checklist (1A) and Research Plan.
3. ☑ I have worked with the student and we have discussed the possible risks involved in the project.
4. ☑ The project involves one or more of the following and requires prior approval by an SRC, IRB, IACUC or IBC:
   - ☑ Humans
   - ☑ Vertebrate Animals
   - Potentially Hazardous Biological Agents
     - ☑ Microorganisms ☐ rDNA ☑ Tissues
5. ☑ Items to be completed for **ALL PROJECTS**
   - ☑ Adult Sponsor Checklist (1)
   - ☑ Student Checklist (1A)
   - ☑ Research Plan
   - ☑ Approval Form (1B)
   - ☑ Regulated Research Institutional/Industrial Setting Form (1C) (when applicable after completed experiment)
   - ☑ Continuation/Research Progression Form (7) (when applicable)
6. **Additional forms required if the project includes the use of one or more of the following** (check all that apply):
   - ☑ **Humans** (Requires prior approval by an Institutional Review Board (IRB); see full text of the rules.)
     - ☑ Human Participants Form (4) or appropriate Institutional IRB documentation
     - ☑ Sample of Informed Consent Form (when applicable and/or required by the IRB)
     - ☐ Qualified Scientist Form (2) (when applicable and/or required by the IRB)
   - ☑ **Vertebrate Animals** (Requires prior approval, see full text of the rules.)
     - ☑ Vertebrate Animal Form (5A)—for projects conducted in a school/home/field research site (SRC prior approval required.)
     - ☐ Vertebrate Animal Form (5B)—for projects conducted at a Regulated Research Institution. (Institutional Animal Care and Use Committee (IACUC) approval required prior experimentation.)
     - ☑ Qualified Scientist Form (2) (Required for all vertebrate animal projects at a regulated research site or when applicable)
   - ☑ **Potentially Hazardous Biological Agents** (Requires prior approval by SRC, IACUC or Institutional Biosafety Committee (IBC), see full text of the rules.)
     - ☑ Potentially Hazardous Biological Agents Risk Assessment Form (6A)
     - ☑ Human and Vertebrate Animal Tissue Form (6B)—to be completed in addition to Form 6A when project involves the use of fresh or frozen tissue, primary cell cultures, blood, blood products and body fluids.
     - ☐ Qualified Scientist Form (2) (when applicable)
   - ☑ **Hazardous Chemicals, Activities and Devices** (No prior approval required, see full text of the rules.)
     - ☑ Risk Assessment Form (3) 1% and 10% bleach
     - ☐ Qualified Scientist Form (2) (required for projects involving DEA-controlled substances or when applicable)

Note: The following are exempt from prior review but require a risk assessment: projects involving protists, archae and similar microorganisms, for projects using manure for composting, fuel production or other non-culturing experiments, for projects using color change coliform water test kits, microbial fuel cells, and for projects involving decomposing vertebrate organisms.

Robert Smith	Robert Smith	9/22/15
Adult Sponsor's Printed Name	Signature	Date of Review
(941) 555-1282	smithr@SFexample.com	
Phone	Email	

Student Checklist (1A)

This form is required for ALL projects.

1. a. Student/Team Leader: Trisha Smith Grade: 9th

   Email: smitht@SFexample.com Phone: (941) 555-1282

   b. Team Member: John Williams c. Team Member: Sandra Montalvo

2. Title of Project:

   Whose has the cleanest mouth?

3. School: The Academy High School School Phone: (941) 555-4567

   School Address: 1293 Palm View Rd.

   Bradenton, FL 34202

4. Adult Sponsor: Robert Smith Phone/Email: (941) 555-1282

5. Does this project need pre-approval? ☑ Yes ☐ No Tentative start date: 10/5/15

6. Is this a continuation/progression from a previous year? ☐ Yes ☐ No

   If Yes:

   a. Attach the previous year's ☐ Abstract **and** ☐ Research Plan

   b. Explain how this project is new and different from previous years on ☐ Continuation/Research Progression Form (7)

7. This year's laboratory experiment/data collection:

   10/10/15 (Actual Start Date: (mm/dd/yy)) 10/30/15 (End Date: (mm/dd/yy))

8. Where will you conduct your experimentation? (check all that apply)

   ☑ Research Institution ☐ School ☐ Field ☑ Home ☐ Other: _____

9. List name and address of all non-school work site(s):

Name:	East Manatee Veterinary Clinic	Smith's home
Address:	8832 E. State Rd. 64	2396 Causeway Dr.
	Bradenton, FL 34202	Bradenton, FL 34208
Phone:	(941) 555-6942	(941) 555-1282

10. **Complete a Research Plan/Project Summary following the Research Plan instructions and attach to this form.**

11. **An abstract is required for all projects after experimentation.**

Continuation of Student Checklist (1A)

Trisha Smith, John Williams and Sandra Montalvo

John Williams
4597 Eastview Lane
Bradenton FL 34202
941 555 2137

Sandra Montalvo
3436 Bridgetender Drive
Bradenton FL 34202
941 555 6589

...and homes of other participants

2015-2016 Research Plan

Trisha Smith, John Williams and Sandra Montalvo Lockheed Martin Manatee RSEF

A. Rationale: Bacteria are found in every habitat and many can cause disease. Some cat and dog owners say that when their dog or cat licks their sores, the sores heal faster. Humans spend a lot of money on dental care products to clean their teeth. There are also many products available to help dogs reduce tartar and reduce bad breath. Cats also have products to reduce teeth problems.

B. Question and Hypothesis: Who has the cleanest mouth? Humans have more bacteria in their mouths than dogs or cats.

C. Method

Participants will be 20 dog and 20 cat owners that are members of our families, friends, or patients in my mother's veterinary office. All of the human participants will be adults of various ethnicities and socioeconomic groups. They will be contacted by us or our parents. The adults will be shown how to swab their own mouth and will help us swab the mouth of their cat or dog in the same fashion. We will not record any names and will label the plates with a sample number and H, C or D for human, cat or dog, respectively. The people may be bitten or scratched while obtaining a sample from their pet's mouth and may feel uncomfortable taking their own sample. We will display the anonymous results in the Vet's office so they can learn whether the cats, dogs or humans had the cleanest mouth. Participation is voluntary and they can quit if they want to. The process will be described on the Informed Consent and the adults will open the sterile swabs. Also, if approved by the human on the informed consent we will take a picture of the pet and owner. The informed consent forms will be kept at the vet's office with other confidential forms for three years.

The 20 dogs and 20 cats will live in the homes of the owners, only the owners will handle their pets whether in their home or in the Vet's office. The owners are responsible for their feeding and housing. Cats and dogs must be used since tissue/cell cultures and invertebrates don't have teeth that can be swabbed after eating. We will only use 20 cats and 20 dogs at the most. Moving the swab across the gum line should not bother the cats and dogs and their owners will collect the samples. The owners should be sensitive to their pet's reactions. The dogs and cats will remain the pets of the owners.

80 petri dishes with nutrient agar	masking tape	bucket	apron
100 sterile swabs	bleach (1% and 10%)	paper towels	surveys
Informed Consent forms	incubator	safety glasses	gloves

1. Prepare the petri dishes and label with the same number on two plates and H on one for human and C or D for cat or dog, respectively on a second plate. (Trisha and Sandra)
2. Visit a home of the potential participant that is a friend or family member of the researcher or meet them in the Vet's office with two petri dishes, swabs, and masking tape. (all three)

Reviewed by Robert Smith R. Smith on 9/22/15

3. Describe the experiment and provide the informed consent form to be completed followed by the survey. Number the survey the same as the petri dishes. Show the process of swabbing along the gum line to each adult. (all three)
4. Immediately after the adult swabs the gum line of themselves and their pet, take the swab and spread it on the agar lifting the lid just enough to insert the swab. Spread the sample using a zig-zag pattern and then rotate the plate and spreading it throughout the plate. Throw away the broken swabs in the home's or office's trash can. (all three)
5. Tape around the petri dish to seal and label the date and time. Store in a box labeled "saliva samples collected on" date for transportation to the school the next morning. (all three)
6. Take a picture of the pet and owner if approved on informed consent form. (This will not be associated with the sample number.) Keep the survey and informed consent forms separately. In the logbook write the sample number and critical information from the survey so the colony numbers can be related to the information for analysis. (all three)
7. The next morning take the samples to school and place upside down in the incubator set at 37°C in the locked storeroom behind my teacher's room. (all three)
8. After 2 days wearing gloves, apron, and safety glasses remove the plates from the incubator and count the number of colonies on each plate. Take pictures of plates with the label. Wipe down counter with 1% bleach solution and throw away gloves and paper towels. (Trisha and Sandra)
9. Place the counted plates in a bucket in which the sponsor will pour 10% bleach solution. (Trisha) If the bleach doesn't leak into the sealed dish, the sponsor will remove the tape under the surface of the bleach solution and make sure the dish soaks for 30 minutes before throwing away in the trash. The sponsor will pour the used bleach solution down the drain with excess water.

Survey

About the adult: What is your gender?

How often do you brush your teeth in a normal day?

Have you eaten in the last 2 hours?

Have you brushed your teeth since you have last eaten?

Do you own a cat or dog? How old is your pet? What is its gender?

Does the pet eat hard or soft foods?

Has the pet eaten in the last 2 hours?

Do you provide any dental care or use dental care products for your pet? If so, what?

Has your pet used a dental product since they had last eaten?

Data Analysis: Compare the average number of bacterial colonies in a bar graph. Compare the average number of colonies from dogs and cats that ate hard food to those that ate soft food using a bar graph. Compare the number of colonies from the humans that brush their teeth one, two, or three times a day

using a bar graph. Compare the average number of bacterial colonies by gender for humans, cats, and dogs. Use t-tests for all comparisons listed above. (John)

D. Bibliography:

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Reviewed by Robert Smith R. Smith on 9/22/15

Revision to the 2015-2016 Research Plan

Trisha Smith, John Williams and Sandra Montalvo — Lockheed Martin Manatee RSEF

Rationale for changes: Some people had multiple pets and we wanted to collect all of the data that we could so we had to change the labeling process of the petri dishes.

Revised Method:

Carry additional plates with no labels so when owners have more than one pet the additional samples can also be marked with the same number of the survey and any additional pet's information can be written separately on the survey.

If the person has more than one pet label the petri dishes with a number after the letter (C or D) to match the survey.

Also add a "+" if the human or pet had eaten in the last two hours on the dish, "-" if they had use dental care since eating and a "x" if neither question were true.

Additional Data Analysis

Compare the results of pets that have used dental products since eating to those that haven't and those that hadn't eaten or used dental products within the last two hours.

Acknowledgement of students and parents– Signatures with dates

Trisha Smith Trisha Smith 10/13/15

Valerie Smith Valerie Smith 10/13/15

John Williams John Williams

Martin Williams Martin Williams 10/14/15

Sandra Montalvo Sandra Montalvo 10/15/15

Ricardo Montalvo Ricardo Montalvo 10/15/15

Reviewed by Adult Sponsor

Robert Smith Robert Smith Date 10/16/15

Revision Approval by SRC

Jaime Joseph Jaime Joseph Date 10/16/15

2015-2016 Project Summary

Trisha Smith, John Williams and Sandra Montalvo Lockheed Martin Manatee RSEF

We started contacting participants on October 10th and sampling on October 12th. In total we sampled 35 people, 16 dogs and 19 cats either in their homes or at John's mother's Veterinarian's office. We prepared and sealed the petri dishes at the sampling site, kept them at home in a labeled box, delivered the samples the next morning where they were incubated. Samples were only collected on Sunday evenings through Tuesday evenings so the inclubated samples could be read after 48 hours. Robert Smith, the sponsor, destroyed all of the samples using 10% bleach solution for 30 minutes. All sampling was finalized by October 30th.

Our data is below recorded in the number of colonies per plate after 48 hours of incubation:

Human	Dog	Human	Dog	Human	Cat	Human	Cat
131	43	43	32	87	18	39	19
48	62	72	52	93	25	55	35
53	74	77	43	124	43	78	40
82	64	119	68	101	22	55	29
102	73	84	56	68	32	103	19
38	53	97	63	76	40	117	77
29	46			89	39	62	38
55	78			117	43	48	40
69	63			49	50	37	26
113	82			75	39		

The dog owners had significantly more bacteria in their mouth than their dogs with an average of 76 colonies while the dogs had only had an average of 60 colonies. The cat owners also had significantly more bacteria in their mouths than the cats with an average of 78 and the cats only had an average of 35 colonies. There was no significant difference in the two groups of humans. Overall the cats had the cleanest mouths of all tested. There were no other significant results in the comparison of gender and soft food or cat food. There was no correlation to the number of times a person brushed their teeth each day, this year we didn't test anyone after brushing their teeth.

We declare that we completed this project and collected the data above.

Trisha Smith Trisha Smith on 11/25/15

John Williams John Williams on 11/25/15

Sandra Montalvo Sandra Montalvo on 11/25/15

Reviewed by Robert Smith R. Smith on 11/30/15

Approval Form (1B)

A completed form is required for each student, including all team members.

1. To Be Completed by Student and Parent

a. **Student Acknowledgment:**

- I understand the risks and possible dangers to me of the proposed research plan.
- I have read the Intel ISEF Rules and Guidelines and will adhere to all International Rules when conducting this research.
- I have read and will abide by the following Ethics statement

Scientific fraud and misconduct are not condoned at any level of research or competition. Such practices include plagiarism, forgery, use or presentation of other researcher's work as one's own, and fabrication of data. Fraudulent projects will fail to qualify for competition in affiliated fairs and the Intel ISEF.

Trisha Smith	Trisha Smith	9/10/15
Student's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

b. **Parent/Guardian Approval:** I have read and understand the risks and possible dangers involved in the **Research Plan**. I consent to my child participating in this research.

Valerie Smith	Valerie Smith	9/10/15
Parent/Guardian's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

2. To be completed by the local or affiliated Fair SRC

(Required for projects requiring prior SRC/IRB APPROVAL. Sign 2a or 2b as appropriate.)

a. **Required for projects that need prior SRC/IRB approval BEFORE experimentation** (humans, vertebrates or potentially hazardous biological agents).

The SRC/IRB has carefully studied this project's **Research Plan** and all the required forms are included. My signature indicates approval of the **Research Plan** before the student begins experimentation.

Jaime Joseph

SRC/IRB Chair's Printed Name

Jaime Joseph — 10/5/15

Signature — Date of Approval (mm/dd/yy) (Must be prior to experimentation.)

OR

b. **Required for research conducted at all Regulated Research Institutions with no prior fair SRC/IRB approval.**

This project was conducted at a regulated research institution (**not home or high school, etc.**), was reviewed and approved by the proper institutional board before experimentation and complies with the Intel ISEF Rules. **Attach (1C) and required institutional approvals (e.g. IACUC, IRB).**

SRC Chair's Printed Name

Signature — Date of Approval (mm/dd/yy)

3. Final Intel ISEF Affiliated Fair SRC Approval (Required for ALL Projects)

SRC Approval After Experimentation and Before Competition at Regional/State/National Fair
I certify that this project adheres to the approved **Research Plan** and complies with all Intel ISEF Rules.

Regional SRC Chair's Printed Name	Signature	Date of Approval
State/National SRC Chair's Printed Name *(where applicable)*	Signature	Date of Approval

Approval Form (1B)

A completed form is required for each student, including all team members.

1. To Be Completed by Student and Parent

a. **Student Acknowledgment:**

- I understand the risks and possible dangers to me of the proposed research plan.
- I have read the Intel ISEF Rules and Guidelines and will adhere to all International Rules when conducting this research.
- I have read and will abide by the following Ethics statement

Scientific fraud and misconduct are not condoned at any level of research or competition. Such practices include plagiarism, forgery, use or presentation of other researcher's work as one's own, and fabrication of data. Fraudulent projects will fail to qualify for competition in affiliated fairs and the Intel ISEF.

John Williams	John Williams	9/10/15
Student's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

b. **Parent/Guardian Approval:** I have read and understand the risks and possible dangers involved in the **Research Plan**. I consent to my child participating in this research.

Martin Williams	Martin Williams	9/10/15
Parent/Guardian's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

2. To be completed by the local or affiliated Fair SRC

(Required for projects requiring prior SRC/IRB APPROVAL. Sign 2a or 2b as appropriate.)

a. **Required for projects that need prior SRC/IRB approval BEFORE experimentation** (humans, vertebrates or potentially hazardous biological agents).

The SRC/IRB has carefully studied this project's **Research Plan** and all the required forms are included. My signature indicates approval of the **Research Plan** before the student begins experimentation.

Jaime Joseph
SRC/IRB Chair's Printed Name

Jaime Joseph | 10/5/15
Signature | Date of Approval (mm/dd/yy) (Must be prior to experimentation.)

OR

b. **Required for research conducted at all Regulated Research Institutions with no prior fair SRC/IRB approval.**

This project was conducted at a regulated research institution (**not home or high school, etc.**), was reviewed and approved by the proper institutional board before experimentation and complies with the Intel ISEF Rules. **Attach (1C) and required institutional approvals (e.g. IACUC, IRB).**

SRC Chair's Printed Name

Signature | Date of Approval (mm/dd/yy)

3. Final Intel ISEF Affiliated Fair SRC Approval (Required for ALL Projects)

SRC Approval After Experimentation and Before Competition at Regional/State/National Fair
I certify that this project adheres to the approved **Research Plan** and complies with all Intel ISEF Rules.

Regional SRC Chair's Printed Name	Signature	Date of Approval
State/National SRC Chair's Printed Name *(where applicable)*	Signature	Date of Approval

Approval Form (1B)

A completed form is required for each student, including all team members.

1. To Be Completed by Student and Parent

a. **Student Acknowledgment:**

- I understand the risks and possible dangers to me of the proposed research plan.
- I have read the Intel ISEF Rules and Guidelines and will adhere to all International Rules when conducting this research.
- I have read and will abide by the following Ethics statement

Scientific fraud and misconduct are not condoned at any level of research or competition. Such practices include plagiarism, forgery, use or presentation of other researcher's work as one's own, and fabrication of data. Fraudulent projects will fail to qualify for competition in affiliated fairs and the Intel ISEF.

Sandra Montalvo	Sandra Montalvo	9/12/15
Student's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

b. **Parent/Guardian Approval:** I have read and understand the risks and possible dangers involved in the **Research Plan**. I consent to my child participating in this research.

Ricardo Montalvo	Ricardo Montalvo	9/12/15
Parent/Guardian's Printed Name	Signature	Date Acknowledged (mm/dd/yy) (Must be prior to experimentation.)

2. To be completed by the local or affiliated Fair SRC

(Required for projects requiring prior SRC/IRB APPROVAL. Sign 2a or 2b as appropriate.)

a. **Required for projects that need prior SRC/IRB approval BEFORE experimentation** (humans, vertebrates or potentially hazardous biological agents).

The SRC/IRB has carefully studied this project's **Research Plan** and all the required forms are included. My signature indicates approval of the **Research Plan** before the student begins experimentation.

Jaime Joseph
SRC/IRB Chair's Printed Name

Jaime Joseph — 10/5/15
Signature — Date of Approval (mm/dd/yy) (Must be prior to experimentation.)

OR

b. **Required for research conducted at all Regulated Research Institutions with no prior fair SRC/IRB approval.**

This project was conducted at a regulated research institution (**not home or high school, etc.**), was reviewed and approved by the proper institutional board before experimentation and complies with the Intel ISEF Rules. **Attach (1C) and required institutional approvals (e.g. IACUC, IRB).**

SRC Chair's Printed Name

Signature — Date of Approval (mm/dd/yy)

3. Final Intel ISEF Affiliated Fair SRC Approval (Required for ALL Projects)

SRC Approval After Experimentation and Before Competition at Regional/State/National Fair
I certify that this project adheres to the approved **Research Plan** and complies with all Intel ISEF Rules.

Regional SRC Chair's Printed Name	Signature	Date of Approval
State/National SRC Chair's Printed Name *(where applicable)*	Signature	Date of Approval

Regulated Research Institutional/Industrial Setting Form (1C)

This form must be completed AFTER experimentation by the adult supervising the student research conducted in a regulated research institution, industrial setting or any work site other than home, school or field.

This form MUST be displayed with your project; responses must be on the form.

Student's Name(s) Trisha Smith, John Williams & Sandra Montalvo

Title of Project Who has the cleanest mouth?

To be completed by the Supervising Adult in the Setting (NOT the Student(s)) after experimentation:
(Responses must remain on the form as it is required to be displayed at student's project booth.)

The student(s) conducted research at my work site:

a. ☐ to use the equipment b. ☑ to perform experiment(s)/conduct research

1. Have you reviewed the Intel ISEF rules relevant to this project? ☑ Yes ☐ No

2. Is this research a subset of your work? ☐ Yes ☑ No

3. How did the student get the idea for her/his project?
(e.g. Was the project assigned, picked from a list, an original student idea, etc.)
The project is a continuation from last year.

4. Did the student(s) work on the project as a part of a research group? ☑ Yes ☐ No
If yes, how large was the group and what kind of research group was it (students, group of adult researchers, etc.)
Three students from my son's school worked together but only my son collected samples at my office.

5. What specific procedures or equipment did the student(s) actually use for the project?
Please list and describe. (Do not list procedures student only observed.)
My son asked patients if they would be involved in his science fair project and then he gave them an informed consent form survey and two swabs. After the owner completes swabbing gumlines of pets, my son will prepare the plates and label with a number and letter for the organism.

6. How independent or creative was the student's/students' work?
The students designed this project and I reviewed it.

Student research projects dealing with human participants, vertebrate animals or potentially hazardous biological agents require review and approval by an institutional regulatory board (IRB/IACUC/IBC). **Copy of approval(s) must be attached, if applicable.**

Sarah Williams	Sarah Williams	DVM
Supervising Adult's Printed Name	Signature	Title
East Manatee Veterinary Clinic		11/15/15
Institution		Date Signed (must be after experimentation)
8832 E. State Rd. 64 Bradenton, FL 34202		(941) 555-6942
Address		Email/Phone

Qualified Scientist Form (2)

May be required for research involving human participants, vertebrate animals, potentially hazardous biological agents, and DEA-controlled substances. Must be completed and signed before the start of student experimentation.

Student's Name(s) Trisha Smith, John Williams & Sandra Montalvo

Title of Project Who has the cleanest mouth?

To be completed by the Qualified Scientist:

Scientist Name: Sarah Williams

Educational Background: Doctor of Veterinary Medicine Degree(s): DVM

Experience/Training as relates to the student's area of research:

Students are working with cats and dogs that I treat.

Co-owner
Position:

East Manatee Veterinary Clinic
Institution:

8832 E. State Rd. 64, Bradenton, FL 34202
Address:

(941) 555-6942
Email/Phone:

1) Have you reviewed the Intel ISEF rules relevant to this project? ☑ Yes ☐ No

2. Will any of the following be used?
   a. Human participants ☑ Yes ☐ No
   b. Vertebrate animals ☑ Yes ☐ No
   c. Potentially hazardous biological agents (microorganisms, rDNA and tissues, including blood and blood products) ☑ Yes ☐ No
   d. DEA-controlled substances ☐ Yes ☑ No

3. Was this study a sub-set of a larger study? ☐ Yes ☑ No

4. Will you directly supervise the student? ☑ Yes ☐ No
   a. If no, who will directly supervise and serve as the Designated Supervisor? _____
   b. Experience/Training of the Designated Supervisor:

To be completed by the Qualified Scientist:

I certify that I have reviewed and approved the Research Plan prior to the start of the experimentation. If the student or Designated Supervisor is not trained in the necessary procedures, I will ensure her/his training. I will provide advice and supervision during the research. I have a working knowledge of the techniques to be used by the student in the Research Plan. I understand that a Designated Supervisor is required when the student is not conducting experimentation under my direct supervision.

Sarah Williams
Qualified Scientist's Printed Name

Sarah Williams 9/16/15
Signature Date of Approval

To be completed by the Designated Supervisor when the Qualified Scientist cannot directly supervise.

I certify that I have reviewed the Research Plan and have been trained in the techniques to be used by this student, and I will provide direct supervision.

Designated Supervisor's Printed Name

Signature Date of Approval

Phone Email

Risk Assessment Form (3)

Required for projects using hazardous chemicals, activities or devices and microorganisms exempt from pre-approval. Must be completed before experimentation.

Student's Name(s) Trisha Smith, John Williams & Sandra Montalvo

Title of Project Who has the cleanest mouth?

To be completed by the Student Researcher(s) in collaboration with Designated Supervisor/Qualified Scientist: (All questions must be answered; additional page(s) may be attached.)

1. Identify and assess the risks involved in this project.
   1 and 10% aqueous bleach (sodium hypochlorite)

2. Describe the safety precautions and procedures that will be used to reduce the risks.
   Eye and skin irritation, caustic material

3. List all hazardous chemicals, activities, or devices that will be used; identify microorganisms exempt from pre-approval (see Potentially Hazardous Biological Agent rules).
   Wear gloves and goggles in a well-ventilated room. Adult sponsor will handle the 10% bleach solution only.

4. Describe the disposal procedures that will be used (when applicable).
   All bleach solutions will be poured down the drain with excess cold water.

5. List the source(s) of safety information.
   Flinn Scientific Inc., 2014, Mar 21. SDS. Sodium Hypochlorite Solution. www.flinnsci.com

To be completed and signed by the Designated Supervisor (or Qualified Scientist, when applicable):
I agree with the risk assessment and safety precautions and procedures described above. I certify that I have reviewed the Research Plan and will provide direct supervision.

Robert Smith	Robert Smith	9/2/15
Designated Supervisor's Printed Name	Signature	Date of Review (mm/dd/yy)

Teacher, The Academy High School	(941) 555-1282
Position & Institution	Phone or email contact information

Training in microbiological techniques in schools

Experience/Training as relates to the student's area of research

Human Participants Form (4)

Required for all research involving human participants not at a Regulated Research Institution. If at a Regulated Research Institution, use institutional approval forms for documentation of prior review and approval.
(IRB approval required before experimentation.)

Trisha Smith, John Williams & Sarah Montalvo	Who has the cleanest mouth?
Student's Name(s)	Title of Project
Robert Smith	(941) 555-1282
Adult Sponsor Contact	Phone/Email

Must be completed by Student Researcher(s) in collaboration with the Adult Sponsor/Designated Supervisor/Qualified Scientist:

1. ☑ I have submitted my Research Plan which addresses ALL areas indicated in the Human Participants Section of the Research Plan Instructions.
2. ☑ I have attached any surveys or questionnaires I will be using in my project or other documents provided to human participants.
   ☐ Any published instrument(s) used was /were legally obtained.
3. ☑ I have attached an informed consent that I would use if required by the IRB.
4. ☐ Yes ☑ No Are you working with a Qualified Scientist? If yes, attach the Qualified Scientist Form 2.

BELOW — IRB USE ONLY

Must be completed by Institutional Review Board (IRB) after review of the research plan. All questions must be answered for the approval to be valid. (If not approved, return paperwork to the student with instructions for modifications.)

☑ Approved with Full Committee Review (3 signatures required) and the following conditions: (All 5 must be answered)

1. Risk Level (check one): ☑ Minimal Risk ☐ More than Minimal Risk
2. Qualified Scientist (QS) Required: ☐ Yes ☑ No
3. Designated Supervisor (DS) Required: ☐ Yes ☑ No
4. Written Minor Assent required for minor participants: ☐ Yes ☐ No ☑ Not applicable (No minors in this study)
5. Written Parental Permission required for minor participants: ☐ Yes ☐ No ☑ Not applicable (No minors in this study)
6. Written Informed Consent required for participants 18 years or older: ☑ Yes ☐ No ☐ Not applicable (No participants 18 yrs or older in this study)

☐ Approved with Expedited Review (1 signature required). Study involves either of the following:

- ☐ Human participants will only provide feedback on project design/student-designed invention or prototype. etc., no personal data will be collected and there are no health or safety hazards.
- ☐ Student is the only subject of the research and no more than minimal risk is involved.

IRB SIGNATURES (All 3 signatures required unless expedited review checked above) None of these individuals may be the adult sponsor, designated supervisor, qualified scientist or related to (e.g., mother, father of) the student (conflict of interest).

I attest that I have reviewed the student's project, that the checkboxes above have been completed to indicate the IRB determination and that I agree with the decisions above.

Medical or Mental Health Professional (a psychologist, medical doctor, licensed social worker, licensed clinical professional counselor, physician's assistant, or registered nurse)

Melanie Lambert/Paul Jones	Psychologist/RN
Printed Name	Degree/Professional License
Melanie Lambert / Paul Jones	9/28/15 / 9/29/15
Signature	Date of Approval (Must be prior to experimentation.)

Educator

Adam Brown	M. Ed.
Printed Name	Degree
Adam Brown	9/28/15
Signature	Date of Approval (Must be prior to experimentation.)

School Administrator

Frank Snow	M. Ed. Leadership
Printed Name	Degree/Professional License
Frank Snow	9/29/15
Signature	Date of Approval (Must be prior to experimentation.)

Verification of Informed Consent

I verify that Trisha Smith, John Williams and Sandra Montalvo have collected 32 appropriately signed and dated informed consent forms from adults for the research project for 2015-2016 academic year. Dates of signatures ranged from October 12th to October 28st. Fifteen of these forms showed that the adult participant approved for an anonymous picture to be taken of themselves with their pet.

The student researchers have been informed about the requirement to hold original forms for a period of no less than 3 years.

A copy of the redacted informed consent form is attached to this form.

Robert Smith — 11/30/15

Adult Sponsor Signature – Robert Smith — Date

Trisha Smith — 11/29/15

Student Researcher – Trisha Smith — Date

John Williams — 11/30/15

Student Researcher – John Williams — Date

Sandra Montalvo — 11/30/15

Student Researcher – Sandra Montalvo — Date

INFORMED CONSENT FORM

Trisha Smith, John Williams and Sandra Montalvo's 2015-2016 project titled, *Who has the cleanest mouth?*, has been reviewed and approved by the Institutional Review Board (IRB) as designated by the signature of the IRB chair below:

Joine Joseph date of review 10/5/15

We are asking for your voluntary participation in my science project. Please read the following information about the project. If you would like to participate, please sign on the appropriate line below and circle whether you would agree to let us take a picture of you and your pet.

****

Purpose of the project is to see if cats, dogs or humans have more bacteria in their mouths, whether eating hard or soft food affects the bacteria counts in the pets' mouths, if age or gender impacts oral bacteria and the impact of brushing on the number of bacteria in the human mouth.

If you participate, you will be asked to complete a brief survey about your and your pet's eating and dental care. You will also use sterile swabs to collect samples from the gum line from yourself and your pet. Also if you agree, we would like to take a picture of you and your pet.

Time required for participation is less than 10 minutes.

Potential risks will include feeling uncomfortable answering the questions and collecting the samples from yourself and your pet. Your pet might bite or scratch you.

Benefits you can expect will be seeing the anonymous results of the project which will be on display in the Veterinarian's office.

Confidentiality will be maintained by recording no names in data and keeping this form separate from the survey and results from samples. The surveys will not be labeled so they can't be related to the results. Pictures will not be labeled so they can't be connected to the data.

****

If you have any questions about this study, feel free to contact the Adult Sponsor: Robert Smith Phone/email: 941 748 2832 x 1639 or smithr3@manateeschools.net

Voluntary Participation:

Participation in this study is completely voluntary. If you decide not to participate there will not be any negative consequences. Please be aware that if you decide to participate, you may stop participating at any time and you may decide not to answer any specific question.

By signing this form I am attesting that I have read and understand the information above and I freely give my consent to participate.

I give permission to have an anonymous picture taken of myself with my pet. yes no

Adult Informed Consent Date Reviewed & Signed: 10/11/15

Printed Name of Research Subject: [redacted] Signature: [redacted]

Vertebrate Animal Form (5A)

Required for all research involving vertebrate animals that is conducted in a school/home/field research site. (SRC approval required before experimentation.)

Student's Name(s) Trisha Smith, John Williams & Sandra Montalvo

Title of Project Who has the cleanest mouth?

To be completed by Student Researcher:

1. Common name (or Genus, species) and number of animals used.

   Canus domesticus (20 of various breeds), Felis catus (20 of various breeds)

2. Describe completely the housing and husbandry to be provided. Include the cage/pen size, number of animals per cage, environment, bedding, type of food, frequency of food and water, how often animal is observed, etc. Add an additional page as necessary.

   All dogs and cats will be kept in the homes of the owners where they will be provided with food and shelter.

3. What will happen to the animals after experimentation?

   Dogs and cats will remain the pets of the owners.

4. Attach a copy of wildlife licenses or approval forms, as applicable

5. The Intel ISEF Vertebrate Animal Rules require that any death, illness or unexpected weight loss be investigated and documented by a letter from the qualified scientist, designated supervisor or a veterinarian. If applicable, attach this letter with this form when submitting your paperwork to the SRC prior to competition.

To be completed by Local or Affiliate Fair Scientific Review Committee (SRC) BEFORE experimentation.

Level of Supervision Required for agricultural, behavioral or nutritional studies:

☐ Designated Supervisor REQUIRED. Please have applicable person sign below.

☑ Veterinarian and ~~Designated Supervisor~~ each owner REQUIRED. Please have applicable persons sign below.

☐ Veterinarian, Designated Supervisor and Qualified Scientist REQUIRED. Please have applicable persons sign below and have the Qualified Scientist complete Form (2).

The SRC has carefully reviewed this study and finds it is an appropriate study that may be conducted in a non-regulated research site.

Local or Affiliate Fair SRC Pre-Approval Signature:

~~Adam Brown~~ Jaime Joseph — Jaime Joseph — 10/2/15

SRC Chair Printed Name | Signature | Date of Approval (must be prior to experimentation) (mm/dd/yy)

To be completed by Veterinarian:

☑ I have reviewed this research and animal husbandry with the student before the start of experimentation.

N/A ☐ I have approved the use and dosages of prescription drugs and/or nutritional supplements.

☑ I will provide veterinary medical and nursing care in case of illness or emergency. at cost to owner.

Sarah Williams — williamss@SFExample.com

Printed Name | Email/Phone

Sarah Williams — 9/16/15

Signature | Date of Approval

To be completed by Designated Supervisor or Qualified Scientist when applicable:

☐ I have reviewed this research and animal husbandry with the student before the start of experimentation and I accept primary responsibility for the care and handling of the animals in this project.

☐ I will directly supervise the experiment.

Printed Name | Email/Phone

Signature | Date of Approval

2016 SSEF Mortality Report

- **This form is required for all research involving vertebrate animals. This form must be completed at the conclusion of research even if no deaths occurred.**
- **NO vertebrate animal deaths due to the experimental procedures are permitted in any group or subgroup. Such a project will fail to qualify (FTQ) for competition.** *See Intel ISEF Rules and Guidelines.*
- **If there was any weight loss or death of an animal during the experimentation, the cause must be investigated.**
- If a member of any experimental group or subgroup dies during experimentation **a degreed professional with experience in necropsy** must document cause of death and absence of connection to experimentation.
- **Mortality must be calculated for each group, subgroup, and the total research population.**

Registrant's Name: Trisha Smith, John Williams, Sanda Montalvo Region Lockheed
First Name Middle Initial Last Name Sir Title (Jr., II, etc)

Project Title: (must match ABSTRACT title)
Bacterial analysis of the mouths of pets and their owners

Genus/Species **Name:** Felis catus **Common Name:** cat

Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Control Group:	12	0
Experimental Factor:	(No Exposure or Treatment)	
Cause(s) of Death:	NA	
Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Experimental Group #1	7	0
Experimental Factor:	had used dental product since last eating	
Cause(s) of Death:	NA	
Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Experimental Group #2		
Experimental Factor:		
Cause(s) of Death:		
Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Experimental Group #3		
Experimental Factor:		
Cause(s) of Death:		

TOTAL NUMBER USED: 19 **TOTAL DEATHS:** 0

Attach required letter- if a member of any experimental group or subgroup dies during experimentation **a degreed professional with experience in necropsy** must document cause of death and absence of connection to experimentation.

2016 SSEF Mortality Report

- **This form is required for all research involving vertebrate animals. This form must be completed at the conclusion of research even if no deaths occurred.**
- **NO vertebrate animal deaths due to the experimental procedures are permitted in any group or subgroup. Such a project will fail to qualify (FTQ) for competition.** *See Intel ISEF Rules and Guidelines.*
- **If there was any weight loss or death of an animal during the experimentation, the cause must be investigated.**
- If a member of any experimental group or subgroup dies during experimentation **a degreed professional with experience in necropsy** must document cause of death and absence of connection to experimentation.
- **Mortality must be calculated for each group, subgroup, and the total research population.**

Registrant's Name: Trisha Smith, John Williams, Sanda Montalvo Region Lockheed
First Name Middle Initial Last Name Sir Title (Jr., II, etc)

Project Title: (must match ABSTRACT title)
Bacterial analysis of the mouths of pets and their owners

***Genus/Species* Name:** Canus domesticus **Common Name:** dogs

Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Control Group:	14	0
Experimental Factor:	(No Exposure or Treatment)	
Cause(s) of Death:		
Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Experimental Group #1	3	0
Experimental Factor:	had used dental product since last eating	
Cause(s) of Death:		
Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Experimental Group #2		
Experimental Factor:		
Cause(s) of Death:		
Study Group Statistics:	**NUMBER Used**	**NUMBER Deaths**
Experimental Group #3		
Experimental Factor:		
Cause(s) of Death:		

TOTAL NUMBER USED: 17 **TOTAL DEATHS:** 0

Attach required letter- if a member of any experimental group or subgroup dies during experimentation **a degreed professional with experience in necropsy** must document cause of death and absence of connection to experimentation.

Potentially Hazardous Biological Agents Risk Assessment Form (6A)

Required for research involving microorganisms, rDNA, fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products and body fluids.
SRC/IACUC/IBC approval required before experimentation.

Student's Name(s) Trisha Smith, John Williams & Sandra Montalvo

Title of Project Who has the cleanest mouth?

To be completed by Student Researcher(s) in collaboration with Qualified Scientist/Designated Supervisor:
(All questions are applicable and must be answered; additional page(s) may be attached.)

1. Identify potentially hazardous biological agents to be used in this experiment. Include the source, quantity and the biosafety level risk group of each microorganism.
   Bacteria found in the mouths of humans, dogs and cats
2. Describe the site of experimentation including the level of biological containment.
   Incubation in a locked storeroom behind the teacher's classroom
3. Describe the procedures that will be used to minimize risk (personal protective equip., hood type, etc.).
   Petri dishes will remain sealed, students wear gloves, goggles, and apron.
4. What final biosafety level do you recommend for this project given the risk assessment you conducted?
   BSL-1
5. Describe the method of disposal of all cultured materials and other potentially hazardous biological agents.
   Sealed petri dishes will be opened under and soaked in 10% bleach solution for at least 30 minutes. The plastic petri dishes will be disposed of in the trash and the bleach solution poured down the sink with excess cold water.

To be completed by Qualified Scientist or Designated Supervisor

1. What training will the student receive for this project? wear gloves, glasses, aprons, wipe down counter with 1% bleach and do not open dishes,
2. Do you concur with the biosafety information and recommendation provided by the student researcher above?
   ☑ Yes ☐ No If no, please explain.
3. Experience/training of Designated Supervisor as it relates to the student's area of research (if applicable)
   training at Regional and State conferences for BSL1 lab

Robert Smith — QS/DS Printed Name
Robert Smith — Signature
9/22/15 — Date of Signature (mm/dd/yy)

To be completed by Local or Affiliate Fair SRC: (Check all that apply.)

☑ The SRC has carefully studied this project's Research Plan and the risk level assessment above **prior to experimentation** and approves this study as a BSL-1 study, which must be conducted at a BSL-1 or above laboratory.
Date of SRC approval (prior to experimentation) 10/2/15

☐ The SRC has carefully studied this project's Research Plan and the risk level assessment above **prior to experimentation** and approves this study as a BSL-2 study, which must be conducted at a BSL-2 or above laboratory.
Date of SRC approval (prior to experimentation) _____

☐ This project was conducted at a Research Institution and was reviewed and approved by the appropriate institutional board (e.g. IACUC, IBC) before experimentation at a BSL-1 or BSL-2 laboratory and complies with the Intel ISEF rules. The required institutional forms are attached.
Date of SRC approval (after experimentation) _____

☐ The Research Institution where this study was conducted does not require approval for this type of study. Attached is institutional documentation certifying the above. The student has received proper training and the project complies with Intel ISEF rules.
Date of SRC approval _____

~~Adam Brown~~ Jaime Joseph — SRC Chair's Printed Name
Jaime Joseph — Signature

ISEF Guidelines for Biosafety Level 1
Laboratory Facilities & Operations

A Self- Assessment Safety Checklist

This form is intended to aid in assessing a laboratory as appropriate to do BSL 1 studies in locations such as water testing facilities, high schools or colleges teaching introductory microbiology classes. The following checklist is based on the Biosafety Level 1 section of "Laboratory Biosafety Manual", 3rd edition, World Health Organization, 2004.

Facility Name The Academy High School **Room #** 234

Address 1293 Palm View Rd,
Bradenton, FL 34202

- **Name of Laboratory Supervisor/Teacher** Robert Smith
  - This person must be educated, trained and qualified to supervise microbiological projects and maintain the criteria below.
  - Qualifications: (List or attach additional sheet if necessary. Qualifications should include general training in microbiology or a related science)

Training at regional and state conferences for BSL-1 labs.

I attest that I have the qualifications listed above (or attached).

I attest that there will be direct supervision of students when they are in the laboratory.

Laboratory Supervisor/Teacher Signature Robert Smith

Date of signature 9/22/15

- **Name of Responsible Administrator** Frank Snow

I attest that this laboratory is a BSL 1 facility and complies with all procedures listed on this form and that the person named above is educated, trained and qualified to supervise microbiological projects and maintain the criterion below.

Administrator Signature Frank Snow

Title Assistant Principal

Date of Signature 9/25/15

Check the appropriate box for each statement.

If you check any of the following boxes with "NO", you must make appropriate modifications before you can classify the lab as a BSL 1 facility. The safety of students and faculty must be your primary concern.

A. Laboratory Practices

Yes	No	
☑	☐	1. All personnel wash their hands after they handle viable materials and animals, after removing gloves, and before leaving the laboratory.
☑	☐	2. Eating, drinking, handling contact lenses, and applying cosmetics is forbidden in the laboratory.
☑	☐	3. Mouth pipetting is prohibited and only mechanical pipetting devices are used.
☑	☐	4. All procedures are performed to minimize the creation of splashes or aerosols.
☑	☐	5. Work surfaces are decontaminated with disinfectant when work is completed at the end of the day and after any spill of viable material.
☑	☐	6. All contaminated cultures, stocks, glassware, plastic ware and other biologically contaminated waste are autoclaved or decontaminated with a suitable disinfectant.
☑	☐	7. Culture fluids and other contaminated liquid wastes are autoclaved or decontaminated with a suitable disinfectant before disposal.
☑	☐	8. Materials to be decontaminated outside of the laboratory are placed in a durable, leak-proof container and closed for transport from the laboratory.
☑	☐	9. Insect and rodent control procedures are in effect.

B. Personal Protective Equipment

Yes	No	
☑	☐	1. Protective laboratory coats/aprons are worn while in the laboratory and left in the laboratory after use. These coats are never taken from the laboratory without prior autoclaving or disinfection.
☑	☐	2. Suitable disposable gloves (e.g., latex, nitrile, vinyl) must be worn.
☑	☐	3. Goggles are available and used when required.

C. Laboratory Facilities

Yes	No	
☑	☐	1. The laboratory has a sink for hand washing.
☑	☐	2. The laboratory is designed so that it can be easily cleaned and decontaminated. (Carpets and rugs are not appropriate)
☑	☐	3. Bench tops are impervious to water and resistant to moderate heat, acids, alkalis, organic solvents and chemicals used to decontaminate the work surface.
☑	☐	4. The laboratory furniture is sturdy with surrounding spaces accessible for cleaning.
☑	☐	5. If the laboratory has windows that are open, they are fitted with fly screens.
☑	☐	6. Sharps are discarded in a puncture-resistant sharps disposal container.
☑	☐	7. A fire extinguisher and first aid supplies are easily accessible within the laboratory
☑	☐	8. An eyewash facility is easily accessible within the laboratory.

Human and Vertebrate Animal Tissue Form (6B)

Required for research involving fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products and body fluids. If the research involves living organisms please ensure that the proper human or animal forms are completed. All projects using any tissue listed above must also complete Form 6A.

Student's Name(s) Trisha Smith, John Williams & Sandra Montalvo

Title of Project Who has the cleanest mouth?

To be completed by Student Researcher(s):

1. What vertebrate animal tissue will be used in this study? Check all that apply.
   - ☐ Fresh or frozen tissue sample
   - ☐ Fresh organ or other body part
   - ☐ Blood
   - ☑ Body fluids
   - ☐ Primary cell/tissue cultures
   - ☐ Human or other primate established cell lines

2. Where will the above tissue(s) be obtained. If using an established cell line include source and catalog number.
   Saliva will be obtained from human participants and their pets (dogs and cats).

3. If the tissue will be obtained from a vertebrate animal study conducted at a research institution attach a copy of the IACUC certification with the name of the research institution, the title of the study, the IACUC approval number and date of IACUC approval.
   NA

To be completed by the Qualified Scientist or Designated Supervisor:

- ☐ I verify that the student will work solely with organs, tissues, cultures or cells that will be supplied to him/her by myself or qualified personnel from the laboratory; and that if vertebrate animals were euthanized they were euthanized for a purpose other than the student's research.

  AND/OR

- ☐ I certify that the blood, blood products, tissues or body fluids in this project will be handled in accordance with the standards and guidance set forth in Occupational Safety and Health Act, 29CFR, Subpart Z, 1910.1030 - Blood Borne Pathogens.

Sarah Williams	Sarah Williams	9/16/15
Printed Name	Signature	Date of Approval (Must be prior to experimentation.)

DVM	(941) 555-6942
Title	Phone/Email

East Manatee Veterinary Clinic

Institution

Continuation/Research Progression Projects Form (7)

Required for projects that are a continuation/progression in the same field of study as a previous project.
This form must be accompanied by the previous year's abstract and Research Plan.

Student's Name(s) Trisha Smith, John Williams, Sandra Montalvo

To be completed by Student Researcher:

List all components of the current project that make it new and different from previous research. The information must be on the form; use an additional form for 2014–2015 and earlier projects.

Components	Current Research Project	Previous Research Project
1. Title	Who has the cleanest mouth?	2014–2015 Do dogs or humans have more bacteria in their mouths? ~~2013–2014~~ 2012-2013 Which surface has the most bacteria?
2. Change in goal/purpose/ objective	Tested human, dog and cat mouths to see which contained the most bacteria and to see if the use of dental products affected the results.	2014–2015 Tested humans and dogs to see which has the most bacteria ~~2013–2014~~ 2012-2013 Tested surface bacteria not mouths
3. Changes in methodology	Samples were taken from mouths of humans, dogs and cats. Survey results provided information about the use of dental products.	2014–2015 Samples were taken from mouths of humans and dogs ~~2013–2014~~ 2012-2013 Samples are taken from surfaces
4. Variables studied	Different species and feeding/dental care	2014–2015 Different species and feeding/dental care ~~2013–2014~~ 2012-2013 Different common surfaces
5. Additional changes	Sandra Montalvo joined team	2014–2015 Trisha and John Williams ~~2013–2014~~ 2012-2013 only Trisha Smith

Attached are:

☑ 2014–2015 Abstract and Research Plan

☑ ~~2013–2014~~ 2012-2013 Abstract

I hereby certify that the above information is correct and that the current year Abstract & Certification and project display board properly reflect work done only in the current year.

Trisha Smith	Trisha Smith	11/30/15
Student's Printed Name(s)	Signature	Date of Signature

2014-15

60th State Science & Engineering Fair of Florida
OFFICIAL ABSTRACT AND CERTIFICATION

60th Annual State Science and Engineering Fair of Florida
March 31- April 2, 2015 Lakeland Center, Lakeland

Title: Who has the dirtiest mouth?

Student\Team Leader: Trisha Smith
School, City, State: The Academy High School, Bradenton, FL

Do humans or dogs have more bacteria in their mouth? Bacteria are found just about everywhere. Some are beneficial living in our intestines and produce vitamins. Others cause disease and decay such as those in our teeth. If the number of bacteria found in mouths of dogs and humans are compared, then humans would have more bacteria.

The saliva of eighteen dog owners and their dogs were collected using sterile swabs which were immediately swiped over petri dishes. After 48 hours the plates were counted and the number of colonies compared. The participants also completed a brief survey to provide information about eating and dental care.

The results were inconclusive. In some cases the human had more bacteria than their dog while in other cases the dog had more than the human. When the number of colonies in the samples from dogs that ate hard or soft food were compared there was no significant differences. Likewise, there were no significant differences when comparing the number of colonies from the humans that brush their teeth more often.

Category
Select one only- - Mark an "X" in Box at right

Behavioral & Social Sciences	☐
Biochemistry	☐
Botany	☐
Chemistry	☐
Computers	☐
Earth & Planetary Sciences	☐
Engineering	☐
Environmental Sciences	☐
Mathematics	☐
Medicine & Health Sciences	☐
Microbiology	☑
Physics & Astronomy	☐
Zoology	☐

1. As a part of this research project, the student directly handled, manipulated, or interacted with (check ALL that apply):
   ☑ human subjects ☑ potentially hazardous biological agents
   ☑ vertebrate animals ☑ microorganisms ☐ rDNA ☑ tissue
2. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only. ☑ Yes ☐ No
3. I/we worked or used equipment in a regulated research institution or industrial setting. ☑ Yes ☐ No
4. This project is a continuation of previous research. ☑ Yes ☐ No
5. The display board includes non-published photographs/visual depictions of humans (other than myself): ☑ Yes ☐ No
6. All photos on display were taken by: (check ALL that apply):
   ☑ Researcher(s) ☐ Research Teacher(s)
   ☐ Parent(s) ☐ other **Citation required on display**
7. All charts/graphs/illustrations were produced by the researcher(s).
   ☑ Yes ☐ No **Citation required on display**

FOR SSEF OFFICIAL USE ONLY

I/We hereby certify that the above statements are correct and the information provided in the abstract is the result of one year's research. I/We also attest that the above properly reflects my/our own work.

Finalist or Team Leader Signature Date

2014-15

2014-2015 Research Plan

Trisha Smith and John Williams Lockheed Martin Manatee RSEF

A. Question: Who has the dirtiest mouth?

B. Hypothesis: Humans have more bacteria in their mouths than dogs.

C. Method

Participants will be 20 dog owners that are members of our families, friends, or patients in my mother's veterinary office. All of the human participants will be adults of various ethnicities and socioeconomic groups. They will be contacted by us or our parents. The adults will be shown how to swab their own mouth and will help us swab the mouth of their dog in the same fashion. We will not record any names and will label the plates with a sample number and H or D for human and dog. The people may be harmed while sampling their dog and may feel uncomfortable taking their own sample. We will display the anonymous results in the Vet's office so they can learn whether the dogs or humans had more or less bacteria. Participation is voluntary and they can quit if they want to. The process will be described on the Informed Consent and the adults will open the sterile swabs. Also, if approved by the human on the informed consent we will take a picture of the dog and owner. The informed consent forms will be kept at the vet's office with other confidential forms for three years.

The 20 dogs will live in the homes of the owners, only the owners will handle their dogs whether in their home or the Vet's office. The owners are responsible for their feeding and housing. Dogs must be used since tissue/cell cultures and invertebrates can't be used since they don't have teeth. We will only use 20 dogs at the most. Moving the swab across the gum line should not bother the dogs and the owners will collect the samples, who should be sensitive to their dog's reactions. The dogs will remain the pets of the owners.

20 petri dishes with nutrient agar	masking tape	bucket	apron
50 sterile swabs	bleach (1% and 10%)	paper towels	survey
informed consent forms	incubator	safety glasses	gloves

1. Prepare the petri dishes and label with the same number on two plates and H on one for human and D for dog on a second plate. (Trisha)
2. Visit a home of the potential participant or meet them in the Vet's office with two petri dishes, swabs, and masking tape. (Trisha and John)
3. Describe the experiment and provide the informed consent form to be completed followed by the survey. Show the process of swabbing along the gum line to each adult. (Trisha and John)
4. Immediately after the adult swabs the gum line of themselves and/or their dog, take the swab and spread it on the agar lifting the lid just enough to insert the swab. Spread the sample using a zig-zag pattern and then rotate the plate and spreading it throughout the plate. Throw away the broken swabs in the home's or office's trash can. (Trisha and John)

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2014-15

2014-2015 Research Plan

Trisha Smith and John Williams Lockheed Martin Manatee RSEF

5. Tape around the petri dish to seal and label the date and time. Store in a box labeled "saliva samples collected on" date for transportation to the school the next morning. (Trisha and John)
6. Take a picture of the dog and owner if approved on informed consent form. (This will not be associated with the sample number.) Keep the survey and informed consent forms separately. In the logbook write the sample number and critical information from the survey so the colony numbers can be related to the information for analysis. (Trisha and John)
7. The next morning take the samples to school and place upside down in the incubator set at 37°C in the locked storeroom behind my teacher's room. (Trisha and John)
8. After 2 days wearing gloves, apron, and safety glasses remove the plates from the incubator and count the number of colonies on each plate. Take pictures of plates with the label. Wipe down counter with 1% bleach solution and throw away gloves and paper towels in the trash. (Trisha)
9. Place the counted plates in a bucket that the sponsor will pour 10% bleach solution. If the bleach doesn't leak into the sealed dish, the sponsor will remove the tape under the surface of the bleach solution and make sure the dish soaks for 30 minutes before throwing away in the trash. Dispose of used 10% bleach by dumping down a sink and flushing with cold water. Keep leftover 1% and 10% bleach for future use in the lab. (Trisha)

Survey

About the adult:

How often do you brush your teeth?

Has it been at least 30 minutes since you have eaten or brushed your teeth?

Have you brushed your teeth since you have last eaten?

About the dog:

Does the dog eat hard or soft foods?

Has it been at least 30 minutes since the dog has eaten?

Data Analysis: Compare the average number of bacterial colonies in a bar graph. Compare the average number of colonies from dogs that ate hard food to those that ate soft food using a bar graph. Compare the number of colonies from the humans that brush their teeth one, two, or three times a day using a bar graph. Compare the number of colonies from those that had brushed their teeth since eating before the sample to those who had not brushed. (John)

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2014-15

2014-2015 Research Plan

Trisha Smith and John Williams Lockheed Martin Manatee RSEF

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2012-13

Trisha Smith Summary of 2012-2013 Research Project

I don't have the research plan or abstract from my 6th grade project. In that project I collected samples from different surfaces: toilet seats, desk tops, sink handles, money, computer key board, and door handles. I used sterile swabs to wipe the surface area and then spread the swab over nutrient agar in the petri dish. I taped the dishes to seal and then incubated the samples for 48 hours. I counted the number of bacterial colonies for each surface and compared the results on a bar graph.

I can't remember which surface had the most colonies.