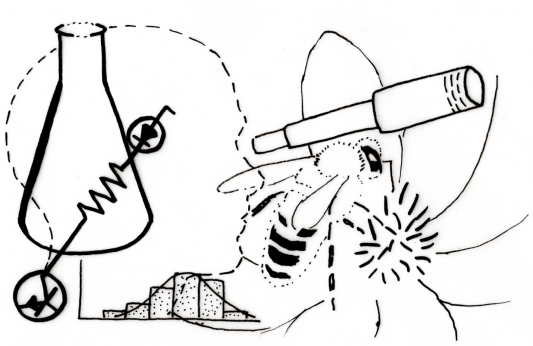
Announcing the

Westlake Science Fair

Thursday February 1, 2018

You don't need a white lab coat to be a scientist! You just need a **question** that needs to be answered, the **creativity** to use scientific inquiry to answer it, and the **energy** to see your project through and present it at the Westlake Science Fair. Westlake Wildcats are full of questions, creativity, and energy, so the Westlake Science Fair is for you!



Who: All Westlake 4th graders participate in Science Fair PLUS students from all other grades are highly encouraged!

Key dates:

Now!:	Start thinking and exploring your world! Information flyer and packet goes out to students
Nov-Dec:	Classroom visits by coordinators
Fri 12 Jan:	**Science Fair entry forms due** Online registration preferred: https://goo.gl/forms/bkZtQHsItEvg6NnT2 If online registration not possible, turn in registration form (found at end of this packet) into the office
Fri 12 Jan:	Poster board pickup in MUR for registered students
Tues 16 Jan:	Poster board pickup in MUR for registered students who could not pick up their poster boards Friday 12 Jan
Wed 31 Jan:	Science Fair setup after school, 12:15 – 1:15
Thu 1 Feb:	8:00 a.m.-12:00 p.m. – Science Fair Judging 6:30-8:00 p.m. - Science Fair Family Open House
Sat 10 Mar:	County Science Fair (for 10-12 selected Westlake projects)

Questions? Contact science fair coordinators Vicki Stone or Jack Lee
westlake.sciencefair@gmail.com

Important Rules and Regulations: Please see rules and regulations further on in this packet, especially if your child's project involves hazardous chemicals, biological agents like bacteria, or human or animal subjects.

Can you help? We need lots of judges the morning and afternoon of 1 February! This year, we will have two sets of judges. In the morning, we need at least 30 judges to listen to student presentations in front of their posters. This is a very rewarding experience. It is super fun to hear about all the amazing hard work the kids put into their projects and to see how much they learned!

We also need ~3-4 additional morning volunteers who can help tabulate judges' scores. Note that these scores are kept confidential, but the students will receive judges' written constructive feedback and encouragement on their poster and presentation once judging is completed.

We also need ~5-10 afternoon judges who can select winners from among the top scored projects and decide on projects moving on to the county science fair.

If you can volunteer, please email westlake.sciencefair@gmail.com and let us know what times you are available on February 1st and whether you have previous judging experience or a science background (Note this is not necessary for volunteering! Just useful information for us to have.).

More information:
Forms and information will be posted on the Westlake home page under "School Life" "Science Fair".

Good additional sources for Science Fair help are available at:

SC County Science Fair Getting Started:
http://science.santacruz.k12.ca.us/pdfs/how_to_get_started.pdf

SC County Science Fair Student Guide Book:
http://science.santacruz.k12.ca.us/pdfs/ScienceFairGuide.pdf

Science Buddies:
http://www.sciencebuddies.org/

Important Regulations

These regulations come from the Santa Cruz County Science Fair guide, which is available at http://science.santacruz.k12.ca.us/pdfs/ScienceFairGuide.pdf for more details. Please contact the Science Fair coordinators at westlake.sciencefair@gmail.com if you have questions.

1. No hazardous materials may be exhibited in the project display.
2. Live or preserved animals may not be displayed.

3. Photographs of procedures detrimental to the health and well being of vertebrate animals, or surgical procedures on animals, may not be displayed.
4. No electrical power, gas outlets, or water will be provided at the Science Fair.
5. Projects must clearly distinguish between the work of the student and others (parents, industry or university sponsors, etc.).
6. Students must clearly specify the assistance received and the role and contributions of others in the project. If associated with a larger research project at a research institute, university, or industry, the project must be accompanied by a letter of the principal research director that indicates the level of his/her involvement in the project.
7. Scientific Review Committee (SRC) approval is REQUIRED for any projects that involve any of the following. Contact westlake.sciencefair@gmail.com immediately to obtain an SRC certificate of compliance BEFORE doing the project.
    - Human subjects (asking people questions, experiments on yourself or other people)
    - Non-human vertebrate animals (including your pet)
    - Pathogenic agents (molds, fungi, bacteria, viruses, microbial cultures from the environment)
    - Controlled substances (prescription drugs, alcohol, tobacco products, gunpowder) – anything that a student could not legally purchase on their own.
    - rDNA – recombinant DNA
    - Human or Animal tissues or fluids (cheek cells, bones, blood, saliva, urine, etc.)
    - Chemicals (including household cleaning agents, solvents, metals, organic chemicals)
    - Hazardous/dangerous materials (rockets, lasers, UV light, radiation, explosives, corrosives)

Project presentation regulations.

1. A complete project requires presentation of (A) the student's original laboratory notebook, (B) a project report, and (C) a project display (your poster). Reports should be word processed and include a cover, title page, and table of contents.
2. Students will be interviewed by judges about their projects. Students should practice a brief oral presentation that describes what the project was about, what they did, and what they found, and be ready to answer questions about the project. They should be able to show which parts were their work and where they got help.
3. Maximum width is 4.0 feet, maximum height is 6.0 feet, and maximum depth is 2.5 feet. Best is a 4-ft x 3-ft tri-fold display board. These will be provided at no charge to all participants.

Additional notes on parental involvement

Parents are an essential part of developing the science fair projects, but the projects should reflect the student's ideas and work. Help them develop the questions and designs by asking them questions, rather than telling them what to do. Help the students figure out how to make graphs, figures, and tables, but let them do it themselves. Students should be responsible for the text (with parental review). Be sure to leave enough time!

Guidelines for Science Fair Notebook, Report, and Display

The Science Fair Notebook: Record everything about a project, as it happens. Include initial observations, notes from reading in preparation for the study, design of the investigation, day-by-day data collection, initial analysis, graphs, charts, drawings, and initial interpretation. It serves as a log for how the scientist move from idea to conclusions supported by data. Every page should be dated.

The Report and the Display Poster have shared goals. They both tell clearly:

(1) what you were interested in,
(2) what your specific questions were,
(3) what you did to answer them,
(4) what you found, and what it means.

Major parts of a Science Fair Report and Display. The display poster will use fewer words, often presented in bullet points. The Report has the same material, but may include more background material from research in books and the web, and presents material in full paragraphs, rather than bullet points.

Introduction: Includes purpose, overall questions, and specific hypotheses. •*Purpose*: 1-3 sentences that explains why you are doing the investigation. •*Questions:* Clearly the overall questions or goals. (e.g., Does puddle size affect how quickly the water warms up in the sun?) •*Hypotheses:* A hypothesis is what you expect is the answer to your question. (e.g., Smaller puddles will warm up more quickly than larger puddles.)	**Discussion:** •A few sentences that describe what your data mean. •What conclusions can you draw about your hypotheses? •Discussion challenges with the experiment (things that didn't go as planned) •Suggestions for future studies on this topic
Procedures (aka **Methods and Materials):** • Provide enough detail for the reader to be able to replicate your experiment to see if he/she gets the same results. •Materials can be included as a list. •The methods may be a step-by-step guide, a descriptive paragraph, or a clearly labeled illustration.	**References** •Citations of books, web sites, articles that were important in giving you information for your projects.
Results: •Highlight main findings in a few simple declarative sentences or bullet points. •Summarize data in way that helps test the hypotheses, rather than present the raw data. •Illustrate results with visuals (photos, drawings, graphs, charts, and tables)	**Acknowledgements** •Specify who helped you with what parts of the science fair project .

Thirteen hints for science fair projects

1. You can work alone, or in groups of up to three students.
2. Get a science notebook where you will keep track of idea development, background research, experimental design, data collection, and data analysis. Date every entry. Your notebook must be presented as part of your project. 4th graders will receive a notebook from their teacher.
3. EXPLORE YOUR WORLD to find ideas. Take a walk in the forest or along the beach, dig in your garden, visit a museum, take apart a toy or a household object: look for a problem that needs solving or a phenomenon that needs explaining. Check out the attached "Project Categories" from the County Science Fair. Don't start by googling "science fair projects" -- answering a question YOU are excited about will be MUCH more fun than following someone else's recipe.
4. Brainstorm a BUNCH of ideas for projects, not just one. Write notes about them in your notebook. Start off by writing down YOUR observations about the world and questions about things you are interested in, whether that is music, sports, machines, stars, gardening, people, pollution, art, math, or animals. The more questions the better.
5. Think about which of your questions might best be answered using scientific inquiry. Those questions might look like: "Does *this* cause *that?"* "If I change *this* is will it make *that* change too?" "Why does *that* happen when I change *this?*" "It is true that *this* happens when you do *that?*" You can also tackle practical problems such as "How can I measure *that* when it is too hard to measure directly?" "Can I use *this* scientific principle to solve *that* practical problem?" Lots of possibilities.
6. Read. Check out the library and the internet for background information about your question. Take notes in your notebook!
7. Design your study. Settle on a question, then see if you can sketch a graph that would answer your question. For instance, if you hypothesize that organic fertilizer is better than chemical fertilizer at helping plants grow, sketch a bar graph that would help you compare those treatments. Design a study that will give you the information you need to make the graph.
8. Make a project calendar!
9. Remember that important elements of scientific studies are replication, controls, and randomization. You need to have as large a sample size as you can handle (many replicates of each thing you are studying (a lot of individual plants in a fertilizer experiment), or many trials if you are just testing what one thing does (how fast is the end of a baseball bat moving?). In many studies, you need a "control" group to compare your experimental group to. Randomize your trials and replicates so that you are sure that any differences you see come from your treatments (e.g., don't put all the fertilized plants nearest the window).
10. Do your experiment, keeping careful, organized notes. Details may be important in answering your question! You might find that something unexpected went wrong the first time. Don't get discouraged -- dust yourself off, figure out how to fix the problem, and do it again!
11. Analyze your data, and think about what they mean. If you do the analysis on the computer, print it out, and paste it into your notebook. Figure out if your results are best presented as a table, a graph, or some other kind of illustration. Write notes and ideas in your notebook. It's OK if your results don't agree with your predictions!
12. Make your poster and report. Your poster and report should tell the story of your project. Use images, not just words! What were your observations, your questions, and your specific hypothesis (or objective); what methods did you use, what did you find, and what do you conclude from your results? Include enough background to show that you read about the system and show how your study adds to our understanding. Don't forget to acknowledge the help you got.
13. Practice an oral presentation and answering questions for the judges' interviews.

Westlake Science Fair
Project Entry Form

Due Friday 12 Jan 2018 in the office

Poster boards will be provided on 12th and 16th of January to all students who submitted entry forms.

Please print clearly!

Student Name: _____

Grade: _____ Teacher _____ Room # _____

Project title or brief description:

Project partners _____ Room _____
(if any) _____ Room _____

Parent name and contact information (phone and/or email):

_____

Parent signature:_____

Does your project involve any of the following? **Yes / No**
Studying people, studying vertebrates (animals with bones), handling human or animal tissues or fluids, microorganisms, rDNA, chemicals (cleaning agents, solvents, organic chemicals) hazardous equipment (UV light, rockets), or controlled substances (anything that the student cannot legally purchase)?
If yes, please provide details about what you plan to do (can continue on back).
Please see the "Important Regulations" handout in Science Fair Packet.