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SCIENCE BUDDIES

Project Ideas Roundup



September 2010

Green Gas: Explore Cutting-Edge Biofuel Science with Bio-Rad

Join the search for cleaner, more-efficient fuel

Scientists are always looking for ways to improve on technology that already exists, and in today's world, that means seeking out environmentally friendly and efficiently produced alternatives (like *biofuels*) for a product we use every day--gasoline. Join the search with the help of Bio-Rad's Biofuel Enzyme Kit and find out how to [Turn Plants into Biofuel with the Power of Enzymes](#).

You'll start by exploring the cellulobiase enzyme, which helps turn plant-based cellulose into glucose, a key component in the production of the biofuel ethanol. *This project allows plenty of room for independent exploration!* (Difficulty: 7-10)



For an introduction to biofuels, check out the Science Buddies [Go Green by Growing Green: How to Extract Energy from Grass](#) project. To delve even deeper, try [Biodiesels: Converting Oil into Clean Fuel](#).

Pinhole Photography

Back to basics



Taking pictures without a lens? It's true! You won't need a darkroom or your own high-end camera for this science project. Instead, in [Photography with a Pinhole Camera](#), you'll get a hands-on look at important photography fundamentals as you experiment with one of the most basic versions of a "camera." Using a pinhole camera to take photos with films of varying speeds in differing light settings will bring the importance of "exposure" time into focus! Plus, you'll have fun building your own kit-based camera! (Difficulty: 4-5)

Go Random!



Click the button above to see **one of the most popular** Science Buddies project ideas. *Click again to see another!*

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Radical Root Reactions

Give your plants a geotropic spin



If you've ever stuck toothpicks into an avocado seed and suspended it over a cup, you know the roots shoot "down." **But what if you threw the roots for a loop, rotating them as they grew?** Would they grow in another direction? In the [How Do Roots Grow When the Direction of Gravity Changes?](#) science project, you will

Turn Space Science into



explore the fascinating concept of geotropism--the directional growth of an organism in response to gravity. In this simple do-it-yourself project, you'll make "seed sandwiches," rotate them, and watch what happens! *Ready, set, rotate those roots!* (Difficulty: 4-8)

"Sprinklers, Sprinklers, Go Away..."

Electronics detective work puts an end to water waste



It's late at night, and you're being lulled to sleep by the calming sound of rain outside. All of a sudden, you're jolted awake by "ch-ch-ch-sssss!" as several sprinklers rise up from the ground and start spraying water all over the already-wet grass. It's raining, so why are the sprinklers running? Whether you have sprinklers in your yard or not, you can find out how to fix this problem as you explore basic electronics in [Green Technology: Build an Electronic Rain Detector to Conserve Water](#). (Difficulty: 6)

Planning Ahead: Long-Term Science Projects

Science projects come in all shapes and sizes

While some whizz-bang science effects can be observed in a matter of minutes, many fascinating projects and experiments take more time. It's not too early to start thinking ahead, particularly if you plan to participate in a local or advanced science competition! The following are definitely not *last-minute* projects, but if you're willing to spend the time, they are exciting and fun projects to explore!

- As you turn your favorite story into an animated movie in this *computer science* project, you'll learn basic programming skills. Get started with [Storytelling Alice: Once Upon a Time in a Computer-generated Land...](#) (Difficulty: 5-8)
- From our heart rates and when we fall asleep to our reaction times, our bodies have their own daily rhythms. Delve into *human biology and health* as you explore human circadian cycles in [Can Your Body Temperature Tell the Time of Day?](#) (Difficulty: 6)

Spending Money

A contest for students curious about craters, baffled by black holes, or pensive about planets.

This school year, turn your interest in space into a **cash prize** by entering the **Science Buddies Astronomy Science Project Contest!** You can enter your own novel astronomy project, or try [one of ours](#). Full guidelines and submission information will be posted soon on the Science Buddies website.

Keeping the Big Picture in Mind: What Could You Win?



As you plan your science project, keep in mind that **with a single, well-executed science fair project**, you could be eligible for a number of different **special awards** either at your local or regional science fair. You could also enter the same science fair project you create for your school science fair into other contests outside of school, such as the Science Buddies Astronomy Science Project Contest.

Be sure and check your regional fair to see if there are special awards for which the project you are considering might qualify. For example, **Bio-Rad Laboratories gives a "Best in Biological Category"** cash award in both the junior and senior divisions at the Contra Costa County Science & Engineering Fair (CCCSEF) each year.

Researching your local and regional fairs early in the process helps you know what prizes and contests are available in various areas of science--**and what steps you need to take to be eligible.** *This might help you select and plan a winning project!*

Newly Released Science Project Ideas



The following Project Ideas were recently added to the Science Buddies library:

Difficulty: 1-5

- [That's a Pretty Tough Baby! A Study of Gender Stereotypes in Children](#)

- In the [Kimchi Chemistry](#) *cooking and food science* project, you'll make Kimchi, a traditional Korean cabbage dish, and observe the activity of microorganisms and the chemical changes that occur in pH and glucose levels during fermentation. (Difficulty: 6-7)
- Imagine this: school pictures are tomorrow and as you stand before the mirror, deciding which outfit to wear, you spot an accessory you could certainly do without--a zit! Investigate basic *microbiology* techniques to find out [Which Acne Medication Can Really Zap That Zit?](#) (Difficulty: 7-8)
- Our oceans play a critical role in absorbing CO₂ and buffering the greenhouse effect, but as oceans absorb carbon dioxide, their acidity changes. In the [Swimming in Acid](#) *ocean sciences* project, explore the process of ocean acidification and the ecological impact it has on marine habitats. (Difficulty: 7)
- This *microbiology* project plays like the scene from a sci-fi movie--bacteriophage (phage, for short) try to pierce the outer coats of bacteria and inject them with phage DNA. Can phage be used to fight human bacterial infections? Explore the idea for yourself in [Biowarfare: Experiment with Viruses that Destroy Bacteria](#). (Difficulty: 8)
- You might know the immediate branches of your family tree, but in the [Trace Your Ancient Ancestry Through DNA](#) *genetics and genomics* project, you'll get a look at your distant past. Based on genetic markers present in a sample of your DNA, you'll track your ancient ancestors, explore their migrations, and get new perspective on your "family" lines. (Difficulty: 9)

Difficulty:5-7

- [Feel Free to Sleep at School...If You're a Computer!](#)
- [Get Rid of Those Leftovers: How Much Organic Waste Can Composting Worms Eat?](#)
- [Green Technology: Build an Electronic Rain Detector to Conserve Water](#)
- [Smashing for Mash: The Science of Making Memorable Mashed Potatoes](#)
- [What's in a Face? Are Composite Faces More Attractive than Real Faces?](#)

Difficulty:7-9

- [Biowarfare: Experiment with Viruses that Destroy Bacteria](#)
- [Turn Plants into Biofuel with the Power of Enzymes](#)

Looking for a Perfect Project for You?



Our [Topic Selection Wizard](#) can help guide you to a science project that fits your areas of interest *and* meets science fair requirements. Give it a try today!

Get Help at Ask an Expert

Our team of volunteer experts can help answer questions related to your science projects. Register for a free account at [Ask an Expert](#) to post your own questions, or browse the Forums for information related to your topic.

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