

The Great Grow Along FAQ

What is the Great Grow Along?

The Great Grow Along is a classroom project that brings together the scientific method, biomedical research, and nutrition concepts in a fun and exciting educational program. Through an animal feeding project, using live lab rats, students witness the effect of nutrition on growth and are challenged to reflect on their own food behaviors. Students also learn the steps of the scientific method; how to set up a scientific experiment, collect data, and analyze the results; and how we can learn about our own bodies by studying animals. The project is designed to foster active involvement of students who are challenged to engage in several areas of learning including mathematics, inquiry and decision making, science, and reading and writing. (The animal feeding portion lasts 4 weeks.)

What are the main items I need to complete this project?

At minimum you will need rat cages and lids; water bowls; food bowls; bedding; food (uncooked oatmeal, fruits/vegetables, protein source such as chicken, whole milk, sugar, and water); rulers for measuring the rats' tail growth; triple beam balance for weighing the rats and the food; a data collection notebook; and a weighing container such as a washable plastic container with air holes.

How does PSBR sponsor this project in my classroom?

PSBR coordinates the donation of rats from a purpose-bred rodent vendor. Various locations in our region allow you to pick up the rats at no charge. We provide polycarbonate solid bottom rodent cages, lids, water bowls, food bowls, bedding, and an enrichment device. There is no cost to have these items shipped to your school. PSBR is always available as a resource should you have any questions or concerns while conducting the project.

Are the rats safe to handle in my classroom?

Of course! PSBR will provide rats that are lab raised and free from disease. They come with a clean bill of health. These rats are known for their docile temperament and ease of handling.

Why do we use albino rats?

Sprague Dawley (albino rats) are used for this project because they will eat any food typically eaten by humans; they have a digestive system similar to humans; they are small, clean, gentle and easily caged animals; they can safely and easily be handled; they do not transmit disease to humans; and they grow quickly and therefore results can be seen in a few weeks. Although rats are much smaller in size, they have similar organ systems as humans. Because of genetic differences, other rats may not give comparable results. The Sprague Dawley rat is an outbred multipurpose breed of albino rat commonly used in medical research. Do NOT attempt to conduct this project with pet store rats.

What kind of rats will my classroom receive?

At the start of the project, your rats will be female, 21 day old, Sprague Dawley littermates. These rats will be ordered (by PSBR) from a credible breeding facility to ensure the rats are disease-free and of known parentage, age, and gender. The Sprague Dawley rat is an outbred multipurpose breed of albino rat commonly used in medical research.

Only standard, uniform, laboratory rats that provide reproducible experimental results can be used for this project. The Sprague Dawley rats will be from the same litter, of the same gender, and of similar weight. Because of genetic differences, other rats may not give comparable results. Do NOT attempt to conduct this project with pet store rats.

Where will the rats be kept?

The rats will be kept in the classroom during the 4 week feeding period. A safe and properly controlled environment is essential for the success of this investigation and the well-being of the rats. The rats will each be kept in a cage in the classroom. Do NOT keep the cages in direct sunlight; they are nocturnal animals and their eyes are sensitive to bright lights. Place the cage in a quiet corner of the room, but do not isolate the animals from students. Protect them from excessive heat or cold and avoid drafty areas. Do not place the cages on or near a radiator. The best temperature range is between 65°F and 75°F. Do not let the temperature drop below 65°F. If your classroom tends to be colder than this, please let PSBR know and we will offer suggestions to manage the problem.

How do I get the rats to my classroom?

A teacher or a classroom representative must pick up the rats on a designated day at one of our approved pick up locations throughout the state. All rat orders must be placed by a PSBR employee. After you fill out our online order request form, PSBR will place the rat order. Once PSBR receives an order confirmation, we will put you in touch with a contact at the chosen pick up location. Pick up arrangements should be made directly with the facility contact. However, all other program/curriculum related questions should be directed to PSBR. The rats will arrive at the pick up facility in an industry approved transportation box with food, water, and bedding. The rats must remain in this box during transportation to your school. Be sure to have an empty seat in the car for the box. The rats can be transferred to their PSBR supplied cages upon arrival at your school.

How can I tell the rats apart?

PSBR will supply a cage for each rat. Each cage should be labeled with an identifying card that includes relevant information such as the rats ID number; whether it is the experimental or control rat; and a description of the rat's diet (milk or sugar water). Note: If the rats are mixed up part way through the experiment, the outcome will be invalid.

You want to make sure the rats are not mixed up when they are taken out of the cages. You can mark each rat temporarily with a *non-toxic* marker (such as Crayola) when the rats are out of the cages and/or for socializing purposes. These temporary marks (such as a dot or line) tend to work best when drawn on the lower back by the base of the tail. This mark will be groomed off by the rat within a day or even a few hours.

If you choose to use more than two rats and pair house them and/or want a permanent identification system, PSBR can instruct you on how to ear notch a rat (this is similar to an ear piercing for a human).

Do rats bite?

Rats are very friendly animals in general. Normally, they do not bite. They may nibble if they smell food on your hands, but this will not hurt nor will it puncture the skin (this is usually only observed during the first few days when the rats are learning about their new environment). The more the rats are handled and socialized, the more bonds they will form with the students. The rats usually become accustomed to human touch within 2-3 days. All students should be taught proper handling techniques before the rats arrive.

What happens to the rats at the end of the experiment?

The rats must be adopted out or kept as a classroom pet. They may NOT be released outside or returned to PSBR or the breeder. It is preferred that the rats be adopted together because rats are social creatures. They live in large family groups in the wild, so in captivity they live a more natural life if kept in pairs or more.

Will I need to mail back the cages and supplies that PSBR sends me?

That depends...If you plan to use the project next year or in the future, please keep the cages and supplies. If you definitely will not be using the project again, we ask that you mail back the cages and any remaining supplies. You can contact PSBR to receive a pre-paid shipping label.

What is the animal feeding portion of the project?

The animal feeding project begins after detailed instructions on animal care, the experimental procedure, and nutrition basics have been presented. Students apply the scientific method in the feeding of two rats. Students must take accurate measurements, carefully record and graph data, and draw conclusions. (If you have the resources, you may choose to use more than one rat for each group.) The Control rat receives foods from each of the Food Groups including milk. The Treatment rat receives the same foods except that it receives no foods from the Milk Group. Instead, it receives a calorically matched sugar water beverage. A switch in beverages between the Treatment and the Control rat occurs in the 4th week of the animal feeding project. This will dramatically illustrate effects of nutrition.

What do I feed the rats?

The rats will be fed according to the feeding schedule. The feeding schedule MUST be followed in order for the experiment to work properly. Control rats are given whole milk. Do not substitute whole milk with lower fat-content milk. The essential fatty acids in the whole milk are the key for proper nervous system development. Milk will spoil and needs to be replaced twice daily or more. Experimental rats are given sugar water. When mixing the sugar water, it is important the sugar water offers the rat the SAME number of calories as the milk. Sugar water mixtures are given in the curriculum.

Can I substitute a different beverage for the sugar water?

NO. The sugar water must be kept. The milk must also be kept. Soda will not have the same calories per volume as the sugar water mixture. Soda, tea and coffee are not caffeine free so that would be an intervening variable. Additionally, rats cannot vomit or burp and this could cause internal health issues if the animals were to be given a carbonated beverage. *You do not need to offer either rat any liquid other than the milk or sugar water during the 4 week experiment.*

What do I do with the rats on the weekend?

Weekend care must be provided the entire time the rats are housed in your classroom. The type of weekend care can be tailored to your needs, but a common procedure is to have a student take each rat home during the weekend. If this happens, the student must be sure to only feed the rat according to its scheduled diet. Deviating from the scheduled diet will make the experiment results void. Another option is for the teacher to take the rats home in order to make sure the feeding schedule is followed and each rat is given their respective beverage and diet throughout the weekend.

How often do I change the bedding and what kind can I use?

If you receive laboratory bedding supplied by PSBR, please follow the instructions included with that bedding. On average, laboratory grade bedding needs changed once a week. For bedding not supplied by PSBR, please follow the instructions on the packaging. Useful bedding materials are corncob pellets, wood shavings/chips, and cellulose chips.

What do I feed the rats AFTER the 4 week feeding project is complete?

After the 4 week feeding project, all rats MUST be put on commercial rat feed pellets that provide a balanced diet that is specifically formulated for the nutritional needs of rats. Rats have incisor teeth that grow throughout life, and pelleted feed helps prevent overgrowth. Water should also be available at all times. After the experiment is complete, all rats can be switched to water as their beverage.

Mazuri® Rodent chow is a good option and can be found in major pet stores such as Petco for about \$10 per bag. These food pellets should be available to the rats at all times after the project has been completed.

What data will my students collect during the project?

Daily: Rats must be fed daily! Food must be weighed before feeding the rats to ensure each rat is offered the same amount of food/calories. Students will observe and record physical observations (qualitative score observations) for each rat such as appetite, behavior, fur condition, and skin/gum condition.

Weekly: Students will weigh the rats and measure their tail length each week. The rats may be weighed and measured more often if you chose to do so. Depending on the bedding used, cages should be cleaned once a week (or more often).

Can I give the rats some sort of enrichment such as a cardboard tube or box?

Yes, you may give the rats enrichment. Keep in mind that the type of enrichment you give may be an intervening variable that could possibly distort the experimental results. Paper towel/toilet paper rolls will be chewed and possibly ingested. Tube socks are an option to give the rats a place to hide. When possible, PSBR will supply laboratory grade enrichment devices that minimize variables.

Must I complete every lesson in the curriculum?

No, you do not need to complete every lesson to properly complete the project. Lessons may be tailored to your classroom needs. However, the 4 week feeding portion of the project and the feeding schedule in Lesson 3 MUST be followed.

Will PSBR loan me the supplies/curriculum if I buy my own rats from an outside source?

No, PSBR will not sponsor this program unless the rats are obtained through PSBR from an approved vendor. To insure the health and safety of those involved, PSBR cannot sponsor a classroom using rats of unknown origin. Additionally, pet store rats will not work for this project.

Have the benefits of the classroom project ever been studied?

Yes, the Great Grow Along has been validated through use in thousands of classrooms over many years. A learner verification study completed in 1997 documented the effectiveness of the program in producing knowledge, attitude and behavior change among students.