National Aeronautics and Space Administration

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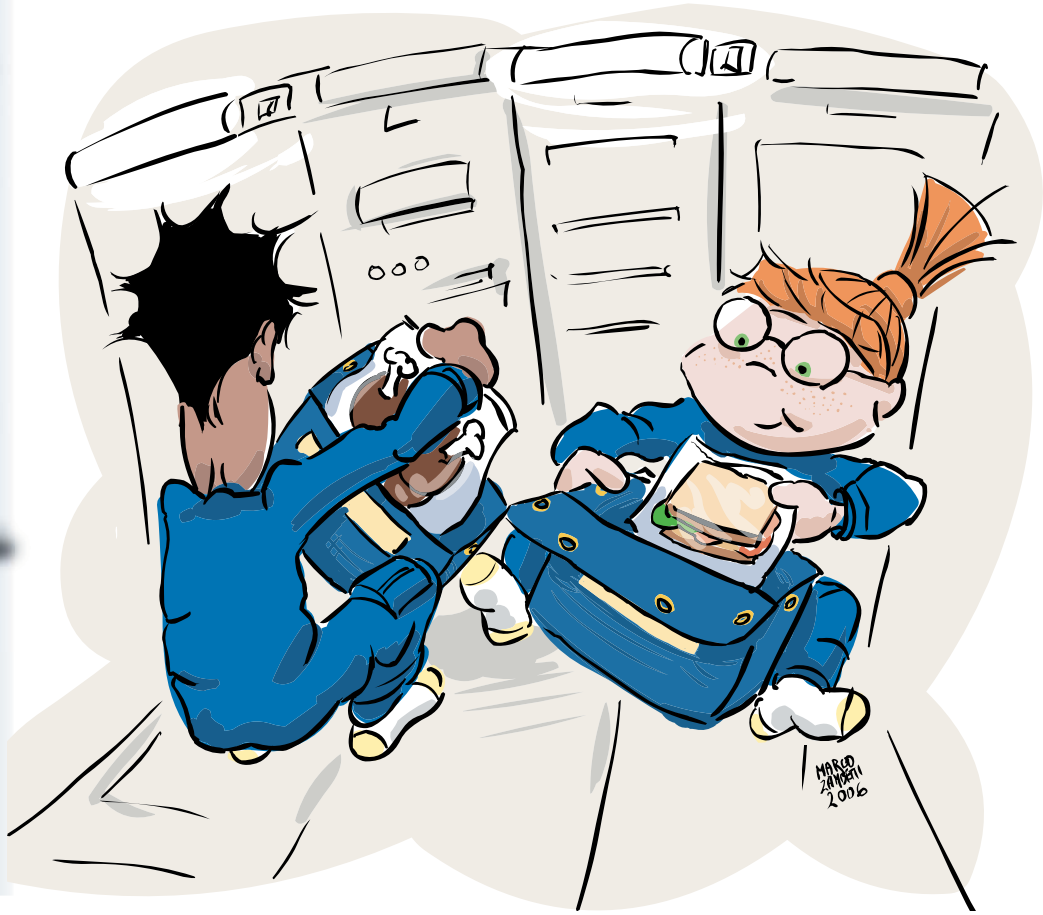
Issue 1

Liftoff!

Greetings! We hope you had a great summer vacation, and are excited about getting back to school. Here in NASA's Nutritional Biochemistry Laboratory, we've had an incredible summer - highlighted by the July 4 liftoff of STS-121, Space Shuttle Discovery! This mission to the International Space Station (ISS) delivered a new crewmember, some hardware, supplies, food, and other needed items. It even included supplies for **two** of our Nutritional Biochemistry Lab experiments!

We call the first experiment the "Stability" experiment. We will test nutrient stability in foods after they have gone to space. We sent up 4 identical bags with different types of space foods. These kits will stay on the ISS for different lengths of time. The first was brought back home on the Shuttle in July, while the other three will stay on the ISS and will be brought home to Earth after 6, 12, or even 18 months of space travel! We'll be measuring vitamins and other nutrients in the food to find out if they are affected by space radiation.

The second experiment (called "Nutrition") is designed to evaluate ISS astronauts' nutritional status during flight. To do this, we will have the astronauts collect blood and urine samples throughout the mission. After these are brought home, we will analyze the samples for chemicals that tell us about the crew members bones, muscles, vitamins, and minerals. This type of testing is called nutritional assessment - we are checking, or assessing, nutrient levels in crew members during 6-month expeditions to the ISS. Knowing how nutrient status changes during these missions will help us better prepare for missions to the Moon, and Mars. The supplies (blood tubes, needles, band-aids, and more), and even the freezer were launched on Discovery's mission in July and delivered to the ISS. They are now at home there awaiting the start of the experiment.



These two experiments are very important to help us understand how nutrition plays a role in keeping astronauts healthy - on the Shuttle, ISS, and future exploration missions. Throughout the year we will keep you updated on what's going on with our experiments, what we are learning, and what we have planned for the astronauts for the coming months and years!

Space Nutrition

Thea's Corner...

For this activity, fill in the blanks for each sentence, then use the letters underlined in red to determine the secret word below. Hint: You will have to unscramble the secret word!

Fruits and vegetables have lots of: _ _ _ _ _ _ _ _

Testing to see if you have enough of a vitamin in your body: _ _ _ _ _ _ _ _ _ _

Samples of this can help tell about your nutritional status _ _ _ _ _ and _ _ _ _ _

This might cause the breakdown of vitamins and other nutrients in food:

_ _ _ _ _ _ _ _ _

A good diet can help keep you _ _ _ _ _ _ _

Secret word:

(scrambled)

One of the nutrition experiments on ISS:

_ _ _ _ _ _ _ _ _

Did You Know?

- Discovery's flight to ISS also marked the return of three member ISS crews. Expedition 13's newest crew member is Thomas Reiter, a German astronaut. He started his ISS stay in July, and will reside on the ISS until he comes home in December. The other two ISS crewmembers, Russian cosmonaut Pavel Vinogradov and American astronaut Jeff Williams started their stay on ISS in March of 2006 and will return to Earth on a Russian Soyuz vehicle in October.
- The word astronaut means "star sailor" in Latin.
- If you were to place 2 space shuttles on top of each other (lengthwise), they would be the same height as the Statue of Liberty (not including pedestal) -- 151 feet (46 meters). The shuttles weigh almost three times as much. Can you figure out why?

Word of the Month

Centrifuge

Can you guess what this word means? Look it up in the dictionary and see if you were right. We'll have more on this next month!

Web Challenge: Find video of an astronaut Q&A (question and answer) session online at a link below:

http://www.nasa.gov/mission_pages/station/main/index.html
http://www.nasa.gov/mission_pages/station/behindscenes/bed_rest_study.html
http://www.nasa.gov/vision/space/features/index.html
http://www.nasa.gov/audience/forstudents/5-8/features/index.html
http://www.nasa.gov/mission_pages/shuttle/multimedia/sts121/121-overview.html

Check out Thea's Bonus Page, experiments you can try, and even stuff you may have done at our website:
http://hacd.jsc.nasa.gov/resources/kid_zone.cfm