ISTS Newsletter

11-2010

ISTS, November 2010

Iowa Academy of Science

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Fall Conference Wrap-Up

Wow! What a ride! The 2010 IAS-ISTS Fall Conference was a huge success thanks to YOU and the other 43 IAS members who attended! I would like to thank once again the ISTS Leadership Team, the IAS Executive Director, the IAS Board Members, the IAS Staff, and every IAS Member who supported the event. Three hundred forty-one people attended the 2010 Fall Conference. One hundred fifty of these are non-members. Won’t you reach out to your colleagues and peers to encourage them to join? Let’s set the goal for 2011 Fall Conference to have more than 88 members attend the fabulous event that Kathy Megivern (2011 Fall Conference Chair) is planning! In fact, let’s see if we can get the 150 folks who experienced what IAS has to offer them to become members. The Academy is only as strong as its membership... and it all starts with YOU!

See you in April at the IAS Annual Meeting, and again next October for the 2011 IAS-ISTS Fall Conference!

Have a wonderful school year!

Clear Skies,

De Anna Tibben

2010 Fall Conference Chair

## Notes and News

Your ISTS Leadership Team brings greetings and information.

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## Iowa Academy of Science Mission

Promote scientific research and dissemination

Improve instruction in the sciences

Promote public understanding of science

Recognize excellence in science and science teaching

## ISTS Leadership

Your Leadership team can be found at [http://ists.pls.uni.edu/officers.html](http://ists.pls.uni.edu/officers.html).

We are always looking for good people. Send a line to kathy.megivern@gmail.com if you would like to be more involved.

Nadine Weirather, Editor

November, 2010
Message from ISTS Chair: Kathy Megivern

Thanks especially to DeAnna Tibben and Ginger Burrell with the Ames Convention and Visitors Bureau, the Fall Conference was a huge success despite the change in venue forced by August flooding of ISU's Scheman Building. We thank Cornerstone Church in Ames for extending us a warm welcome in using their facility! The conference began with a banquet at Hickory Hilltop Restaurant on Thursday evening, followed by a choice of activities: presentations on Iowa's one-room school houses, a chemistry pedagogy presentation, and assembling Galileoscopes at McFarland Park. The skies cooperated and participants could test their scopes with Ames Area Amateur Astronomers and Galileo Michael Frances. NASA Education Specialist John Weis also lent his expertise on Thursday evening. The evening concluded with the IAS-ISTS Chair Reception at McFarland Park that featured a dessert buffet.

Friday included a host of activities, from breakfast sessions, to morning concurrent sessions, to a buffet lunch and keynote speaker Michael Francis as Galileo, to afternoon concurrent sessions, to the concluding door prizes. New this year was a change, a person can be nominated in the new area. Nominate a colleague or yourself, today. If you have any questions, please contact the ESTA Committee Chair: Tom Ervin: tomervin@mchsi.com

Excellence in Science Teaching Awards

It’s time to nominate teachers for the Excellence in Science Teaching Awards (ESTA).

Dear Science Teaching Colleague,

It is time for us to recognize great science teaching in our midst. There are plenty of terrific science teachers in Iowa and The Iowa Academy of Science (IAS) wants to present Excellence in Science Teaching Awards (ESTA) to them. Over forty years ago, in 1969, the IAS awarded the first ESTAs.

Each year, outstanding teachers of all grade levels and areas of science are eligible to be recognized for their work and innovations in science education. Please nominate a colleague or yourself, today. There is no official nomination form, but specific nominating, processing and mailing instructions may be found on the 2nd page of the ESTA brochure at this web address: http://www.iacad.org/download/esta_brochure_2009.pdf

The deadline for submission of the above nomination letter is 1/31/11. Nominations are encouraged from administrators, colleagues, or a teacher may self-nominate. A letter of support from a second person is also due 1/31, and one of the two letters must be from an administrator. Time is short, but the on-line nomination process is so easy.

Final selections are made by the Awards and Recognition Committee. Winners are honored at a luncheon during the Iowa Academy of Science Annual Meeting. Awardees receive a plaque and a $200 award. You do not need to be a member of the IAS to receive the award. Nominations are accepted in the following six categories which allow for 7 teachers to be recognized each year:

* Earth/Space Science/Environmental Science
* General/Multiple Science (ea. integrated science, interdisciplinary courses, multiple preps)
* Middle School/Junior High Science
* Elementary Science (two awards may be given/year)

Even if a person has received the ESTA previously, but has had an assignment change, a person can be nominated in the new area. Nominate a colleague or yourself, today. If you have any questions, please contact the ESTA Committee Chair: Tom Ervin: tomervin@mchsi.com

Win a Science Assembly for Your School!

Imagine a day of Discovery at your school - complete with engaging science demonstrations, hands-on activities, and thrilling surprises. Enter each day to improve your chance of winning the Ultimate Cool School Science Day for your school.

Entries accepted through February 24, 2011.

The winning school will win a spellbinding assembly that is not only fun and interactive, but also underscores the importance of science literacy. Click here for contest rules: http://siemensscienceday.com/rules.cfm

****Drop of Water Video*****

Watch the 2-minute video that shows a drop of water falling into a puddle at 2000 frames a second. You will see something totally unexpected.

http://www.flixxy.com/water-drop.htm
Announcing the 2011 Iowa Space Grant Consortium Partner School Program

The Iowa Space Grant Consortium (ISGC) is excited to announce the seventh round of an exciting opportunity for Iowa educators with a new twist. The ISGC is sponsoring a Science, Technology, Engineering, and Math (STEM) School partnership to help connect schools to learning opportunities that move the NASA mission forward and increase awareness of STEM careers, especially at NASA.

In the past ISGC determined the professional development opportunities that teachers could apply for, but this year we are allowing teachers to identify the professional development that best serves their needs as well as links with the ISGC mission. The change will allow partners to tailor their professional development based on their needs and interests.

One of the reasons for the change is the 50th Anniversary of NASA Education that will be celebrated in a big way at NSTA's National Conference in San Francisco, in March. NASA will have sessions going each day, a large presence in the exhibit hall, and other special events to commemorate 50 years of NASA Education. To learn more about the NSTA National Conference go to www.nsta.org and follow the Conferences & Institutes links to the 2011 National Conference: San Francisco.

To get the application packet for the program go to ISGC's web page at http://www.iastate.edu/organizations/isgc. Click on The ISGC Partner Schools program Application <http://www.iastate.edu/organizations/isgc/programs/precollage>

Please consider applying. If you have any questions please contact Jay Staker at jstaker@iastate.edu

Celebrating 25 Years of Excellence in Science Literacy

The DuPont Challenge Science Essay Competition is accepting applications for the 2011 program year. Celebrating 25 years of science writing excellence, the program will award $50,000 in prizes this year. Students in grades 7–12 are eligible and could win money for college and an expense-paid trip to the Walt Disney World® Resort and Kennedy Space Center where winners will be recognized. Teachers can also earn grants and trips to the awards ceremony and the NSTA National Conference on Science Education by mentoring a winning student.

Prizes will also be awarded in the 25 Days of Giveaways, a special feature of the 25th anniversary program year. From November 22 to December 24, DuPont will award science classrooms with prizes related to STEM education and science literacy. Teachers must register to be eligible.

The DuPont Challenge was developed to honor the crew of the Challenger shuttle and as a way to increase science literacy. To register, get more information, and apply, go to thechallenge.dupont.com. The deadline for essay entries is January 31, 2011.

from NSTA Express, 11/22/10

Deadline Extended for the Mars Education Challenge

The deadline to submit proposals for the Mars Education Challenge has been extended to January 19, 2011, at 11:59 p.m. EST. High school science teachers located throughout the country, who have developed or are interested in creating new and innovative curricula support materials that focus on Mars science and exploration, are encouraged to apply.

The Challenge will recognize six winning entries with five regional awards and one national award. Regional winners will receive $2,500 grants, and the national winner will receive a $5,000 grant. Additionally, all of the winners will have an opportunity to do field research with well-known planetary scientists. The national winner will receive an expense-paid trip to NSTA's 2011 National Conference on Science Education in San Francisco, where he or she will be recognized at a special awards ceremony. Winning lesson plans will be shared with classrooms nationwide.

If you are uncertain if your submission conforms to competition guidelines, contact Explore Mars at info@exploremars.org. A program staff member will let you know if it meets the program requirements.

New Competition Brings Needed Lab Resources to Teachers

NSTA and Shell announce the NSTA's Shell Science Lab Challenge—an innovative new competition for middle and high school teachers that will bring much-needed laboratory resources to school districts nationwide. Schools will compete for up to $93,000 in prizes, including a grand prize school science lab makeover valued at $20,000.

The Challenge asks teachers who have found innovative ways to deliver quality lab experiences in schools with little or inferior equipment to submit their strategies. Entries will be judged on the basis of several criteria, including uniqueness, creativity, and replicability of their submissions. 18 regional winners will be selected. Of the 18 winners, five national winners and one grand prize winner will be selected. Prizes include gift certificates for lab equipment, cash grants, NSTA memberships, NSTA Learning Center subscriptions, travel to NSTA conferences, and paid conference registration fees. Entries submitted to the Challenge will form a national database of ideas and strategies and serve as models for how to succeed in science lab instruction with limited school and laboratory resources.

Schools in urban and rural areas, and those with underserved populations, are encouraged to apply.

For more information and to apply, go to shellsciencelab.nsta.org. The deadline for entries is February 2, 2011.

from NSTA Express, 11/22/10

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Project Dragonfly
Professional Opportunity

CONTACT: Connie Malone
513.529.5103;
EarthExpeditions@muohio.edu

OXFORD, Ohio - Applications are being accepted for 2011 summer/fall graduate field courses and a master’s program that offer international conservation studies in 12 countries throughout Africa, Asia, Australia and the Americas. New in 2011 are courses in Australia and Guyana.

Created in 2004 by Miami University’s Project Dragonfly and the Cincinnati Zoo & Botanical Garden, Earth Expeditions graduate courses and now the Global Field Program (GFP) master’s degree bring together graduate students, scientists, educators and community leaders at critical conservation field sites worldwide. In addition to Australia and Guyana, sites for 2011 include the Amazon, Baja, Belize, Borneo, Costa Rica, Kenya, Mongolia, Namibia, Thailand and Trinidad.

Tuition for seven graduate credits and all basic in-country expenses are covered in the $1,250 course costs. Accepted students are responsible for airfare.

Earth Expeditions and the GFP, which can be completed part-time from anywhere in the United States or abroad, are open to educators and other professionals from all disciplines and settings, regardless of grade level or academic focus. For information and to apply, please visit: Earth Expeditions: http://www.EarthExpeditions.org <http://www.earthexpeditions.org/>

Write Women Back Into History Essay Contest -- With a Science Twist??

To give students a deeper and more relevant appreciation of women’s roles in history and celebrate March as Women’s History Month, the Iowa Commission on the Status of Women, Iowa Department of Education, and the State Historical Society of Iowa invite teachers to encourage their students to enter the 27th Annual Write Women Back Into History Essay Contest.

2011 Theme: Our History is Our Strength

A student’s own thoughts on the significance of the women's contributions are important. Essays should identify 1) why the woman should be written into history (i.e., what meaningful contributions has she made to her community, the state, nation, or world?), and 2) why she is important to the student. Students should consider what people would learn about us from this essay 50 years from now. A successful essay will discuss why the student researched, read about or interviewed, and found the subject to be a role model; it should not merely be a biographical sketch.

The guidelines and entry form can be found here.

News from NASA’s Space Place

A new game on the NOAA/NASA SciJinks website puts you in the position of an airline Flight Controller whose job is to safely steer planes around such hazards as air turbulence, lightning storms, and near-invisible volcanic ash. Luckily, you have maps updated in real time with information from the GOES-R satellite so you can easily see where trouble lurks. See how many of the 12 different types of scenarios you can handle to safely land all your flights within the allotted time. Check it out at http://scijinks.gov/aviation-game.

Go on, ask us anything about weather, storms, Earth’s atmosphere, and even space weather. We will put your question and our answer on the new “Ask a SciJinks expert” page, along with a link to a video, game, or illustrated explanation on our web site: http://scijinks.gov/questions-and-answers.

Rain, Runoff and Rivers: Understanding Watersheds Workshops for Teachers and Naturalists

February 11-13 and April 29-30, Mount Vernon, IA

Presented at Sleep Inn, Mount Vernon, IA (near Cedar Rapids) by Environmental Issues Instruction (eii), a program of the UNI Center for Energy and Environmental Education.

Learn how to help your students understand watershed issues and take action to mitigate flooding via activities which coordinate with the Iowa Core. For primary through Community College teachers and naturalists who will receive 2 UNI graduate credits, materials, meals and housing for only $198 registration, due to REAP, LRTF, KIB and EPA grants.

Check with ICEC for teacher registration stipends at <behlers@netins.net>. For more information visit www.uni.edu/ceee/eii, request a paper brochure at bollwinkel@uni.edu or call 319-273-2783.

Submitted by Carl Bollwinkel

Honeywell: Educators at Space Academy Program

The Honeywell Educators at Space Academy Program funds five-day scholarships for middle school math and science teachers at the U.S. Space & Rocket Center in Huntsville, Alabama. Recipients have 40 hours of intensive classroom, laboratory and training time, focusing on space science and space exploration, including participation in astronaut-style training and simulations and activities designed to promote life-long learning in a classroom setting. Maximum award: travel, accommodations, materials and five-day tuition. Eligibility: middle school (grades 6-8) science and math teachers. Deadline: December 31, 2010. http://www.spacecamp.com/educators/honeywell/
Take Action to Protect Our Water Planet

Now’s the time for educators and students in grades 6-12 to take action in protecting and restoring our precious water planet.

Inspire your students and give them the tools to get involved! Introducing the Water Planet Challenge - an online destination filled with valuable multimedia resources for use in both the classroom and community alike:

• Standards-aligned lesson plans and engaging videos
• Service-learning action guides, tips and ideas for getting involved
• Related online resources that will challenge students and dare them to change the world

Help shape the Water Planet Challenge. We want to hear from you - share your valuable ideas and best practices as we continue to add multimedia resources and grow this site. Together, we can reach our youth and help them to become aware and involved in affecting change in their own communities and beyond.

Leading Place-Based Student Investigations - Water

A pilot workshop from the Iowa Academy of Science, Iowa DNR, and UNI

Engage your students in real scientific research of a local water issue while you improve your own content knowledge and pedagogy!

• For 4th-8th grade science and environmental educators.
• Class begins on January 24th and ends on April 30th.
• Stipend provided. No textbooks to buy - All course materials provided.
• 2 hours of UNI Graduate Credit (820:133g) available.

Applications are due by January 5th. Class is limited to 10 participants and 2 alternates, so apply early! Apply at: http://www.surveymonkey.com/s/D3BMC3M

Course content will focus on:

• sound pedagogy (how to engage students in authentic science investigations) grounded in the 5 Essential Features of Inquiry,
• developing/enhancing content knowledge about water and specific place-based water issues, and
• student learning through integration of concept-related support activities (activities from Project WILD Aquatic, Project WET, GLOBE, etc.)

With your students you will develop and conduct a place-based water student investigation unit (or enhance a current unit). The final product of the course will be a presentation of the results and conclusions of your investigation presented at the Iowa Academy of Science Annual Meeting at Wartburg College on April 30th, 2011.

Questions? Contact Marcy Seavey at seavey@uni.edu

The Lexus Eco Challenge

The Lexus Eco Challenge program is designed to "inspire and empower" middle and high school students to learn about the environment and take action to improve it. The maximum award is $30,000 in scholarships and grants. Middle or high school teams composed of 5-10 students and one teacher advisor are eligible. The deadline for Challenge One (Land/Water) is November 3, 2010, and the deadline for Challenge Two (Air/Climate) is January 19, 2011. Visit their website for more information: http://www.scholastic.com/lexus/

Finding Science in Football

The National Football League, National Science Foundation and NBC have teamed up to show how pro football is full of cool science principles. The 10-part documentary series, called the "Science of NFL Football," aims to reveal how principles of physics, math and other science translate into every play on the field." The first several episodes are available both at NBCLearn.com and science360.org. "Watching video, digital media...that's the pathway to [a kid's] brains," said Soraya Gage, the executive producer of NBC Learn. "Getting the athletes to talk about what they do hooks the kids and the students. And when it's coming from an idol, a sporting hero, they sit up and listen." The Times notes, "The series is aimed at middle school, junior and senior high students."
Winter Solstice: Sketching Iowa's Heritage: How to Draw Children Back into Nature

January 21-23, 2011
Honey Creek Resort
Moravia, Iowa (on Lake Rathbun)

Watch for the Registration packet in the mail soon to download the registration packet now visit: https://docs.google.com/fileview?id=0BzswN-o_nbo6MiM3MmEmEwMTETmJdiMS00MWU1LTlhOWYtM2QwNDUxMTExNDNj&hl=en Scholarship form may be found at: https://docs.google.com/fileview?id=0BzswN-o_nbo6MTU1Nzk5ODMiZmRkMj00MWRiLTtjOTItM2Y0N2Q3NTiZzZmiV&hl=en If you have any problems downloading the registration brochure please contact Heather at adminicec@mchsi.com.

Speakers: The 2011 Winter Solstice Workshop features keynote speakers Kris Howes-Vonstein and Jennifer Hancock from Vinton School’s Green Team.

Vinton Shellsburg School’s “Green Team”
As part of a Green School Grant, teachers from the Vinton-Shellsburg School have “gone green” with student activities. Using Project Based Learning as the learning platform, students submitted plans to the school board that have made significant, school-wide differences. The teachers and students have been honored with a national award from Project Learning Tree and will be speaking at the organization’s national conference. ICEC has invited them to share their experience with Winter Solstice attendees. ICEC believes other educators will be inspired by their experience and consider replicating many, if not all of the accomplishments made by this teaching team.

First Hand Learning
This workshop is presented by First Hand Learning, Inc., a nonprofit organization founded in 1998 to promote inquiry-based teaching, learning from direct experience, and closer links between cultural institutions and schools. First Hand Learning’s work in this area has been supported by the cooperation of generous colleagues across the country, and by the Howard Hughes Medical Institute, the John R. Oishei Foundation, and the National Science Foundation. http://www.firsthandlearning.org.

Patricia McGlashan is currently the director of curriculum development for First Hand Learning. She has had 15 years of classroom experience spanning grades K through 12, and is the lead author of Outdoor Inquiries: Taking Science Investigations Outside the Classroom, which was published by Heinemann in 2007. She has taught foreign language at all grade levels and science at the elementary and middle school levels. McGlashan has been developing curriculum materials for 20 years, and has worked on numerous different curriculum projects. She authored six units while at the National Science Resources Center in the Science and Technology for Children (STC) program, and has developed units for the American Museum of Natural History, the Buffalo Museum of Science, the U.S. National Arboretum, NASA, and National Geographic. Her work also includes experience as a designer and facilitator of teacher professional development programs, helping school systems implement curriculum she has written.

Creating a Field Guide
Sunday January 23, 2011; 8:30 – 2:00, with working lunch

Spend Sunday with Patricia McGlashan from First Hand learning and their program: Creating a Field Guide.

Eulenspiegel Puppet Theatre
Eulenspiegel Puppet Theatre is a non-profit, tax-exempt puppet company organized to promote the art of puppetry by producing and presenting high-quality performances and workshops. The company is committed to educating the public about the arts, serving as a center for the exchange of ideas, and enhancing the quality of community life.

Shakespeare Fishing Poster Contest

Shakespeare®, the national leader in youth fishing tackle products, is holding a middle school drawing contest with the theme “Take Your Parent Fishing”. The contest is part of a Shakespeare advertising effort to engage students, their families, and their schools in outdoor fishing and aquatic education activities. The winning drawing will be used as part of Shakespeare’s 2011 family fishing advertising campaign. Please encourage your students to participate to win big prizes for themselves, their teacher, and their school. Click here for prize list

Time is short. Register now to receive your instruction packet by mail. No purchase or cost required to participate. Deadline to register is December 10, 2010. Winners will be announced on/about March 15, 2011.
**Human Population Video Contest**

Human population is set to reach seven billion by the end of 2011.

As this historic moment approaches, Population Connection is hosting a nationwide video contest for high school students. The contest challenges students to create a video public service announcement that illustrates the impact of population reaching seven billion as it relates to environmental and global issues.

With cash prizes of up to $1,000 available to winning videos, the deadline for entries is March 1, 2011. But there’s something in it for you, the teacher, as well! If at least 10 of your students submit videos, we’ll send you a set of free classroom resources. This is a teachable moment you don’t want to miss!

Contest information and forms are available at www.Worldof7Billion.org. You can use this printable flyer to hang in your classroom to let students know about the contest.

If you have any questions, please email us at Worldof7Billion@populationconnectio n.org or call 1-800-767-1956. You can also like us on Facebook!

We had a great time at the ISTS Fall Conference in Ames!

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**Exploring Iowa’s Natural Resources**

*An online course held February 7 - March 11, 2011*

The goal of this twelve-week on-line course is to help you incorporate local natural resources into your curriculum. You will work in small groups and individually to create a network of contacts and resources to teach about natural resources. Group and individual assignments will build on each other each week.

Participants are required to spend 5-6 hours per week on-line completing assignments and participating in group discussions. Participants should be comfortable navigating web pages, have access to internet and a computer on a daily basis, and possess basic computer skills. A majority of the course materials will be provided on a CD with linked pdf files.

**Course Objectives**

1. Become more knowledgeable about local natural resources and issues facing them.
2. Increase knowledge/skills on finding credible electronic resources.
3. Compile a list of local natural resources areas and contacts.
4. Develop a topical unit that meets their specific teaching needs.
5. Be acquainted with a variety of additional resources to enhance their personal knowledge of Iowa’s natural resources and issues facing them.

**Course Requirements**

The course is arranged on a weekly basis – Monday through Sunday. Each week you will have a new Module of required readings, resources and references, assignments, and occasional guest speaker discussions. Assignments will be available at 12:00 a.m. on Mondays and must be completed by 11:00 p.m. on Sunday. You must register on-line. Go to the Heartland AEA 11 website – www.aea11.k12.ia.us.

Click on “Professional Development” on the left-hand menu, under “Home.” Click on “Professional Development Catalog” (top link). Scroll down the page to “OR... Enter Activity an Activity Number.” Type SC005999991102 in the box. Click the “Go” button.

Registration deadline is January 26, 2011. Registration fee includes materials and 2 license renewal credit for $50 or 2 graduate credits from Drake University for $250.

Contact: Shannon Hafner, Aquatic Education Program, Iowa Department of Natural Resources, 2473 160th Road, Guthrie Center, IA 50115, (641) 747-2051, Shannon.Hafner@dnr.iowa.gov

**Disney’s Planet Challenge “Imagine Your Planet” Video Series**

Calling All Science Teachers, Grades 3–8! Check out the new “Imagine Your Planet” video series, brought to you by Disney’s Planet Challenge. With “Imagine Your Planet,” Disney’s Planet Challenge goes into classrooms across the country, following students on their mission to create a better planet. In the latest video released, Disney’s Planet Challenge spotlights a fourth-grade class and their teacher, Mrs. Cress, from Central Intermediate School in Baton Rouge, Louisiana. The clip highlights the students’ project, Saving the Wetlands, One Planet at a Time, which focuses on helping to fortify the native wetlands in Louisiana after Hurricane Katrina and the recent oil spill in the Gulf threatened to destroy it.

Developed in collaboration with NSTA and the K–12 Alliance, the Challenge offers students the chance to use their imagination and creativity to help the planet while giving educators a fresh new way to motivate students with the help of an educationally sound curriculum that meets national and state guideline requirements.

For more information or to enroll in the program, visit disney.go.com/planetchallenge. Enrollment is open through December 17, 2010. Once enrolled, teams have until February 16, 2011 to complete their projects.
Beautiful flat rings around the planet Saturn are one thing—but flat rings around entire galaxies?


"For most of the twentieth century, astronomers observing at visible wavelengths saw that galaxies looked either 'red and dead' or 'blue and new,'” explained Salim. Reddish galaxies were featureless, shaped mostly like balls or lentils; bluish ones were magnificent spirals or irregular galaxies.

Elliptical galaxies looked red, astronomers reasoned, because they had mostly old red giant stars near the end of their life cycles, and little gas from which new stars could form. Spiral and irregular galaxies looked blue, however, because they were rich in gas and dust that were active nurseries birthing hot, massive, bluish stars.

At least, that’s how galaxies appear in visible light.

As early as the 1970s, though, the first space-borne telescopes sensitive to ultraviolet radiation (UV) revealed something mysterious: a few red elliptical galaxies emitted “a surprising ultraviolet excess,” said Rich. The observations suggested that some old red galaxies might not be as “dead” as previously supposed.

To investigate, Salim and Rich used NASA’s Galaxy Evolution Explorer satellite to identify 30 red elliptical galaxies that also emitted the strongest UV. Then they captured a long, detailed picture of each galaxy using the Hubble Space Telescope.

“Hubble revealed the answer,” says Salim. The UV radiation was emitted by enormous, flat bluish rings that completely surrounded each reddish galaxy, reminiscent of the rings of Saturn. In some cases, the bluish rings even showed a faint spiral structure!

Because the bluish UV rings looked like star-forming spiral arms and lay mostly beyond the red stars at the centers of the elliptical galaxies “we concluded that the bluish rings must be made of hot young stars,” Salim continued. “But if new stars are still being formed, that means the red-and-dead galaxies must have acquired some new gas to make them.”

How does a galaxy "acquire some gas?" Salim speculates that it was an act of theft. Sometimes galaxies have close encounters. If a gas-rich irregular galaxy passed close to a gas-poor elliptical galaxy, the gravity of the elliptical galaxy could steal some gas.

Further studies by Galaxy Evolution Explorer, Hubble and other telescopes are expected to reveal more about the process. One thing is certain, says Rich: “The evolution of galaxies is even more surprising and beautiful than we imagined.”

Point the kids to the Photon Pile-up Game at http://spaceplace.nasa.gov/en/kids/galex/photon, where they can have fun learning about the particle nature of light.