



Story amendment to the Annual Report of the Office of the Vice Provost for Research, 2002:

Noy discovered that the ability of RA to inhibit the proliferation of breast cancer cells is enhanced by a protein called CRABP-II. The complete story is reprinted below.

Treating Cancer with Retinoic Acid

Noa Noy, Nutritional Sciences, discovered a way to treat several cancers with retinoic acid (RA), a derivative of vitamin A, with fewer side effects. RA regulates gene transcription and therefore governs many functions in the body, including cell division and the development and spread of cancer cells. The process of turning genes on and off requires high doses of medication, and the side effects of the high levels of RA can be devastating. By making tumor cells up to a thousand times more sensitive to RA, Noy's discovery will enable much smaller doses of RA to be used—even the amount of RA that naturally occurs in the body. Noy found that a protein called cellular RA-binding protein II (CRABP-II) in the cell can enhance the ability of RA to inhibit the proliferation of breast cancer cells, requiring less RA to suppress tumor growth. CRABP-II exerts these effects by activating the transcriptional regulator protein called retinoic acid receptor (RAR), which binds to certain DNA sequences and turns targeted genes on or off. RA has been used to treat prostate cancer and leukemia. Experiments are underway using retinoids to treat breast, head-and-neck cancers, diabetes, arteriosclerosis, and emphysema.

Frank D'Amico/CU



Noa Noy

New Physics Textbook for Non-physicists Uses Color and Fantasy to Explain Tough Concepts

Rebel fighters blow up a Death Star in *Return of the Jedi*. Jack's beanstalk grows taller and taller, allowing him to climb to the giant's kingdom in the clouds.

But what is the likelihood that an exploding star would result in the bright flash and loud roar of destruction that George Lucas's audience sees and hears on the screen? How high can a beanstalk really grow and still support its own weight?

Science fantasy? Not to three Cornell University academics—Alan Giambattista, Betty Richardson, and her husband, Robert. They pose the questions in their recently published textbook, *College Physics* (McGraw Hill, 2004). Their intent is to draw readers into the text and to help explain difficult physics concepts for pre-med students and others not planning to further their education in the subject. The text is now in use on the Cornell campus in Physics 102.

Betty Richardson, a senior lecturer who began teaching physics at Cornell in 1977, notes the importance of attracting the reader's interest when writing a textbook: "If the text does not appeal to the students, we might as well not have written it." Co-author Giambattista, also a senior lecturer in the Department of Physics who has taught at Cornell since 1989, agrees. "But if it's not thorough and well-presented," notes Giambattista, "it won't do [the students] any good to read it."

While all three authors agree on the importance of comprehensiveness and presentation when writing a college textbook, they also acknowledge that appeal through illustrations and contemporary references play a major role. Each chapter of *College Physics* begins with a situation or question to interest the reader, followed by material that is carefully organized and aesthetically pleasing, often with colorful graphics and photographs. Explanations avoid specialized jargon wherever possible, and throughout the text simple experiments are suggested, under the heading "Physics at Home," to apply concepts to real-life situations.

The authors' collaboration began in 1995, when Giambattista invited Betty Richardson to join him in writing a text for students. Their goal, she noted, was "to have a text that a student can read, understand, and relate to without having to rely on a lecture to explain the information the textbook author was trying to convey."

In time, Richardson's Nobel laureate husband, Robert C. Richardson, the F. R. Newman Professor of Physics and Cornell's Vice Provost for Research, joined the duo to help write the text. Robert Richardson, who came to Cornell as a research associate in October 1966, has even begun developing a CD-ROM to accompany future editions of the text.

Charles Harrington/CU



(l. to r.) Robert Richardson, Alan Giambattista, and Betty Richardson

For more information:

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Joseph A. Burns Named as Vice Provost for Physical Sciences and Engineering

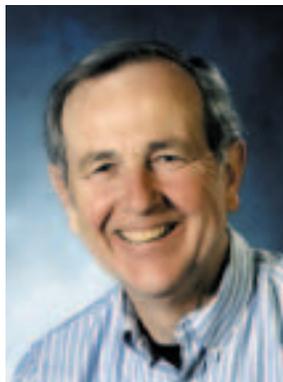
Joseph A. Burns, the Irving Porter Church Professor of Engineering, Theoretical and Applied Mechanics, and professor of Astronomy at Cornell, has been named as the university's Vice Provost for Physical Sciences and Engineering. Burns's role is to facilitate Cornell's research in the areas of physical sciences and engineering, especially at federally funded centers, and to advise on the university's research policies and priorities in those areas.

In the appointment, which became effective July 1, Burns replaces John Silcox, who retains his post as the David E. Burr Professor of Engineering, Applied and Engineering Physics.

Commenting on the appointment, Vice Provost for Research Robert C. Richardson said: "I am delighted that Joe has agreed to join us. He is a very distinguished educator—a faculty member in the College of Engineering with a joint appointment in the Department of Astronomy—and a nationally recognized scientist. Joe has a long record of leadership in his department, college, and the university, and his work on the physics of the solar system has long been admired."

Burns joined the faculty of the Department of Theoretical and Applied Mechanics in 1966 after earning a B.S. in naval architecture at the Webb Institute and a Cornell Ph.D. in space mechanics in 1966. After serving a year as a postdoctoral research associate at NASA's Goddard Space Flight Center, he returned to the faculty two years later. His current research concerns planetary rings and the small bodies of the solar system, from dust and satellites to comets and asteroids.

Charles Harrington/CU



Joseph Burns, Theoretical and Applied Mechanics; Astronomy

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