



SUCCESSSES

Targeting tumors

CSU can now deliver radiation to tumors in animals with unmatched precision, using an instrument that is the first of its kind in any animal clinic or veterinary teaching college in the world. Developed by CSU's veterinary radiation oncology unit, the Varian Trilogy Linear Accelerator is only available for human treatment in a few limited locations in the United States. The accelerator, which delivers precision radiation to tumors and drastically reduces the impact of radiation on surrounding healthy cells, will eventually help humans suffering from cancer, said Dr. Lance Perryman, dean of the College of Veterinary Medicine and Biomedical Sciences.

Light on lasers

CSU scientists have dramatically improved laser light, a discovery valuable to the semiconductor manufacturing industry, which makes computer chips. The new technology generates short wavelength light about 13 nanometers (a human hair is about 60,000 nanometers), nearly 50 times shorter than visible light. The next fast-generation computer chip is expected to incorporate the new laser light by 2011. Laser users can see tiny features and manipulate materials in ways that visible light can't. The research is conducted at the National Science Foundation's Center for Extreme Ultraviolet Science and Technology – a partnership between Colorado State, the University of Colorado-Boulder, and the University of California, Berkeley.

Quantum gift

CSU has been awarded a \$1.1 million gift from the W.M. Keck Foundation to develop technology for a large-scale silicon quantum computer. Researchers will use a laser-cooled, single-atom-on-demand source to precisely place atoms within nanometers of a designated target. A quantum computer will enable massive parallel computation at much faster speeds than traditional computers, contribute to Internet security, and shape the future of nano-electronics, says Siu Au Lee, CSU professor of physics and principal investigator for the program.

SERVICE

Hurricane force

Researchers with the Tropical Meteorology Project at CSU predict "somewhat above average" Atlantic basin hurricane activity for 2008. The forecasters consider past global oceanic and atmospheric conditions such as El Niño, sea-surface temperatures, and sea-level pressure to provide information about the future. Predictions for the 2008 hurricane season include 13 named storms to form between June 1 and Nov. 30, seven storms to become hurricanes, three storms to develop into intense or major hurricanes with sustained winds of 111 mph or greater, and a 60 percent chance that at least one major hurricane will make landfall on the U.S. coastline in 2008.

War-torn vets

CSU scientists were in Iraq recently to develop a comprehensive national animal-health program in the war-torn country. The U.S. Department of Agriculture's Foreign Agricultural Service, the Animal and Plant Health Inspection Service, the U.S. Embassies in Baghdad and Damascus, Colorado State, and other U.S. universities worked with the Iraqi Ministry of Agriculture and nearly 100 Iraqi veterinarians, agriculturalists, and public officials on a plan to control Iraq's five priority animal diseases: brucellosis, bovine tuberculosis, foot-and-mouth, high pathogen avian influenza, and echinococcosis.

RESEARCH

Confident voters

Citizen confidence in the election system depends on procedural consistency, perceived fairness, and accountability, reports a new study by Colorado State University and the University of New Mexico. Bolstering confidence in the U.S. election system is directly linked to a positive voting experience, which includes casting a ballot on Election Day (instead of voting absentee or early) and using voting machines with verifiable results. Trained poll workers who appear competent, non-partisan, and helpful can enhance the voter experience as can ballots that are well designed, efficient, and unambiguous. The study was based on a random survey of voters following the 2006 midterm election in two congressional districts.

Mountain economy

Visitors who climb a mountain by rail or automobile generate greater local economic benefits than those who scale the peak on foot, reports a recent CSU study. But roads and mechanized railways on mountaintops diminish the perceived value of the experience for hikers, the study found. The Department of Agricultural and Resource Economics at CSU found that mechanized means of transportation generate a greater perceived benefit to the user than hiking the same mountain. Cog railway riders, automobile users, and hikers report benefits valued at \$98, \$54, and \$31, respectively, per day-trip – a value in addition to what recreationists already spent on the trip.

Rocky Mountain ecosystem

Nitrogen, in moderation an important fertilizer and nutrient in the environment, is adversely affecting the ecosystem in Rocky Mountain National Park, say CSU scientists, who were commissioned by the state, the National Park Service, and the EPA to study the impact of nitrogen on the park. Too much nitrogen can change an ecosystem, resulting in spruce trees more vulnerable to drought and insects, fewer wildflowers in the tundra, and the proliferation of grasses, researchers note. The scientists found the highest concentrations of trace nitrogen affecting the ecology in Rocky Mountain National Park originated from the winds east of the Continental Divide.

Air emergency

CSU scientists will study the relationship between daily pollution and emergency room visits for asthma, heart attacks, respiratory conditions, and low-weight births. Coarse particulate matter – pollution from construction, feedlots, agricultural activities, mining, and road dust – penetrate the thoracic region of the lungs when inhaled, says Jennifer Peel, epidemiologist and assistant professor of environmental and radiological health at CSU. The study – a partnership of CSU, the University of Colorado at Boulder, and the Colorado School of Mines – will compare ambient air pollution data to health data and measure pollution levels from four sites in Denver and three sites in Greeley every hour for three years.



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