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| http://images.magnetmail.net/images/template/acs/gold.gifIn This Edition

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| http://images.magnetmail.net/images/clients/ACS/041812CocaineIstock_thumb.jpgAntidote for cocaine overdose shows promise in lab testsCredit: iStock |

Scientists are reporting development and successful testing in laboratory mice of a substance that shows promise for becoming the first antidote for cocaine toxicity in humans. According to a report in ACS’ journal Molecular Pharmaceutics, the new so-called “passive vaccine” reversed the motor impairment, seizures and other dangerous symptoms of a cocaine overdose, which claims thousands of lives each year among users of the illicit drug.Kim D. Janda and Jennifer B. Treweek explain that their previous research established the validity of using vaccines as treatments for drug addiction and contributed to the promotion of one cocaine active vaccine (and three nicotine active vaccines) to clinical evaluation in humans. These so-called “active” vaccines elicit antibodies that bind circulating cocaine (and nicotine) molecules in the blood and prevent these drug molecules from reaching the brain. In doing so, vaccinated patients are “immune” to the drug’s effects, and as a result, they feel no pleasurable effects from the drug if they backslide during recovery. The report describes the development of a cocaine passive vaccine, which consists of pre-formed human antibodies against cocaine that are 10 times more potent in binding cocaine molecules. This improved potency accelerates their ability to reverse cocaine toxicity, where time is of the essence. When administered by emergency medical teams or in hospital emergency departments, these passive vaccines could represent a life-saving therapeutic for overdose victims. The vaccine “represents a viable treatment strategy for the human condition of cocaine overdoses,” the report concludes. The authors acknowledge funding from the [Skaggs Institute for Chemical Biology](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487812&m=1892890&u=ACS&j=9908331&s=http://www.scripps.edu/research/skaggs/) and the [National Institute on Drug Abuse](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487813&m=1892890&u=ACS&j=9908331&s=http://www.drugabuse.gov/).

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| http://images.magnetmail.net/images/clients/ACS/041812MP_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487814&m=1892890&u=ACS&j=9908331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/041812mp.jpg) for high-resolution image |

ARTICLE #1 **FOR IMMEDIATE RELEASE**“An Antidote for Acute Cocaine Toxicity”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487815&m=1892890&u=ACS&j=9908331&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/mp200588v) CONTACT:Kim D. Janda, Ph.D.The Scripps Research InstituteLa Jolla, Calif. 92037Phone: 858-784-2516Fax: 858-784-2595E-mail: kdjanda@scripps.edu  [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #2 **FOR IMMEDIATE RELEASE****Advance could mean stain-busting super scrub brushes and other new laundry products**Industrial & Engineering Chemistry Research

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| http://images.magnetmail.net/images/clients/ACS/041112ScrubbrushIstock_thumb.jpgAdvance could mean stain-busting super scrub brushes and other new laundry productsCredit: iStock |

Scientists are reporting development and successful testing of a way to reuse — hundreds of times — the expensive, dirt-busting enzymes that boost the cleaning power of laundry detergents and powdered bleaches that now disappear down the drain. The discovery, reported in the ACS journal Industrial & Engineering Chemistry Research, opens the door to new laundry products, like special scrub brushes or reusable enzyme-coated plastic flakes and strips that might be added to cheaper detergents and then saved for reuse.C.S. Pundir and Nidhi Chauhan explain that the most effective laundry detergents on the market today contain enzymes, such as amylase, cellulase, protease and lipase. The enzymes break down starches, mud, proteins, and fats and oils in stains into smaller, more water-soluble pieces that are easily removed from garments. Enzymatic detergents (which make up over half the market) work well, but they are expensive compared with regular detergents. And although the enzymes are still active after a washing cycle, they get rinsed down the drain. In previous research, the scientists showed it was possible to attach individual enzymes to various surfaces in previous studies so they could be reused. Now, for the first time, the researchers bound all four enzymes onto a plastic surface. They adhered all four enzymes to the inside surface of a plastic (PVC) bucket and to the PVC bristles of a scrub brush. Then they washed white cotton cloths with starch, grass, egg or mustard oil stains in the bucket or with the brush. Less expensive, non-enzyme laundry detergents, used in the bucket or with the scrub brush, cleaned just as well or better than using the pricey enzymatic detergent by itself. The PVC-attached enzymes remained active when used as many as 200 times over three months. The new method “makes cheaper detergents better than expensive detergents for washing purposes,” say the researchers.

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| http://images.magnetmail.net/images/clients/ACS/041812IEC_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487816&m=1892890&u=ACS&j=9908331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/041812iec.jpg) for high-resolution image |

ARTICLE #2 **FOR IMMEDIATE RELEASE**“Coimmobilization of Detergent Enzymes into a Plastic Bucket and Brush for Their Application in Cloth Washing”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487817&m=1892890&u=ACS&j=9908331&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/ie202053r)CONTACT:C.S. Pundir, Ph.D.Department of BiochemistryMaharshi Dayanand (M.D.) University, RohtakHaryana, IndiaPhone: +91-941-649-2413Fax: +91-126-274-640Email: pundircs@rediffmail.com[To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #3 **FOR IMMEDIATE RELEASERivers flowing into the sea offer vast potential as electricity source**Environmental Science & Technology

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| http://images.magnetmail.net/images/clients/ACS/041812EstuaryIstock_thumb.jpgRivers flowing into the sea offer vast potential as electricity sourceCredit: iStock |

A new genre of electric power-generating stations could supply electricity for more than a half billion people by tapping just one-tenth of the global potential of a little-known energy source that exists where rivers flow into the ocean, a new analysis has concluded. A report on the process — which requires no fuel, is sustainable and releases no carbon dioxide (the main greenhouse gas) — appears in ACS’ journal Environmental Science & Technology.Menachem Elimelech and Ngai Yin Yip explain that the little-known process, called pressure-retarded osmosis (PRO), exploits the so-called salinity gradient — or difference in saltiness — between freshwater and seawater. In PRO, freshwater flows naturally by osmosis through a special membrane to dilute seawater on the other side. The pressure from the flow spins a turbine generator and produces electricity. The world’s first PRO prototype power plant was inaugurated in Norway in 2009. With PRO appearing to have great potential, the scientists set out to make better calculations on how much it actually could contribute to future energy needs under real-world conditions.Elimelech and Yip concluded that PRO power-generating stations using just one-tenth of the global river water flow into the oceans could generate enough power to meet the electricity needs of 520 million people, without emitting carbon dioxide. The same amount of electricity, if produced by a coal-fired power plant, would release over one billion metric tons of greenhouse gases each year.The researchers acknowledge funding from the [Environment and Water Industrial Development Council of Singapore](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487819&m=1892890&u=ACS&j=9908331&s=http://www.nuhs.edu.sg/research/funding/funding-opportunities/physical-sciences-grants/nrf-environment-and-water-industry-development-council-incentive-for-research-and-innovation-scheme.html) for Ngai Yin Yip’s fellowship.

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| http://images.magnetmail.net/images/clients/ACS/041812EST_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487820&m=1892890&u=ACS&j=9908331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/041812est.jpg) for high-resolution image |

ARTICLE #3 **FOR IMMEDIATE RELEASE**“Thermodynamic and Energy Efficiency Analysis of Power Generation from Natural Salinity Gradients by Pressure Retarded Osmosis”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487821&m=1892890&u=ACS&j=9908331&s=http://pubs.acs.org/stoken/presspac/presspac/abs/10.1021/es300060m)CONTACT:Menachem Elimelech, Ph.D.Yale UniversityNew Haven, Conn. 06520-8286Phone: 203-432-2789Email: menachem.elimelech@yale.edu [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif ARTICLE #4 **FOR IMMEDIATE RELEASE: A PressPac Instant Replay\*****That caffeine in your drink – is it really “natural?”**Analytical Chemistry

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| http://images.magnetmail.net/images/clients/ACS/030712CoffeeIstock_thumb.jpgThat caffeine in your drink – is it really “natural?”Credit: iStock |

That caffeine in your tea, energy drink or other beverage — is it really natural? Scientists are reporting successful use for the first time of a simpler and faster method for answering that question. Their report appears in the American Chemical Society (ACS) journal Analytical Chemistry.Maik A. Jochmann, Ph.D., and colleagues point to the growing consumer preference for foods and beverages that contain only natural ingredients. Coffee, tea, colas, energy drinks and other caffeine-containing drinks are the most popular beverages in the world. Food regulatory agencies require that caffeine be listed on package labels, but do not require an indication of whether the caffeine is from natural or synthetic sources. The scientists set out to develop a faster, simpler method for categorizing caffeine’s origins.In the study, they describe use of a technique called stable-isotope analysis to differentiate between natural and synthetic caffeine. The test makes use of differences in the kinds of carbon isotopes – slight variations of the same element – found in caffeine made by plants and caffeine made in labs with petroleum-derived molecular building blocks. Their analysis, which takes as little as 15 minutes, found four products that contained synthetic caffeine, despite a “natural” label.The authors acknowledge funding from the [German Federal Ministry of Economics and Technology](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487822&m=1892890&u=ACS&j=9908331&s=http://www.bmwi.de/English/Navigation/root.html) and the [German Research Foundation](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487823&m=1892890&u=ACS&j=9908331&s=http://www.dfg.de/en/index.jsp).

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| http://images.magnetmail.net/images/clients/ACS/041812AnaChem_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487824&m=1892890&u=ACS&j=9908331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/041812anachem.jpg) for high-resolution image |

ARTICLE #4 **FOR IMMEDIATE RELEASE**“Caffeine in Your Drink: Natural or Synthetic?”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487825&m=1892890&u=ACS&j=9908331&s=http://pubs.acs.org/stoken/presspac/presspac/abs/10.1021/ac203197d)CONTACT:Maik A. Jochmann, Ph.D.University of Duisburg-EssenEssen, GermanyPhone: +49-0-201-6775Fax: +49-0-201-6773E-mail: maik.jochmann@uni-due.de**\* A previous PressPac item that you may have missed**   [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #5 **FOR IMMEDIATE RELEASE****Not by DNA alone: How the epigenetics revolution is fostering new medicines**Chemical & Engineering News

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| http://images.magnetmail.net/images/clients/ACS/041812CEN_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487826&m=1892890&u=ACS&j=9908331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/041812cen.jpg) for high-resolution image. |

Scientific insights that expand on the teachings of Mendel, Watson and Crick, and underpinnings of the Human Genome Project are moving drug companies along the path to development of new medicines based on deeper insights into how factors other than the genetic code influence health and disease. That’s the topic of the cover story in the current edition of Chemical & Engineering News (C&EN), the weekly newsmagazine of the American Chemical Society (ACS), the world’s largest scientific society.The article, by C&EN Senior Editor Lisa M. Jarvis, focuses on the quiet revolution — in epigenetics — that has been sweeping through biology, chemistry and other scientific fields for the last several years. It explains how scientists initially believed that cracking the genetic code, achieved a decade ago, would lay out a straight path for inventing new medicines: Identify the genetic mutation behind a disease and then find a drug that overcomes it. But scientists now know that another layer of biochemical controls, an epigenetics layer, influences how and when genes work in health and disease without changing DNA itself. Early epigenetics research already produced four drugs currently approved to treat blood cancer. But these treatments lack selectivity, limiting their effectiveness.Now, Jarvis explains, companies like GlaxoSmithKline, Epizyme and Constellation Pharmaceuticals are moving ahead to develop the next generation of epigenetic drugs, particularly for cancer. Armed with a better understanding of how specific epigenetic enzymes are implicated in disease, they are designing compounds to block the activity of those enzymes. The article describes GSK’s announcement earlier this month of an epigenetic inhibitor it has developed that might fight lymphoma. “Although no one will know the value of the new epigenetic compounds until they are tested in humans, scientists are confident that the field is moving forward with the right balance of caution and enthusiasm,” Jarvis concludes.ARTICLE #5 **FOR IMMEDIATE RELEASE**"Controlling the Code"This story is available at: [http://cenm.ag/epigenetics](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487828&m=1892890&u=ACS&j=9908331&s=http://cenm.ag/epigenetics)  [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif **Journalists’ Resources****Press releases, briefings and more from ACS’ 243rd National Meeting**[www.eurekalert.org/acsmeet.php](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487829&m=1892890&u=ACS&j=9908331&s=http://www.eurekalert.org/acsmeet.php) [http://www.ustream.tv/channel/acslive](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487830&m=1892890&u=ACS&j=9908331&s=http://www.ustream.tv/channel/acslive%20) **Inside Science News Service**For thoroughly enjoyable multimedia coverage of the science behind the news — a valuable resource for journalists and news media organizations everywhere. [Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487831&m=1892890&u=ACS&j=9908331&s=http://www.insidescience.org/) to visit the Inside Science News website.**C&EN Video Spotlight: 3-D printing goes viral**Sriram Subramaniam, Ph.D., keeps a curio collection of sorts on top of a file cabinet in his office. It's packed with three-dimensional replicas of viruses and proteins implicated in diseases, including influenza and HIV. They're made with a technology called 3-D printing, which makes 3-D objects from a digital image in a way that's akin to printing images on a piece of paper. The technology is already used in the medical and dental, footwear and jewelry industries. Subramaniam, a biophysicist, and his colleagues learn more about how diseases are transmitted with these "touchable science" tools at the newly-created Living Lab, a collaboration between the National Institutes of Health and instrument maker FEI.[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487832&m=1892890&u=ACS&j=9908331&s=http://www.youtube.com/watch?v=wStbqKU9Dmc&feature=youtu.be) to watch Dr. Subramaniam show off some of the proteins and viruses his group has made.**Must-reads from C&EN: “First-Time Disclosures”**Potential drugs for hepatitis, migraine, cancer and type 2 diabetes captivated a large audience at this traditional session at the American Chemical Society’s 243rd National Meeting & Exposition. For the run-down and stories behind their discovery, contact Michael Bernstein at m\_bernstein@acs.org.**ACS Pressroom Blog** The ACS Office of Public Affairs' [pressroom blog](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487833&m=1892890&u=ACS&j=9908331&s=http://www.acspressblog.com) highlights research from ACS’ more than 40 peer-reviewed journals and National Meetings. **Bytesize Science Blog** Educators and kids, put on your thinking caps: The American Chemical Society has [a blog for Bytesize Science](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487834&m=1892890&u=ACS&j=9908331&s=http://www.bytesizescience.com), a science podcast for kids of all ages.  **ACS Satellite Pressroom: Daily news blasts on Twitter** The satellite press room has become one of the most popular science news sites on Twitter. 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Then visit [http://twitter.com/ACSpressroom](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487836&m=1892890&u=ACS&j=9908331&s=http://twitter.com/ACSpressroom) and click the ‘join’ button beneath the press room logo. **C&EN on Twitter**Follow @cenmag <[http://twitter.com/cenmag](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487837&m=1892890&u=ACS&j=9908331&s=http://twitter.com/cenmag)> for the latest news in chemistry and dispatches from C&EN's blog, CENtral Science <[http://centralscience.org](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487838&m=1892890&u=ACS&j=9908331&s=http://centralscience.org)>.**ACS Press Releases** [Press releases](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487839&m=1892890&u=ACS&j=9908331&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_NEWSRELEASES&node_id=222&use_sec=false&sec_url_var=region1&__uuid=50b5ab93-801d-4d0d-868f-b9507ff9d709) on a variety of chemistry-related topics.[To Top](#top)http://images.magnetmail.net/images/clients/acs/goldline.gif**ACS Videos**The American Chemical Society encourages news organizations, museums, educational organizations and other web sites to embed links to these videos.**Spellbound: How Kids Became Scientists**

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| http://images.magnetmail.net/images/clients/ACS/Spellbound3.jpg |

The road to a Nobel Prize began for one scientist in elementary school when his father placed a sign on his bedroom door proclaiming him to be a “doctor.” This is just one of the many experiences that helped launch the careers of scientists from diverse backgrounds who are featured in a new ACS video series called [Spellbound: How Kids Became Scientists](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487840&m=1892890&u=ACS&j=9908331&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=1355&content_id=CNBP_028033&use_sec=true&sec_url_var=region1&__uuid=e8e6ee76-0abe-4e78-84c4-3717c995c65e). **Prized Science video series**

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Prized Science: How the Science Behind ACS Awards Impacts Your Life video series is new for 2011! In the first episode, see how Ahmed Zewail, Ph.D., developed a technology that's paving the way for new medicines, new fuels and new materials that will give people longer, healthier, happier lives. Zewail is the winner of the 2011 Priestley Medal. The second episode features the work of David Craik, Ph.D., who made advances toward new drugs for treating health problems that affect millions of people around the world, including antibiotic-resistant bacteria and AIDS. Craik is the winner of the ACS 2011 Ralph F. Hirschmann Award in Peptide Chemistry, sponsored by Merck Research Laboratories. More episodes will appear later in the year. The series is available at the [Prized Science](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487841&m=1892890&u=ACS&j=9908331&s=http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=446&content_id=CTD1_018821&use_sec=true&sec_url_var=region1&__uuid=594bce97-0b05-4df7-b759-1a0f9156c5d8) website and on DVD. **First Living, Dancing Periodic Table of the Elements**

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That famous chart displaying the chemical elements that make up everything on Earth — a fixture on the walls of classrooms and labs — literally comes alive in this new video from the American Chemical Society (ACS). [Chemists Can Dance!](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487842&m=1892890&u=ACS&j=9908331&s=http://bytesizescience.com/index.cfm/2011/3/29/The-Chemistry-Dance) features scores of chemists wearing symbols representing the elements, kicking up their heels to the tune of an original rap song. It's all part of ACS' celebration of the International Year of Chemistry. Check out the fun and share the link.**A Day Without Chemistry** Imagine a day without cars, electric lights, TV, telephones, safe food and water, medicine, clothing, your house and thousands of other familiar objects that make up modern society. Do it, and you are imagining a day in a world without chemistry. ACS explores that thought-provoking premise in a new high-definition video released as part of the celebration of the International Year of Chemistry. [A Day Without Chemistry](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487843&m=1892890&u=ACS&j=9908331&s=http://www.youtube.com/watch?v=AbfW_CMMe48) follows a person who sees more and more everyday necessities and conveniences disappear before his widening eyes.[The Chemistry of Sourdough Bread](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487844&m=1892890&u=ACS&j=9908331&s=http://www.bytesizescience.com/index.cfm/2010/9/27/Chemistry-of-Sourdough)[The Chemistry of Fireworks](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487845&m=1892890&u=ACS&j=9908331&s=http://www.bytesizescience.com/index.cfm/2010/6/25/Bytesize-Science-Presents-The-Chemistry-of-Fireworks)[The Chemistry of Grilling and Barbecuing](http://www.mmsend88.com/link.cfm?r=800557068&sid=18487846&m=1892890&u=ACS&j=9908331&s=http://www.bytesizescience.com/index.cfm/2010/6/15/Chemistry-of-Barbeque) [To Top](#top)  http://images.magnetmail.net/images/clients/ACS/goldline.gif**ACS Podcasts**

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