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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/121912Bread_thumb(1).jpgIn the future, pills could allow celiac disease sufferers to eat gluten in breads, pastries and other grain products.Credit: iStockphoto/Thinkstock |

Scientists are reporting an advance toward development of a pill that could become celiac disease’s counterpart to the lactase pills that people with lactose intolerance can take to eat dairy products without risking digestive upsets. They describe the approach, which involves an enzyme that breaks down the gluten that causes celiac symptoms, in the Journal of the American Chemical Society.Justin Siegel, Ingrid Swanson Pultz and colleagues explain that celiac disease is an autoimmune disorder in which the gluten in wheat, rye or barley products causes inflammation in the digestive tract. Enzymes in the stomach break down gluten into smaller pieces, called peptides. For most people, these peptides are harmless. But for the 2 million-3 million Americans with celiac disease, the peptides trigger an autoimmune response and painful symptoms. Currently, the only treatment is a gluten-free diet. However, the scientists reasoned that if an enzyme could further break down the offending peptides in the stomach, celiac patients might be able to eat gluten-containing foods.They describe discovery of a naturally occurring enzyme that has some of the ideal properties for doing so. The scientists modified the enzyme in the laboratory so that it would meet all the necessary criteria. The new enzyme (called KumaMax) broke down more than 95 percent of a gluten peptide implicated in celiac disease in acidic conditions like those in the stomach. “These combined properties make the engineered [enzyme] a promising candidate as an oral therapeutic for celiac disease,” say the researchers.The authors acknowledge funding from the [Howard Hughes Medical Institute](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890674&m=2421452&u=ACS&j=12391331&s=http://www.hhmi.org/) and the [Defense Advanced Research Projects Agency](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890675&m=2421452&u=ACS&j=12391331&s=http://www.darpa.mil/).

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| http://images.magnetmail.net/images/clients/ACS/121912JACS_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=21945212&m=2421452&u=ACS&j=12391331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/121912jacs.jpg) for high-resolution image |

ARTICLE #1 **FOR IMMEDIATE RELEASE**“Computational Design of an α-Gliadin Peptidase”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890676&m=2421452&u=ACS&j=12391331&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/ja3094795) CONTACT:Justin B. Siegel, Ph.D.University of WashingtonSeattle, Wash. 98195University of California, DavisDavis, Calif. 95616Email: jbsiegel@ucdavis.edu [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #2 **FOR IMMEDIATE RELEASE****A new, super-nutritious puffed rice for breakfast cereals and snacks**Journal of Agricultural and Food Chemistry

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| http://images.magnetmail.net/images/clients/ACS/121912Rice_thumb.jpgA new way to blow up grains could make a form of puffed rice loaded with protein and other nutrients.[*Click here*](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890677&m=2421452&u=ACS&j=12391331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/121912rice.jpg) for high-resolution image.Credit: American Chemical Society |

A new process for blowing up grains of rice produces a super-nutritious form of puffed rice, with three times more protein and a rich endowment of other nutrients that make it ideal for breakfast cereals, snack foods and nutrient bars for school lunch programs, scientists are reporting. Their study appears in ACS’ Journal of Agricultural and Food Chemistry. Syed S.H. Rizvi and colleagues explain that commercial puffed rice is made by steam extrusion. An extruder squeezes rice flour mixed with water through a narrow opening at high temperature and pressure. On exiting the nozzle, the rice puffs up as steam expands and escapes. The process, however, can destroy heat-sensitive nutrients. The scientists looked for a way to avoid that loss and enrich rice with protein and other nutrients during the puffing process. They turned to a process that uses supercritical carbon dioxide, which has been used for making decaffeinated coffee and in other applications.The scientists describe using the process to make puffed rice with three times more protein and eight times more dietary fiber than commercial puffed rice. It also contains calcium, iron, zinc and other nutrients that conventional puffed rice lacks. Their puffed rice was crispier than commercial products, giving it a better taste and crunch. The new rice is “ideally suited for consumption as breakfast cereals, snack food and as part of nutrition bars for school lunch programs,” the report states. “The balanced nutritional profile and use of staple crop byproducts such as broken rice makes these expanded crisps unique to the marketplace.”

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| http://images.magnetmail.net/images/clients/ACS/121912JAGF_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=21945213&m=2421452&u=ACS&j=12391331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/121912jagf.jpg) for high-resolution image |

ARTICLE #2 **FOR IMMEDIATE RELEASE**“Micronutrient and Protein-Fortified Whole Grain Puffed Rice Made by Supercritical Fluid Extrusion”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890678&m=2421452&u=ACS&j=12391331&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/jf3034804)CONTACT:Syed S.H. Rizvi, Ph.D.Cornell UniversityIthaca, N.Y. 14853Phone: 607-255-7913Fax: 607-255-7913Email: ssr3@cornell.edu [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gifARTICLE #3 **FOR IMMEDIATE RELEASESustainable way to make a prized fragrance ingredient**Journal of the American Chemical Society

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| http://images.magnetmail.net/images/clients/ACS/121912Perfume_thumb.jpgBacteria could make a sustainable alternative to a prized natural ingredient in many perfumes.Credit: Stockbyte/Thinkstock |

Large amounts of a substitute for one of the world’s most treasured fragrance ingredients — a substance that also has potential anti-cancer activity — could be produced with a sustainable new technology, scientists are reporting. Published in the Journal of the American Chemical Society, the advance enables cultures of bacteria to produce a substitute for natural ambergris, which sells for hundreds of dollars an ounce.Laurent Daviet, Michel Schalk and colleagues explain that ambergris, a waxy substance excreted by sperm whales, has been prized as a fragrance ingredient for centuries. Ambergris has a pleasant sweet and earthy scent of its own, and it enhances other scents in high-end perfumes. With sperm whales an endangered species, and natural ambergris not used in perfumes in the U.S., perfume makers have turned to substitutes. One is made from sclareol, obtained from the Clary sage plant. But the plant contains only small amounts of sclareol, and it is laborious to extract and purify. That’s why the scientists looked for a better way of making large amounts of sclareol.Their report describes isolating the genetic material (DNA) that produces the two Clary sage enzymes needed to make sclareol. They put the DNA into bacteria, which made large amounts of sclareol in bioreactors.

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| http://images.magnetmail.net/images/clients/ACS/121912JACS_thumb(1).jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=21945214&m=2421452&u=ACS&j=12391331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/121912jacs.jpg) for high-resolution image |

ARTICLE #3 **FOR IMMEDIATE RELEASE**“Toward a Biosynthetic Route to Sclareol and Amber Odorants”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890680&m=2421452&u=ACS&j=12391331&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/ja307404u)CONTACT:Laurent Daviet, Ph.D.FIRMENICH SAGeneva CH-1211SwitzerlandEmail: Laurent.Daviet@firmenich.comorMichel Schalk, Ph.D.FIRMENICH SAGeneva CH-1211SwitzerlandEmail: Michel.Schalk@firmenich.com [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif ARTICLE #4 **FOR IMMEDIATE RELEASE: A PressPac Instant Replay\*****Hagfish slime as a model for tomorrow’s natural fabrics**Biomacromolecules

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| http://images.magnetmail.net/images/clients/ACS/112812Hagfish_thumb(1).jpgSlime from hagfish, above, could be a model for tomorrow’s natural fabrics.[*Click here*](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890681&m=2421452&u=ACS&j=12391331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/112812hagfish.jpg) for high-resolution image.Credit: Stacia Stower; National Science Foundation funding |

Nylon, Kevlar and other synthetic fabrics: Step aside. If new scientific research pans out, people may be sporting shirts, blouses and other garments made from fibers modeled after those in the icky, super-strong slime from a creature called the hagfish. The study appears in ACS’ journal Biomacromolecules.Lead author Atsuko Negishi, her supervisor Douglas S. Fudge and colleagues explain that petroleum is the raw material for making modern synthetics. Rising prices and the quest for more sustainable alternatives have led scientists to consider the possibilities of using protein-based raw materials, such as spider silk. Another candidate comes from the hagfish, an eel-like fish that produces a thick slime to protect itself against predators. A single Atlantic Hagfish can produce quarts of slime in seconds. It clogs the gills and may suffocate other fish. The slime consists of tens of thousands of remarkably strong threads, each 100 times thinner than a human hair. The scientists set out to investigate spinning spider-silk-like fibers from the proteins of these slime threads.They developed a method for drawing hagfish slime thread proteins into fibers comparable to lab-made spider silk. It involved casting a thin self-supporting film of thread proteins on the surface of a salt solution, then grabbing it with forceps and lifting it upwards so it collapses into a single strand. The threads in hagfish slime, they indicate, might be models for synthetic fibers made from renewable, naturally occurring proteins.The authors acknowledge funding from the [Advanced Foods and Materials Network](http://www.mmsend88.com/link.cfm?r=800557068&sid=21930264&m=2421452&u=ACS&j=12391331&s=http://www.afmcanada.ca/) and the [Ontario Ministry of Economic Development and Innovation](http://www.mmsend88.com/link.cfm?r=800557068&sid=21930265&m=2421452&u=ACS&j=12391331&s=http://www.mri.gov.on.ca/english/programs/era/program.asp).

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| http://images.magnetmail.net/images/clients/ACS/121912BM_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=21945215&m=2421452&u=ACS&j=12391331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/121912bm.jpg) for high-resolution image |

ARTICLE #4 **FOR IMMEDIATE RELEASE**“The Production of Fibers and Films from Solubilized Hagfish Slime Thread Proteins”[DOWNLOAD FULL TEXT ARTICLE](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890685&m=2421452&u=ACS&j=12391331&s=http://pubs.acs.org/stoken/presspac/presspac/full/10.1021/bm3011837)CONTACT:Douglas S. Fudge, Ph.D.University of GuelphGuelph, Ontario CanadaPhone: 519-824-4120, ext. 56418 Fax: 519-767-1656 E-mail: dfudge@uoguelph.ca**\* 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****Wine and tea are key ingredients in South African plan to grow domestic research**Chemical & Engineering News

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| http://images.magnetmail.net/images/clients/ACS/121912CEN_thumb.jpg[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=21945216&m=2421452&u=ACS&j=12391331&s=http://web.1.c2.audiovideoweb.com/1c2web3536/121912cen.jpg) for high-resolution image. |

The South African government is investing in scientific research to foster production of agricultural products like pinotage (the country’s signature red wine) and honeybush (source of a tea so fragrant that a potful can perfume an entire house) to create jobs and boost the economy. That effort and others aimed at developing a globally competitive research enterprise are the topics of cover stories in the current issue of Chemical & Engineering News (C&EN), the weekly newsmagazine of the American Chemical Society, the world’s largest scientific society.Britt E. Erickson, C&EN senior editor, explains that South Africa currently lags in science, accounting for less than 0.5 percent of the world’s research output. South Africa, however, has growth potential in a number of areas, including mining, agriculture, pharmaceuticals and astrophysics. The nation has struggled to maintain its research and development funding, which is currently less than 1 percent of the country’s gross domestic product — compared to 2.7 percent in the U.S. South Africa’s minister of science and technology is looking for smart ways to encourage scientific research, and agriculture is one sector showing promise.The wine industry is working with the government to fund scientific research about consumers’ tastes and preferences, Erickson reports. To help growers and winemakers improve their products, researchers are using advanced analytical methods to identify the roughly 1,000 compounds that give wines their flavor and smell. Government scientists are also working to extract valuable antioxidant, anti-diabetes and antimicrobial compounds from the honeybush plant. Other researchers are trying to cultivate the plant to boost tea production, which already struggles to keep up with global demand. ARTICLE #5 **FOR IMMEDIATE RELEASE**These stories are available at:“Scaling Up Science In South Africa”[http://cenm.ag/southafrica](http://www.mmsend88.com/link.cfm?r=800557068&sid=21945217&m=2421452&u=ACS&j=12391331&s=http://cenm.ag/southafrica)“Making Premium Wine And Tea”[http://cenm.ag/premiumtea](http://www.mmsend88.com/link.cfm?r=800557068&sid=21945218&m=2421452&u=ACS&j=12391331&s=http://cenm.ag/premiumtea)  [To Top](#top)http://images.magnetmail.net/images/clients/ACS/goldline.gif **Journalists’ Resources****About the Weekly PressPac**The ACS Weekly PressPac consists of summaries of research published in the American Chemical Society’s more than 40 peer-reviewed journals and its weekly newsmagazine, Chemical & Engineering News. ACS journals publish more than 35,000 articles annually. Although not traditional press releases, PressPac content can be used to prepare news stories, in conjunction with the full-text PDF and an interview with the authors. PressPac stories and the accompanying full-text PDFs also can be an excellent resource for features and background.**Press releases, briefings and more from ACS’ 244th National Meeting**[www.eurekalert.org/acsmeet.php](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890687&m=2421452&u=ACS&j=12391331&s=http://www.eurekalert.org/acsmeet.php) [http://www.ustream.tv/channel/acslive](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890688&m=2421452&u=ACS&j=12391331&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=21890689&m=2421452&u=ACS&j=12391331&s=http://www.insidescience.org/) to visit the Inside Science News website.**C&EN Video Spotlight: Panda Power**The search for better biofuels is leaving no patch of grass unturned — Mississippi State University researchers are studying the poo that pandas at the Memphis Zoo leave behind. Pandas are among several critters that digest a tough-to-break-down compound called cellulose, which is found in plant cell walls. Microbes living in pandas’ guts help carry out that degradation process. Since the microbes end up in panda poo, researchers can analyze the poo to find the microbial genes that do the digesting job. By harnessing these genes, researchers hope to someday make biofuels more efficiently from plants such as switchgrass and sugarcane.[Click here](http://www.mmsend88.com/link.cfm?r=800557068&sid=21946775&m=2421452&u=ACS&j=12391331&s=http://cen.acs.org/articles/90/i49/Make-Better-Biofuels-Scientists-Mine.html) to read the article and view the video.**Must-Read from C&EN: Beer with a Truly Quirky Ingredient**Student researchers in Germany have genetically engineered beer-brewing yeast to manufacture caffeine, opening the door to boutique brews with a built-in caffeine kick that people might quaff without getting drowsy. For the full story, contact newsroom@acs.org. **ACS Pressroom Blog** The ACS Office of Public Affairs' [pressroom blog](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890690&m=2421452&u=ACS&j=12391331&s=https://communities.acs.org/community/science/science_news) 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=21890691&m=2421452&u=ACS&j=12391331&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. To get our news blasts and updates, create a free account at [https://twitter.com/signup](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890692&m=2421452&u=ACS&j=12391331&s=https://twitter.com/signup). Then visit [http://twitter.com/ACSpressroom](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890693&m=2421452&u=ACS&j=12391331&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=21890694&m=2421452&u=ACS&j=12391331&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=21890695&m=2421452&u=ACS&j=12391331&s=http://centralscience.org)>.**ACS Press Releases** [Press releases](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890696&m=2421452&u=ACS&j=12391331&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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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=21890697&m=2421452&u=ACS&j=12391331&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 2012! The first episode features the research of Dr. Robert Langer, winner of the 2012 ACS Priestley Medal. He is a professor at the Massachusetts Institute of Technology. The Priestley Medal is the highest honor of the ACS, and it recognizes Langer’s pioneering work making body tissues in the lab by growing cells on special pieces of plastic. Langer’s team has used the approach to make skin for burn patients, for instance, with the goal of eventually making whole organs for transplantation. The second episode features Dr. Chad Mirkin, winner of the 2012 ACS Award for Creative Invention. His research has provided patients with faster diagnoses for influenza and other respiratory infections, and new tests that improve care for heart disease. 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=21890698&m=2421452&u=ACS&j=12391331&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. **The Periodic Table Table Featuring Theo Gray**

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Some people collect stamps. Wolfram Research co-founder and author Theo Gray collects elements. Step into his office, and you'll see a silicon disc engraved with Homer Simpson, a jar of mercury, uranium shells and hundreds of other chemical artifacts. But his real DIY masterpiece is the world's first ["periodic table table."](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890699&m=2421452&u=ACS&j=12391331&s=http://www.bytesizescience.com/index.cfm/2012/2/22/The-Periodic-Table-Table-Featuring-Theo-Gray) Within this masterfully constructed table-top lay samples of nearly every element known to man, minus the super-radioactive ones.**Healing the voice: Synthetic vocal cords**

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[Synthetic vocal cords](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890700&m=2421452&u=ACS&j=12391331&s=http://www.bytesizescience.com/index.cfm/2012/5/22/Bytesize-Science-Healing-the-voice-with-synthetic-vocal-cords%20) may someday heal the voices of singers like Julie Andrews -- whose legendary voice was permanently damaged in a 1997 operation. Filmed in the lab of 2012 ACS Priestley Medalist and MIT Institute Professor Robert Langer, our latest video explains how artificial polymer vocal cords may help repair damaged vocal tissue.[The Chemistry of Beer](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890701&m=2421452&u=ACS&j=12391331&s=http://youtu.be/2xKpQ11CpVE)[The Chemistry of Cheese](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890702&m=2421452&u=ACS&j=12391331&s=http://youtu.be/jMAlToEYHJM)[Without a scratch: Self-Healing Materials](http://www.mmsend88.com/link.cfm?r=800557068&sid=21890703&m=2421452&u=ACS&j=12391331&s=http://youtu.be/Bx3WTSSD5f0) [To Top](#top)  http://images.magnetmail.net/images/clients/ACS/goldline.gif**ACS Podcasts**

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