



# Rice-Gene Scientist Sharing Success With Poor Nations

David Perlman, Chronicle Science Editor Published 4:00 am, Monday, May 26, 1997



**Pamela Ronald**, a molecular biologist with an active conscience and a talent for juggling the genes in plants, has given the Western world an imaginative push toward dealing more fairly with undeveloped nations.

For decades, industrialized nations have sent their scientists foraging through the fields and forests of Africa, Asia and Latin America in search of exotic plants that might prove useful for medicine and agriculture.

Native healers and farmers have long shared their traditional knowledge, which in scientific hands yielded new drugs and improved crops. Only recently have developing countries begun to seek to share the wealth that development of their natural resources can yield.

### MOST POPULAR

- 1 Mother Nature to drop a 'bombogenesis' on California Friday night
- 2 Twitter reacts to Trump's wild press conference
- 3 Lake Berryessa's Glory Hole on verge of spilling over for...

This is an issue that Ronald, a 36-year-old associate professor of plant pathology at the **University** of California at Davis, has thought a lot about. Her husband is an organic farmer in the fertile Sacramento Valley near the Davis campus, so she knows the chancy nature of cultivating crops where pests and disease can ruin an entire growing season.

"Even when I was a graduate student in Berkeley," she said, "I was aware that plant people can take as long as 10 or 15 years to breed crops to withstand even a single disease. And I also knew that

many of the plant varieties the seed companies use to develop better hybrids come from **Third World** countries.

"Yet farmers in those countries hardly ever see any return for their contributions, while the scientific plant breeders can patent their new hybrid varieties and profit from them."

So four years ago, when Ronald set up her laboratory at Davis to clone plant genes, she knew what her goal would be. She would focus on genes that would help increase food production, renew the genetic diversity of crops and reduce the use of pesticides and herbicides.

"When you clone a gene," Ronald said, "it becomes 'intellectual property' and you can patent it. But ownership of a patented gene -- or an entire plant -- is problematical, and to me, working on the genes of crop plants, it seemed pretty natural to ask myself what that should mean. It ought to mean getting a share in the ownership for everyone involved, including the people of the countries where the genes come from."

Nearly two years ago, Ronald and her colleagues had a chance to put her ideals into practice. They succeeded in isolating a single gene from a variety of rice plants that endows them with resistance to a devastating plant disease called bacterial leaf blight, which is caused by a bacterium called Xanthomonas

orizae.

Rice is the staple food for people in the developing world, and at least half of the world's rice crop is lost every year to attacks by bacteria, fungi and viruses. Pesticides -- which are often too costly for farmers -- lose their effectiveness as their use increases.

Ronald isolated the blight-resistance gene from a rice variety that is cultivated in the **West African** country of Mali. This was a remarkable achievement in genetic engineering considering that scientists at the **International Rice Research Institute** in the Philippines had been studying its genetics for 20 years.

When Ronald and her laboratory colleagues showed that the blight-resistance gene could be engineered into other varieties of rice so that all their offspring would inherit resistance to the blight, they knew they had made a valuable discovery.

UC officials quickly patented the gene as intellectual property, and began negotiations to license the discovery to American seed companies that hope to market the newly resistant rice seeds worldwide. Under established UC policies, royalties from the licenses would be shared among the university, the chancellor of the Davis campus, and the "inventors" -- meaning Ronald and her colleagues.

But with guidance from **John Barton**, a law professor at **Stanford University** with a long-standing interest in legal problems involving intellectual property rights and developing countries, Ronald pursued a novel idea: The royalty money that might be earned, she reasoned, should be shared with the people of Mali who were the original source of her rice gene.

So Ronald persuaded UC negotiators and Davis chancellor **Larry N. Vanderhoef**, a plant biochemist, to agree that a share of any royalty payments going to Davis from the seed companies would create new fellowships at Davis for scientists from Mali and perhaps from other West African countries. The companies licensed by UC would also contribute directly to the Davis fellowship fund under the licensing agreements.

And after their training, the African scientists would then carry their new knowledge and skills back to benefit their nations with advanced agricultural science.

Negotiations with two international seed companies are now complete, according to **Candace Voelker** of UC's technology transfer office, and two more are in the works. Names of the companies are not disclosed because they remain "proprietary," Voelker said, and so are the amounts of their up-front payments to the university.

As "inventors" of the rice gene, Ronald and her colleagues are putting their share into the fund, and the early fellowship money for West African students should total about \$250,000 -- enough to finance about 10 students, she said.

Meanwhile, Ronald is working to clone another gene that gives rice plants resistance against a disastrous fungal disease called "blast." When that is completed, Ronald said, she expects to join UC licensing negotiators to require a different method of royalty payments that should eventually yield more money and bring more scientists to Davis from other African countries as well as India and the Philippines.

Improving developing countries' farm crops through biotechnology is now a major effort among gene-splicers in academic labs nationwide. This summer, Ronald is planning a campaign to get her colleagues to follow her lead in assuring that the developing nations share in benefits from the enterprise.

"It seems really obvious that this is the right thing to do," Ronald said.

---

## SPONSORED CONTENT



**The West Wing, Breaking Bad: The Most Watched TV Series Finales**  
PrettyFamous | By Graphiq



**America's Most Common Baby Names Since 1915**  
MooseRoots | By Graphiq



**The Happiest Countries: the U.S. Isn't Even in the Top 10**  
country-



**The Best Dogs for Country Living**  
PetBreeds | By Graphiq

## SPONSORED CONTENT

**25 Dog Breeds Associated With Health Issues** PetBreeds | By Graphiq

**The Best Christmas Movies to Watch Online This Winter** PrettyFamous

**People Are Naming Their Babies After These 28 Animals** MooseRoots | By Graphiq

**Ranking the Best NBA MVP Seasons Ever** PointAfter | By Graphiq

**These Are the Highest-Paid CEOs Under 40** FindTheCompany

## MORE FROM SFGATE

**'Opening salvo': Trump's policy toward Venezuela may be taking a hardline turn**

**The Utah Jazz perfectly captured the NBA's positional revolution with a stellar defensive sequence**

**Sign Up for The Piglet Bulletin for Exclusive Recipes from Winning Cookbooks**

**Trump Asks Black Reporter About Congressional Black Caucus: 'Are They Friends of Yours?' (Video)**

**Epic 'Planet Earth II' offers creatures'-eye view of nature**

**Lamborghini's Urus SUV will be a major game-changer for the company — here's why**

**TRUMP: It's in our interest to get along with Russia because 'nuclear holocaust would be like no other'**

Recommended by outbrain

## Latest from the SFGATE homepage:

Click below for the top news from around the Bay Area and beyond. Sign up for our newsletters to be the first to learn about breaking news and more. Go to 'Sign In' and 'Manage Profile' at the top of the page.

## TRUMP PRESS CONFERENCE

Looks like Hillary and Barack are watching the [#TrumpPressConference](#) too.



### Twitter reacts to Trump's wild press conference

[Quotes from Trump's surreal press conference](#)

[President's PAC emails 'media accountability survey'](#)

[Trump says White House 'fine-tuned machine,' despite turmoil](#)

[Black lawmakers dismayed by Trump's invite to black reporter](#)

[Fact check: Trump's messy case that he inherited a mess](#)

[Full transcript: Trump's news conference](#)

## LATEST NEWS

[Map shows where NorCal's hate groups are](#)

[Armed bandit wearing mask robs Pacifica Safeway](#)

[SF pet stores can no longer sell non-rescue animals](#)

[Here's what's in the \\$100K Oscars swag bag](#)

['Day Without A Woman' strike gets a date](#)

[Groups work to blanket SF with fast, affordable Internet](#)

[Suspect in fatal SF shooting arrested in less than 24 hours](#)

Tiffany Trump thanks Whoopi Goldberg for defending her



### 'Ashamed' store owner who voted for Trump closes for protest

- Local eateries join today's protest
- Bay Area restaurants, firms closed for #DayWithoutImmigrants
- 'Day Without Immigrants' protests being held across US



### 'Weather bomb' forecast to hit California Friday night

- Bay Area storm causes flooding, spinouts



### Lake Berryessa hole to spill over for first time in 10 years

- Snow quickly covering highways into the Sierra

### Where to find rare beauty hiding behind raindrops in area parks

- Weekender: 48 hours in a Big Sur Resort



**TODAY'S TOP PICKS**



**What Golden Gate Park looked like the decade you were born**



Stores that have dropped Ivanka Trump's products



Why celebs' political statements don't mean much

**TRENDING NOW**



**They're Here! The 2017 Piglet Community Picks (Food)**



**Hello? Is That You, Deep Dish Pizza? (Food)**

**LIVERMORE LINCOLN'S PRESIDENT'S DAY SALES EVENT**  
**2016 LINCOLN MKX RESERVE SUV**  
**0% APR FOR 60 MONTHS PLUS UP TO \$7,800 OFF**

\$61,790 MSRP  
 -\$4,300 LIVERMORE LINCOLN SAVINGS  
 -\$1,500 BONUS CASH  
 -\$1,000 TRADE-IN BONUS CASH  
 -\$1,000 BONUS CERTIFICATE CASH

**\$53,990 NET COST • (\$7,800 IN SAVINGS) [MORE INFO](#)**

Offer includes dealer discount of \$4,300 + \$1,500 Premium Bonus Cash (PGM #11639) + \$1,000 Winter Bonus Certificate (PGM # #71879) + \$1,000 Trade In Assist Bonus Cash. Not all buyers will qualify for Lincoln AFS financing. 0% APR financing for 60 months at \$16.67 per month per \$1,000 financed regardless of down payment (PGM #20407). Residency restrictions apply. For all offers, take new retail delivery from dealer stock by 2/29/17. See dealer for qualifications and complete details.

**SPONSORED CONTENT**



**These 50 Are the Most Unreliable Quarterbacks of...**  
 PointAfter | By Graphiq



**Ranked: The 50 Best Movies in History**  
 PrettyFamous



**40 Baby Names Destined for Doctors**  
 MooseRoots | By Graphiq



**Tech Gadgets Anyone Would Be Happy to Find in...**  
 SpecOut



**31 Beautiful, But Inexpensive, Dog Breeds**  
 PetBreeds | By Graphiq

Recommended by **Outbrain**

San Francisco Chronicle  
MEMBERSHIP  
**MEMBERSHIP  
HAS ITS PERKS**  
LEARN MORE!



SF Chronicle Newsroom Tour



SF MO MA  
SFMOMA



SAN FRANCISCO  
OPERA  
San Francisco Opera

## MOST POPULAR

- 1 Twitter reacts to Trump's wild press conference
- 2 Lake Berryessa's Glory Hole on verge of spilling over for...
- 3 Bay Area businesses and restaurants that will be closed for...
- 4 Wild moments: Quotes from Donald Trump's press conference
- 5 Mother Nature to drop a 'bombogenesis' on California Friday night
- 6 'I am ashamed' — Store owner who voted for Trump closes...
- 7 'Nothing to see here': Time magazine's illustrated cover...
- 8 Bay Area restaurants joining the #DayWithoutImmigrants protest...
- 9 Police find pet squirrel tried to fight off burglar
- 10 Thimble tossed! Game piece voted out of Monopoly board game

## LATEST NEWS

Map shows where NorCal's hate groups are

Armed bandit wearing mask robs Pacifica Safeway

SF pet stores can no longer sell non-rescue animals

Here's what's in the \$100K Oscars swag bag

'Day Without A Woman' strike gets a date

Groups work to blanket SF with fast, affordable Internet

Suspect in fatal SF shooting arrested in less than 24 hours

Tiffany Trump thanks Whoopi Goldberg for defending her

# THE CHRONICLE'S VISIONSF



San Francisco Chronicle  
**VISIONSF**  
INSPIRING LEADERSHIP WITH PURPOSE

**Inspiring Leadership with Purpose**  
*Learn about visionary Bay Area business leaders who strive to make the world a better place.*

San Francisco Chronicle  
MEMBERSHIP

**MEMBERSHIP HAS ITS PERKS**

**LEARN MORE!**



SF Chronicle Newsroom Tour



SF MO MA

SFMOHA



SAN FRANCISCO OPERA

San Francisco Opera

**VIEW COMMENTS**