



Home Video News Images Health Education Topics Blogs Daily Orbit Search

Space Science Technology Health General Sci-Fi & Gaming Oddities International Business Education Mars Science Laboratory Curiosity

Home » News » Science » Social Chromosomes Determine How Many Queen Ants Are In Fire Ant Colony

Social Chromosomes Determine How Many Queen Ants Are In Fire Ant Colony

January 17, 2013

8 Like 0 8 0



Image Credit: Photos.com

[Lee Rannals](#) for redOrbit.com – Your Universe Online

Researchers wrote in the journal [Nature](#) that they discovered a social chromosome in fire ants that explain why some colonies allow for more than one queen ant.

Red [fire ants](#) live in two different types of colonies, including some that strictly have a single queen, and others that contain hundreds of queens.

Scientists discovered that this difference in social organization is determined by a chromosome that carries one of two variants of a "supergene" that contains more than 600 individual genes.

The two variants differ in structure, but have evolved similarly to the X and Y [chromosomes](#) that determine the sex of humans. If worker fire ants in a colony carry the B variant, rather than the b, they will accept a single BB queen. However, a colony with worker fire ants that have the b variant will accept multiple Bb queens.

Scientists analyzed the genomes of more than 500 red fire ants during the study to understand why this happens.

"This was a very surprising discovery – similar differences in chromosomal structure are linked to wing patterns in butterflies and to cancer in humans but this is the first supergene ever identified that determines social behavior," co-author Dr Yannick Wurm, from [Queen Mary's](#) School of Biological and Chemical Sciences, said in a statement.

"We now understand that chromosomal variants determine social form in the fire ant and it's possible that special chromosomes also determine fundamental traits such as behaviour in other species," he added.

Young winged queens from both types of colonies emerge for mating flights during the reproductive season and are fertilized by males. Young queens hoping to establish their own single-queen colonies disperse far and wide.

Other young queens join existing multiple-queen colonies close to their maternal colony. The multiple queens cooperating in these colonies are able to produce more workers than are found in a single-queen colony. This makes multiple queen colonies the more successful social form in busy environments.

Red fire ants are native to South America, and were accidentally introduced to the [Southern United States](#) in the 1930s. Since the invasion, the ants have spread to other places in the world, including China and Australia.

So far, efforts to control the spread of this species have largely been unsuccessful, and have earned them the nickname "the invincible," or *Solenopsis invicta* in Latin.

Related Articles

[Ancient Human Predecessors Were Tree-Climbing Bark Eaters](#)
[Vaccine Developed Against Nicotine Addiction](#)
[Alzheimer's Infects Neuron To Neuron](#)
[Google Creates Learning Brain, Turns It Loose On The Internet](#)
[Finding Brings Scientists One Step Closer To Parkinson's Drug](#)
[The Highly Diverse Ant Fauna Of The Philippines](#)
[AntWeb To Catalogue Ant Species In 3D](#)
[Giant Insects Ruled The Sky Until Evolution Of Birds Kicked In](#)
[Parasite Wasps Caught Attacking Ants From The Air](#)
[Native Ants Use Chemical Weapon To Turn Back Invading Argentine Ants](#)

Related Images

[An American locust \(Schistocerca americana\)](#)
[A Brigham Young University \(BYU\) study found that some walking stick species like this](#)
[A male tarantula hawk wasp is marked with acrylic paint as part of research on insect mating](#)
[Wasp Species T. kaykai](#)
[Parasite Manipulation of Host Behavior \(Image 1\)](#)
[Parasite Manipulation of Host Behavior \(Image 8\)](#)
[Male House Finch](#)
[Ancient Crocodile Pakasuchus kapilimai \(Image 1\)](#)
[Winter Weather in Gallatin Canyon](#)
[RootNodule#80936 5.0kX](#)
[RootNodule#80937 33kX](#)
[RootNodule#80938 50kX](#)

Related Videos

[Red Blood Cells Lose Quality After 3 Weeks](#)
[iPhone App For Your Quadcopter Drone...](#)
[Fat Cell Procedure For A More Youthful You](#)
[Flight of the Bumble and Other Bees](#)
[Vying For Termite Throne](#)
[Kollasmosoma Sentum](#)
[How Mosquitoes Survive Raindrops](#)
[Leaf-cutter Ants Put on Quite a Show](#)
[Pygmy Mole Crickets Don't Just Walk on...](#)
[Giant Squid All One Big Happy Family](#)
[iPhone App For Your Quadcopter Drone...](#)
[New Drug Helps Paralyzed Dogs Walk Again](#)

Related Reference Library

[Dwarf Tapeworm, Hymenolepis nana](#)
[Beef Tapeworm, Taenia saginata or...](#)
[Pharynx](#)
[Wasp](#)
[Bumblebee](#)

"Our discovery could help in developing novel pest control strategies. For example, a pesticide could artificially deactivate the genes in the social chromosome and induce social anarchy within the colony," Wurm said.

Source: Lee Rannals for redOrbit.com – Your Universe Online

Topics: Biology, Hymenoptera, Entomology, Zoology, Solenopsis molesta, Myrmicinae, Ant, Fire ant, Red imported fire ant, Queen ant, Solenopsis saevissima, Queen

0 0 0 0 0 0

Inspiring Innovative LOL Amazing Geeky Scary

Recommended For You

- De-Extinction – Are We There Yet?
- Grassroots Series Quiet Desperation Battles Boston's Sudden Influx of Stereotypical Reality Shows
- The Red Planet May Have Once Been Blue: Curiosity Finds More Evidence Of Water
- Amount Of Sleep Linked To Gene Changes
- Whale Skeleton Found At Bottom Of Antarctic Ocean
- Students Flock to Online Dating Platforms
- Boiled Greek Coffee Could Be The Secret To Longevity
- Conscientiousness Linked To Higher College GPA Scores
- First Evidence Of Life Deep Under Oceanic Crust Realized
- Chinese Study Provides Evidence That Early Birds Had Four Wings Instead Of Two

Recommended by

Post a new comment

0 Comments

[RSS](#) | [Subscribe](#)

- Yellowjacket
- Caelifera
- Katydid
- Leafcutter ant
- Dwarf Tapeworm, Hymenolepis nana
- African Sharptooth Catfish, Clarias...
- Amazonian Giant Centipede,...
- Fire ant

Most Recent Blogs

- Big Story Weather – March 21, 2013
- Disney Gone Wild: Threesome
- Gaming Spotlight: Tribal Towers
- Cadillac CTS-V Coupe: Not Just A Luxury Car, A Race Car As Well
- B-52 Bombers And Propaganda Videos
- International Weather Outlook: March 21, 2013
- Iron Maiden Brews A Beer
- Caffeinated Gum For A Quick Energy Fix
- The Other Problems With Origin, Steam And Other Gaming Services
- Samsung's Dumb Scroll

Breaking News

- Space
- Science
- Technology
- Health
- CES 2013
- More...

Streaming Video

- Top Picks
- Science
- Health
- More...

Images and Photos

- Images of the Day
- Image Galleries
- Wallpapers
- More...

Space Exploration

- Astronomy
- Human Spaceflight
- Ask the Astronomer
- Mars Science Laboratory
- More...

Science and Research

- Instruments
- Calculator
- Ask the Scientist
- More...

Technology

- Ask the Expert
- Technology Reviews
- Time Tracking
- More...

My Health

- Health
- More...

Mobile Widgets Advertising About Us Contact Us Privacy Statement Terms of Service Abuse Reporting Search Topics Feeds Jobs Podcasts Follow us on:



© 2002-2013 redOrbit.com. All rights reserved
All other copyrights remain the property of their respective owners