MIT engineers create living calculator from bacteria

MIT engineers have created living calculators by tweaking the genes of bacteria to create analog circuits.

Bacteria (CC/National Institutes of Health)

By KRISTEN BUTLER, UPI.com

MIT engineers have transformed bacterial cells into living calculators that can compute logarithms, divide, and take square roots more efficiently than many existing biocomputers.

While digital circuits classify all values as zeros and ones, analog circuits can handle a continuous range of inputs, allowing for other values. The analog circuits harness the cell's natural biochemical functions, sensing the input of various molecules, such as glucose.

Most synthetic biologists up to now have pursued digital circuits. But digital circuits also require many more parts, which can drain the energy of the cell hosting them, according to Rahul Sarpeshkar and Timothy Lu, the two senior authors on the paper, describing the circuits in the May 15 online edition of Nature.

“You could do a lot of upfront sensing with the analog circuits ... and have that output go into a [digital] circuit that makes a decision -- is this true or not?” says Lu.

The researchers are now trying to create analog circuits in larger nonbacterial cells.
mammalian cells. They are also working on expanding the library of genetic parts that can be incorporated into the circuits.

Sarpeshkar believes the new approach of what he terms "analog synthetic biology" will create a new set of fundamental and applied circuits that can improve the fine control of gene expression, molecular sensing and computation.

Recommended Stories

- Chaz Bono 65 lbs weight loss: I really like what I see
- Suit alleges IRS seized 60 million medical records
- Pizza man used Papa John's job as cover for cocaine delivery, police say
- School board upholds suspension of 31 'twerking' students
- Kai the hitchhiker arrested in homicide investigation
- 'Kai the Hatchet Wielding Hitchhiker' sought for murder

© 2013 United Press International, Inc. All Rights Reserved. Any reproduction, republication, redistribution and/or modification of any UPI content is expressly prohibited without UPI's prior written consent.

Order reprints

Next Story: Amanda Knox ex Raffaele Sollecito speaks out on 'Today'

Trending News

- Lindsay Lohan gaining weight after quitting Adderall
- Labor pain simulator helps two men experience childbirth
- Marinas with umbrellas protect Obama, Turkish PM from rain in 'extremely rare' sight
- Miley Cyrus attends Maxim Hot 100 party, flashes engagement ring
- Man accidentally shoots himself while bowling
- Ahmed Angel, Iraqi model and Photoshop expert, is delighting the Internet
- Taylor Swift fan arrested for swimming to the singer's beach house
- [PHOTOS] 2013 Celebrity Couples

sign up to receive our daily newsletter
This approaching Obama scandal will change the White House Administration and our country, overnight.

The FDA has approved a solution for snoring & sleep apnea that does not require a cumbersome CPAP.

Arlington arrest records. Who do you know? You may be surprised! Search anyone!

If you are a smoker and live in Massachusetts you need to read this...

Join the conversation

Enter comment here

leave comment as a

Guest

name

email

Submit Comment

Most Popular Collections

'Met Ball 2013'

'NBC upfronts'

'Star Trek Into Darkness' screening

'Spire raised on top of One WTC'

'2013: Celebrity break ups and divorces'

'Great Gatsby' premieres in New York

'Obama umbrella marines: Obama protected from rain by marine holding umbrella'

'Mit engineers create living calculator from bacteria - UPI.com'
Greek national flags fly over Tiananmen Square during Greece's Prime Minister Antonis Samaras state visit to Beijing on May 16, 2013. Samaras is in China seeking investment and trade deals to help revive his country's recession-battered economy. UPI/Stephen Shaver.

Write a parking ticket for a widower sitting behind the hearse carrying his wife? You'd better believe...

Florida implements system to allow Florida citizens to call each other terrorists

Explosion on the moon visible from Earth. North Korea scrambling to take credit

Pink Barbie-themed tourist trap objectifies woman, says topless female protestor as she sets fire...

Man pleads guilty to being naked in public, despite the fact he was clearly wearing a blonde wig,...

Photoshop these tenacious trainees