



Electricity Conducting, Naturally Occurring Microbes now Available as Biowire for Nano-Electronic Applications, Microchips, Circuit Boards and Sensors



Mark Miller
Chief Executive Officer

BioCurrent Technologies
www.biocurrenttechnologies.com

Contact:
Mark Miller
(201) 220-3739
mark.miller@biocurrenttechnologies.com

Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine

“Our Biowires are a sustainable alternative to carbon nanotubes and are readily modifiable to act as sensors. They are perfectly suited for all sorts of nanoelectronic applications including flexible and wearable applications.”

- Mark Miller

CEOCFO: Mr. Miller, what is the idea behind BioCurrent Technologies?

Mr. Miller: The main idea behind BioCurrent Technologies is to promote environmentally responsible technologies to a variety of industries that are moving toward or using nanotechnology. Our objective is to replace finite carbon nanotubes and nanowires and graphene with sustainable, environmentally preferable biowires.

CEOCFO: Would you give us a more detailed look at how that works?

Mr. Miller: The world is going smaller and smaller, we all want to get more technology and information into, or more information out of, our electronic equipment. Computers, cell phones, smart-wear are all going into the nano scale. Most of these nano products are made with carbon or silicon nano tubes. Conventional nano tubes are made from finite and scarce resources that are mined from the environment and then processed to a great extent in high temperatures while utilizing harsh solvents as part of the purification process. We use naturally occurring microbes whose appendages, known as “Pili”, actually conduct electricity. These are nano sized electric wires, so that you can use them in microchips, circuit boards and other nanoelectronic applications.

CEOCFO: How do you get from microbes to nanotubes?

Mr. Miller: This is technology that has been developed out of the University of Massachusetts at Amherst. Derek Lovley a PhD research microbiologist at the university has been working with the Geobacter microbe for the last 30 years. He is currently finding ways to genetically modify this microbe to do a variety of different things. One of the applications is to control the way these Pili conduct electricity. It has been known for a long time that these microbes can consume things like heavy metals, petroleum hydrocarbons and other soil contaminants, and generate small amounts of electricity. Derrek took it further in understanding the functionality. From finding that Pili conduct electricity, it was a very small step to modify the Pili, increasing their conductivity so they behave just like a conventional carbon nanotube.

CEOCFO: Would you tell us about the steady stream of microbes?

Mr. Miller: The microbe is a Geobacter, which is a common soil microbe. They readily reproduce and what Dr. Lovley and his team were able to do is to modify the microbes down to the DNA level so that the Pili that it creates have variable count and characteristics. The microbes reproduce readily at room temperature and are very durable. These microbes have been used in soil remediation, cleaning out hydrocarbon spills and or heavy metal type of contamination. They are happy little bugs.

CEOCFO: Where are you in going from figuring out it can happen to making it happen? What stage are you at?

Mr. Miller: We have been able to confirm the application within the lab. We know that the Pili conduct electricity. We know that we can modify the microbe to have various levels of conductivity. From an application perspective, we know we can