thirteen
WNET NEW YORK

Stella Giammasi
Vice President and Director
Communications Group
tel: 212.560.3006
fax: 212.560.3012
giammasi@thirteen.org

450 West 33rd Street
New York NY 10001-2605
www.thirteen.org

press release

REAL SCIENCE, REAL LIFE CONVERGE IN *CURIOUS*, A NEW THIRTEEN/WNET NEW YORK SERIES THAT TAKES VIEWERS INSIDE BRAIN CENTERS OF INNOVATION TO WITNESS BREAKTHROUGHS THAT COULD CHANGE THE WORLD, JANUARY 2008 ON PUBLIC TELEVISION

Two Documentaries Follow Researchers Working On A Revolutionary Cancer Drug, An "Artificial Leaf" That Uses Sunlight To Produce Earth-Friendly Fuel And Other Cutting-Edge Concepts

Mark Davis was enjoying a successful career as a chemical engineer – until his wife was diagnosed with breast cancer. After chemotherapy treatments compromised her immune system and made her gravely ill, she insisted to her husband, "There's got to be a better way – you can fix this." Davis didn't think he could. "Cancer – what did I know about it?" he wondered. "It was way out of my comfort zone from a scientific point of view." Ultimately, he rose to that very personal challenge, and 10 years later, the first drops of IT-101, a revolutionary nanoparticle drug he invented, were injected into the first human, Ray Natha. A terminal cancer patient, Natha was expected to live only a few months, but IT-101 reversed that grim prognosis and, today, more than a year later, his cancer remains stable. In addition to his dramatic improvement, Natha experienced virtually no side effects during the drug trial.

While Davis focuses his efforts on human survival, other researchers are trying to save planet Earth. Spurred by the looming energy crisis, Nathan Lewis and Sossina Haile are working to invent a new kind of fuel that uses the sun to power the planet. They are attempting to produce a prototype for a truly alternative fuel source – an artificial leaf that emulates natural photosynthesis, converting solar energy into a usable, clean chemical fuel. They hope their

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pioneering solar cell and fuel cell technologies will eventually end our dependence on petroleum and provide an energy source that won't pollute our planet.

Scientists at the California Institute of Technology (Caltech) and the Jet Propulsion Laboratory (JPL) make up the cast of ***CURIOUS***, a series of two one-hour documentaries from Thirteen/WNET New York, airing in January on public television (check local listings for premieres in your market). This engagingly stylized production immerses viewers in a world where smart, dedicated researchers are pushing the limits of established fields of research, innovating unique and radical solutions to the problems that plague the human race. For them, it has become a personal mission to discover practical applications for scientific breakthroughs that could dramatically improve how we live.

"***CURIOUS*** gives viewers a rare opportunity to see how real scientific research gets done at a cutting-edge institution," said Jared Lipworth, the series' executive producer. "We wanted to explore the cross-pollination that goes on when brilliant minds come in contact with and challenge one another, and along the way, we've discovered some incredible stories. This isn't just research for research's sake; these are some big innovations that may actually change the world as we know it."

Mark Mannucci, the series' director, writer and producer, wanted to make a science show that would be appealing to people who might not generally choose to watch a science show. "I'd never tackled a science show before ***CURIOUS*** so I had no preconceptions about what science on television should be," he said. "We played with a lot of different ways to explain science concepts and we had fun doing it. We hope that comes across, and that viewers will be engaged by the clarity that that playful spirit brings to the ideas we're trying to illustrate. But we hope the real points of connection between science and the viewer are the people we meet. That's what's really at the heart of ***CURIOUS*** – people trying to solve their own problems, people trying to figure it out for the rest of us."

"It's about science that connects to life," said series co-producer Tara Thomas. "How will we survive – individually and as a species? How do our brains work? What happens when they don't? To answer those questions, ***CURIOUS*** goes deep into an institution where the job is to push the limits of what we know. We delve inside a place where surprising things happen. And it's through this deep immersion that we get to know people like Mark Davis and Ray Natha who show us how very personal science can be and how it can completely change our lives."

Mark Davis' work on a new cancer treatment and the energy scientists' efforts to create clean fuel from the sun are just two of the many stories ***CURIOUS*** tells. The series also explores everything from fly brains and wings to human and robotic decision making, and it all takes place at Caltech or JPL, the NASA space center managed by Caltech.

Funding for ***CURIOUS*** is provided by TIAA-CREF, Peter & Merle Mullin and Stan & Barbara Rawn.

CURIOUS is a co-production of Thirteen/WNET New York and the California Institute of Technology and is distributed by American Public Television. Mark Mannucci is producer, director and writer. Tara Thomas is co-producer. Jared Lipworth is executive producer and director of science programs at Thirteen. William R. Grant is executive in charge of production and director of science, natural history and features programs at Thirteen.

Following are summary descriptions for parts one and two of ***CURIOUS***:

Episode 1: "Survival"

For Mark E. Davis, cancer became a personal battle that he fought in a laboratory with innovation and determination as his weapons. Davis, a successful chemical engineer, never dreamed that he would reinvent his career and create a revolutionary kind of cancer drug. But everything changed when his wife was diagnosed with breast cancer, and pleaded with him to find an alternative to chemotherapy, which had devastated her body and her spirit. Davis was reluctant at first, having had no prior experience in cancer research, but 10 years later, IT-101, the nanoparticle drug he engineered, was approved for a six-month trial in humans. This segment follows Ray Natha, a terminal cancer patient and IT-101's first experimental subject. The story begins on the first day IT-101 drips into Natha's veins and concludes at the end of the trial, at which time the cancer was stable. Animations illustrate exactly how the drug works.

If we run out of oil, civilization as we know it will come to a grinding halt. On the other hand, if

we drill for more oil or burn more coal, the damage we inflict on the Earth might prove to be our undoing. It's clear: to power our planet, we're going to need a new kind of fuel. This segment introduces a group of young, hopeful scientists who are setting their sights on a resource that provides enough energy in one hour to power the entire globe for one year – the sun. Solar energy isn't new, but the goal of these scientists is visionary – using the sun to make fuel. They believe they can create an "artificial leaf" that uses sunlight to split water into hydrogen and oxygen. The hydrogen can then be used to power fuel cells, which, in turn, can produce electricity when the hydrogen is recombined with oxygen. The result? All the electricity we need, plus pure, clean water as the byproduct. The research team still has a long way to go in seeing this concept evolve from a prototype in the lab to a product on the shelves of America's hardware stores, but their convictions and their curiosity continue to drive and inspire them.

Episode 2: Mind/Brain/Machine (w.t.)

Neuroscientists are studying the "science of consciousness" to discover the networks where conscious thoughts and sensations originate. This program introduces Tony Grobmeier, who was born without a corpus callosum, the structure that connects the two interdependent halves of our brains: language and linear thinking on the left, emotion and visual perception on the right. Neuroscientists are trying to understand the ways this relatively rare congenital condition affects the brain. They've observed that people without a corpus callosum have brains wired in completely unique ways. When it comes to human nature, what does "normal" mean, anyway? This is just one of the provocative questions posed in this segment.

Another segment takes viewers to the FlyLab at Caltech. Here, Michael Dickinson and his graduate students are researching the brain and its complex collection of neurons with help from *Drosophila Melanogaster* – a.k.a. the fruit fly. What they learn from this extraordinarily robust and dexterous biological flying machine might one day be used to build better robots and other machines, including safer airplanes. Though their brains are the size of a poppy seed with 300,000 times less gray matter than ours, flies squeeze a lot more performance out of each neuron than humans do. Always reverent of their subject matter, but with charm and humor to spare, the young researchers work with the lab's "Fly-o-rama" – a virtual reality environment where flies play for hours – and other devices, giving viewers a new respect for the humble fly and a new way of thinking about our brains.

Moral, social and economic decisions all happen at the level of the individual neuron, the brain's most basic unit. This segment goes inside the human brain, revealing what is essentially a huge number-cruncher that assigns a numeric value to everything from a loaf of bread to our most deeply held values. Do the emotional parts of the brain do battle with areas that control reason? How do these conflicts result in feelings and decisions? To answer these questions, scientists are attempting to catch the brain in the act of decision making using an fMRI, a heavy-duty but non-evasive method of brain scanning that is revolutionizing our understanding of the science of decision making. The program illustrates conflicts and ethical dilemmas involved in decision making by proposing theoretical scenarios. One example uses a train racing toward a group of track workers to ask whether people would make the decision to sacrifice one life in order to save four others.

The researchers aren't the only interesting characters in this program. This segment also features a fascinating cast of robots, including NASA veterans like the aging but able Mars Exploration Rover and youngsters like the tool-wielding A.T.H.L.E.T.E. (All Terrain Hex-Limbed Extra-

Terrestrial Explorer). Can things we're learning about the brain be applied to robots? Will it ever be possible to create a machine that can see, learn and make decisions? Some scientists predict robots will ultimately surpass humans in intelligence, leading to prickly ethical conundrums.

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About Thirteen/WNET New York
Thirteen/WNET New York is one of the key program providers for public television, bringing such acclaimed series as *Nature*, *Great Performances*, *American Masters*, *Charlie Rose*, *Religion & Ethics NewsWeekly*, *Wide Angle*, *Secrets of the Dead*, *NOW With David Brancaccio*, and *Cyberchase* – as well as the work of Bill Moyers – to audiences nationwide. As the flagship public broadcaster in the New York, New Jersey and Connecticut metro area, Thirteen reaches millions of viewers each week, airing the best of American public television along with its own local productions such as The Ethnic Heritage Specials, The Thirteen Walking Tours, *New York Voices*, and *Reel New York*. Thirteen extends the impact of its television productions through educational and community outreach projects – including the Celebration of Teaching and Learning – as well as Web sites and other digital media platforms. More information can be found at: www.thirteen.org.

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Press Contact:

Caroline Oman
Thirteen
212.560.3057
oman@thirteen.org

Zenobia Costa
Thirteen
212.560.3018
costaz@thirteen.org