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One Guest Street
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617 300 2000

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FROM OUTER SPACE TO THE OCEAN FLOOR, FROM LEECHES TO STEM CELLS ON EPISODE 5 OF *NOVA scienceNOW*

***NOVA scienceNOW* with Host Neil deGrasse Tyson**
Wednesday, July 23 at 9 pm ET/PT on PBS
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BOSTON, MA—In Episode 5 of its sizzling summer season, **NOVA scienceNOW** once again ranges across the width and breadth of science, technology, and medicine, introducing viewers to the thrill of discovery at the frontiers of knowledge, airing on Wednesday, July 23 at 9 pm ET/PT on PBS (check local listings).

Host Neil deGrasse Tyson covers stories from the deep sea to deep space—profiling a scientist who is probing the ocean's inky depths with a unique camera that has revealed previously unknown sea creatures, and catching up on a bold new project to tune in possible transmissions from alien civilizations in our galactic neighborhood.

Tyson also goes above and beyond the call of duty by getting up close and personal with a much maligned life form that deserves more respect than revulsion—the leech. And he gives viewers an update on the latest innovation in stem cell research, which may help break the deadlock between proponents and opponents of this controversial technology by creating stem cells without the use of human embryos.

Episode 5 Segment Descriptions:

LEECHES
Leeches, those innocent bloodsuckers, have been bad-mouthed to the point that they've become synonymous with obnoxious freeloaders. Even host Neil deGrasse Tyson gets creeped out while wading through leech-infested waters with scientist Mark Siddall, who runs the leech lab at the American Museum of Natural History. Siddall notes that leeches are much less dangerous than mosquitoes and ticks as disease spreaders. Although leeches became notoriously overused in nineteenth century medicine, they've orchestrated something of a comeback, and are today used when reattached fingers and toes become engorged with excess blood that must be drained off. Leeches are hermaphrodites and exist

more

in countless species and ecological niches throughout nature. One even prefers the rectal region of the hippopotamus. Maybe that's more than you want to know about leeches, but you'll gain new respect for these fascinating little creatures and never use their name in vain again.

SETI

In 1960 an inquisitive astronomer named Frank Drake aimed a radio telescope at a couple of nearby stars and started listening. Nearly 50 years later we're still listening, and SETI—the Search for Extra Terrestrial Intelligence—has just expanded big time to begin the systematic survey of millions of star systems for signs of advanced civilizations. **NOVA scienceNOW** reports on this impressive new effort, called the Allen Telescope Array. The project is underwritten primarily by billionaire philanthropist Paul G. Allen and will eventually comprise 350 dish antennas, all working in unison to answer the question: Are we alone? It's a radical step forward. Jill Tarter, director of the Center for SETI Research, explains that making a judgment about the existence of alien cultures based on the last 40 years of observations would be like trying to determine if there are fish in the ocean by looking in a single glass of sea water. Tarter—a SETI legend—is said to be the inspiration for Jodie Foster's character in the movie *Contact*. And while no alien signals have yet turned up—much less a transmission with plans for an alien spaceship, as in the movie—the new SETI search has only begun!

STEM CELLS

In the latest update on the controversial subject of stem cell research, **NOVA scienceNOW** explores an exciting and potentially revolutionary new development. Japanese researcher Shinya Yamanaka has discovered how to take an ordinary skin cell from an adult, turn back its genetic clock, and transform it into the equivalent of an embryonic stem cell. Yamanaka calls these cells Induced Pluripotent Stem (iPS) cells, and their crucial feature is that they are created without embryos, thus bypassing a political and ethical stumbling block that has hampered research. Scientists have been eager to explore the full potential of stem cells, which can grow into almost any type of cell in the body. Now they are a step closer to using this medically promising technology to treat diseases such as sickle cell anemia. One experiment has already used iPS cells to cure mice of a sickle cell condition similar to that in humans. Major hurdles remain, but the discovery of iPS cells is so important that Yamanaka is being touted for a Nobel Prize.

EDITH WIDDER

Go for a deep-sea dive with a scientist who is seeing things never before recorded on the ocean floor. Edie Widder is a specialist in marine bioluminescence, the biochemical emission of light by ocean animals that can light up the murky depths to an astonishing degree. Widder is doing some lighting of her own with an innovative camera system called the "Eye in the Sea" that uses a wavelength of light invisible to sea creatures to catch them unaware. On its first test the "Eye" recorded a squid not yet known to science. As a child, Widder loved to learn and settled on a career in bioluminescence because it was about the coolest thing she'd ever seen! Recently, her research has won her a MacArthur "genius" grant, which will help support her work at the Ocean Research and Conservation Association, of which she is a co-founder.

NOVA scienceNOW is produced for PBS by the WGBH Science Unit at WGBH Boston. The director of the WGBH Science Unit and senior executive producer of NOVA and **NOVA scienceNOW** is Paula S. Apsell; the executive producer of **NOVA scienceNOW** is Samuel Fine; Neil deGrasse Tyson is host and executive editor.

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Press Contacts

Eileen Campion
Dera, Roslan & Campion PR
212.966.4600
eileen@drcpublicrelations.com

Carole McFall
NOVA National Promotion
617.300.3988
carole_mcfall@wgbh.org

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