Goodyear, AZ, USA
Dec. 1, 2011
For Immediate Release

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VETERAN MARS RESEARCHER SAYS EXPERIMENTS ON CURIOSITY CAN CONFIRM VIKING DETECTED LIFE
"Stealth" Life Detectors Aboard

NASA has repeatedly said that its just-launched mission to Mars, Curiosity, carries no life detection experiments. Yet, Gilbert V. Levin, life detection Experimenter on NASA's 1976 Viking Mission to Mars, disagrees. He says there are instruments aboard Curiosity that can confirm that his Viking experiment did, indeed, detect living microorganisms in the soil of the red planet. He plans to watch his "virtual life detection experiments" carefully as Curiosity proceeds with its mission.

With Dr. Levin as Experimenter and Dr. Patricia Ann Straat as Co-Experimenter, the Viking Labeled Release (LR) experiment returned data from Mars indicating the presence of microbial life, fully satisfying the pre-mission criteria. The experiment injected a tiny drop of radioactive nutrients on a thimble-full of Martian soil, and looked for the rising of radioactive gas as evidence of metabolism. To insure that the gas had not come from a chemical reaction, a second sample of the soil was heat-heated at a temperature to kill microorganisms, but not high enough to destroy possible chemical reactants. This "control" sample was then tested in the LR. On Mars, the untreated soils gave positive results, and the heat-treated control samples were negative, indicating that the positive reactions were biological. A total of nine experiments at both Viking landing sites, some 4,000 miles apart, supported the positive responses as being biological. However, because another Viking instrument failed to find organic matter, the stuff of life, NASA concluded the LR results were ambiguous at best. To avoid another such result, NASA ruled out life detection efforts on any of its missions. Instead, it sought evidence of habitability for past or present life. Accordingly, Levin's several proposals to send an updated version of the LR to Mars to follow up and test the validity of his claim have been rejected. Levin now claims the organic analyzers and the high-resolution camera on Curiosity as his "stealth life detectors."

In recent years, Viking's failure to find organic matter (which most scientists agree should have been accreted by meteoric impacts on Mars, as it was on Earth) has come under scrutiny as possibly in error. Levin did not announce his life conclusion about the Viking LR until 1997, after twenty years of analyzing the LR data, reviewing possible flaws revealed in Viking's organic detector, and in studying new information relative to life obtained from Mars and Earth. Co-Experimenter Straat agrees with his published conclusion, saying she "… looks forward to Curiosity data that may confirm our life interpretation of the LR data." Levin thinks that Curiosity's results, coupled with the Viking LR findings, can bring about a realization that we are not alone in the universe. To that effect, Levin said, today, that, should Curiosity detect organic matter, the last obstacle to general acceptance of his claim to have discovered life on Mars will vanish.

Levin's other "virtual experiment" aboard Curiosity is its microscopic imager, which has sufficient resolution to see individual grains of silt. Levin thinks this camera can determine whether "lichen-like" colored patches his review of all 10,000 Viking lander images found on some rocks at the Viking lander sites might be living organisms. He invited Patricia

Straat, and William D, Benton, of the Jet Propulsion Laboratory, to assist in the study. They subjected the Mars images and terrestrial rocks bearing lichen to the Viking Imaging System at JPL. Visible and infrared spectral analyses found the same responses from the Mars and terrestrial samples. Viking images of the same Martian rocks taken Martian years apart showed changes in the pattern of the patches (Levin, G. V., P. A. Straat and W. D. Benton, "Color and Feature Changes at Mars Viking Lander Site," J. Theoret. Biol., 75, 381-390, 1978 – available at <gillevin.com>, tab "Mars Research"). Believing color and form insufficient, no claim to life was made. Levin has now written to Dr. Mike Malin, designer of the Curiosity camera, to look up close and photograph any such patches found on rocks, and to ask that the rover return to them so that identical images can be taken seasons apart, thereby seeking changes indicating growth or decay. In this way, the high-resolution Curiosity camera may determine whether Viking found living organisms on the rocks.

No stranger to seeking life on Mars, Levin (see biog. <gillevin.com>) began his efforts to send an instrument to Earth's nearest neighbor in 1958. That is when he was funded by NASA to develop the rapid method he had invented, for detecting microorganisms in contaminated water, into a Mars life probe. That project continued through NASA contracts to Resources Research Inc, an environmental firm co-founded by Levin in 1953, and Spherix Inc., an environmental and health research firm founded by Levin in 1967. In 1969, NASA appointed Levin as a Team Member of the IRIS experiment aboard the 1971 Mariner 9 Mission that orbited Mars. Dr. Straat joined him in that effort in 1970. Their part of the IRIS experiment sought organic gases in the Martian atmosphere. None was found, but recent observations with more sensitive instruments have claimed detecting methane, possibly of microbial origin, in regions of the Martian atmosphere. Levin's next chance at Mars came when he was appointed as a Team Member of NASA's MOx experiment aboard the Russian '96 Mission to Mars, Levin converted that soil analysis instrument to give it life detection capability. However, that mission failed to reach Mars.

"This is a very exciting time," says Levin, now an adjunct professor at Arizona State University, "something for which I have been waiting for years. At the very least, the Curiosity results may bring about my long-requested re-evaluation of the Viking LR results, which, I believe, would support my claim." Levin thinks this is especially important because Viking was sterilized according to an international protocol to prevent contaminating Mars with hitchhiking terrestrial microorganisms. Since then, none of the many NASA and ESA Mars landers, including Curiosity, has been treated to prevent microbial contamination of Mars. This might lead to questioning any new findings of life as to whether the life was indigenous to Mars or was contamination from Earth. Thus, he says, "The Viking life detection data are the only data that will ever be available from a pristine Mars, and are, thus, a priceless source that should be thoroughly mined."

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