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Gilbert V. Levin (1924–2021)

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Dr. Gilbert V. Levin died in Bethesda, Maryland after an aortic dissection on July 26, 2021, at the age of 97. He was an American engineer, scientist and founder of the Rockville, Maryland biotech firm *Biospherics Incorporated*. There, Levin managed both the biotechnology laboratory, and its high-tech federal and commercial information services business ranging from health and medical topics to general subjects of interest to the public including the Federal Information Center. Dr. Levin was a member of The Johns Hopkins National Engineering and Library Advisory Councils, and has received awards from the University and from NASA.

Dr. Levin presenting his evidence for life on Mars at the 2016 40th Anniversary of the NASA Viking mission to Mars. Photo credit: Barry E. DiGregorio.

Memorial for Dr. Gilbert V. Levin

A memorial for Dr. Levin will be held on Sunday, April 24, 2022 at Johns Hopkins University. If interested in attending please contact:

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However, it was at a fateful gathering at a Washington D.C. cocktail party in 1959 where Levin was introduced to NASA's first Administrator, Dr. Thomas Keith Glennan where both men became engaged in a discussion about looking for life on Mars. Levin explained to Glennan that he had developed a rapid way to detect blood infections (sepsis) in humans but because of the public fear of using anything involving radioisotopes in the 1950's he was unable to sell his invention to hospitals. He explained to Glennan that the technique he patented called radiospirometry was incredibly sensitive and could detect as few as ten living cells and could be used to look for microbial life on Mars. Glennan who was intrigued with Levin's concept told

Levin that NASA was planning to send missions to Mars and other planets to look for life and that he should apply.

Shortly after reviewing his application, NASA appointed Levin as Experimenter on the Mariner 9 and Viking Lander Missions to Mars. It was during the period between the Mariner 9 mission (an orbiter) and the development of the Viking Landers that Levin turned his *radiosrepirometry* technique into one of the first microbial life detection instruments named “Gulliver” after the character in the book *Gulliver’s Travels*.

Levin’s Gulliver experiment, for a time, became the centerpiece of the NASA exobiology program and was pictured in popular astronomy books whenever authors chose to talk about the search for life on Mars. Later as the Viking program in the late 1960’s became closer to reality Levin would rename *Gulliver* as the *Labeled Release experiment*.

The first and only missions to look directly for extant life on Mars were the Viking Landers launched by NASA in the summer of 1975 and landed in 1976. They were identical, each equipped with the same cameras, three biology instruments, Gas Chromatograph Mass Spectrometer and other scientific instruments. Each lander set down in a different geographical region on Mars that were separated by 6,500 km.

However, it was on July 30, 1976 that Viking Lander 1, in the region known as *Chryse Planitia*, [detected strong evidence](#) for extant microbial metabolism coming from several soil samples that were analyzed by the Labeled Release (LR) experiment.

Two months later, Viking Lander 2 touched down on the surface of Mars, on September 3, 1976, in a large flat plain in the northern hemisphere called *Utopia Planitia* thought to be the remnants of an ancient ocean basin. Once again the Labeled Release experiment on Viking Lander 2 showed evidence for microbial metabolism taking place.

However, another instrument placed on each Viking Lander, called the [Gas Chromatograph Mass Spectrometer \(GCMS\)](#) was designed to look for any organic molecules in the Martian soil, but it did not find any organic molecules down to the parts per billion level at both landing sites. Planetary scientists knew that at the very least some organic molecules should be found from meteorites that have impacted on Mars over billions of years — just as they have accumulated on Earth. Without the finding of organic molecules — the building blocks of life, doubt would be cast on any biology results. Some on the Viking science team suggested that oxidants such as hydrogen peroxide or other [unknown oxidants](#) were responsible for destroying any

organic molecules in the soil. Furthermore, those supporting this oxidant theory went on to claim that it may have caused the Viking Labeled Release instrument to report false readings that only seemed to “mimic life”.

After 21 years of defending his Labeled Release data against numerous theories suggesting he was in error, Levin announced in my 1997 book [*Mars The Living Planet*](#) for the first time — that he detected microbial life on Mars and that it could be nothing else.

NASA, in the years since Viking, has never sent a follow-up extant life detection mission to rule out Levin’s data. Both Gilbert V. Levin and his co-investigator Patricia Ann Straat (deceased in October 2020) would go on to publish in scientific journals that their data from the surface of Mars indicating life, was correct.

Ironically, beginning with its landing in Gale crater in the summer of 2012 NASA’s Curiosity rover (still operating in Gale crater on Mars as of this writing) conducted a number of organic analyses with its [*Sample Analysis at Mars instrument \(SAM\) and found organic molecules*](#) in the soil, rocks and atmosphere of Mars. More recently, at the 2021 Fall Meeting of the [*American Geophysical Union*](#), it was announced by the Perseverance rover science team that they have [*found organic molecules*](#) in both the rocks and dust analyzed on the crater floor. Were Levin’s findings correct after all these years?

Gilbert Levin was a member of NASA’s planetary quarantine advisory panel from 1967–1973 and his company *Biospherics Incorporated* of Rockville, Maryland was under contract by NASA to produce [*one of the first Mars Sample Return studies*](#) in 1975. Later in 1986, Levin would file a report to the planetary quarantine advisory panel defending his [*Viking Labeled Release data*](#) from Mars.

In 1999, Levin would become a founding member and scientific advisor to the [*International Committee Against Mars Sample Return*](#) (ICAMSR) and stated:

“I fear that, even if a safe Mars Sample Return container could be made and brought to Earth, there is a good probability that some of the sample would escape from the ‘secure’ lab where the container would be opened”.