

# Panspermia — The Theory that Life came from Outer Space

**DR JERRY BERGMAN**

## ABSTRACT

*In debates about the creation-evolution controversy, many evolutionists allege that the existing naturalistic origin of life theory is generally regarded as highly possible. That these theories are in fact not tenable is shown by the fact that many prominent evolutionists now hypothesize an alternate method. Since the theistic world view is unacceptable, they thus assume a set of conditions elsewhere in the solar system or the universe which are theorized to be more favourable for the origin of life. The recognition that the conditions on the earth are such that the origin of life is close to impossible forces this approach if a naturalistic world view is maintained. Nowhere does the literature reveal as vividly the impossibility of a naturalistic origin of life on the earth than in this area. The fact that an entirely hypothetical scenario has been proposed which is supported by virtually no evidence and only, at best, indirect inferences which can be interpreted as evidence, forces a review of the theory of panspermia.*

*Much science fiction has in time become science fact — journeying to the moon, for example —and this should not surprise us. Many science fiction writers are scientists by profession, or at least trained in science at the graduate level. Isaac Asimov, a Ph.D. in biochemistry, is the best known example. Writing good science fiction requires both a good grasp of science fact and a vivid imagination. One of the latest science fictions which is now becoming ‘respectable’ science theory is **panspermia**, the belief that the source of life on earth was from other worlds. Although it enjoys an almost total lack of empirical support, the reasons for the theory have a clear message for creationists.*

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## DID LIFE COME FROM OUTER SPACE?

Some scientists, noting that the evidence is that the conditions on earth were never favourable for the spontaneous generation of living molecules, have concluded that life must have come from outside of our solar system. In the words of Cowen:

*‘... Drs Hoyle and Wickramasinghe in developing the concept of the cosmic cradle [have based] ... their theory partly on their own interpretation of the infra-red signatures of some space chemicals [and because] they reject Darwin’s warm shallow pond or Stanley Miller’s and Harold Urey’s lightning-created chemi-*

*cal mixtures as birthplaces of organic life. “The concept of primeval soup”, Dr Wickramasinghe remarked in an interview, “is just a confidence trick which people have bought without much critical analysis. It would be too diluted for anything to happen.”’<sup>1</sup>*

Ever since Jules Verne’s stories **From the Earth to the Moon** (1865) and H. G. Wells, **The War of the Worlds** (1898), then the popular **Flash Gordon** in the 1950s, and now **Star Trek**, **Star Wars** and similar genre, many people have been fascinated with the possibility of life in outer space. And in the 1980s, Carl Sagan’s acclaimed **Cosmos** has made, in the minds of much of the public at least, life on other worlds a high probability.

Because many eminent scientists have championed this theory, it has now achieved some credibility in the science world. The two main types of panspermia genesis are:—

- (1) **Deliberate or Directed Panspermia**, the view that the ‘seeds of life’ were deliberately brought to earth by beings from other planets; and
- (2) **Accidental Panspermia**, the position that simple forms of life were accidentally carried here by comets, meteorites, or dust clouds which the earth had at one time passed through in its orbit around the sun.

*‘Earth in orbit sweeps up some 16,000 tons of interplanetary matter each year, much of it the remnants of decaying comets. Are new life forms present in this stellar gift? Do viruses evolved in comets or interstellar dust bring novel genes to influence earthly evolution? Did earth’s life itself evolve from these cosmic seedings?’<sup>2</sup>*

Also as Christian notes, due to the fact that hundreds of thousands of comets exist, *‘The theory suggests that life may exist throughout the universe.’<sup>3</sup>*

Among those who advocate the theory that the origin of life is from outer space via rocket ships, comets, or similar vehicles, or at least conclude that the theory has merit, is Francis Crick. He shared the 1962 Nobel Prize with James D. Watson for unlocking the secret of deoxyribonucleic acid (DNA), a substance that had previously been identified as the master molecule of heredity. In 1953 he and his co-workers discovered the now famous *double helix molecular structure* that carries the genetic code which makes up the blueprint that directs the building of life. Their discovery spawned the now famous genetic revolution, including gene splicing.<sup>4,5</sup>

Other scientists who feel that the panspermia view has merit include Leslie Orgel, a researcher at California’s prestigious Salk Institute for Biological Studies; Armand Delsemme, a University of Toledo astrophysicist; Joan Oro, professor of biochemical and biophysical sciences at the University of Houston; mathematician/astronomer Chandra Wickramasinghe; Sir Fred Hoyle, one of the most famous living astronomers; and Harvard astrophysicist Brian Marsden.<sup>6</sup> Others include Enrico Fermi, the man who designed and constructed the first atomic pile, ushering in the atomic age, and the Hungarian scientist Leo Szilard, who became professor of biophysics at the University of Chicago. Researchers as far back as Thomas Henry Huxley, the first great defender of evolution (1825–1895), speculated that some type of panspermia could have been the source of all life on earth.

Flindt and Binder advocated a similar theory as did Von Daniken and Cohane.<sup>7–9</sup> NASA expert Maurice Chatelain even concludes that the **only** way to understand history is to postulate some visitation from outer space which started what he concludes was *‘the sudden evolution’* which rapidly produced humans.<sup>10</sup> Fred Hoyle and Chandra Wickramasinghe have written more about this than almost any other writers. Their books include **Lifecloud, Dis-**

**eases From Space and Evolution From Space** (all published by Harper and Row).

Ginsburgh even theorizes that the first humans in the biblical Garden of Eden actually came in a spaceship which crash landed on earth about 6,000 years ago!<sup>11</sup> Among its cargo were our first parents, Adam and Eve, whom he concludes were actually beings from another planet. Ginsburgh is not a theologian, but a Ph.D. scientist with over 36 years of research experience. Among the variety of proofs that he uses to argue for his theory is the fact that the earliest known civilizations were highly advanced and have enjoyed highly developed writing, medicine, religion and culture from their very beginning. The time **before** these advanced civilizations existed, previous to 6,000 years ago, he notes is called ‘pre-history’ because virtually nothing is known about this period. Creationists would view this theory as a way to interpret the facts of history without a creator as discussed in the biblical account.

## THE HISTORY OF THE IDEA

The modern idea of panspermia (which literally means ‘seeds everywhere’) was probably originated by the nineteenth century Swedish chemist Svante Arrhenius (1859–1927), who concluded that life could not have begun on earth by itself. He thus felt it must have been seeded by spores propelled by light-waves pushing them. The British physicist Lord Kelvin (1824–1907) once argued that, *‘Seed-bearing meteoritic stone from another world started life on earth’<sup>12</sup>* Thomas Henry Huxley was not only the ‘great defender’ of evolution, but of panspermia as well. Today, many scientists are actively testing the theory in the laboratory.<sup>13</sup> Directed panspermia, the notion that life is sent from a rocket, is advocated by Crick, and accidental panspermia is proposed by Fred Hoyle. He hypothesizes that life originated in space and migrated by chance to earth by comets, meteorites, or even dust clouds.

## THE REASON FOR THE THEORY

For Crick and most other proponents, their motivations to develop the theory, according to Jaroff, include the conclusion that existing abiogenesis theories are untenable.

*‘A decade ago the restless Crick . . . began stalking the greatest secret of all: the origin of life itself. Along with other biologists, Crick was troubled by the prevailing explanations of how life began on earth. In 1973, he and Leslie Orgel . . . published an article in the journal, Icarus theorizing that life on Earth originated with micro-organisms sent by rockets from another planet in our galaxy. They call this act of deliberate seeding “directed panspermia”.’<sup>14</sup>*

Other details on the reasons for the new theory are according to Johnson as follows:

*‘Assuming away the difficult points is one way to solve an intractable problem; another is to send the prob-*

lem off into space. That was the strategy of one of the world's most famous scientists, Francis Crick, co-discoverer of the structure of DNA. Crick is thoroughly aware of the awesome complexity of cellular life and the extreme difficulty of explaining how such life could have evolved in the time available on earth. So he speculated that conditions might have been more favorable on some distant planet.<sup>15</sup>

Many other researchers have also expressed much dissatisfaction with the prevailing theories about how life originated on planet earth. They have concluded that, given what we know about the environment necessary for life, it could **never** have spontaneously generated here.<sup>16</sup> They thus looked elsewhere in search of an explanation. And in so doing, Adler concluded:

*'Probing the origins of life on earth, a biologist and an astronomer have performed the improbable feat of reinventing religion. Conventional science has invoked the workings of chemistry over almost limitless time to bring the order of life out of the planet's primitive chaos. But life seems to have begun rather quickly: the more scientists have looked, the further back they have found signs of life; the earliest fossil cells, . . . are almost as old as the solar system itself. Pondering such mysteries, Nobel Prize-winning biologist Francis Crick and Sir Fred Hoyle, the distinguished astronomer, have independently supposed a deus ex galaxia to explain the sudden appearance of life on earth: the "seeding" of space by intelligent beings from distant corners of the universe.'*<sup>17</sup>

As we might expect, Crick's book, **Life Itself**, a **Science Book of the Month Club** selection has received mixed reviews — many scientists were very favourable; others, such as Niles Eldredge, were very critical. Eldredge called Crick's book '*nothing short of a disaster*', partly because as Eldredge states, '*Crick develops his notion of "directed panspermia" unhampered by such pedestrian considerations of testability.*'<sup>18</sup> Ironically, Eldredge's main criticism of Crick's work seems to be his tendency to see

*'... science as an alternative to religion and [his lashing] out at "antiscientific fanatics" who fail to hearken to the clarion call of the twentieth century gurus of the West, the enlightened scientists. ... Crick's characterization of religion as an amalgam of arcane, outmoded beliefs is intemperate in light of his own views on how life came to exist on the planet earth.'*<sup>19</sup>

The fact that some of the greatest of the world's foremost scientists disagree among themselves on this topic illustrates how much we have yet to learn about our world, especially about such questions as the origin of life. Nonetheless, as Jaroff states:

*'Coming from a lesser man, directed panspermia might well be written off as science fiction. But Crick is a giant among scientists, and his ideas are not taken*

*lightly. While he concedes the weaknesses in his theory and does not hesitate to expound the strengths of others, he insists that directed panspermia is built on a foundation of scientific detail . . . Crick allows that he has several times sworn off further writing on the origin of life "because there is too much speculation running after too few facts", but he confesses that "the subject is so fascinating that I never seem to stick to my resolve."*<sup>20</sup>

Thus, scientists are still arguing today over the views that Jules Verne and H. G. Wells presented in their science fiction, and scientists today do not seem to have all that much more of an advantage in arriving at a conclusion as to their validity. We are still '*running after too few facts*', yet, as Adler observed:

*'Crick and Hoyle may have the most far-out hypothesis, but they are not alone in asking whether life on earth was made possible —or at least influenced— by objects from the far reaches of the solar system. Astrophysicist Armand Delsemme . . . believes that the stuff of living things —including hydrogen, carbon and oxygen —came from comets, which brought gas and organic material to lifeless, airless earth ...'*<sup>21</sup>

Frank points out that there is evidence that every minute about 2,100 small comets consisting primarily of water and ice dump water on the earth.<sup>22</sup> If the evidence proves valid, our lakes and oceans must have been formed relatively recently, which poses serious problems for all existing naturalistic origin of life theories. The implications for the current naturalistic origin of life scenario is obvious; without large quantities of water, most theories break down. Frank thus realizes that some type of panspermia is the only saviour of atheistic abiogenesis. An exogenesis is also argued for on the grounds that many of the biochemicals necessary for life could not have formed here, and thus must have had their origin elsewhere. Frank states that consequently many scientists

*'now believe that much of the organic molecules needed to create the first forms of life on earth could well have been brought in by comets that bombarded the planet early in its history.'*<sup>23</sup>

He then cites the work of a number of researchers who conclude that

*'a cometary bombardment could have brought in a hundred to a thousand times as much organic material as the earth itself would have produced photochemically during the same period.'*<sup>24</sup>

And, the oxygen problem is likewise solved, since

*'... it may be that these small comets provided not only the chemical seeds for life on earth, but the oxygen to protect it from the sun, as well as the marine incubator —the ocean—in which it could grow and thrive. That, in essence, would make us all the children of comets.'*<sup>25</sup>

The tentative terminology used here is appropriate in

that there is no evidence that comets were historically the source of the large amounts of organic molecules or oxygen we now have, only controversial evidence that small comets today are bringing in vast quantities of water from outer space.

## OBJECTIONS TO PANSPERMIA

The problem most often pointed out by critics is that we simply **have no direct evidence** that any form of natural panspermia has ever actually occurred. It presumes both that life exists on other planets and that, given the right conditions, life is able to spontaneously generate itself there. The whole theory, as many of its critics point out, is almost purely speculation.

The main objection to directed panspermia is that it moves the problem of the origin of life to another planet or place by relocating unanswered questions.<sup>26</sup> As Christian notes, pushing *'the problem light-years away to some unknown location'* does not solve the question of naturalistic origins.<sup>27</sup> Other problems include the likelihood of life that evolved elsewhere being compatible with our environment, and the difficulty of anything living travelling for millions and millions of years in the environment of space which is extremely hostile to life and still being viable. Another concern is that radiation in space may well destroy most life, or even life's seeds, during its journey. As Johnson notes, panspermia

*'... leaves the problem of getting life from the planet of origin to earth. First in a paper with Leslie Orgel, and then in a book of his own, Crick advanced a theory he called "directed panspermia". The basic idea is that an advanced extraterrestrial civilization, possibly facing extinction, sent primitive life forms to earth in a spaceship. The spaceship builders couldn't come themselves because of the enormous time required for interstellar travel; so they sent bacteria capable of surviving the voyage and the severe conditions that would have greeted them upon arrival on the early earth.'*<sup>28</sup>

Yet another concern is how did the spores break away from the gravity at their home base and travel into space — no easy task, as our space program engineers are keenly aware.<sup>29</sup> Crick does an admirable job attempting to explain many of these difficulties, but falls far short, leaving most of the major objections unanswered. Many of these objections were recognized long ago. Wells summarized the problem a full half-century ago as follows:

*'The actual origin of life must always remain a secret: even if man succeeds in artificially making life, he can never be sure that Nature did not employ some other means. Some thinkers have supposed that life was carried to this earth in a dormant state within meteorites. But this is to think timorously and to balk the issue; it only removes the problem of life's origin one step farther back. It does not absolve us from asking*

*how and when life originated, but merely introduces an extra difficulty.'*<sup>30</sup>

## THE THEORY'S IMPLICATIONS FOR TODAY

The theory clearly emphasizes the fact that serious difficulties exist with the assumption that life spontaneously originated at some point in time long ago in some primordial soup somewhere on the surface of earth. The literature on the various theories of how the spontaneous generation of life on earth could have occurred eons ago is based on the *a priori* assumption that, since life is clearly here, and it is not 'scientific' to resort to a creator to guide the process, we therefore must speculate on **how** life could have been **spontaneously generated**. That scientists of the stature of Hoyle, Crick, Ginsburgh and Wickramasinghe seriously question the assumption that life could have originated on earth without outside direction clearly indicates serious difficulties are present in **all** of the current origin of life theories.<sup>31,32</sup>

One primary method exists to test the theory. In contrast to the belief of most scientists that life formed out of the earth's early atmosphere, Hoyle and others speculate that the first living cells which gave rise to life on earth formed in space about 4.6 billion years ago. Further, Hoyle concluded, as discussed in his book, **Diseases from Outer Space**, that this influx of life from outer space (mainly via comets) **still occurs today**. As evidence for this, Hoyle notes that smallpox and other diseases tend to occur and disappear at 'mysterious intervals' throughout history.

Some scientists have even speculated that each return of some comet could herald disaster because of the germs and other life that they believe it carries, a theory not supported by the research completed on the 1986 return of Hailey's comet. Given this theory, it is feasible to empirically determine whether or not the visit of a comet brings disease or complex organic matter **of any kind** aside from amino acids. For a control, satellites or high flying airplanes could be used to accurately evaluate the contents in a certain area of space. Then, when a comet makes a close enough appearance (Hailey passed by the earth in 1986, and this can be accurately calculated) a germ count of the same area again can be taken. If it increases significantly, and if this increase cannot be accounted for by other causes, the results would indicate that the comet was carrying germs, or some type of organic molecules.

A spacecraft was sent to Hailey's comet to determine, among other things, if it contained organic molecules, or germs. The results found no evidence that comets or other bodies carried germs or life of any type. So far, only simple 'organic' compounds have been identified in Hailey's comet from infrared detectors in telescopes on earth. Wickramasinghe and Allen used this equipment to measure waves given out by the comet beyond the visible light spectrum. They found a 3.4 micron wavelength, which indicates some hydrogen-carbon molecules are present in

the space visitor's body. This compound, though, while organic is a long way from life, actually about as far as a bucket of bolts is from a Ferrari.<sup>33,34</sup>

Labelling something an organic compound implies it is a 'living organism', or something close to it, but an organic chemical is actually nothing more than **a compound that contains carbon** and hydrogen.<sup>35</sup> Carbon is an element that combines with many others — actually most compounds are carbon based; over 10,000,000 are organic compared to only about 1,000,000 non-organic types. Iron is necessary for higher life, yet the discovery of iron on a planet would hardly prove that life was close to formation there. As Adler summarizes Hoyle's current ideas:

*'... in his 1978 book, **Lifecloud**, he suggested that primitive living cells originated in comets and were "seeded" on earth early in its history. In **Lifecloud** he also pointed out that earthly organisms are strangely out of tune with conditions in the rest of our solar system; the wavelengths of light that chlorophyll uses most efficiently, for example, are not these in which the sun's spectrum is concentrated. Such speculation . . . has led Hoyle to exactly the view that seemed self-evident in the Middle Ages: that life did not arise spontaneously on earth. According to this theory, the origins of life are inherently unknowable, or at best a problem for the scientists [who live] far out in space where it did arise.'*<sup>36</sup>

This new field, called astrochemistry, has grown so much that

*'the fact that Drs Hoyle and Wickramasinghe are willing to stake their professional reputations on these audacious theories, shows how fast the young science of astrochemistry is developing.'*<sup>37</sup>

## CONCLUSION

The ability of a spore to survive during a trip from outer space to earth has now been researched by many respectable scientists. The most optimistic are Leiden and Greenberg who conclude that:

*'While "naked" spores had a life expectancy of only 150 years in space, at least 10 percent of those with molecular shields could last up to 45 million years — more than long enough to survive an interstellar journey.'*<sup>38</sup>

The spores used in this research, though, were the highly developed *Bacillus subtilis*, a hardy bacterium which, as any sanitationist knows, is like some of its cousins, very difficult to kill. Further, to be able to produce a set of events in controlled laboratory conditions says only what is possible, not what actually has historically occurred. No one is denying the contributions of this experiment, and in no way are we discouraging such research, but it speaks far more for **over design** than a **theistic evolution**, and illustrates how far humans will go to deny a designer to explain design.

The issue of directed or accidental panspermia, and the speculation it is based upon, helps us to understand how little is actually known about the origin of life. Outsiders should be cautious and not uncritically accept the many speculations put forth by contemporary scientists and their students. This also illustrates the extremes to which scientists will go to explain the complex reality around us without a creator.

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**Dr Jerry Bergman** has seven degrees, including in biology and psychology, and a Ph.D. in evaluation and research, all from Wayne State University, Detroit. He was an assistant professor in educational foundations and inquiry at Bowling Green State University, Ohio and has also taught at the University of Toledo. He is now a professor of science at North West College, Archbold, Ohio, and was recently awarded his second Ph.D., this one in biology.