Meteorites and Minerals Associated With The Origin of Life

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METEORITES AND MINERALS ASSOCIATED WITH THE ORIGIN OF LIFE

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MINERALS
PYRITE- Wachtershauser et al (1)
GEYSERITE- Campbell et al (2)
OPALINE SILICA- Deamer et al (2)
CHERT (FROM SILICA GEL)- Westall et al (9)
PUMICE-Brasier et al (3)
MONTMORILLONITE- Cairns-Smith et al (3)
KAOLINITE-Hashizume et al (3)
OLIVINE- Russell et al (1)
PYROXENE-Russell et al (1)
SERPENTINE-Russell et al (1)
MAGNETITE-Russell et al (1)
BRUCITE-Russell et al (1)
WULFENITE-Benner et al (4)
TOURMALINE-Benner et al (4)
COLEMANITE-Benner et al (4)

context for origin of life
1) under water to protect from impacts on surface
2) on surface to get wet/dry cycles
3) compartments on surface for organic molecules
4) enough dry land to create boron to help RNA
5) method to transfer Mars life to Earth
6) method to transfer organic molecules to planet
7) method to transfer water to planet
8) method to transfer phosphorus to planet
9) protection and wet/dry cycles

METEORITES
MURCHISON (Amino Acids)- Kvenvolden et al (6)
ALLENDE (CAI’s)- Clarke et al (6)
TISSINT (Piece of Mars)- Steele et al (5)
ORGUEIL (Piece of Comet)- Gardiner et al (6)
CAMEL DONGA (Piece of Vesta)- Alexander et al (7)
TAMBO QUEMADO (Schreibersite)- Pasek et al (8)
BLACK BEAUTY (Piece of Mars)- Agee et al (5)
NAKHLA (Piece of Mars)- Bridges et al (5)
MINI VERSION OF EXHIBIT OF METEORITES AND MINERALS ASSOCIATED WITH THE ORIGIN OF LIFE

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The Origin of Life explained in minutes to the general public.

I have created this mini version of my Meteorite and Mineral Exhibit for educating people about the Origin of Life. Here is the story.

It is commonly accepted you need three conditions for life to start-

A source of Organic Molecules
A solvent (water)
A source of energy to power the start of life

The piece of the Murchison meteorite (middle right) contains organic molecules
The crust of a rocky planet contains enough water to create an ocean
The sources of energy and location for the start of life have changed over 50 years

In the 70's it was thought to be clay (montmorillonite- top left)
In the 80's it was thought to be black smoker vents on the ocean floor (pyrite- middle left)
In the 2000's it was thought to be white smoker vents on the ocean floor (Serpentinization Minerals Olivine Serpentine Magnetite Brucite bottom row)
In 2013 it was thought to be Mars because it had enough dry land to create boron to stabilize ribose in RNA (A meteorite like Tissint- middle left bringing life to Earth)
In 2015 it was thought to be surface hot springs (sinter- top left in pink)
In 2016 it was thought to be volcanic island splash pools (opaline silica- middle right)
In 2017 it was thought to be sediment at the bottom of the ocean in silica gel which precipitates into chert (upper right)

In future years there will be new sources of energy and locations for the start of life from new theories.