Astrobiology News April 2018:
Discovering Earth-like Worlds with TESS

Launched atop a SpaceX Falcon 9 rocket, NASA's Transiting Exoplanet Survey Satellite (TESS) began its two-year mission to seek out strange new worlds - if not new civilizations – on April 18th. TESS is headed for an unusual, highly elliptical, orbit, circling the Earth twice for every orbit of the Moon. By June, it will begin its science operations, using the same method to detect exoplanets as the Kepler Observatory; however, the two missions were designed with different goals in mind.

During its main mission, Kepler "stared" at a patch of sky about the size of your hand projected on the sky from arm's length, but TESS will observe roughly 85% of the entire sky! Whereas Kepler's principal focus was on determining how common different types of exoplanets are, TESS will focus on finding the nearest transiting terrestrial (rocky) worlds. Most of the stars in Kepler's view were faint and distant, while TESS will monitor 500,000 "nearby" stars.

TESS is expected to discover thousands of new exoplanets, including ~500 worlds the size of Earth and slightly larger – so-called "Super Earths" that appear to be abundant, but aren't represented in our own Solar System.[1] Since TESS's focus is on a large survey of worlds that orbit bright, nearby stars, in tandem with follow-up observations by ground-based telescopes, it will identify the best candidates for rocky worlds that orbit in the habitable zones of their stars. This will provide a critical database for large telescopes capable of searching for biomarkers in the atmospheres of these worlds, such as the James Webb Space Telescope (JWST), currently scheduled for launch in 2020.

You can find much more information about TESS and related missions whose ultimate goal is the identification of habitable, and possibly inhabited, worlds, on NASA's TESS mission site.[2]

Until next month,

Grace

[1] The hypothesized “Planet Nine” may fall into this category though.
[2] https://tess.gsfc.nasa.gov/