What is the science question? Which exoplanets offer the best chance for discovering possible biosignatures, the remotely observable signs of life that will be sought from exoplanet atmospheres?

What were your findings? The simultaneous presence of oxygen and methane in an atmosphere is an especially strong biosignature. However, these gases may be difficult to simultaneously detect for planets orbiting G stars like our Sun due to the atmospheric chemistry driven by G star ultra-violet radiation. Our computer simulations find that the atmosphere of a planet orbiting a lower mass K star can support an order of magnitude more methane in the presence of oxygen compared to a planet orbiting a G star like our Sun.

What was the impact? This finding tells us that exoplanets orbiting K stars may offer a “biosignature advantage” in the search for life elsewhere in the universe. We should thus concentrate our exoplanet observations on those located around K stars.

Why does it matter to non-scientists? One of the most profound scientific questions that could be answered in the near future is whether there is life on other planets.