Jay,

My apologies for not getting back to you on this sooner. I was at meetings in Australia and not looking at email very much.

As for pathogenicity of our synthetic organisms, I can confidently say that neither JCVI-syn1.0 or JCVI-syn3.0 are human pathogens. I attached an old review article that lists all the mycoplasma species that have been found in humans and Mycoplasma mycoides, the organism on which the synthetic cells are based is not listed. Mycoplasma mycoides subspecies capri, which is also known as Mycoplasma mycoides large colony, is a goat pathogen. Note that it is not the same as Mycoplasma mycoides subspecies mycoides, which is a dangerous cattle pathogen and is on the USDA’s select agent list of bacteria not allowed in the US except at the USDA facility at Plum Island, NY.  JCVI-syn1.0 is almost identical to Mycoplasma mycoides subspecies capri strain GM12. There are a few genes missing or that have been disrupted. There is no reason to believe that it is attenuated in its pathogenicity for goats. In a BSL2 lab it would not be necessary to work with the organism in a lab hood. Simply follow normal BSL2 biosafety procedures. The JCVI minimal cells, JCVI-syn3.0 and JCVI-syn3A are a different story. To make these bacteria, we deleted more than half of the genes present in JCVI-syn1.0. This is not published, but we know that unlike wild type Mycoplasma mycoides subspecies capri and JCVI-syn1.0, JCVI-syn3.0 and JCVI-syn3A are incapable of infecting cultured mammalian cells. We have checked Vero, HeLa, and TK293 cells by adding the bacteria to cell cultures. After a few days, unlike with the wild type organisms, we cannot isolate live bacteria from the mammalian cell cultures. All that said, so long as you don’t hire goats to do your lab work or consume your lab wastes, you should be OK.

I hope this helps,

John

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