Key areas of acidic hot springs
Global Conclusions and Implications

• There are sufficient genetic differences among the Yellowstone, Japanese, New Zealand and Iceland isolates to warrant new species designations, even when partial sequences of only two genes are used (18S rDNA and rbcL).

• Yellowstone, Japan, New Zealand, and Iceland are distinct “provinces”, separated from each other by many thousands of miles. However, similar acidic thermal habitats occur in each of these regions.

• The “cyanidia” are known from past and present work to be intolerant of desiccation (low or intermediate humidity).

• Since no spore or resting stages exist this strongly suggests that successful dispersal over great distances would be an extremely rare event (thousands or millions of years??) with speciation occurring in the interim in these isolated provinces. Viable cells in moist acidic mud and transport by birds seems the most likely means of dispersal, although survival in the intestinal track of birds is also possible (there is precedent). ALSO, BEWARE OF THERMOBIOLOGISTS.