

Strawberry Disease lesions in rainbow trout (*Oncorhynchus mykiss*) from southern Idaho are associated with a *Rickettsia*-like organism

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Strawberry disease (SD) is a skin disorder of unknown etiology that occurs in rainbow trout (*Oncorhynchus mykiss*). Previous work from our lab detected a candidate bacterial agent that shares close 16S rDNA sequence identity with the order Rickettsiales. We designed a nested PCR assay for the *Rickettsia*-like organism (RLO) 16S rDNA sequence and found a significant association between RLO DNA and SD lesions ($P < 0.001$). In addition, RLO DNA was absent from tissues collected from apparently unaffected raceway controls and present in two of six wild-caught rainbow trout exhibiting lesions consistent with SD. Because of the close phylogenetic association between the RLO and other tick-borne agents, we are attempting to culture RLO in a tick cell line (ISE6). Cells are inoculated directly with fresh SD lesion homogenate and we have detected RLO DNA in two cultures while negative controls have remained negative. Transmission electron microscopy from tick cells inoculated with lesion homogenate has demonstrated the presence of vacuoles filled with bacteria-like structures. RLO-positive cell culture and lesion homogenate were used to challenge three and ten fish, respectively, using inoculation by skin scarification and by intramuscular injection; after seven weeks no SD lesions have appeared. Additional culture and challenge efforts are planned or are in progress to examine the role of RLO in strawberry disease.