

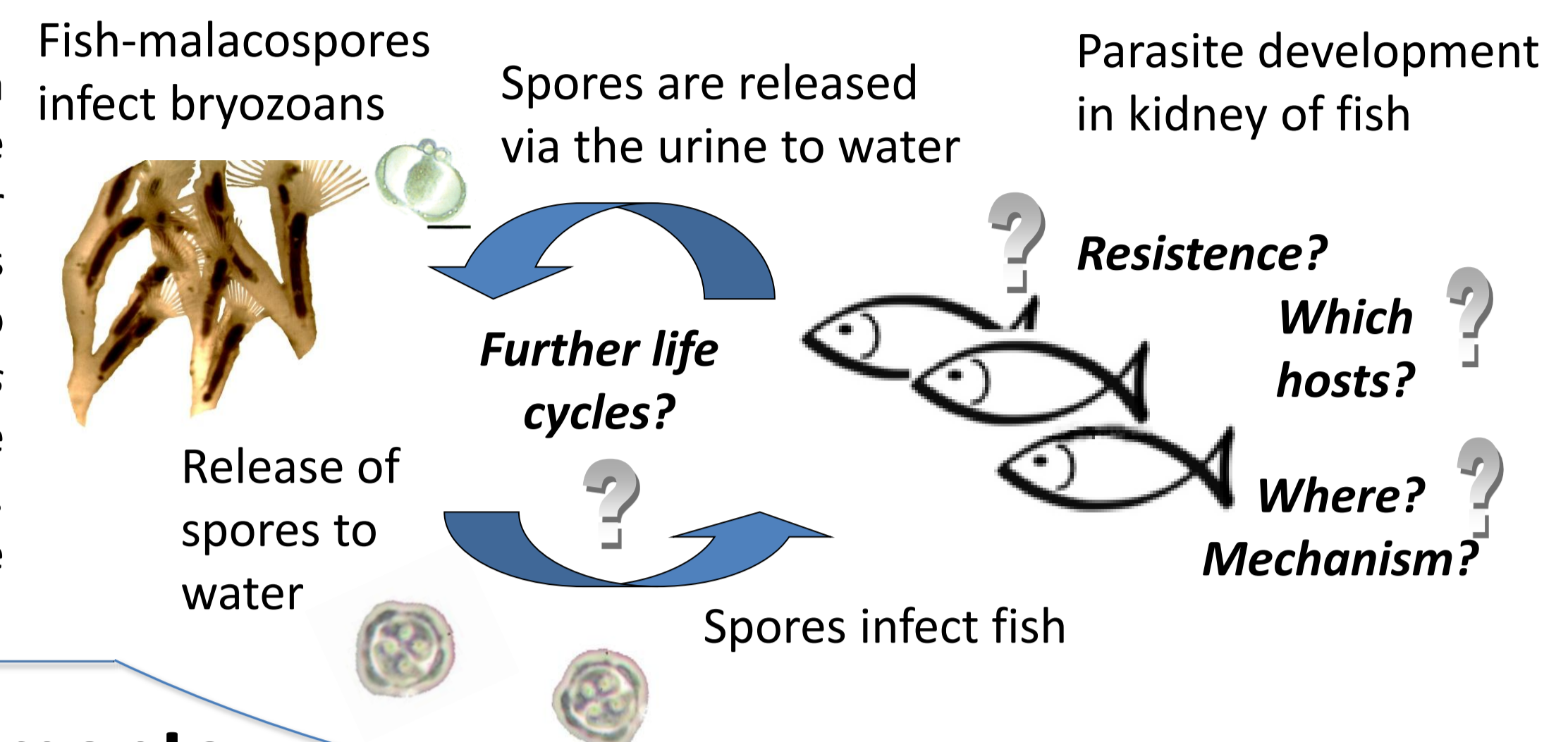
Investigations on life-cycle and host specificity of the Malacosporea (Myxozoa)

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Introduction

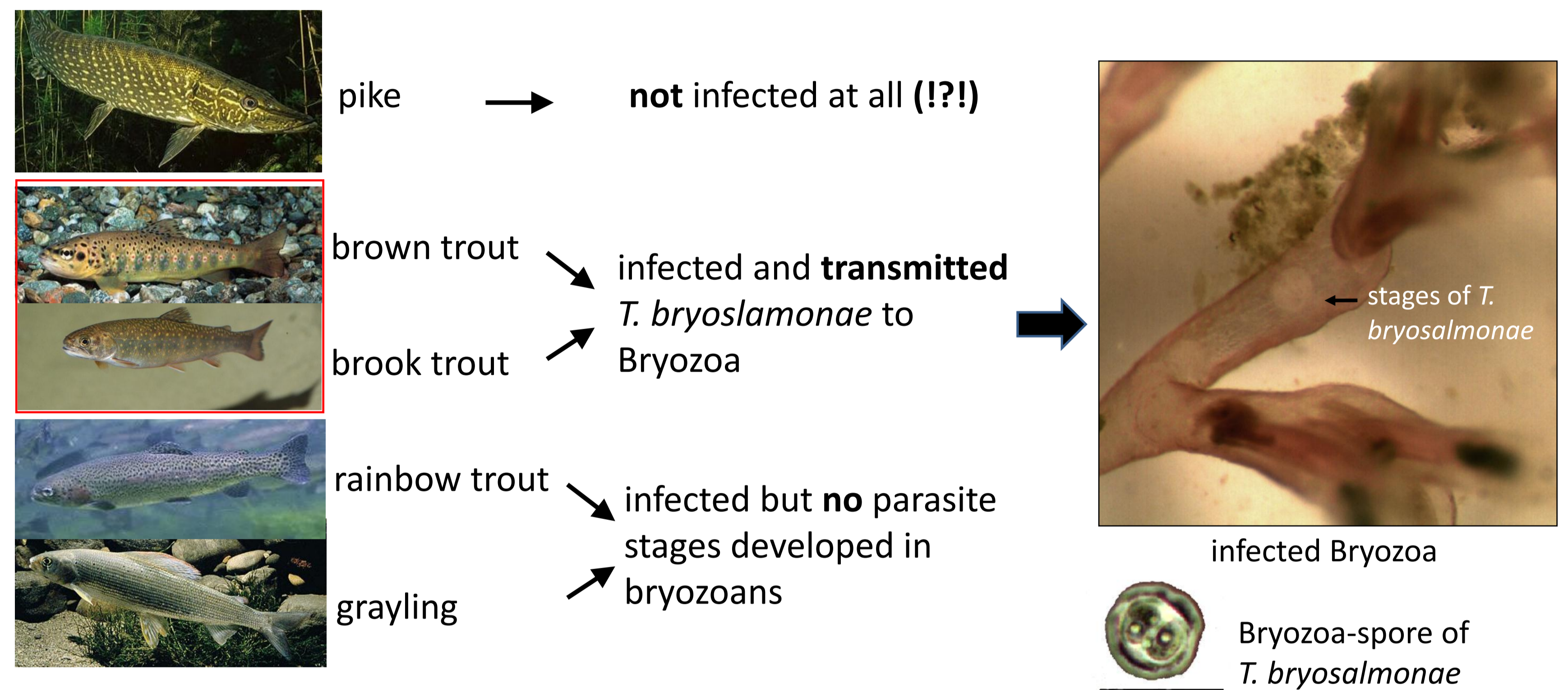
The Metazoan phylum Myxozoa comprises about 2,000 mostly fish-parasitic species. Typical for this group are life-cycles involving a vertebrate and an invertebrate host. Transmission from one host to the other is achieved by water-born spores. Within the Myxozoa, the class Malacosporea is the most enigmatic and probably most ancient group. These parasites are known to infect fish and freshwater bryozoans, though most malacosporeans have been described only in the invertebrate host. The only complete malacosporean life-cycle is known for *Tetracapsuloides bryosalmonae*, the parasite causing proliferative kidney disease (PKD) in salmonid fish. This disease can lead to high losses in aquaculture and might also threaten wild populations of brown trout (*Salmo trutta*). Besides the genus *Tetracapsuloides* with only a single species, the Malacosporea also contain the genus *Buddenbrockia* with two described species. *Buddenbrockia* spp. are known only from the bryozoan host where they either form sac-like stages similar to *T. bryosalmonae* or worm-like, motile stages. Knowledge about host spectrum, transmission mechanisms and intra-specific differences in susceptibility to malacosporean parasites are scarce. Therefore, it was the aim of the present study to investigate biology and life-cycles of some malacosporeans more intensively.



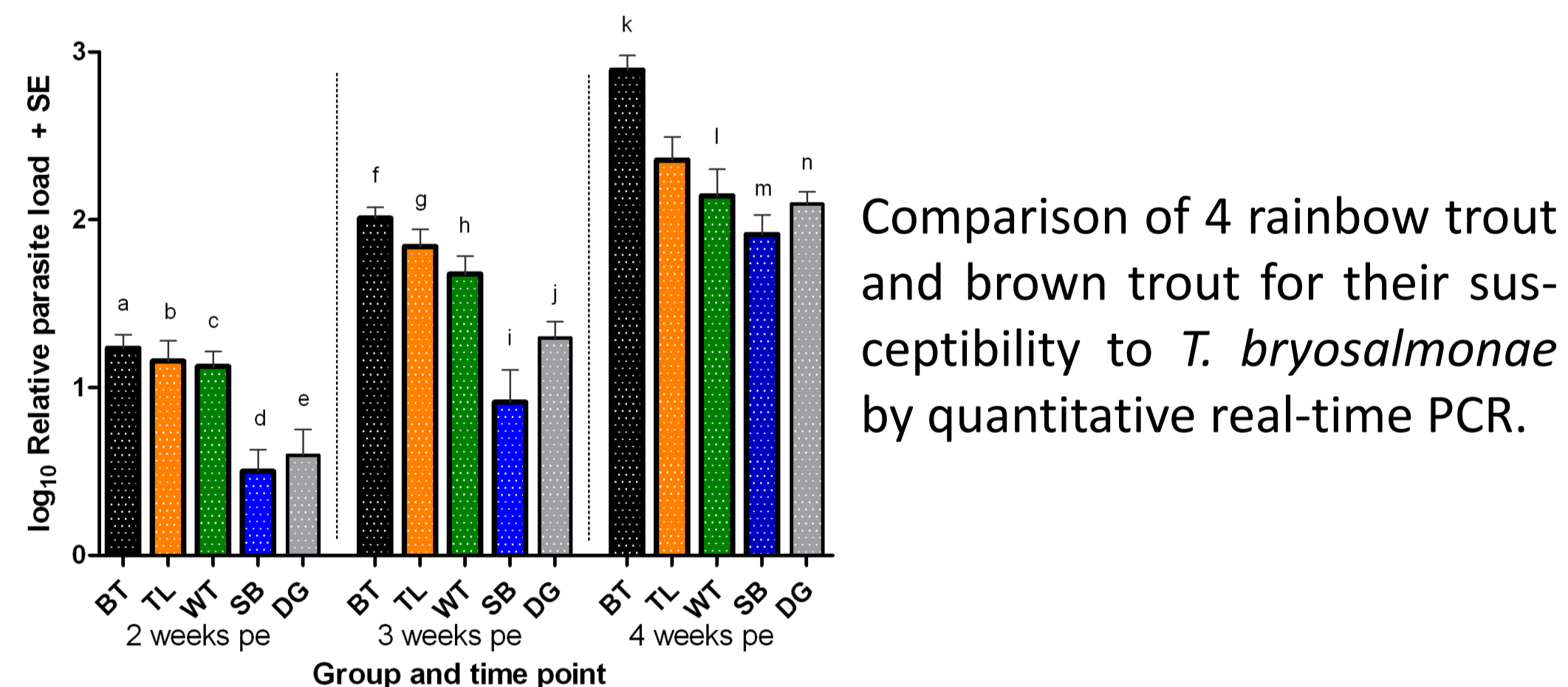
Laboratory cycle of *T. bryosalmonae*



Transmission experiments

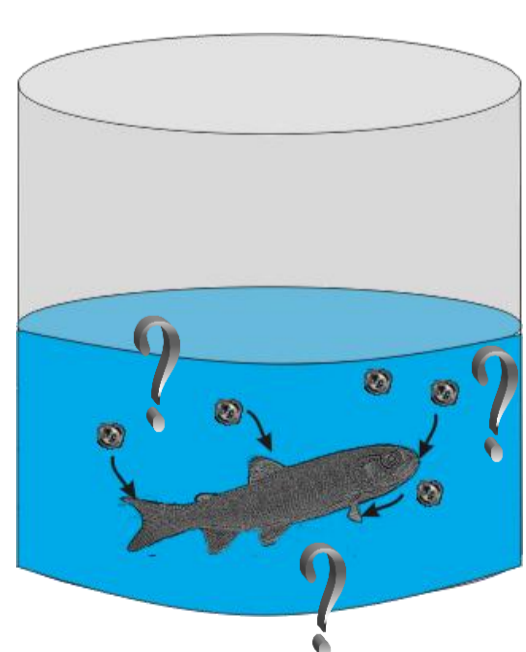


Resistance of rainbow trout lineages



Brown trout (BT) were found to be most susceptible, while one rainbow trout lineage (WT) showed slower increase of parasite numbers than others.

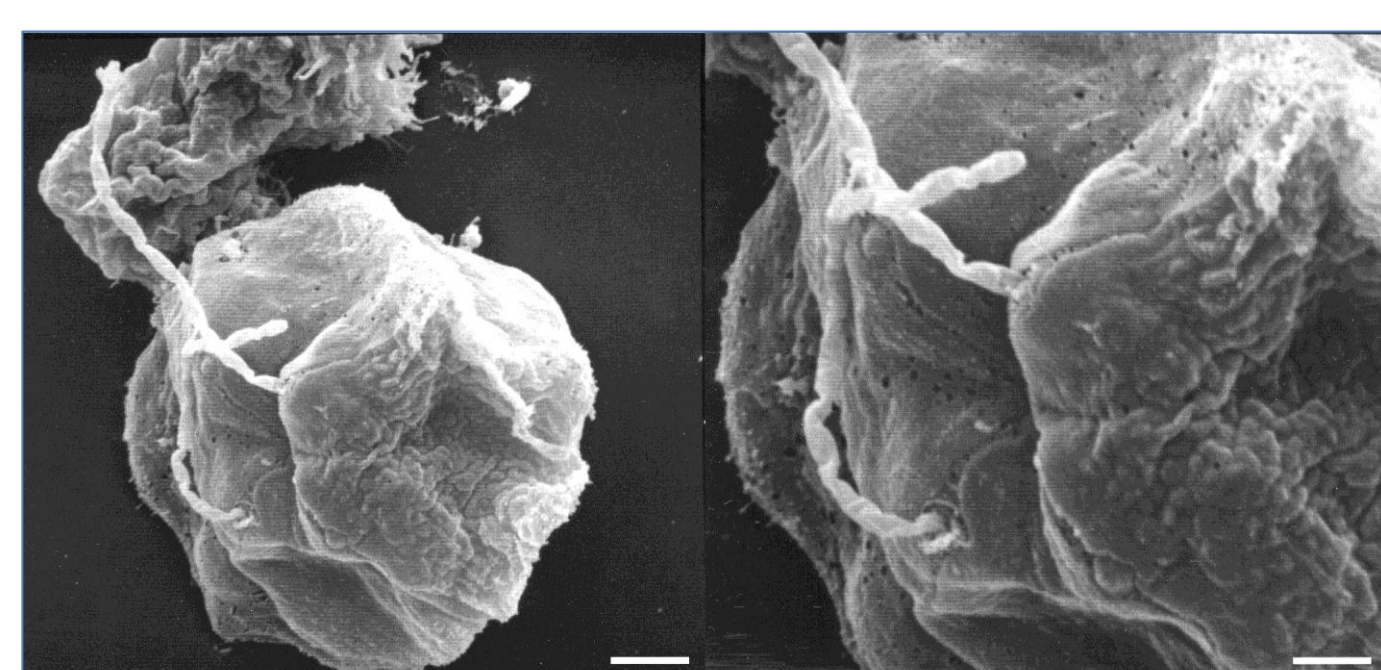
Route of entry into fish host



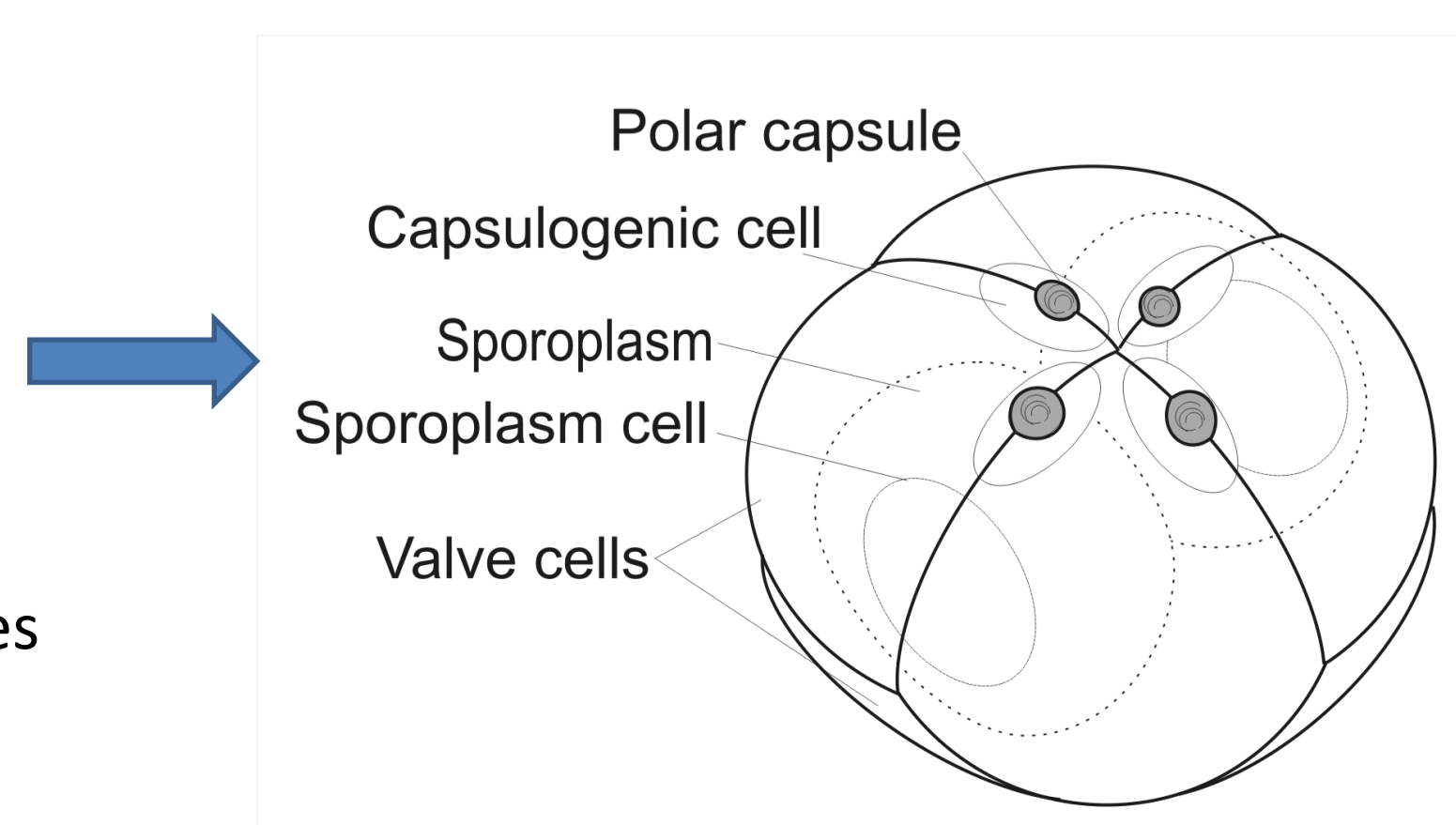
The penetration of *T. bryosalmonae* spores into the fish was investigated by in-situ hybridization



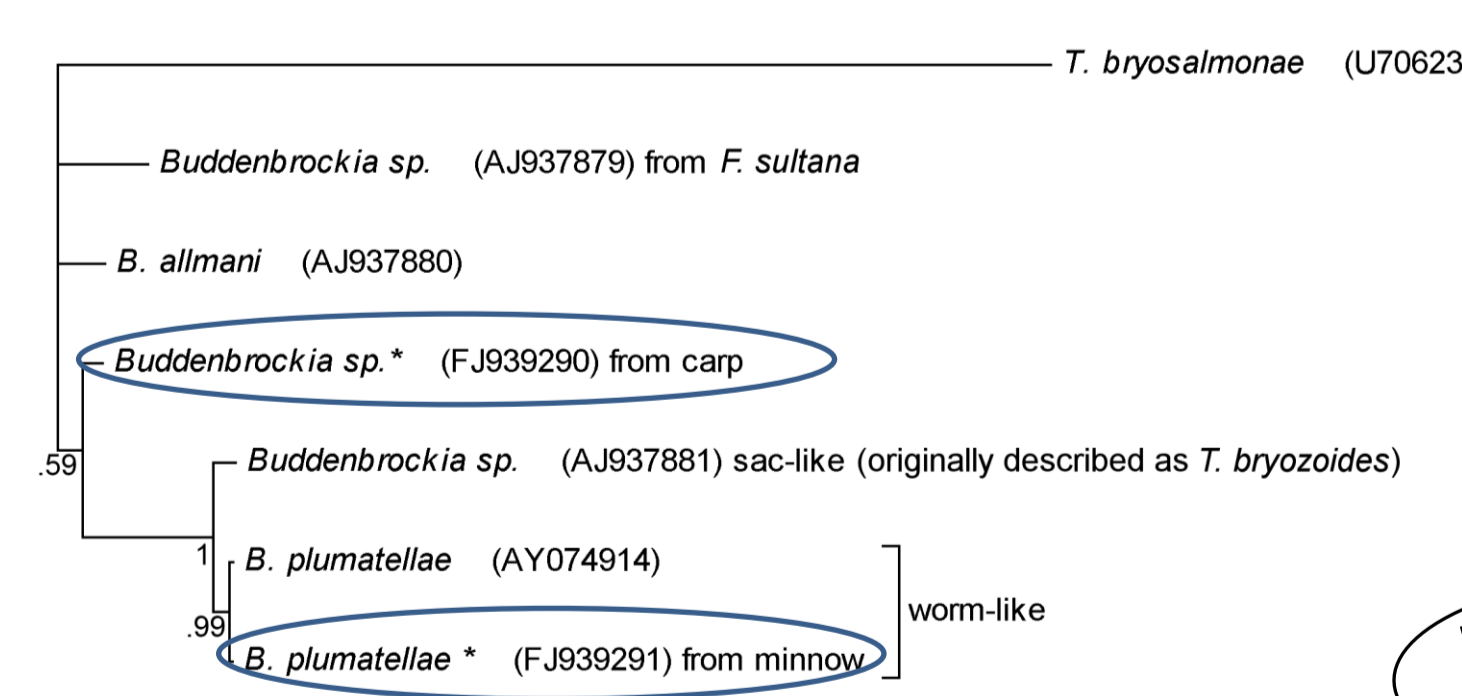
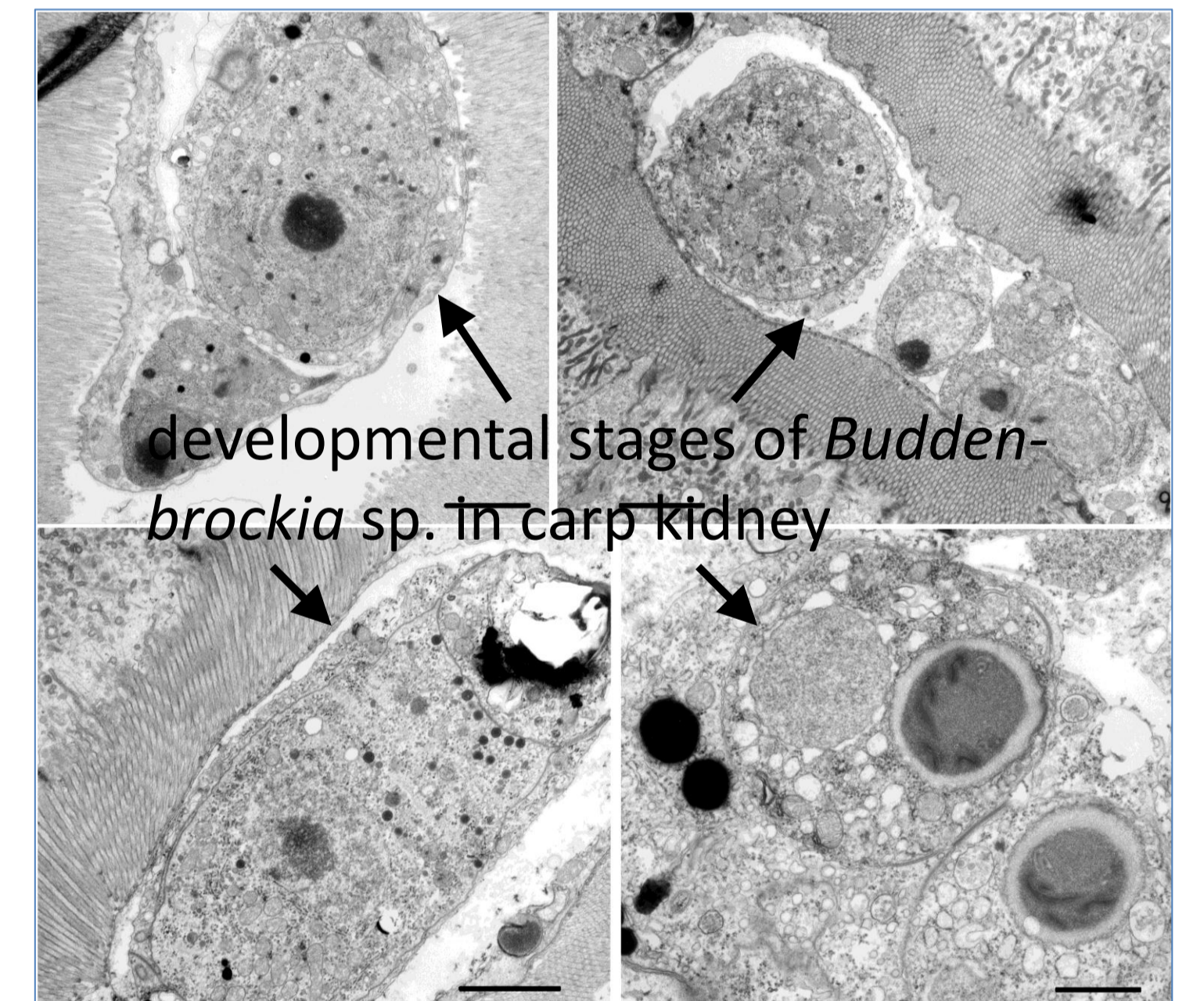
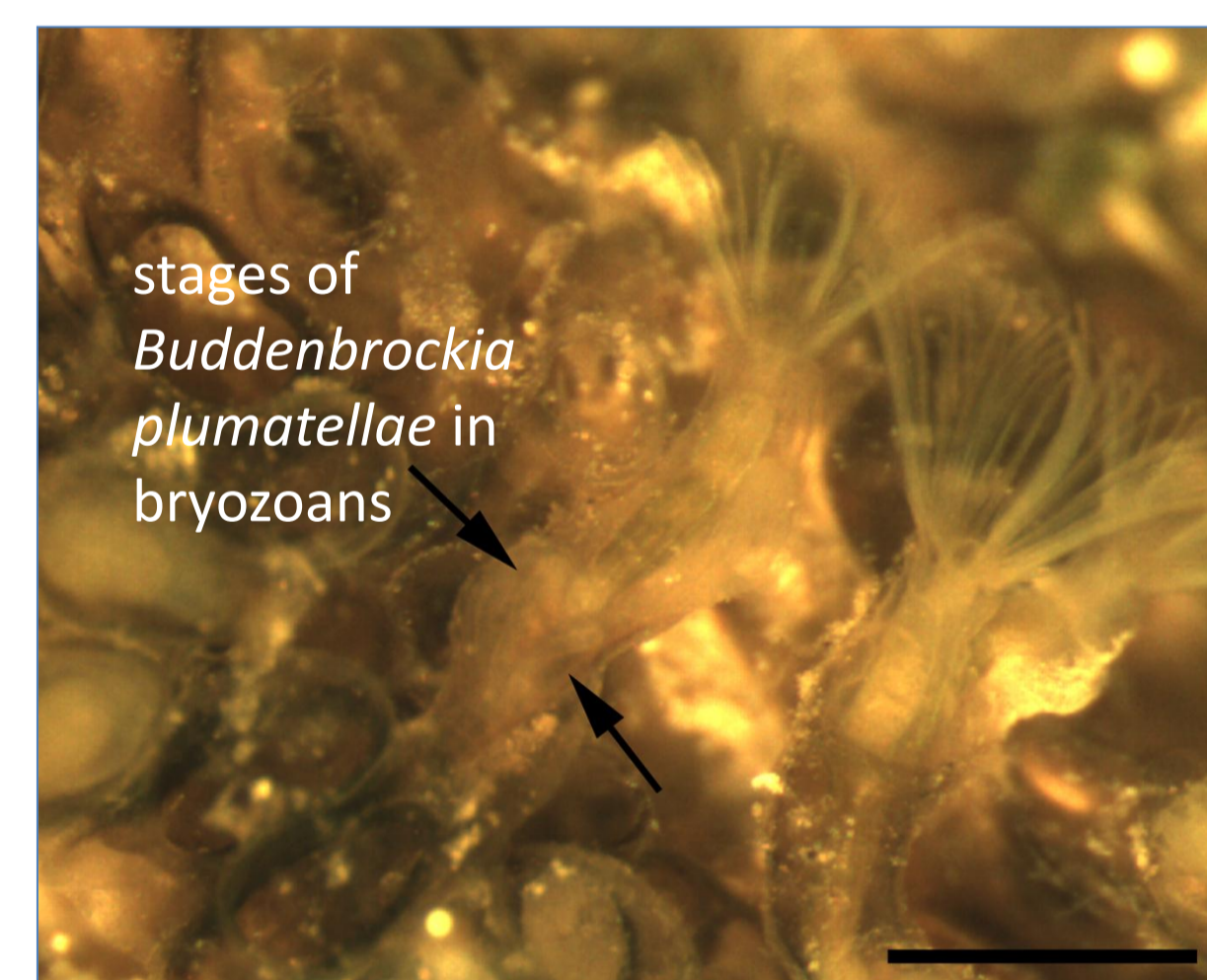
Presence of infective stages reveal gill to be the dominant portal of entry for the parasite.



Scanning electron microscopy of bryozoa-spores of *T. bryosalmonae* allow further insights in spore morphology



Diversity of malacosporeans



Molecular phylogeny of known malacosporeans

A new Buddenbrockia species?!

We can be infected by *B. plumatellae*!!

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1999-2005 Studium der Biologie an der Eberhard-Karls-Universität Tübingen

2006-2010 Promotion an der Universität Duisburg-Essen, praktische Durchführung der Arbeit an der Tierärztlichen Fakultät der Ludwig-Maximilian-Universität in München und der Veterinärmedizinischen Universität Wien

2010-2011 Stipendium der Japanese Society for Promotion of Science an der Universität von Tokyo

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