

BDELLOID ROTIFERS, AN EVOLUTIONARY PUZZLE

Bdelloid rotifers are a class of rotifers that reproduce exclusively through parthenogenesis, meaning females produce offspring without fertilization by males. Typically, mutations and sexual reproduction generate variability essential for surviving in an ever-changing environment. In this regard, bdelloid rotifers are considered an "evolutionary scandal."

Recently, some answers to this puzzle have emerged. These microscopic animals gain diversity by stealing genes from other organisms through horizontal gene transfer, including genes from bacteria. In a paper titled "Bdelloid rotifers deploy horizontally acquired biosynthetic genes against a fungal pathogen" in Nature Communications, Nowell et al. report a paradigmatic example.

The paper has an intriguing tale. The reported results suggest that bdelloid rotifers may be a promising source of new antimicrobial compounds. Traditionally, the search for antimicrobials has focused on bacteria and fungi, but many potential compounds are often toxic to animal cells. Bdelloid rotifers, however, appear to have spent millions of years (~40) acquiring antimicrobial synthesis capabilities from various life forms and adapting them for use in animal cells to defend against bacteria and fungi. Therefore, studying the secondary metabolome of bdelloid rotifers could be highly valuable in discovering new antimicrobial agents for treating animal infections.

1. <https://www.nature.com/articles/s41467-024-49919-1>