

Amphibians may develop immunity to fatal fungus

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Amphibian populations are declining worldwide, principally because of the spread of the fungal disease chytridiomycosis. Researchers know that some amphibian populations and species are innately more susceptible to the disease than others. Recent preliminary evidence, described in the April issue of *BioScience*, suggests also that individual amphibians can sometimes develop resistance to chytridiomycosis, which is caused by the fungus *Batrachochytrium dendrobatidis* (Bd).

Jonathan Q. Richmond, of the US Geological Survey, and three coauthors argue that researchers should broaden their studies of chytridiomycosis to include so-called acquired immunity, because this might improve predictive models of Bd's spread and so suggest ways to protect threatened [frog](#) and toad populations.

Richmond and colleagues discuss experimental studies indicating that two species of New Zealand frogs infected with Bd but treated with the antimicrobial drug chloramphenicol were later resistant to reinfection with the fungus. Other studies indicate that North American [toads](#) that survived after being first exposed to Bd in dry conditions survived longer when reinfected in wet conditions than did toads that were exposed to Bd in wet conditions.

Richmond and colleagues emphasize that innate immunity has to be activated in an animal before acquired immunity can develop. They point to several key immune-system components—notably, toll-like receptors and major histocompatibility complex molecules—that most

likely play a role in bridging the innate and the acquired immune systems, and urge researchers to undertake collaborative studies of the genetics of how these systems interact as Bd spreads.

Source: American Institute of Biological Sciences

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