

Giant fire-bellied toad's brain brims with powerful germ-fighters

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Frog and toad skins already are renowned as cornucopias of hundreds of germ-fighting substances. Now a new report in ACS's *Journal of Proteome Research* reveals that the toad brains also may contain an abundance of antibacterial and antiviral substances that could inspire a new generation of medicines.

Ren Lai and colleagues point out that scientists know little about the germ-fighting proteins in amphibian brains, despite many studies showing that amphibians synthesize and secrete a remarkably diverse array of antimicrobial substances in their skin. So they decided to begin filling that knowledge gap by analyzing brains from the Giant Fire-Bellied Toad and the Small-webbed Bell Toad.

They discovered 79 different antimicrobial peptides, the components of proteins, including 59 that were totally new to science. The diversity of the peptides "is, to our knowledge, the most extreme yet described for any animal brains," they noted. Some of the peptides showed strong antimicrobial activity, crippling or killing strains of staph bacteria, *E. coli*, and the [fungus](#) that causes yeast infections in humans. These promising findings suggest that the toad brains might be a valuable source for developing new antibacterial and [antiviral drugs](#).

Provided by American Chemical Society

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