Researchers discover general recipe for making antimicrobial agents that kill bacteria

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Many antimicrobial peptides in our immune system kill bacteria by punching holes in their membranes. Scientists have been researching antimicrobial peptides for more than 30 years, and there is currently a large effort to mimic their antimicrobial action in order to fight antibiotic-resistant bacteria and emerging pathogens.

Now, a research team led by Gerard Wong, a professor of bioengineering at the UCLA Henry Samueli School of Engineering and Applied Science, has discovered an important pattern in the amino acid content of antimicrobial peptides and has shown that it is consistent with all 1,080 known peptides in the antimicrobial database.

The discovery of this pattern allows for the formulation of a general recipe for making antimicrobial peptides. The recipe is based on physical principles behind the generation of membrane curvature, specifically the type of curvature that facilitates membrane pore formation in bacterial membranes. Knowing this rule will greatly facilitate engineering efforts aimed at making new antibiotics.

The discovery and development of new antibacterials is costly and time consuming. Moreover, it is well known that bacteria also evolve immunity to new drugs quickly. This discovery allows for the creation new antibacterial drugs without starting from scratch: A general recipe can be followed, rather than using simple trial and error. Consequently,

this will greatly accelerate drug discovery.

More information: The research was recently published in the peer-reviewed *Journal of the American Chemical Society* and is available online at pubs.acs.org/doi/full/10.1021/ja200079a

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