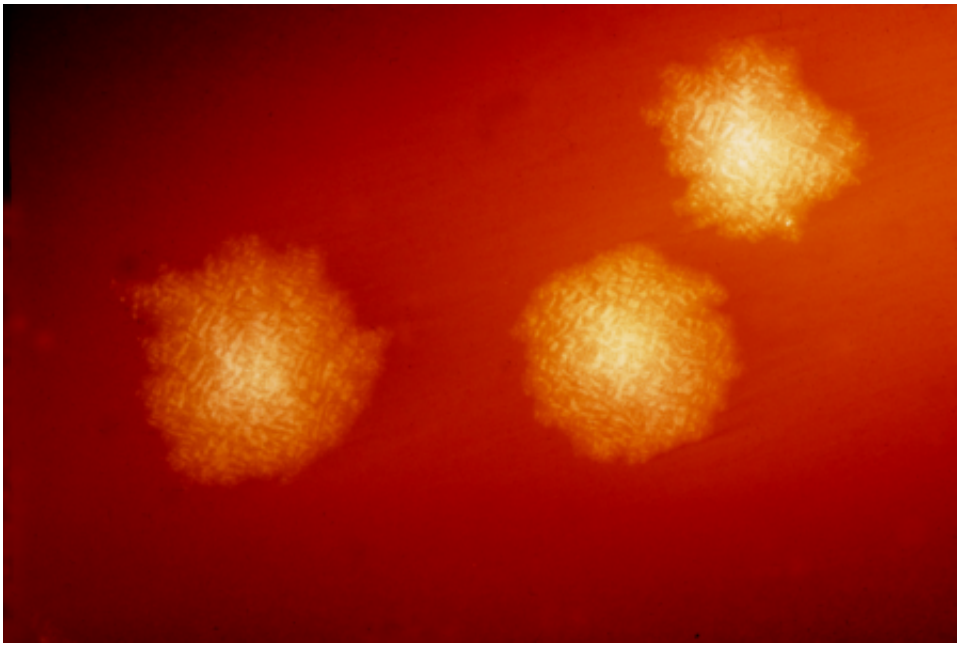
Versatile C. difficile blocker

January 26 2018, by Bill Snyder



This photograph depicts Clostridium difficile colonies after 48hrs growth on a blood agar plate; Magnified 4.8X. C. difficile, an anaerobic gram-positive rod, is the most frequently identified cause of antibiotic-associated diarrhea (AAD). It accounts for approximately 15–25% of all episodes of AAD. Credit: CDC

Clostridium difficile (C. difficile) infection is the leading cause of hospital-acquired diarrhea, causing nearly a half million infections in the United States each year. Recurrence after treatment with antibiotics is common and new therapies are needed.

TcdB is a toxin produced by the bacterium that upon entering epithelial

cells lining the colon causes cell death. A human monoclonal antibody that blocks the toxin from entering the cell has been shown to protect against C. difficile infection in animal models and reduce recurrence in humans.

Now Heather Kroh, PhD, Ramyavardhanee Chandrasekaran, PhD, Ben Spiller, PhD, Borden Lacy, PhD, and colleagues show that the antibody, PA41, recognizes a single conserved amino-acid sequence of the toxin from multiple C. difficile strains.

Their work, published Jan. 19 in the *Journal of Biological Chemistry*, reveals a unique mechanism of C. difficile toxin neutralization by a monoclonal antibody. The antibody, in turn, provides a novel tool for understanding how bacterial toxins are transported across the membrane.

More information: Heather K. Kroh et al. A neutralizing antibody that blocks delivery of the enzymatic cargo ofClostridium difficiletoxin TcdB into host cells, *Journal of Biological Chemistry* (2017). DOI: 10.1074/jbc.M117.813428

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