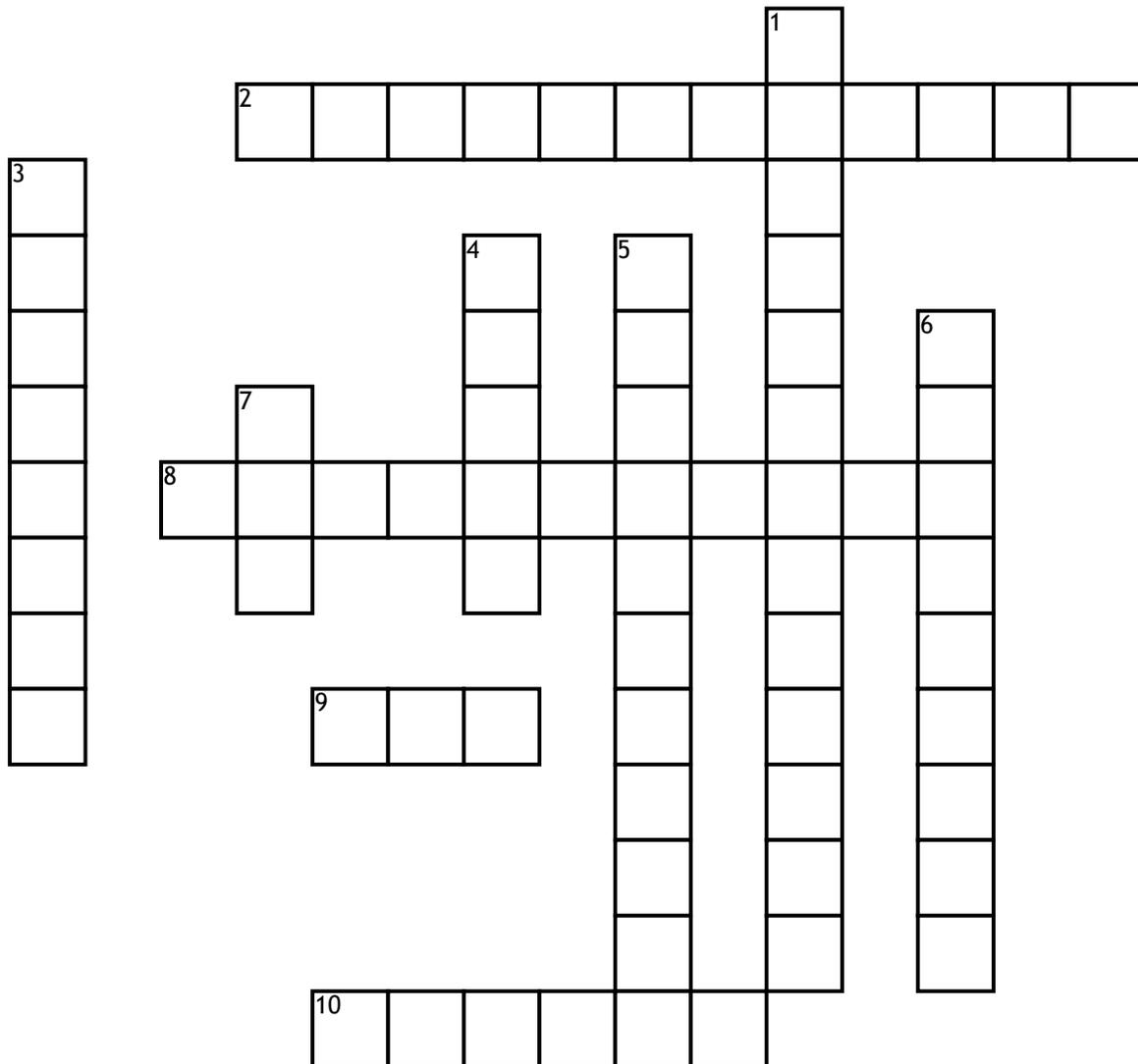


Carbapenems



Across

2. this side chain is important for the activity of this class of antibiotics
8. route of administration of most carbapenems used clinically due to their low oral bioavailability
9. beta-lactams bind to this group of enzymes to exert their antibacterial activity
10. carbapenems enter Gram-negative bacteria through these outer membrane proteins

Down

1. bacterial cell wall component that 3) catalyze the formation of

3. the first carbapenem developed that was stable against base hydrolysis
4. country where the world's first oral carbapenem was developed in
5. name of the first ever carbapenem discovered
6. unique bond found in class A carbapenemases that changes the distance between active-site residues and therefore changes the shape of the active site
7. the superfamily of efflux pumps that eliminate carbapenems in *P. aeruginosa*