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Bacterial ribosome selective aminoglycosides

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Aminoglycosides inhibit bacterial growth by binding to the A-site decoding region of the bacterial 16s ribosomal RNA (rRNA) within the 30S ribosomal subunit. Previous work has shown that there is approximately a five-fold difference in the affinity of neomycin for the human A-site model and the *E. coli* model. We have developed a screening assay that rapidly identifies compounds that discriminate between the two model rRNA structures. This approach, coupled with a rapid solid phase synthesis method, has identified active aminoglycosides that show large differences in binding affinity for the *E. coli* A-site and the human A-site than that of neomycin (~30 fold). The methodology for synthesizing, screening for both ribosomal binding/selectivity and bacterial growth inhibition, and rapid analysis of the data provides a systematic method for identification of bacterial ribosome specific antibacterial that can evade bacterial resistance pathways.

Biography

Dev P Arya earned his BSc (chemistry honors program) from St. Stephen's College, Delhi, and PhD (Bioorganic Chemistry) from Northeastern University, Boston. After spending his Post-doctoral years in the labs of Prof. T. C. Bruice (UC Santa Barbara), he joined the faculty at Clemson University. He is a recipient of a National Science Foundation CAREER Award (2002) and the ACS Horace S. Isbell Award of the Division of Carbohydrate Chemistry (2007). He has served as the Program Chair (2004-2008), Chair-Elect (2009-2010) and Chair (2010-2011) of the ACS Division of Carbohydrate Chemistry.

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