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Characterization of antibiotic resistance in aquatic bacteria

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Several species of the genus Staphylococcus are important human and livestock pathogens. Among the staphylococci, S. aureus strains pose the greatest health concern and are often responsible for hospital wound infections, cases of toxic shock syndrome, and severe pneumonia. S. aureus has also caused outbreaks of food poisoning and skin infections in humans, as well as mastitis in cows. S. sciuri strains have been associated with a variety of illnesses, as well as hospital wound infections. S. epidermidis can cause endocarditis and sometimes infects indwelling medial devices such as catheters. S. saprophiticus strains are a common cause of urinary tract infections. In addition to their clinical significance, staphylococci may be useful in microboal source apportionment studies. However, strains in aquatic habitats have rarely been characterized, especially in the Northeastern United States. These investigations seek to address that data gap. Halotolerant bacteria from Hudson River surface water, treatment plant effluent, sewer effluent, biofilms, etc. are being recovered on mannitol salt agar by either membrane filtration or swabbing. Putative staphylococci (PS) are Gram-positive, catalase-positive, halotolerant cocci that grow characteristically on Baird-Parker medium. Over 100 PS have been isolated from various sources to date. Isolates are being characterized with regard to antibiotic resistance and evaluated for significant differences among sources. Isolates are being obtained over the course of four seasons to evaluate changes in resistance features.