

P038 Nitrate and selenate respiration in *Aeromonas hydrophila*
James T. Leaver and Clive S. Butler
*Institute for Cell and Molecular Biosciences, University of
Newcastle, Newcastle upon Tyne, NE2 4HH*

Aeromonas hydrophila is a Gram-negative facultative anaerobe found in fresh and brackish water environments. It is considered a fish pathogen but has also caused gastro-intestinal disease and cellulitis in humans. *A. hydrophila* has been shown to grow aerobically on a wide range of carbon sources as well as anaerobically on a wide range of respiratory substrates including iron, nitrate, selenate and chromate. It is perhaps these abilities that allow *A. hydrophila* to survive longer than many other bacteria in aquatic environments. In the present study *A. hydrophila* (ATCC 7966) has been grown on various carbon sources, using oxygen, nitrate and selenate as terminal electron acceptors. Results have shown that both nitrate and selenate can support anaerobic growth when grown on glycerol-formate. Nitrate respiration is supported by a typical membrane-bound NAR-type nitrate reductase. Preliminary studies of whole cells using viologen assays suggest that the selenate reduction occurs in the periplasmic compartment. Reduction of selenate was inhibited by the growth on tungstate containing media, inferring that the selenate reductase is a molybdoenzyme. The role of this novel selenate reducing system in relation to selenate detoxification and energy conservation is discussed.