Gram-positive bacteria are capable of complete denitrification converting nitrate via nitrite, nitric oxide and nitrous oxide to dinitrogen. Unlike gram-negative bacteria, gram-positive bacteria have a very small periplasmic-like space. This leads to the question whether those enzymes and electron carriers involved in denitrification, which are normally located in the periplasmic space in gram-negative bacteria, are located in the periplasmic-like space in gram-positive bacteria or have been modified as membrane-bound proteins.

Employing *Bacillus azotoformans* as a gram-positive bacterial model, our initial study demonstrates that anaerobic denitrification is catalysed by four membrane-bound enzymes and that the electron carriers are membrane-bound cytochromes c and menaquinol. NADH dehydrogenase is coupled to the denitrification pathway providing menaquinol. In addition, the cytochrome $b_6f$ complex forms part of the denitrification pathway, oxidizing menaquinol and reducing at least three different membrane-bound cytochromes c. We determined that the NO reductase, $qCu_A$NOR, can accept electrons from two donors, a specific cytochrome $c_{551}$ and menaquinol. Similarly, nitrite reductase, a copper enzyme, and $N_2O$ reductase may be bifunctional enzymes. Regarding the bifunctionality of $qCu_A$NOR, we propose that the menaquinol-linked pathway is involved in NO detoxification and the cytochrome $c_{551}$ pathway in denitrification including the cytochrome $b_6f$, thus serving the bioenergetic needs of the organism.