Answer

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The criticisms raised by Dr Saraste suggest that he does not believe that Southern hybridization experiments can be carried out at nominal stringencies so as to show partial or limited homology between heterologous DNA sequences. As we clearly state in our publication (see p. 79 of [1]), hybridization under the conditions that we used reveals only structural homology not necessarily functional homology. Careful examination of our figs 2 and 3 [1] shows that there are indeed discrete radiolabeled bands whose intensities do not correlate with the ethidium bromide staining pattern. Inasmuch as hybridization reactions are thermodynamically driven processes dependent on temperature, ionic conditions, and degree of base sequence homology, the observed bands are a result of a limited, but specific, interaction of the probe with the bacterial DNAs, not 'background' as described in Dr Saraste's *Comment*. In fact, the weak signal that we obtained upon hybridization of the CO III probe to *Paracoccus denitrificans* DNA is entirely consistent with the report of Saraste et al. [2], whose partial DNA sequence of the cytochrome *c* oxidase subunit III gene from *P. denitrificans* exhibits approx. 30% homology with the bovine mitochrondrial CO III gene. Dr Saraste's gratuitous comments aside, the results we presented [1] suggest that there are DNA sequences in the different bacterial genomes that have degrees of structural homology to the bovine CO III DNA probe (as indicated by the intensity of radioactive probe binding), not that the bacterial genomes necessarily encode proteins that have a function similar to mammalian cytochrome *c* oxidase subunit III.

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REFERENCES

[1] Fink, S.P., Whitford, T., Leffak, M. and Prochaska, L.J. (1987) FEBS Lett. 214, 75–80.
[2] Saraste, M., Raitio, M., Jalli, T. and Peramaa, A. (1986) FEBS Lett. 206, 154–156.

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