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BIOSYNTHESIS OF VITAMIN B12

- Insertion of Co²⁺ **generates** cob(II)yrinic acid *a,c-diamide* (Fig. 6), indicating that there has been no redox change associated with the chelation process.
- With the metal inserted, the pathway turns its attention to ensuring the cobalt is ligated securely. To do this the cobalt ion is reduced by a reductase.
- With the generation of the Co(I) species, the corrin can now be adenosylated, this step being accomplished with the assistance of the CobO enzyme, which exists as a homodimer with a subunit molecular mass of 27 kDa.
- 33 The enzyme has**
 - a high affinity for cob(II)yrinic acid *a,c-diamide* producing adenosylcob(III)yrinic acid *a,c-diamide* but is strongly inhibited by the cobalt-free substrate equivalent, hydrogenobyrrinic acid *a,c-diamide*.

Biosynthesis of adenosylcobinamide

- The biosynthesis of adenosylcobinamide (AdoCbi) from adenosylcobyric acid requires the attachment of an aminopropanol group, derived from threonine, to the *f* (*propionic acid*) side chain of the corrin ring (Fig. 11). In *P. denitrificans*, this
- process is accomplished by a two component system, designated α and β . **For full activity, α and β require adenosylcobyric acid, ATP/Mg and (*R*)-1-aminopropan-2-ol.**