ARF1 encodes one of three ADP ribosylation factorsidentified in S. cerevisiae. ARFs are GTPases of the Ras superfamily that regulate the formation of coated vesicles in intracellular trafficking. The process of vesicle formation in the exocytic and endocytic pathways has been recently reviewed, as has the role of ARF. Deletion of ARF1 causes defects in secretion. Yeast Arf1p and Arf2p are 96% identical in amino acid sequence and are functionally interchangeable. An arf1 arf2 double deletion is inviable, despite the presence of the third yeast ARF, Arf3p. Yeast ARF activity is regulated by the guanine nucleotide exchange factors Sec7p, Gea1p, Gea2p, and Syt1pand by the GTPase activating proteins Gcs1p, Glo3p, Age1p, and Age2p.