leads to the release of Mss51 from the assembly intermediates, which allows further rounds of Cox1 synthesis. The mitochondrial Hsp70 Ssc1, which has been suggested to associate with Mss51 in the 'TE' and in the 'SI' states is not shown.

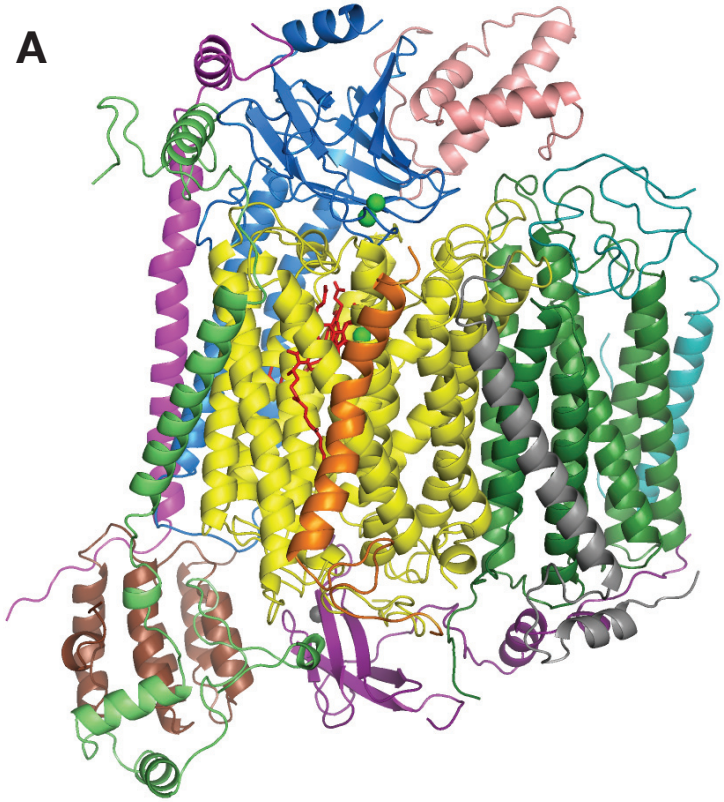
Figure S1| Crystal structure of monomeric bovine cytochrome oxidase. Shown are schematic presentations of bovine subunits[12], that are homologous to the yeast proteins: Cox1 (yellow), Cox2 (blue), Cox3 (dark green), Cox4 (purple), Cox5 (light green), Cox6 (brown), Cox7 (grey), Cox8 (orange), Cox9 (magenta), Cox12 (salmon), Cox13 (cyan); and cofactors: heme moieties (red stick models) and copper ions (green spheres). (A) Side-view of all subunits with the matrix at the bottom and the IMS side at the top. (B) Top-view of a section through the transmembrane domains from the IMS-side. Helices of subunits containing more than a single transmembrane helix are indicated in Roman numbering. PDB entry: 1OCC, analyzed with PyMol software, Version 1.2r3pre, LLC.

Supplementary Table:

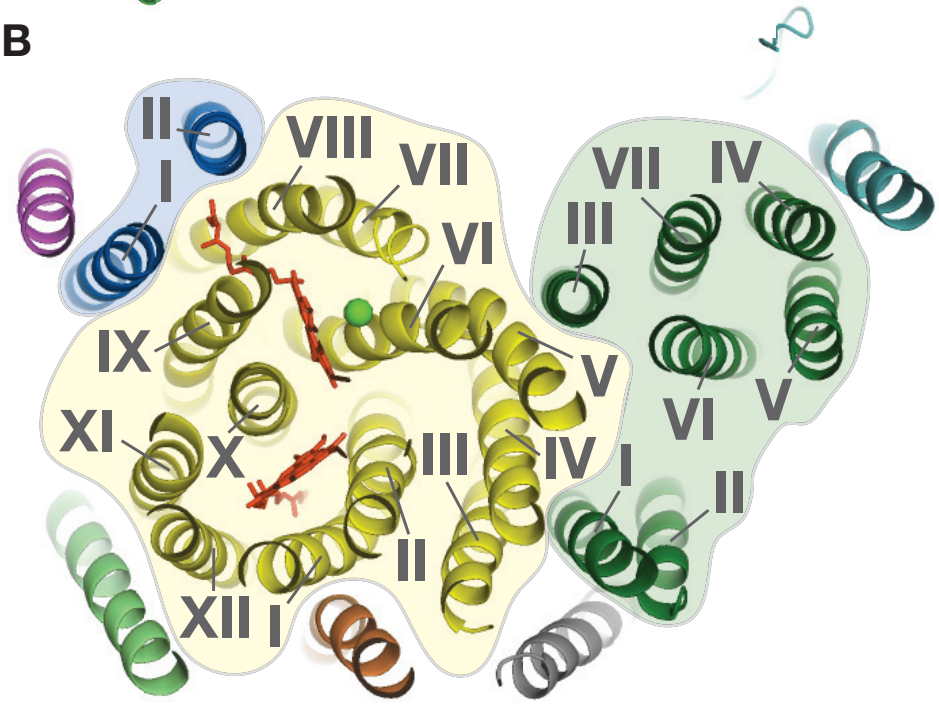
Assembly factors for cytochrome oxidase in yeast and human

Links to web sites: none

A



B



C

Nomenclature of cytochrome oxidase subunits

Yeast	Mammals	Functions*
Mitochondria-encoded subunits (catalytic core)		
Cox1	COX1 or MTCO1	Coordination of hemes and Cu_B center; proton translocation
Cox2	COX2 or MTCO2	Coordination of Cu_A site
Cox3	COX3 or MTCO3	Stabilizing enzymatic core
Nuclear-encoded structural subunits		
Cox4	COX5b	Coordination of zinc ion
Cox5a and b	COX4-1 and -2	Stabilizing newly synthesized Cox1; regulating activity
Cox6	COX5a	Stabilizing Cox5a and b (COX4-1 and -2 respectively)
Cox7	COX7a	Unknown
Cox8	COX7c	Unknown
Cox9	COX6c	Unknown
Cox12	COX6b	Unknown
Cox13	COX6a	Influencing activity; ATP sensing
n/i	COX7b	Unknown
n/i	COX8	Unknown

n/i, no homolog identified; *, based on published data

Supplementary Table I. Cytochrome oxidase assembly factors

Yeast	Mammals	Functions*
Translational regulation		
Mss51	n/i	Cox1 translation and stabilization (see below)
Pet309	(LRPPRC)	Cox1 translation (Stabilization of *COX1* and *COX3* mRNAs)
Pet111	n/i	Cox2 translation
Pet54	n/i	Cox3 translation
Pet122	n/i	Cox3 translation
Pet494	n/i	Cox3 translation
Hah1	TACO1	COX1 translation in humans, no respiratory defect in yeast
Membrane insertion and processing		
Oxa1	OXA1	Main insertase for catalytic core; assembly facilitator
Cox18/Oxa2	COX18	Export of C-terminal domain of Cox2
Mss2	n/i	Recognition of Cox2 C-terminal domain
Pnt1	n/i	Recognition of Cox2 C-terminal domain
Imp1	n/i	Maturation of Cox2 precursor
Heme *a* synthesis		
Cox10	COX10	Heme *o* synthesis; formation of heme *a* site in Cox1
Cox15	COX15	Heme *a* synthesis
Yah1	FDX1	Heme *a* synthesis; (iron-sulfur-cluster biogenesis)
Copper transport and insertion		
Sco1	SCO1 and SCO2	Formation of Cu_A center (Cox2)
Sco2	n/i	Unknown
Cox11	COX11	Formation of Cu_B center (Cox1)
Cox17	COX17	Copper delivery to Cox11 and Sco1
Cox19	COX19	Copper trafficking
Cox23	n/i	Copper trafficking
Assembly factors with chaperone-like function		
Cox14	n/i	Negative regulator of Cox1 translation
Cox20	n/i	Cox2-specific chaperone
Shy1	SURF1	Involved in Cox1 biogenesis; heme a_3 insertion
Mss51	n/i	Specific Cox1 chaperone
Coa1	n/i	Transition from Cox1 translation to co-factor insertion
Coa2	n/i	Cox1 stabilization; cooperation with Cox10
Coa3	n/i	Negative regulator of Cox1 translation
Coa4	n/i	Membrane stabilization of Cytochrome *c*
Pet100	n/i	Assembly facilitator for Cox7-Cox8-Cox9 subcomplex
Pet117	n/i	Unknown
Pet191	PET191	Unknown

n/i, no homolog identified; *, based on published data