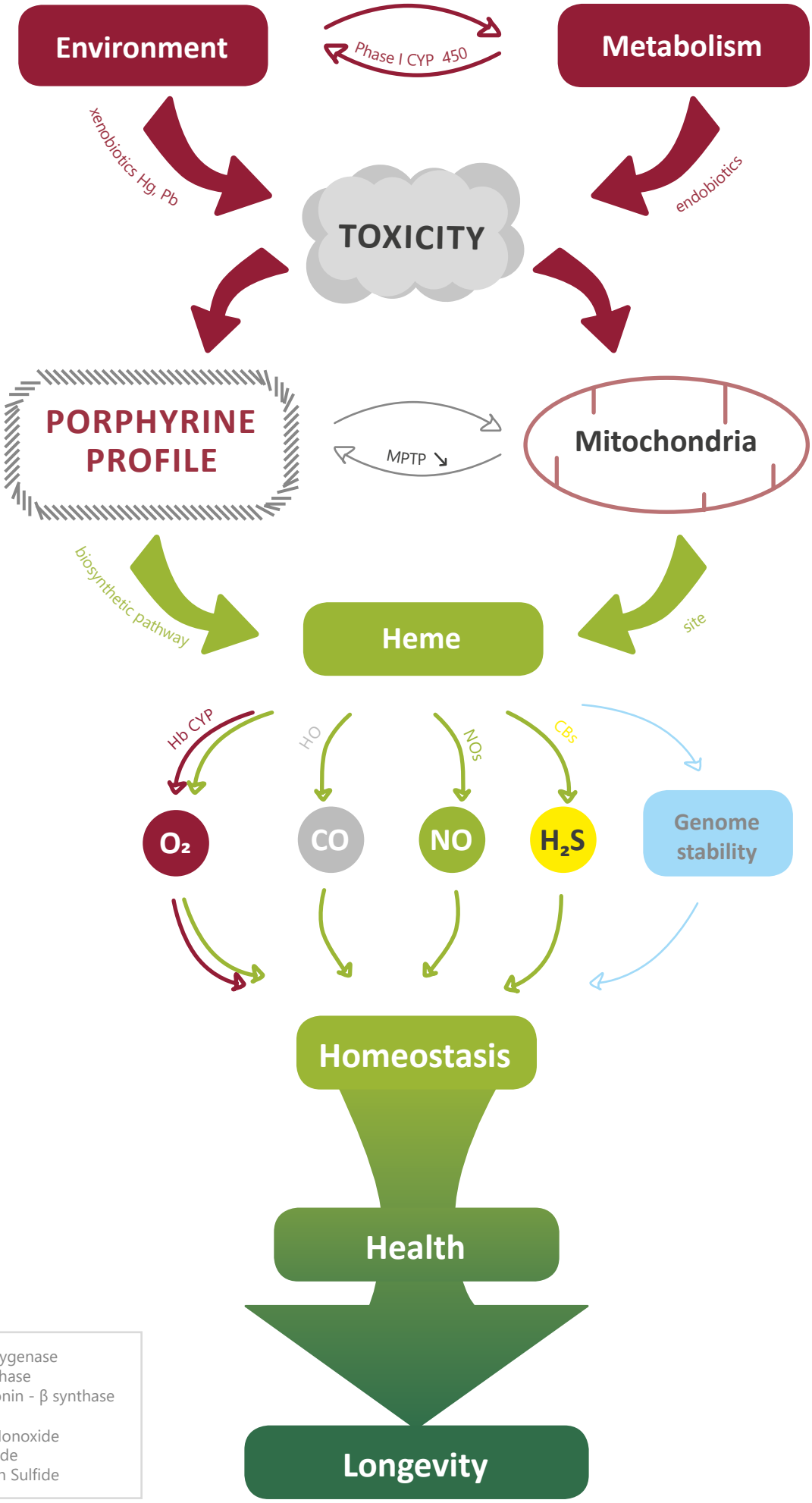
Porphyrins in the physiological «web»



HO : Heme Oxygenase
NOs : NO synthase
CBs : Cystathionin - β synthase

CO : Carbon Monoxide
NO : Nitric Oxide
H_2S : Hydrogen Sulfide

Porphyrins in health and disease

Porphyrins are components of Heme's biosynthetic pathway. It is synthetized in the mitochondria of all living things' cells. **Heme controls oxygen in breath and detoxication** but also **promote the other gaz production** like Nitric Oxide (NO), Hydrogen Sulfide (H2S) and Carbon Monoxide (CO) which are, all three of them, **oxygen savers, antioxidants, anti-inflammatory agents** and have a **tissue protective effect**.

Thus, **Heme is a key component of oxygen homeostasis**. The Porphyrin profile can be altered quantitatively by a rise of their synthesis level, qualitatively by a modification of their respective components proportions, or most of the time in both manners :

- A **rise of porhyrinuria** is related with **an increase of environmental xenobiotics toxic burden** or **endobiotics burden** coming from our metabolism, or whether a **decrease in the potential of the mitochondrial membrane** induced by many toxics including some medecines.

- Qualitatively, a **break in the profile balance**, as a joint increase of the three terminated compounds, 5cxP, PcP and coproporphyrin, has been associated by many authors to a **latent mercury toxicity**.

- Finally, **an isolated rise of coproporphyrin** has been tied to **xeno/endobiotics impact** and/or an a**lteration of the mitochondrial function** by MPTP* decrease, which is generated by many toxics/medecines.

To the extent that **Heme's biosynthetic pathway**, sensitive to many toxics, is **protected in the mainstay by an effective and multifaceted detoxication system**, which is composed of Phase I CYP 450, Phase II transferases, peroxidases, epoxydases, dehydrogenases, including the ALDH (type II) ; a **Porphyrin profile alteration** can be regarded more broadely like an **insufficient detoxication capacity of the metabolism** regarding the stress it have to deal with.

*MPTP : Membran Pore Transition Potential which is the mitochondrial membran support.

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