



Estrogen-related receptor α and PGC-1-related coactivator constitute a novel complex mediating the biogenesis of functional mitochondria

Submitted by Emmanuel Lemoine on Wed, 12/11/2013 - 17:08

Titre	Estrogen-related receptor α and PGC-1-related coactivator constitute a novel complex mediating the biogenesis of functional mitochondria
Type de publication	Article de revue
Auteur	Mirebeau-Prunier, Delphine [1], Le Pennec, Soazig [2], Jacques, Caroline [3], Guegen, Naig [4], Poirier, Julie [5], Malthièry, Yves [6], Savagner, Frédérique [7]
Editeur	Wiley
Type	Article scientifique dans une revue à comité de lecture
Année	2010
Langue	Anglais
Date	2010
Numéro	3
Pagination	713-725
Volume	277
Titre de la revue	FEBS Journal
ISSN	1742-4658
Mots-clés	Cell [8], estrogen-related [9], mitochondrial [10], PGC-1-related [11], respiratory [12]
Résumé en anglais	Mitochondrial biogenesis, which depends on nuclear as well as mitochondrial genes, occurs in response to increased cellular ATP demand. The nuclear transcriptional factors, estrogen-related receptor α (ERR α) and nuclear respiratory factors 1 and 2, are associated with the coordination of the transcriptional machinery governing mitochondrial biogenesis, whereas coactivators of the peroxisome proliferator-activated receptor γ coactivator-1 (PGC-1) family serve as mediators between the environment and this machinery. In the context of proliferating cells, PGC-1-related coactivator (PRC) is a member of the PGC-1 family, which is known to act in partnership with nuclear respiratory factors, but no functional interference between PRC and ERR α has been described so far. We explored three thyroid cell lines, FTC-133, XTC.UC1 and RO 82 W-1, each characterized by a different mitochondrial content, and studied their behavior towards PRC and ERR α in terms of respiratory efficiency. Overexpression of PRC and ERR α led to increased respiratory chain capacity and mitochondrial mass. The inhibition of ERR α decreased cell growth and respiratory chain capacity in all three cell lines. However, the inhibition of PRC and ERR α produced a greater effect in the oxidative cell model, decreasing the mitochondrial mass and the phosphorylating respiration, whereas the nonphosphorylating respiration remained unchanged. We therefore hypothesize that the ERR α -PRC complex plays a role in arresting the cell cycle through the regulation of oxidative phosphorylation in oxidative cells, and through some other pathway in glycolytic cells.

URL de la notice	http://okina.univ-angers.fr/publications/ua320 [13]
DOI	10.1111/j.1742-4658.2009.07516.x [14]
Lien vers le document	http://dx.doi.org/10.1111/j.1742-4658.2009.07516.x [14]

Liens

- [1] <http://okina.univ-angers.fr/delphine.prunier/publications>
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=1022](http://okina.univ-angers.fr/publications?f[author]=1022)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=447](http://okina.univ-angers.fr/publications?f[author]=447)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=24205](http://okina.univ-angers.fr/publications?f[author]=24205)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=1023](http://okina.univ-angers.fr/publications?f[author]=1023)
- [6] <http://okina.univ-angers.fr/yves.malthiery/publications>
- [7] [http://okina.univ-angers.fr/publications?f\[author\]=557](http://okina.univ-angers.fr/publications?f[author]=557)
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=1734](http://okina.univ-angers.fr/publications?f[keyword]=1734)
- [9] [http://okina.univ-angers.fr/publications?f\[keyword\]=1750](http://okina.univ-angers.fr/publications?f[keyword]=1750)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=1749](http://okina.univ-angers.fr/publications?f[keyword]=1749)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=1751](http://okina.univ-angers.fr/publications?f[keyword]=1751)
- [12] [http://okina.univ-angers.fr/publications?f\[keyword\]=1752](http://okina.univ-angers.fr/publications?f[keyword]=1752)
- [13] <http://okina.univ-angers.fr/publications/ua320>
- [14] <http://dx.doi.org/10.1111/j.1742-4658.2009.07516.x>

Publié sur *Okina* (<http://okina.univ-angers.fr>)