

Optimal bone mechanical and material properties require a functional glucagon-like peptide-1 receptor.

Submitted by Guillaume Mabileau on Thu, 07/17/2014 - 11:29

Titre	Optimal bone mechanical and material properties require a functional glucagon-like peptide-1 receptor.
Type de publication	Article de revue
Auteur	Mabileau, Guillaume [1], Mieczkowska, Aleksandra [2], Irwin, Nigel [3], Flatt, Peter-R. [4], Chappard, Daniel [5]
Editeur	BioScientifica
Type	Article scientifique dans une revue � comit� de lecture
Ann�e	2013
Langue	Anglais
Date	2013 Oct
Pagination	59-68
Volume	219
Titre de la revue	J Endocrinol
ISSN	1479-6805
Mots-cl�s	Bone quality [6], FTIRI [7], Gastrointestinal hormones [8], GLP-1r KO [9], glucagon-like peptide-1 [10], MicroCT [11], nanoindentation [12], qBEI [13], qXRI [14]
R�sum� en anglais	<p>Bone is permanently remodeled by a complex network of local, hormonal, and neuronal factors that affect osteoclast and osteoblast biology. Among these factors, a role for gastrointestinal hormones has been proposed based on the evidence that bone resorption dramatically falls after a meal. Glucagon-like peptide-1 (GLP1) is one of these gut hormones, and despite several reports suggesting an anabolic effect of GLP1, or its stable analogs, on bone mass, little is known about the effects of GLP1/GLP1 receptor on bone strength. In this study, we investigated by three-point bending, quantitative X-ray microradiography, microcomputed tomography, qBEI, and FTIRI bone strength and bone quality in male Glp1r knockout (Glp1r KO) mice when compared with control WT animals. Animals with a deletion of Glp1r presented with a significant reduction in ultimate load, yield load, stiffness, and total absorbed and post-yield energies when compared with WT animals. Furthermore, cortical thickness and bone outer diameter were significantly decreased in deficient animals. The mineral quantity and quality were not significantly different between Glp1r KO and WT animals. On the other hand, the maturity of the collagen matrix was significantly reduced in deficient animals and associated with lowered material properties. Taken together, these data support a positive effect of GLP1R on bone strength and quality.</p>
URL de la notice	http://okina.univ-angers.fr/publications/ua3447 [15]
DOI	10.1530/JOE-13-0146 [16]
Autre titre	J. Endocrinol.
Identifiant (ID) PubMed	23911987 [17]

Liens

- [1] <http://okina.univ-angers.fr/guillaume.mabileau/publications>
- [2] <http://okina.univ-angers.fr/aleksandra.mieczkowska/publications>
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=4853](http://okina.univ-angers.fr/publications?f[author]=4853)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=4855](http://okina.univ-angers.fr/publications?f[author]=4855)
- [5] <http://okina.univ-angers.fr/daniel.chappard/publications>
- [6] [http://okina.univ-angers.fr/publications?f\[keyword\]=7279](http://okina.univ-angers.fr/publications?f[keyword]=7279)
- [7] [http://okina.univ-angers.fr/publications?f\[keyword\]=7280](http://okina.univ-angers.fr/publications?f[keyword]=7280)
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=7459](http://okina.univ-angers.fr/publications?f[keyword]=7459)
- [9] [http://okina.univ-angers.fr/publications?f\[keyword\]=7460](http://okina.univ-angers.fr/publications?f[keyword]=7460)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=7461](http://okina.univ-angers.fr/publications?f[keyword]=7461)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=7139](http://okina.univ-angers.fr/publications?f[keyword]=7139)
- [12] [http://okina.univ-angers.fr/publications?f\[keyword\]=7458](http://okina.univ-angers.fr/publications?f[keyword]=7458)
- [13] [http://okina.univ-angers.fr/publications?f\[keyword\]=7457](http://okina.univ-angers.fr/publications?f[keyword]=7457)
- [14] [http://okina.univ-angers.fr/publications?f\[keyword\]=7462](http://okina.univ-angers.fr/publications?f[keyword]=7462)
- [15] <http://okina.univ-angers.fr/publications/ua3447>
- [16] <http://dx.doi.org/10.1530/JOE-13-0146>
- [17] <http://www.ncbi.nlm.nih.gov/pubmed/23911987?dopt=Abstract>

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