

# OSTEOSCOOP

News on current events in osteoporosis and rheumatology

## Bril: a novel bone-specific modulator of mineralization

N° 130 – May 2010

In the course of attempting to define the bone “secretome,” a gene encoding a small membrane protein novel to osteoblasts was identified. Although previously identified in silico as ifitm5, no functional studies had been undertaken on this gene. A recent study [1] characterized the expression patterns and localization of this gene in vitro and in vivo and assessed its role in matrix mineralization in vitro.

The bone specificity of this peptide and its role in mineralization led to rename the gene bone restricted ifitm-like protein (Bril). Bril encodes a 14.8-kDa 134 amino acid protein with two transmembrane domains. Bril is expressed selectively in bone with no expression in other embryonic or adult tissues. Screening of cell lines showed Bril expression to be highest in osteoblasts, associated with the onset of matrix maturation/mineralization, suggesting a role in bone formation. Functional evidence of a role in mineralization was shown by Bril overexpression and Bril shRNA knockdown in vitro. Elevated Bril resulted in dose-dependent increases in mineralization in UMR106 and rat primary osteoblasts. Conversely, knockdown of Bril in MC3T3 osteoblasts resulted in reduced mineralization.

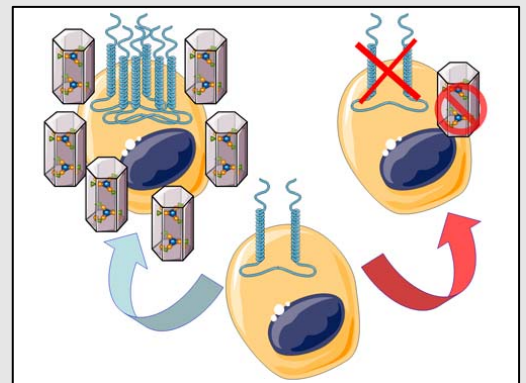
Thus, Bril is identified as a novel osteoblast protein with a major role in mineralization, possibly identifying a new regulatory pathway in bone formation.

1 Moffat P et al. *J Bone Miner Res.* 2008;23:1497–1508.

### Bril: a novel bone-specific modulator of mineralization

A small membrane protein specific to osteoblasts was recently identified. This protein was named Bril. In the embryo, Bril is exclusively located in bones. This newly identified protein plays a major role in bone mineralization. Overexpression of Bril leads to increased mineralization whereas knockdown of Bril inhibits bone mineralization.

The signaling pathway leading to modulation of bone formation remained to be identified.



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