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GENE EXPRESSION DURING REGENERATION OF ZEBRAFISH (*DANIO RERIO*)
FINS: RELATIVE EXPRESSION LEVELS OF MINERALIZATION-RELATED GLA
PROTEINS

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Most animals have the ability to regenerate epidermal injuries yet only a few can regenerate largely severed appendages that comprise several different tissues. Nowadays zebrafish is one of the most used metazoan models in regeneration studies in particular for investigation of molecular events during fin regeneration process. Fin regeneration starts through the formation of a blastema, a set of heterogeneous mesenchyma-like cells located between stump tissues and the wounded epidermis. This event, denominated epimorphic regeneration, comprises strict growth control and cell reprogramming leading to faithful restoration of the lost parts.

Matrix Gla Protein (*Mgp*) and Bone Gla Protein (*Bgp*, osteocalcin) are small extracellular matrix proteins, members of the vitamin K-dependent (VKD) proteins family. These proteins are considered to be related to bone formation and mineralization, and more recently, to vascular calcification. Expression of *bgp* is specific to bone tissue and dentine while expression of *mgp* is mainly associated with cartilage, soft tissues, and vascular muscle cells.

The typical teleost caudal fin, such as the one in zebrafish, is composed of multiple fin rays with a bony part named lepidotrichium, so it is of great relevance to determine *mgp* and *bgp* expression patterns during regeneration events.

Our main objective was to determine the relative gene expression levels for *mgp* and *bgp* considering the first 96 hours of regeneration. Real-time PCR was used to determine relative expression for each of these genes while the histological markers alizarin red and alcian blue allowed us to detect both calcium deposition and cartilage formation in the regenerating fin. The results obtained showed a possible correlation between Gla-proteins and regeneration.

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