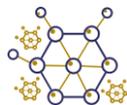


## NTHO



## Business area

Discovery

## Market sector

Musculoskeletal  
Pathology, Traumatology

## Medical Indication

Heterotopic ossification  
(OH)

## Research goal

Development of a new treatment for heterotopic ossification (OH) based on a drug repositioning

## Problem to solve

HO is characterized by ectopic formation of lamellar bone in soft tissues. This pathology is associated with a high degree of disability, reduction of movements and personal independence as well as deterioration in the quality of life as a consequence of the excessive bone formation. Altogether, these consequences are related with an exacerbated healthcare expenditure, which means an economic burden to the national health system.

The HO may be congenital or acquired. The acquired HO is related with traumatic processes such as soft tissue trauma, explosion injuries, fractures, dislocations, orthopaedical surgery for joint replacement, electrocution, burns and neurological damage as spinal cord injuries and traumatic brain injuries.

Nowadays, the therapeutic approach for the prevention and the treatment of the HO is based on the use of NSAIDs, radiotherapy and/or surgical excision. However, the results of these treatments are satisfactory only in some patients and they are associated with multiple adverse effects. In fact, in addition to the side effects of these drugs, the excessive use of these treatments could exert a negative effect on the bone formation associated with the healing of the bone fractures. Radiotherapy has also been proved useful in the HO prophylaxis, both in pre-operative and immediately after the surgical procedure. However, the time and the magnitude of the radiation will greatly affect its effectiveness, which may affect the wounds' healing or become ineffective. Once the HO is established, the previous treatments mentioned do not work and surgery is necessary.

Surgery by itself does not significantly improve the HO and an 92% of the patients present a recurrent growth of the removed bone masses. As a result, the combination of surgery and radiotherapy is recommended due to reduce the levels of recurrence. Because of this and despite the fact that to control the HO new therapeutic approaches have been proposed, including the use of bisphosphonates, the pharmacological management of these patients is currently very limited.

## Innovation

This new technology offers a disruptive approach to the blockade of the heterotopic bone formation, through the inhibition of the osteoblast differentiation, and that can be implemented in clinical practice individually or in combination with current therapies.

## Market opportunity

The global market in the hip and knee arthroplasty market were valued at \$ 13.83bn in 2015, and are expected to experience slow growth throughout the 2013-2022 forecast period, at an annual growth rate Composite (CAGR) of 2.8% and the market of musculoskeletal diseases, among which is the OH, will grow progressively at an annual compound rate of almost 5.5%. The global market for musculoskeletal medicines is expected to reach more than \$ 165 billion by 2020

## Research team

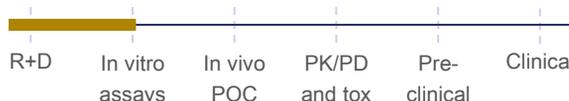
Musculoskeletal Pathology Research Group of the Health Research Institute of Santiago de Compostela.

- **Rodolfo Gómez Bahamonde:** Principal Investigator

## Intellectual property

Patent in process

## Development stage:



Available for: *Licensing, co-development*

