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Osteoarthritis unmasked: Identification of nuclear prohibitin as a new specific OA biomarker and therapeutic target

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Osteoarthritis (OA) is one of the most common age-related chronic disorders affecting articular cartilage, joints and bone tissues. According to datamonitor, up to 81.4 million cases in adults aged 25 and older suffer from OA in seven major markets (USA, Japan, UK, Germany, Italy, France and Spain). The current drug treatment for OA is symptom-relieving, and the need for pharmacological treatments to retard, prevent or repair cartilage destruction in OA is urgent. Target selection has been problematic, which includes the identification of selective biomarkers, establishment of appropriate preclinical animal models that reflect human OA, the limitations of the current radiographic standard for structural assessment (KL score), and the lack of stratification of patients in clinical trials by phenotype or tissue involvement. Yet, the search for disease-modifying OA drugs (DMOADs) has proven to be an exceptional challenge, largely because OA usually progresses slowly, with few patients reporting worsening symptoms throughout the clinical trial, which typically lasts months, not years. In that context, we developed a new predictive diagnostic assay intended to measure a specific biomarker, Prohibitin (PHB1) through an immunoassay on blood samples. This test is sensitive enough to detect OA at its earliest stage in asymptomatic subjects and for the first time provides a therapeutic window for intervention, to stop or reverse the mechanism of cartilage matrix degradation associated with primary OA. The integration of specific biomarkers in a companion diagnostic test has the potential to accelerate drug development and thus time to market access for the pharma industry.

Biography

Alain Moreau is Full Professor in the Faculty of Dentistry and the Faculty of Medicine at the Université de Montréal. He is the Director of Research and Chief Scientific Officer of Sainte-Justine University Hospital. He received his PhD in Microbiology and Immunology from the Université de Montréal in 1993. He did a first Post-doctoral training at the Protein Engineering Center of University of Liège, Belgium (1992-1993), followed by a second Postdoctoral fellowship at the Shriners Hospital for Children in Montreal affiliated with McGill University (1993-1997). He is an internationally recognized expert on molecular genetics of pediatric scoliosis and osteoarthritis. His discoveries led to multiple peer-reviewed papers, international conferences as guest speaker, several awards as well as 32 patents issued.

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