

The APPROACH consortium: a 2-year , European, cohort study to describe, validate, and predict phenotypes of knee osteoarthritis using clinical, imaging, and biochemical markers

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Facts & figures

Start date:	01/06/2015
End date:	30/11/2020
Contributions	
IMI funding:	7 500 000 €
EFPIA in kind:	7 743 323 €
Other:	2 306 685 €
Total cost:	17 550 008 €
Project website:	www.approachproject.eu
Social media:	 @APPROACH_EU

Challenge

There is a major, unmet need for more effective markers to improve the quality and effectiveness of clinical trials in the field of osteoarthritis (OA). Markers could be used to prospectively identify subjects that will show significant OA progression, help identify phenotypes of knee OA that would potentially benefit from a specific targeted therapy, and serve as outcome parameters. Having such markers would lead to investigational and therapeutic approaches which are stratified for OA phenotypes instead of the current 'one size fits all' approach as well as efficient outcome assessment.

The goal of the APPROACH study is to identify markers for knee OA, and with that, give an impulse to the development of OA treatments.

Approach & Methodology

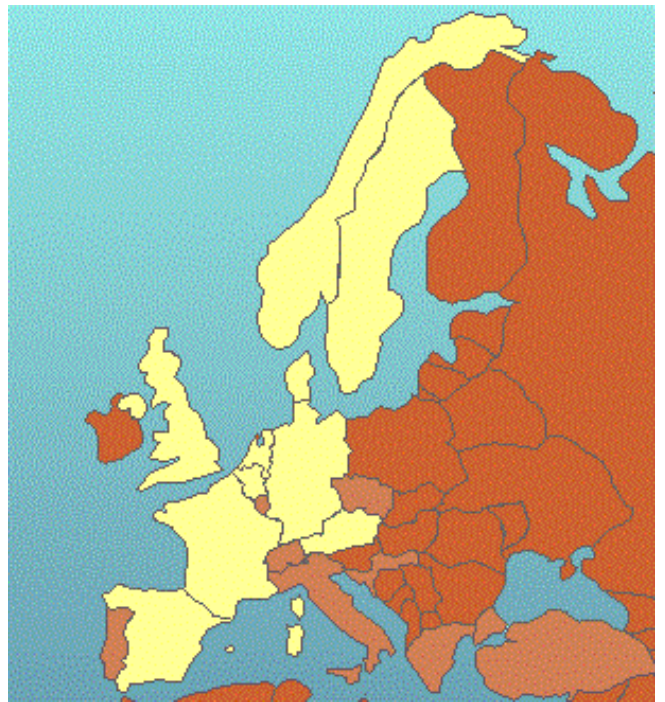
Tibiofemoral OA patients, will be selected from five European OA cohorts according to a stepwise protocol, using multiple prediction models. All prediction models have been derived using a machine-learning approach, trained on follow-up data from the Cohort Hip & Cohort Knee (CHECK) and the Osteoarthritis Initiative (OAI). The 300 patients that are most likely to experience pain and/or structural progression over 2 years will be selected to participate in a prospective two-year study. At each study visit, a set of conventional and novel markers will be obtained. Potential, novel markers will be studied using epigenetic, transcriptomic, proteomic, lipidomic and metabolomic analyses, and using novel radiographic imaging, quantitative and qualitative MRI imaging, live imaging techniques for visualizing inflammation in hands, and motion analysis techniques.

Results

APPROACH will provide valuable insights into conventional and novel markers that extend the ability to predict OA progression and distinguish between OA phenotypes. This will enable classification of each patient on a phenotype specific OA progression scale. Ultimately, this will form the basis for phenotype-specific treatments and will decrease the number of subjects and trial duration of potential DMOADs.

Value of IMI collaboration

IMI enables the collaboration of 25 partners from European clinical centres, basic research institutes, small and medium-sized enterprises (SMEs) and pharmaceutical companies to combine data of more than 10.000 patients and healthy cohorts to identify phenotypes of OA and the validation of these phenotypes in a longitudinal study, using conventional and novel clinical, imaging, and biochemical markers.



Impact & take home message

APPROACH will identify different phenotypes of osteoarthritis and with that give osteoarthritis trials a new impulse, leading to improved diagnostic tools and more effective, personalized treatments