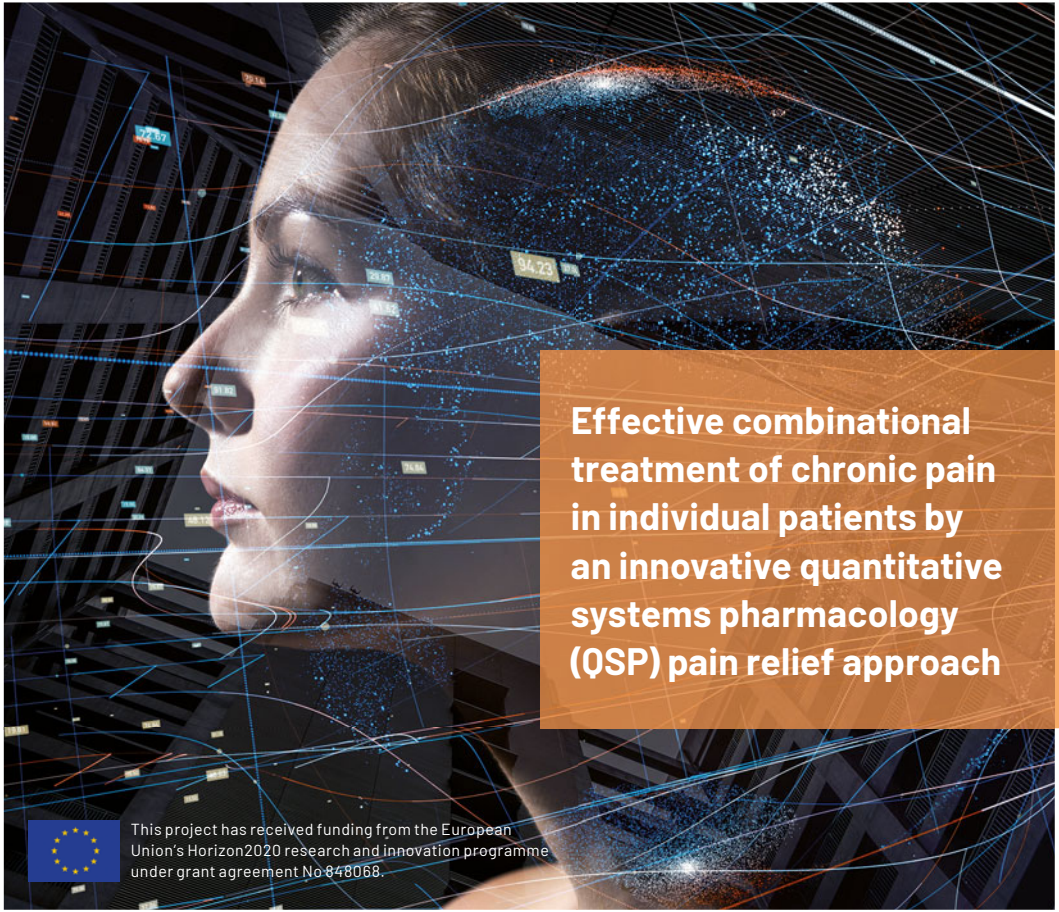
QSPainRelief



Effective combinational treatment of chronic pain in individual patients by an innovative quantitative systems pharmacology (QSP) pain relief approach

This project has received funding from the European Union's Horizon2020 research and innovation programme under grant agreement No 848068.

»PERSONALISED PAIN MEDICATION BASED ON EACH PATIENT'S GENETIC SET-UP AND MEDICAL HISTORY«

OUR VISION

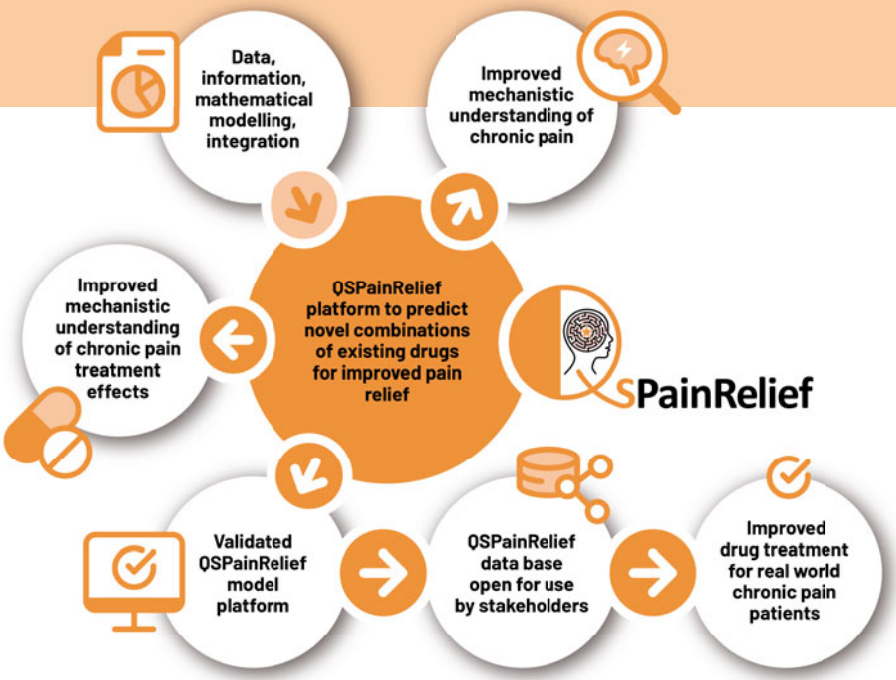
We envision a future in which patients suffering from chronic pain can be treated faster and more effectively according to their individual genetic setup and medical history. The overarching goal of QSPainRelief is to develop more personalised, and therefore more effective combinational treatments of existing medications.

To do so, world-leading experts on chronic pain, pharmacology, pharmacogenomics, personalised medicine, systems biology, and mathematical modelling join forces to identify novel combinational treatments with improved analgesia and reduced adverse effects, using a mechanism-based quantitative systems pharmacology (QSP) approach.

First, algorithms and advanced computational technologies are used for in silico data integration and model development. Then, the most promising combinational treatments are tested in preclinical models, followed by validation in healthy volunteers and, most importantly, in clinical practice in real-world chronic pain patients.

A major strength of QSPainRelief is that *in silico* modelling is based on existing medications and published data. This approach avoids the uncertainty of *de novo* R&D and is likely to create direct patient benefits already within the 5-year runtime of the project or shortly thereafter.

Photo credit: BlackJack3D



Direct benefits for chronic pain patients:

- Novel and improved combinational treatment strategies in clinical practice
- Higher treatment efficacy due to personalised medicine and effective patient stratification
- Improved acceptance of combinational therapies in the clinical setting
- Reduced stigmatisation of chronic pain as a health condition

»MOST CHRONIC PAIN PATIENTS DO NOT EXPERIENCE ADEQUATE PAIN RELIEF UPON TREATMENT.«

WHY IT MATTERS

The problem starts when the brain interprets normal nerve signals as danger, which can lead to chronic pain even when there is no danger present. Suffering from chronic pain is both physically and emotionally debilitating. It is extremely hard to focus on daily tasks when being constantly distracted or incapacitated by the pain whilst enduring the stigma of having a disease that is not readily visible to other people.

Chronic pain severely reduces the patients' quality of life, their ability to work, and their socio-economic contribution in society. In fact, 20 percent of all Europeans suffer from chronic pain, and up to 60 percent of these patients do not receive adequate treatment. Thus, it is crucial to help affected individuals!

Therapy with a single medication, for example an opioid, is often ineffective or associated with severe adverse effects, such as sedation, cognitive impairment, and the risk of addiction and abuse. In contrast, combinational therapies (for example, an opioid in combination with an anti-anxiety or anti-depressant medication) are more promising to help patients through a beneficial balance between therapeutic effects versus side effects.

Quantitative Systems Pharmacology (QSP) merges these novel technologies to tailor treatments to the specific needs of individuals and stratified patients groups.

QSPainRelief merges novel pharmacological and *in silico* technologies to tailor chronic pain treatment to the specific needs of individuals and stratified patients groups.

Photo credit: sturti

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QSPainRelief is an international research project that brings together 10 institutions from 5 European countries and the USA.

BASIC FACTS AND FIGURES

Full Project Title	Effective combinational treatment of chronic pain in individual patients by an innovative quantitative systems pharmacology (QSP) pain relief approach
Start Date	01 January 2020
Duration	60 months (5 years)
Participants	10 institutions from 5 European countries and the USA
EC Funding	6.24 million € (6,239,539 €)
Project Website	qspainrelief.eu Sign up for our newsletter!

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