Interaction of squalene-based anti-cancer and neuroprotective drugs with cell membranes: in silico study

Fact Sheet

Project Information

SquaMem

Grant agreement ID: 796245

Project website

DOI
10.3030/796245

Project closed

EC signature date
3 April 2018

Start date
1 November 2018

End date
19 September 2021

Funded under
EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions

Total cost
€ 173 076,00

EU contribution
€ 173 076,00

Coordinated by
UNIVERSITE DE FRANCHE-COMTE
France

Objective

Squalene is a natural lipid precursor, which plays a crucial role in the biosynthesis of sterols in the cells . Squalene is 100% biocompatible, not toxic and is able to enter into the cells easily. This makes it very promising for creating highly efficient drugs and drug delivery systems. The so-called squalenoylation technology is based on fusing hydrophobic squalenic acid
with the molecules of water-soluble drugs. Resulting conjugated molecules

spontaneously self-assemble into nanoparticles, which deliver the drugs into the target cells efficiently. Currently anticancer (gemcitabine , doxorubicin), antiviral (dideoxycytidine) and neuroprotective (adenosine) drugs were used in this technology with great success.
This project is devoted to revealing mechanisms of interaction of novel and highly promising squalene-based anti-cancer and neuroprotective drugs with cell membranes by means of in silico ccomputer simulations. The main goals of the project are the following:
1. To reveal how squalene-based drugs incorporate into the cell membranes, interact with membrane components and are released from the membranes on atomistic level of details.
2. To propose the ways of improving translocation of squalene-based drugs through the membranes in order to increase their therapeutic efficacy.
The practical impact of the project is improving translocation of squalene-based drugs through the membranes and making it selective, which is of great interest for therapeutic applications of existing drugs and for creation of new compounds with desirable properties.

Fields of science (EuroSciVoc)

natural sciences > biological sciences > biochemistry > biomolecules > **lipids**

engineering and technology > nanotechnology > **nano-materials**

Programme(s)

H2020-EU.1.3. - EXCELLENT SCIENCE - Marie Skłodowska-Curie Actions MAIN PROGRAMME

H2020-EU.1.3.2. - Nurturing excellence by means of cross-border and cross-sector mobility

Topic(s)

MSCA-IF-2017 - Individual Fellowships

Call for proposal

H2020-MSCA-IF-2017

See other projects for this call

Funding Scheme

MSCA-IF-EF-ST - Standard EF

Coordinator

UNIVERSITE DE FRANCHE-COMTE

Net EU contribution

€ 173 076,00

Total cost

€ 173 076,00

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Region

Bourgogne-Franche-Comté > Franche-Comté > Doubs

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

Last update: 24 August 2022

Permalink: https://cordis.europa.eu/project/id/796245