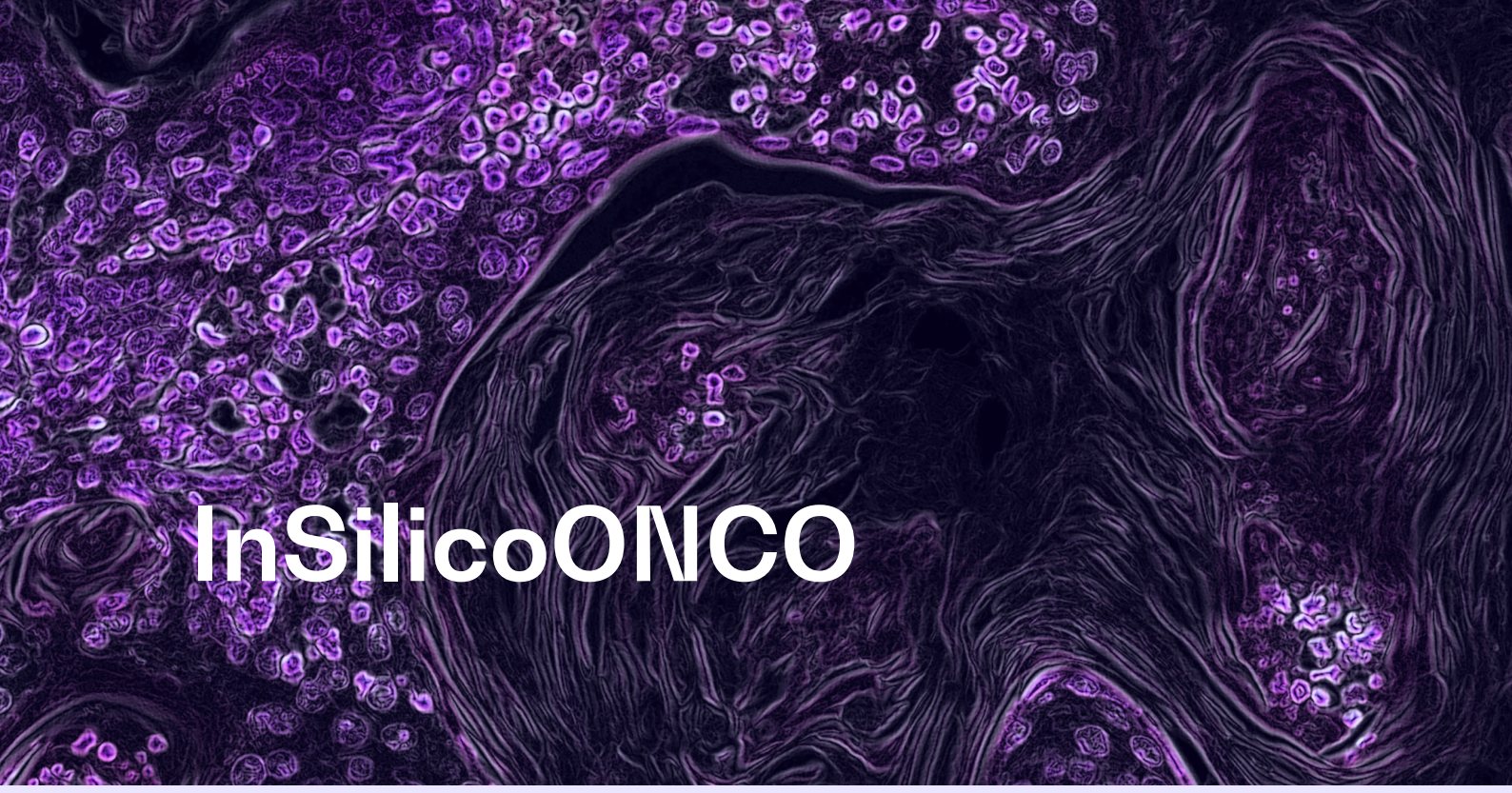


CTx NeutroSim

Chemotherapy-induced neutropenia simulator

Neutropenia is a condition in which neutrophils are below normal levels. It is a common side effect in cancer patients treated with chemotherapy and is associated with an increased risk of getting serious infections. Chemotherapy-induced neutropenia is of primary concern for both drug developers and clinicians as, to prevent its occurrence, chemotherapy doses may be lowered or delayed, possibly compromising treatment outcomes (1).

While setting up their oncology clinical development programs, pharma companies encounter the following challenges:

- High costs (average phase I and II clinical trials cost 4.5 and 11.2 million $, respectively (2));
- Failure risk (97% of oncology drug development programs do not reach approval, with 46% phase II trials failing to advance to phase III (3));
- Difficult comparison of new drugs with those already on the market.

What is CTx NeutroSim

CTx NeutroSim is the result of a collaboration between the University of Navarra and InSilicoTrials Technologies.

CTx NeutroSim is based on a semi-mechanistic pharmacokinetic/pharmacodynamic computational model which describes neutropenic effects following the administration of a chemotherapeutic agent. The computational model has been calibrated on data obtained from diflomotecan clinical trials and demonstrated its ability in describing neutropenic effects after very different dosing schedules of diflomotecan given either by intravenous infusion or oral administration (4).

CTx NeutroSim enables simulations of clinical trials on a virtual population of cancer patients being treated with a chemotherapeutic drug. The tool can be used to explore different trial design scenarios in terms of drug pharmacokinetic and pharmacodynamic properties, single and multiple dosing, administration route, as well as virtual population.

Advantages

Customize the pharmacokinetic and pharmacodynamic properties of the therapeutic agent of your choice

Assess the drug impact on proliferative bone marrow stem cells

Perform population simulations of neutrophil count levels following the administration of a chemotherapy agent given by intravenous infusion and/or oral administration under different dosing regimens

Optimize phase I and II clinical trial designs

Predict the extent of dose reductions and/or delays needed to prevent neutropenic complications

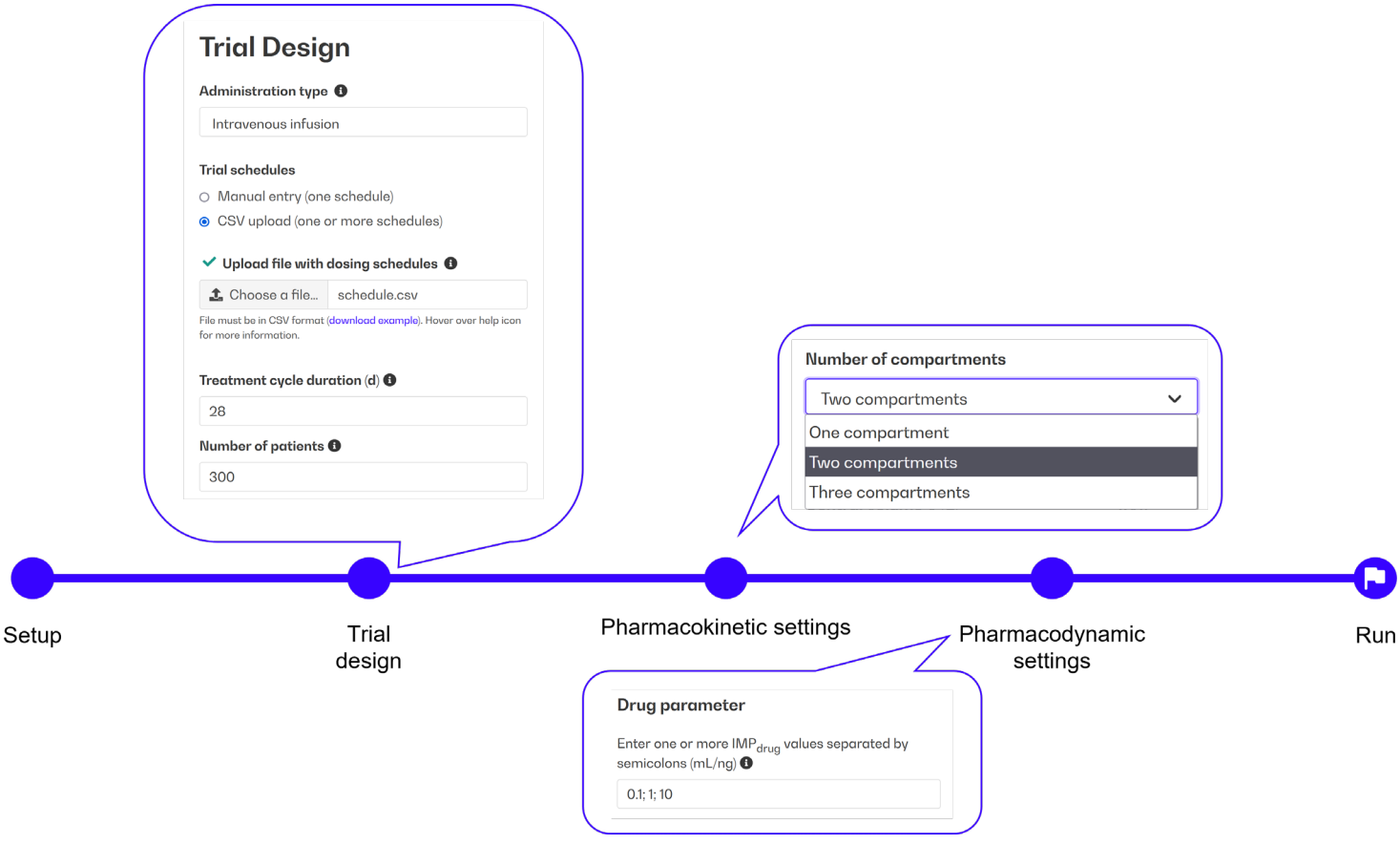
How it works

CTx NeutroSim enables to setup and run in silico clinical trials of cytotoxic anticancer agents in a user-friendly way by using a step-by-step integrated workflow:

Define the clinical trial design by entering the virtual population size, the dosing regimen, and the treatment cycle duration;

Insert the pharmacokinetic parameter values of the compound;

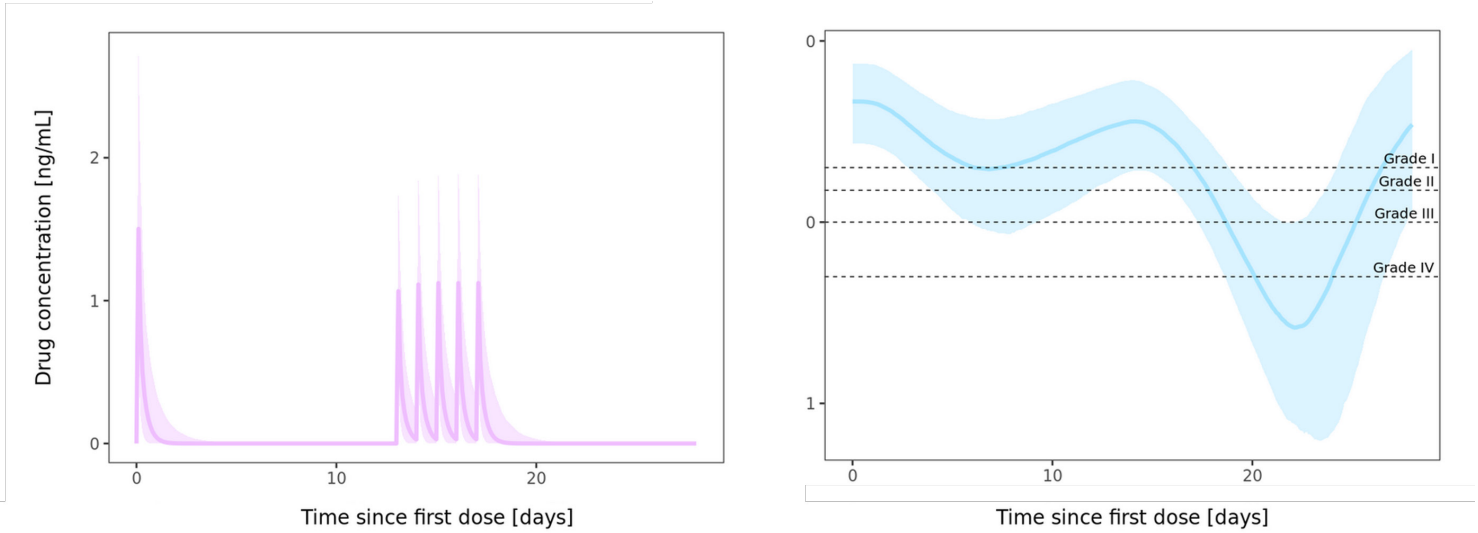
Insert the drug-related parameter quantifying the drug impact on proliferative hematopoietic stem cells.



After running the simulation, results will be displayed as:

Drug concentrations and absolute neutrophil count levels;

Estimated incidence of neutropenia grades.



Neutropenia incidence

Grade 0 (%)	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Recovery (%)
0.3	0.6	2.6	15.6	80.9	82.2

In silico is key to innovate drug development

Today, the very long and expensive development and the complex registration processes for new drugs are becoming financially unsustainable.
Regulatory agencies have been encouraging the use of in silico methods in drug research and development for years (4) because the use of these methods can greatly accelerate the time-to-market of new medicines for the benefit of the patients while significantly reducing development costs and allowing companies to exploit patents for a longer period. Solvers, IT infrastructure and computational specialists require a continuous investment from companies.

To help solve these challenges, **InSilicoTrials Technologies** has developed a game-changing-solution. Our experts:

- *Select computational models from outstanding research centers around the world*
- *Integrate them in our cloud-based platform*
- *Make them available through user-friendly online products*

This solution enables companies to leverage cutting-edge in silico methods at low costs without specific computational expertise, IT infrastructure and solvers investments requirements. On our cloud-based platform, users can select the online computational product of their choice in pay-per-use, or ask us to build the digital product they need.

Why working with InSilicoTrials

SaaS

Buy tokens and use the online products of your choice among those available on the platform

VIRTUAL PATIENTS

Design and accelerate your clinical trials with the virtual patient populations you need

ON DEMAND & CUSTOM

Ask us for the models and simulations you need, or ask us to evaluate where modeling and simulation can support you

TECHNOLOGY-ENABLED SERVICES

Ask us for support on technology integration, in silico trials planning, execution and reporting, in line with regulatory requirements

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