

## 24 European organisations unite their efforts towards a better prediction of toxic effects of new drug candidates

*The Innovative Medicines Initiative (IMI) funds for 5 years a consortium consisting of 12 European pharmaceutical companies and 12 academic groups and SMEs to develop information technologies-based solutions for improved toxicity prediction of new drug candidates*

Drug development necessitates running *in vivo* toxicological studies for the assessment of potential untoward side effects. Toxicities may often limit the use of medicines, and sometime prevent molecules to become drugs. Early selection of chemicals with a low probability of being toxic will improve the whole process, taking less time and resources, including the use of animals. Hence, early *in silico* prediction of *in vivo* toxicological results would increase the efficiency of the drug development process and reduce the number of animals to be used in preclinical studies.

The eTOX project aims to develop innovative methodological strategies and novel software tools to better predict the toxicological profiles of new molecular entities in early stages of the drug development pipeline. This is planned to be achieved by sharing and jointly exploiting legacy reports of toxicological studies from participating pharmaceutical companies. The project will coordinate the efforts of specialists from industry and academia in the wide scope of disciplines that are required for a more reliable modelling of the complex relationships existing between molecular and *in vitro* information and the *in vivo* toxicity outcomes of drugs. The proposed strategy includes a synergetic integration of innovative approaches in the following areas:

- Data sharing of previously inaccessible high quality data from toxicity legacy reports of the pharma companies
- Database building and management, including procedures and tools for protecting sensitive data.
- Ontology and text mining techniques, with the purpose of facilitating knowledge extraction from legacy preclinical reports and biomedical literature.
- Chemistry and structure-based approaches for the molecular description of the studied compounds, as well as of their interactions with the anti-targets responsible for the secondary pharmacologies.
- Prediction of DMPK (Drug Metabolism and Pharmacokinetics) features since they are often related to the toxicological events.
- Systems biology approaches in order to cope with the complex biological mechanisms which govern *in vivo* toxicological events.
- Computational genomics and sophisticated statistical analysis tools required to derive multivariate QSAR models
- Development and validation (according to the OECD principles) of QSARs, integrative models, expert systems and meta-tools.

The eTOX project will be carried out by a Consortium comprising 24 organisations (12 pharmaceutical companies, 7 academic groups and 5 SMEs) with complementary expertises. The total budget of the project is the 13 millions of Euros and it will last for five years.

eTOX is funded by the Innovative Medicines Initiative (IMI), which is a unique Public-Private Partnership (PPP) between the pharmaceutical industry represented by the European Federation of Pharmaceutical Industries and Associations (EFPIA) and the European Union represented by the European Commission.

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**List of partners:**

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