Faculté de pharmacie

Journée de la recherche conjointe des axes « Découvertes et validation des cibles thérapeutiques » et « Pharmacométrie et pharmacothérapie »

« Optimized Drug Treatments in Patient Care : Safety Matters »

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The US Food and Drug Administration anticipates a blockbuster year in 2014 with the approval of 35 new drugs. The majority of these approvals are targeted therapy drugs for cancer and specialty drugs for treating rare diseases. It is worth noting that most new drug approvals by drug licensing bodies in North America, Europe and Japan depend on improvements in efficacy demonstrated in phase III randomized controlled trials (RCTs). The benefits of new drugs are weighed against treatment-related toxicities, i.e., the benefit/risk ratio (B/R) by regulators. However safety data about risks in RCTs are often limited and the true B/R of a new treatment only emerges after regulatory approval and pharmacovigilance of the marketplace. Given the challenges of identifying toxicities during the drug development process, future improvements in drug safety will come from a thorough understanding of off-target pharmacology, data-mining of multiple safety databases and *in silico* bioinformatics approaches to understanding and predicting adverse drug reactions (ADRs). I will present examples of ADRs and recent pharmacogenomic progress related to predicting drug toxicities. A case study of acetaminophen-induced Stevens - Johnson syndrome, a severe and life-threatening hypersensitivity syndrome, will be used to demonstrate how a bioinformatics platform can be used to understand, prevent and predict drug toxicities.