Cause-effect analyses of breast cancer clinical records from Institut Curie

Résumé du projet de recherche (Langue 1)

This interdisciplinary / translational PhD project aims at uncovering cause-effect relationships in the breast cancer clinical records from Institut Curie Hospitals. The proposed approach is based on the development and implementation of novel information-theoretic methods to analyze information-rich clinical data from curated clinical records as well as medical consultation reports of breast cancer patients over a ten-year period (2002-2013). While numerous methods have been developed to identify correlations in heterogeneous clinical records, a central challenge remains to uncover unsuspected cause effect relationships when clinical essays are impractical or costly if not unethical despite possible benefits for the patients’ health and survival. In such settings, it is now considered a priority to guide clinical understanding and treatments by novel and innovative data analysis and computational methods. This project aims, more specifically, at identifying possible causal relationships between breast cancer treatments and other seemingly unrelated medications to circumvent detrimental interference or, on the contrary, leverage therapeutic synergy between drug treatments and ultimately improve the clinical outcomes of breast cancer patients.