Biomedical Ontologies provide a crucial framework for handling and coping with an exponential growth in the volume of biological data, generated by high-output technologies and fuelled by advances in biotechnology. However, these Ontologies have developed in a largely uncoordinated way, often reflecting mere relations of 'association' between concepts, and primarily serving the purposes of information extraction from on-line biomedical literature and databases. In recent years, a great deal has been learned about the criteria which must be satisfied if an ontology is to allow true information integration and automatic reasoning across data with information derived from different sources.