It is a common problem to study conditional dependencies that best fit data. For example, to find gene regulation through data on gene expression. Bayesian networks model conditional dependencies as a directed acyclic graph (DAG). However, many DAGs model the same conditional dependence information. The equivalence classes of DAGs modeling the same dependencies are called essential graphs and can be drawn as partially directed graphs. This talk concerns a Markov chain for random sampling of DAGs in the equivalence class of an essential graph. Conditions for fast and slow mixing will be given.