In three years from now, the heavy ion collision program at the LHC will start, with collisions of lead nuclei at energies twenty times larger than that of the Relativistic Heavy Ion Collider (RHIC) presently in operation in BNL. The logarithmically enhanced kinematical regimes will allow to study saturation effects in parton distributions and jet evolution in a medium. By extrapolating what we have learned from RHIC, these new regimes open new possibilities to study the formation, evolution and properties of the very dense medium produced in heavy ion collisions, which at the LHC is expected be denser and hotter. In the seminar I will review at a very general level the main lessons from RHIC and the new opportunities for the LHC.