Rapid advances in High Performance Computing (HPC) over the past decade have enabled scientists to attack a new set of more complex problems that were previously intractable on any reasonable timescales. HPC can be implemented at all stages of the scientific process from simulating and modeling, to triggering and real-time data processing, to high-level data analysis and visualization. This seminar is meant to be a brief introduction to HPC from a scientific perspective, inspired by my recent experience at the Supercomputing 2010 conference.