Molecular epidemiology is the integrated application of the principles and practices of epidemiology, molecular biology and disease control to gain a better understanding of disease distribution and transmission. This approach has been particularly fruitful in the field of tuberculosis. With this approach a number of lessons have been learned: The transmission and accelerated progression of TB in AIDS patients; Exogenous reinfection of AIDS patients with MDR TB after successful eradication of the originally infecting strain, false positive cultures as a result of laboratory cross contamination, and the unexpectedly high rate of ongoing transmission of TB in urban settings. More recently this approach has been used to study the spread of MDR TB in NY city, demonstrating that a majority of MDR strains were clonally derived and transmitted nosocomially. In addition, studies of the impact of immigration on tuberculosis in SF suggest that in the context of an efficient TB control program that there is limited transmission between US and Foreign Born patients. Efforts are underway to study the efficacy of TB control intensification. At the same time, controversy has arisen about the temporal stability of the IS6110, the most commonly used marker in these studies and the appropriate use of alternative markers in certain settings.