Murine polyomavirus is an important member of Polyomaviridae family offering potential applications in gene therapy and immunotherapy. Viral mutant analysis is crucial for study of the virus, however, commonly used methods of its production are laborious and give low yields. This thesis involves development of the new experimental system that can produce intact viral genome from recombinant plasmid in vivo using Cre/loxP-mediated recombination. One loxP site is unavoidably introduced into newly generated viral genome during recombination. Two variants of production plasmids generating wild type viral genome with incorporation of loxP between the poly(A) signal sites of early and late genes or into the intronic region of early genes were prepared. LoxP insertion between the poly(A) signal sites has a dramatic effect on viral gene expression and leads to complete loss of virus infectivity. Conversely, the infectious virus was obtained from the viral genome containing loxP site in the early intronic region. To ensure expression of Cre recombinase I also prepared stably transfected cell lines which can simplify the virus production. This thesis shows that newly designed system gives satisfactory yield of the virus, solves restrictions connected with commonly used methods and can be used for low infectious viral mutant production.