

What is the “MOI”?

The multiplicity of infection is a common term which indicates the number of vector particles per cell used in a transduction. For example, a MOI of 1 means the addition 10^4 vector particles to 10^4 cells.

That's easy, **but**: The term MOI is used in two slightly different ways which may make a great difference:

A:

The transduced cell type is the same cell type that has been used for the titration. In this case a MOI of 1 results in a mean number of vector integrations per cell of 1 as estimated by quantitative PCR (assuming lentis can integrate in every step of cell cycle). The transduction rate in this case will be around 40 - 50% because of multiple integrations per cell [Fehse et al. 2004, Pois(s)on - it's a question of dose..., Gene Ther. 11(11)]. A MOI of 20 then results in a mean number of vector integrations per cell of 20. This is a strict interpretation of the term MOI.

B:

The transduced cell type is not the same cell type that has been used for the titration. In this case the MOI doesn't tell anything about the expectable transduction rate or the mean number of vector integrations per cell since the transducability/susceptibility of different cell types may differ far more than 10-fold. Now the MOI is used to specify the amount of vector used in an experiment, which is always dependant on the titration method in that specific lab. While Lab-A needs a MOI of 30 to transduce neurons to 20%, Lab-B may need a MOI of 110 – and both may mean the same but titer their vectors in a different way. In this experiment the neurons may have a mean number of vector integrations per cell below 1 although the MOI was 110.