These questions concern the paper referenced below. Please be concise in your answers but provide sufficient detail to demonstrate that you understand the issues under discussion:

“Caenorhabditis elegans gene ced-9 protects cells from programmed cell death”
Hengartner et al.

1. Describe the evidence that ced-9(n1950) is a dominant, gain-of-function mutation. Do you think it is possible for a mutation to be dominant but not gain-of-function?

2. What is the evidence that the ced-9 loss-of-function mutations are indeed in the ced-9 gene, not in some other gene?

3. What is the evidence that the ectopic cell deaths seen in ced-9 loss-of-function mutants are the result of activation of the programmed cell death pathway (as opposed for example to death by some other means)?

4. Based on the ced-9(loss-of-function) ced-3(loss-of-function) double mutant phenotype, the authors propose that the two gene products act sequentially in a pathway. Can you propose another explanation for the double mutant phenotype, an explanation that doesn’t have the gene products functioning in a linear pathway?