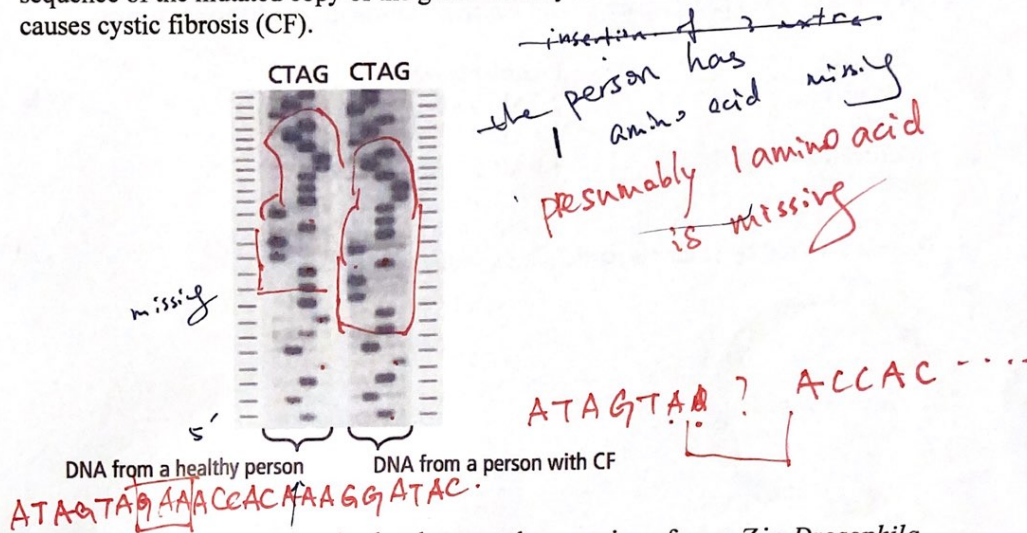


## Questions: Techniques

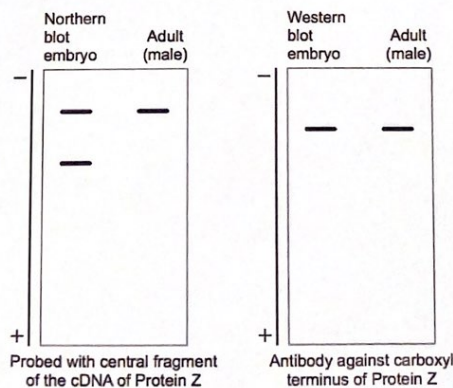
November 2021

1) The autoradiograph below is from the original study that first sequenced the cystic fibrosis gene (J.R. Riordan et al., 1989. Science 245: 1066-1073). From the autoradiograph, determine the sequence of the normal copy of the gene and the sequence of the mutated copy of the gene. Identify the location of the mutation that causes cystic fibrosis (CF).



2) You want to characterize the developmental expression of gene Z in *Drosophila melanogaster*. You isolate mRNA from embryos and adult flies and perform a northern blot using a labeled DNA probe specific to gene Z mRNA, a gene required for development. The results are depicted below to the left. Intrigued, you isolate protein Z from embryos and adult flies and perform a western blot using an antibody against the carboxyl terminus of the protein. The results are depicted below to the right. You are surprised to find a single band of the same molecular weight in both embryos and adult flies.

different spread



- Propose a hypothesis to explain these results.
- Propose a modification to the western blot experimental strategy that would allow you to test your hypothesis. Assume you have access to any necessary reagents.