

Functional Genomics

Ho-Ryun Chung

1842 chromosomes, C.W. von Nägeli

1871 nucleic acids, F. Miescher

1880 chromatin, W. Flemming

1910 chromosomes = genetic material, T.H. Morgan

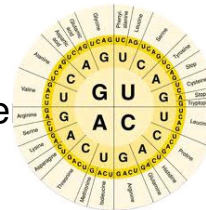
1944 DNA = genetic material, O. Avery, C. MacLeod & M. McCarty

1945 AT and GC base pairs, E. Chargaff



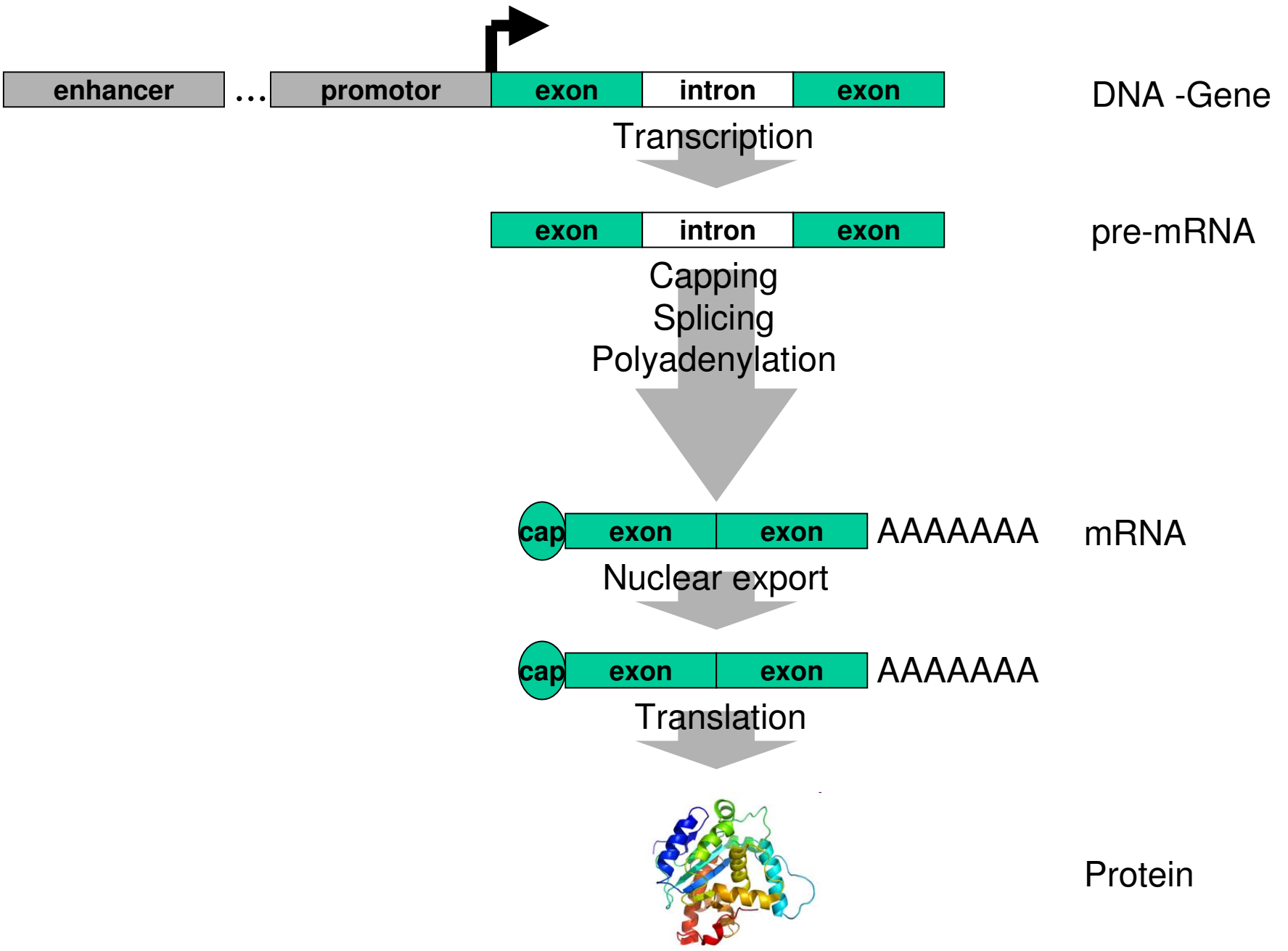
1953 DNA double helix, J. Watson & F. Crick

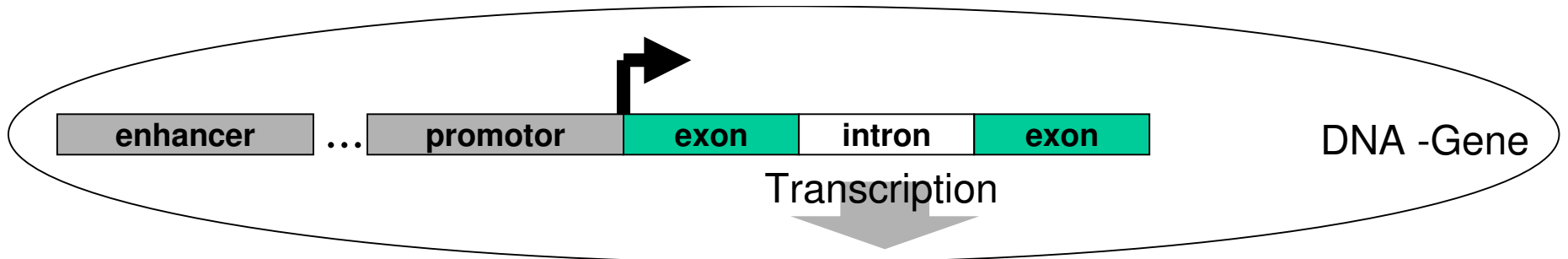
1961 genetic code, F. Crick, S. Brenne



2000 human genome

What is written in the (human) genome sequence?





Where are these?



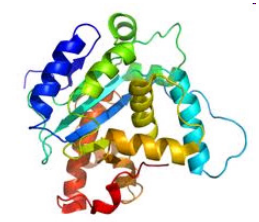
Capping
Splicing
Polyadenylation



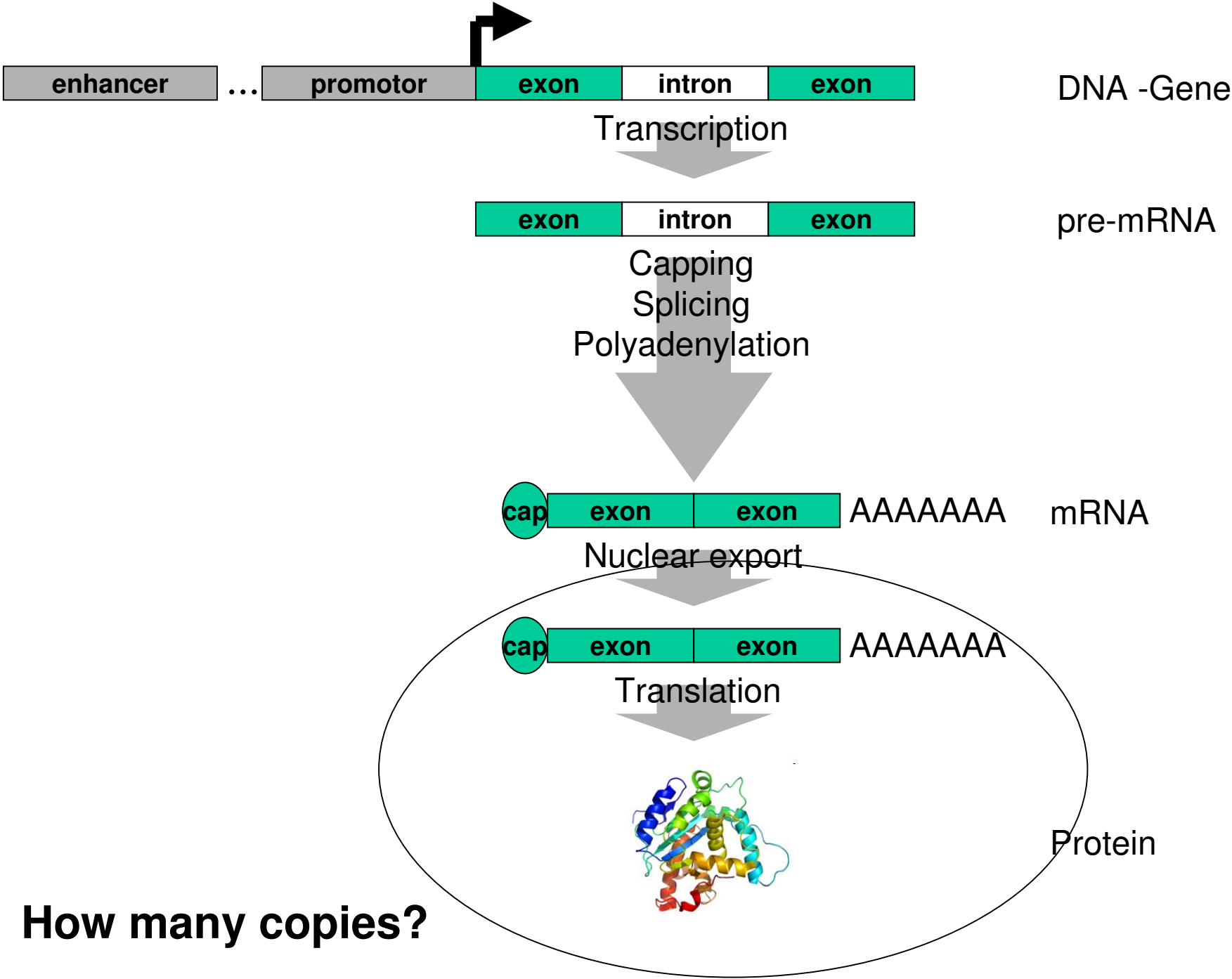
Nuclear export



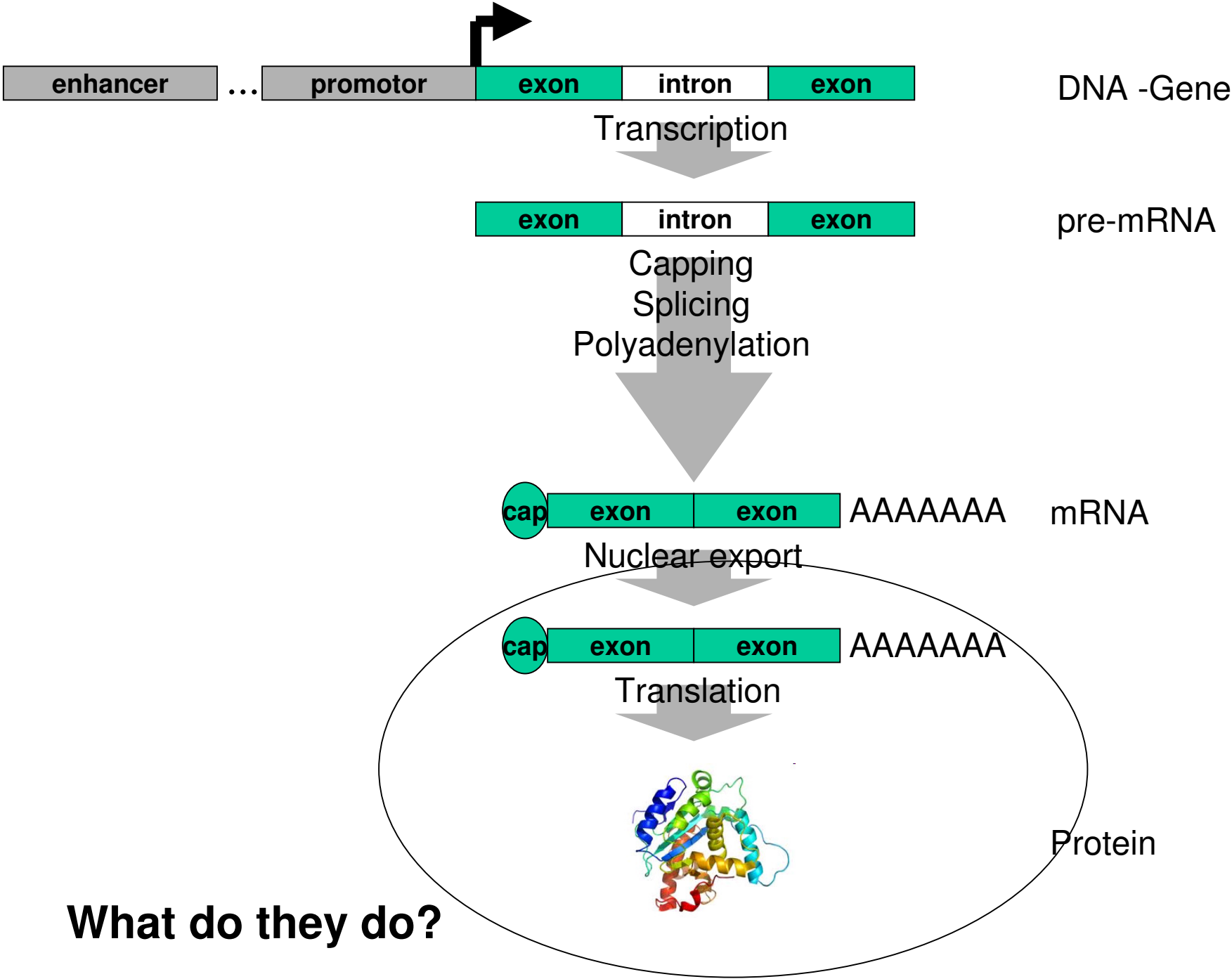
Translation



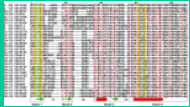
Protein



How many copies?



What do they do?



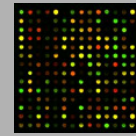
Sequence alignment



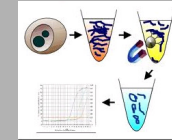
PCR



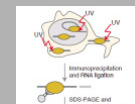
Sequencing



Microarray



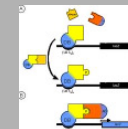
Chromatin immunoprecipitation



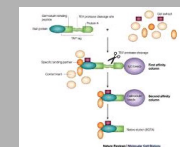
RNA immunoprecipitation



Mass spectrometry



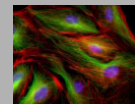
Yeast two hybrid



Tandem affinity purification



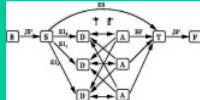
In situ hybridization



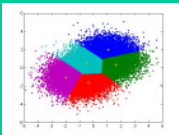
Immunofluorescence



Pattern recognition



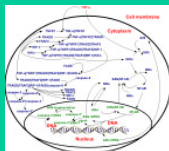
Gene prediction



Clustering



Network inference



Modeling and simulation

the functional genomics toolbox