The background of the slide features a dense, abstract pattern of overlapping circles in various sizes and colors, including shades of pink, blue, and grey, creating a sense of depth and motion.

# WHAT IS FUNCTIONAL GENOMICS?

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# WHAT IS FUNCTIONAL GENOMICS?

Functional Genomics is like Teenage Sex

- Everyone talks about it.
- Nobody really knows how to do it.
- Everyone thinks everyone else is doing it.
- So everyone claims they are doing it.



# WHAT IS FUNCTIONAL GENOMICS?

Determination of the relationship between an organism's genome and its phenotype



# WHAT IS FUNCTIONAL GENOMICS?

# Determination of the relationship between an organism's genome and its phenotype



# WHAT IS FUNCTIONAL GENOMICS?

Determination of the relationship between an organism's genome and its **phenotype**



Slight variation  
in genome  
(~0.1% different)

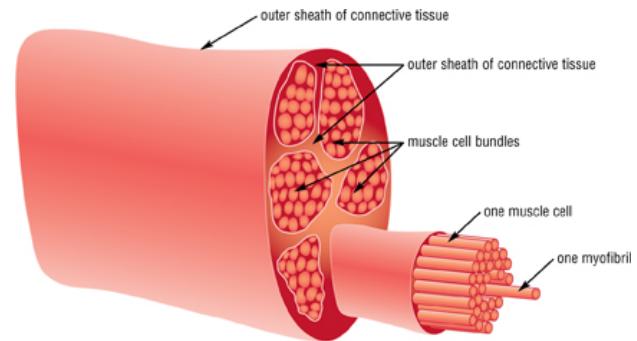


# WHAT IS FUNCTIONAL GENOMICS?

Determination of the relationship between an organism's genome and its **phenotype**



No variation  
in genome



# WHAT IS (NOT) FUNCTIONAL GENOMICS?



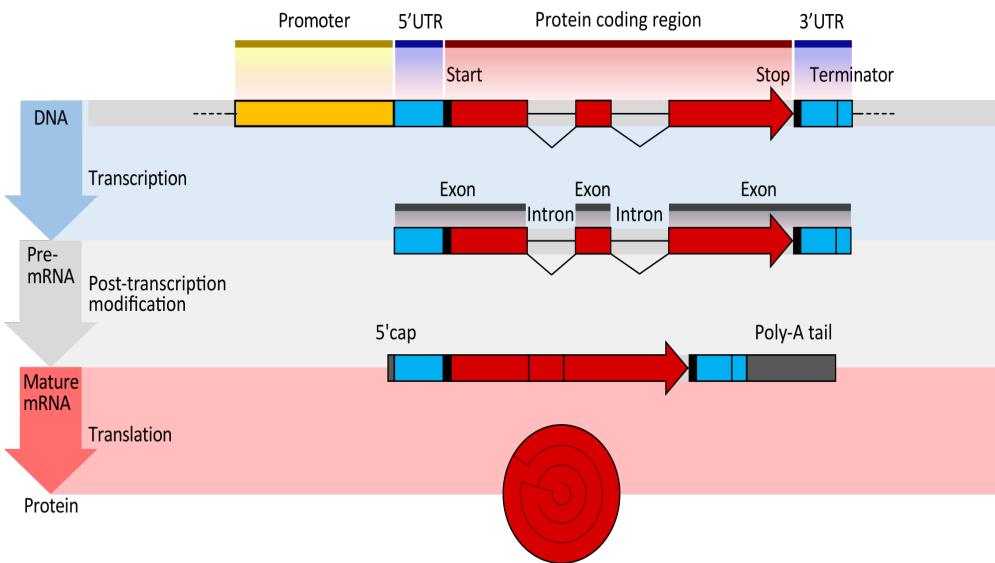
# WHAT IS FUNCTIONAL GENOMICS?

## Typical functional genomics questions:

- When and where are genes expressed?
- How do gene expression levels differ in various cell types and states?
- What are the functional roles of different genes and in what cellular processes do they participate?
- How are genes regulated?
- Where are the active gene promoters in a particular cell type?
- How do genes and gene products interact?
- How does gene expression change in various diseases or following a treatment?

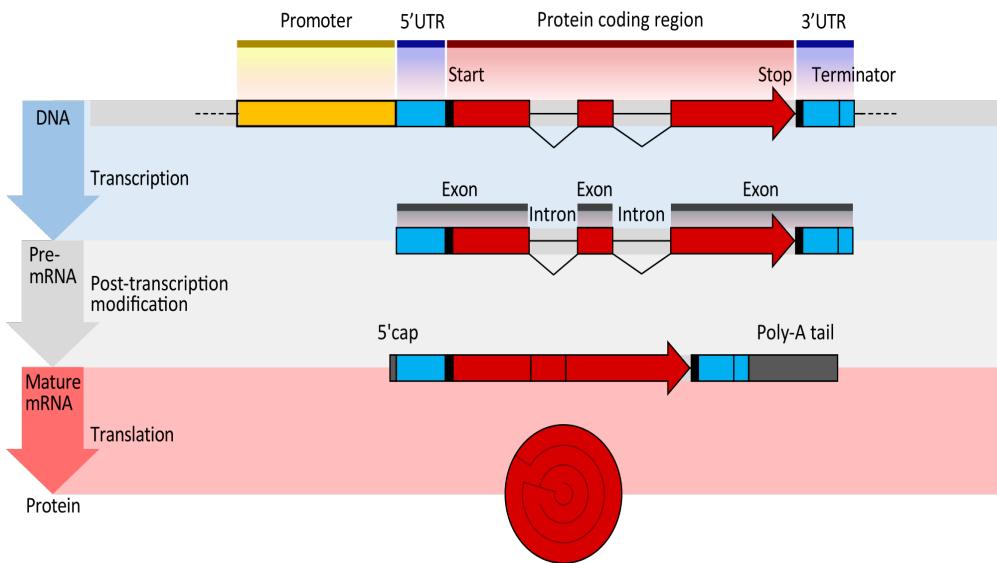


# WHAT IS FUNCTIONAL GENOMICS?



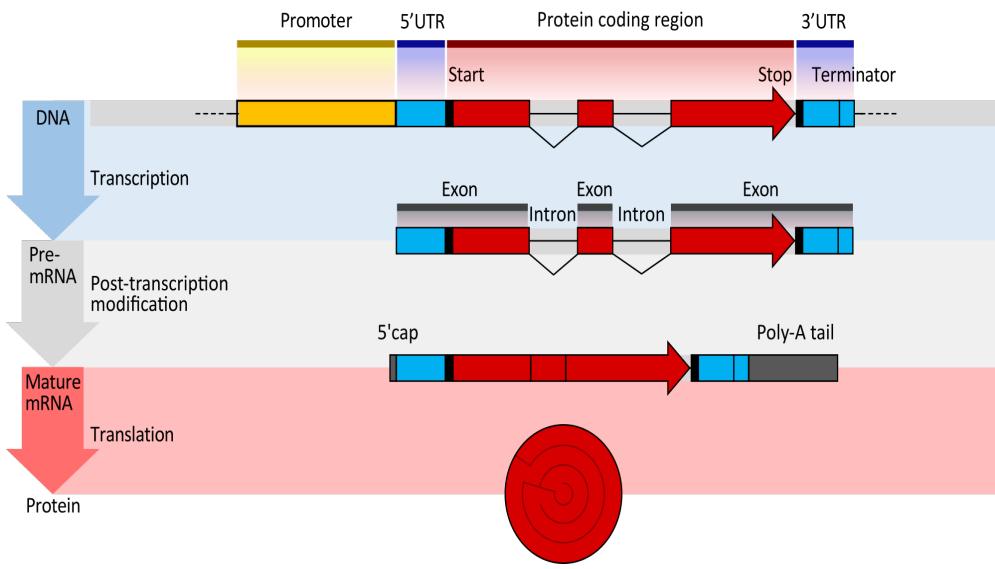
- Variant detection
  - aCGH
  - FISH
  - Sanger
- Epigenetics
  - ChIP-seq
  - Bisulfite seq

# WHAT IS FUNCTIONAL GENOMICS?



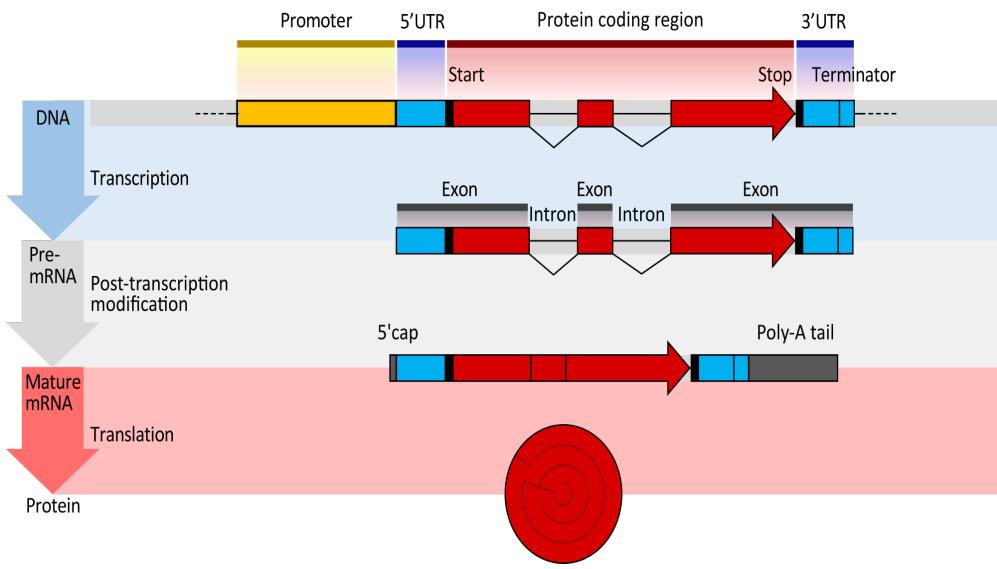
- Transcriptomics
  - Northern Blot
  - qPCR
  - RNA-seq

# WHAT IS FUNCTIONAL GENOMICS?



- Transcriptomics
  - Ribo-seq

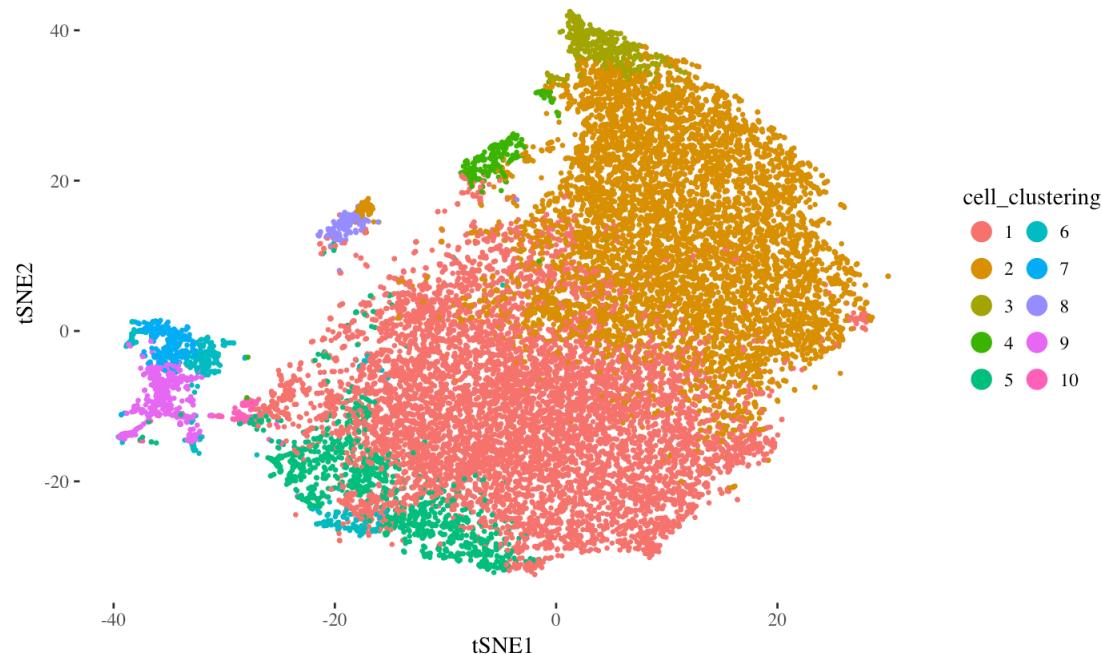
# WHAT IS FUNCTIONAL GENOMICS?



- Proteomics
  - MS
  - CyTOF
  - Crystallography

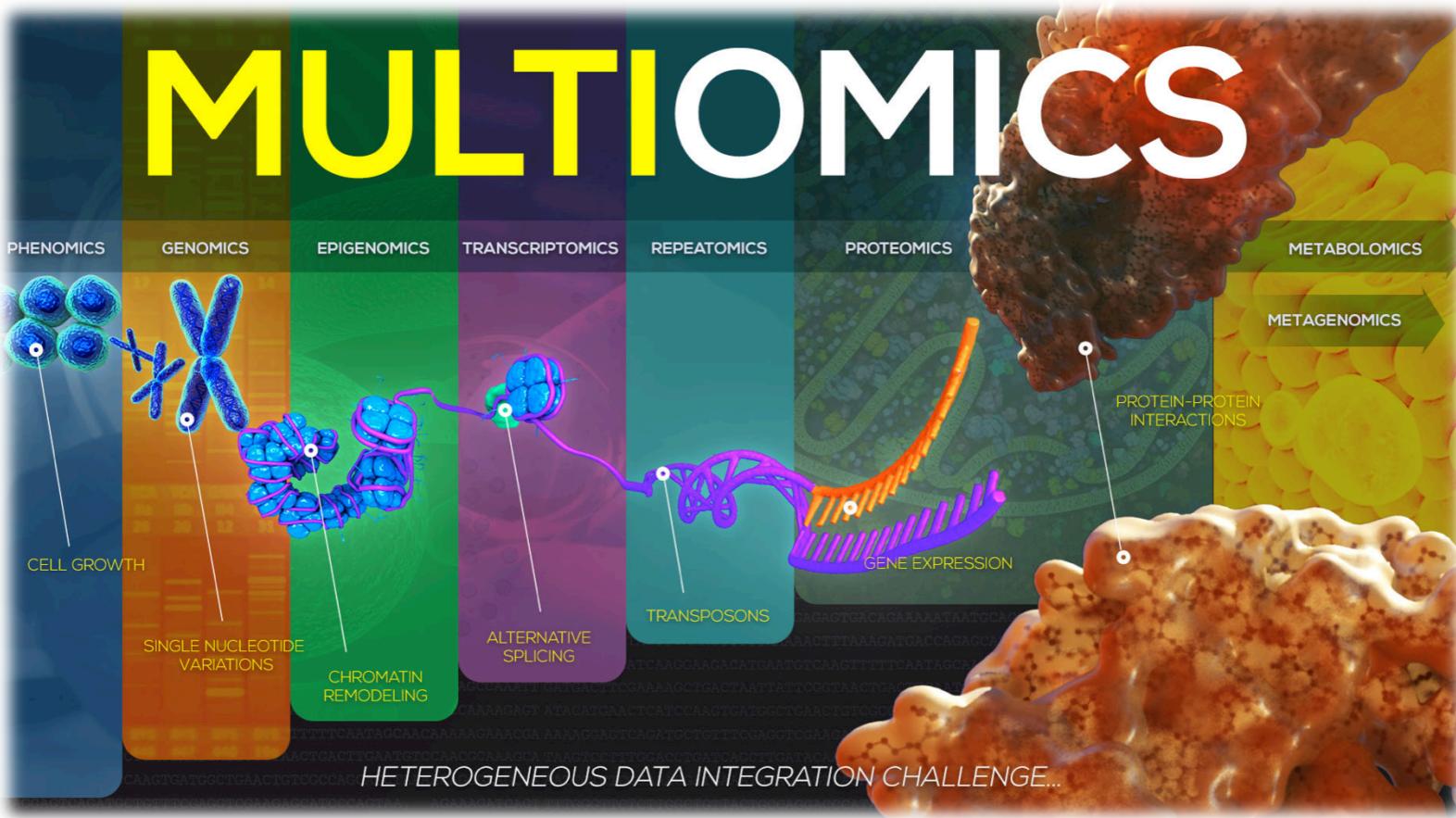
# WHAT IS FUNCTIONAL GENOMICS?

Single-cell sequencing



scRNAseq on Xenograft tumour

# WHAT IS FUNCTIONAL GENOMICS?



# ACKNOWLEDGEMENTS

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