

## Week 9 – PCR, VNTR, and Genome Variation

**Learning Goal:** Appreciate how PCR can amplify specific regions in the genome of any organism and be used to study genetic diversity across organisms

After the pre-class assignments you should be able to:

- Discuss the relationship between gene number, genome size, and organismal complexity
- Describe how the polymerase chain reaction (PCR) produces many copies of a DNA molecule
- Define the term “variable number tandem repeat” (VNTR) as it relates to genetic variation
- Explain the experimental processes of DNA fingerprinting using VNTR analysis

By the time you take the final exam you should also be able to:

- Design an appropriate primer pair to amplify a given region of DNA using PCR
- Predict the size of a PCR product based on a given DNA template and primer pair
- Predict changes in PCR results based on alterations of required components
- Interpret potential errors in PCR design based on gel results
- Analyze PCR results as they relate to presence or absence of a region in the genome of multiple organisms
- Interpret DNA fingerprinting data (VNTR/STR analysis) to identify an individual or characterize genetic diversity among different organisms