1125-VU-3117 **Christine Caples*** (christine-caples@uiowa.edu). *Classifying Tangles Using Invariants.* Preliminary report.

A knot can be thought of as a knotted piece of string with the ends glued together. A tangle is formed by intersecting a knot with a 3-dimensional ball. The portion of the knot in the interior of the ball along with the fixed intersection points on the surface of the ball form the tangle. Tangles can be used to model protein-DNA binding, so another way to think of a tangle is in terms of segments of DNA (the strings) bounded by the protein complex (the 3-dimensional ball). Like knots, the same tangle can be represented by multiple diagrams which are equivalent under deformations (no cutting or gluing allowed). A tangle invariant is a value that is the same for equivalent tangles, thus an invariant can be used to tell us when two tangles are decidedly different. Tangles can be classified into families which allows one to compute invariants more quickly as well as study properties of tangles that may be useful for solving tangle equations. (Received September 21, 2016)