INTRODUCTION TO NETWORK MODELS

Watch these videos:

# 1. Social network analysis overview

<https://www.youtube.com/watch?v=fgr_g1q2ikA>

2. The hidden influence of social networks

<https://www.youtube.com/watch?v=2U-tOghblfE>

# 3. Tracking the human genome in 4D

<https://www.youtube.com/watch?v=Q_KdrtsmYoE>

Read the specified sections of following article:

Beagrie RA, Scialdone A, Schueler M, Kraemer DC, Chotalia M, Xie SQ, Barbieri

M, de Santiago I, Lavitas LM, Branco MR, Fraser J, Dostie J, Game L, Dillon N, Edwards PA, Nicodemi M, Pombo A.

Complex multi-enhancer contacts captured by genome architecture mapping.

*Nature*. 2017 Mar 23;**543(7646)**:519-524.

1. Read the section entitled “Principle of the method.”
2. Study figure 1 – “Concept of genome architecture mapping.”
3. Study Extended Data Figure 2 – “Outline of the GAM method.”

The article is available here:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5366070/#!po=5.27638>

Concepts to learn from the videos and the article:

* What is a social network?
  1. The social network is a collection of individuals and how traits can go through them
* What is a genome network?
  1. The network of genomes and how they interact with itself, or one another.
* What is the concept of genome architecture mapping?
  1. Physical interactions between genomic loci do not follow linear genomic position
  2. Physically proximal loci are found more frequently in the same thin nuclear section than distant loci.
  3. Loci present in each NP are identified
  4. Locus co-segregation scored in a large collection of NPs is used to infer preferred contacts, radial position and compaction of each locus.
* What are the major steps of the GAM method?
  1. Cell sample
  2. Cryosection
  3. Nuclear Profile
  4. Purified DNA
  5. Identified Sequences
  6. Interaction Probabilities
* What is the genome network that is captured by GAM?
  1. Complex multi-enhancer contacts

In the next class we will have a blackboard quiz about these concepts. The quiz may include multiple choice, true-false, fill-in-the-blank, and/or matching questions.