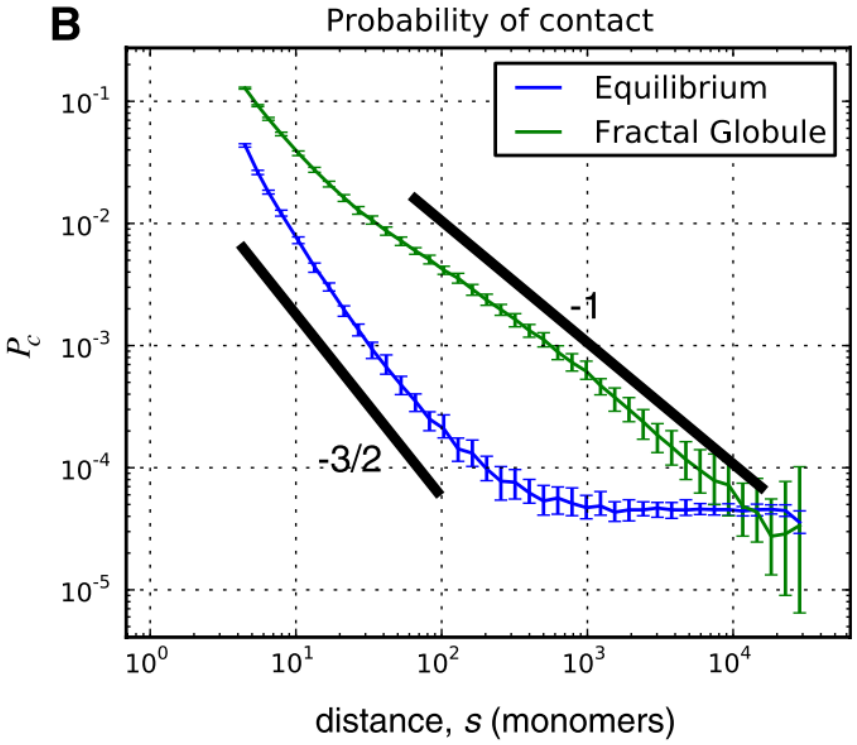
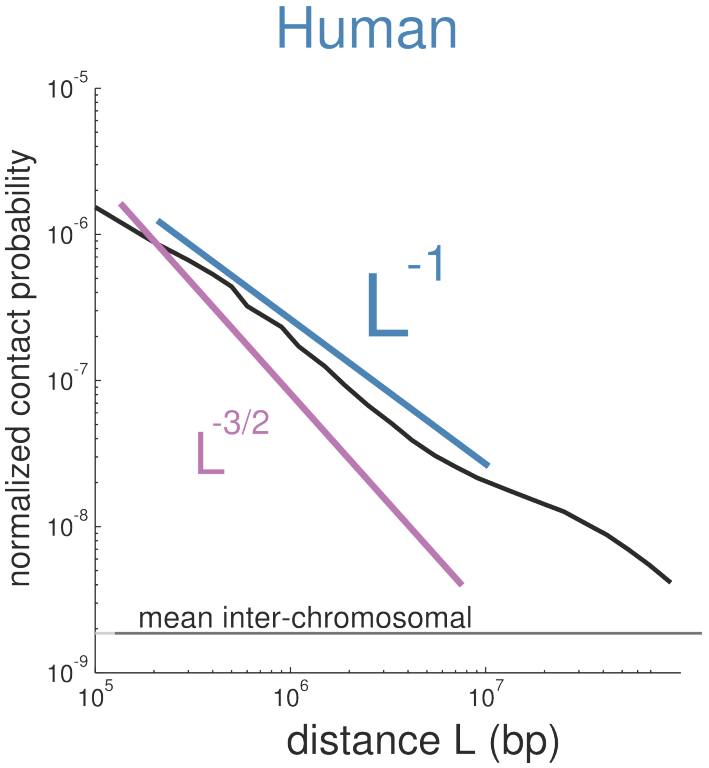
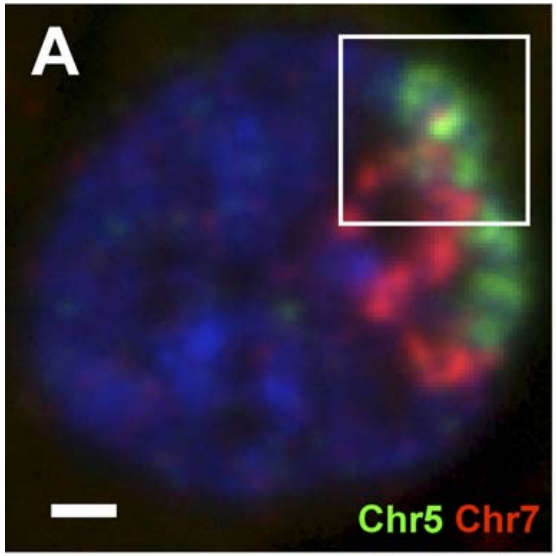
Hi-C contact probability scaling is consistent with the fractal globule

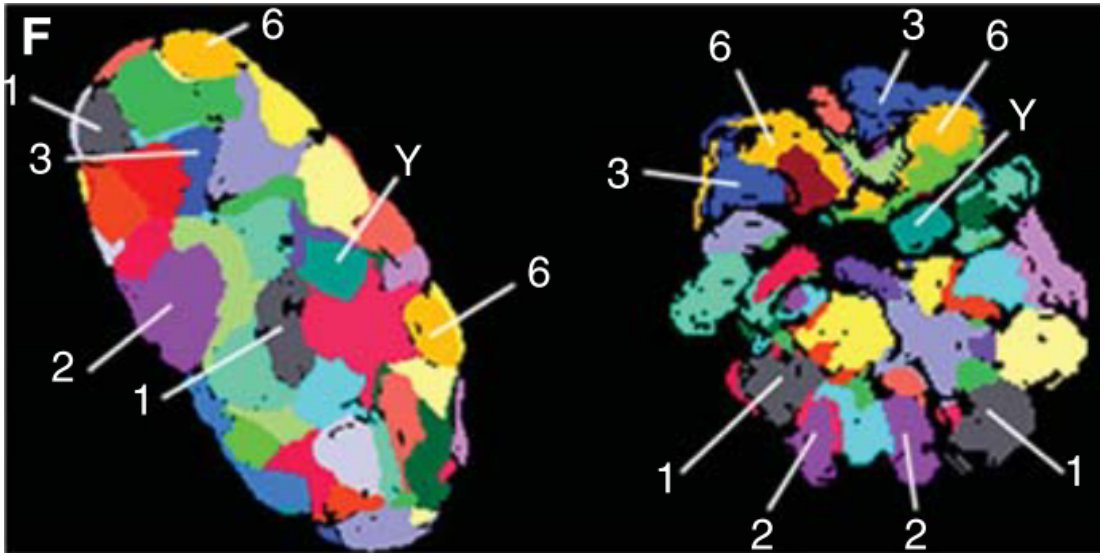




from L. Mirny, *Chromosome research,* vol. 19, no. 1, pp. 37–51, Jan. 2011.

Human chromosomes form separate "territories"



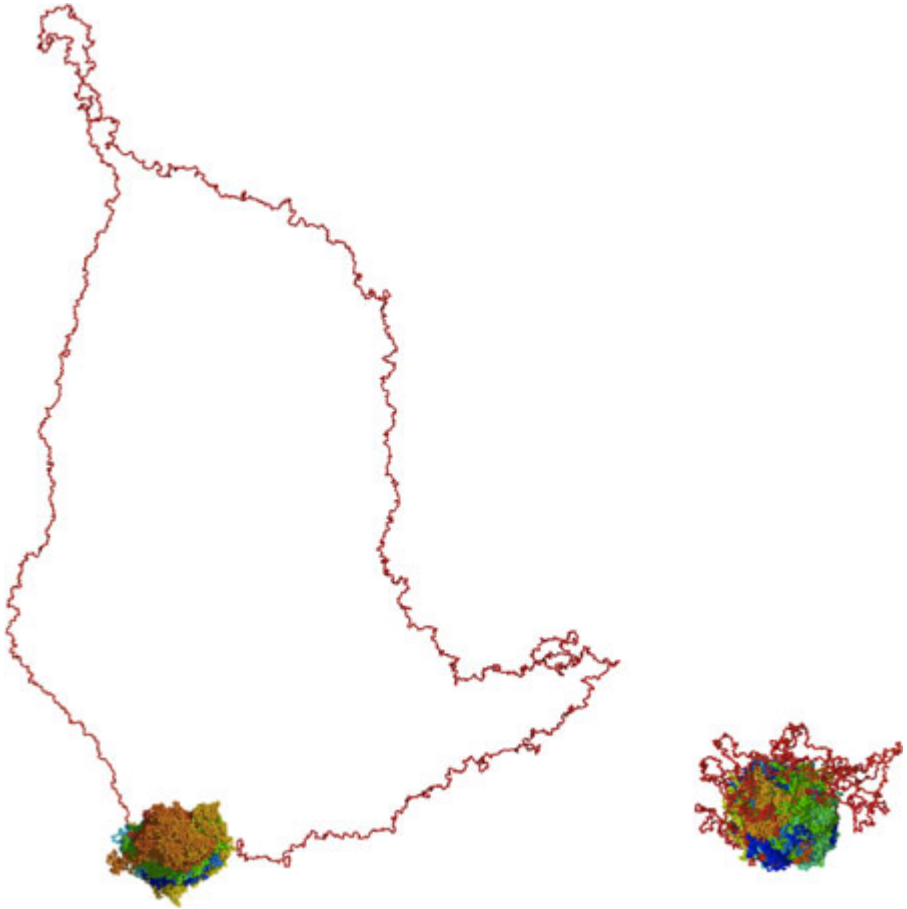


[1] M. R. Branco and A. Pombo, “Intermingling of chromosome territories in interphase suggests role in translocations and transcription-dependent associations.,” *PLoS biology*, vol. 4, no. 5, p. e138, May 2006.
[2] from T. Cremer and M. Cremer, “Chromosome territories.,” *Cold Spring Harbor perspectives in biology*, vol. 2, no. 3, p. a003889, Mar. 2010.

Biological implications of fractal globule

- gene colocalization
- DNA search / repair
- frequency of genomic alterations (e.g. cancer)
- mechanism of mitotic condensation

Biological implications of fractal globule: chromatin decondensation



from L. Mirny, *Chromosome research,* vol. 19, no. 1, pp. 37–51, Jan. 2011.