SMALL INTERFERING RNAs

8Mar10
GWLC, 9th, p. 312-315

So-called "**gene silencing**" short RNAs, they trigger destruction of targeted RNAs, including mRNA, which can prevent expression of the gene. The potential is for "gene therapy" in which deleterious genes can be "silenced." (Example: CCR5 gene which codes for docking protein for HIV.)

MECHANISM:

The system detects and destroys double stranded RNA in the cell, which could result from viral infection, or from transposable elements which have integrated in deleterious locations.

1) Double stranded RNA is detected by a complex "**Dicer**." which binds to it and chops it up into dsRNA which are "**short, interfering RNAs**" (siRNA).
2) "**RNA-induced Silencing Complex**" (RISC) binds to the siRNA and separates it into sRNA which is held in the complex.
3) The RISC-sRNA complex binds to complimentary sequences on the target RNA, and degrades the target RNA.