

## ADVANCED GRADUATE LEVEL COURSE

### TITLE: CHROMOSOME BIOLOGY OR CHROMOSOME STRUCTURE AND FUNCTION

FORMAT: 3cr., two lectures and one paper discussion per week

#### CONTENT:

**Textbook: Chromosome Biology by Appels et al., Kluwer press, 1998 (ISBN 0-412-02601-5)**

#### Topics for Discussion

1. Introduction, DNA structure and folding (Chapter 17)
2. Organization of DNA, variable amounts of DNA, coding vs. non-coding, heterochromatin vs. euchromatin (Chapters 16, part of 20 + reading material)
3. DNA replication (Chapter 18 + reading material)
4. Structure and function of telomeres (Chapter 20 + reading material)
5. Structure and function of centromeres (Chapter 20 + reading material)
6. Cell cycle control (Chapter 4 + reading material)
7. Mitosis (Chapter 4 + reading material)
8. Meiosis (Chapter 5 + reading material)
9. Chromosome pairing and recombination (Chapter 5 + reading material)
10. Chromosome morphology and number (Chapter 6 +reading material)
11. Structural stability of chromosomes (Chapter 7 +reading material)
12. Losses and Gains of chromosome segments (Chapter 8 +reading material)
13. Rearrangements of chromosome segments (Chapter 9 +reading material)
14. Polyploidy (Chapter 10+reading material)
15. Aneuploidy (Chapter 11+reading material)
16. Mapping genes in diploids using chromosome aberrations (Chapters 12, 13+reading material)
17. Mapping genes in polyploids using chromosome aberrations (Chapters 12, 14 + reading material)
18. Gene transfers by chromosome manipulations (Chapter 15+reading material)
19. Various molecular cytogenetic tools and their uses (Chapters 19, 21, and 23)
20. Chromatin structure and epigenetic control (Reading material)