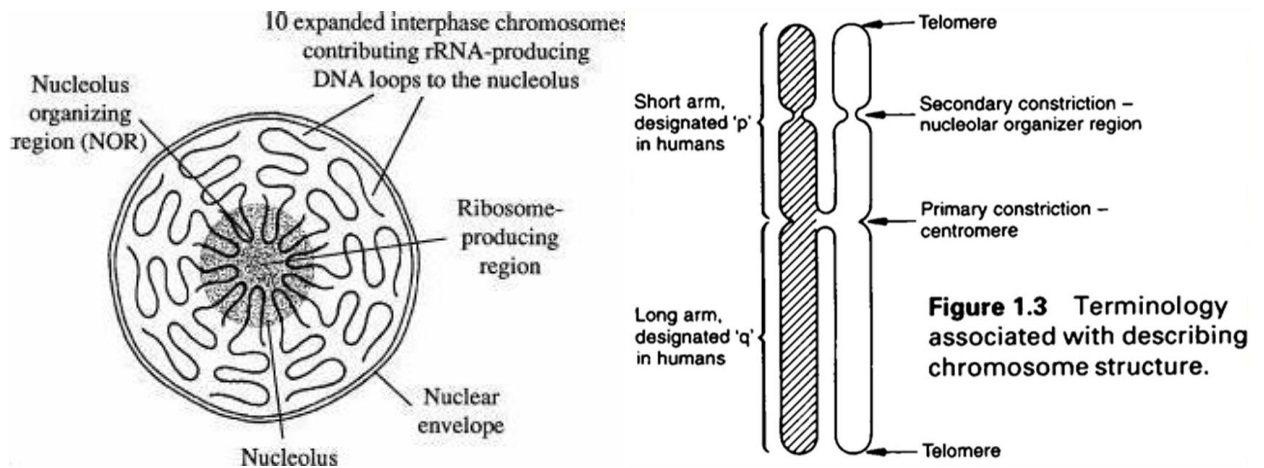


Nucleolar organizer regions (NORs)

Location and structure:

- ✓ Nucleolar organizer regions (NORs) are a secondary constriction on the short arms of the acrocentric human chromosomes 13, 14, 15, 21 and 22.
- ✓ During interphase the nucleolar organizers located on short arms (telomeric region) of several chromosomes may together form a common nucleolus.
- ✓ This association within the nucleolus in these chromosomes may remain even after the metaphase stage, a phenomenon described as 'satellite association,' and an example of the nonrandom arrangement of chromosomes during the cell cycle.



Role of NORs:

- ✓ NORs are structures of central importance in the transcription of nucleic acid to protein.
- ✓ The NORs are transcribed to rRNA under the influence of RNA polymerase I.
- ✓ There is a close relationship between NORs and cell activity, their size or number might reflect or predict cell proliferation, transformation or even overt malignancy.

Visualization:

- ✓ The NORs can be visualized microscopically by simple silver-staining method (Goopasture and Bloom, 1975) that as the non-histone acidic proteins have affinity for silver stains.