QUADRANT II – TRANSCRIPT AND RELATED MATERIALS (NOTES)

Programme: Bachelor of Science (First Year)

Subject: ZOOLOGY

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Paper Title: DIVERSITY OF CHORDATES AND GENETICS

Unit 09: CHROMOSOME STRUCTURE

Module Name: GIANT CHROMOSOME- POLYTENE CHROMOSOME

Module No: 14

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Notes

- Commonly found in the **salivary glands** of insects. Therefore, also called "**salivary gland chromosomes".**
- The largest polytene chromosomes described thus far occur in larval salivary gland cells of the **chironomid genus *Axarus*.**
- Also in protists, plants, mammals.
- In insects – also in the malpighian tubules and Fat bodies
- Visible under the compound microscope during the interphase due to their enormous size.
- Polyteny arises and attains high levels in tissues, organs and at developmental stages when there is **need for the rapid development** of an organ at an unaltered high level of function.
- Organs containing cells with polytene chromosomes are, as a rule, involved in **intense secretory functions.**
- Both polytene and lampbrush chromosome are giant chromosomes.
- Hence, they are extremely large compared to normal chromosomes.
- These chromosomes can be seen under the light microscope

DIFFERENCE BETWEEN POLYTENE & LAMPBRUSH CHROMOSOMES		
	POLYTENE CHROMOSOME	LAMPBRUSH CHROMOSOME
Appearance	06 arms with light and dark bands	Lampbrush shape does not have a banding pattern.
Presence	Mostly in the Salivary glands (Interphase/Prophase of mitosis)	Oocytes (Diplotene stage in meiosis)
Size	Giant chromosome, but smaller than the lampbrush chromosome	Giant chromosome, larger than the polytene chromosome
Structure	Made up of many DNA strands	Made up of a main axis with lateral loops

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