Optional Course

ADVANCED ANIMAL DEVELOPMENTAL BIOLOGY (LS-665)

S Saran*

S. No	Topics	Contact hours
1.	Introduction: Features and concepts in Developmental Biology, Future of Developmental Biology, Developmental Genetics, Developmental mutants, Transgenesis, Gene duplication, Regulatory circuits in embryonic development	6
2.	Zebrafish as a model organism: Normal development, Mutagenesis ,Regional specification	4
3.	Mouse as model organism:Normal development ,Regional specification, Understanding gene function by transgenic and knockout studies	4
4.	Cell-cell communications in development	3
5.	Growth, aging and regeneration	4
6.	Concept of stem cells: Hematopoietic stem cells as a model, Progenitor cells, Transdifferentiation, Embroyonic stem cells	3
7.	Medical implication of Developmental Biology: Diseases of development, Teratogenesis, Developmental therapies, Gene therapy, Therapeutic cloning	3
8.	Evolution and Development: Modification of development in evolution, Hox genes, Changes in the timing of developmental processes during evolution	3
9.	Developmental Mechanisms of evolutionary change—2 lectures	2

Suggested Readings:

1. Developmental Biology – Scott F Gilbert
2. Essentials of Developmental Biology – JMW Slack
3. Development – Wolpert and Tickle
4. Research papers