



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Pruduction of Mammalian Chimeric Embryos							
Course Code		VHE660		Couse Level		Third Cycle (Doctorate Degree)			
ECTS Credit	4	Workload	100 (<i>Hours</i>)	Theory	2	Practice	0	Laboratory	0
Objectives of the Course		To have the student understand methods for the construction of inter-species avian chimeric embryos using mouse as a commonly used mammalian model and the methods used for the analysis of chimeras							
Course Content		Construction of mouse chimeric embryos by either through the fusion of two embryos at the morula stage or through the transfer of embryonic stem cells into the blastocoelic cavity and histological, immunohistochemical and molecular methods used for their examination							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Demonstration, Discussion					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Hassa, O., Aşti, R. N. (2003) Embriyoloji.Yorum Matbaacılık, Ankara.
2	Balinsky, B. I. (1975). An introduction to embryology . Saunders, Philedelphia.
3	Kierszenbaum, A. L. (2007) Histology and Cell Biology. An introduction to Pathology, Mosby, Elsevier, Kanada.
4	Wolpert, L. (1998). Principles of development. Current Biology Ltd., New York.

Week	Weekly Detailed Course Contents	
1	Theoretical	T: Mammalian embryo development at pre-implantation stages-I
2	Theoretical	T: Mammalian embryo development at pre-implantation stages-2
3	Theoretical	T: Mammalian embryo development at pre-implantation stages-3
4	Theoretical	T: Sexual cycle in mice
5	Theoretical	T: Superovulation in mice
6	Theoretical	T: Definition of chimeric embryos and their possible uses in experimental embryology
7	Theoretical	T: Laboratory methods used for the construction of chicmeric embryos
8	Intermediate Exam	Mid-term examination
9	Theoretical	T: Construction of aggregation chimeras in mice
10	Theoretical	T: Cell types used for the construction of aggregation chimeras in mice
11	Theoretical	T: Construction of chimeric mouse embryos through the transfer of cells into the blastocoelic cavity
12	Theoretical	T: Development of transgenic mice through the construction of chimeric embryos-1
13	Theoretical	T: Application of histological and immunohistochemical methods used for the examination of chimeric embryos



14	Theoretical	T: Application of molecular methods used for the examination of chimeric embryos
15	Theoretical	Application of molecular methods used for the examination of chimeric embryos
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	2	28
Seminar	1	0	8	8
Project	1	0	12	12
Midterm Examination	1	20	1	21
Final Examination	1	30	1	31
Total Workload (Hours)				100
[Total Workload (Hours) / 25*] = ECTS				4

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Learns to construct chimeric embryos through the fusion of two embryos at the morula stage.
2	Learns principles of techniques for the construction of mouse chimeric embryos through the transfer of embryonic stem cells into the blastocoelic cavity
3	Learns histological methods used for the examination of resulting chimeras. Düzelt Sil
4	Learns immunohistochemical methods used for the examination of resulting chimeras.
5	Learns molecular methods used for the examination of resulting chimeras.

Programme Outcomes (Histology and Embryology (Veterinary Medicine) Doctorate)

1	Gains expert knowledge on the function and basic histological features of cells, tissues and systems in animals.
2	Gains expert knowledge on the stages of embryonal and fetal development in both mammals and birds.
3	Based on his/her training during the Master of Science program, he/she has in depth knowledge in the field of histology/embryology as well as in areas related to his/her area of expertise.
4	Using basic knowledge gained during the undergraduate and master of science program, develops ,critically evaluates and tests novel ideas in his/her area of expertise.
5	Endowed with theoretical and practical knowledge as for the scientific research and methodology to be able to conduct an independent research project.
6	Has theoretical knowledge concerning skills (leadership, entrepreneurship, ability to reach information technologies, organization, industrial correspondence etc.). Knows laws and regulations concerning his/her area of expertise and related subjects.
7	Determines and uses laboratory equipment and consumables in a histology laboratory. Has the ability to solve problems in his/her area of expertise.
8	Has the ability to design and develop scientific methodology concerning new developments in his/her area of expertise. Has the ability to put established methods in use to tackle current problems in his/her area of expertise.
9	Designs and conducts an independent research project on his/her own.
10	Critically evaluates and reaches to a synthesis of new ideas in his/her area of expertise and related fields.
11	Uses and develops modern technologies in his/her area of expertise towards the industry in a systematic and critical manner.
12	Performs his/her expertise with the recognition of the rights and responsibilities obtained with the completion of doctorate program in histology/embryology.
13	Is able to break down new and immature ideas into simple components and suggest alternative solutions by using his/her ability to recognize possible relationships among these components.
14	If the need arises, designs an interdisciplinary research project , forms a team, leads and finalizes the research project to solve an old or a new problem in the field of histology/embryology.
15	Attends to activities such as congresses, panels, symposiums, workshops, seminars, journal clubs in his/her area of expertise, shares information in his/her area of expertise and contributes to the solution of a problem by interacting with experts in other fields.
16	Expands a growing body of information in his/her area of expertise by publishing scientific articles in national and international journals.
17	Is in recognition of taking professional and ethical responsibilities.
18	Develop new ideas and methods that has the potential to ignite social and cultural progress or add values to the information society by using practical and theoretical knowledge gained throughout his/her training and his/her skill to work independently and to take responsibilities.



19	Makes the concept of life-long learning a matter of principle and recognizes the fact that evidence-based information is the most important gain of education.
20	Provides information and manages information exchanges on issues of public and animal health in committees with the aim of defining and solving a problem using his/her expertise.

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L4
P2	5	5	5
P3	4	4	4
P7	4	4	4

