GENE THERAPY IN IMMUNOLOGY

1	Course Title:	GENE THERAPY IN IMMUNOLOGY	
2	Course Code:	TMİ6010	
3	Type of Course:	Optional	
4	Level of Course:	Third Cycle	
5	Year of Study:	1	
6	Semester:	2	
7	ECTS Credits Allocated:	5.00	
8	Theoretical (hour/week):	1.00	
9	Practice (hour/week):	4.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	NONEYok	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. BARBAROS ORAL	
15	Course Lecturers:	-	
16	Contact information of the Course Coordinator:	Uludağ Üniversitesi, Tıp Fakültesi, Tıbbi Mikrobiyoloji Anabilim Dalı, İmmünoloji Bilim Dalı, 16059, Nilüfer, BURSA E-mail: oralb@uludag.edu.tr Phone: 2954114	
17	Website:		
18	Objective of the Course:	The aim of this course is to provide knowledge to the student about different gene transfer techniques and usage of potential immune therapeutic genes.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	To gain knowledge about the basic principals of gene therapy and its associated risks and challenges
		2	To comprehend the mechanisms of gene transfer techniques
		3	To be aware of some diseases that might be treatable by targeting immune genes
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21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Potential therapeutic genes in Immunology	DNA database screening
2	Viral vectors	Primer and probe design
3	Non-viral vectors	Calculation of primer and probe concentrations and preparation of master mix

4	Amplification of target DNA by PCR	Amplification of target DNA by PCR
5	Ligation into cloning vector and bacterial transformation	Ligation into cloning vector and bacterial transformation
6	Selection of positive colonies and plasmid purification (miniprep)	Selection of positive colonies and plasmid purification (miniprep)
7	Restriction, agarose gel electrophoresis and purification of target DNA fragman from gel	Restriction, agarose gel electrophoresis and purification of target DNA fragman from gel
8	Cloning into expression vector	Cloning into expression vector
9	Selection of positive colonies and plasmid purification (maxiprep)	Selection of positive colonies and plasmid purification (maxiprep)
10	Gene transfer of reporter gene (ß-galaktosidase) into HeLa cells by chemical transfection	Gene transfer of reporter gene (ß-galaktosidase) into HeLa cells by chemical transfection
11	Staining of transfected cells (X-gal)	Staining of transfected cells (X-gal)
12	Gene transfer of reporter gene (ß-galaktosidase, CAT) into HeLa cells by lipofection	Gene transfer of reporter gene (ß-galaktosidase, CAT) into HeLa cells by lipofection
13	Gene transfer of reporter gene (ß-galaktosidase) into HeLa cells by adenovirus	Gene transfer of reporter gene (ß-galaktosidase) into HeLa cells by adenovirus
14	Current gene therapy studies in Immunology	Cell extract preparation and determination of gene expression by CAT ELISA Test
22	Textbooks, References and/or Other Materials:	1. Thompson L., "Measuring Immunity: Basic and clinical practice", Elsevier Academi,c Press (2005). 2. Buyru N., Dalay N., Özgüç M., Öztürk M., Sakızlı, M. (Çeviri editörleri) "Hücrenin Moleküler Biyolojisi", TÜBA

Activites		Number	Duration (hour)	Total Work Load (hour)
23	Theoretical Assesment	14	1.00	14.00
	Practicals/Labs	14	4.00	56.00
	Self study and preperation	14	1.00	14.00
	Homeworks	5	10.00	50.00
	Projects	0	0.00	0.00
	Field Studies	0	0.00	0.00
	Midterm exams	0	0.00	0.00
	Others	0	0.00	0.00
	Final Exams	1	11.00	11.00
	Total Work Load			145.00
	ECTS Credit of the Course			5.00

Measurement and Evaluation Techniques Used in the Course	
24	**ECTS / WORK LOAD TABLE**

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	4	0	2	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**