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| **AYŞEGÜL DURAK (CV DOCUMENT)** |
| Associate professor |

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**Education Information**

PhD: ANKARA UNIVERSITY HEALTH SCIENCES INSTITUTE/BIOPHYSICS (DR) (MEDICAL)

2012 - 22/January/2018

Thesis name: Investigation of the function and structure of sarcolemmal ion channels in rat cardiomyocytes with developed insulin resistance using electrophysiological and molecular biological techniques (2017) Thesis Advisor: (Belma Turan)

Master's Degree: TRAKYA UNIVERSITY HEALTH SCIENCES INSTITUTE/BIOPHYSICS (MS) (WITH THESIS)

2010 - 8/March/2012

Thesis name: Total antioxidant capacity, trace elements and lipid peroxidation in breast cancer patients before and after treatment (2012) Thesis Advisor:(ASSISTANT PROFESSOR DR. TEVFİK GÜLYAŞAR)

Undergraduate: TRAKYA UNIVERSITY FACULTY OF SCIENCES /PHYSICS PR.

2005 - 29/September/2009

Foreign language

●Yökdil 2017: 87.5

**Duties Performed in Projects:**

1. Molecular Mechanisms Related to Uncontrolled Sarcoplasmic Reticulum Ca2+ Leak Playing a Role in Cardiac Dysfunction: Investigation of the Role of Possible Cross-Interactions Between Intracellular Free Ion Concentrations, B3-Adrenergic Receptors, Chianases and Phosphotases, European Union, Scholar: AYŞEGÜL DURAK, , 01/09 /2011 - 01/09/2014 (INTERNATIONAL)

2. Examination of the Role of STIM1 and ORAI1 Mediators in Cardiac Dysfunction in Rats with Metabolic Syndrome, -Tübitak 1002, Director: AYŞEGÜL DURAK, Advisor: BELMA TURAN, Researcher: CEYLAN VERDA BİDİRİM, 01/01/2020 - 20/07/2021 (NATIONAL)

3. In vivo and in vitro Examination of the Role of Estrogen on Cardiac Progenitor Cell Differentiation, -Tübitak 3501, Researcher: AYŞEGÜL DURAK, Researcher: YUSUF OLĞAR, Executive: CEYLAN VERDA BİTTİRİM, , 01/05/2021 (Ongoing) (NATIONAL)

4. Examining the role of Rho kinase in the hypertrophic heart failure model with electrophysiological methods, -Tübitak 1001, Director: BELMA TURAN, Researcher: KAMİL CAN AKÇALI, Researcher: Erkan Tuncay, Scholar: YUSUF OLĞAR, Scholar: AYŞEGÜL Durak, , 15/01/2014 - 15/03/2016 (NATIONAL)

5. Investigation of the Role of Insulin Application in Cardiac Dysfunction in Old Rats with Advanced Insulin Resistance with Electrophysiological and Molecular Biochemical Approaches, TÜBİTAK PROJECT 1001, Researcher: AYŞEGÜL DURAK, Manager: BELMA TURAN, Researcher: YUSUF OLĞAR, Researcher: CEYLAN VERDA BİDİRİM, Researcher: ERKAN TUNCAY, Advisor:KAMİL CAN AKÇALI, , 01/11/2019 - 21/10/2022 (NATIONAL)

**International articles:**

1. **DURAK AYŞEGÜL**, OLĞAR YUSUF, TUNCAY ERKAN, AKAT FIRAT, DEĞİRMENCİ SİNAN, TURAN BELMA (2022). STIM1-Orai1 interaction mediated calcium influx activation contributes to cardiac contractility of insulin-resistant rats. BMC Cardiovascular Disorders, 22, Doi: 10.1186/s12872-022-02586-w (Yayın No: 7842210)

2. OLĞAR YUSUF, **DURAK AYŞEGÜL**, DEĞİRMENCİ SİNAN, TUNCAY ERKAN, BİLLUR DENİZ, ÖZDEMİR SEMİR, TURAN BELMA (2021). Ticagrelor alleviates high-carbohydrate intake induced altered electrical activity of ventricular cardiomyocytes by regulating sarcoplasmic reticulum\u2013mitochondria miscommunication. Molecular and Cellular Biochemistry, 476, Doi: 10.1007/s11010-021-04205-2 (Yayın No: 7399629)

3. OLĞAR YUSUF, **DURAK AYŞEGÜL**, BİTİRİM CEYLAN VERDA, TUNCAY ERKAN, TURAN BELMA (2021). Insulin acts as an atypical KCNQ1/KCNE1\u2010current activator and reverses long QT in insülin resistant aged rats by accelerating the ventricular action potential repolarization through affecting the β3 adrenergic receptor signaling pathway. Journal of Cellular Physiology, Doi: 10.1002/jcp.30597 (Yayın No: 7399376)

4. **DURAK AYŞEGÜL**, AKKUŞ ERMAN, GÖKÇAY CANPOLAT ASENA, TUNCAY ERKAN, ÇORAPÇIOĞLU DEMET, TURAN BELMA (2021). Glucagon like peptide receptor agonist treatment of high carbohydrate intake\u2010induced metabolic syndrome provides pleiotropic effects on cardiac dysfunction through alleviations in electrical and intracellular Ca 2+ abnormalities and mitochondrial dysfunction. Clinical and Experimental Pharmacology and Physiology, 49, Doi: 10.1111/1440-1681.13590 (Yayın No: 7434276)

5. AKDAŞ SEVGİNUR, TURAN BELMA, **DURAK AYŞEGÜL**, ARIBAL AYRAL PELİN, YAZIHAN NURAY (2020). The Relationship Between Metabolic Syndrome Development and Tissue Trace Elements Status and Inflammatory Markers. Biological Trace Element Research, 198(1), 16-24. (Yayın No: 6779709)

6. OLĞAR YUSUF, TUNCAY ERKAN, BİLLUR DENİZ, **DURAK AYŞEGÜL**, ÖZDEMİR SEMİR, TURAN BELMA (2020). Ticagrelor reverses the mitochondrial dysfunction through preventing accumulated autophagosomes-dependent apoptosis and ER stress in insulin-resistant H9c2 myocytes. Molecular and Cellular Biochemistry, 469, Doi: 10.1007/s11010-020-03731-9 (Yayın No: 7521423)

7. **DURAK AYŞEGÜL**, BİTİRİM CEYLAN VERDA, TURAN BELMA (2020). Titin and CK2α are New Intracellular Targets in Acute Insulin Application-Associated Benefits on Electrophysiological Parameters of Left Ventricular Cardiomyocytes From Insulin-Resistant Metabolic Syndrome Rats. Cardiovascular Drugs and Therapy, 34, Doi: 10.1007/s10557-020-06974-2 (Yayın No: 7587008)

8. TUNCAY ERKAN, OLĞAR YUSUF, **DURAK AYŞEGÜL**, DEĞİRMENCİ SİNAN, BİTİRİM CEYLAN VERDA, TURAN BELMA (2019). β3 adrenergic receptor activation plays an important role in the depressed myocardial contractility via both elevated levels of cellular free Zn2+ and reactive nitrogen species. Journal of Cellular Physiology, 234, Doi: 10.1002/jcp.28015 (Yayın No: 7521563)

9. TUNCAY ERKAN, BİTİRİM CEYLAN VERDA, OLĞAR YUSUF, **DURAK AYŞEGÜL**, rutter Gay, TURAN BELMA (2019). Zn2+-transporters ZIP7 and ZnT7 play important role in progression of cardiac dysfunction via affecting sarco(endo)plasmic reticulum-mitochondria coupling in hyperglycemic cardiomyocytes. Mitochondrion, 44, Doi: 10.1016/j.mito.2017.12.011 (Yayın No: 7521489)

10. **DURAK AYŞEGÜL**, OLĞAR YUSUF, DEĞİRMENCİ SİNAN, AKKUŞ ERMAN, TUNCAY ERKAN, TURAN BELMA (2018). A SGLT2 inhibitor dapagliflozin suppresses prolonged ventricular-repolarization through augmentation of mitochondrial function in insulin-resistant metabolic syndrome rats. Cardiovascular Diabetology, 17, Doi: 10.1186/s12933-018-0790-0 (Yayın No: 7521658)

11. OLĞAR YUSUF, DEĞİRMENCİ SİNAN, **DURAK AYŞEGÜL**, BİLLUR DENİZ, CAN BELGİN, KAYKI MUTLU GİZEM (2018). Aging related functional and structural changes in the heart and aorta: MitoTEMPO improves aged-cardiovascular performance. Experimental Gerontology, 110, Doi: 10.1016/j.exger.2018.06.012 (Yayın No: 7582092)

12. DEĞİRMENCİ SİNAN, OLĞAR YUSUF, **DURAK AYŞEGÜL**, TUNCAY ERKAN, TURAN BELMA (2018). Cytosolic increased labile Zn2+ contributes to arrhythmogenic action potentials in left ventricular cardiomyocytes through protein thiol oxidation and cellular ATP depletion. Journal of Trace Elements in Medicine and Biology, 48, Doi: 10.1016/j.jtemb.2018.04.014 (Yayın No: 7587032)

13. OLĞAR YUSUF, **DURAK AYŞEGÜL**, TUNCAY ERKAN, BİTİRİM CEYLAN VERDA, ÖZÇINAR EVREN, İNAN MUSTAFA BAHADIR, TOKCAER KESKİN ZEYNEP, AKÇALI KAMİL CAN, AKAR AHMET RÜÇHAN, TURAN BELMA (2018). Increased free Zn2+ correlates induction of sarco(endo)plasmic reticulum stress via\n altered expression levels of Zn2+-transporters in heart failure. Journal of Cellular and Molecular Medicine, 22, Doi: 10.1111/jcmm.13480 (Yayın No: 7582112)

14. AKAT FIRAT, FIÇICILAR HAKAN, **DURAK AYŞEGÜL**, TUNCAY ERKAN, DURSUN ALİ DOĞAN, TOPAL ÇELİKKAN FERDA, SABUNCUOĞLU BİZDEN, TURAN BELMA, BAŞTUĞ METİN (2018). Intermittent Hypoxia Induced Beneficial Cardiovascular Remodeling in Left Ventricular Function of Type 1 Diabetic Rat. The Anatolian Journal of Cardiology, Doi: 10.14744/AnatolJCardiol.2018.00236 (Yayın No: 7587051)

15. TUNCAY ERKAN, BİTİRİM CEYLAN VERDA, **DURAK AYŞEGÜL**, Carrat Gaelle R J, Taylor Kathryn M., Rutter Guy A, TURAN BELMA (2017). Hyperglycemia-Induced Changes in ZIP7 and ZnT7 Expression Cause Zn2+ Release From the Sarco(endo)plasmic Reticulum and Mediate ER Stress in the Heart. Diabetes, 66, Doi: 10.2337/db16-1099 (Yayın No: 7587329)

16. **DURAK AYŞEGÜL**, OLĞAR YUSUF, TUNCAY ERKAN, KARAÖMERLİOĞLU İREM, KAYKI MUTLU GİZEM, ARIOĞLU İNAN EBRU, ALTAN VECDİ MELİH, TURAN BELMA (2017). Onset of decreased heart work is correlated with increased heart rate and shortened QT interval in high-carbohydrate fed overweight rats. Canadian Journal of Physiology and Pharmacology, 95, Doi: 10.1139/cjpp-2017-0054 (Yayın No: 7583717)

17. BİLLUR DENİZ, TUNCAY ERKAN, OKATAN ESMA NUR, **DURAK AYŞEGÜL**, OLĞAR YUSUF, DEĞİRMENCİ SİNAN, CAN BELGİN, TURAN BELMA (2016). Interplay Between Cytosolic Free Zn2 and Mitochondrion Morphological Changes in Rat Ventricular Cardiomyocytes. Biological Trace Element Research, 174(1), 177-188., Doi: 10.1007/s12011-016-0704-5 (Yayın No: 3207288)

18. OKATAN ESMA NUR, **TOY AYŞEGÜL**, TURAN BELMA (2016). Electrophysiological basis of metabolic syndrome induced cardiac dysfunction sup 1 sup title. Canadian Journal of Physiology and Pharmacology, 94(10), 1064-1073., Doi: 10.1139/cjpp-2015-0531 (Yayın No: 3207203)

19. DELETİOĞLU VEDİA, TUNCAY ERKAN, **DURAK AYŞEGÜL**, ATALAY MUSTAFA, TURAN BELMA (2015). Immuno-spin trapping detection of antioxidant/pro-oxidant properties of zinc or selenium on DNA and protein radical formation via hydrogen peroxide. Molecular and Cellular Biochemistry, 409, Doi: 10.1007/s11010-015-2508-x (Yayın No: 7587601)

20. ÇİÇEK FİGEN, **DURAK AYŞEGÜL**, TUNCAY ERKAN, CAN BELGİN, TURAN BELMA (2014). Beta-blocker timolol alleviates hyperglycemia-induced cardiac damage via inhibition of endoplasmic reticulum stress. Journal of Bioenergetics and Biomembranes, 46, Doi: 10.1007/s10863-014-9568-6 (Yayın No: 7587670)

21. TUNCAY ERKAN, OKATAN ESMA NUR, **DURAK AYŞEGÜL**, TURAN BELMA (2014). Enhancement of Cellular Antioxidant-Defence Preserves Diastolic Dysfunction via Regulation of Both Diastolic Zn2+and Ca2+and Prevention of RyR2-Leak in Hyperglycemic Cardiomyocytes. Oxidative Medicine and Cellular Longevity, 2014, Doi: 10.1155/2014/290381 (Yayın No: 7589131)

**Papers presented at international scientific meetings and published in proceedings books:**

1. Investıgatıon of the effect of lıraglıtude on actıon potentıal and channel currents ın cardıomyocytes wıth type 2 dıabetes , **DURAK AYŞEGÜL** (2021).. II. Uluslararası Bilim ve İnovasyon Kongresi, (Özet bildiri)
2. The Effect Of Soce On The Heart Function Disorder In Metabolic Syndrome , **DURAK AYŞEGÜL**, TURAN BELMA (2021). 1. ınternatıonal health scıences, bıomedıcal and ınnovatıve approach congress (Özet bildiri) 2021
3. The effects of lıraglıtude on heart functıon ın aging. **DURAK AYŞEGÜL** (2021). 8th ınternatıonal gevher nesibe health scıences conference (Özet bildiri) 2021
4. Investıgatıng of trpc channels, the contrıbutıon of ıntracellular calcıum changıng ın metabolıc syndrome, **DURAK AYŞEGÜL** MAS 16 th ınternatıonal European Conference On Mathematics, Engineering, Natural & Medical Sciences, (Özet bildiri) 2022
5. Investıgatıon of the effect of soce on ageing-reletad ıntracellular Ca2+ changes , **DURAK AYŞEGÜL** 8. uluslararası erciyes bilimsel araştırmalar kongresi, (Özet bildiri) 2022
6. Effect of glp-1 agonist liraglutide on cardiac dysfunction caused by metabolic syndrome , **DURAK AYŞEGÜL** 4th ınternatıonal health scıences and ınnovatıon congress, (özet bildiri) 2021
7. Mitochondria-targeted antioxidants in aging related functional changes in the heart and aorta: MitoTEMPO improves aged-cardiovascular performance , OLĞAR YUSUF, DEĞİRMENCİ SİNAN, **DURAK AYŞEGÜL**, TURAN BELMA Minutes of the 13th Conference on Mitochondrial Physiology The role of mitochondria in health, disease and drug discovery- COST MitoEAGLE perspectives MIP2018 and MitoEAGLE WG and MC Meeting, (Özet bildiri) 2018
8. Comparıson of female and male ın the formatıon of metabolıc syndrome. **DURAK AYŞEGÜL** 2. uluslararası multidisipliner başkent kongresi, (Özet bildiri) 2022
9. Cardioprotective action of intermittent hypoxia on left ventricle function in type 1 diabetic rats , AKAT FIRAT, FIÇICILAR HAKAN, BAŞTUĞ METİN, **DURAK AYŞEGÜL**, TURAN BELMA, SABUNCUOĞLU BİZDEN, TOPAL ÇELİKKAN FERDA. FEPS, (Özet bildiri) 2017
10. Dıfferentıal effects of glp-1 receptor agonıst applıcatıons on the remodelıng of agıng-heart. **AYŞEGÜL DURAK**, YUSUF OLGAR, BELMA TURAN. 8 th European Section Meeting of the International Academy of Cardiovascular Sciences 2022
11. The role of stım1-orai1-medıated ca2+ entry ın heart contractıon ın the model of ınsulın resıstance, **AYŞEGÜL DURAK** 4. Uluslararası 33. Ulusal Biyofizik Kongresinde 2022
12. Modulatory role of OKG on delayed rectifier potassium channels in ventricular cardiomyocytes from metabolic syndrome rats ERKAN TUNCAY, YUSUF OLGAR, **AYŞEGÜL DURAK**, CEYLAN VERDA BİTİRİM, BELMA TURAN. Biophysical society 2022 annual meeting 2022
13. Both reactive ROS and RNS contribute to intracellular free Zn2+ regulation in cardiomyocytes via zinc transporter ZIP7 under hyperglycemia ERKAN TUNCAY, VERDA BİTİRİM, **AYŞEGÜL DURAK**, GUY A. RUTTER, BELMA TURAN Elsevier Free Radical Biology and Medicine Volume 100, Supplement, November 2016, Page S153 2016
14. Association Between b3-Adrenoceptor Activation and Intracellular Free Zinc Ion Increase Contributes to Hyperglycemia-Induced Cardiac ER-Stress ERKAN TUNCAY, **AYŞEGÜL TOY**, BELMA TURAN. biophysical society annual meeting Abstracts 2016
15. b3-Adrenergic Receptor Regulation of Cardiac Ion Channels in Overweight Insulin Resistant Rats **AYŞEGÜL DURAK**, YUSUF OLGAR, ERKAN TUNCAY, BELMA TURAN. biophysical society 2022 annual meeting 2022
16. Opposite Effects of Beta3 Adrenergic Receptor Agonists on Electrical Properties of Normal and Hyperglycemic Cardiomyocytes [BELMA TURAN](https://www.jstage.jst.go.jp/search/global/_search/-char/ja?item=8&word=Belma+Turan), **AYŞEGÜL DURAK**,  [YUSUF OLGAR](https://www.jstage.jst.go.jp/search/global/_search/-char/ja?item=8&word=Yusuf+Olgar), [SİNAN DEGİRMENCİ](https://www.jstage.jst.go.jp/search/global/_search/-char/ja?item=8&word=Sinan+Degirmenci), [ERKAN TUNCAY](https://www.jstage.jst.go.jp/search/global/_search/-char/ja?item=8&word=Erkan+Tuncay) The 18th World Congress of Basic and Clinical Pharmacology 2018
17. Role of Zinc Transporters in Mammalian Heart under Physiological and Pathological Conditions **AYŞEGÜL DURAK**, YUSUF OLGAR, ERKAN TUNCAY, VERDA C. BİTİRİM, EVREN OZCİNAR, MUSTAFA BAHADIR INAN, KAMİL CAN AKCALİ, SEMİR OZDEMİR, AHMET RUCHAN AKAR, BELMA TURAN biophysical society 2017 annual meeting 2017
18. Expression levels of zinc transporters in human failing heart. **AYŞEGÜL DURAK**, Yusuf Olgar, Erkan Tuncay, Ceylan Verda Bitirim, Mustafa Bahadir Inan, Kamil Can Akcali, Ahmet Ruchan Akar, Belma Turan 34th Annual Meeting of the ISHR-European Section 2017
19. Both Hyperglycemia and Hyperinsulinemia Induce Changes in Voltage-Dependent KD Channel Currents in H9c2 Ventricular Cells. SINAN DEGIRMENCI, YUSUF OLGAR, **AYŞEGÜL**  TOY, BELMA TURAN. Annual Meeting of the Biophysical-Society 2016
20. An Investigation on Electrical Activity and Sarcolemmal K+-Channels in Cardiomyocytes from Insulin-Resistant Rat Heart TOY AYŞEGÜL, OLĞAR YUSUF, DEGİRMENCİ SİNAN, TUNCAY ERKAN, TURAN BELMA. 60th Annual Meeting of the Biophysical-Society, Los-Angeles

2016

1. Altered heart function in high sucrose fed overweight rats: ın vivo and in vitro investigations ARIOĞLU İNAN EBRU, DURAK AYŞEGÜL, OLGAR YUSUF., TUNCAY ERKAN., KAYKI MUTLU GİZEM., KARAÖMERLİOĞLU İ. DCVD Annual Meeting 2017
2. Effects of a sglt2 inhibitor on intracel ular ion levels andmitochondrialmembrane potential in ventricular H9c2 cel line DEĞİRMENCİ SİNAN, **DURAK AYŞEGÜL**, OLĞAR YUSUF, TUNCAY ERKAN, TURAN BELMA. JOINT 12th EBSA congress 10th ICBP– IUPAP congress, Madrid, İspanya 2019