

**TDK TOPICS**  
**Semmelweis University**  
**Heart and Vascular Center - Cardiology Department**  
**(2021/2022)**

1. Evaluation of the mechanisms and non-pharmacological treatment of arrhythmias.  
(Prof. Béla Merkely M.D., Ph.D., D.Sc., Klaudia Vivien Nagy M.D., Ph.D., assistant professor)
2. Role of electrocardiography in non-invasive cardiac screening of athletes.  
(Prof. Béla Merkely M.D., Ph.D., D.Sc.; Orsolya Kiss M.D., Ph.D., assistant professor)
3. Possible cardiac indications of MRI examination.  
(Prof. Béla Merkely M.D., Ph.D., D.Sc.; Hajnalka Vágó M.D., Ph.D., associate professor)
4. Sudden cardiac death and sport.  
(Prof. Béla Merkely M.D., Ph.D., D.Sc. Nóra Sydó M.D., Ph.D, assistant lecturer, Emese Csulak M.D., clinical physician, Ph.D. student)
5. Resynchronisation therapy of chronic heart failure – actual questions.  
(Prof. Béla Merkely M.D., Ph.D., D.Sc.; Valentina Kutyifa M.D., Ph.D., assistant lecturer; Annamária Kosztin M.D., Ph.D. assistant professor)
6. The role of tissue Doppler echocardiography in cardiac resynchronisation therapy.  
(Prof. Béla Merkely M.D., Ph.D., D.Sc.; Valentina Kutyifa M.D., clinical physician; Annamária Kosztin M.D., Ph.D. assistant professor)
7. Characteristics, diagnosis, and treatment of idiopathic ventricular arrhythmias  
(Pál Ábrahám, M.D.; Ph.D. assistant professor)
8. The influential factors of the acute coronary syndrome  
(Dávid Becker M.D., Ph.D., associate professor)
9. Human stem cells in 3D tissue engineering.  
(Gábor Földes M.D., Ph.D, assistant professor; Andrea Ágnes Molnár M.D.,Ph.D., Cardiologist; Edit Gara M.D., Ph.D, clinical physician)
10. Human pluripotent stem cells and their cardiovascular derivatives - a developing field of cardiovascular research and therapy.  
(Gábor Földes M.D., Ph.D, assistant professor; Andrea Ágnes Molnár M.D.,Ph.D., Cardiologist; Edit Gara M.D., Ph.D, clinical physician)
11. Disease modelling with human pluripotent stem cells.  
(Gábor Földes M.D., Ph.D, assistant professor; Andrea Ágnes Molnár M.D.,Ph.D., Cardiologist; Edit Gara M.D., Ph.D, clinical physician)
12. New biomarkers in myocardial remodelling and fibrosis in end-stage heart failure  
(Gábor Földes M.D., Ph.D, assistant professor; Edit Gara M.D., Ph.D.,clinical physician)
13. Anti-tumor therapy-induced myocardial toxicity: in vitro and ex vivo human myocardial studies  
(Gábor Földes M.D., Ph.D, assistant professor; Edit Gara M.D., Ph.D, clinical physician)

14. New cell therapies in ischemic heart disease  
(Gábor Földes M.D., Ph.D, associate professor; Andrea Ágnes Molnár M.D.,Ph.D., Cardiologist; Edit Gara M.D., Ph.D, clinical physician)
15. Endovascular treatment of vascular complications at cardiological interventions.  
(Prof. László Gellér M.D., Ph.D.)
16. Role of catheter ablation in the treatment of Ventricular Tachycardia  
(Prof. László Gellér M.D., Ph.D.; Klaudia Vivien Nagy M.D., Ph.D., assistant professor)
17. Ablation treatment of cardiac arrhythmias: new indications, new techniques.  
(Prof. László Gellér M.D., Ph.D. Vivien Klaudia Nagy M.D., Ph.D., assistant professor)
18. Applying LV lead stenting in resynchronization.  
(Prof. László Gellér M.D., Ph.D, associate professor)
19. Special techniques in resynchronization therapy  
(Prof. László Gellér M.D., Ph.D.; Levente Molnár M.D., clinical physician)
20. New electrophysiological methods.  
(Prof. László Gellér M.D., Ph.D.; István Osztheimer M.D., assistant professor)
21. Identification and analysis of prognostically important factors in acute coronary syndrome patients treated with percutaneous coronary intervention  
(István Hizoh M.D., Ph.D., assistant professor ; Dominika Szabó M.D. clinical specialist)
22. The ALPHA score – comparative validation  
(István Hizoh M.D., Ph.D., assistant professor ; Dominika Szabó M.D. clinical specialist)
23. Mortality prediction algorithms for patients undergoing primary percutaneous coronary intervention  
(István Hizoh M.D., Ph.D., assistant professor ; Dominika Szabó M.D. clinical specialist)
24. Treatment of in-stent restenosis with drug-eluting balloon.  
(Zoltán Jambrik M.D., assistant professor, external collaborator)
25. Short- and long-term follow-up of percutaneous catheter interventions on left main stem.  
(Zoltán Jambrik M.D., assistant professor, external collaborator)
26. Non-invasive diagnosis and follow-up of heart diseases in childhood and infancy.  
(Prof. Krisztina Kádár M.D., Ph.D., external collaborator)
27. Long-term follow-up of the Kawasaki disease.  
(Prof. Krisztina Kádár M.D., Ph.D., external collaborator)
28. Fetal Cardiology  
(Prof. Krisztina Kádár M.D., Ph.D., external collaborator)
29. Right ventricular adaptation in elite athletes.  
(Tímea Kováts M.D., Ph.D., assistant professor)
30. Characterization of response to Cardiac Resynchronization Therapy  
(Valentina Kutiyfa M.D., assistant lecturer; Vivien Klaudia Nagy M.D., Ph.D., assistant professor; Annamária Kosztin M.D., Ph.D. assistant professor)

31. The role of novel echocardiographic techniques in the assessment of long term prognosis in patients undergoing transcatheter aortic valve implantation  
(Bálint Károly Lakatos MD, clinical physician, Mihály Ruppert MD, clinical physician)
32. Coronary CT angiography for atherosclerotic plaque quantification and characterisation.  
(Pál Maurovich-Horvat M.D., Ph.D., M.P.H. associate professor, Judit Simon M.D., Ph.D fellow)
33. Cardiac CT imaging in structural heart disease  
(Pál Maurovich-Horvat Pál M.D., Ph.D. M.P.H., associate professor, Bálint Szilveszter M.D. PhD., Clinical Physician)
34. Assessment of the function of the atria in elite athletes by speckle tracking echocardiography  
(Andrea Ágnes Molnár M.D.,Ph.D., Cardiologist)
35. Comparison the results of various types of trans-catheter aortic biografts.  
(Anikó Ilona Nagy, M.D., assistant professor)
36. Predictors of early mortality following trans-catheter aortic valve implantation  
(Anikó Ilona Nagy, M.D., assistant professor)
37. Predictors of functional improvement following trans-catheter aortic valve implantation  
(Anikó Ilona Nagy, M.D., assistant professor)
38. Analysis of the left atrial function following trans-catheter aortic valve implantation  
(Anikó Ilona Nagy, M.D., assistant professor)
39. Predictive value of the left atrial strain in cardiovascular interventions  
(Anikó Ilona Nagy, M.D., assistant professor; Andrea Varga, M.D., clinical physician)
40. Quantification of left atrial deformation by CT versus echocardiography  
(Anikó Ilona Nagy, M.D., assistant professor; Bálint Szilveszter M.D. PhD., Clinical Physician)
41. Cognitive trajectory of patients following trans-catheter aortic valve implantation  
(Anikó Ilona Nagy, M.D., assistant professor)
42. In vivo animal models in investigation of ischemic stroke.  
(Prof. Zoltán Nagy M.D., Ph.D., D.Sc.)
43. Role of MMP-9 in evolution of reperfusional cerebral damage.  
(Prof. Zoltán Nagy M.D., Ph.D., D.Sc.)
44. NOGO system and cerebral plasticity.  
(Prof. Zoltán Nagy M.D., Ph.D., D.Sc.)
45. Diabetic cardiomyopathy – development of new treatment strategies in rat models  
(Tamás Radovits MD, PhD, associate professor)
46. Investigation of left ventricular hypertrophy induced by endurance training in a rat model  
(Tamás Radovits MD, PhD, associate professor and Attila Oláh MD, PhD, assistant lecturer)

47. Investigation of cardiac effects of acute exhaustive exercise stress in a rat model  
(Tamás Radovits MD, PhD, associate professor and Attila Oláh MD, PhD, assistant lecturer)
48. Investigation of electrophysiological aspects of sports cardiology in rat models  
(Attila Oláh MD, PhD, assistant lecturer and Tamás Radovits MD, PhD, associate professor)
49. Aging-associated cardiovascular dysfunction and nitro-oxidative stress  
(Tamás Radovits MD, PhD, associate professor)
50. Investigation of novel cardioprotective therapies on animal models of ischemia/ reperfusion  
(Tamás Radovits MD, PhD, associate professor)
51. Experimental heart transplantation studies  
(Tamás Radovits MD, PhD, associate professor and Kálmán Benke MD, resident)
52. Investigation of physiological and pathological myocardial hypertrophy in small animal models  
(Tamás Radovits MD, PhD, associate professor and Attila Oláh MD, PhD, assistant lecturer)
53. Investigation of right ventricular alterations induced by endurance training in a rat model  
( Attila Oláh MD, PhD, assistant lecturer and Tamás Radovits MD, PhD, associate professor)
54. Investigation of microvascular function and dysfunction in different pathophysiological conditions  
(Attila Oláh MD, PhD, assistant lecturer )
55. Investigation of novel treatment options for heart failure in rat models.  
(Tamás Radovits MD, PhD, associate professor)
56. Novel options for large vessel replacement  
(Tamás Radovits MD, PhD, associate professor)
57. Investigation of vascular function in heart diseases  
(Tamás Radovits MD, PhD, associate professor)
58. Comparison of the pathophysiological and hemodynamic aspects of chronic heart failure with different etiologies in rats  
(Mihály Ruppert MD clinical physician, Tamás Radovits MD, PhD, associate professor)
59. Investigation of pressure unloading-induced myocardial reverse remodeling in rat models  
(Mihály Ruppert MD clinical physician, Tamás Radovits MD, PhD, associate professor)
60. The role of microRNA in different cardiovascular pathologies  
(Mihály Ruppert MD clinical physician, Tamás Radovits MD, PhD, associate professor)
61. The role of novel biomarkers in the assessment of long term prognosis in patients undergoing transcatheter aortic valve implantation  
(Mihály Ruppert MD, clinical physician, Bálint Károly Lakatos MD, clinical physician)
62. The application of the distal radial artery puncture during coronary and vascular interventions  
(Dr. Ruzsa Zoltán PhD, associate professor)

63. Cardiological aspects of peripheral artery disease  
(Dr. Ruzsa Zoltán PhD, associate professor)
64. Ischemic and reperfusion injury during myocardial infarction  
(Dr. Ruzsa Zoltán PhD, associate professor)
65. Development of a new impedimetric method to measure platelet adhesion.  
(Pál Soós M.D., Ph.D., assistant professor, external collaborator; Dr. med. habil. Kóhidai László M.D., Ph.D., associate professor)
66. The role of cardiopulmonary exercise testing in youth athletes  
(Nóra Sydó M.D., Ph.D, assistant lecturer Emese Csulak clinical physician, Ph.D. student)
67. Sport and congenital heart disease  
(Nóra Sydó M.D., Ph.D assistant lecturer, Emese Csulak clinical physician, Ph.D. student)
68. Physiological and pathological ECG changes in athletes  
(Nóra Sydó M.D., Ph.D assistant lecturer, Emese Csulak clinical physician, Ph.D. student)
69. Sport cardiology evaluation and performance assessment  
(Nóra Sydó M.D., Ph.D, Emese Csulak clinical physician, Ph.D. student)
70. Limiting factors of sport performance  
(Nóra Sydó M.D., Ph.D assistant lecturer, Emese Csulak clinical physician, Ph.D. student)
71. Field test' performance assessments  
(Nóra Sydó M.D., Ph.D assistant lecturer, Emese Csulak clinical physician, Ph.D. student)
72. Genetic prognostic markers of myocardial ischaemia and infarction.  
(Zsolt Szelid M.D., Ph.D., assistant professor, external collaborator)
73. Genetic polymorphisms associated with the cardiovascular system in athletes.  
(Zsolt Szelid M.D., Ph.D., assistant professor, external collaborator)
74. The role of the psychosocial factors in the outcome of heart surgical interventions.  
(Prof. Andrea Székely M.D., Ph.D., external collaborator)
75. Monitoring during caritis surgery  
(Prof. Andrea Székely M.D., Ph.D., external collaborator)
76. Frailty assessment and long term outcome in cardiac surgery, vascular surgery and transplantation  
(Prof. Andrea Székely M.D., Ph.D., external collaborator)
77. Endocrine aspects of cardiac surgery and transplantation  
(Prof. Andrea Székely M.D., Ph.D., external collaborator)
78. Hepatic dysfunction and outcome after transplantation  
(Prof. Andrea Székely M.D., Ph.D., external collaborator)
79. Hepatic vein flow patterns and outcome after cardiac surgery  
(Prof. Andrea Székely M.D., Ph.D., external collaborator)

80. Left ventricular reverse remodelling assessed by cardiac CT is associated with improved patient outcomes following transcatheter aortic valve implantation  
(Bálint Szilveszter M.D. PhD., Clinical Physician)
81. Pericoronary adipose tissue attenuation by CT angiography: Diagnosis and prognostic value  
(Bálint Szilveszter M.D. PhD., Clinical Physician, Melinda Boussoussou, M.D. Ph.D. fellow)
82. The role of coronary CT angiography in chronic coronary syndrome  
(Bálint Szilveszter M.D. PhD., Clinical Physician, Adam Jermendy, M.D., Ph.D., assistant lecturer)
83. 4D MR flow measurement in congenital heart disease  
(Attila Tóth M.D., assistant lecturer; Olga H. Bálint M.D., Ph.D., specialist)
84. MRI examination of heart.  
(Hajnalka Vágó M.D., Ph.D., associate professor; Attila Tóth M.D., assistant lecturer)
85. Cardiac examination of competitive sportmen.  
(Hajnalka Vágó M.D., Ph.D., associate professor; Attila Tóth M.D., assistant lecturer)
86. New method for characterization of heart muscle with cardiac MRI.  
(Hajnalka Vágó M.D., Ph.D., associate professor; Attila Tóth M.D., assistant lecturer)
87. Pathomechanism, risk stratification, diagnostics and treatment of acute and chronic heart failure:
- a. Examination of prognostic and diagnostic value of oxidative, nitro-oxidative stress and PARP activation (Prof. Endre Zima M.D., Ph.D., Levente Molnár M.D., clinical physician)
  - b. Investigation of therapeutic efficacy and safety profile of levosimendan in heart failure. (Prof. Endre Zima M.D., Ph.D.)
  - c. Investigation of (side)effects of inotropic and vasoactive agents (Prof. Endre Zima M.D., Ph.D)
  - d. Cardiogenic shock and multi-organ failure. (Prof. Endre Zima M.D., Ph.D)
88. Investigation of prognostic factors of in- and out-of-hospital cardiac arrest, post cardiac arrest intensive hypothermic treatment modalities  
(Prof. Endre Zima M.D., Ph.D.,).
89. Investigation of telecardiological monitoring options in pacemaker and ICD patients.  
(Prof. Endre Zima M.D., Ph.D.)

**Military Hospital – State Health Center**  
**(1134 Budapest, Károly Róbert krt. 44)**

1. Cardiac implantable electronic devices in the treatment of heart failure and arrhythmias.  
(Gábor Duray M.D. Ph.D.)
2. Role of zero fluoro invasive cardiac electrophysiology in the treatment of cardiac arrhythmias  
(Gábor Duray M.D. Ph.D.)
3. Clinical use of the intracardiac pacemaker capsule.  
(Gábor Duray M.D. Ph.D.)
4. Novel treatment options in atrial fibrillation  
(Gábor Duray M.D. Ph.D.)
5. Strahlungslose Kathethertherapie von Herzrhythmusstörungen.  
(Gábor Duray M.D. Ph.D.)
6. Activation and inhibition of platelets in coronary atherothrombosis.  
(Róbert Gábor Kiss M.D., Ph.D., honorary professor)
8. Regular physical activity, sport activity and the heart  
. (Prof. István Préda M.D., Ph.D., D.Sc.)

**Gottsegen National Cardiovascular Center**  
**1096 Budapest, Haller u. 29.)**

1. Stem cell transplantation in the clinical practice.  
(Prof. Péter Andréka M.D., Ph.D.)
2. Percutan interventional techniques.  
(Prof. Péter Andréka M.D., Ph.D.)
3. Assessment of paravalvular aortic regurgitation  
(Tünde Pintér M.D., Ph.D.)
4. Pregnancy and heart disease.  
(Olga Hajnalka Bálint M.D. Ph.D.)
5. Non-pharmacological treatment of atrial fibrillation: medium- and long-term results.  
(Attila Kardos M.D., Ph.D.,)
6. Isolation of vena pulmonalis by cryoballoon in the treatment of paroxysmal atrial fibrillation.  
(Attila Kardos M.D., Ph.D.,)
7. Endothelial dysfunction: clinical significance and search modalities.  
(Attila Mohácsi M.D., Ph.D., honorary associate professor)

8. The role of genetic polymorphisms in the pathomechanism of atherosclerosis.  
(Attila Mohácsi M.D., Ph.D., honorary associate professor)
9. FFR in everyday practice  
(Zsolt Piróth M.D., Ph.D.)
10. The clinical value of post-PCI FFR measurements  
(Zsolt Piróth M.D., Ph.D.)
11. Long-term outcome of percutaneous interventions of the unprotected left main coronary artery.  
(Zsolt Piróth M.D., Ph.D.)
12. The role of 3D echocardiography in monitoring different interventions.  
(András Temesvári M.D., Ph.D.)
13. Long-term prognosis of pulmonal homograft surgery in adults.  
(András Temesvári M.D., Ph.D.)