TDK TOPICS
Semmelweis University
Heart and Vascular Center - Cardiology Department
(2023/2024)

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. 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)

5. 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)

6. The influential factors of the acute coronary syndrome
(Dávid Becker M.D., Ph.D., professor; Réka Skoda M.D. Ph.D. student)

7. Ventricular dyssynchrony and arrhythmic risk assessment in patients with dilated cardiomyopathy using cardiac magnetic resonance imaging and ultra-high frequency ECG
(Csilla Czimbalmos MD, PhD, assistant professor; Roland Papp M.D., clinical physician)

8. Cardio-oncology in clinical practice
(Zsófia Drobni M.D., Ph.D. clinical physician, Prof. Béla Merkely M.D., Ph.D., D.Sc.)

9. Cardiovascular toxicities associated with immunotherapy
(Zsófia Drobni M.D., Ph.D. clinical physician, Prof. Béla Merkely M.D., Ph.D., D.Sc.)

10. Application of human stem cells in 3D tissue engineering: spheroid and organoid cell cultures
(Földes Gábor, M.D., Ph.D., D.Sc., associate professor; Orsolits Barbara, Ph.D., research fellow)

11. Human induced pluripotent stem cell-derived cardiovascular cells in patient-specific toxicology assays
(Földes Gábor, M.D., Ph.D., D.Sc., associate professor; Orsolits Barbara, Ph.D., research fellow; Bors Luca Anna, Ph.D., research fellow)

12. Use of bioreactor for culturing Human induced pluripotent stem cells
(Földes Gábor, M.D., Ph.D., D.Sc., associate professor; Orsolits Barbara, Ph.D., research fellow; Bors Luca Anna, Ph.D., research fellow)

13. Bioinformatics as a tool in cell research: use of machine learning to analyse images from high-content screening microscopic systems.
(Bors Luca Anna, Ph.D., research fellow; Földes Gábor, M.D., Ph.D., D.Sc., associate professor)

14. Novel options of cell and gene therapy in regenerative cardiology
(Földes Gábor, M.D., Ph.D., D.Sc., associate professor; Orsolits Barbara, Ph.D., research fellow; Bors Luca Anna, Ph.D., research fellow)

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, MD, PhD, associate professor; Dominika Szabó, MD, cardiology specialist)

22. The ALPHA score – comparative validation
(István Hizoh, MD, PhD, associate professor; Dominika Szabó, MD, cardiology specialist)

23. Mortality prediction algorithms for patients undergoing primary percutaneous coronary intervention
(István Hizoh, MD, PhD, associate professor; Dominika Szabó, MD, cardiology specialist)

24. Non-invasive diagnosis and follow–up of heart diseases in childhood and infancy.
(Prof. Krisztina Kádár M.D., Ph.D., external collaborator)

25. Long-term follow-up of the Kawasaki disease.
(Prof. Krisztina Kádár M.D., Ph.D., external collaborator)

26. Fetal Cardiology
(Prof. Krisztina Kádár M.D., Ph.D., external collaborator)

27. Right ventricular adaptation in elite athletes.
(Tímea Kováts M.D., Ph.D., assistant professor)

28. Characterization of response to Cardiac Resynchronization Therapy
(Valentina Kutyifa M.D., assistant lecturer; Vivien Klaudia Nagy M.D., Ph.D., assistant professor; Annamária Kosztin M.D., Ph.D. assistant professor)

29. Coronary artery in-stent restenosis formation, investigation and treatment possibilities
(Péter Márton Kulyassa M.D., cardiologist trainee; István Ferenc Édes M.D., PhD. associate professor)

30. The role of novel echocardiographic techniques in the assessment of long term prognosis in patients undergoing transcatheter aortic valve implantation
(Bálint Károly Lakatos MD, Ph.D assistant professor, Mihály Ruppert MD, Ph.D assistant professor)

31. 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)

32. 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)

33. Assessment of the function of the atria in elite athletes by speckle tracking echocardiography
(Andrea Ágnes Molnár M.D.,Ph.D., Cardiologist)

34. Arrhythmic mitral valve prolapse
(Andrea Nagy MD PhD, assistant professor, Csilla Czimbalmos MD, PhD, assistant professor, Astrid Apor MD assistant professor)

35. The investigation of the prognostic role of right ventricular strain following cardiopulmonary resuscitation
(Bettina Nagy M.D., PhD Student; Bálint Lakatos M.D., PhD.,assistant lecturer; Prof. Endre Zima M.D., PhD.)

36. In vivo animal models in investigation of ischemic stroke.
(Prof. Zoltán Nagy M.D., Ph.D., D.Sc.)

37. Role of MMP-9 in evolution of reperfusional cerebral damage.
(Prof. Zoltán Nagy M.D., Ph.D., D.Sc.)

38. NOGO system and cerebral plasticity.
(Prof. Zoltán Nagy M.D., Ph.D., D.Sc.)

39. Effect of environmental, spatial and temporal factors on cardiac arrest
(Ádám Pál-Jakab, M.D., Cardiology Resident, PhD student; Boldizsár Kiss, M.D., Cardiology Resident, PhD student;
Koós Krisztiánné Szilágyi Brigitta, Associate Professor, Budapest University of Technology and Economics; Prof. Endre István Zima, M.D., PhD.)

40. Prognostic factors in cardiopulmonary resuscitation: predicting patient outcome using artificial intelligence
(Ádám Pál-Jakab, M.D., Cardiology Resident, PhD student; Bettina Nagy, M.D, PhD student; Prof. Endre István Zima,M.D., PhD.,)

41. Diabetic cardiomyopathy – development of new treatment strategies in rat models
(Tamás Radovits MD, PhD, associate professor)

42. 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)

43. 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)

44. Investigation of electrophysiological aspects of sports cardiology in rat models
(Attila Oláh MD, PhD, assistant lecturer and Tamás Radovits MD, PhD, associate professor)

45. Aging-associated cardiovascular dysfunction and nitro-oxidative stress
(Tamás Radovits MD, PhD, associate professor)

46. Investigation of novel cardioprotective therapies on animal models of ischemia/ reperfusion
(Tamás Radovits MD, PhD, associate professor)

47. Experimental heart transplantation studies
(Tamás Radovits MD, PhD, associate professor and Kálmán Benke MD, resident)

48. Investigation of physiological and pathological myocardial hypertrophy in small animal models
(Tamás Radovits MD, PhD, associate professor and Attila Oláh MD, PhD, assistant lecturer)

49. 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)

50. Investigation of microvascular function and dysfunction in different pathophysiological conditions
(Attila Oláh MD, PhD, assistant lecturer)

51. Investigation of novel treatment options for heart failure in rat models.
(Tamás Radovits MD, PhD, associate professor)

52. Novel options for large vessel replacement
(Tamás Radovits MD, PhD, associate professor)

53. Investigation of vascular function in heart diseases
(Tamás Radovits MD, PhD, associate professor)

54. Comparison of the pathophysiological and hemodynamic aspects of chronic heart failure with different etiologies in rats
(Mihály Ruppert MD Ph.D assistant professor, Tamás Radovits MD, PhD, associate professor)

55. Investigation of pressure unloading-induced myocardial reverse remodeling in rat models (Mihály Ruppert MD Ph.D assistant professor, Tamás Radovits MD, PhD, associate professor)

56. The role of microRNA in different cardiovascular pathologies
(Mihály Ruppert MD Ph.D assistant professor, Tamás Radovits MD, PhD, associate professor)

57. The role of novel biomarkers in the assessment of long term prognosis in patients undergoing transcatheter aortic valve implantation
(Mihály Ruppert MD, Ph.D assistant professor, Bálint Károly Lakatos MD, Ph.D assistant professor)

58. The application of the distal radial artery puncture during coronary and vascular interventions
(Dr. Ruzsa Zoltán PhD, associate professor)

59. Cardiological aspects of peripherial artery disease
(Dr. Ruzsa Zoltán PhD, associate professor)

60. Ischemic and reperfusion injury during myocardial infarction
(Dr. Ruzsa Zoltán PhD, associate professor)

61. Developement of a new impedimetric method to measure platelet adhesion.
(Pál Soós M.D., Ph.D., assistant professor, external collaborator; Dr. med. habil. Kőhidai László M.D., Ph.D., associate professor)

62. Genetic prognostic markers of myocardial ischaemia and infarction.
(Zsolt Szelid M.D., Ph.D., assistant professor, external collaborator)

63. Genetic polymorphisms associated with the cardioascular system in athletes.
(Zsolt Szelid M.D., Ph.D., assistant professor, external collaborator)

64. The role of the psychosocial factors in the outcome of heart surgical interventions.
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

65. Monitoring during caritis surgery
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

66. Frailty assessment and long term outcome in cardiac surgery, vascular surgery and transplantation
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

67. Endocrine aspects of cardiac surgery and transplantation
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

68. Hepatic dysfunction and outcome after transplantation
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

69. Hepatic vein flow patterns and outcome after cardiac surgery
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

70. Autoimmune disease and heart transplantation
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

71. Immune aspects of the transplantation
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

72. Osmotic and electrolyte changes after heart transplantation
(Andrea Székely M.D., Ph.D. DSc, Professor of Anesthesia)

73. 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)

74. 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)

75. 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)

76. Machine learning-based prediction of left and right ventricular function from echocardiographic videos
(Márton Tokodi M.D. Ph.D., assistant professor; Attila Kovács M.D. Ph.D., assistant professor)

77. Characterization of myocardial tissue properties on echocardiographic images using novel image analysis techniques
(Márton Tokodi M.D. Ph.D., assistant professor; Attila Kovács M.D. Ph.D., assistant professor)

78. 4D MR flow measurement in congenital heart disease
(Attila Tóth M.D., assistant lecturer; Olga H. Bálint M.D., Ph.D., specialist)

79. MRI examination of heart.
(Hajnalka Vágó M.D., Ph.D., associate professor; Attila Tóth M.D., assistant lecturer)

80. New method for characterization of heart muscle with cardiac MRI.
(Hajnalka Vágó M.D., Ph.D., associate professor; Attila Tóth M.D., assistant lecturer)

81. 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)

82. 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.,).

83. 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. Klinische Erfahrung mit dem Sondenloden Herzschrittmachertherapie.
(Gábor Duray M.D. Ph.D.)

6. Strahlungsdosisreduzierung beim Kathetertherapie von Herzrhythmusstörungen.
(Gábor Duray M.D. Ph.D.)

7. 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.
(Zsófia Nagy M.D., Ph.D.,)

6. Isolation of vena pulmonalis by cryoballoon in the treatment of paroxismal atrial fibrillation.
(Zsófia Nagy 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.)

14. Characterization of cardiovascular diseases using artificial intelligence-based image analytics
(Márton Kolossváry M.D., Ph.D.)

15. Diagnostic efficacy of coronary CT angiography in chronic and acute coronary syndromes
(Márton Kolossváry M.D., Ph.D.)

16. Invasive assessment of the coronary microvasculature
(Zsolt Piróth M.D., Ph.D.)