

## Summary report on research accreditation

### I. General information

Name of organization	<b>Institute of Cardiology</b>		
Organization type ( <i>to underline</i> )	Research institute	Higher education institution	<u>Ministerial research institute</u>
Research direction (s) of organization	Elucidation of the mechanisms of cardiovascular disorders and elaboration of prevention, diagnosis, treatment and rehabilitation methods, the implementation of new invasive treatment tools.		
Correlation with strategic research direction (s) of activity in the field of science and innovation for 2013-2020	3. Health and Biomedicine		
Evaluated period	2011-2015		
Web of organization	www.icardiologie.md		

### II. Research capacity (annual average for evaluated period)

Total number of employees	<b>76.2</b>					
Number of scientific researchers	<b>62.6</b>					
Number of researchers who possess honorific titles, scientific degrees, scientific and scientific-didactical titles	ASM full members	ASM corresp. members	Professor	Associated professor	Dr.hab.	Dr. (PhD)
	<b>1</b>	-	<b>6</b>	<b>13</b>	<b>11</b>	<b>22</b>
Number of researchers involved in international projects	European Commission Programmes	United Nations Programmes and Funds	Bilateral Programmes financed from the national budget	Others		
	-	-	-	<b>10</b>		
Number of young researchers (under 35 years old)	PhD students			Others		
	<b>4</b>			<b>4</b>		
Financial resources - revenues (thousand MDL)	Public budget			Special means		
	<b>3274.0</b>			<b>978.3</b>		
Categories of special means (thousand MDL)	National			International		
	<b>978.3</b>			-		
Distribution of expenditures (thousand MDL)	Salary	Procurement of scientific equipment	Traveling for scientific purposes (travel, accommodation,	Other		

	<b>2517.6</b>	<b>738.5</b>	per-diems, etc.) <b>30.1</b>	<b>966.1</b>
List of 3 basic research methods, equipments, technologies (per accredited field)	<ol style="list-style-type: none"> <li>1. Method IVUS (intravascular ultrasonography) during coronary angioplasty as a tool of the atherogen plaque evaluation and coronary stenosis morphopathologic pattern underlying.</li> <li>2. Method of the blood lipoprotein-associated phospholipase A2 determination, as a marker of vascular endothelium dysfunction and inflammation.</li> <li>3. Method for determining the effectiveness of measures to reduce the evolutive cardiovascular risk in patients with heart failure through assessment of the causes of disease exacerbation and the most important risk factors of death in patients with systolic dysfunction.</li> </ol>			
List of provided scientific services	<ul style="list-style-type: none"> <li>• The ambulatory blood pressure monitoring with the assay of the blood pressure variability indices, the diurnal profile of blood pressure, the mean on the day, night and 24 hours time of blood pressure.</li> <li>• The quantitative method of determination the microalbuminuria in hypertensive patients.</li> <li>• Electrocardiographic 24-48 hours Holter monitoring in patients with heart failure to determine the variability of cardiac rhythm.</li> <li>• Angiographic contrast of the coronary and peripheral vessels.</li> <li>• The analysis of the intima-media thickness in patients with cardiac failure after myocardial infarction.</li> <li>• The evaluation of the large and small artery elasticity indices in patients with arterial hypertension.</li> </ul>			
List of editorial activities	Institute of Cardiology is the co-founder of the journal „The Bulletin of the Academy of Sciences. Medical Sciences”, ISSN 1857-0011, category B.			

### III. Distribution of the number of research projects and themes during the evaluated period

ASM institutional projects	<b>2011</b> 5	<b>2012</b> 5	<b>2013</b> 5	<b>2014</b> 5	<b>2015</b> 4
ASM projects in the frame of State Programmes	<b>2011</b> -	<b>2012</b> -	<b>2013</b> -	<b>2014</b> -	<b>2015</b> -
ASM technological transfer projects	<b>2011</b> -	<b>2012</b> -	<b>2013</b> -	<b>2014</b> -	<b>2015</b> -
ASM projects for equipment procurement	<b>2011</b> -	<b>2012</b> -	<b>2013</b> -	<b>2014</b> -	<b>2015</b> -
ASM projects for	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>

young researchers	<b>1</b>	-	-	<b>1</b>	<b>1</b>
ASM projects in the frame of bilateral programmes	<b>2011</b> -	<b>2012</b> -	<b>2013</b> -	<b>2014</b> -	<b>2015</b> -
International projects/grants	<b>2011</b> -	<b>2012</b> <b>1</b>	<b>2013</b> <b>2</b>	<b>2014</b> <b>2</b>	<b>2015</b> <b>2</b>
List of 3 representative international projects/grants	<ol style="list-style-type: none"> <li><b>XANTUS</b> (Xarelto on prevention of stroke and non-central nervous system systemic embolism in patients with non-valvular atrial fibrillation: A non-interventional study). Execution period: 2013-2014. Executor: Scientific Laboratory <i>Cardiac emergencies</i>.</li> <li><b>Eur Observational Research Programme</b>: „Heart Failure Long-Term Registry”. Execution period: 2012-2016. Executor: Scientific Laboratory <i>Chronic heart failure</i>.</li> </ol>				
Research contracts	<b>2011</b> 1	<b>2012</b> 2	<b>2013</b> 1	<b>2014</b> 1	<b>2015</b> 1
List of 3 representative research contracts	<ol style="list-style-type: none"> <li>Clinical study agreement between Worldwide Clinical Trials Limited (London) and PMSI Institute of Cardiology. A phase II b multicenter, randomized, double-blind, placebo-controlled. Execution period: 2014-2015.</li> <li>The International Survey of acute Coronary Syndromes in transitional Countries (ISACS-CT). Sponsors and collaborators: university of Bologna. Execution period: 2011-2012.</li> <li>MacNew – Collaboration Study information. Execution period: 2011-2014.</li> </ol>				

#### IV. Scientific publications

Total number of publications abroad	Books -	Chapters in books <b>2</b>	Journal papers <b>9</b>	Conference abstracts <b>165</b>
Total number of publications in ISI journals and books	Books	Chapters in books	Journal papers <b>12</b>	
Total number of publications in the country	Books <b>4</b>	Chapters in books <b>1</b>	Journal papers <b>153</b>	Conference abstracts <b>25</b>
List of 5 representative publications (per accredited field)	<ol style="list-style-type: none"> <li>POPOVICI, I. The role of microRNA 143/145 in the development of in-stent restenosis. <i>Cardiology</i>. 2011, 9, 17-21. ISSN 0022-9040 (<b>IF: 0.373</b>) (<i>in Russian</i>).</li> <li>MOSCALU, V.; MANOLACHE, GH.; BARNACIUC, S.; MOROZAN, V.; SLOBOZEANU, A.; MOSCALU, V.; MARGINEANU, A.; GUZGAN, I.; BATRINAC A. Surgical management of acute mitral valve insufficiency. <i>The Journal of Cardiovascular surgery</i>. 2014, 2(55), (Supl.2), 10. ISSN 0021-9509 (<b>IF: 1.461</b>)</li> <li>VATAMAN, E; LISII, D; S., FILIMON, S; A., GRIVENCO, A;</li> </ol>			

	<p>VATAMAN, V. The effect coexistence of multiple noncardiac diseases on the one year prognosis of hospitalized patients with post infarction chronic heart failure. <i>European Journal of Heart Failure</i>. Abstracts Supplement, 2014, vol.16 (Supplement 2), p.290 (IF: 6.577).</p> <p>4. COBANU, L; SYRBU S; POPOVICI, I; IVANOVA, V; GUDUMAK, V.; POPOVICH, M. The immune-enzyme technique of detection of Ca<sup>2+</sup> ATPASE of sarcoplasmic reticulum - a new biologic marker of acute cardiac infarction. <i>Clinical laboratory diagnostics</i>. 2013, 5, 39-42. ISSN 0869-2084 (IF: 0.247) (in Russian).</p> <p>5. DAVID, L.; GROSU, A. Abnormal Glucose Tolerance and Long-Term Prognosis in Patients with Acute Myocardial Infarction. <i>Cardiology</i>. 2013, 53, 15-21. ISSN 0022-9040 (IF: 0.759) (in Russian).</p>
List of 5 citations	<p>DAVID, L.; GROSU, A. Abnormal Glucose Tolerance and Long-Term Prognosis in Patients with Acute Myocardial Infarction. <i>Cardiology</i>. 2013, 53, 15-21. ISSN 0022-9040 (IF: 0.759) (in Russian)</p> <p><i>Cited by:</i></p> <p>1. BEZNADEJNIH, N. Outcome prediction of by-pass coronary surgery in patients with ischemic heart diseases and diabetes mellitus type II. Ph.D. Thesis in Medical Sciences, Kemerovo, 2015 (in Russian)  <a href="http://www.kemsma.ru/htdocs/sci/diss/Diss_nomanyNA.pdf">http://www.kemsma.ru/htdocs/sci/diss/Diss_nomanyNA.pdf</a></p> <p>2. VOLINCOVA, M. Age related progress of multifocal atherosclerosis in patients after ST elevation myocardial infarction. PhD Thesis in Medical Sciences, Kemerovo, 2015 (in Russian)  <a href="http://www.kemsma.ru/sci/diss/Diss_VolikovaMA.pdf">http://www.kemsma.ru/sci/diss/Diss_VolikovaMA.pdf</a></p>

## V. Innovation outputs

Total number of patents	Registered in the country <b>8</b>	Registered abroad -	Implemented <b>7</b>
Total number of new developed methods and technologies	Registered -	Non-registered -	Implemented -
Total number of new scientific products	Registered -	Non-registered -	Implemented -
List of 5 representative innovation outputs (per accredited field)	<p>1. Patent 834(13) Y. Method for early prediction of the evolution of acute myocardial infarction/Constantin Jucovschi, Lilia David, Aurel Grosu (MD). Date of filing the application 15.05.2014, BOPI nr.11/2014.</p> <p>2. Patent 840 (13) Y. Method for predicting the risk of death in the post-infarction period of acute myocardial infarction/Constantin Jucovschi, Lilia David, Aurel Grosu (MD). Date of filing the application 15.05.2014, BOPI nr.11/2014.</p> <p>3. Patent 529 (13) Y. Method for predicting the evolution of congenital heart failure in children, complicated by pulmonary hypertension/Constantin Jucovschi, Ina Palii, Eleonora Vataman (MD). Date of filing the application 01.11.2011, OBIP (The Official Bulletin of Industrial Property) nr.7/2012.</p>		

	<p>4. Patent 4412 (13) B1. Use of 4-({2-butyl-5-[2-carboxy-2- (thiophene-2-ylmethyl)et-1-en-1-yl]-1Himidazole-1-yl)methyl) benzoic acid to improve vascular elasticity in the prevention of complications of hypertensive genesis/Aliona Durnea, Alexandru Caraus, Constantin Jucovschi (MD). Date of filing the application 29.08.2014, BOPI nr.4/2016.</p> <p>5. Patent 833 (13) Y. Method for early prediction of the evolution of acute myocardial infarction in patients with pancreatic diabetes/Constantin Jucovschi, Lilia David, Aurel Grosu (MD). Date of filing the application 15.05.2014, BOPI nr.11/2014.</p>
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## VI. Other outputs

Total number of scientific outputs for central and local authorities (draft of law, strategies etc.)	<b>3</b>		
Total number of scientific outputs for educational institutions	Handbooks for higher education <b>1</b>	Handbooks for pre-university institutions -	Number of researchers – supervisors of license and master theses -

## VII. Major scientific and innovation achievements

Short description of main scientific results and their confirmation (by awards, citations, development of international projects etc.)	<ol style="list-style-type: none"> <li>1. The increase of the expression of extracellular ARN is an intrinsic factor leading to boosting of proinflammatory markers (e.g. TNF-alpha, IL-1-beta) and reactive oxygen species that is an important precondition for intra-stent restenosis. Serum ARN-ase is a predictor of this event and might be useful in patients exposed to coronary angioplasty for negative coronary remodelling prognosis. Poster communication at the World Congress of Cardiology, Melbourne 2014.</li> <li>2. Circulating Ca-ATP-ase (SERCA2) is a marker of myocardial irreversible injury and could be used as a predictor of acute myocardium re-infarction. Silver medal of the international Salon from Bruxelles (EUREKA-2013) - Innovation and new technologies in cardiovascular diagnosis.</li> <li>3. The systemic inflammation is strongly linked to the risk of major adverse cardiovascular events after coronary angioplasty and C-reactive protein is a marker having a high relative risk regarding vascular events. Poster communication at the ESC Congress, Frontiers in cardiovascular biology. Barcelona, 2014.</li> <li>4. The involvement of nitric oxide in mediation of vasodilation in patients with neurocardiogenic syncope was investigated. Gold Medal on the 38-th international invention show, 9-th invention and prototype show and student business plan competition from Zagreb, Croatia, 2013.</li> </ol>
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	<p>5. The clinical factors associated with high long-term mortality post myocardial infarction in patients with abnormal glucose tolerance were highlighted. Silver Medal on the XVII International Salon from Moscow, 2014: Inventions and new innovation technologies</p> <p>6. The study demonstrated the role of the glucose tolerance test and plasma malonic dialdehyde level in the pre-discharge risk stratification of non-diabetic patients with acute myocardial infarction. The Agora award „Diabetologica” on the 41-th National Congress of the Romanian Society of diabetes, nutrition and metabolic diseases, 2015.</p>				
Number of researchers invited as speakers at international conferences	2011 3	2012 2	2013 1	2014 -	2015 -
Short description of technological transfer and innovation results and their certification by implementation	<p>Cardiac electrophysiology and catheter ablation of arrhythmias – theoretical classes on electrophysiology and practical training in diagnosis of arrhythmias.</p> <p>Implementation of the program "School of patients after revascularization";</p> <p>Determination of morphometric parameters of left ventricular remodeling and the importance of their association at various stages of development of heart failure;</p> <p>Physical rehabilitation program in patients undergoing coronary revascularization;</p> <p>The model for predicting the survival of patients with heart failure (The Seattle Heart Failure Model);</p> <p>Patient Satisfaction Questionnaire of the results of phase II cardiovascular rehabilitation in hospital and phase II stage at home.</p>				
Number of defended dr./dr. hab. theses per year	2011 2/2	2012 1/1	2013 2/0	2014 0/0	2015 2/2

#### **VIII. Present/further involvement in the Horizon 2020 (FP7)**

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#### **IX. Accredited research field and its evaluation by the National Council for Accreditation and Attestation of the Republic of Moldova (very good/good/satisfactory)**

The Institute of Cardiology is accredited by the National Council of Accreditation and Attestation of Republic of Moldova with the qualification:  
Cardiology (the assessment of the performance - good).

**X. Category (A/B/C) attributed by the National Council for Accreditation and Attestation of the Republic of Moldova to the organization**

Organization with international recognition (A category).

**XI. Institutional development actions planned for the next 5 years (maximum ½ page).**

1. Evaluation of diagnostic worth of the admission circulating levels of copeptin (glycoprotein of 39 amino acid C-terminal vasopressin) in patients with STEMI and NON-STEMI, and its predictive value concerning necessity of primary revascularization.
2. Assaying of the feasible serum markers of inflammatory response in patients with STEMI in different periods of post-infarction evolution, including early phases, corresponding to myocardial cell infiltration, such as neutrophils (24-48 hours), macrophages M1 (72 hours) and macrophages M2 (7 day) as well as their matching to indices of cardiac remodeling and clinical dynamics.
3. Study of correlation between serum value of metalloproteases 8 and 9 and parameters indicating cardiac remodeling in patients with STEMI after angioplasty during first 6 months of post-infarction evolution.
4. Implementation of telemonitoring of rehabilitation programs for patients with various forms of heart failure. Select the most effective ways to control the quality of care of patients with heart failure at various stages of surveillance. Study the autonomic dysfunction in chronic heart failure under the influence of medication and physical rehabilitation and pulmonary hypertension secondary to heart failure of ischemic heart disease.
5. To estimate benefit sympathetic denervation to the renal arteries versus pharmacological treatment over variability blood pressure values, and diurnal profile in essential hypertension.
6. Evaluating the snippet of pro-BNP depending on the applied.
7. To appreciate the dynamics of physical capacity in relation to the treatment.
8. Evaluation of the correlation between degree morpho-functional improvement of the heart, the levels of pro-BNP and of reducing the blood pressure values.

9. Estimation efficacy of procedure DSAR versus pharmacological treatment on diastolic function and remodeling of the left ventricular parameters during the treatment of resistant hypertension.