

Action Profile

Action General Information

Action Code	CA15203	MC Chair	Prof Erich Gnaiger	
Action Title	CA15203 - Mitochondrial mapping: Evolution - Age - Gender - Lifestyle - Environment			
MOU	003/16	Draft MOU	OC-2015-2-19984	
CSO Approval Date	2016-02-26			
Action Start Date	2016-09-12	Action End Date	2020-09-11	
Science Officer	Dr Federica Ortelli	Administrative Officer	Mr Christophe Peeters	

Participating COST Members:

	ITC		Non-ITC		Total
accepted the MoU	Number	15	Number	16	31
	% of ITC in Action		% of non- ITC in Action	51.61%	
	% of all ITC	68.18%	% of all non- ITC	94.12%	
Number of Action MC members	24		33		57

COST Member and Acceptance Date				
AT 23/03/2016 BE 02/05/2016 BA 08/01/2019 HR 06/04/2016 CZ 12/05/2016 DK 31/03/2016 EE 04/03/2016	HU 22/03/2016 IE 29/03/2016 IL 09/03/2016 IT 23/06/2016 LV 07/03/2016 LT 07/06/2016 MT 07/05/2016	RO 23/03/2016 RS 01/04/2016 SK 12/09/2016 SI 04/04/2016 ES 03/05/2016 SE 26/08/2016 CH 19/04/2016		
FI 08/09/2016 FR 11/03/2016 DE 22/03/2016 EL 09/03/2016	NL 26/02/2016 NO 04/05/2016 PL 14/03/2016 PT 28/04/2016	TR 16/06/2016 UK 11/03/2016		



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International cooperation

	NNC	IPC	Specific Organis ation	Total
Number of entities formally approved to join Action	2	1	0	3
Number of countries	2	1	0	3

Working Groups

	WG Title	WG Leader	Number of WG members
WG1	Standard operating procedures and user requirement document: Protocols, terminology, documentation	Dr Marko Vendelin	70
WG2	MITOEAGLE data repository in muscle and other tissues	Dr Pablo M. Garcia-Roves	55
WG3	MITOEAGLE data repository on fat tissues and other tissues	Prof Jan Nedergaard	30
WG4	MITOEAGLE data repository for blood cells and cultured cells	Dr Nicoleta Moisoi	70



MoU objectives, Action deliverables and Grant Agreement Period Goals

Action Objectives from MoU

Aim/primary Objective

include Evolution, Age, Gender, Lifestyle and Environment (EAGLE) in studies of mitochondrial function. MITOEAGLE develops harmonisation protocols towards generating a data repository on mitochondrial respiratory function. A data management system will interrelate various study-results and set them into a multidimensional context, to better diagnose mitochondrial respiratory defects

Secondary objectives

- 1. Intensify the dissemination of updated knowledge and know-how among the partners.
- 2. Build and improve collaborative relationships among the participating groups of the Action and interested end-users.
- 3. Optimally harmonise protocols across research groups.
- 4. Foster coordinated research activities of scientific proposals in the European Research Area.
- 5. Increase the number of active participants in the course of the COST Action.
- 6. Form a unique well-coordinated network of senior researchers and young investigators.
- 7. Include well established stakeholders.
- 8. Establish a spirit of mentorship and collaboration in contrast to fierce competition which characterised early decades of bioenergetics.
- 9. Initiate applications for funding to support international collaborative research projects.
- 10. Present and publish results of collaborative research projects within the COST Action, particularly related to STSMs supported by the Action.
- 11.MITOEAGLE recommendations: The goal is to increase the value and reduce the noise in mitochondrial research. Prespecified and time-stamped protocols are needed in practice, and researchers need to be introduced into adhering to publicly deposited protocols in practice. MITOEAGLE recommendations will provide practical guidelines for students, scientists and stakeholders.
- 12.A monitored database centres of excellence: The MITOEAGLE database will provide an invaluable tool for mitochondrial studies in the transition from exploratory preclinical research to clinical and pharmacological applications. Centres of excellence will emanate from the project's working groups providing training programmes and diagnostic services.
- 13. Training: Enhance the rigorous training activities particularly for PhD students and young researchers (STSMs, Schools, Workshops, Conferences) in order to establish the practical guidelines introduced by MITOEAGLE and to enhance research results in the long term.



Action Deliverables

Deliverable	Month
1. Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation (1/3 - WG1).	11
2. A multi-authored publication towards a unification of concepts and nomenclature in mitochondrial physiology (1/3 - WG1).	15
3. Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation (2/3 - WG1).	26
4. A multi-authored publication towards a unification of concepts and nomenclature in mitochondrial physiology (2/3 - WG1).	26
5. Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation (3/3 - WG1).	35
6. A multi-authored publication towards a unification of concepts and nomenclature in mitochondrial physiology (3/3 - WG1).	35
7. SOPs for blood cell separation and respirometric characterisation open for the research community (WG4).	35
8. Publication with a set of reference data (WG4).	36
9. A MitoEAGLE database on muscle tissue from humans and model organisms (WG2).	38
10. A draft of the review manuscript (WG2).	38
11. A library of protocols for sample preparation and examination by respirometry (WG1).	39
12. A joint publication documenting the results of the MitoEAGLE-PT (WG1).	42
13. Qualitative and quantitative evaluation of results obtained in ongoing studies by comparison with a reference sample (WG1).	44
14. A draft of the review manuscript (WG3).	44
15. A multi-authored publication with recommendations of comparable standard protocols and procedures (WG1).	45
16. Guidelines for future research and recommendations for the evaluation of respiratory characteristics in human respirometric samples (WG1).	46
17. A database on mt fitness evaluated with humans' cells and tissues (WG1).	47
18. Guidelines as to the optimum use of a reference sample for determination of respiration and related parameters of interest (WG1).	47
19. A set of guidelines for future studies on mitochondrial bioenergetics in muscle tissue (WG2).	47
20. An expanded MitoEAGLE database (WG1).	48
21. The MitoEAGLE data management system (WG1).	48
22. A continuously updated MitoEAGLE database for the use as reference data and guideline towards application of optimised protocols, ultimately leading towards standardisation (WG1).	48
23. A joint publication on the use of the MitoEAGLE database and management system (WG1).	48
24. An education programme for the use of MitoEAGLE database and management system	48



(WG1).	
25. Guidelines for future research and recommendations for the evaluation of respiratory characteristics in fat tissue (WG3).	48
26. A database on mt-fitness evaluated with fat tissue from humans and model organisms and post-study reports (PubMed Commons) (WG3).	48
27. MitoEAGLE data repository for comparative data evaluation, planning of future studies data mining (WG4).	48



Grant Agreement Period

Grant Agreement Period Start	01/05/2020	Grant Agreement Period End	11/09/2020
Date		Date	

Grant Agreement Period Goals

Number	Grant Agreement Period Goal	MoU Objective(s) it relates to
GAPG 1		Secondary objective 1
GAPG 2	Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation	 Secondary objective 2 Secondary objective 4 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 11 Secondary objective 13
GAPG 3	A multi-authored publication towards an unification of concepts and nomenclature in mitochondrial physiology	 Secondary objective 1 Secondary objective 2 Secondary objective 3 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 10 Secondary objective 11
GAPG 4	SOPs for blood cell separation and respirometric characterisation open for the research community	 Secondary objective 2 Secondary objective 3 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 9 Secondary objective 10 Secondary objective 11 Secondary objective 12
GAPG 5	Publication with a set of reference data	 Secondary objective 1 Secondary objective 2 Secondary objective 3 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 10 Secondary objective 11
GAPG 6	A MitoEAGLE database on muscle tissue from humans and model organisms	 Secondary objective 1 Secondary objective 2 Secondary objective 3 Secondary objective 4 Secondary objective 6 Secondary objective 7 Secondary objective 8 Secondary objective 10 Secondary objective 11 Secondary objective 12
GAPG 7	Draft of review manuscript	 Secondary objective 1 Secondary objective 2 Secondary objective 3 Secondary objective 6



GAPG 8	A library of protocols for sample preparation and examination by respirometry	 Secondary objective 8 Secondary objective 10 Secondary objective 11 Secondary objective 12 Secondary objective 13 Secondary objective 2 Secondary objective 3 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 9 Secondary objective 10 Secondary objective 11
GAPG 9	A joint publication documenting the results of the MitoEAGLE-PT	 Secondary objective 2 Secondary objective 3 Secondary objective 4 Secondary objective 6 Secondary objective 7 Secondary objective 8 Secondary objective 9 Secondary objective 10 Secondary objective 11 Secondary objective 12 Secondary objective 13
GAPG 10	Qualitative and quantitative evaluation of results obtained in ongoing studies by comparison with a reference sample	 Secondary objective 2 Secondary objective 3 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 10 Secondary objective 11 Secondary objective 13
GAPG 11	Guidelines for future research and recommendations for the evaluation of respiratory characteristics in human respirometric samples	 Secondary objective 2 Secondary objective 3 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 11
GAPG 12	A multi-authored publication with recommendations of comparable standard protocols and procedures	 Secondary objective 1 Secondary objective 3 Secondary objective 6 Secondary objective 7 Secondary objective 10 Secondary objective 11
GAPG 13	A continuously updated MITOEAGLE database for the use as reference data and guideline towards application of optimized protocols, ultimately leading towards standardization.	Secondary objective 2Secondary objective 3Secondary objective 11
GAPG 14	A database on mt fitness evaluated with humans cells and tissues	 Secondary objective 1 Secondary objective 2 Secondary objective 3 Secondary objective 4 Secondary objective 6 Secondary objective 7 Secondary objective 8



GAPG 15	An expanded MITOEAGLE database	 Secondary objective 9 Secondary objective 10 Secondary objective 11 Secondary objective 13 Secondary objective 1
		Secondary objective 10Secondary objective 12
GAPG 16	Guidelines as to the optimum use of a reference sample for determination of respiration and related parameters of interest	Secondary objective 1Secondary objective 2Secondary objective 3
GAPG 17	An education programme for the use of MITOEAGLE database and management system	 Secondary objective 1 Secondary objective 3 Secondary objective 4 Secondary objective 5 Secondary objective 6 Secondary objective 7 Secondary objective 8 Secondary objective 9 Secondary objective 13
GAPG 18	Publication of paper on concepts and terminology: Dissemination of preprint and journal submission of final manuscript	 Secondary objective 1 Secondary objective 2 Secondary objective 3 Secondary objective 5 Secondary objective 6 Secondary objective 8 Secondary objective 10 Secondary objective 11
GAPG 19	Dissemination of COST Action MitoEAGLE, presenting results that were accomplished so far, goals and impact of the Action on research career	 Secondary objective 1 Secondary objective 2 Secondary objective 4 Secondary objective 7 Secondary objective 10
GAPG 20	The MitoEAGLE data management system	 Secondary objective 1 Secondary objective 3 Secondary objective 10 Secondary objective 11 Secondary objective 12
GAPG 21	A set of guidelines for future studies on mitochondrial bioenergetics in muscle tissue	 Secondary objective 1 Secondary objective 3 Secondary objective 11 Secondary objective 12 Secondary objective 13
GAPG 22	MitoEAGLE data respiratory for comperative data evaluation, planning of future studies data mining	 Secondary objective 1 Secondary objective 2 Secondary objective 3 Secondary objective 4 Secondary objective 6 Secondary objective 7 Secondary objective 8 Secondary objective 9 Secondary objective 10 Secondary objective 11 Secondary objective 13



Work and Budget Plan for the Grant Agreement Period

Work and Budget Plan Summary

A. COST Networking Tools	EUR
(1) Meetings	17,124.02
(2) Training Schools	11,488.00
(3) Short Term Scientific Missions (STSM)	7,500.00
(4) ITC Conference Grant	8,000.00
(5) COST Action Dissemination	2,800.00
(6) Other Expenses Related to Scientific Activities (OERSA)	230.00
B. Total Science Expenditure (sum of (1) to (6))	47,142.02
C. Financial and Scientific Administration and Coordination (FSAC) (max. of 15% of B)	7,071.30
Total Grant (B+C)	54,213.32



Meetings

Overview

Meeting Title	Meeting Type	Dates	Location	ITC	Total Cost(EUR)
MitoEAGLE Summit	Management Committee Meeting, Working Group Meeting	22/07/2020 - 25/07/2020	Obergurgl (Austria)	No	13,004.00
WG4 Meeting	Workshops/Conf erences	25/08/2020 - 28/08/2020	Innsbruk (Austria)	No	2,060.01
WG2 Meeting	Working Group Meeting	06/09/2020 - 10/09/2020	Innsbruck (Austria)	No	2,060.01
				Total	17,124.02

Details

Meeting Type	Management Committee Meeting, Working Group Meeting					
Title of the Meeting	MitoEAGLE Summit	MitoEAGLE Summit				
Grant Period Goal(s) it will address	SOPs for blood cell separation and respirometric characterisation open for the research community, Publication with a set of reference data, A MitoEAGLE database on muscle tissue from humans and model organisms, Draft of review manuscript, A library of protocols for sample preparation and examination by respirometry, Qualitative and quantitative evaluation of results obtained in ongoing studies by comparison with a reference sample, Guidelines for future research and recommendations for the evaluation of respiratory characteristics in human respirometric samples, A continuously updated MITOEAGLE database for the use as reference data and guideline towards application of optimized protocols, ultimately leading towards standardization., A database on mt fitness evaluated with humans cells and tissues, An expanded MITOEAGLE database, Guidelines as to the optimum use of a reference sample for determination of respiration and related parameters of interest, An education programme for the use of MITOEAGLE database and management system, Dissemination of COST Action MitoEAGLE, presenting results that were accomplished so far, goals and impact of the Action on research career, A set of guidelines for future studies on mitochondrial bioenergetics in muscle tissue					
Description	meeting with MC meeting	n MitoEAGLE working grou	ips and additional WG			
Output(s)	Discussion and dissemina					
Location	Obergurgl (Austria)	ITC	No			
Start Date	2020-07-22 09:00:00	End Date	2020-07-25 18:00:00			
Duration	4 days					
Number of expected total participants	Number of participants to be reimbursed from COST funds					
Average reimbursement(per participant)(EUR)	Total Reimbursement 8,004.00 costs (EUR)					
Local Organiser Support (EUR)	5,000.00					
Total cost of the meeting (EUR)	13,004.00					



Meeting Type	Workshops/Conferences				
Title of the Meeting	WG4 Meeting				
Grant Period Goal(s) it will address	Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation, SOPs for blood cell separation and respirometric characterisation open for the research community, Publication with a set of reference data, Draft of review manuscript, A library of protocols for sample preparation and examination by respirometry, A joint publication documenting the results of the MitoEAGLE-PT, Guidelines for future research and recommendations for the evaluation of respiratory characteristics in human respirometric samples, A multi-authored publication with recommendations of comparable standard protocols and procedures, A database on mt fitness evaluated with humans cells and tissues, An expanded MITOEAGLE database, MitoEAGLE data respiratory for comperative data evaluation, planning of future studies data mining				
Description	WG 4 Meeting				
Output(s)	Finalization of joint manuscript for publication. Templates for PBMC and PLT database Work in progress: MitoEAGLE blood cells 1 Follow-up meeting from MitoEAGLE Poznan 2018 and MitoEAGLE Lund 2018 and Innsbruck 2019				
Location	Innsbruk (Austria)	ITC	No		
Start Date	2020-08-25 09:00:00	End Date	2020-08-28 15:00:00		
Duration	4 days				
Number of expected total participants	Number of participants to 3 be reimbursed from COST funds				
Average reimbursement(per participant)(EUR)	Total Reimbursement 2,000.01 costs (EUR)				
Local Organiser Support (EUR)	60.00				
Total cost of the meeting (EUR)	2,060.01				

Meeting Type	Working Group Meeting
Title of the Meeting	WG2 Meeting
Grant Period Goal(s) it will address	Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation, Publication with a set of reference data, A MitoEAGLE database on muscle tissue from humans and model organisms, Draft of review manuscript, A library of protocols for sample preparation and examination by respirometry, A joint publication documenting the results of the MitoEAGLE-PT, Qualitative and quantitative evaluation of results obtained in ongoing studies by comparison with a reference sample, Guidelines for future research and recommendations for the evaluation of respiratory characteristics in human respirometric samples, A multi-authored publication with recommendations of comparable standard protocols and procedures, A continuously updated MITOEAGLE database for the use as reference data and guideline towards application of optimized protocols, ultimately leading towards standardization., Guidelines as to the optimum use of a reference sample for determination of respiration and related parameters of interest, A set of guidelines for future studies on mitochondrial bioenergetics in muscle tissue



Description	WG1 and WG2 Meeting	WG1 and WG2 Meeting				
Output(s)	This particular workshop will be a follow up meeting of the retreat in Innsbruck linked to one of the current projects we are performing in WG2 "OXPHOS capacity in human permeabilized myofibers: effect of oxygen, ADP and blebbistatin in MiR05 and buffer Z", only and will result in the finalization of a manuscript.					
Location	Innsbruck (Austria)	Innsbruck (Austria) ITC No				
Start Date	2020-09-06 09:00:00 End Date 2020-09-10 18:00:00					
Duration	5 days					
Number of expected total participants	Number of participants to 3 be reimbursed from COST funds					
Average reimbursement(per participant)(EUR)	Total Reimbursement 2,000.01 costs (EUR)					
Local Organiser Support (EUR)	60.00					
Total cost of the meeting (EUR)	2,060.01					



Training Schools

Overview

Title of the Training School	Dates	Location	ITC	Total Cost(EUR)
MitoEAGLE Training School	27/07/2020 - 30/07/2020	Obergurgl (Austria)	No	11,488.00
			Total	11,488.00

Details

Title of the Training School	MitoEAGLE Training School				
Grant Period Goal(s) it will address	Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation, A library of protocols for sample preparation and examination by respirometry, Qualitative and quantitative evaluation of results obtained in ongoing studies by comparison with a reference sample, Guidelines for future research and recommendations for the evaluation of respiratory characteristics in human respirometric samples, Guidelines as to the optimum use of a reference sample for determination of respiration and related parameters of interest, An education programme for the use of MITOEAGLE database and management system, A set of guidelines for future studies on mitochondrial bioenergetics in muscle tissue				
Description	Training school on OXPHOS protocols, mitochondrial pathways, protonmotive force and respiratory control, Mitochondrial physiology, liver and speciesspecific respiratory control and mitochondrial medicine				
Output(s)	Enhance the rigorous training level particularly for PhD students and young researchers in order to establish the practical guidelines introduced by MitoEAGLE and to enhance research results in the long term				
Location	Obergurgl (Austria)	ITC	No		
Start Date	2020-07-27 09:00:00	End Date	2020-07-30 18:00:00		
Number of trainers	15	Number of trainees	80		
Number of trainers to be reimbursed	6	Number of trainees to be reimbursed	32		
Average trainer Reimbursement(EUR)	500.00 Average reimbursement 109.00 per trainee(EUR)				
Total trainer Reimbursement(EUR)	3,000.00 Total trainee Grant(EUR) 3,488.00				
Local Organiser Support (EUR)	5,000.00				
Total cost of the Training School(EUR)	11,488.00				



Short Term Scientific Missions (STSM)

Number	Average cost per STSM(EUR) Total cost(EUR)				
5	1,500.00 7,500.00				
Grant Period Goal(s) it will address	Training of researchers towards improved reproducibility of sample preparation and respirometric evaluation, Publication with a set of reference data, A MitoEAGLE database on muscle tissue from humans and model organisms, Draft of review manuscript, A joint publication documenting the results of the MitoEAGLE-PT, Qualitative and quantitative evaluation of results obtained in ongoing studies by comparison with a reference sample, A continuously updated MITOEAGLE database for the use as reference data and guideline towards application of optimized protocols, ultimately leading towards standardization., A database on mt fitness evaluated with humans cells and tissues, An expanded MITOEAGLE database, Guidelines as to the optimum use of a reference sample for determination of respiration and related parameters of interest, An education programme for the use of MITOEAGLE database and management system				
Description	STSM				
Output(s)	1. Support individual mobility. 2. Specifical contribution objectives of MitoEAGLE. 3. Strengthen the MITOEAG collaborations by allowing researchers participating in MitoEAGLE to visit an institution/organisation in anoth Country; an approved Near Neighbour Country nstituti International Partner Country institution. 5. Learn new access to specific data, methods and instruments not institutions / organisations.	GLE network. 4. Foster the COST Action er participating COST on; an approved techniques. 6. Gain			



ITC Conference Grant

Number	Average cost per Grant(EUR) Total cost(EUR)				
4	2,000.00 8,000.00				
Grant Period Goal(s) it will address	Guidelines as to the optimum use of a reference sample for determination of respiration and related parameters of interest, An education programme for the use of MITOEAGLE database and management system				
Description	ITC Conference Grant				
Output(s)	1. Support individual mobility. 2. Strengthen the MitoE collaborations by allowing researchers participating in MitoEAGLE to participate in a conference				



COST Action Dissemination

Title		Туре	Publisher/provider	Expected date of Release	Cost(EUR)
Dissemation Material		Leaflet / Brochure	Steiger Druck	31/08/2020	500.00
Grant Period Goal(s) it will address	Publication of paper on concepts and terminology: Dissemination of prepr and journal submission of final manuscript, Dissemination of COST Action MitoEAGLE, presenting results that were accomplished so far, goals and impact of the Action on research career			ST Action	
Description	Dissemination material				
Output(s)	Dissemina	ition material			

Title		Туре	Publisher/provider	Expected date of Release	Cost(EUR)
States and rates		Printed publication	Steiger Druck	02/09/2020	1,000.00
Grant Period Goal(s) it will address	nomenclar respirome a set of re MitoEAGL evaluation authored p and proce reference ultimately database, determina programm system,Pu preprint ar managem	ture in mitochondric characterisate ference data, A juber E-PT, Guidelines of respiratory cloublication with redures, A continuodata and guideli leading towards Guidelines as to tion of respiratione for the use of ablication of paper and journal submit	on towards an unificate drial physiology, SOPs tion open for the reservoint publication documes for future research a characteristics in human recommendations of cously updated MITOE ne towards application standardization., An extended the optimum use of an and related parame MITOEAGLE databaser on concepts and tession of final manuscrit of guidelines for futurs are more to the sound to the s	s for blood cell se arch community, nenting the resul nd recommenda in respirometric s comparable stand AGLE database n of optimized pr expanded MITOE reference samp ters of interest, A se and managem rminology: Disse ript, The MitoEAG	eparation and Publication with ts of the tions for the samples,A multi- dard protocols for the use as totocols, EAGLE ble for an education tent emination of GLE data
Description	Programme, dissemination material for MitoEAGLE Meetings and various conferences				d various
Output(s)	Programm conference		n material for MitoEAC	GLE Meetings an	d various

Title		Туре	Publisher/provider	Expected date of Release	Cost(EUR)
		Leaflet / Brochure	Steiger Druck or Studia	31/07/2020	1,000.00
Grant Period Goal(s) it will address	Publication of paper on column and journal submission of MitoEAGLE, presenting reimpact of the Action on res		final manuscript,Dissessults that were accom	emination of COS	ST Action
Description	Programme, dissemination conferences		n material for MitoEAC	GLE Meetings an	d various
Output(s)	Programme, dissemination conferences		n material for MitoEAC	GLE Meetings an	d various



Title		Туре	'	Expected date of Release	Cost(EUR)
Website Dissemination and other website costs		Action Website	BCOMM	09/09/2020	300.00
Grant Period Goal(s) it will address	Dissemination of COST Action MitoEAGLE, presenting results that were accomplished so far, goals and impact of the Action on research career				
Description	Dissemination on website				
Output(s)	Dissemination on website				

Total Disseminations 2,8	2,800.00
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Other Expenses Related to Scientific Activities (OERSA)

Item	Cost(EUR)
Bank fees	230.00