



## “Valorisation of thistle-curdled CHEESEs in MEDiterranean marginal areas” Acronym VEGGIE-MED-CHEESES

<b>Deliverable title</b>	<b>D1.1 Kick off meeting Report</b>
<b>Deliverable Lead:</b>	Università Politecnica delle Marche
<b>Related Work Package:</b>	<b>WP1 Project coordination and overall management</b>
<b>Related Task:</b>	<b>T1.1 Organization of general Project meetings</b>
<b>Author(s)</b>	Lucia Aquilanti
<b>Dissemination level</b>	Public
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<b>Start date of project</b>	01.05.2019
<b>Duration</b>	36 months (after project end extension: 48 months)
<b>Abstract</b>	The Kick off meeting report corresponds to the minutes of the meeting, held in Ancona on 24 <sup>th</sup> May 2019

### Versioning and Contribution History

Version	Date	Modified by	Modification reason
v1.0	15/06/2019	Lucia Aquilanti	First version
V2.0	30/06/2019	Lucia Aquilanti	Comments after peer review process

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**KICK-OFF MEETING**  
**PRIMA FUNDED PROJECT UNDER THE 2018 CALL**  
**“Valorisation of thistle-curdled CHEESES in MEDiterranean marginal areas”**  
**Acronym VEGGIE-MED-CHEESES**

**24 MAY 2019**

**1. LOCATION**

**Dipartimento di Scienze Agrarie Alimentari e Ambientali (D3A), Università Politecnica delle Marche, via Breccie Bianche 60131 Ancona, Italy**  
**Tel: +39 071 2204959, Fax: +39 071 2204988**

On May 24, 2019, at 10.15 am in the “Faculty Club” of the Università Politecnica delle Marche, via Breccie Bianche, Ancona, Italy, the Principal Investigators (PI) and the research Team Members of the Partners of the VEGGIE-MED-CHEESES Consortium met, regularly convened by the Coordinator of the Project, Prof. Lucia Aquilanti, with an email dated 07.05.19.

**2. PARTICIPANTS**

The attendance situation at the beginning of the meeting is shown in the following table:

<b>Partner No.</b>	<b>Organisation</b>	<b>Participant (Permanent Staff)</b>	<b>Role</b>	<b>Attendance</b>
<b>Coordinator (Partner 1)</b>	Dipartimento di Scienze Agrarie, Alimentari e Ambientali, Università Politecnica delle Marche, Italy (short name: D3A-UNIVPM)	<b>Lucia Aquilanti</b>	<b>Project Coordinator PI of UNIVPM</b>	<b>P</b>
		Francesca Clementi	Team member	A
		Andrea Osimani	Team member	P
		Cristiana Garofalo	Team member	P
		Nadia Raffaelli	Team member	P
		Massimo Mozzon	Team member	A
		Silvia Zitti	Team member	P
		Simona Casavecchia	Team member	P
		Fabio Taffetani	Team member	A
		Roberto Orsini	Team member	A
Raffaele Zanolì	Team member	P		
<b>Partner (P2)</b>	Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria - Centro di ricerca Alimenti e Nutrizione (short name: CREA-AN)	<b>Pamela Manzi</b>	<b>PI of CREA-AN</b>	<b>P</b>
		Flavio Paoletti	Team member	A
		Antonio Raffo	Team member	P
		Fiorella Sinesio	Team member	P
		Mena Ritota	Team member	P
		Maria Gabriella Di Costanzo	Team member	A
		Elisabetta Moneta	Team member	A
		Nicoletta Nardo	Team member	A
		Marina Peperario	Team member	A
		Luis Tejada Portero	<b>PI of UCAM</b>	<b>A</b>

<b>Partner (P3)</b>	<b>3</b>	Departamento de Tecnología de Alimentos y Nutrición, Universidad Católica San Antonio De Murcia (short name: UCAM)	Jose María Cayuela	Team member	A
			Eva Salazar Serna	Team member	A
			Adela Abellán	Team member	A
			Eva Salazar Serna	Team member	A
			Estefania Bueno Gavila	Team member	A
			Cindy Maria Bande de Leon	Team member	A
<b>Partner (P4)</b>	<b>4</b>	Department of Food Hygiene and Technology, Veterinary Research Institute, Hellenic Agricultural Organization, DEMETER (short name: DEMETER)	Akis Psomas	<b>PI of DEMETER</b>	<b>P</b>
			Georgios Samouris	Team member	<b>P</b>
			Loukia Ekateriniadou	Team member	A
			Evridiki Boukouvala	Team member	A
			Maria Ioannidou	Team member	A
			George Vafeas	Team member	A
			Virginia Giantzi	Team member	A
<b>Partner (P5)</b>	<b>5</b>	High Institute of Agronomy of Chott-Mariem, Sousse University (ISA-CM)	Bouthaina Al Mohandes Dridi	<b>PI of ISA-CM</b>	<b>P</b>
			Rabaa Haouala	Team member	A
			Ismahen Essaidi	Team member	A
			Imen Ben Ammar	Team member	A

Legend: P Present; A Absent

### 3. AGENDA FOR THE MEETING

#### 10 h 00 – 10 h 15

**Welcome at D3A, UNIVPM and communications from the Project coordinator**

#### 10h 30 – 10h 45

**Flash presentation of Principal Investigators (PI), Partners, and their role in the Project**

- Prof. Lucia Aquilanti
- Dr Pamela Manzi
- Prof. Luis Tejada Portero
- Prof. Bouthaina Dridi
- Prof. Akis

#### 11h 00 - 11h 30

**Management bodies**

- Assignment of Project Management Committee seats
- Nomination of national expert groups
- Drafting of stakeholders list

#### 11h 30 – 11h 45

**Coffee break**

#### 11 h 45 – 12h 30

**First WP1 and WP7 deliverables**

- Project Logo and type kit

- Project Website

### **13h 00-14h 30: Lunch**

### **14h 45-16h 45 Specific techno-scientific aspects related to WP2-WP4**

- WP2: thistle species to be sampled and collected for a preliminary screening of their milk clotting potential (sampling: who and where)
- WP3: cultivation trials (what, who and where)

### **16h 45 – 17h 00 Coffee break**

### **17h 00 – 18h 30 Specific techno-scientific aspects related to WP5-WP6**

- cheese-making trials and analysis of experimental and control cheeses: identification of possible pilot plants/local dairies for the manufacture of the experimental cheeses and related costs
- consumer tests: volunteers enrolment, protocols, details and costs

### **18h 30 Expected closure of the meeting**

#### **4. MEETING MINUTES AND CONCLUSIONS**

The Project Coordinator opens the meeting at 10.30 and brings greetings from Luis Tejada Portero and his research team who could neither attend the meeting nor join it via web conference. The Project Coordinator opens the meeting with the following agenda:

1. Welcome at D3A, UNIVPM and communications;
2. Flash presentation of Principal Investigators (PI), Partners, and their role in the Project
3. Management bodies
4. First WP1 and WP7 deliverables
5. Specific techno-scientific aspects related to WP2WP4
6. Specific techno-scientific aspects related to WP5-WP6

## **1. Welcome at D3A, UNIVPM and communications**

The Project Coordinator, Prof. Lucia Aquilanti, welcomes the participants and communicate the opens the meeting with the following three communications.

- An international kick-off meeting has been organized by PRIMA-IS for all funded Projects under the call PRIMA2018; the meeting will be held in Montpellier (France) on June 20.06.2019. All the project Coordinators of the PRIMA2018 funded projects are invited to attend the meeting with a flash-presentation of their projects (3 minutes each, morning session); the afternoon sessions will be reserved for the PRIMA coordinators and the Funding agencies involved in PRIMA. The agenda of the afternoon sessions will include: (i) presentation of the common rules for the Scientific Monitoring (for section 1 and section 2 coordinators); (ii) questions / answers with the national Funding Agencies (for section 2 coordinators).

The project Coordinators confirms that she will attend the International Kick-off and kindly ask to the Participants at the VIEGGIE-MED-CHEESES kick-off meeting if there were any questions she should ask to Funding Agencies, especially concerning the grant agreements.

- The project Coordinator informed the Participants at the VIEGGIE-MED-CHEESES kick-off meeting that the PRIMA Observatory on Innovation (POI) (available at <https://primaobservatory.unisi.it/en/homepage>) has been created. Project coordinators of funded PRIMA2018 projects have been invited to add basic information about their Project on this observatory, including scope, short abstract, long abstract, focus key words, TRL, Results & Impacts, Impact Sectors, Sustainable Development Goals (SDG's), Main results achieved, etc). Once that project data will be submitted they will be further used for the drafting of informative material (i.g. booklets)
- Concerning the dissemination of project aims and outcomes, for Italy, a first article entirely dedicated to the VEGGIE-MED-CHEESES PROJECT has been drafted by Italian PRIMA Secretariat and published on 26.04.2019 by the on-line magazine Agricoltura.it (<https://www.agricoltura.it/2019/04/26/formaggio-da-caglio-di-cardo-origini-antiche-per-un-prodotto-innovativo-rilanciato-grazie-a-progetto-di-ricerca/>). As suggested by Dr Barbara Di Paola from the Italian PRIMA Secretariat, this article will be disseminated and shared on PRIMA social channels and on those of agricoltura.it. At this regards, the Project Coordinator, Prof. Lucia Aquilanti, recalls the importance of project dissemination even through the use of press releases/booklets/articles published on on-line/printed national and international magazines/journals (both in English and national languages of the VEGGIE-MED-CHEESES Partners). A draft (in English) of a press release will be produced by the Project Coordinator and sent to all PI to be used as a template for national/local press releases/articles/booklets/etc.

## 2. Flash presentation of Principal Investigators (PI), Partners, and their role into the Project

The Project Coordinator shows her flash-presentation briefly describing UNIVPM, the research team and the main role of UNIVPM researchers into the VEGGIE-MED-CHEESES Project (Annex 1 of this minute); hence the Project Coordinator invites the PIs of the remaining Partners to show their presentations, with the following order: Prof. Bouthaina Dridi (Annex 2 of this minute), Dr. Akis Psomas (Annex 3 of this minute) and Dr Pamela Manzi (Annex 4 of this minute).

## 3. Management bodies

The Project Coordinator lists and briefly describes the 3 management bodies foreseen in the VEGGIE-MED-CHEESES Project, namely (i) Project Management Committee; (ii) Steering Committee; (iii) National expert groups.

Concerning the **Project Management Committee**, in the VEGGIE-MED-CHEESES proposal it is literally stated that:

*"The Coordinator will be responsible for the smooth execution of the Project, and will be supported by the Project Management Committee and the Steering Committee in achieving the objectives of the Project. The support of this team, who will monitor the progress on a daily basis, will enable the Coordinator to focus on the big picture and promoting the project"*

*"The Project Management Committee is the decision-making body of the Consortium"*

*"The Project Management Committee shall consist of one representative of each Party (corresponding to the Principal Investigator), hereinafter referred to as "Member". The Coordinator shall chair all meetings of the Project Management Committee, unless decided otherwise by the Project Management Committee. The Parties agree to abide by all decisions of the Project Management Committee. Each Member shall be deemed to be duly authorised to deliberate, negotiate and decide on all matters listed in Section 6.3.6 of this Consortium Agreement. The Coordinator shall chair all meetings of the Project Management Committee, unless decided otherwise by the Project Management Committee. The Parties agree to abide by all decisions of the Project Management Committee. This does not prevent the Parties from submitting a dispute for resolution in accordance with the provisions of settlement of disputes in Section 11.8 of this Consortium Agreement.*

*Any Member:*

- should be present or represented at any meeting;
- may appoint a substitute or a proxy to attend and vote at any meeting;
- shall participate in a cooperative manner in the meetings.

*The Project Management Committee shall be free to act on its own initiative to formulate proposals and take decisions in accordance with the procedures set out herein.*

*The following decisions shall be taken by the Project Management Committee:*

*Content and intellectual property rights*

- Proposals for changes to the Project Work Plan (Attachment 6) to be agreed by the Funding Authorities*
- Modifications to Attachment 1 (Background Included)*
- Additions to Attachment 3 (List of Third Parties for simplified transfer according to Section 8.3.2)*
- Additions to Attachment 4 (Identified Affiliated Entities)*

*Evolution of the consortium*

- Entry of a new Party to the Consortium and approval of the settlement on the conditions of the accession of such a new Party*
- Withdrawal of a Party from the Consortium and the approval of the settlement on the conditions of the withdrawal*

*Identification of a breach by a Party of its obligations under this Consortium Agreement or the Grant Agreement*

- Declaration of a Party to be a Defaulting Party*
- Remedies to be performed by a Defaulting Party*
- Termination of a Defaulting Party's participation in the Consortium and measures relating thereto*
- Proposal to the Funding Authority for a change of the Coordinator*
- Proposal to the Funding Authority for suspension of all or part of the Project*
- Proposal to the Funding Authority for termination of the Project and the Consortium Agreement*

*In addition, the Project Management Committee shall:*

- approve the Work plan for the coming Project period*
- evaluate the progress since the last Project period*
- discuss any issues concerning the management or the smooth running of the Project, which may require attention;*
- resolve sensitive technical, administrative or contractual issues*
- monitor coherence and integration in the Project*
- identify and analyse potential risk factors and determine the necessary measures to minimize them, recording this in a risk register*
- discuss and approve changes in the Consortium if necessary*
- take decisions on proposed changes to the Consortium Agreement deal with conflict resolution"*

Based on the above premises, the **Project Management Committee** will be formed by:

- **Prof. Lucia Aquilanti (PI of UNIVPM and Project Coordinator),**  
email: l.aquilanti@univpm.it  
skype contact: lucia.aquilanti76  
phone: +39 071 2204959  
mobile phone: +39 340 3380366
- **Dr Pamela Manzi (PI of CREA-AN)**  
email: pamelamanzi@crea.gov.it  
skype contact: pamskype3  
phone: +39 06 51494499  
mobile phone: +39 347 0377363
- **Prof. Luis Tejada Portero (PI of UCAM)**

email: ltejada@ucam.edu  
skype contact: luistejadaportero  
phone: 968278612  
mobile phone: 699083773

- **Prof. Bouthaina Dridi Al Mohandes (PI of ISA-CM)**  
email: bouthaina2@yahoo.com  
skype contact: Al Mohandes Dridi Bouthaina  
phone: 00 216 73 327 546  
mobile phone: 00 216 53 530 364 and 00 216 98 630 364
- **Dr Akis Psomas (PI of DEMETER)**  
email: psomas@vri.gr  
skype contact: akis32  
phone: +302310365390  
mobile phone: +306977272602

Regarding the **Steering Committee**, in the VEGGIE-MED-CHEESES proposal it is literally stated that:

*"The daily management of the Project execution will be the responsibility of the Steering Committee, who will comprise the Coordinator and the Work Package (WP) Leaders. Each WP of the Work Plan (Attachment 6) has a Work Package Leader who is the contact person for that WP. The Steering Committee will direct all tasks of the Project in accordance with the Project objectives. The Steering Committee will be also responsible for:*

- ensuring that the tasks are progressing according to the agreed schedule and in coordination with the other WP leaders*
- report on progress to the Coordinator and advice of any delays, risks or other issues that may hinder this, including the proposal of solutions*
- as necessary propose modifications to the Work Plan and the Consortium Agreement for approval by the Project Management Committee and PRIMA-IS and the Funding Authorities if so required.*
- provide input on technical and financial aspects to be included in reports and communication (via the Coordinator) to PRIMA-IS and the Funding Authorities*
- address and document all issues raised by external regulatory and other relevant bodies;*
- discuss and record all relevant intellectual property issues raised by participants in conformity with the Consortium Agreement;*
- approve or otherwise, publications resulting from the Project;*
- monitor all ethical issues.*

*The Steering Committee will meet once a month via teleconference/Skype. Additional meetings can be called at any time. Decisions will be taken by consensus. If this is not possible, then they will be referred to the Coordinator".*

Based on the above premises, seats of Steering Committee have been assigned according to the following table:

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<b>Project Coordinator (Chairman)</b>	Lucia Aquilanti	<a href="mailto:l.aquilanti@univpm.it">l.aquilanti@univpm.it</a> skype contact: lucia.aquilanti76 phone: +39 0712204959 mobile: + 39 340 3380366
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Work Package (WP) No	WP Leader (Institution)	WP Leader (Contact Person)	
1	UNIVPM	Andrea Osimani	e.mail: <a href="mailto:a.osimani@univpm.it">a.osimani@univpm.it</a> phone+39 071 2204959 mobile: 3470722901
2	ISA-CM	Rabiaa Haouala	email: <a href="mailto:rabiaahaouala@gmail.com">rabiaahaouala@gmail.com</a>
3	ISA-CM	Chokri Thabet	phone: 00 216 73 327 592 mobile phone: 00 216 95 711 218
4	UCAM	Eva Salazar Serna	email: <a href="mailto:esalazar@ucam.edu">esalazar@ucam.edu</a> skype contact: Eva Salazar Serna phone: 968278622 mobile phone: 60928834
5	CREA-AN	Antonio Raffo	email: <a href="mailto:antonio.raffo@crea.gov.it">antonio.raffo@crea.gov.it</a> skype contact: anton.raffo phone: +39 0651494573 mobile phone: +39 347 9906198
6	DEMETER	George Samouris	email: <a href="mailto:samouris@vri.gr">samouris@vri.gr</a> skype contact: samouris phone: +302310365382 mobile phone: +306972957517
7	UNIVPM	Cristiana Garofalo	email: <a href="mailto:c.garofalo@univpm.it">c.garofalo@univpm.it</a> skype contact: Cristiana.garofalo phone: +39 071 220 4782 mobile phone: +39 328 5651934

Regarding nomination of **National expert groups**, the VEGGIE-MED-CHEESES proposal reports that:

*“The National Expert Groups will comprise at least 3 members for each country, with a Chairmain who will be a representative from the scientific partners, and at least one expert from public bodies and one from industry. National Expert Groups will act as advisory bodies. Nominations for participants for the National Expert Groups will be proposed by the Parties to the Steering Committee who will evaluate and approve them. The members of the National Expert Groups must have a good knowledge of the national and regional sector policy and practice relevant to the sheep and goat dairy sector in their countries. The National Expert Groups shall:*

- be an active linkage between the Steering Committee and the main Stakeholders (Academia, ministries, industries, local authorities, etc.);*
- have an advisory role and assist the Steering Committee for the current priorities for the Project implementation;*
- consult the Steering Committee on issues related to the evaluation of Project results.”*

The Project Coordinator kindly ask to each PI to make as soon as possible a list of their potential national experts carefully following the above indications; the composition of the four National expert groups (1 for Italy, 1 for Spain, 1 for Greece and 1 for Tunisia) will be approved by the Steering Committee at its first meeting.



Finally, concerning the **Stakeholders platform** implementation, in the VEGGIE-MED-CHEESES proposal, it was stated that:

*“The Project outcomes will be of interest to all stakeholders in the sheep and goat milk cheese value chain: dairy industries (dairy farmers and their cooperatives), certification and control bodies, NGO’s, producers of ingredients for the dairy industry (e.g. animal rennet, plant-based rennet substitutes), retailers, consumers, policy-makers, associations, researchers. Other key stakeholders are represented by agriculture operators (especially crop producers). Relevant stakeholders will be directly involved during the whole Project using multiple tools (newsletters, participation at national expert groups, …). They will be also invited to participate in the thematic Project events (final Workshop; events for valorization of local dairy products) where the Project results will be presented and discussed, as detailed in the Project Work Plan”*

Analogously to what suggested for National expert groups, even for the implementation of the VEGGIE-MED-CHEESES **Stakeholders** platform, the Project Coordinator kindly invites PIs to draft as soon as possible their own list of potential (local/national) stakeholders which should include (among others):

- farmers (for the sustainable cultivation of thistles as a source of vegetable coagulants);
- artisan dairy farmers;
- dairy industries;
- producers of dairy ingredients (i.g. rennets), etc.

For identification of potential Stakeholders, the project Coordinator stresses what is reported in the approved VEGGIE-MED-CHEESES proposal, namely:

*“Concerning WP7, Partners will identify the key stakeholders for each country, ensuring gender and group balance and invite them to participate to the stakeholder platform on a voluntary basis”*

Once that the stakeholder lists have been drafted for each country, PIs will share them with the Steering Committee for approval; thereafter PIs will be in charge of contacting directly the stakeholders from their own countries; in case of a positive answer in terms of inclusion into the Stakeholders platform, stakeholders will receive a formal email from the Project Coordinator (written in English and translated by PIs in the local/national languages) with an invitation to register on the VEGGIE-MED-CHEESES website to receive newsletters, surveys, invitations for attendance at meetings/seminars/congresses, etc.

## 4. First WP1 and WP7 deliverables

The Project Coordinator shows the Work Package 1 and its deliverables:

Work package number	1	Lead beneficiary				PARTY 1	
Work package title	Project coordination and overall management						
Participant number	PARTY 1	PARTY 2	PARTY 3	PARTY 4	PARTY 5	/	/
Short name of participant	UNIVPM	CREA-AN	UCAM	DEMETER	ISA-CM	/	/
Person months per participant	15	1	3	6	3	/	/

Objectives

The objective of WP1 is to ensure optimal co-ordination and management of VEGGIE-MED-CHEESES, as well as collaboration among Partners, with the final aim of maximising progress of knowledge and innovation outputs.

#### **Description of work**

The coordination and overall management of VEGGIE-MED-CHEESES will utilise the project management expertise of the **PARTY 1** (D3A-UNIVPM) together with the expertise of WP leaders. A set of plans will be prepared and presented in order to assure proper programming, identification, formulation, implementation, evaluation and audit processes: I. work planning and timetable; II. Work package list; III. Deliverable list; IV. Overall budget; V. Management level description of resources and budget.

The Project coordination and overall management will rely on the following bodies.

The **Steering Committee** will include the **work package leaders (WP Leaders)**; it will direct the research priorities and activities of the consortium. The steering committee will meet (face-to-face or by teleconference) with the **PARTY 1**, 3 times during the Project (once a year). In cases that a member cannot attend a meeting, a written notification must be sent to the Project Coordinator. Chairman of this body is Prof. Lucia Aquilanti from the **PARTY 1** (D3A-UNIVPM). The main tasks of the Steering Committee is to set and revise project's priorities and activities to ensure they are consistent with the contractual obligations with PRIMA-IS and funding agencies. The Steering Committee will also establish the national expert groups and to encourage and coordinate joint activities between the participants from different countries. The Steering committee will also organise the Quality Assurance Plan describing the guidelines adopted by the Project on preparation and validation of deliverables, internal peer reviewing, periodic reporting, preparation of financial statements, as well as risk management.

The **Project Management Committee** will comprise the **Principal Investigators (PI)** and the Project **Coordinator**. The Project management committee (led by the Project Coordinator), will meet (face-to-face or by teleconference) at least every 3 months, or as required, for a number of tasks detailed in section 3.2.

The **National Expert Groups** will comprise at least 3 members for each country, with a chairman who will be a representative from the scientific partners and at least one expert from public bodies and one from industry. National Expert groups will act as advisory bodies. Nominations for participants for the national Expert Groups will be proposed by VEGGIE-MED-CHEESES participants to the Steering Committee who will evaluate and approve them. The members of the national Expert Groups must have a good knowledge of the national and regional sector policy and practice relevant to the sheep and goat dairy sector in their countries. Their main tasks are: (i) to become an active linkage between the Steering Committee and the main related stakeholders (academia, ministries, industries, local authorities, etc.); (ii) to have an advisory role and assist Steering Committee for the current priorities for the project implementation; (iii) to consult the Steering Committee on issues related to the evaluation of project results.

Project coordination and overall management will be achieved through the following tasks:

#### **Task 1.1 Organization of general Project meetings. Partners involved: PARTY 1.**

The organization of six general Project meetings (two per year), restricted to the Consortium will be responsibility of the **project Coordinator**, which will handle the careful and timely preparation of the agenda, meeting documents and reports. The meetings are expected to take place in months: 2 (kick-off meeting), 12, 18, 24, 30 and 34. The kick-off meeting will be hosted by **PARTY 1**, whereas the other four meetings will be hosted by other participants. The logistics of the respective meetings in terms of venue and accommodation are responsibility of the hosting participant. A final Workshop (hosted by **PARTY 1**) will be organized by the **project Coordinator** together with the Steering Committee, in month 34. This event will be open to the public and will be part of the Dissemination activities (see WP 7).

#### **Task 1.2 Project coordination, management, supervision and quality control, Partners involved: All Partners.**

The project **Coordinator** will ensure the role of Project supervision with the help of the Steering Committee and the Project Management Committee. General coordination of the Project includes monitoring of the overall project progress and management of communication and knowledge transfer between participants. The quality management system will be based on current practices applied at **PARTY 1** institution, e.g. University and standard operating procedures applied in other EU funded projects.

#### **Task 1.3 Communication with PRIMA-IS and the Funding Authorities; Partners involved: All Partners.**

The **PARTY 1** will review the periodic and final reports prepared by the WP leaders to verify their consistency with the project tasks, before assembling and transmitting them to PRIMA-IS and the funding agencies on behalf of the Consortium.

#### **Task 1.4 Preparation of mid-term and final reports; Partners involved: All Partners.**

Preparation of mid-term and final scientific reports will involve all partners who are requested to produce a detailed report before the end of each year and further send it to the project **Coordinator** (through the WP leader). These reports will be discussed during the project meetings n° 2, 4 and 6. An updated "plan for the dissemination and exploitation of results" as well as a report of completed and planned communication activities will also be included in both the periodic and final reports.

**Deliverables:**

<b>D1.1</b>	Kick off meeting report	<b>30.06.2019 (month 2)</b>	
<b>D1.2</b>	Quality Assurance Plan	31.07.2019 (month 3)	
<b>D1.3</b>	General Project meeting 2 report	30.04.2020 (month 12)	
<b>D1.4</b>	1 <sup>st</sup> year (progress) report (Month 12)	30.04.2020 (month 12)	
<b>D1.5</b>	General Project meeting 3 report	31.10.2020 (Month 18)	
<b>D1.6</b>	General Project meeting 4 report (Month 24)	30.04.2021 (Month 24)	
<b>D1.7</b>	2 <sup>st</sup> year (progress) report (Month 24)	30.04.2021 (Month 24)	
<b>D1.8</b>	General Project meeting 5 report	31.10.2021 (Month 30)	
<b>D1.9</b>	General Project meeting 6 report	28.02.2022 (Month 34)	
<b>D1.10</b>	3 <sup>rd</sup> year (final) report (Month 36)	30.04.2022 (Month 36)	

Hence, the Project Coordinator shows the Work Package 7 (included in the VEGGIE-MED-CHEESES Consortium Agreement as Annex 6) and its deliverables with the up-dated deadlines for delivery, namely:

<b>Work package number</b>	<b>7</b>	<b>Lead beneficiary</b>				<b>PARTY 1</b>	
<b>Work package title</b>	Multi-actor internal and external communication and technology transfer						
<b>Participant number</b>	<b>PARTY 1</b>	<b>PARTY 2</b>	<b>PARTY 3</b>	<b>PARTY 4</b>	<b>PARTY 5</b>	<b>/</b>	<b>/</b>
<b>Short name of participant</b>	<b>UNIVPM</b>	<b>CREA-AN</b>	<b>UCAM</b>	<b>DEMETER</b>	<b>ISA-CM</b>	<b>/</b>	<b>/</b>
<b>Person months per participant</b>	<b>15</b>	<b>3</b>	<b>5</b>	<b>13</b>	<b>4</b>	<b>/</b>	<b>/</b>

**Objectives**

The objectives of WP7 are to ensure participation of stakeholders, as well as dissemination and exploitation of VEGGIE-MED-CHEESES outputs. A distinction can be made between objectives of internal and external communication.

Objectives of **internal communication** (within the Project), are:

- I. communicate project results within the Consortium so that all partners are updated timely on the knowledge generated by all WPs and tasks;
- II. coordinate the use of participatory approaches to utilise stakeholder and research knowledge and innovation to prioritise research activities within the project.

Objectives of **external communication** (to Stakeholders), are:

- I. use participatory approaches to utilise stakeholder and research knowledge to prioritise dissemination and training activities;
- II. communicate and disseminate project outputs to stakeholders and create a dairy farm-level observatory and knowledge exchange network;
- III. build capacity through technology transfer to ensure that the industry can effectively use the outputs from the project.
- IV. create a roadmap for future implementation and exploitation of project outputs at dairy farm, on regional and Mediterranean scales and for further research.

As a whole these actions aim to promote participation and effectively translate the Project outputs to meet the needs of the dairy industry and so that the results are disseminated in a way that can be promptly implemented and exploited by the

following stakeholder groups: i) crop producers; ii) dairy farms, dairy industries, dairy operators, iii) retail and consumers and the general public; iv) Non Governative Organisations; v) scientists; vi) policy makers. All the partners will be involved in this WP.

### Description of work

The plan for communication, dissemination and exploitation drafted in Section 2.2 will be the guide for all communication, dissemination and exploitation actions. It defines a communication and dissemination strategy with detailed tasks and timelines to deliver on project objectives; to communicate the project concepts and outputs; to promote engagement between partners and key interested groups; to involve policy makers and to ensure that the most relevant channels and effective forms of communication are used. In more detail, WP7 is articulated in the following activities:

#### **Task 7.1 Establishment of a stakeholder-platform (Month 1–Month 36); Partners involved: All partners.**

Effective knowledge transfer requires the participation of stakeholders. Communication between researchers and stakeholders will be managed to ensure that: I. new RTD strategies and innovations are relevant to industry needs; II. stakeholder's perspectives are taken into account in the development of the research programme. A stakeholder platform, composed of up to 3 members per participating country, will be formed to represent the interests of the target end user groups. Partners will identify the key stakeholders of diverse types and with different interests for each participating country, ensuring gender and group balance and promoting inclusion of crop producers, small dairy farms/dairy operators. Selected stakeholders will be invited to participate to the platform on a voluntary basis. They will have the possibility to interact with the platform, to share information and other resources (e.g. using different tools that will be made available on the project website, such as interviews, surveys, etc.) and to receive updated information/news about the project and its progresses and main outcomes.

A data management plan will be drafted and completed by Month 6, to manage VEGGIE-MED-CHEESES data overall collected from stakeholders as well as qualitative and quantitative analyses foreseen in WP2, 3, 4, 5, and 6. Such a data management plan will be drafted according to the H2020 Guidelines on Data management, including issues such as: "What types of data will the project generate/collect? What standards will be used? How will this data be exploited and/or shared/made accessible for verification and re-use? How will this data be curated and preserved?" This plan will be annually discussed and updated.

#### **Task 7.2 Installation of a website and production of dissemination materials; Partners involved: All partners.**

As detailed in the Communication, Dissemination and Exploitation Plan described in section 2.2, different tools will be adopted in order to ensure that the outputs of the Project are communicated to the public, the relevant stakeholders, etc., including: I. Project website; II. Project leaflet; III. newsletters; IV. social media; V. articles in farmers/dairy industries journals.

A visual identity defining the Project's graphic character, logo, fonts, colours will be designed including compulsory logos that must be used by all Partners for communication about Project activities. Instructions for external communication and publications will be provided in a Communication guide to ensure that all VEGGIE-MED-CHEESES partners use the visual identity in a consistent way.

The Project website for external and internal communication, dissemination and project management will serve as an archive for Project information. The website will be established by the PARTY 1 at a suitable server to: Present information on Project structure and outputs; II. Allow closed and open discussion between Partners and Stakeholders; III. Act as the Project website for VEGGIE-MED-CHEESES. The website will have an open site and a restricted site. The restricted site will have state-of-art technology with password-regulated access for Project Partners and PRIMA Secretariat to have access to internal and confidential material with a special section for the stakeholder platform. The restricted site will contain: I. Updated Projects documents including all meeting agendas, material and reports at overall Project level and by WPs; II. Project reports; III. Facility to share Project data to facilitate exchange between Partners; IV. Share point to enable information exchange and discussion between Partners; V. Share point to allow discussion between Partners and the stakeholder platform. The information will be transferred from the restricted to the open site in format targeted at the stakeholder groups after agreement between Project partners and with advice from the stakeholder platform. The open site will contain I. Project objectives, list of Partners (including contact details and web site links) and Project description; II. Press releases and latest news; III. Calendar and information on Project events; IV. Scientific publications, presentations from conferences and proceedings; V. Regular update on results-outputs of the Project including recommendations, guidelines, technical notes and summary articles from the Project activities. Email alerts and RSS (electronic information) feeds will inform members of the stakeholder platform of new information available on the site. The PARTY 1 will continue to support the website after the end of the Project. To increase its visibility, links will be created to each Partner's website and to other relevant web interfaces.

Running information and communication with the stakeholders and the public on project issues and results will be ensured by means of news in connection with the publication of deliverables on the public part of the website. Key results of scientific

relevance and innovation potential will be summarised in press releases and leaflets (both in English and in the official languages of the Partners involved into the transnational consortium) in order to present them to a wide public. These texts are expected to appear at the website of the participating organizations and in farmers/dairy industries journals' articles, and to be presented to the media, including social media (twitter, facebook, etc.). At least 12 newsletters with up-dated information on the progress of the Project (written in a non-scientific-technical language) will be also made available to stakeholders and the general public up-dated.

**Task 7.3 Documentation of scientific results; Partners involved: All partners.**

Thorough documentation of scientific results in open-access international peer-reviewed journals will support the worldwide dissemination of results within a wide scientific community. Scientific results will also be spread at well-known Mediterranean/international conferences as well as at exhibitions aimed at promoting traditional local products where the supply and demand of the trade specialising in local raw milk cheeses can encounter each other and the researchers (e.g Cheese 2020 Bra, Italy <http://cheese.slowfood.it/en/>; Fair Cheese Dairy Products 2020, Paris, France, <https://10times.com/cheese-dairy-products>; etc). To share the project outputs within a wider audience the PARTY 1 will organise a final Workshop targeting Mediterranean countries, where the main outputs of the project will be presented and discussed to ensure relevance to the Mediterranean basin. Partners will contribute to organise these events. The Workshop will enable Partners to discuss with key end users in the Mediterranean basin the latest research from the project and gain feedback on future activities in research, dissemination and implementation. Funds will made available from the project for representatives coming from the participating countries (particularly early career scientists, stakeholders, and decision-makers) to attend this meeting. The aim of this event will be to provide recommendations of future research needs and implementation strategies for project outputs to enhance exploitation. Each event will comprise plenary sessions to present the project outputs and overviews by partners, members of the stakeholder platform and external speakers, breakout workshops to discuss the relevance of project outputs from each of the components to the Mediterranean regions and a final session to agree recommendations on future research, development and decision-making needs implementation plans. The proceedings and conclusions from the Workshop will be placed on the VEGGIE-MED-CHEESES website.

DELIVERABLES OF WP7

D7.1	Project logo, fonts and communication templates	31.05.2019 (month 1)	V
D7.2	Public VEGGIE-MED-CHEESES website	30.06.2019 (month 2)	
D7.3	VEGGIE-MED-CHEESES intranet	30.06.2019 (month 2)	
D7.4	Press release at Project launch for the wide public	31.07.2019 (month 3)	
D7.5	Establishment of a stakeholder-platform as a tool for industry level observatory and knowledge exchange network	31.10.2019 (month 6)	
D7.6	VEGGIE-MED-CHEESES data management plan	31.10.2019 (month 6)	
D7.7	Collection of newsletters	30.04.2022 (month 36)	
D7.8	At least 4 articles published in crop producers/dairy industries journals	30.04.2022 (month 36)	
D7.9	At least 4 open-access papers published in international peer-reviewed journals	30.04.2022 (month 36)	
D7.10	At least 4 contributions to conference proceedings	30.04.2022 (month 36)	
D7.11	At least 1 downloadable project leaflet	30.04.2022 (month 36)	
D7.12	Final Workshop	30.04.2022 (month 36)	
D7.13	Press release at Final Workshop for the wide public	30.04.2022 (month 36)	
D7.14	Attendance at (at least) 1 event/exhibition aimed at promoting traditional local dairy products	30.04.2022 (month 36)	

Regarding Deliverable D7.1, in the VEGGIE-MED-CHEESES proposal it was stated that:

*"A visual identity defining the Project's graphic character, logo, fonts, and colours will be designed including compulsory logos that must be used by all Partners for communication about Project activities"*

The Project Coordinator announce that a local web agency, VANNILLA MARKETING (<https://www.vanillamarketing.it/>), has been commissioned to design the VEGGIE-MED-CHEESES logo. Hence, the Project Coordinator shows the three proposals for logo made by the Company (for a total cost of € 250 + vat, in charge of the Project Coordination). These are showed below:

LOGO 1



LOGO 2



LOGO 3



The Project Coordinator communicates the choice of LOGO 1, though the need of a slight change related to replacement of the term CHEESE with its plural form CHEESES; tough a general liking of logo 1 by PIs and the team members attending the meeting, some participants suggest to modify it, by replacing the half tree-leaf with a half cardoon-leaf or –alternatively-

by introducing something more reminiscent of thistle plants (i.g. thistle heads). The Project Coordinator assures that she will contact the web designer of VANILLA MARKETING to ask if further changes are possible without any expenditure increases. In any case, the Project Coordinator stresses the fact that: 1) a project logo has to reach a very wide public, with no specific knowledge about shape of thistle heads/flowers; 2) as a general rule, the goal of a project logo is to communicate to a wide public – possibly at a first sight - the concept behind the project, which in the case for VEGGIE-MED-CHEESES, consists of the manufacture of cheese with vegetable coagulant. Given these premises, the Project Coordinator underlines the fact that - in its present form - LOGO 1 fully reaches its objective.

The Project Coordinator announces that even the implementation of the VEGGIE-MED-CHEESES website will be in charge of the web agency VANILLA MARKETING, who will complete it by the end of June 2019; at this regard, the Project Coordinator shows what it has been literally reported in the VEGGIE-MED-CHEESES proposal, namely:

*"The Project website for external and internal communication, dissemination and project management will serve as an archive for Project information. The website will be established by the Coordinator at a suitable server to: Present information on Project structure and outputs; II. Allow closed and open discussion between Partners and Stakeholders; III. Act as the Project website for VEGGIE-MED-CHEESES. The website will have an open site and a restricted site. The restricted site will have state-of-art technology with password-regulated access for Project Partners and PRIMA Secretariat to have access to internal and confidential material with a special section for the stakeholder platform. The restricted site will contain: I. Updated Projects documents including all meeting agendas, material and reports at overall Project level and by WPs; II: Project reports; III. Facility to share Project data to facilitate exchange between Partners; IV. Share point to enable information exchange and discussion between Partners; V. Share point to allow discussion between Partners and the stakeholder platform. The information will be transferred from the restricted to the open site in format targeted at the stakeholder groups after agreement between Project partners and with advice from the stakeholder platform. The open site will contain: I. Project objectives, list of Partners (including contact details and web site links) and Project description; II. Press releases and latest news; III. Calendar and information on Project events; IV. Scientific publications, presentations from conferences and proceedings; V. Regular update on results-outputs of the Project including recommendations, guidelines, technical notes and summary articles from the Project activities. Email alerts and RSS (electronic information) feeds will inform members of the stakeholder platform of new information available on the site. The Coordinator will continue to support the website after the end of the Project. To increase its visibility, links will be created to each Partner's website and to other relevant web interfaces. Running information and communication with the stakeholders and the general public on project issues and results will be ensured by means of news in connection with the publication of deliverables on the public part of the website.*

The Project Coordinator leaves the word to Dr Carlotta Carucci (the legal representative of Vanilla marketing) who briefly describes the principles behind the implementation of the public section of the VEGGIE-MED-CHEESES website, namely: (i) easiness of use; (ii) exploitation of project colours– green and yellow – taken from the VEGGIE-MED-CHEESES logo; etc.. For the private section of the VEGGIE-MED-CHEESES Project (which will be used by Partners for the exchange of data, information, etc), a link to the freely available application TRELLO will be included in the VEGGIE-MED-CHEESES website. A detailed review of TRELLO and its features/application is available at [http://trello.appshost.co/?utm\\_source=bing&utm\\_medium=cpc&utm\\_campaign=%5BAH-IT-D%5D%20Search%20-%20Italy%20-%20Desktop%20%7C%202.0%20Broad%2BExact&utm\\_term=%2Btrello%20%2Bdownload&utm\\_content=trello](http://trello.appshost.co/?utm_source=bing&utm_medium=cpc&utm_campaign=%5BAH-IT-D%5D%20Search%20-%20Italy%20-%20Desktop%20%7C%202.0%20Broad%2BExact&utm_term=%2Btrello%20%2Bdownload&utm_content=trello)

Again regarding WP7, the project Coordinator gives some up-to-dates about deliverable D7.4 "Press release at Project launch for the wide public" (date of delivery: 31.07.2019, end of month 3). In the VEGGIE-MED-CHEESES Project, and more specifically in the Section describing communication activities, it was literally stated that:

*“Key results of scientific relevance and innovation potential will be summarised in press releases and leaflets (both in English and in the official languages of the Partners involved into the transnational consortium) in order to present them to a wide public. These texts are expected to appear at the website of the participating organizations and in farmers/dairy industries journals’ articles, and to be presented to the media, including social media (twitter, facebook, etc).”*

An informative article (written in Italian) describing the VEGGIE-MED-CHEESES Project has been recently drafted by the Italian PRIMA Secretariat and published on 26.04.2019 on the on-line magazine [Agricoltura.it](http://www.agricultura.it) (available at [www.agricultura.it](http://www.agricultura.it)).

Similarly to what has been performed by the Italian PRIMA Secretariat, the project Coordinator kindly invites all the Partner to draft, on the basis of a template in English, short notes/press releases/informative articles describing the VEGGIE-MED-CHEESES Projects, its Partners, objectives, expected impact, etc. The template will be prepared by UNIVPM (approximately by the end of June) and sent to all PIs.

## 5. Specific techno-scientific aspects related to WP2-WP4

The Project Coordinator opens the discussion concerning tasks of WP2-WP4 dealing with: (i) the collection of thistles from the wild, as plant sections (leaves, stems, heads) and seeds (WP2); (ii) the sustainable cultivation of thistles (WP3); and the analysis of crude extracts from wild thistles (WP4)

Concerning WP2, the Project Coordinator first shows the up-dated WP2 scheme (as reported in the Consortium agreement) and its deliverables, whose delivery date has been up-to-date considering that the project started 01.05.2019:

Work package number	2	Lead beneficiary				PARTY 5	
Work package title	Characterization of spontaneously grown thistle populations						
Participant number	PARTY 1	PARTY 2	PARTY 3	PARTY 4	PARTY 5	/	/
Short name of participant	UNIVPM	CREA-AN	UCAM	DEMETER	ISA-CM	/	/
Person months per participant	15	0	0	0	24	/	/

### Objectives

The objective of WP2 is the characterization of Mediterranean spontaneous thistle populations ascribed to species and genera traditionally exploited in local cheese-making for the manufacture of thistle-curdled sheep's and goat's milk cheeses: *C. humilis*, *C. acanthifolia* and *O. tauricum*. To reach this goal both qualitative and quantitative morphological traits will be evaluated and different ecotypes eventually identified (even using genetic markers).

### Description of work

Morphological characterization is the first step in the description and classification of germplasm. Accordingly the genetic diversity in spontaneous thistles populations ascribed to *Cynara humilis*, *Carlina acanthifolia* and *Onopordum tauricum*, occurring in various Mediterranean marginal areas (high altitude pastures, dry and arid lands, islands) will be morphologically characterized based on qualitative and quantitative traits, thus leading to the identification of different geographical populations and even ecotypes. Samples and seeds from these populations will be collected, catalogued and stored. Sampling will be performed within the natural areas of distribution of the thistle species under study, spanning from Spain in the West



Mediterranean to Cyprus in the East Mediterranean, passing through North Africa and Italy. WP2 will be articulated in the following activities:

**Task 2.1 Sampling and morphological characterization of spontaneously growing thistles; Partners involved: PARTY 1, PARTY 5.**

Samples from thistle populations spontaneously occurring in various Mediterranean marginal areas (PARTY 1: central Italy; PARTY 5: South-eastern Spain, North Tunisia and Cyprus), ascribed to the species *Cynara humilis*, *Carlina acanthifolia* and *Onopordum tauricum* will be collected, classified and characterized through the evaluation of morphological (qualitative and quantitative) traits, according to the UPOV (International Union for the Protection of New Varieties of Plant) for artichoke. Sampling will be carried out using the simple random method and a specimen of each population will be catalogued and stored with notes of collecting areas.

**Task 2.2 Lyophilization of sampled spontaneous thistles; Partners involved: PARTY 1, PARTY 5.**

Sampled thistles will be lyophilized (as whole plants and plant sections: leaves, stems, flours) according to a standard procedure (Alamanni & Cossu, 2003). The dried material will be crushed and the resulting powder will be kept in sealed bags at room temperature for storing.

**Task 2.3 Sampling, cataloguing and storing of seeds; Partners involved: PARTY 1, PARTY 5.**

Seeds will be catalogued according to international protocols (ISTA, 2018), and further stored in rooms at controlled temperature (15°C) and relative humidity (15%) and in freezer cabinets at -20°C.

**Task 2.4. Elaboration of morphological data and potential identification of different ecotypes; Partners involved: PARTY 1, PARTY 5.**

Morphological data will be elaborated using multiple statistical tools (PCA, PLS, PLS-DA, UPGMA cluster analysis, etc.) to identify eventual different thistle ecotypes (PARTY 1). In case of occurrence of different ecotypes within the sampled thistle populations, genetic variability will be checked by molecular analysis of Simple Sequence Repeats (SSR) markers, according to Ben Ammar et al. (2015) (PARTY 1).

**Deliverables:**

D2.1	Lyophilized biomass from spontaneous thistle populations	31.07.2019 (month 3)	
D2.2	Catalogued and stored seeds from Mediterranean spontaneous thistle populations	01.01.2020 (month 8)	
D2.3	Report with elaborated data overall collected within WP2	31.03.2020 (month 10)	

For Deliverable D2.1, the Project Coordinator communicates that botanists from UNIVPM and ISA-CM agreed in widening the number of thistle species to be investigated and hence sampled; thanks to local surveys made by Prof. Bouthaina Dridi Al Mohandes, PI of ISA-CM, none of the thistle species cited in the VEGGIE-MED-CHEESES proposal - *Cynara humilis*, *Carlina acanthifolia* and *Onopordum tauricum* - grow in Tunisia and are used as source of milk coagulants by local dairy farmers; by contrast, in south Tunisia, women from villages exploit local wild thistle plants (presumably belonging to *Onopordum platylepis*) for the manufacturing of local cheeses. Hence, botanists from ISA-CM and UNIVPM agreed in including this further thistle species in the sampling campaign and in the further screening of the milk-clotting activity.

As far as the procedure for maintenance of the sampled thistles (freeze-drying) is concerned, the Project Coordinator will send by email to all partners (and especially to botanists from ISA-CM and UNIVPM) the freeze-drying protocol to be used for long-term maintenance of vegetable samples.

Concerning WP3, again the project Coordinator opens the discussion by showing the up-to-date WP3 scheme (as reported in the Consortium agreement) and its deliverables with up-to-date delivery date:

Work package number	3	Lead beneficiary	PARTY 5
Work package title	Sustainable cultivation of thistles		

Participant number	PARTY 1	PARTY 2	PARTY 3	PARTY 4	PARTY 5	/	/
Short name of participant	UNIVPM	CREA-AN	UCAM	DEMETER	ISA-CM	/	/
Person months per participant	15	0	0	0	20	/	/

### Objectives

The objective of WP3 is the evaluation of the adaptability and agronomic productivity of *C. humilis*, *C. acanthifolia* and *O. tauricum* in rainfed areas of the Mediterranean basin under zero/low inputs of fertilizers and use of non-chemical weed control methods. The final goal of this WP is to produce recommendations and guidelines for the sustainable cultivation, in the Mediterranean basin, of thistles exploitable by dairy industries for the manufacturing of high-quality and safe thistle-curdled cheeses.

### Description of work

Field experiments will be carried out in 2 experimental sites, each modeling a Mediterranean scenario with different landscapes and climatic conditions, namely: a central Italian hill area next to the Adriatic coast, with a warm and rainy temperate climate (classified as **Csa** = hot-summer Mediterranean climate, according to Köppen and Geiger). At least three times as much precipitation in the wettest month of winter as in the driest month of summer, and driest month of summer receives less than 30 mm (1.2 in.) (**PARTY 1**) and an area in North Tunisia with an arid climate (classified as **BSh** = hot semi-arid climate, according to Köppen and Geiger), which is characterized by scarce rainfall and high temperatures during the whole year (**PARTY 5**). Field experiments will be carried during a 3-year period (2019–2021), under rainfed conditions.

WP 3 is articulated in the following activities:

#### Task 3.1 Design of the field experiments; Partners involved: PARTY 1, PARTY 5.

Selected thistle species/ecotypes will be compared in a randomized block experimental design with three replications.

#### Task 3.2 Germination tests; Partners involved: PARTY 1, PARTY 5.

Seeds will be subjected to germination tests according to **Bacchetta et al. (2006)** to identify the most suitable environmental conditions for their germination (temperature, light, pre-treatments, etc.).

#### Task 3.3 Soil characterization; Partners involved: PARTY 1, PARTY 5.

Influence of soil composition on thistles-based cropping system will be evaluated by measuring with standardised procedures already in use at the laboratories of the PARTY 1 and PARTY 5: pH, organic matter content, electrical conductivity, total N, exchangeable K<sub>2</sub>O, available P<sub>2</sub>O<sub>5</sub>, exchangeable Ca, Na and Mg.

#### Task 3.4 Seeds multiplication and transplantation; Partners involved: PARTY 1, PARTY 5.

Seeds will be planted in standard seed trays; four-week-old thistles with three-four true leaves will be transplanted on previously prepared plots of 25 m<sup>2</sup> (5 x 5) with a plant density of 20.000 plants ha<sup>-1</sup> with inter-row and intra-row spacing of 1 m and 0.5 m, respectively. Supplementation of low doses of organic fertilizer and relatively spaced irrigations (depending on rainfall) will be adopted to align experimental conditions to plant local habits and conditions. Tillage will consist of medium-depth ploughing (30 cm). Seed bed preparation will be conducted immediately before planting, by using a disk harrow. Plots will be kept weed-free by using non-chemical methods (e.g. hoeing).

#### Task 3.5 Phenological development survey; Partners involved: PARTY 1, PARTY 5.

At each plot, three permanent areas (1 m<sup>2</sup>) will be monitored to determine plants survival. All permanent areas will be monitored twice per growing season. In the first monitoring at the beginning of the plant cycle, the number of plants that has re-grown will be recorded. In the second monitoring at the end of the season, the number of plants that has reached reproduction will be recorded. Plant survival will be then estimated as the ratio between the second and first monitoring. In parallel, for each plot, twenty plants will be randomly selected within each plot and phenological growth stages will be regularly recorded (every 3 days), according to the universal BBCH coding system for mono- and dicotyledonous plants (BBCH abbreviation stands for Biologische Bundesanstalt, Bundessortenamt and Chemical industry).

Environmental parameters (rainfall and daily maximum and minimum air temperature) will be regularly recorded during the whole experimental period at agro-meteorological stations located in each of the two experimental fields (**PARTY 1** and **PARTY 5**).

#### Task 3.6 Analysis of the above ground fresh and dry biomass; Partners involved: PARTY 1, PARTY 5.

Following each growing season, harvests will be carried out manually in summer (July-August) when the capitula are in the seed filling stage. Twenty plants standing in the middle of each plot will be harvested. The border plants in the outermost rows

will not be included in the harvested area. Above ground fresh biomass yield will be analyzed by weighing all harvested thistles (as whole plants and plant sections: stalks, leaves and capitula) immediately after harvest. Approximately 200 g of fresh plant material will oven dried at 105°C until constant weight will be reached. Data of fresh and dry biomass will be statistically elaborated by evaluating the effect of agronomic and environmental variables (ANalysis Of VAriance, ANOVA; Partial Least Squares, PLS, etc).

**Task 3.7 Lyophilization of sampled cultivated thistles; Partners involved: PARTY 1, PARTY 5.**

Cultivated thistles will be lyophilized within 12 h from the harvest (again as whole plants and plant sections). Lyophilized material will be ground to a fine powder (particle size  $\leq 0.25$  mm), kept in sealed bags and stored at room temperature prior to use, according to **Deligios et al. (2017)**.

**Deliverables:**

<b>D3.1</b>	<b>Experimental plan design of cultivation trials</b>	<b>31.08.2019 (month 3)</b>	
<b>D3.2</b>	Lyophilized biomass from cultivated thistles	30.11.2020 (month 19)	
<b>D3.3</b>	Report with elaborated data overall collected within WP3	28.02.2022 (month 32)	
<b>D3.4</b>	Recommendations and guidelines on the sustainable production of thistle crops in the Mediterranean basin (Month 32)	28.02.2022 (month 32)	

At this regard, Prof. Bouthaina Dridi Almohandes confirms that in October/November 2019 trials for cultivation of thistle species will be implemented in TUNISIA; by the end of August, selection of thistle species/ecotypes to be considered for cultivation trials in TUNISIA and ITALY will be made, even considering the preliminary results of the milk clotting ability screening.

The Project Coordinator shows WP4 and its up-to-date deliverables:

<b>Work package number</b>	<b>4</b>	<b>Lead beneficiary</b>				<b>PARTY 3</b>	
<b>Work package title</b>	Characterization of thistle aqueous crude extracts (CEs)						
<b>Participant number</b>	<b>PARTY 1</b>	<b>PARTY 2</b>	<b>PARTY 3</b>	<b>PARTY 4</b>	<b>PARTY 5</b>	/	/
<b>Short name of participant</b>	<b>UNIVPM</b>	<b>CREA-AN</b>	<b>UCAM</b>	<b>DEMETER</b>	<b>ISA-CM</b>	/	/
<b>Person months per participant</b>	<b>18</b>	<b>2</b>	<b>10</b>	<b>18</b>	<b>12</b>	/	/

**Objectives**

The objective of WP4 is the full characterization (chemical, microbiological, technological and biochemical) of aqueous crude extracts (CEs) derived from both spontaneously grown and cultivated thistles (CE\_st and CE\_ct, respectively) from either whole plants or separate plant sections: stalks, leaves, capitula.

**Description of work**

In this WP, fresh crude extracts (CEs) prepared by reconstituting the lyophilized biomass of sampled thistles from spontaneously grown Mediterranean populations (CE\_st) will be first analysed for a number of chemical, microbiological and technological properties. The CE\_st with the higher potential in terms of milk clotting activities will be further assayed in cheese-making trials for the manufacture of thistle-curdled cheese prototypes (WP5). The chemical, microbiological and technological properties of fresh crude extracts obtained from the same thistle species (and eventually ecotypes) cultivated in two Mediterranean rainfed areas under zero-low input of fertilizer (CE\_ct) will be also assessed, to evaluate the impact of the agronomic practices adopted onto the above listed properties. The CEs characterized by the best performance in terms of milk clotting ability will be chosen for the purification and further characterization of proteases to be potentially exploited by the dairy industry for the manufacturing of thistle-curdled cheeses.

WP4 is articulated in the following activities.

**Task 4.1 Chemical characterization of CEs; Partners involved: PARTY 1, PARTY 2, PARTY 5.**

CEs will be subjected to the analytical determination of the following parameters (using standardised procedures already in use at the laboratories of the Partners):

- (i) hydrosoluble phenolics (**PARTY 1**);
- (ii) minerals (Ca, P, Na, K, Mg, Zn) by atomic absorption spectroscopy (AAS) (**PARTY 2**);
- (iii) B-group vitamins by High-Performance Liquid Chromatography with Diode-Array Detection (HPLC-DAD) and High-Performance Liquid Chromatography-Mass Spectrometry (HPLC-MS) (**PARTY 1**);
- (iv) antioxidant properties (**PARTY 1**).

**Task 4.2 Microbiological characterization of CEs; Partners involved: PARTY 1, PARTY 3, PARTY 4, PARTY 5.**

CEs will be subjected to viable plate counting of quality and hygiene indicators (total mesophilic aerobes, Enterobacteriaceae and *Escherichia coli*, eumycetes, spore-forming bacteria, pseudomonads) and pro-technological microorganisms (mesophilic and thermophilic lactic acid bacteria) (**PARTY 1, PARTY 4**) on selective/semi-selective solid media and under opportune growth conditions; the antibacterial activity of CEs will be also assessed at PARTY 1 laboratories.

**Task 4.3 Evaluation of technological properties of CEs; Partners involved: PARTY 1, PARTY 3, PARTY 4.**

Milk-clotting activity (MCA) will be measured according to the International Dairy Federation Standard. Proteolytic activity (PA) will be assessed on caseins from sheep, goat and bovine milk using photometric assays, as previously described by **Tavaria et al. (2001)**. Protein concentration will be determined with the Bradford method (**Bradford, 1976**) using bovine-serum albumin as reference standard for the calibration curve. MCA and PA will be evaluated under different conditions (e.g. pH, T). Response Surface Methodology (RSM) will be used to identify optimal conditions for milk clotting.

**Task 4.4 Purification of proteases from CEs; Partners involved: PARTY 1.**

Different steps will be carried out to purify the active proteolytic fractions, including salting-out and ion exchange chromatography, according to **Llorente et al, 2004**.

**Task 4.5 Biochemical characterization of purified proteases; Partners involved: PARTY 1**

The effect of known inhibitors will be tested to identify the type of purified proteases, following the procedure recently described by **Mohan et al. (2017)**. Caseinolytic specificity of purified proteases will be assessed through Sodium Dodecyl Sulphate – Poly Acrylamide Gel Electrophoresis (SDS-PAGE) of hydrolyzed caseins, as previously described by **Anusha et al. (2014)**. The structure of these proteases will be defined through peptides mass fingerprinting, according to **Sarmiento et al. (2009)**.

**Deliverables**

<b>D4.1</b>	Crude extracts from spontaneous thistles (CE_st) endowed with milk coagulant activity and bioactive compounds	30.11.2019 (month 7)	
<b>D4.2</b>	Crude extracts from cultivated thistles (CE_ct), endowed with milk coagulant activity and bioactive compounds	31.01.2021 (month 21)	
<b>D4.3</b>	Pure and enzymatically active proteases	31.01.2022 (month 33)	
<b>D4.4</b>	Scientific report with data overall collected within WP4	31.01.2022 (month 33)	

Regarding the preparation of crude extracts Prof. George Samorius suggests the need for a standardization of the procedures; the project Coordinator will communicate as soon as possible the alternative options to be discussed and approved by the Steering Committee for standardised preparation and analysis of these extracts.

Hence the Project Coordinator shows WP5 and its up-to-date deliverables:

<b>Work package number</b>	<b>5</b>	<b>Lead beneficiary</b>				<b>PARTY 2</b>	
<b>Work package title</b>	Cheese-making trials and characterization of thistle-curdled and control cheeses						
<b>Participant number</b>	<b>PARTY 1</b>	<b>PARTY 2</b>	<b>PARTY 3</b>	<b>PARTY 4</b>	<b>PARTY 5</b>	<b>/</b>	<b>/</b>
<b>Short name of participant</b>	<b>UNIVPM</b>	<b>CREA-AN</b>	<b>UCAM</b>	<b>DEMETER</b>	<b>ISA-CM</b>	<b>/</b>	<b>/</b>

<b>Person months per participant</b>	<b>18</b>	<b>6.5</b>	<b>14</b>	<b>32</b>	<b>0</b>	<b>/</b>	<b>/</b>
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### Objectives

The objective of WP5 is to carry out cheese-making trials allowing for the full characterization (physico-chemical, chemical, microbiological, textural and sensory) of local thistle-curdled cheeses as well as for the investigation of nutritionally valuable substances (e.g. minerals, vitamins, etc), health-beneficial (e.g. phenolic compounds, bioactive peptides with ANTI-ACE activity) and hazardous (biogenic amines) compounds.

### Description of work

Crude extracts (CEs) obtained from spontaneously grown (CE\_st) and cultivated (CE\_ct) lyophilized thistles will be used in two subsequent "rounds" of cheese-making trials, respectively. Cheeses traditionally manufactured with thistle extracts (Caciofiore, Italy, and Torta del Casar, Spain) and animal rennet (Queso de Murcia, Spain, and Feta, Greece) will be produced together with control cheeses. These latter will be manufactured with both commercial vegetal (control 1) and animal (control 2) rennet. Cheese prototypes will be produced (in laboratory and/or dairy farm) by **PARTY 1** (Caciofiore), **PARTY 3** (Torta del Casar and Queso de Murcia) and **PARTY 4** (Feta). For each type of cheese (Caciofiore, Torta del Casar, Queso de Murcia and Feta) and each round of cheese-making trials, two batches of cheeses, each consisting of 3 cheese replicates, will be produced. Overall, the following cheeses will be manufactured:

- 12 cheese wheels of Caciofiore (3 replicates + 3 replicates) and Torta del Casar (3 replicates + 3 replicates) for each CE\_st and CE\_ct under study;
- 12 cheese wheels of Queso de Murcia (3 replicates + 3 replicates) and Feta (3 replicates + 3 replicates) for each CE\_st and CE\_ct under study;
- 12 control cheese wheels of Caciofiore (3 replicates + 3 replicates) and Torta del Casar (3 replicates + 3 replicates) curdled with commercial vegetal rennet (control 1);
- 12 control cheese wheels of Caciofiore (3 replicates + 3 replicates) and Torta del Casar (5 wheels) curdled with commercial animal rennet (control 2);
- 12 control cheese wheels of Queso de Murcia (3 replicates + 3 replicates) and Feta (3 replicates + 3 replicates) curdled with commercial vegetal rennet (control 1);
- 12 control cheese wheels of Queso de Murcia (3 replicates + 3 replicates) and Feta (3 replicates + 3 replicates) curdled with commercial animal rennet (control 2).

All the experimental and control cheese replicates will be subjected to physico-chemical, chemical, microbiological, textural and sensory analysis, as well as to the analysis of nutritionally valuable, health-beneficial and hazardous substances, using optimised protocols already in use at the laboratories of the scientific partners involved. All the analyses will be performed at least in triplicate and overall collected data (expressed as mean values  $\pm$  standard deviations) will be statistically elaborated. WP5 is articulated in the following activities.

#### Task 5.1 Cheese-making trials; Partners involved: **PARTY 1, PARTY 3, PARTY 4.**

First- and second-round cheeses will be manufactured with CE\_st and CE\_ct respectively, following local traditional procedures, under optimized process-parameters (milk clotting temperature, etc.).

#### Task 5.2 Physico-chemical and chemical analyses; Partners involved: **PARTY 1, PARTY 3, PARTY 4.**

Cheeses will be analyzed for:

- (i) moisture, aw, pH, lactose, total ash, total and water-soluble N, (**PARTY 1:** Caciofiore; **PARTY 3:** Torta del Casar and Queso de Murcia; **PARTY 4:** Feta);
- (ii) total fat, free fatty acids (FAAs), cholesterol, phytosterols (according to **Mozzon et al., 2013**) (**PARTY 1:** all cheeses)
- (iii) casein hydrolysis profile by SDS-PAGE (according to **Sidrach et al. 2005**) (**PARTY 1:** Caciofiore and Feta; **PARTY 3:** Torta del Casar and Queso de Murcia).

#### Task 5.3 Microbiological analyses; Partners involved: **PARTY 1, PARTY 4.**

Cheeses will be subjected to viable plate counting of quality and hygiene indicator microorganisms (total mesophilic aerobes, Enterobacteraceae and *Escherichia coli*, eumycetes, spore-forming bacteria, pseudomonads) and protechnological bacteria (mesophilic and thermophilic lactic acid bacteria) (**PARTY 1:** Caciofiore, Torta del Casar and Queso de Murcia; **PARTY 4:** Feta). The cheese microbiota will be further investigated by Polymerase-Chain-Reaction Denaturing Gradient Gel Electrophoresis (PCR-DGGE) and next-generation sequencing of nucleic acids (DNA) extracted directly from the cheese matrix, following the procedures previously described by **Cardinali et al. (2016, 2017)** already in use at the D3A-UNIVPM laboratories (**PARTY 1: Caciofiore, Torta del Casar; PARTY 4: Queso de Murcia and Feta**).

#### Task 5.4 Textural and sensory analyses; Partners involved: **PARTY 2, PARTY 3, PARTY 4.**

Cheeses will be subjected to:

- (i) texture profile analysis as previously described by **Garcia et al. (2014)** (**PARTY 2:** Caciofiore; **PARTY 3:** Torta del Casar and Queso de Murcia; **PARTY 4:** Feta);
- (ii) profiling of aroma by Solid-Phase Micro-Extraction-High-Resolution Gas Chromatography/Mass Spectrometry (SPME-HRGC-MS) (**PARTY 2:** Caciofiore, Torta del Casar and Queso de Murcia; **PARTY 4:** Feta);
- (iii) panel tests with trained panelists (**PARTY 2:** Caciofiore; **PARTY 3:** Torta del Casar and Queso de Murcia; **PARTY 4:** Feta);
- (iv) color measurement using the CIE L\*a\*b\* system (**PARTY 2:** all the cheeses).

**Task 5.5 Analysis of nutritionally valuable, health-beneficial and hazardous substances (Month 8-Month 14: cheeses made with CE\_st; Month 22-Month 28: cheeses made with CE\_ct); Partners involved: PARTY 1, PARTY 2, PARTY 3.**

Cheeses will be assayed for:

- (i) hydrosoluble phenolic components, according to **Roseiro et al. (2005)** (**PARTY 1:** all the four cheeses);
- (ii) B-group vitamins by High-Performance Liquid Chromatography with Diode-Array Detection (HPLC-DAD) and High Performance Liquid Chromatography-Mass Spectrometry (HPLC-MS) with optimized procedures already in use at D3A-UNIVPM (**PARTY 1:** all the four cheeses);
- (iii) fat soluble vitamins (A and E) by HPLC DAD and fluorimetric detector with optimized procedures already in use at CREA-AN (**PARTY 2:** all the four cheeses);
- (iv) minerals (Ca, P, Na, K, Mg, Zn) by Atomic Absorption Spectroscopy (AAS) with optimized procedures already in use at CREA-AN (**PARTY 2:** all the four cheeses);
- (v) biogenic amines according to **Mozzon et al. (2015)** (**PARTY 1:** all the four cheeses);
- (vi) bioactive peptides (anti-ACE) by Liquid chromatography-Mass Spectrometry (LC-MS) with optimized procedures already in use at UCAM (**PARTY 3:** all the four cheeses).

**Task 5.6 Statistical elaboration of data; Partners involved: PARTY 1.**

Data collected onto the first- and second-round experimental and control cheeses will be statistically elaborated using the most appropriate tools: ANalysis Of VAriance (ANOVA); Principal Component Analysis (PCA); Partial Least Squares regression (PLS); Unweighted Pair Group Method with Arithmetic Mean (UPGMA) cluster analysis, etc.) and the impact of the coagulant onto the cheese traits will be evaluated. Biomarkers for demonstration of quality and/or authenticity of Mediterranean thistle-curdled cheeses will be identified.

## Deliverables

<b>D5.1</b>	Experimental and control "first round" cheeses	30.04.2020 (month 12)	
<b>D5.2</b>	Report with data on physico-chemical, chemical, microbiological and sensory characterization of "first round" cheeses	31.10.2020 (month 18)	
<b>D5.3</b>	Experimental and control "second round" cheeses	30.06.2021 (month 26)	
<b>D5.4</b>	Report with data on physico-chemical, chemical, microbiological and sensory characterization of "second round" cheeses	31.12.2021 (month 32)	
<b>D5.5</b>	Report with statistical elaboration of data overall collected in WP5 and identified biomarkers for demonstration of quality/authenticity of Mediterranean thistle-curdled cheese	31.12.2021 (month 32)	
<b>D5.6</b>	Recommendations and guidelines on manufacturing and authentication of high-value and safe Mediterranean thistle-curdled cheeses	31.12.2021 (month 32)	

For WP5 tasks, the Project Coordinator stresses the need to contact as soon as possible pilot plants/local dairy farms to involve them in the cheese-making assays; Dr Akis Psomas confirms that they are already in contact with a pilot plant where FETA cheese-making assays will be performed; even Italy and Spain should identify the pilot plants/local dairies where to perform cheese-making assays of Caciofiore (IT), Queso de Murcia and Torta del Casar (SP). For each cheese variety (Caciofiore, Feta., Queso de Murcia and Torta del casar, experimental and control cheeses will be manufactured with thistle and commercial animal rennet (respectively) from the same batch of milk at the selected pilot plant/dairy farm; for each cheese variety, the most opportune commercial animal rennet will be selected and used.

Finally the project Coordinators shows WP6 and its up-to-date deliverables:

<b>Work package number</b>	<b>6</b>	<b>Lead beneficiary</b>				<b>PARTY 4</b>	
<b>Work package title</b>	Evaluation of consumer needs, preferences and acceptance towards thistle-curdled and control cheeses						
<b>Participant number</b>	<b>PARTY 1</b>	<b>PARTY 2</b>	<b>PARTY 3</b>	<b>PARTY 4</b>	<b>PARTY 5</b>	/	/
<b>Short name of participant</b>	<b>UNIVPM</b>	<b>CREA-AN</b>	<b>UCAM</b>	<b>DEMETER</b>	<b>ISA-CM</b>	/	/
<b>Person months per participant</b>	<b>15</b>	<b>0</b>	<b>10</b>	<b>18</b>	<b>0</b>	/	/

#### Objectives

The objective of WP6 is to evaluate the degree of liking of consumers towards experimental and control “second round” cheeses, as well as to provide analytical insights on the prospect value-chain potential of thistle-curdled traditional local cheeses in the Mediterranean.

#### Description of work

WP6 will be articulated in the following activities:

##### **Task 6.1 Focus groups and consumer tests; Partners involved: PARTY 1, PARTY 3, PARTY 4.**

Expected and perceived (in blind conditions) liking of cheeses, as well as the willingness-to-pay will be evaluated for new thistle-curdled cheeses (Feta and Queso de Murcia). Qualitative analyses will be done by means of two focus groups (8-12 people with 1 repetition) in Italy (**PARTY 1**), Spain (**PARTY 3**), Tunisia (**PARTY 1**) and Greece (**PARTY 4**) to explore general consumer interest on local traditional cheeses manufactured with vegetable rennet. Results will be used to inform the information stimulus during the subsequent assessment of consumers' liking of Feta and Queso de Murcia (acceptance test), which will be performed on 100 consumers per country (Italy: **PARTY 1**; Spain: **PARTY 3**; Tunisia: **PARTY 1**; Greece: **PARTY 4**). The experimental design of the acceptance test consists of 3 sequential tests according to **Napolitano et al. (2010)**. In the first test a blind assessment of both experimental (thistle-cuddled) and control (commercial animal and vegetal rennet) cheeses will be performed. This assessment will be followed by an expectation test based on an information stimulus on thistle-cuddled cheeses, and then by an informed (non blind) tasting of experimental and control cheeses. Samples will be offered to the subjects immediately after slice preparation in booths. Consumers will rate their liking on a 9-point hedonic scale labelled at the left end with “extremely unpleasant”, at the right end with “extremely pleasant” and at the central point with “neither pleasant nor unpleasant”. Subjects will be voluntaries selected according to quota sampling. Collected data will be analysed statistically.

##### **Task 6.2 Prospect value chain analysis and business model canvas analysis; Partners involved: PARTY 1, PARTY 3, PARTY 4.**

Potential developments of the various thistle-curdled cheeses developed in WP5 will be assessed by means of prospect value-chain analysis. Results of consumer analysis in Task 6.1 will be used as input for a business model canvas analysis (**Osterwalder & Pigneur, 2010**) and solutions will be recommended for real-life scenarios.

#### Deliverables

<b>D6.1</b>	Report on consumer analyses	31.01.2022 (month 33)	
<b>D6.2</b>	Report on value-chain and business model analysis	31.03.2022 (month 35)	

The project Coordinator recalls what it was literally reported in the Proposal at pg. 49 concerning consumer tests:

*“vi) agro-food economy, especially focussed on economic, policy, managerial and wider societal questions connected to the production, processing and consumption of food and fibre including the impacts in policy relevant areas such as rural development, international trade, the environment and dietary health. Concerning VEGGIE-MED-CHEESES, the agro-food economists of D3A-UNIVPM will be in charge of: designing focus groups and consumer tests for*

*all the Partners (giving precise guidelines on how to carry out them); carrying out focus groups and consumer tests on Feta (in both Central Italy and North Tunisia) and Caciofiore cheese prototypes (in Central Italy); performing prospect value-chain analyses"*

Hence Prof. Lucia Aquilanti leaves word to Prof. Raffaele Zanolli from UNIVPM, who shows a brief presentation (Annex 5 of this minute) about the tasks where economists of UNIVPM are involved. The project Coordinator stresses the need that for consumer tests in Tunisia, Spain and Greece, there will be the need of the support and active collaboration of local Researchers (for both involvement of volunteers and carrying out of the consumer tests). Consumers tests will be performed in all the 4 countries (Spain, Italy, Greece and Tunisia) on Feta cheeses manufactured in a Greek pilot plant/dairy farm using the same batch of milk and either vegetable rennet or control (animal) rennet; experimental and control Feta cheeses will be delivered to all Partners; at least in Spain, consumer tests will be also performed on Queso de Murcia cheese; even for Queso de Murcia, experimental and control cheeses will be manufactured at a Spanish pilot plant/dairy farm using the same batch of milk and either thistle or animal (commercial) rennet (control).

As there is nothing else to discuss, the project Coordinator declares the session closed at 17.45.

VEGGIE-MED-CHEESES Project Coordinator

Prof. Lucia Aquilanti PhD



Lucia Aquilanti