H2020- FETOPEN-2018-2019-2020-01 - Grant n° 964386, **MIMIC-KeY**

Agenda of the Kick-off meeting

June 14th 2021

MILAN (University of Milan, Via Camillo Golgi 19 Aula G23)

Virtual Zoom Meeting:

https://zoom.us/j/93019235806?pwd=Qk1FSTcrMERHRGZhL2tPdVQ1NWNYZz09

(Meeting ID: 930 1923 5806; Passcode: 2AFVQd)

8:30 – 9:00 Arrival in Milan and set-up of virtual sessions		
FIRST SESSION: PROJECT & PARTNER OVERVIEW		
9:00 – 10:50 Presentation of the project and of the MIMIC-KeY partners		
9:00-09:10	Welcome - introduction of the PO Dr. Iria Rio Echevarria	POLITO V. Cauda
9:10-9:30	MIMIC-KeY project outlook	POLITO V. Cauda
9:30-9:40	Politecnico di Torino	POLITO V. Cauda
9:50-10:00	Technische Universiteit Eindhoven	TUE L. Albertazzi
10:00-10:10	Istituto Di Ricerche Farmacologiche Mario Negri	IRFMN L. De Cola
10:10-10:20	Scuola Universitaria Professionale Della Svizzera Italiana	SUPSI G. Pavan
10:20-10:30	Universiteit Utrecht	UU E. Nolte
10:30-10:40	Fundacio Hospital Universitari Vall D'Hebron - Institut De Recerca	VHIR I. Abasolo
10:40-10:50	Oxford Nanoimaging Ltd	ONI R. Bastos
10:50 - 11:20 Coffee break		

11.20-11.45	Appointment & presentation of the Advisory Board	Prof. B. Bussolati Prof. A. Hendrix Prof. M. Olivera Prof. A. Schroeder Dr. A. Prodi-Schwab
SECOND SESSION: TECHNICAL ASPECTS		
11.45 -14:50 Detailed presentation of the project WPs and first 6-months activities		
11:45-12:00	WP1: Profiling of bone-targeting natural EVs and functional comparison of natural EV and EV-mimics	UU E. Nolte
12:00-12:10	WP1 discussion	All
12:10-12:25	WP2: High resolution imaging of natural and artificial EV-mimics	TUE L. Albertazzi
12:25-12:35	WP2 discussion	All
12:35-12:50	WP3: Modelling, simulations & machine learning	SUPSI G. Pavan
12:50-13:00	WP3 discussion	All
13:00-14:00 Lunch Break		
14:00-14:15	WP4: Synthesis and assembly of artificial EV-mimics	IRFMN L. De Cola
14:15-14:25	WP4 discussion	All
14:25- 14:40	WP5: In vivo characterization	VHIR I. Abasolo
14:40-14:50	WP5 discussion	All
THIRD SESSION: MANAGEMENT		
14:50 -15:30 General management and financial aspects		
14:50-15:10	General project management - Contractual aspects - Reporting requirements (first 6-months deliverables) - Financial statements & Payments	POLITO S. Appendino R. Melchiorre
15:10-15:20	Risk, Data and Dissemination Management	POLITO S. Appendino R. Melchiorre
15:20-15:30	Ethics Management	VHIR I. Abasolo
15:30-15:40	Conclusions & final remarks	POLITO V. Cauda S. Appendino
END OF THE KICK-OFF MEETING		

For the arrival to the meeting, this is the entrance to the room:

H2020- FETOPEN-2018-2019-2020-01 - Grant n° 964386, **MIMIC-KeY**

LIST OF PARTICIPANTS to kick-off meeting

June 14th 2021, MILAN (University of Milan, Via Camillo Golgi 19 Aula G23)

Participant	**Host Insitution**	**Presence/ Virtual**	**Signature**
Valentina Cauda	POLITO	Presence	
Silvia Appendino	POLITO	Presence	
Roberta Melchiorre	POLITO	Presence	
Giada Rosso	POLITO	Presence	
Lorenzo Albertazzi	TUE	Virtual	
	TUE	Virtual	
	TUE	Virtual	
Luisa De Cola	IRFMN	Presence	
Roberta Pastorelli	IRFMN	Virtual ~~Presence~~	
Mario Salmona	IRFMN	Virtual ~~Presence~~	
MARIA SANCHO ALBERO	IRFMN	Presence	
ALESSANDRO AJO	IRFMN	Presence	

Giovanni Maria Pavan	SUPSI	Presence	
Claudio Perego	SUPSI	Presence	
Charly Empereur-Mot	SUPSI	Presence	
Esther Nolte-'t Hoen	UU	Virtual	
Marije Kuipers	UU	Virtual	
	UU	Virtual	
Ibane Abasolo	VHIR	Virtual	
Quim Seras	VHIR	Virtual	
Vanessa Diaz	VHIR	Virtual	
Ricardo Bastos	ONI	Virtual	
	ONI	Virtual	
	ONI	Virtual	
Benedetta Bussdati	AB	Virtual	
Marc Molto-Alad	VHIR	Virtual	
Maria Camprodan Gomez	VHIR	Virtual	
Avi Schroeder	AB	Virtual	
Anna Prodi	AB	Virtual	
Miguel Olivera	AB	Virtual	

MIMIC-KEY

A KEY To The Understanding Of Extracellular Vesicles And Rational Design Of MIMICking Nanoparticles

Valentina Cauda

Kick-off meeting

Milan
June 14th, 2021

European Commission
Horizon 2020
European Union funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 964386

Project overview

- Project number: **964386**
- Acronym: **MIMIC-KeY**
- Call: H2020-FETOPEN-2018-2019-2020-01
- Type of Action: RIA
- Coordinator: Politecnico di Torino
- PI: Valentina Cauda
- Partners: Technische Univesiteit Eindhoven, Istituto di Ricerche Farmacologiche Mario Negri, Scuola Universitaria della Svizzera Italiana, Universiteit Utrecht, Fundacio Hospital Universitari Vall D'Hebron, Oxford Nanoimagning
- AB members: B. Bussolati, A. Hendrix, M. Oliveira, A. Schroeder, A. Prodi-Schwab
- Starting date: **1st June 2021**
- Duration: **48 months**

Project overview

CHALLENGE: Being able to target a specific tissue or cell type for targeted therapies, such as drug delivery

Key Research Question:

Can we synthesize targeted nanoparticles inspired by tumor-derived EVs to achieve selective tissue targeting?

MIMIC-KEY project:

OBJECTIVE 1: KEY UNDERSTANDING

We propose a radical new vision to first understand and predict the targeting and functional properties of natural EVs

OBJECTIVE 2: MIMIC

We aim to design and produce new artificial EV-mimics with controlled uniform sizes and reproducible functions as a science-enabled technology

Application

A **proof of concept** to target lysosomal bone metabolic disease

METABOLIC BONE DISEASES: a series of pathologies caused by an altered relationship between bone resorption and bone formation, causing:

➔altered bone structure

➔ subsequent frequent fractures and bone malformation.

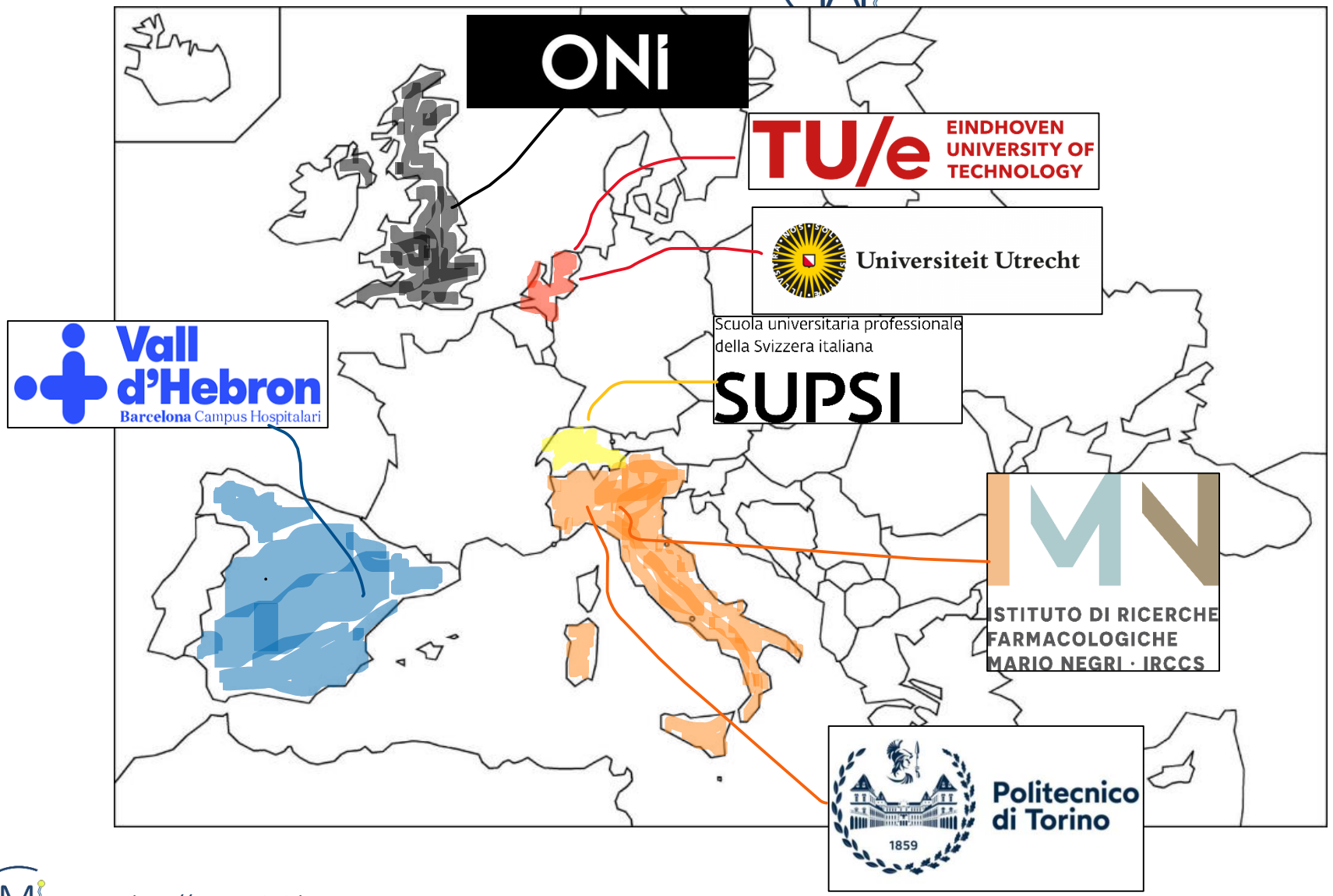
Pycnodysostosis: lack of Cathepsin K (CTSK) impedes the enzymatic action of osteoclasts during bone resorption ➔ Altered bone metabolism due to excessive/reduced osteoclast activity

PRESENT THERAPIES: drug development towards osteoclast cellular component and enzyme replacement therapies

However:

- lack of efficacy
- lack of technologies to specifically target and deliver drugs to the bone
- frequent off-target effects, toxicity and non-selective inhibition of other lysosomal cathepsins
- no enzymatic replacement therapies (i.e., CTSK enzyme delivery) to restore bone resorption

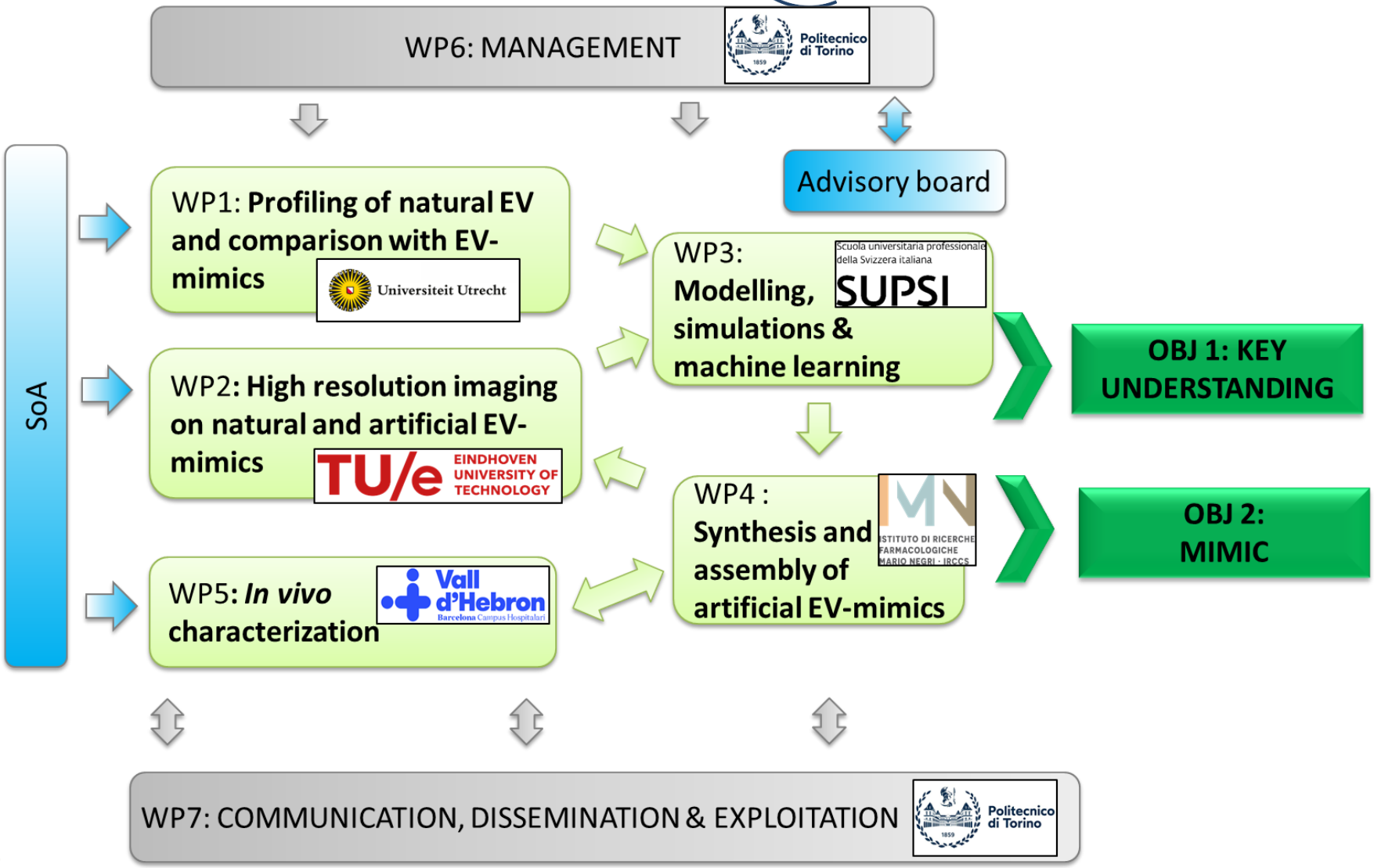
The consortium



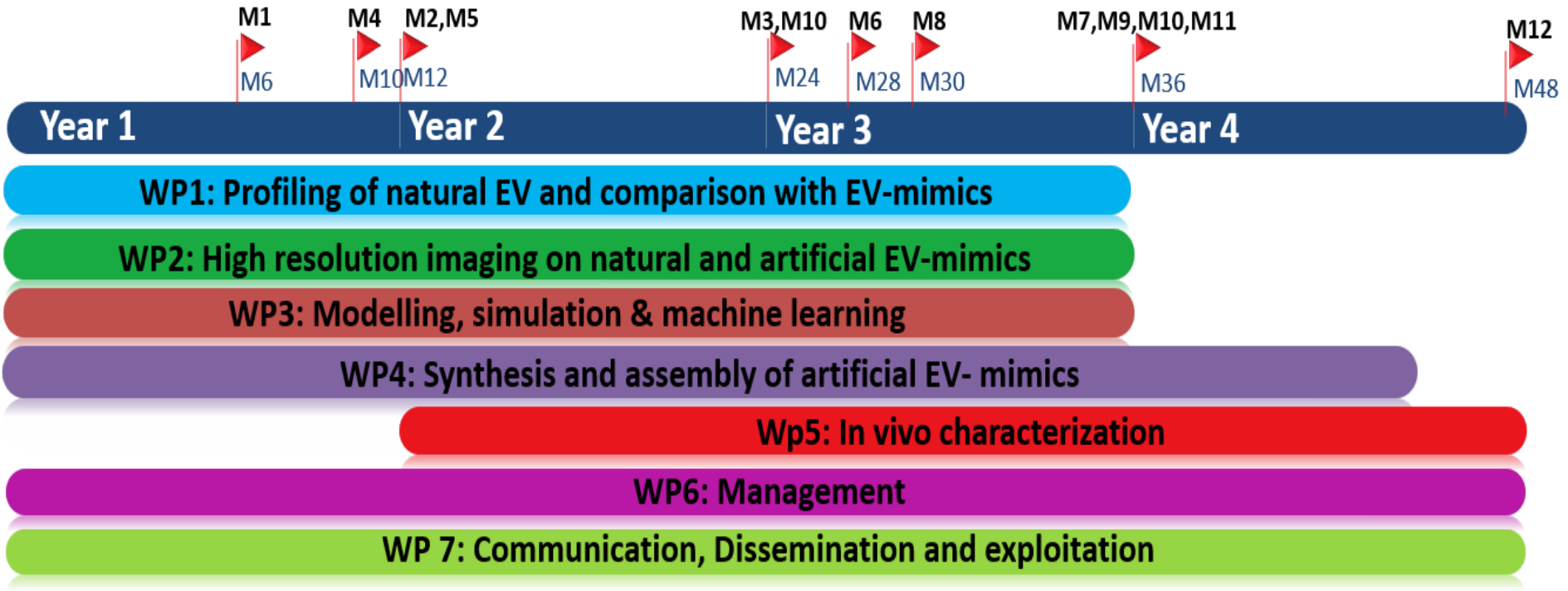
Expertises

Partner	Chemistry		Biology				Computer science		Biophysics		Medicine		
	NP synthesis	Supramolecular assembly	Cell biology	Molecular biology	EVs biology	Proteomics	Modelling	Simulation	Fluorescence signals	Live cell imaging	Preclinical studies	Lysosomal metabolic diseases	
PoliTO	xx	xxx	x		x				x	x			
TUE		xx			x				xxx	xxx			
IRFMN	xxx	xx	x	x		xx			x	x			
SUPSI	x	xx					xxx	xxx					
UU			xxx	xxx	xxx	xxx							
VHIR			xxx	xxx	xx				x	x	xxx	xxx	
ONI			x		x				xxx	xxx			

WP organization



The GANNT


M1
M6
M4
M10
M2,M5
M12
M3,M10
M24
M6
M28
M8
M30
M7,M9,M10,M11
M36
M12
M48
Year 1
Year 2
Year 3
Year 4
WP1: Profiling of natural EV and comparison with EV-mimics
WP2: High resolution imaging on natural and artificial EV-mimics
WP3: Modelling, simulation & machine learning
WP4: Synthesis and assembly of artificial EV- mimics
Wp5: In vivo characterization
WP6: Management
WP 7: Communication, Dissemination and exploitation

Project Risks

Risks to KEY UNDERSTANDING

- Ability to discover, understand, and implement the key molecules ("building blocks") playing a role in EV communication within cells
- Ability to identify candidate molecular components of EV (subpopulations) involved in cellular targeting and cargo delivery by EVs.

Risks to MIMIC

- Successful design of artificial self-assembled EV-mimics
- EV-mimics possessing reactive and responsive properties similar to the fascinating ones of natural EVs
- EV-mimics as stimuli-responsive NP for cargo transport, triggerable release and a soft and mobile lipid bilayer shell

Art. 27.1 GA: Obligation to protect the results

Each beneficiary must examine the possibility of protecting its results and must adequately protect them — for an appropriate period and with appropriate territorial coverage — if:
(a) the results can reasonably be expected to be commercially or industrially exploited and
(b) protecting them is possible, reasonable and justified (given the circumstances).
When deciding on protection, the beneficiary must consider its own legitimate interests and the legitimate interests (especially commercial) of the other beneficiaries.

Art 27.2: If a beneficiary intends not to protect its results, to stop protecting them or not seek an extension of protection, the EU may — under certain conditions (see Article 26.4) — assume ownership to ensure their (continued) protection.

Art 27.3 GA: Information on EU funding

Applications for protection of results (including patent applications) filed by or on behalf of a beneficiary *must* — unless the Commission requests or agrees otherwise or unless it is impossible — *include* the following:
"The project leading to this application has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 964386".

Art 28.1 GA: Obligation to exploit the results

Each beneficiary must — up to four years after the period set out in Article 3 — take measures aiming to ensure '**exploitation**' of its results (either directly or indirectly, in particular through transfer or licensing; see Article 30) by:

(a) using them in further research activities (outside the action);
(b) developing, creating or marketing a product or process;
(c) creating and providing a service, or
(d) using them in standardisation activities.

Annex I GA: Identification and classification of knowledge and scientific results generated by the consortium will be described in detail in the **Data Management Plan** (DMP as in D7.3), set up by M6 and updated until the end of the project. *WP Leaders will report as soon as possible to the Coordinator any project result which might be object to formal protection* in order to formulate a clear strategy for the specific component being considered.

Art. 29.2 GA - Open access to scientific publications

Each beneficiary must ensure open access (free of charge, online access for any user) *to all peer-reviewed scientific publications relating to its results*. In particular, it must:

a) as soon as possible and at the latest on publication, *deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication* in a repository for scientific publications;

Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.

b) ensure *open access to the deposited publication* — via the repository — at the latest:

(i) on publication, if an electronic version is available for free via the publisher, or

(ii) within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.

c) ensure *open access* — via the repository — *to the bibliographic metadata* that identify the deposited publication.

GREEN OA free of charge, mostly 12 or more months embargo – **EC requires max 6 months**

GOLD OA publication fee, no embargo – OK for EC

costs for open access are eligible under H2020 Projects

Art. 29.3 GA - Open access to research data

Regarding the digital research data generated in the action (‘**data**’), the beneficiaries must:

a) *deposit in a research data repository* and take measures to make it possible for third parties to access, mine, exploit, reproduce and disseminate — free of charge for any user — the following:

i. the data, including associated metadata, needed to validate the results presented in scientific publications, as soon as possible;

ii. other data, including associated metadata, as specified and within the deadlines laid down in the ‘data management plan’ (see Annex 1);

b) *provide information* — via the repository — about tools and instruments at the disposal of the beneficiaries and necessary for validating the results (and — where possible — provide the tools and instruments themselves).

costs for data management are eligible under H2020 Projects

Dissemination & Communication

Art. 29.1 GA: Obligation to disseminate results

Unless it goes against their legitimate interests, *each beneficiary must* — as soon as possible — '***disseminate***' *its results by disclosing them to the public by appropriate means* (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium).

Art 38.1.1 GA: Obligation to promote the action and its results

The *beneficiaries must promote the action and its results*, by providing targeted information to multiple audiences (including the media and the public) in a strategic and effective manner.

Before engaging in a communication activity expected to have a major media impact, the beneficiaries must inform the Commission (see Article 52).

Annex I GA: **All project partners will contribute to the dissemination** according to their role and to the detailed ***Plan for Exploitation and Dissemination of Results (PEDR)***, which will be elaborated in deliverable D7.2 (*M12*).

Acknowledgment

Art. 29.4 and 38.1.2 GA: Information on EU funding — Obligation and right to use the EU emblem

Unless the Commission requests or agrees otherwise or unless it is impossible, **any dissemination of results** (in any form, including electronic) and **any communication activity related to the action** (including in electronic form, via social media, etc.) **must**:

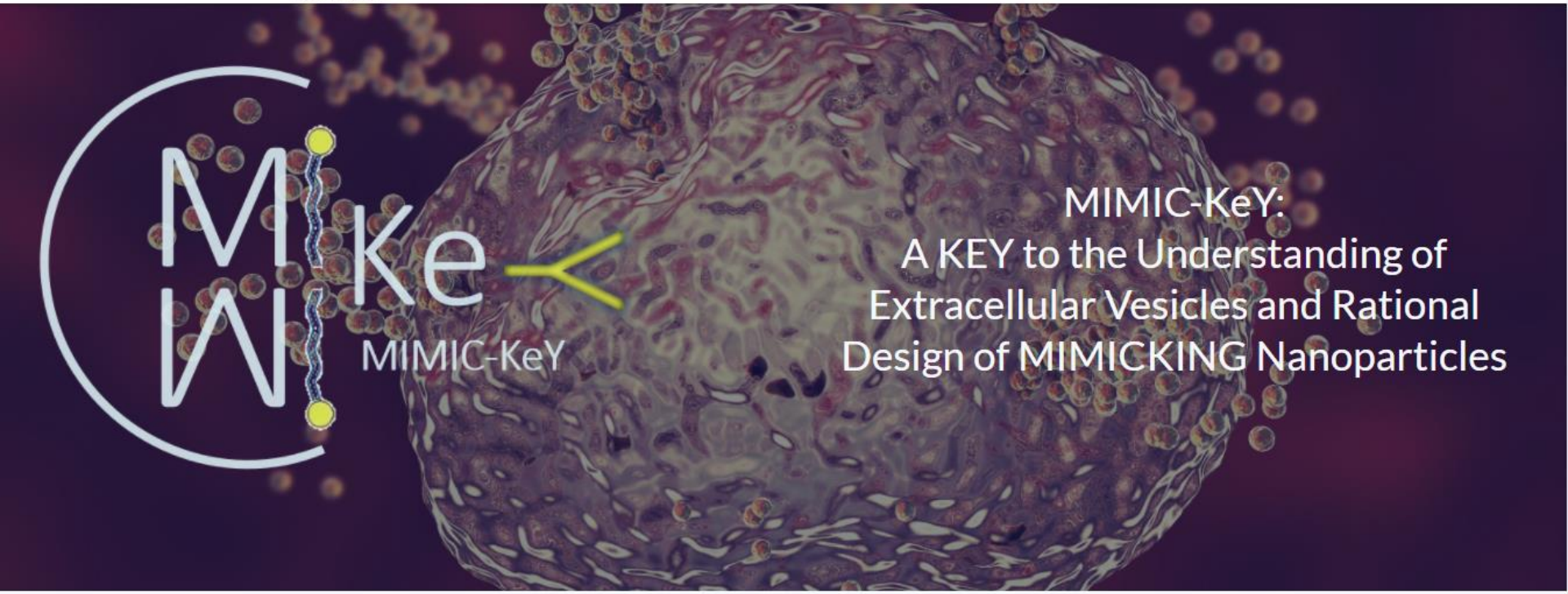
(a) display the **EU emblem** and
(b) include the following text:

“This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 964386”.

When displayed together with another logo, the EU emblem must have appropriate prominence.
For the purposes of their obligations under this Article, the beneficiaries may use the EU emblem without first obtaining approval from the Commission.

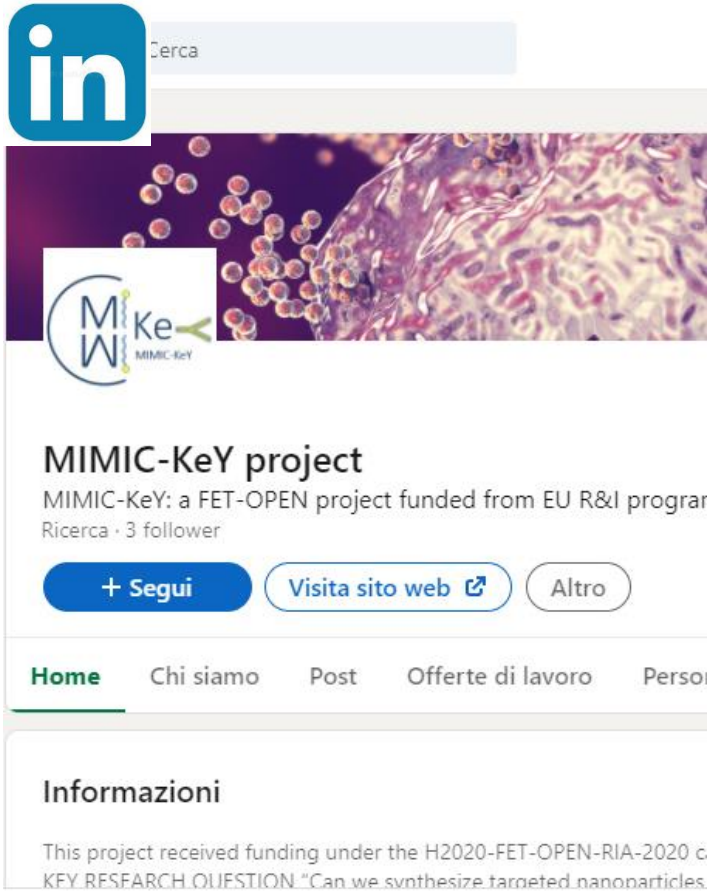
Project website

This project received funding under the H2020-FET-OPEN-RIA-2020 call with GA N. 964386



We aim to answer to the KEY RESEARCH QUESTION "Can we synthesize targeted nanoparticles inspired by tumor-

Project social media



All partners and participants please link to project's media!

Q&A