Finanziato dall'Unione europea
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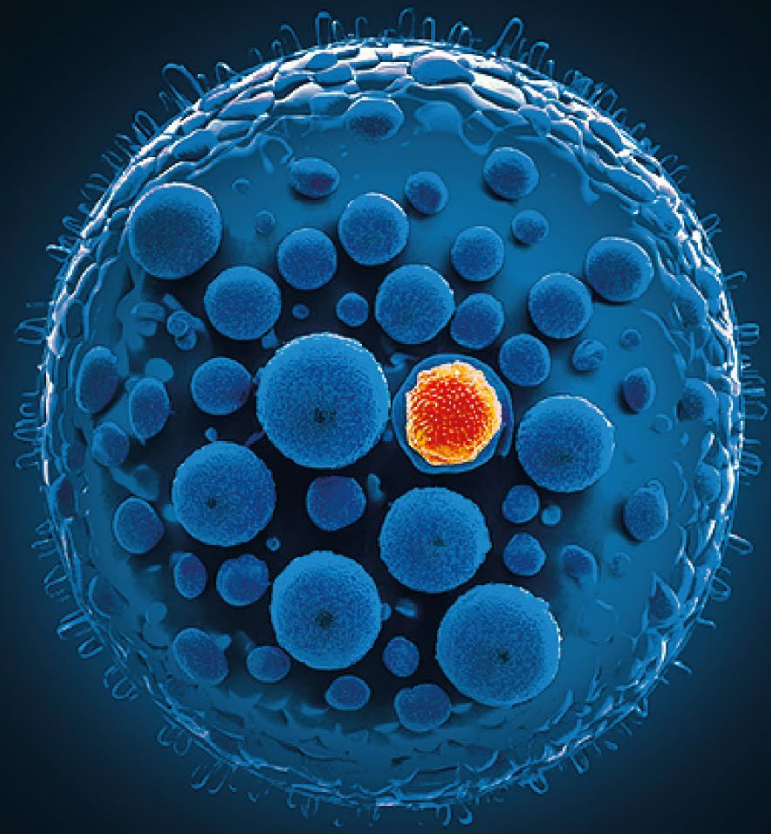
Ministero dell'Università e della Ricerca

Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA

HEAL ITALIA



FORUM NAZIONALE SULLA MEDICINA DI PRECISIONE

Il Modello HEAL ITALIA e il contributo della Ricerca al Sistema Sanitario del Futuro

PALERMO
13 · 14 · 15
GIUGNO 2024

SPOKE 1
Holistic Nosology

From patients to molecules and back. Mapping the omics landscape of the clinical and molecular environment, to identify, classify and refine multifactorial disease.

SPOKE 1 PRESENTATION

Spoke 1 Holistic Nosology			
Spoke Leader Univ. of Rome "Tor Vergata"			
Affiliati	Settore	P	Recrutamento
Tor Vergata	public	13	7 RTDA 4 Post-doc *(ass. di ricerca)* 6 PhD
UNIBO	public	1	1 RTDA
SAPIENZA	public	3	
UNIMORE	public	3	3 RTDA 1PhD
UNIVPM	public	2	
UNIVR	public	6	1 RTDA
UNIFG	public	4	
UNICA	public	2	
NEUROMED	private	2	
TLL	private	2	
TOTAL		38	23

Bando a Cascata	ENTI
Topic 1: *"Incrementare lo studio e le analisi di marcatori genomici e metabolici, analizzando soggetti normali e coorti di pazienti. Effettuare analisi di Big Data e la loro integrazione con aspetti clinici. Lo scopo finale è l'identificazione di nuovi target terapeutici"*	Fondazione Human Technpole Biogem scarl (media impresa) Università Campania "L. Vanvitelli" IRCCS Fondazione "G. Pascale"
Topic 2: *"Identificare i meccanismi molecolari (regolazione dell'RNA e delle funzioni mitocondriali) che portano allo sviluppo dei Big Killers (tumori, malattie cardiovascolari) con particolare attenzione all'interazione con l'ambiente e agli stili di vita. Lo scopo finale è l'identificazione di nuovi target terapeutici"*	Università dell'Aquila Università di Ferrara Università della Calabria Università LUM

18 University/Research sites

61 Researchers (40% recruited)

Scientific coordinator
Prof.ssa Eleonora **CANDI**
(Prof. *Gerry* ***MELINO advisor***)

Deputy scientific coordinator
Dott. Manuel **SCIMECA**

Administrative contact
Dott.ssa Maria Antonietta **COMPOSTELLA**
Dott.ssa Maria Grazia **FARRACE** (Bando a Cascata)

Head of the University PNRR Office
Dott. Gianluca **PORINELLI**

Scientific Advisory Board
Boris **ZHIVOTOVSKY** *Karolinska, Sweden*
George **CALIN** *MD Anderson, Houston, US*
Xin **LU** *Ludwing Institute, Oxford, UK*
Michele **CARBONE** *Hawai Cancer Centre, Honolulu, US*

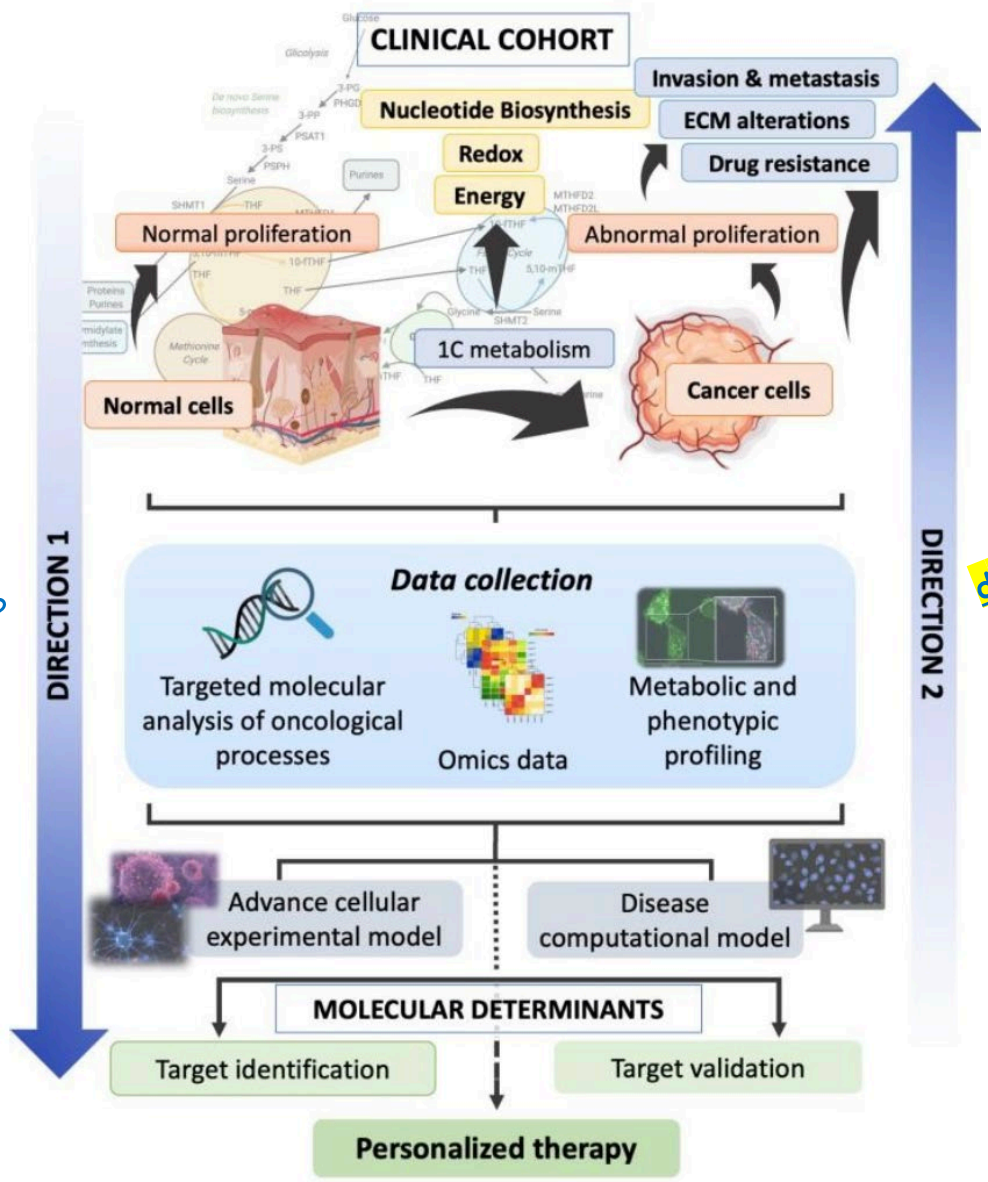
SPOKE 1
Holistic Nosology

○ PURPOSE OF THE SPOKE

Identify, in a large normal population and/or with specific pathologies (Big Killers), the factors that control/protect the development or progression towards distinct diseases, to be used as preventive/prognostic biomarkers and potential pharmacological targets for personalized medicine interventions.

The identified genes/molecules will be studied in vitro and in vivo (DIRECTION 1: from patients to molecular determinants). Furthermore, current knowledge on metabolic and biochemical pathways will be explored in depth, moving in the opposite direction (DIRECTION 2: from molecular determinants to patients).

direction 1
IDENTIFY
BioMARKERS



direction 2
VALIDATE & USE
BioMARKERS

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SPOKE 1
Holistic Nosology

WP1. Population mapping: DNA seq, Exome Mapping aiming at the identification of pathogenic genetic variants

Task 1.1: Precision Medicine: the common soil hypothesis and the Moli-sani studies and other cohorts.
Task 1.2: Genomics, Phenomics and Biomarkers.
Task 1.3: Metabolome mapping from mouse to Moli-sani sub-cohorts and development of new therapeutic targets.

DNA

WP2. Transcriptomics: refinement of “common-soil” hypothesis & investigation on chronico-pathological conditions for personalized stratification for therapeutics

Task 2.1: Omics biomarkers in the stratification of obesity, epithelial and related metabolic and functional complicatior
Task 2.2: Multi-omics approach for big killers: stratification of treatment response and tailored interventions.
Task 2.3: Serine metabolism and epigenetic regulation through ncRNAs.

RNA

WP3. Proteomic and metabolic analysis: an exciting avenue to advance the knowledge of dynamic interactomes

Task 3.1: Microbial metabolites impact on disease: from translational models to bedside.
Task 3.2: Protein degradation in physiology and pathology.
Task 3.3: Autophagy, cell cycle regulation and diseases.

Proteins

WP4. Metabolic alterations, metabolites and metabolome maps

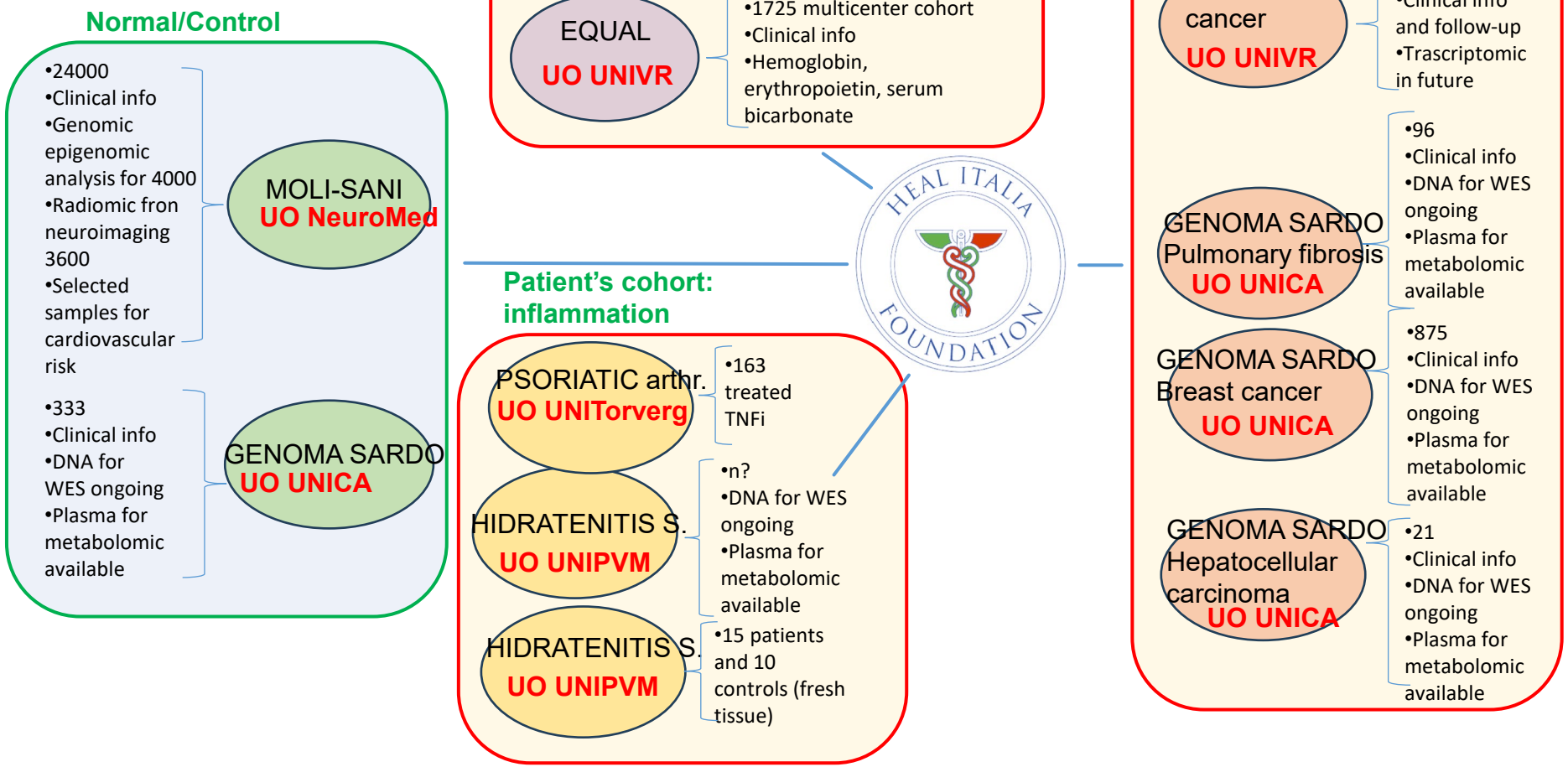
Task 4.1: Long Chain fatty acids enzymes and lipid metabolism.
Task 4.2: Imaging & Ca2+ machinery as reporter of metabolic adaptations in physiology and disease.
Task 4.3: Genes versus environment, causing metabolic dysregulation leading to disease.

Metabolites

SPOKE 1
Holistic Nosology

- **WHERE WE ARE** (in month 18 of 36)

Cohorts dello SPOKE 1:



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SPOKE 1
Holistic Nosology

- **WHERE WE ARE**(in month 18 di 36)

Area Diagnostica terapeutica
Malattie Cardiovascolari (Infarto del miocardio, stroke, insufficienza cardiaca, cardiopatia ischemica, atherosclerosis)
Malattie infiammatorie e reumatologiche (artrite psoriatica, artrite reumatoide, hidratenitis suppurativa)
Oncologia (breast cancer, ovarian cancer, multiple myeloma, mielofibrosi primria (PMF), carcinoma del fegato, tiroide, tumori del SNC, adenocarcinoma duttale pancreatico; leucemia linfatica cronica; carcinoma del polmone non a piccole cellule operabile, microcitoma polmonare, tumore del surrene, melanoma, tumore della prostata, tumore renale e vescicale, tumori di origine sconosciuta, carcinoma a cellule squamose della testa e del collo)
Malattie Rare (malattie metaboliche ereditarie, distrofia della retina, malattie autoimmuni del fegato, sindrome di Sjogren)
Malattie Metaboliche (Steatoepatite non alcolica, diabete mellito; sindrome metabolica; rischio cardiovascolare correlato a malattie metaboliche, diabete tipo-2, neuropatia diabetica)

Progetti clinici
• Numero di Studi in Fase di avvio: **n.7** • Numero di Studi Avviati: **n.16** • Numero di Studi Conclusi: **n.0** • % di pazienti da reclutare: l'**80%** degli studi hanno terminato la fase di recrutamento dei pazienti • Reclutamento non ancora avviato: nessuno) • Necessità di ampliamento dei pazienti da reclutare: nessuna
Progetti pre-clinici
• Numero di Studi in Fase di avvio: **n.4** • Numero di Studi Avviati: **n.19** • Numero di Studi Conclusi: **n.6**
Collaborazioni intra- e inter- Spoke 1: SI (Spoke 1: Spoke 2, 3, 4, 5, 7)

- Various scientific publications and participation in conferences

Oral communications SPOKE 1:

Tot. 23

Giuseppe NOVELLI
Genomics in Precision and Personalized Medicine: How the management of complex and multifactorial diseases changes.

Sebastiano RONTUAROLI
Multiomic Characterization of Clonal Dynamics in the Disease Progression of Myeloproliferative Neoplasms.

Gilulia GALLERANI
Circulating Tumor Cells: from Cancer Monitoring to Metastatic Models.

Massimiliano AGOSTINI
*M*odels to Study Long Chain Fatty Acids Enzymes and Lipid Metabolism in Diseases.

Tot. 29

Federica ROSSIN, UNI Tor Vergata
Role of Transglutaminase 2 in Hepatocarcinogenesis.

Sabrina GIGLIO
Liquid Biopsy into the Clinics: Current Evidence and Future Perspectives - Experience of Ovarian Cancer in the Sardinian Population.

SPOKE 1
Holistic Nosology

- **WHERE WE ARE GOING:**

➢ Conclusion of ongoing projects;

➢ Identification and characterization of -omics signatures associated with most of the diseases studied;

➢ Identification of new markers for improving early diagnosis, prognosis and predictors of response to therapy;

➢ Identification of new pathways relevant for the identification of new therapeutic targets.

SPOKE 1
Holistic Nosology

○ FORECASTS AFTER THE CLOSURE OF THE PROJECT

- Improve public health. While GENOMICS already offers the possibility of obtaining rapid and personalized diagnoses, we believe we are contributing to establishing whether other OMICS sciences, such as PROTEOMICS and METABOLOMICS, will complete their transfer from research laboratories into clinical practice;

- Demonstration that the INTEGRATION of OMICS SCIENCES in the clinic will act as a driving force for the development of systems medicine and this convergence of knowledge and data will allow us to understand the complexity of diseases and develop increasingly personalized programs;

- Promote FUNDAMENTAL RESEARCH as a GENERATOR of new APPROACHES for prevention, screening, risk stratification, early diagnosis and precision therapies tailored to the phenotypes of defined diseases (cancer, cardiovascular, metabolic and rare diseases);

- Creation of SYNERGY between universities and both public and private research institutions (networking, thematic networks, biobanks) for future projects and new challenges;

- Creation of scientific SKILLS for the study of complex pathologies with advanced TECHNOLOGIES.


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1343


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sanofi


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SIT


SAPIENZA
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NEUROLOGICO
MEDITERRANEO


Istituto Oncologico
del Mediterraneo s.p.a.


TOR VERGATA
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DI ROMA


UNIMORE
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MODENA E REGGIO EMILIA


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