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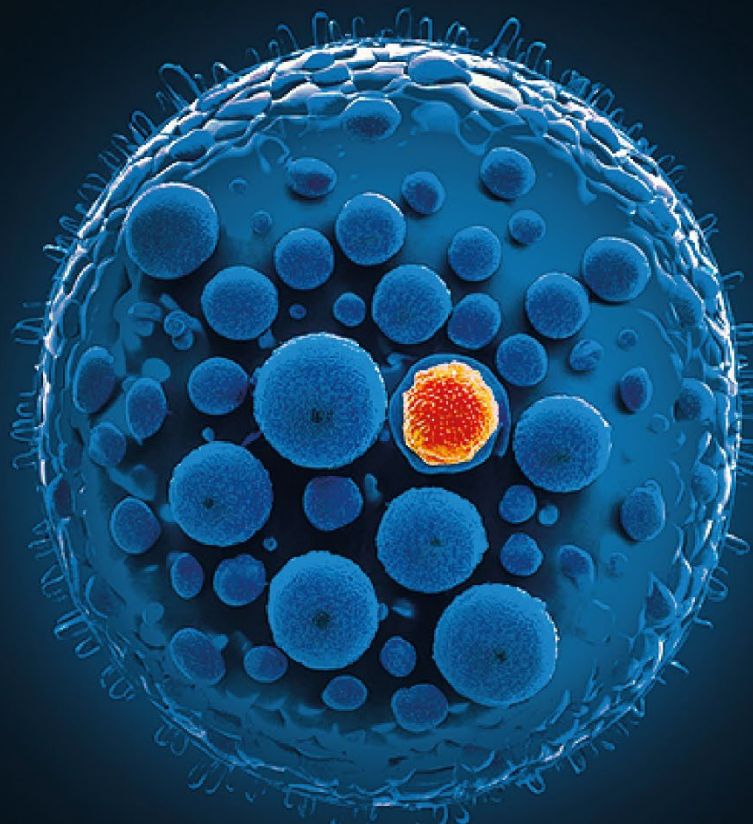


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Italiadomani
PIANO NAZIONALE
DI RIPRESA E RESILIENZA

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 4

Precision Diagnostics

○ SPOKE PRESENTATION

54 researchers (64)

13 affiliated entities



In collabortion with **Spoke 2, Spoke 6 and Spoke 8**



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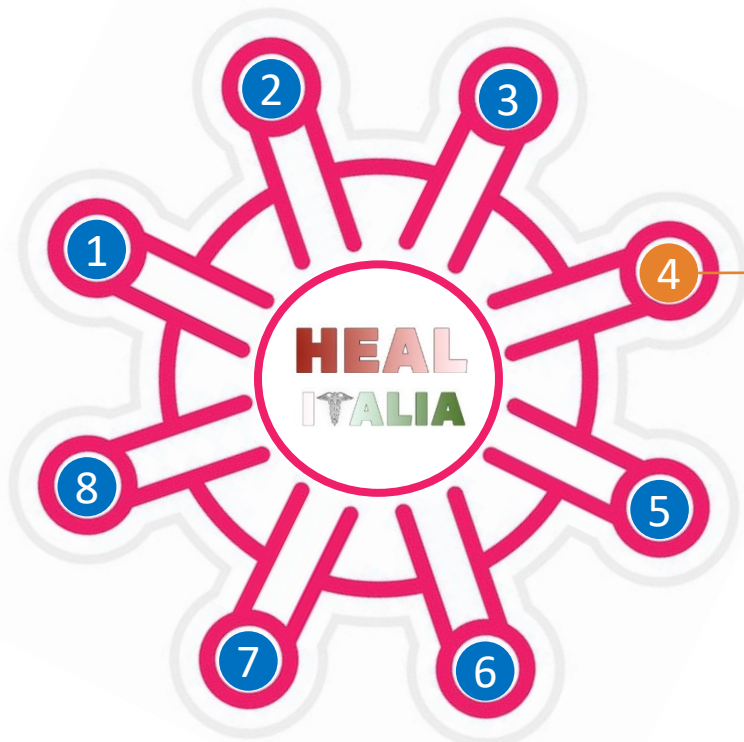


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HEAL **ITALIA**



SPOKE 4

Spoke Purpose

Create new diagnostic pathways in order to obtain a diagnosis:



Rapid



Fast



Precise



Accessible



Cost-effective

Forbes

FORBES > INNOVATION > HEALTHCARE

Precision Diagnostics Can Save Money In Healthcare: What's Holding Them Back?



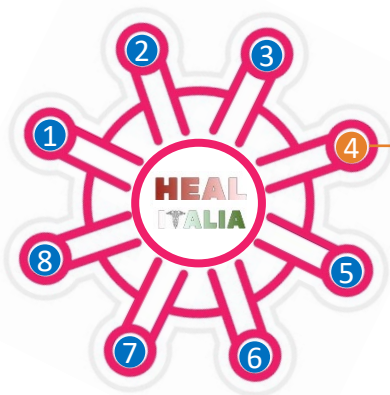
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In wich **pathologies?**



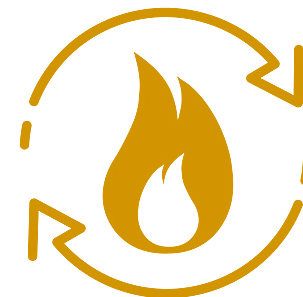
Rare



Oncological



Cardiovascular



Metabolic



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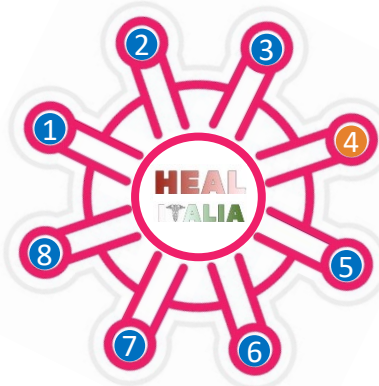
WP 1

New early and non-invasive
markers



WP 2

New tools for advanced biological
diagnosis of complex and
oncological pathologies



WP 3

New solutions for digital image
acquisition and interpretation



WP 4

Network-based frontier in the
management of polygenic and
tumor pathologies



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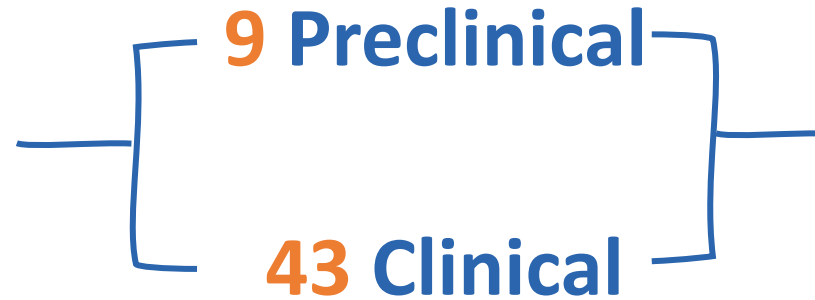
Precision Diagnostics

Where are we?

52 Original studies

35 Publications

In indexed, open access, high impact journals



■ Programmati ■ In fase di avvio ■ Avviati



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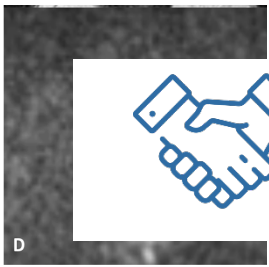
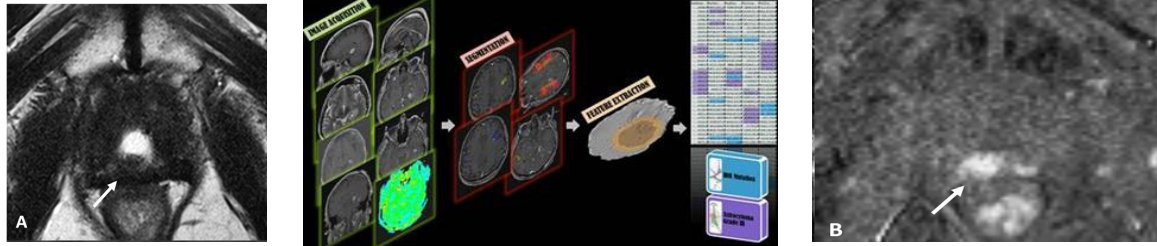
HEAL ITALIA

SPOKE 4

Precision Diagnostics

Where are we going?

The first examples of practical application of precision diagnostics



In collaboration with Spoke 8


**Magnetic
Resonance
Imaging**


**Artificial
intelligence**

New frontiers of MRI

imaging Faster, cheaper and more effective prostate cancer screening and follow-up

- Bi-parametric MRI of the prostate without contrast medium



Prospective Validation Study of a Novel Integrated Pathway Based on Clinical Features, Magnetic Resonance Imaging Biomarkers, and MicroRNAs for Early Detection of Prostate Cancer

- New scores (PI-RR), to identify tumor recurrence early via MRI without having to resort to PET/CT (more invasive).

400 patients



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Where are we going?

The first examples of practical application of precision diagnostics

Innovations in Nuclear Medicine

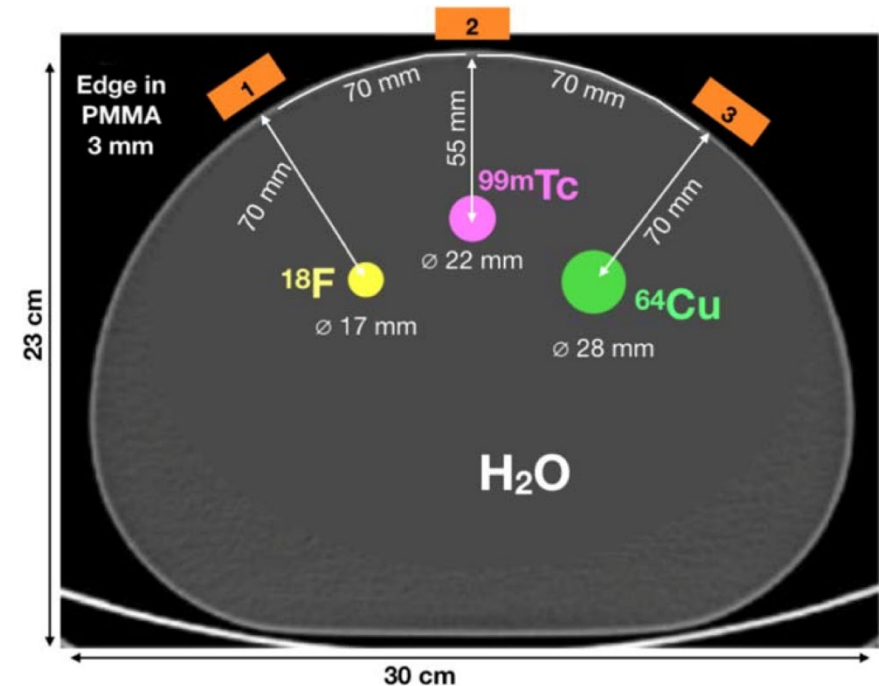
Physics in Medicine & Biology

NOTE • OPEN ACCESS

Experimental validation of an innovative approach in biokinetics study for personalised dosimetry of molecular radiation therapy treatments

To cite this article: C Mancini-Terracciano *et al* 2023 *Phys. Med. Biol.* 68 19NT02

Personalization of **molecular radiotherapy treatment** with a **wearable meter of absorbed radiation dose** (internal dosimetry)



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Precision Diagnostics

Molecular biology as a tool for
personalized medicine

Micro-RNA 494 has demonstrated a crucial role
in **metabolic reprogramming** in hepatocellular
carcinoma cells



Potential roles:

- Biomarker of response to sorafenib therapy
- Therapeutic target for combined strategies with sorafenib or other oncology drugs

Where are we going?

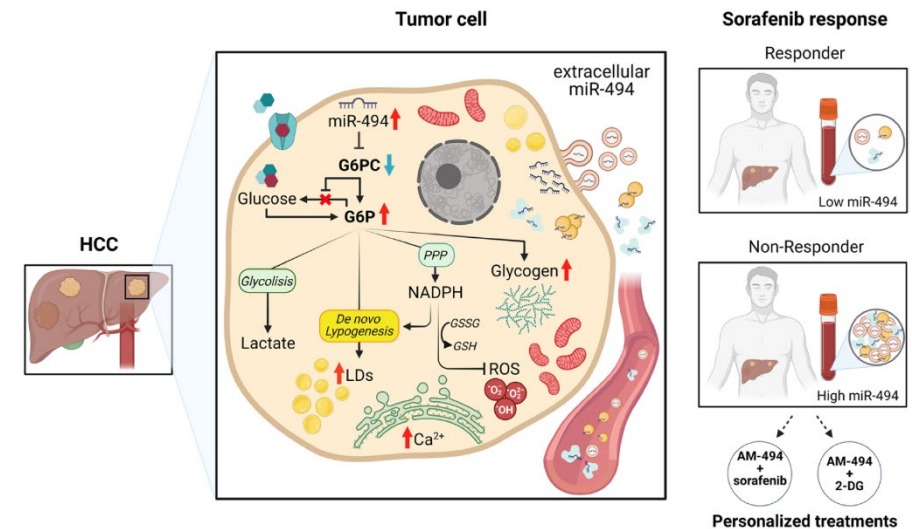
The first examples of practical application
of precision diagnostics

RESEARCH

Open Access

MiR-494 induces metabolic changes
through G6pc targeting and modulates
sorafenib response in hepatocellular carcinoma

Journal of Experimental &
Clinical Cancer Research



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SPOKE 4

Precision Diagnostics

The challenge

From the laboratory to clinical practice

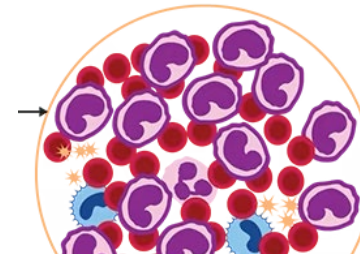
Applying AI to clinical practice

- In estimating **cardiovascular risk** to optimize the indication for the **implantation of implantable cardiac defibrillators**

300 patients



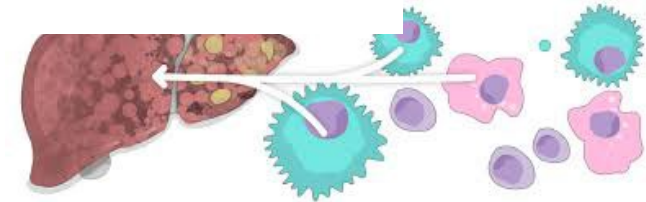
In collaboration with **Spoke 2**



- In hematological tumors → for better stratification and prognosis



- In obtaining a dimensional reduction of genomic data in complex pathologies → **personalized diagnosis**



- In autoimmune liver diseases → differential diagnosis between primary biliary cirrhosis and autoimmune hepatitis

40 patients



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SPOKE 4

Precision Diagnostics

Nelle malattie Rare

The challenge

From the laboratory to clinical practice



Una speranza terapeutica per i pazienti affetti da iperplasia surrenalica congenita



The NEW ENGLAND
JOURNAL of MEDICINE

ORIGINAL ARTICLE



Phase 3 Trial of Crinecerfont in Adult Congenital Adrenal Hyperplasia

Authors: Richard J. Auchus, M.D., Ph.D., Oksana Hamidi, D.O., Rosario Pivonello, M.D., Ph.D., Irina Bancos, M.D., Gianni Russo, M.D., Selma F. Witchel, M.D., Andrea M. Isidori, M.D., Ph.D., et al. for the CAHtalyt Adult Trial Investigators* [Author Info & Affiliations](#)

Published June 1, 2024 | DOI: 10.1056/NEJMoa2404656



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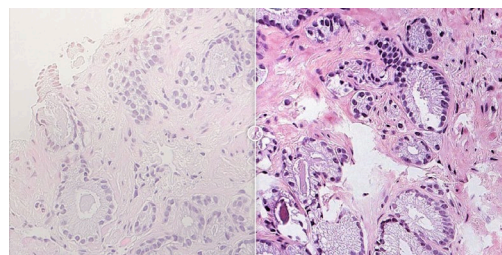
SPOKE 4

Precision Diagnostics

Create a digital pathology
infrastructure

The challenge

From the laboratory to clinical practice



AEQUIP

- New latest generation scanner

- Standardization system
- AI-assisted



- New WorkStation



- Automated filing system



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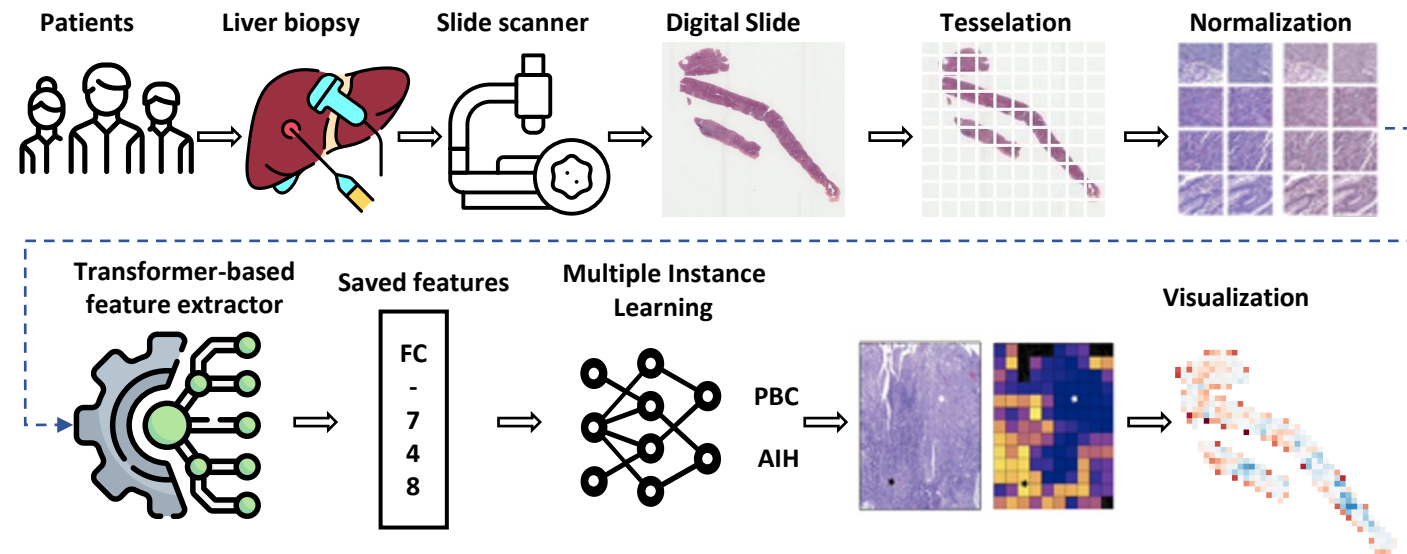
Precision Diagnostics

The challenge

From the laboratory to clinical practice

Deep Learning helps discriminating Autoimmune Hepatitis and Primary Biliary Cholangitis

Gerussi & Saldanha et al
JHEP Reports 2024 accepted



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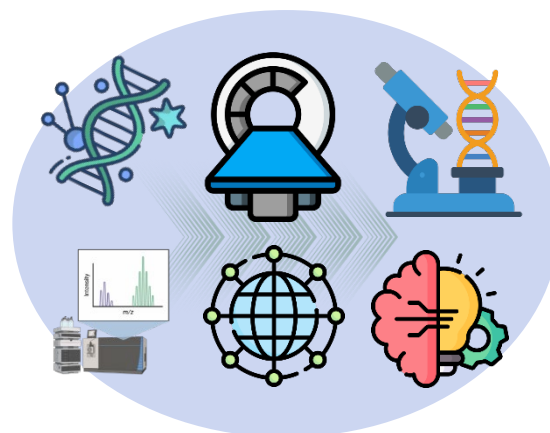
Precision Diagnostics

Forecasts after the project
is closed

**Making precision diagnostics the new
frontier of diagnosis and management of
rare, chronic and tumor diseases**



LABORATORY



**PRECISION
DIAGNOSTICS**



PATIENT



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ISTITUTO DI RICERCHE
FARMACOLOGICHE
MARIO NEGRI - IRCCS

