



UNIVERSITÀ POLITECNICA DELLE MARCHE

Dipartimento scienze della vita e dell'ambiente

Corso di laurea in Scienze Biologiche

**Lo chaperone molecolare HSP10 e il suo ruolo per il
trattamento delle malattie neurodegenerative**

The Molecular Chaperone HSP10 and Its Role in Treating
Neurodegenerative Diseases

Tesi di laurea di

Lucrezia Formichetti

Sessione Autunnale

Anno accademico 2023/2024

Docente Referente

Chiar.ma Prof.ssa

Maria Grazia Orotre

INTRODUZIONE

Malattie Neurodegenerative

Caratterizzate da

Proteine Mal Ripiegate

Causano

Aggregati Fibrillari

*Interruzione
Normali Funzioni
Cellulari*

RIPIEGAMENTO CORRETTO

VS

MAL- RIPIEGAMENTO

Spontaneo

=

*Proteina
Funzionale*

RUOLO HSP10

*Mantenimento
Corretto
Ripiegamento*

*Prevenzione
Formazione
Aggregati
Tossici*

*Struttura
Amiloide
Polimorfica*



Accumulo

*Aggregato
Proteico
Tossico*

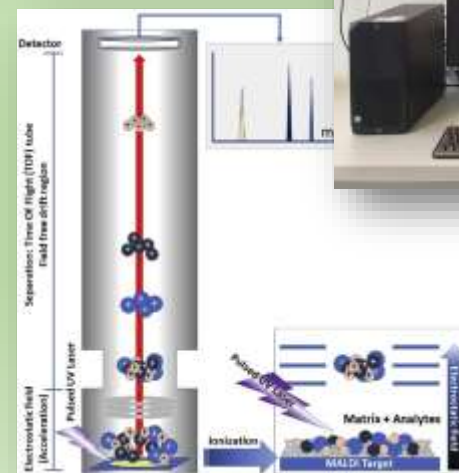
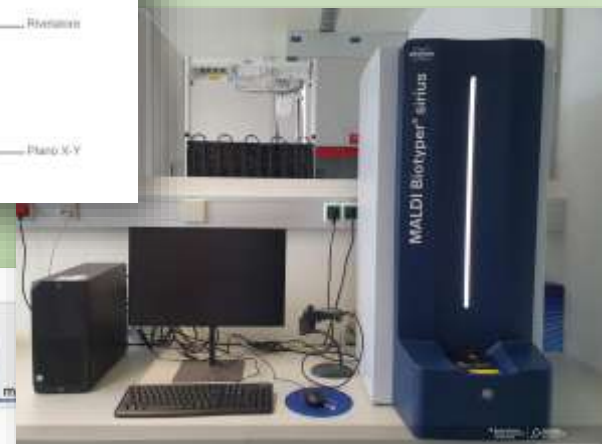
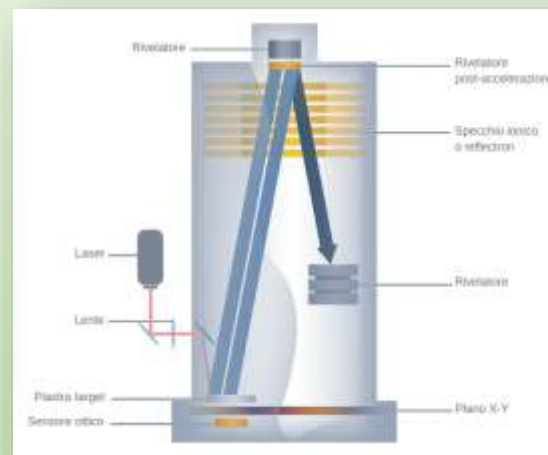
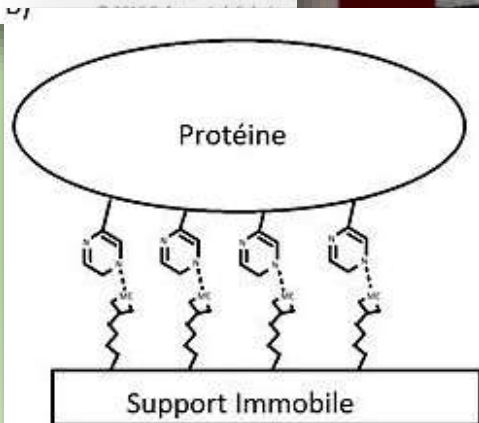
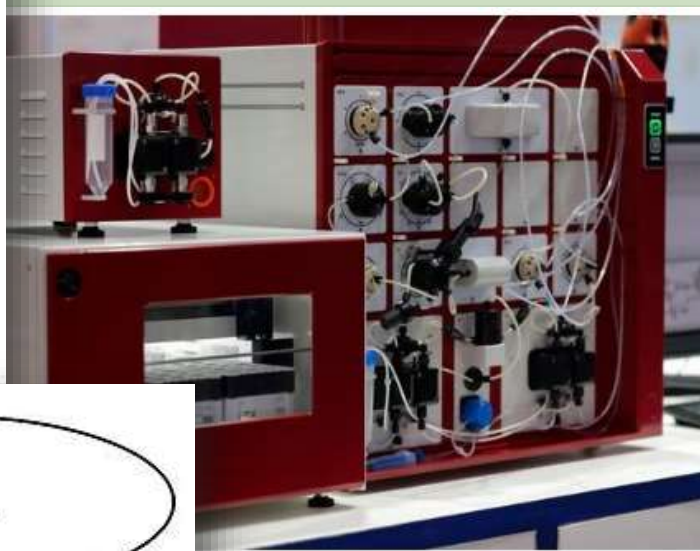
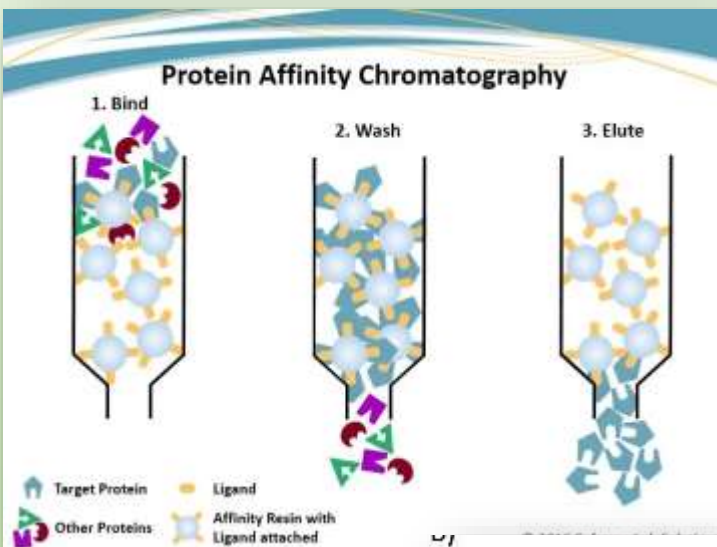
OBIETTIVO DELLO STUDIO:

*Influenza di HSP10 Umana, di Escherichia coli e di
Drosophila melanogaster sul Processo di Fibrillazione di
A β 1–42 e HuPrP90–231*

METODI SPERIMENTALI

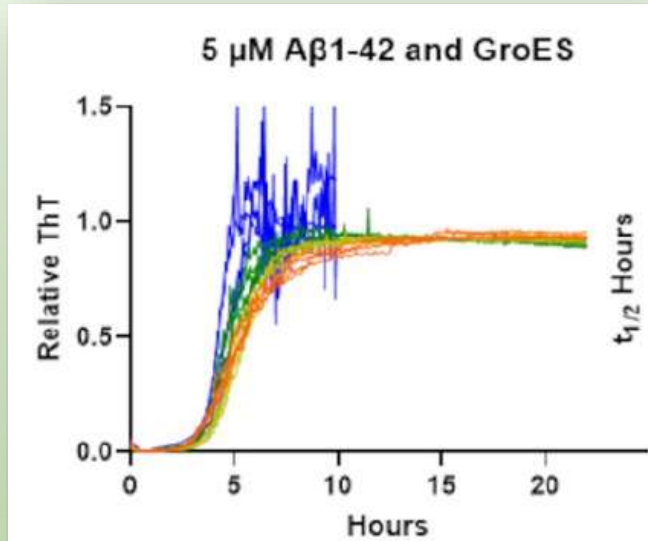
Cromatografia IMAC

Spettrometria di massa MALDI-TOF

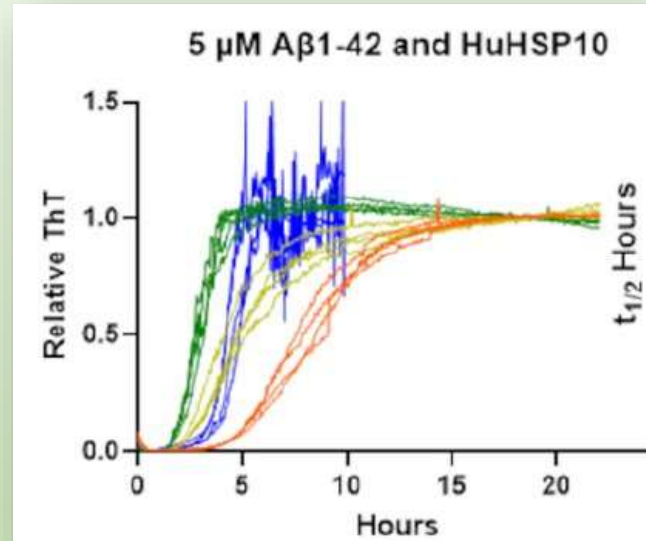


RISULTATI A β 1-42

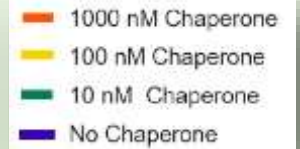
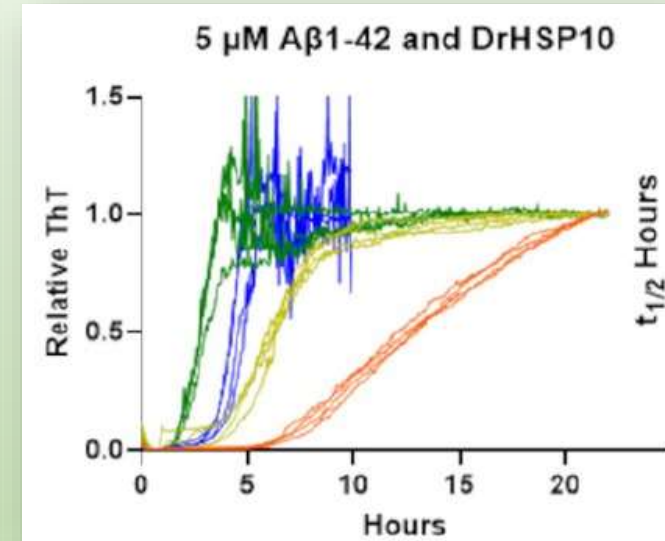
HSP10 E. coli



HSP10 umana



HSP10 D. melanogaster

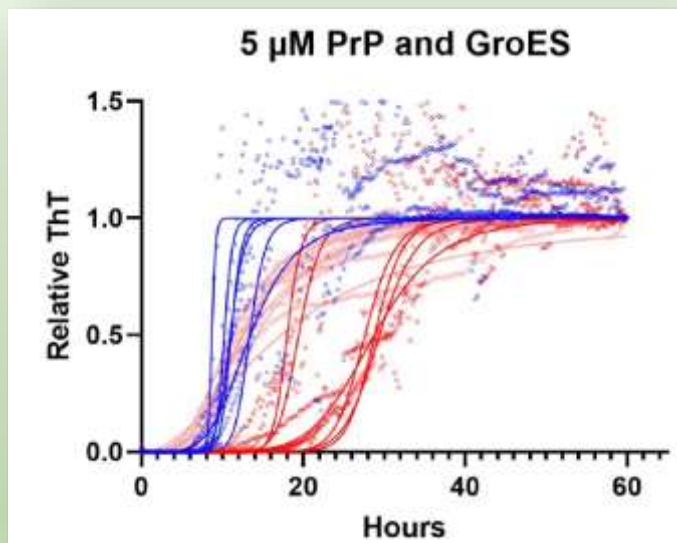


*Nessuna influenza
significativa sulla
nucleazione*

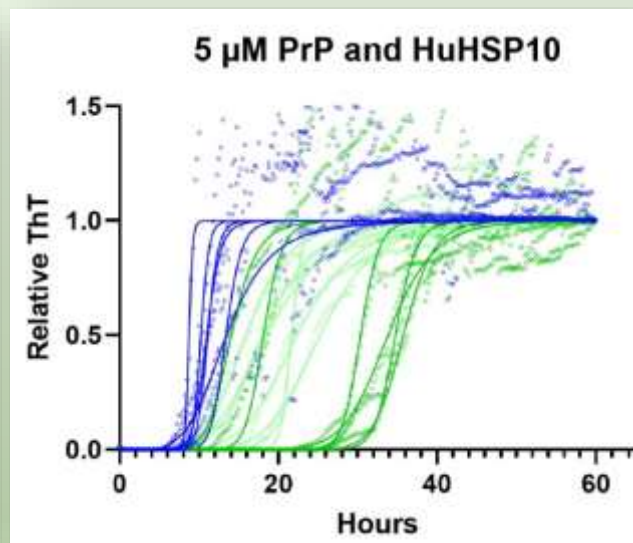
- *Alte concentrazioni =
nucleazione inibita*
- *Basse concentrazioni =
nucleazione favorita*

RISULTATI HuPrP90–231

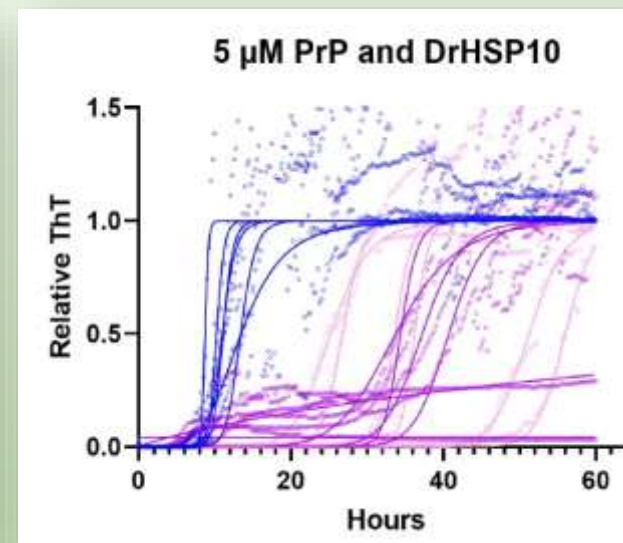
HSP10 E. coli



HSP10 umana



HSP10 D. melanogaster



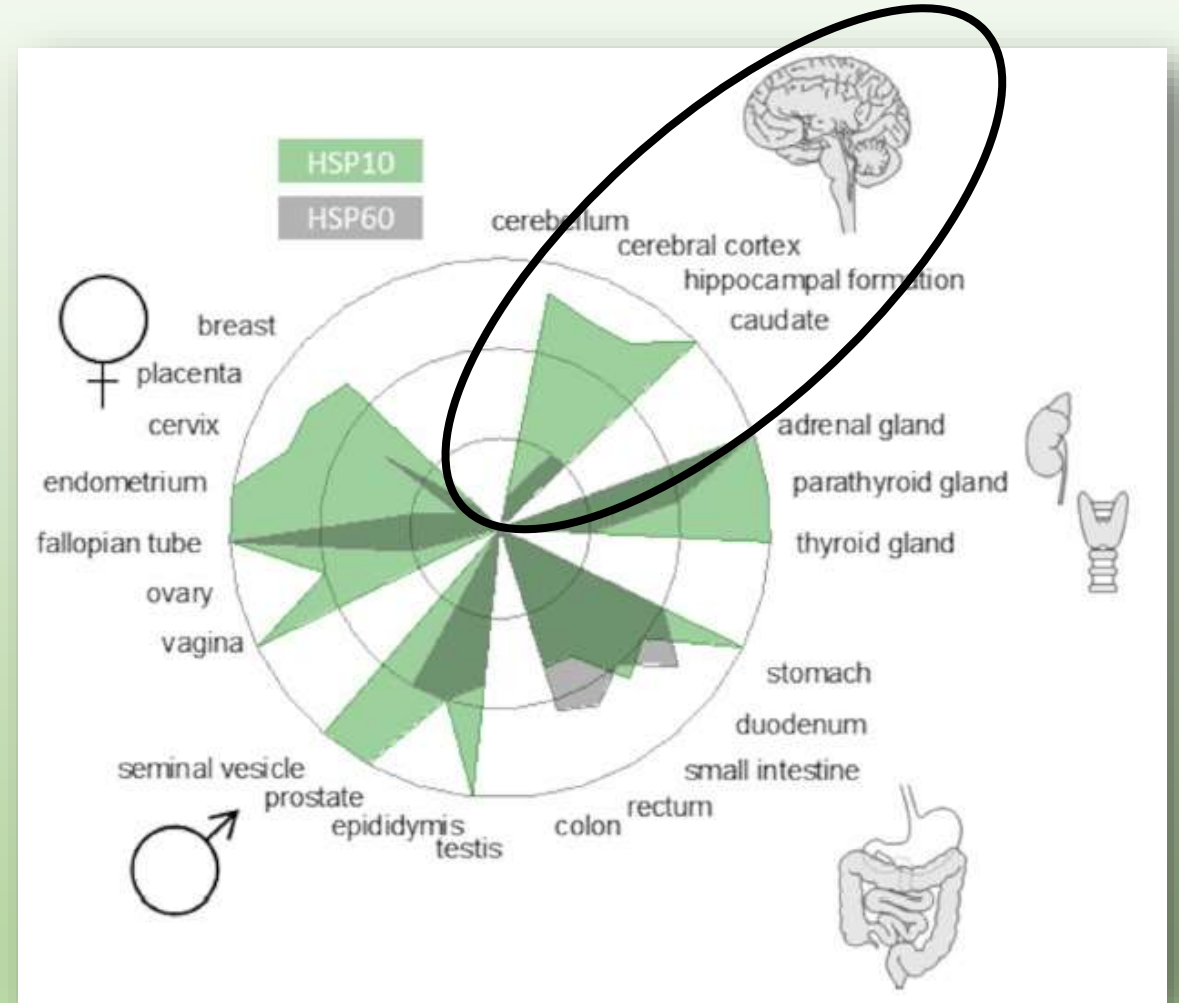
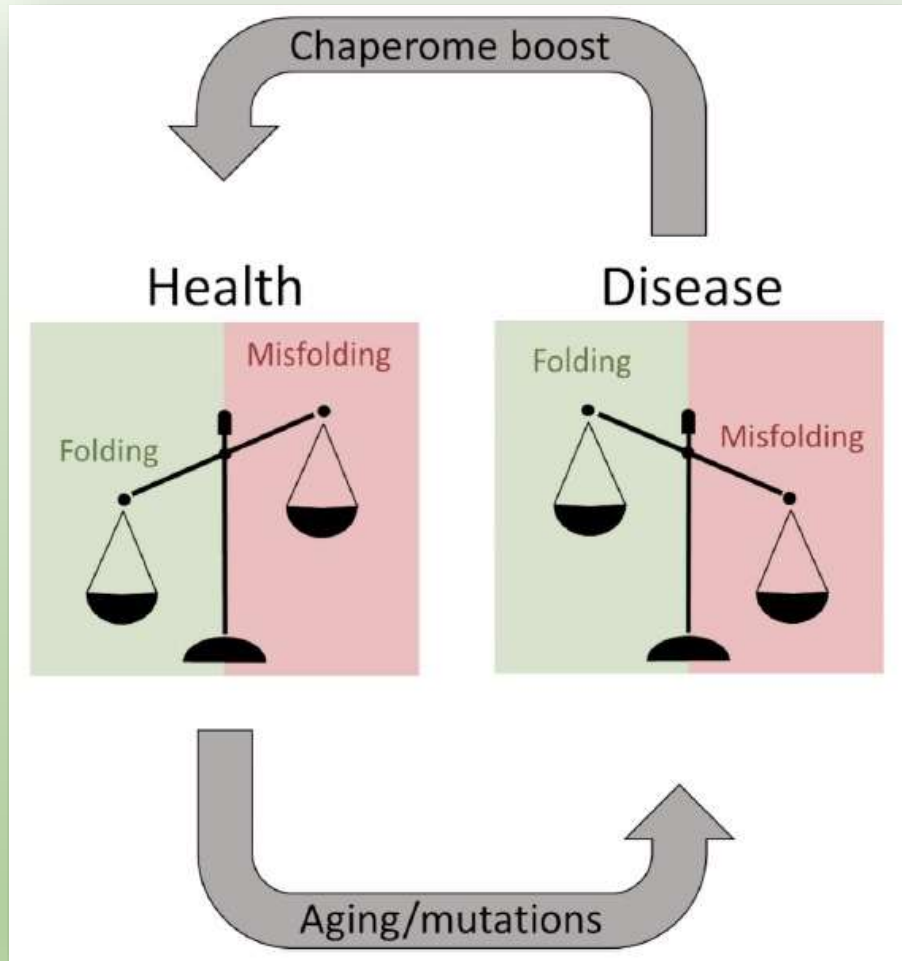
- *Alte concentrazioni* =
nucleazione inibita

- *Basse concentrazioni* =
nucleazione favorita

- *Alte concentrazioni* =
nucleazione inibita

- *Basse concentrazioni* =
nessuna influenza

DISCUSSIONE



*Questo studio ha dimostrato il ruolo fortemente **inibitorio** di **HSP10** nel processo di **nucleazione primaria** delle proteine $A\beta_{1-42}$ e HuPrP90-231*

CONCLUSIONE

HSP10

Alte Concentrazioni

Basse Concentrazioni

Effetti Benefici

Potenziali Effetti Nocivi

- *Mantiene l'omeostasi proteica (proteostasi).*
- *Riduce il rischio di aggregazione amiloide.*
- *Potenziale protezione contro le malattie neurodegenerative*

- *Rischio di aggregazione di proteine tossiche (es., A β 1-42).*
- *Possibile contribuzione al danno neuronale*

POTENZIALE TERAPEUTICO

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