



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

29.09.2025 – Plesso Navile –
Bologna

Giornata di presentazione
dei programmi di Tesi di
Laurea

LABORATORIO DI PROGETTAZIONE E SINTESI DI SMALL MOLECULES

GRUPPO DI RICERCA:

**Prof. ssa Alessandra Locatelli
Prof. ssa Rita Morigi
Dott. Daniele Esposito**

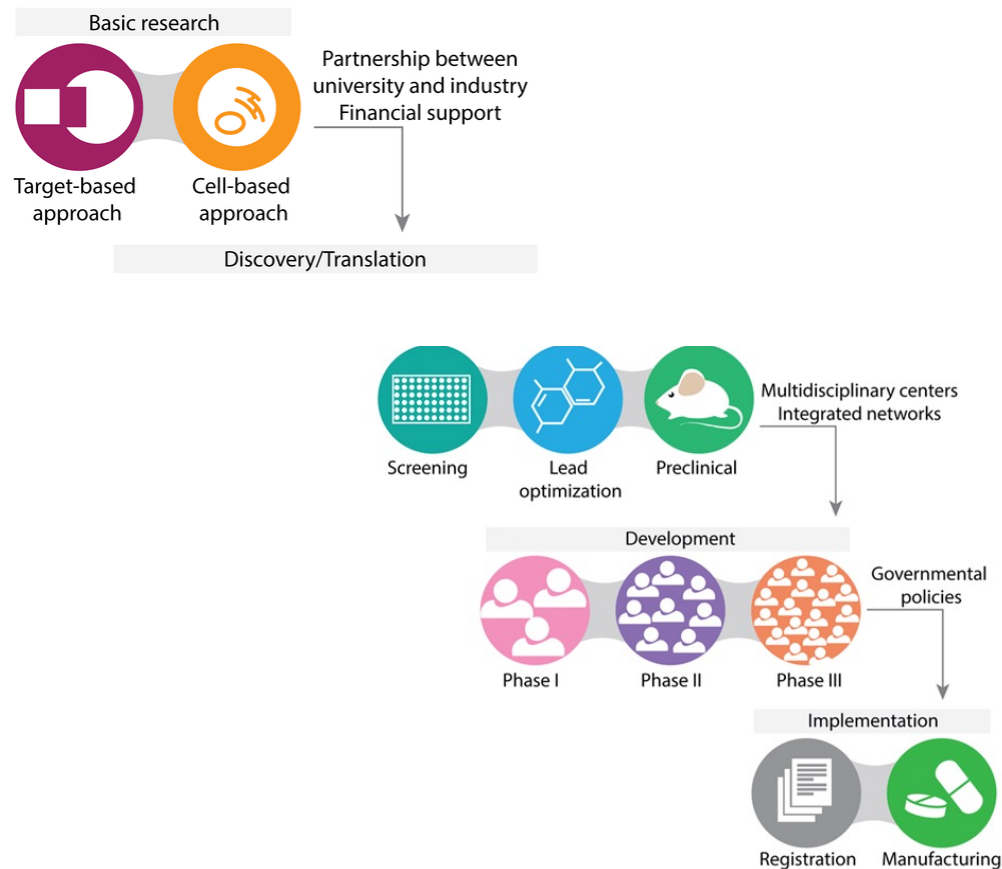


SINTESI DI SMALL MOLECULES



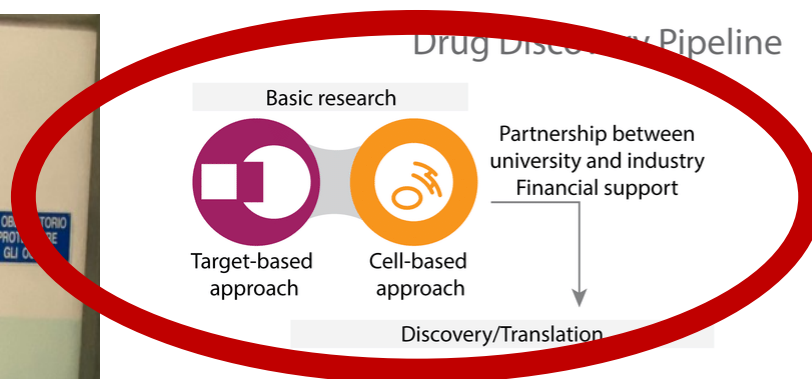
FABIT – Via Belmeloro 6, Bologna

Drug Discovery Pipeline

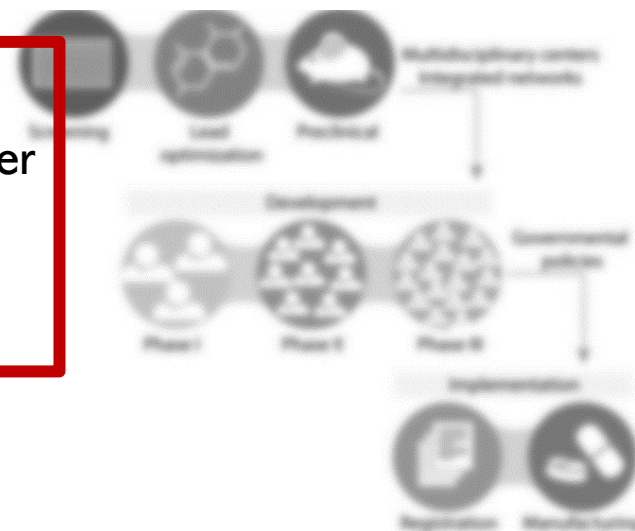




SINTESI DI SMALL MOLECULES



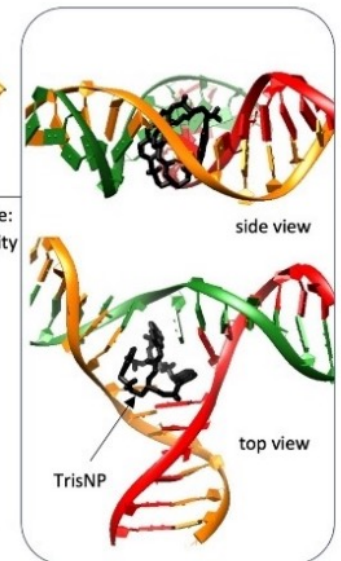
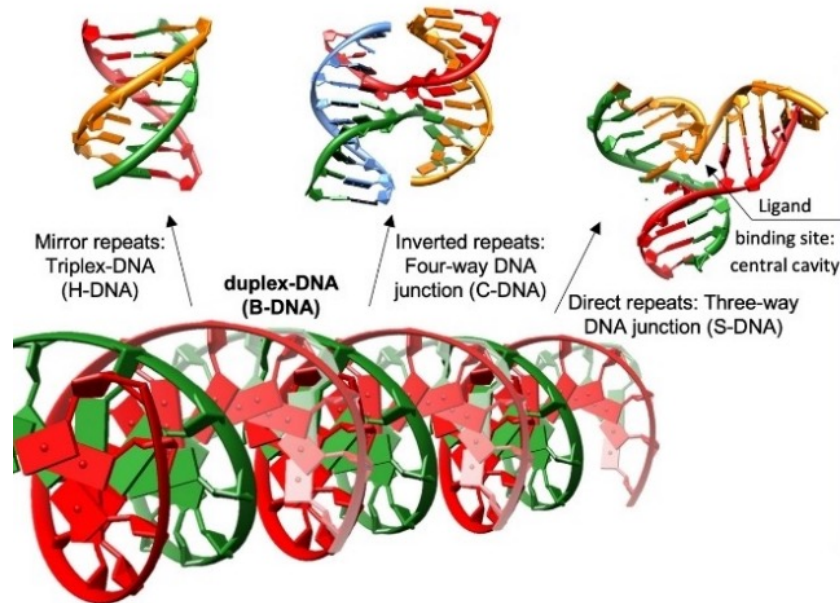
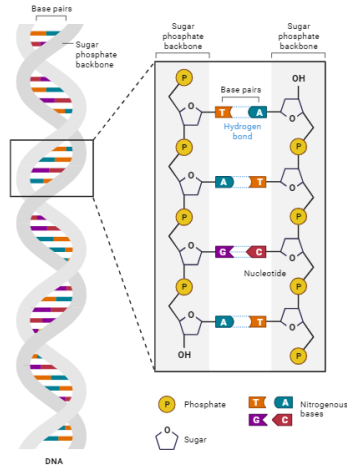
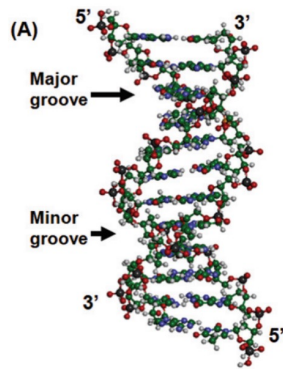
Voi siete qui!
Il primissimo step per
la scoperta di un
nuovo potenziale
farmaco



A POTENZIALE
ATTIVITA' ANTITUMORALE



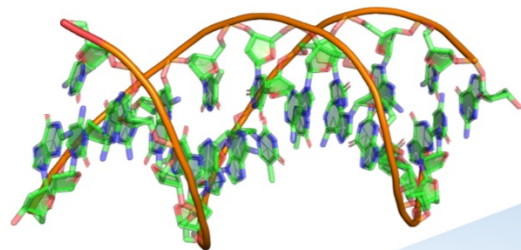
LIGANDI DI *STRUTTURE DNA*
G-QUADRUPLLEX



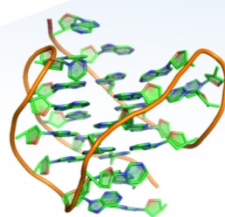
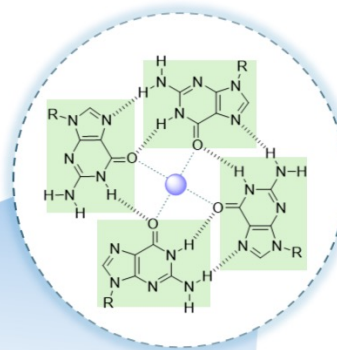
A POTENZIALE
ATTIVITA' ANTITUMORALE



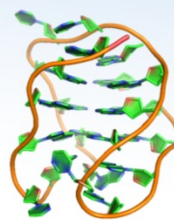
LIGANDI DI *STRUTTURE DNA*
G-QUADRUPLX



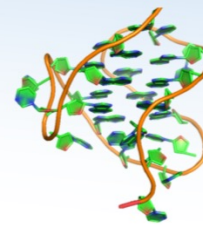
Supercoiling events
Metal coordination
Hoogsteen H-bonds



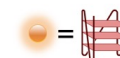
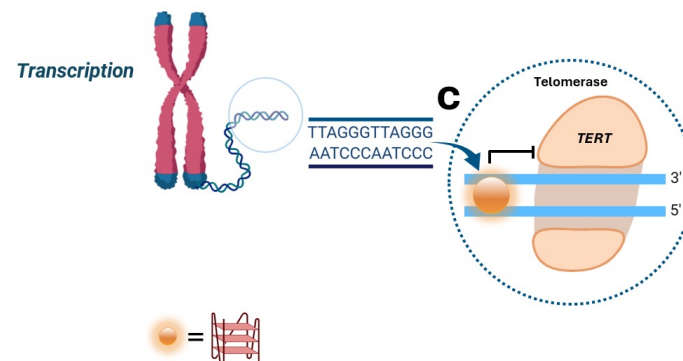
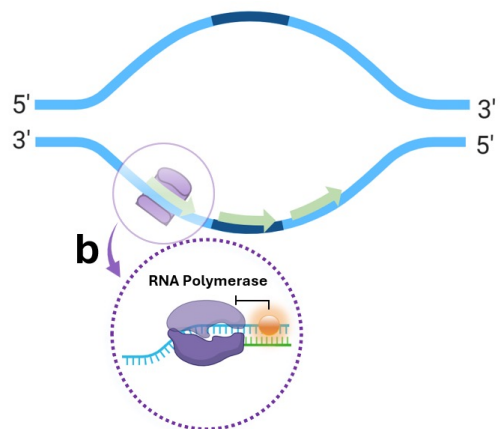
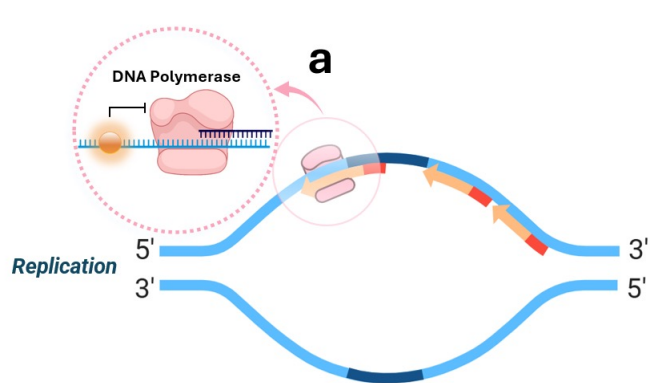
Parallel G4



Antiparallel G4



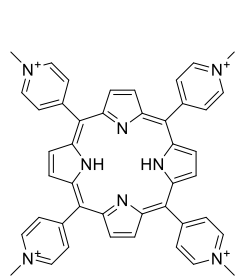
Hybrid G4



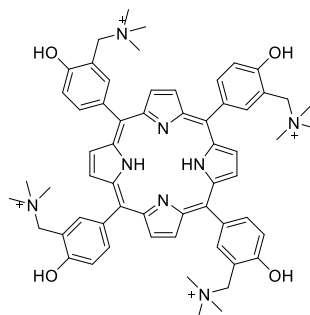
A POTENZIALE
ATTIVITA' ANTITUMORALE



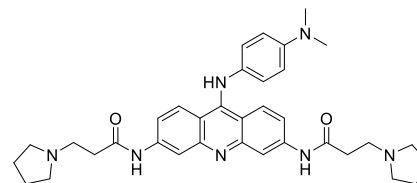
LIGANDI DI *STRUTTURE DNA*
G-QUADRUPLIX



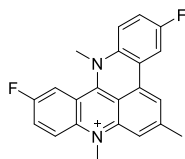
TMPyP4



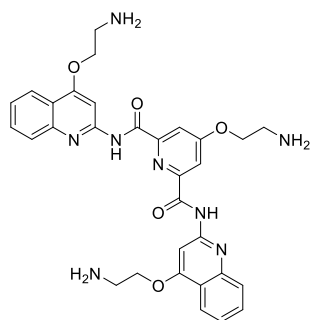
TQMP



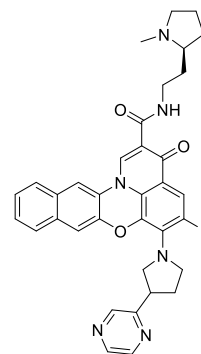
Braco-19



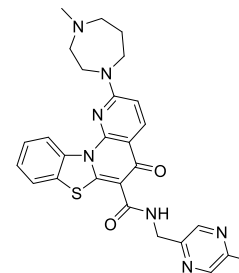
RHPS4



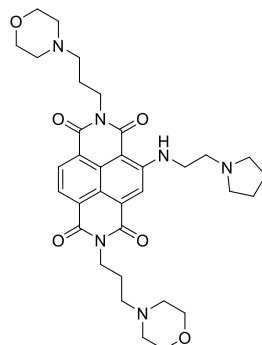
Pyridostatin



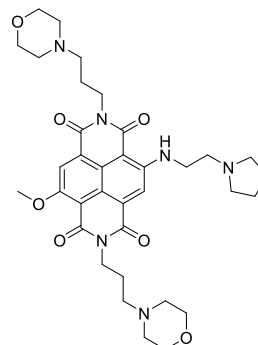
**CX-3543
(Quarfloxin)**



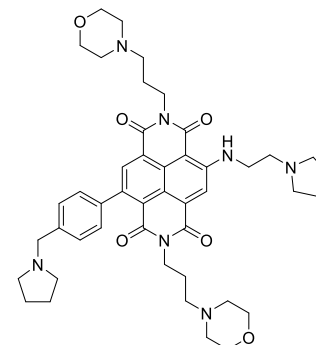
**CX-5461
(Pidnarulex)**



CM03



SOP1247

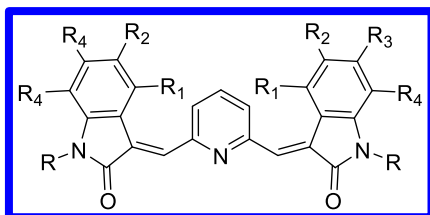
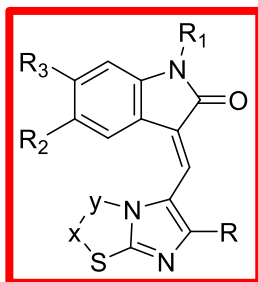
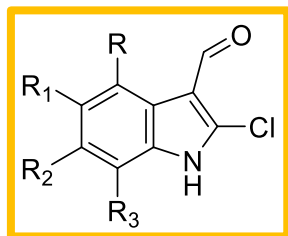
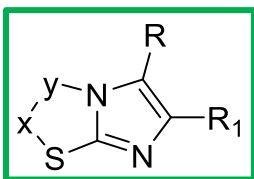


QN302

A POTENZIALE
ATTIVITA' ANTITUMORALE

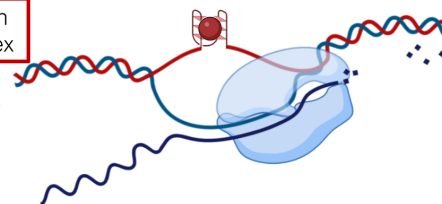


LIGANDI DI *STRUTTURE DNA*
G-QUADRUPLIX



Il vostro contributo alla ricerca di
nuove molecole in grado di
interagire con il DNA

● Binding on
G-quadruplex

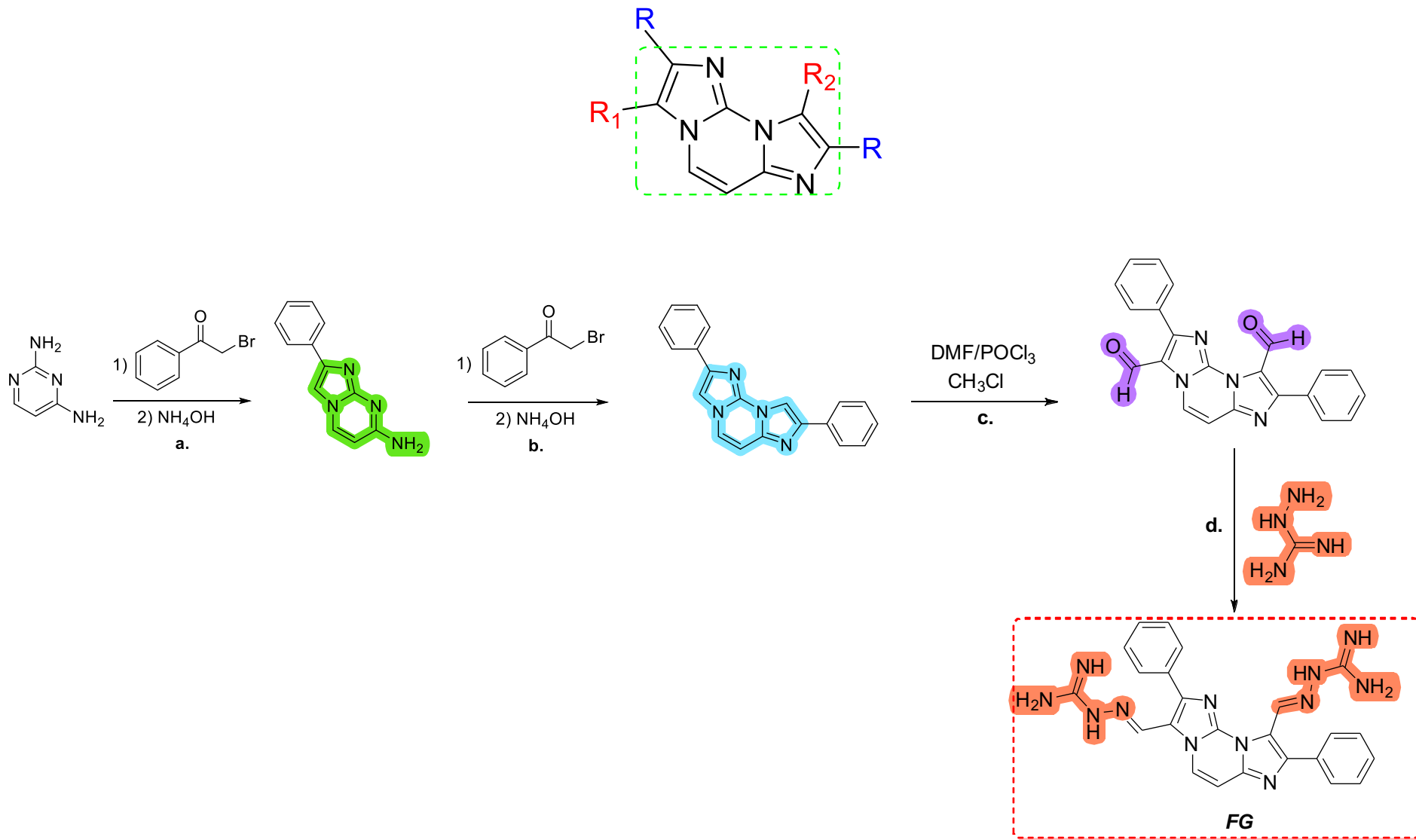


Genome instability

Micronuclei formation

IFN- β production

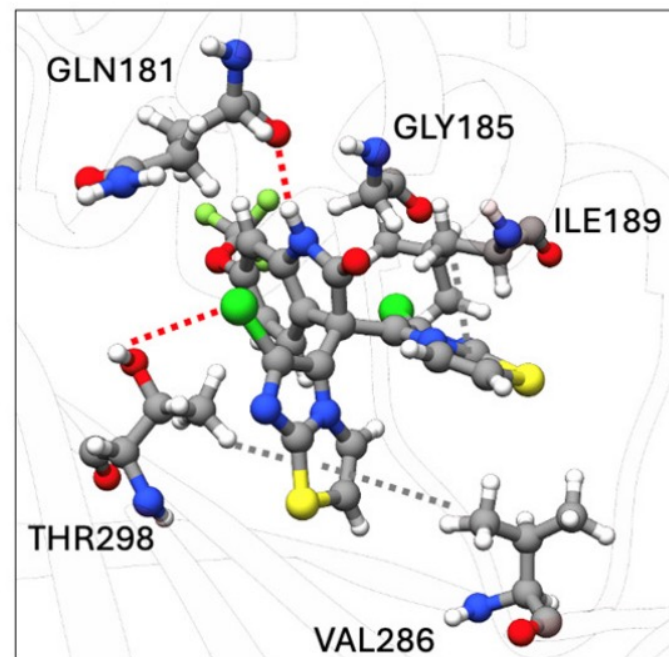
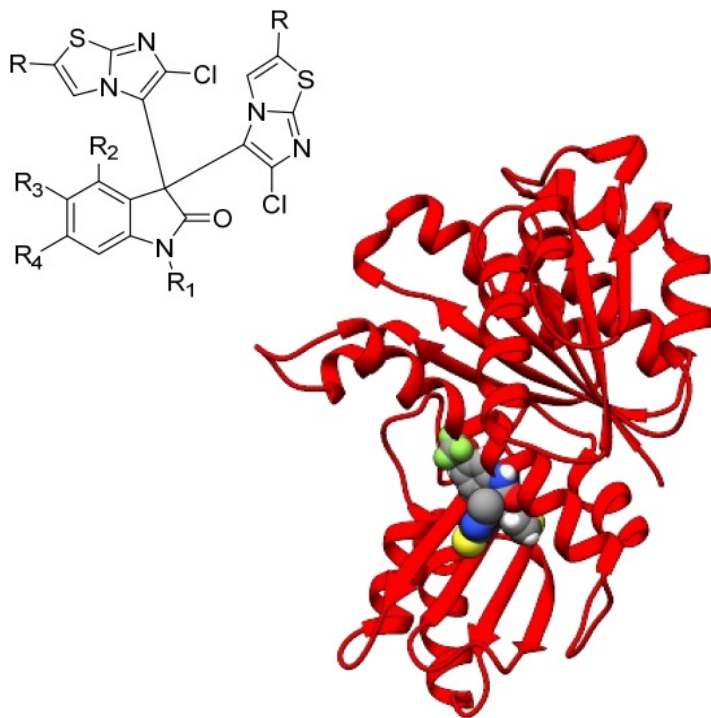
PROGETTAZIONE E SINTESI NUOVE LIBRERIE DI COMPOSTI



A POTENZIALE
ATTIVITA' ANTIBATTERICA

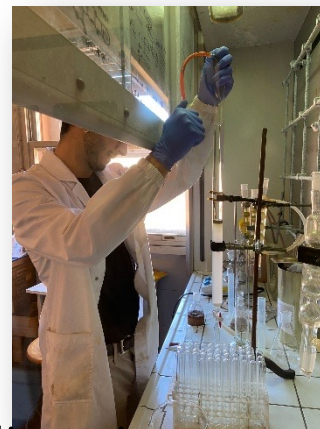


INIBITORI DI FtsZ





5. Work-up e Purificazione del prodotto

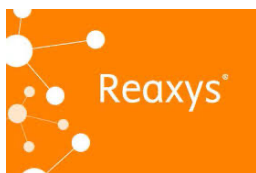


2. Impostazione della reazione

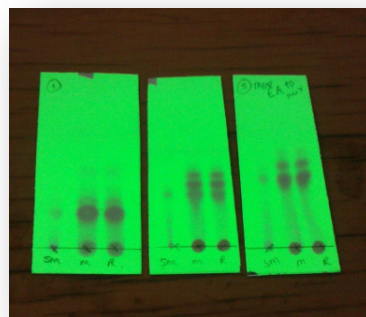
Il vostro percorso di tesi

1. Ricerca bibliografica
Con quale reazione comincio?

3. Monitoraggio della reazione 6. Caratterizzazione



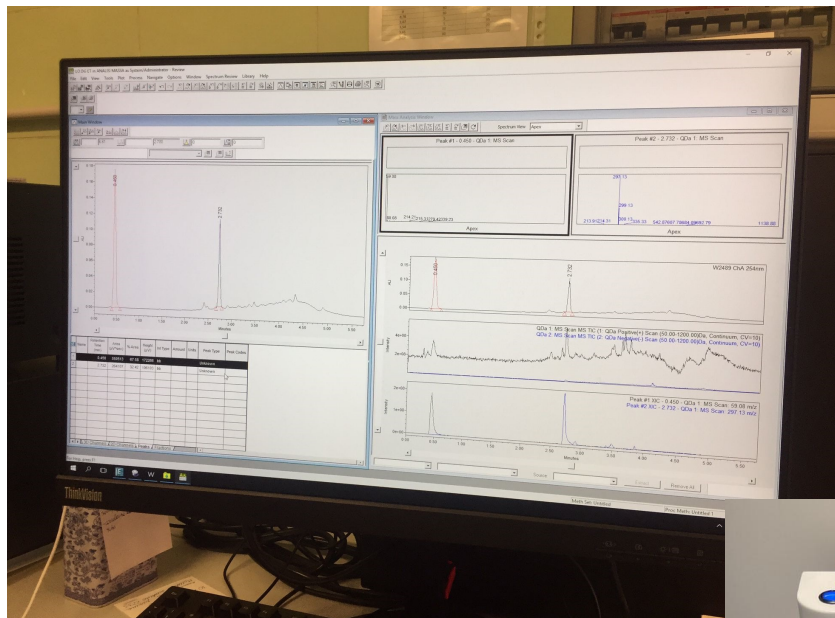
ELSEVIER
Scopus



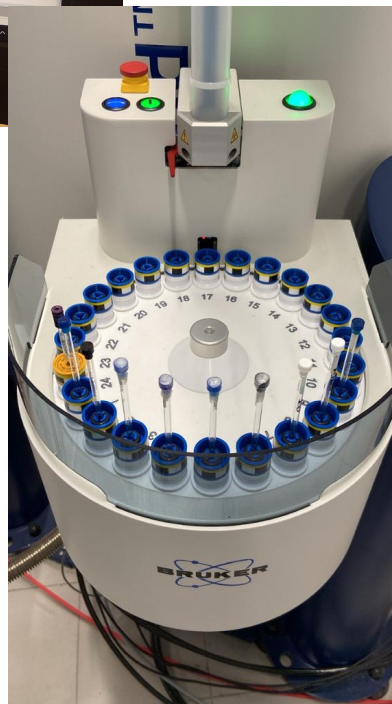
7. Supporto emotivo



UHPLC-MS



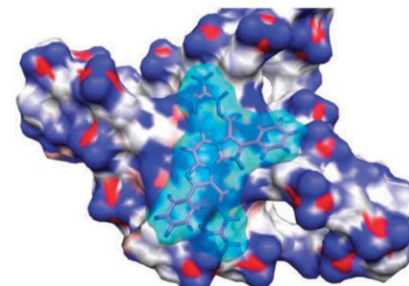
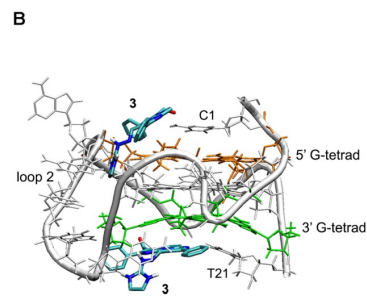
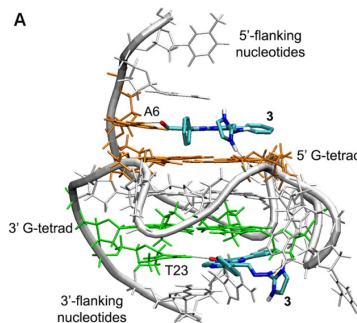
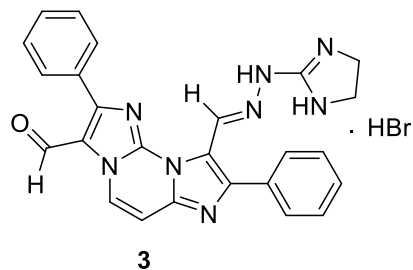
Bruker 600 MHz



Varian 400 MHz

In collaborazione con altri gruppi di ricerca:

STUDI DI MOLECULAR DOCKING



In collaborazione con altri gruppi di ricerca:

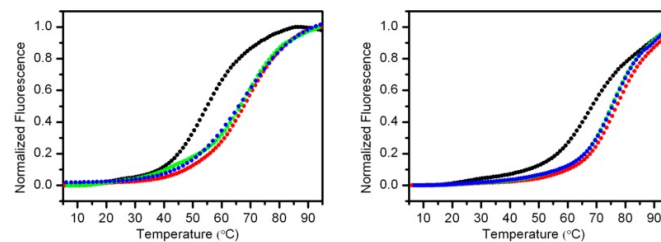
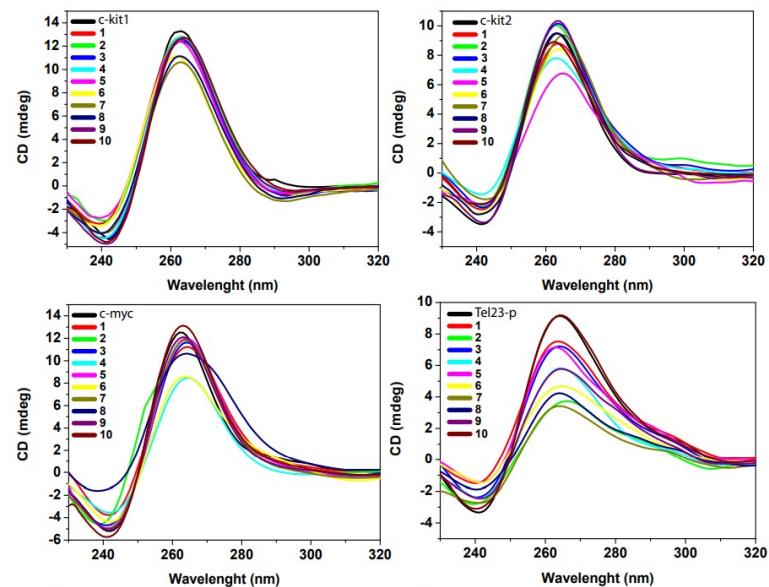
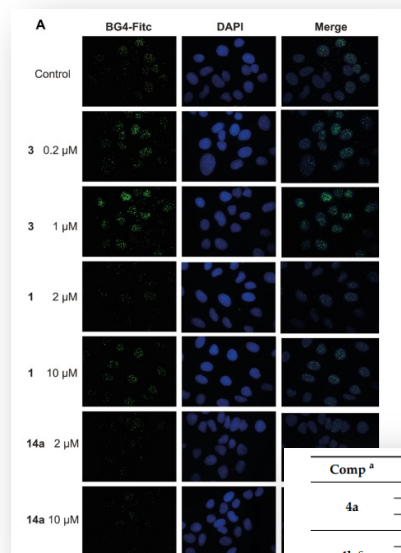


Figure 4. FRET-melting curves for *F-Tel23-T-p* (left panel) and *F-c-kit2-T* (right panel). Experiments were carried out by using 0.2 μM G4-forming oligonucleotides in the absence (black circles) and presence of 15 (2 μM, red circles). Experiments in the presence of 15 were also performed by adding a large excess of *ds12* duplex (5 and 10 μM, green and blue circles, respectively).

SAGGI BIOFISICI



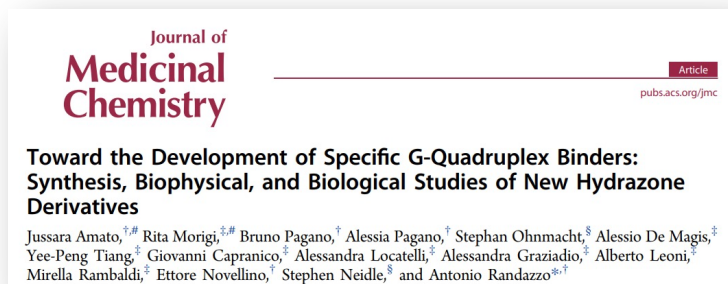
In collaborazione con altri gruppi di ricerca:



Comp ^a	Modes	Leukemia	NSCLC	Colon	CNS	Melanoma	Ovarian	Renal	Prostate	Breast	MG-MID ^b
4a	GI ₅₀	3.98	6.76	4.68	4.37	4.90	6.76	4.90	5.01	5.62	5.13
	TGI	21.38	20.89	16.60	17.38	16.60	20.42	18.62	16.60	18.20	18.62
	LC ₅₀	79.43	51.29	43.65	45.71	45.71	53.70	47.86	43.65	50.12	51.29
4b ^c	GI ₅₀	2.69	3.98	4.27	2.19	2.40	2.75	2.40	3.09	2.45	2.88
	TGI	11.48	13.80	13.80	7.94	7.08	11.48	11.48	13.18	7.76	10.47
	LC ₅₀	75.86	41.69	38.90	63.10	20.42	44.67	33.11	43.65	30.20	36.31
4c	GI ₅₀	1.86	2.57	2.45	1.29	1.66	1.82	2.24	1.95	1.82	1.95
	TGI	7.59	7.59	6.76	3.31	3.89	5.13	7.59	4.79	4.79	5.62
	LC ₅₀	51.29	20.89	21.88	8.32	9.33	20.89	22.39	15.49	17.38	18.20
4d	GI ₅₀	2.04	2.51	2.57	1.78	1.82	2.40	3.24	3.31	2.40	2.63
	TGI	12.59	8.13	8.71	8.32	4.27	8.91	10.23	13.18	12.02	8.51
	LC ₅₀	93.33	28.84	28.18	38.90	12.02	30.90	32.36	45.71	46.77	30.90
4f ^c	GI ₅₀	1.48	3.55	2.95	2.88	2.45	4.27	4.37	2.14	3.31	3.09
	TGI	8.91	10.72	8.13	9.77	6.92	15.49	12.88	9.12	15.14	10.47
	LC ₅₀	100.00	33.88	22.91	33.88	23.44	46.77	31.62	37.15	51.29	37.15
4g	GI ₅₀	3.31	7.94	11.22	6.76	7.41	7.94	12.30	6.76	5.75	7.76
	TGI	20.42	30.90	45.71	38.90	27.54	50.12	51.29	70.79	50.12	38.90
	LC ₅₀	97.72	79.43	79.43	83.18	79.43	85.11	100.00	95.50	83.18	
5b ^c	GI ₅₀	0.51	1.62	0.63	1.10	0.72	1.35	0.98	1.10	0.74	0.91
	TGI	3.16	8.32	1.95	4.57	2.29	6.61	3.63	5.25	5.89	4.07
	LC ₅₀	61.66	43.65	7.59	19.50	8.91	31.62	16.22	25.70	23.99	21.38
5c	GI ₅₀	0.56	2.04	0.89	1.05	0.89	1.62	1.23	2.04	0.89	1.15
	TGI	5.50	7.59	2.19	3.98	2.19	7.08	3.72	12.88	4.68	4.27
	LC ₅₀	100.00	25.12	5.01	17.38	5.01	19.50	12.88	50.12	12.30	14.79
5d ^c	GI ₅₀	0.55	2.95	1.58	2.19	2.09	2.95	2.75	2.51	2.00	2.04
	TGI	6.61	29.51	5.01	12.88	6.76	13.18	22.91	45.71	12.02	12.88
	LC ₅₀	100.00	77.62	20.89	56.23	25.70	75.86	89.13	100.00	66.07	57.54
5e	GI ₅₀	2.95	3.98	2.63	2.19	2.14	4.79	6.17	2.69	2.57	3.24
	TGI	33.11	16.98	10.00	6.46	4.79	15.49	30.20	9.77	7.24	12.30
	LC ₅₀	100.00	47.86	44.67	28.18	15.85	54.95	69.18	56.23	41.69	45.71
5f	GI ₅₀	0.87	2.69	1.29	1.66	1.74	2.45	2.40	1.62	1.74	1.82
	TGI	11.22	7.08	2.88	3.72	3.55	7.24	4.90	3.39	5.13	5.01
	LC ₅₀	100.00	21.88	8.13	8.71	7.94	23.99	10.47	7.08	21.88	15.14
8h ^c	GI ₅₀	5.49	5.54	5.54	5.59	5.39	5.30	5.55	5.30	5.47	5.48
	TGI	4.46	4.26	4.44	4.37	4.29	4.12	4.28	4.16	4.21	4.29
	LC ₅₀	0.10	0.25	0.10	0.13	0.16	0.32	0.32	0.13	0.32	0.20
Vincristin- esulfate ^d	TGI	15.85	15.85	3.98	6.31	7.94	19.95	19.95	6.31	7.94	10.00

^a Highest conc. = 100 μM; only modes showing a value < 100 μM are reported. The compound exposure time was 48 h, ^b Mean graph midpoint, i.e., the mean concentration for all cell lines, ^c Mean of two separate experiments, ^d Highest conc. = 10⁻³M.

SAGGI BIOLOGICI



Per guardare i nostri lavori



ALCUNE INFORMAZIONI

Per cominciare il laboratorio di tesi è necessario:
aver superato tutti gli esami dei corsi con laboratorio

Durata della tesi: almeno 6 mesi

Impegno giornaliero dal lunedì al venerdì

Per curiosità e informazioni:

Prof.ssa Alessandra Locatelli: *alessandra.locatelli@unibo.it*

Prof.ssa Rita Morigi: *rita.morigi@unibo.it*

Dottorando Daniele Esposito: *daniele.esposito6@unibo.it*



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milla.mainenti@studio.unibo.it



Sito web del gruppo
per approfondire le
tematiche di ricerca

Grazie per l'attenzione e in bocca al lupo!