



Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai Approved by Pharmacy Council of India, New Delhi.

Coimbatore -641035

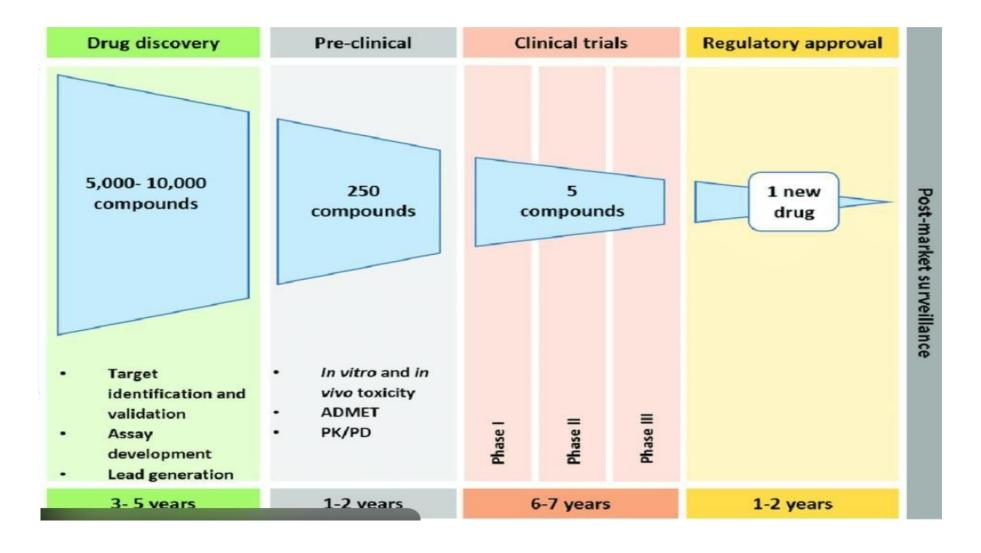
COURSE NAME: COMPUTER AIDED DRUG DESIGN(BP 807 ET)

VIII SEM / IV YEAR

TOPIC 3: RANDOM SCREENING, NON-RANDOM SCREENING, SERENDIPITOUS DRUG DISCOVERY

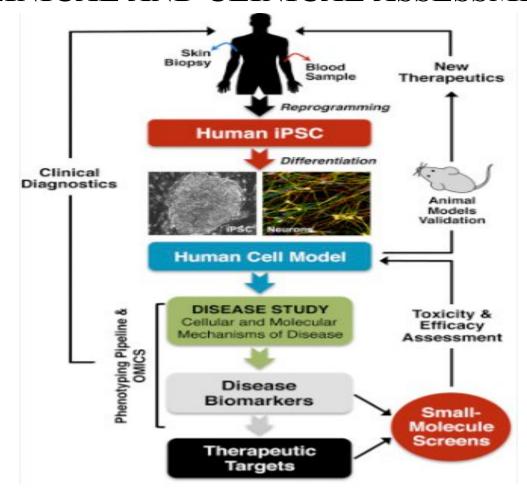
#### SCREENING STAGES OF DRUG DISCOVERY





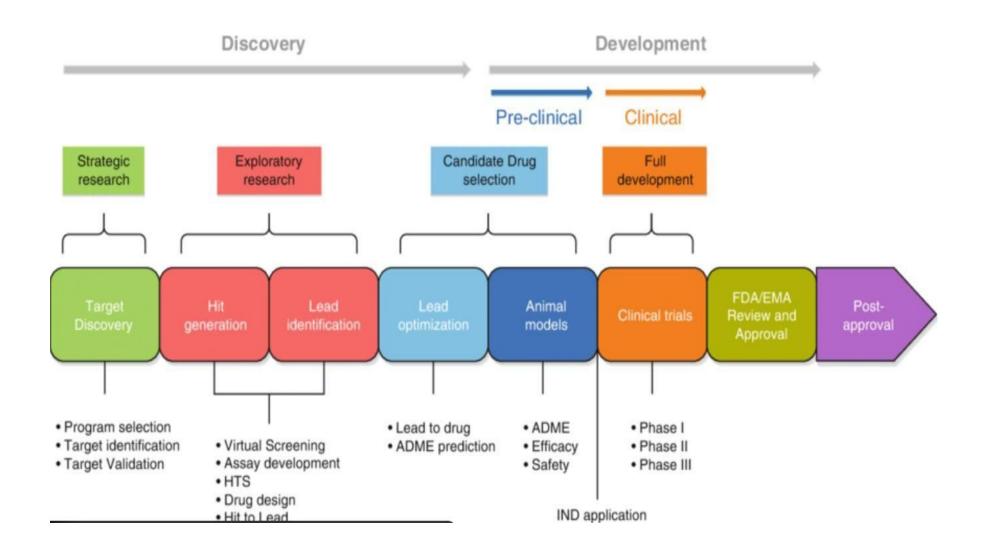
## SCREENING OF THERAPEUTIC TARGETS INTO PRECLINICAL AND CLINICAL ASSESSMENTS





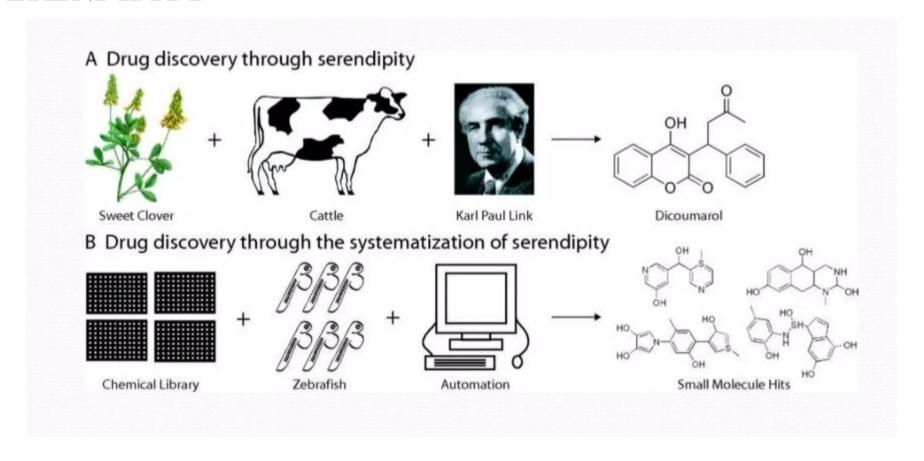
#### STUDY OF DRUG DISCOVERY AND DRUG DEVELOPMENT





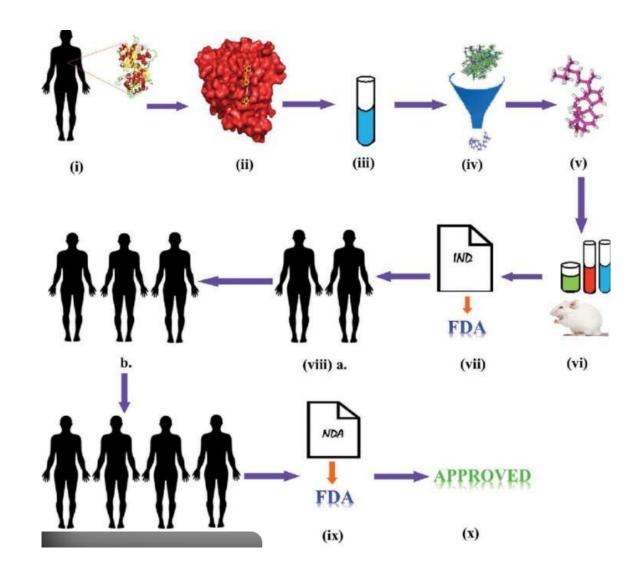
### A SYSTEMIZATION OF DRUG DISCOVERY THROUGH SERENDIPITY





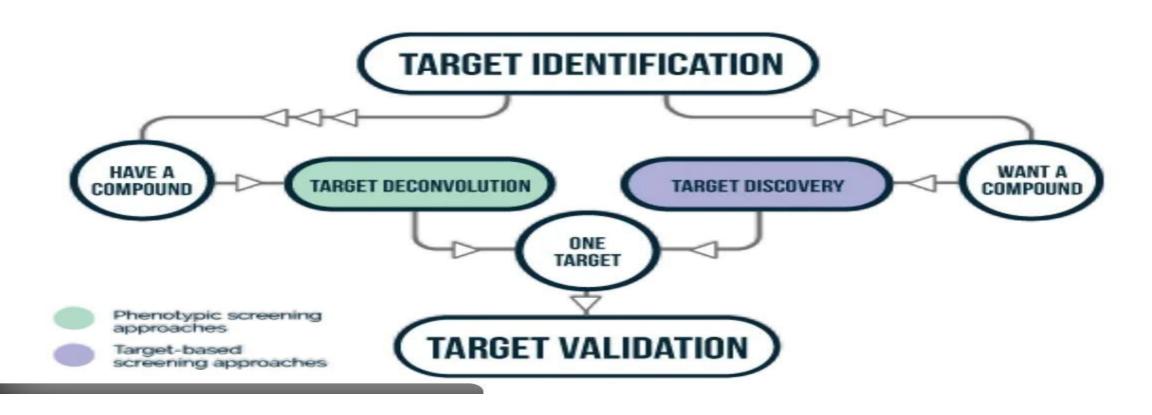
### SCREENING OF DRUGS INTO REGULATORY APPROVAL







### DIFFERENCE BETWEEN TARGET IDENTIFICATION AND TARGET VALIDATION ON DRUG DISCOVERY



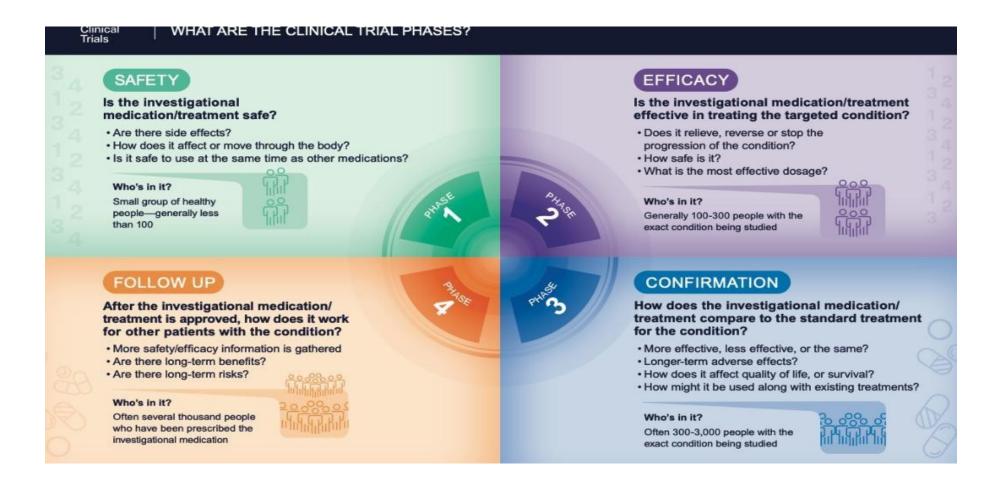
### STUDY OF LEAD DISCOVERY IN RANDOM SCREENING AND NON RANDOM SCREENING





#### METHODS OF CLINICAL TRAILS



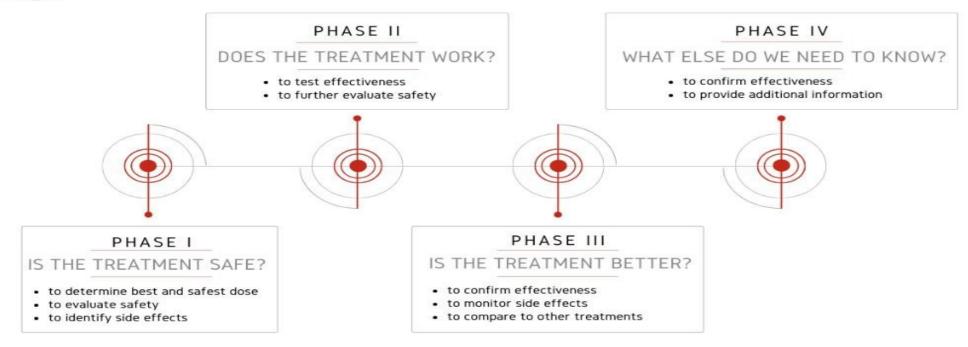




#### PHASES OF CLINICAL TRAILS IN DRUG DISCOVERY

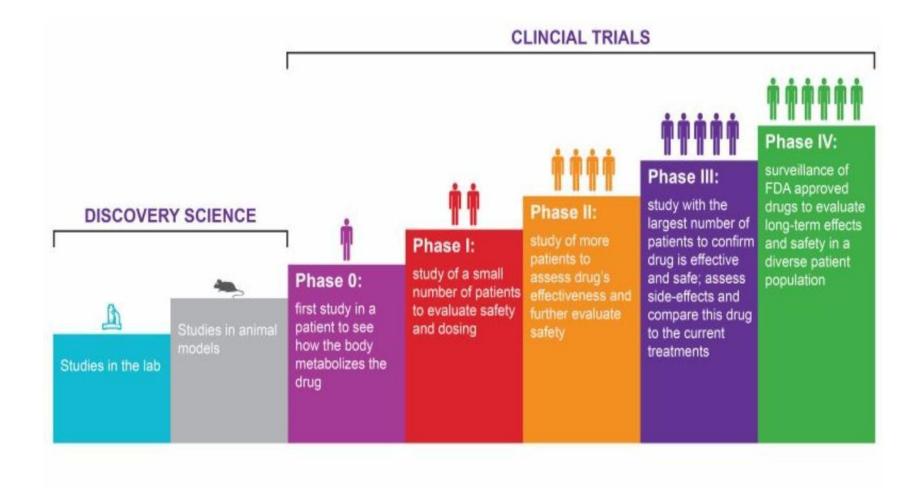
#### THE 4 PHASES IN CLINICAL TRIALS





### STUDY OF DIFFERENCE ON BETWEEN DISCOVERY SCIENCE & CLINICAL TRAILS IN DRUG SCREENING PROCESS





## STAGES OF PHASES ARE INVOLVED IN DRUG DEVELOPMENT



### Phases of drug development

Laboratory		Early clinical			Late clinical Market			
Discovery	Preclinico	Phase 0	1a	1b	2a	2b	3	4
		\$\frac{1}{2}\$	6		FOFFO	12 <sup>(P</sup>		
Target finding & drug design	The second second	Preliminary trial PD, ADME, pound selection		MAD Food effect	Safety & Dose	assessment	Efficacy & Side effects, comparison to existing treatment	Post-market surveillance
Laboratory	Animal	Patients 10-15	Healthy v (sometimes 20-1	s patients)		Patients 50-300	Patients 300-3.000	
		14-18 months	1-2 y	ears	1	2 years	1-4 years	
PK PharmacoKinetics PD PharmacoDynamics ADME Absorption, Distribution, Metabolism and Excretion MTD Maximum Tolerated Dose			TR	CFR			phases in drug development. St ween studies. No rights can be	

# **OBJECTIVES AND TIMELINES OF CLINICAL TRAIL PHASES** (HUMANS)



#### Clinical trial phases with objective and timeline



### DRUG COMPOUNDS ARE INVOLVED IN CLINICAL TRAIL PHASES



#### Clinical trial phases funnel with drug compounds

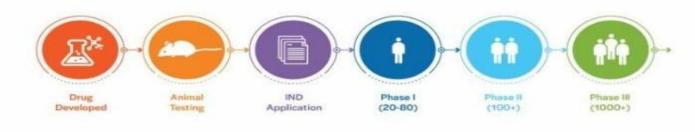
This slide covers the different phases of research trial for the testing of new medicine for human consumption. It also provides information about the number of drug dose variations tested in each step to find the optimum chemical composition of the drug. Stage 1 Drug Discovery 10,000 · Add text here Compounds Stage 2 · Pre-Clinical Development · Add text here 250 Phases Compounds · Effect on body Stage 3 Safety in humans · Clinical Development \* Effectiveness at treating diseases Add text here Larger scale safety and effectiveness Compounds Regulatory Approval 1 Compound



### DRUG SCREENING DEVELOPMENT AND APPROVAL PROCESS

#### FDA DRUG APPROVAL PROCESS

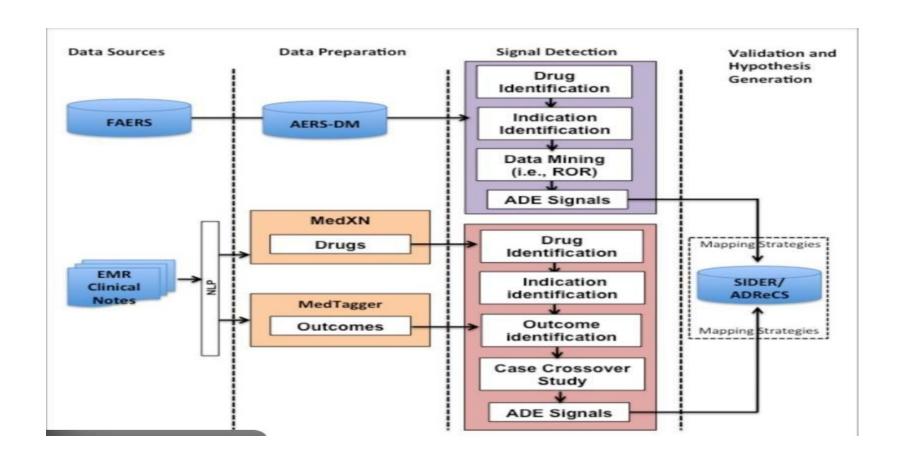
#### Overview of the FDA Drug Approval Process





#### **DRUG DEVELOPMENT SOURCES**

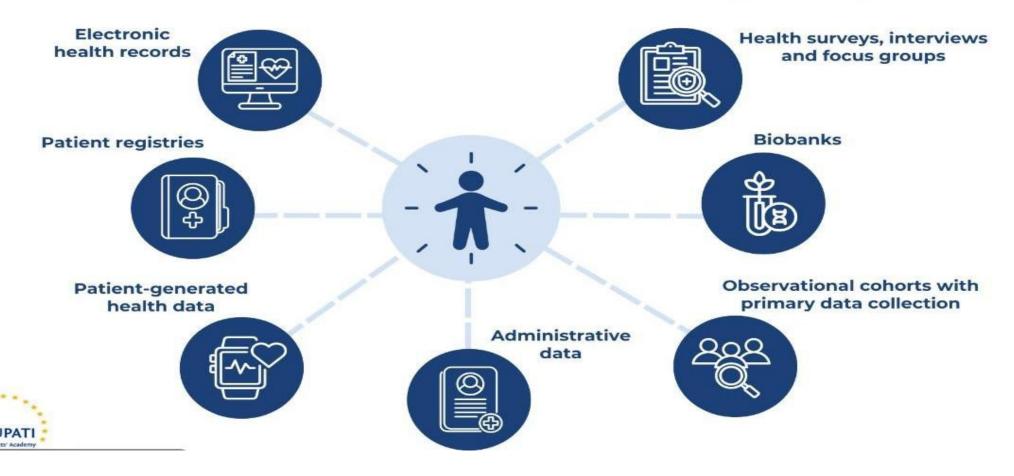




### SOURCES OF REAL WORLD DATA IN DRUG SCREENING PROCESS



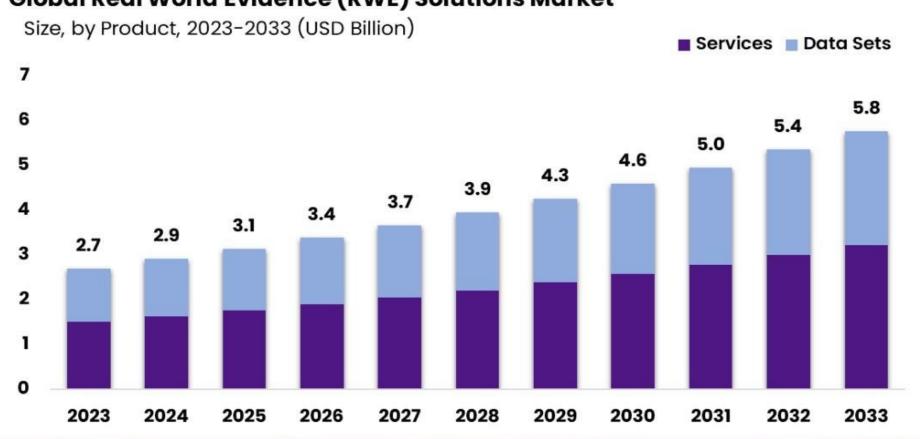
### Sources of Real World Data (RWD)



## GLOBAL MARKET DEVELOPMENT IN DRUG SCREENING PROCESS

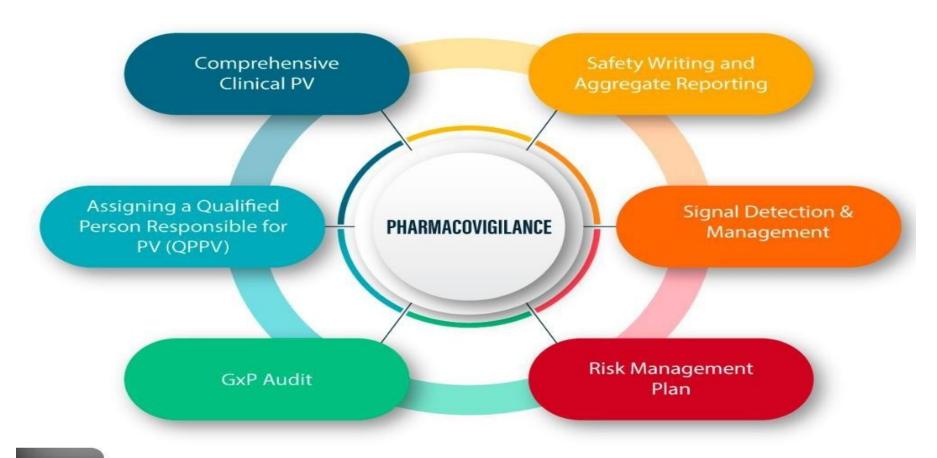


#### Global Real World Evidence (RWE) Solutions Market



### STUDY OF PHARMACOVIGILANCE IN DRUG DISCOVERY AND DRUG SCREENING PROCESS







#### **ASSESMENTS**

Question 1: Discuss how advances in high-throughput screening (HTS) and target-based screening have affected

the role of random screening and serendipity in modern drug discovery.



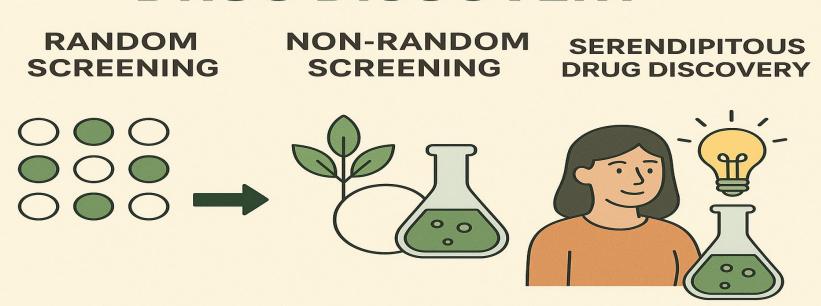


**Question 2:** While technology and rational design dominate drug-discovery these days, serendipity remains important. Critically evaluate this statement, using examples and considering strengths and limitations of serendipity.



#### **SUMMARY**

### **DRUG DISCOVERY**





#### REFERENCES

