SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES

Affiliated To The Tamil Nadu Dr. MGR Medical University, Chennai
Approved by Pharmacy Council of India, New Delhi.
Coimbatore -641035

COURSE NAME : NOVEL DRUG DELIVERY SYSTEM (BP 706 T)

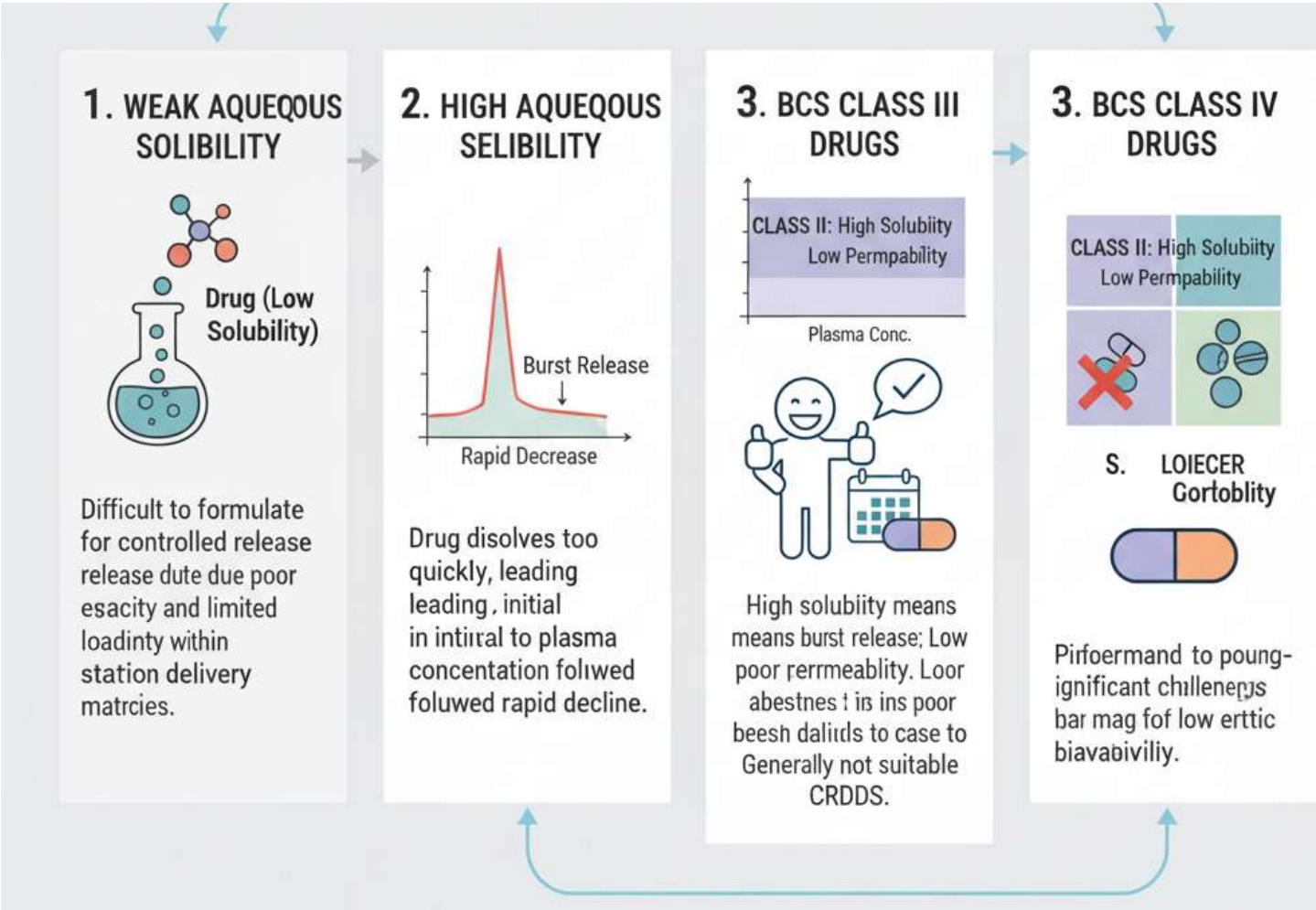
VII SEM / IV YEAR

TOPIC 1 :CONTROLLED RELEASE DRUG DELIVERY SYSTEM

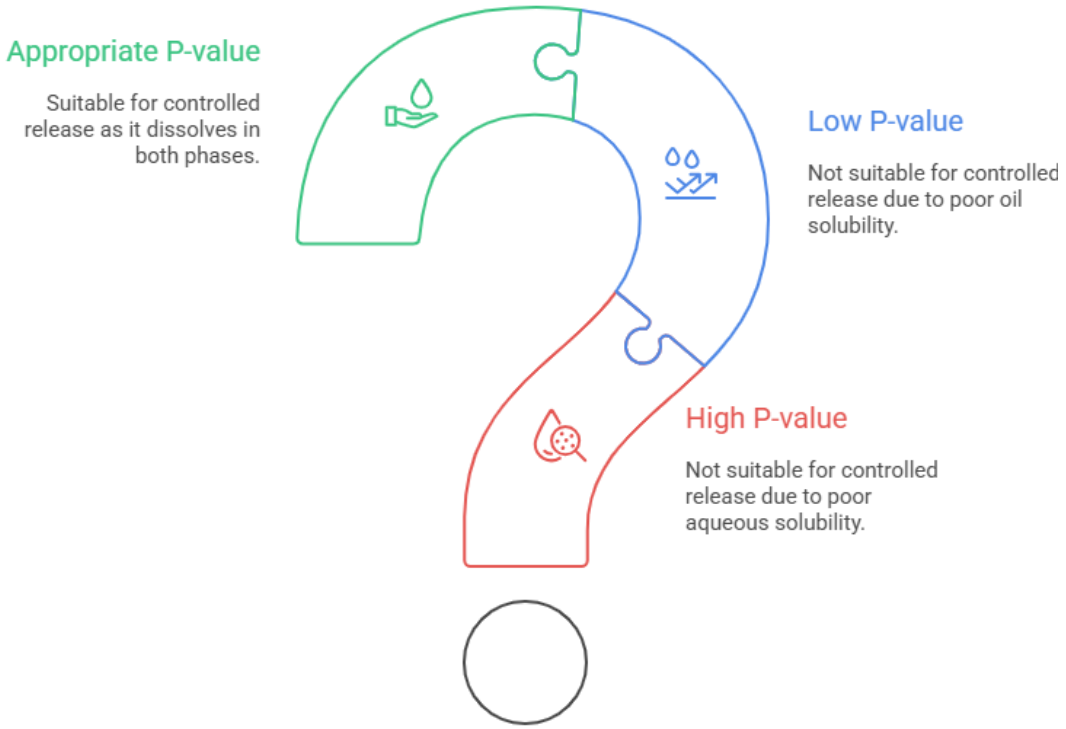
SUBTOPIC: PHYSIOLOGICAL AND BIOLOGICAL PROPERTIES OF DRUGS

PHYSIOLOGICAL PROPERTIES

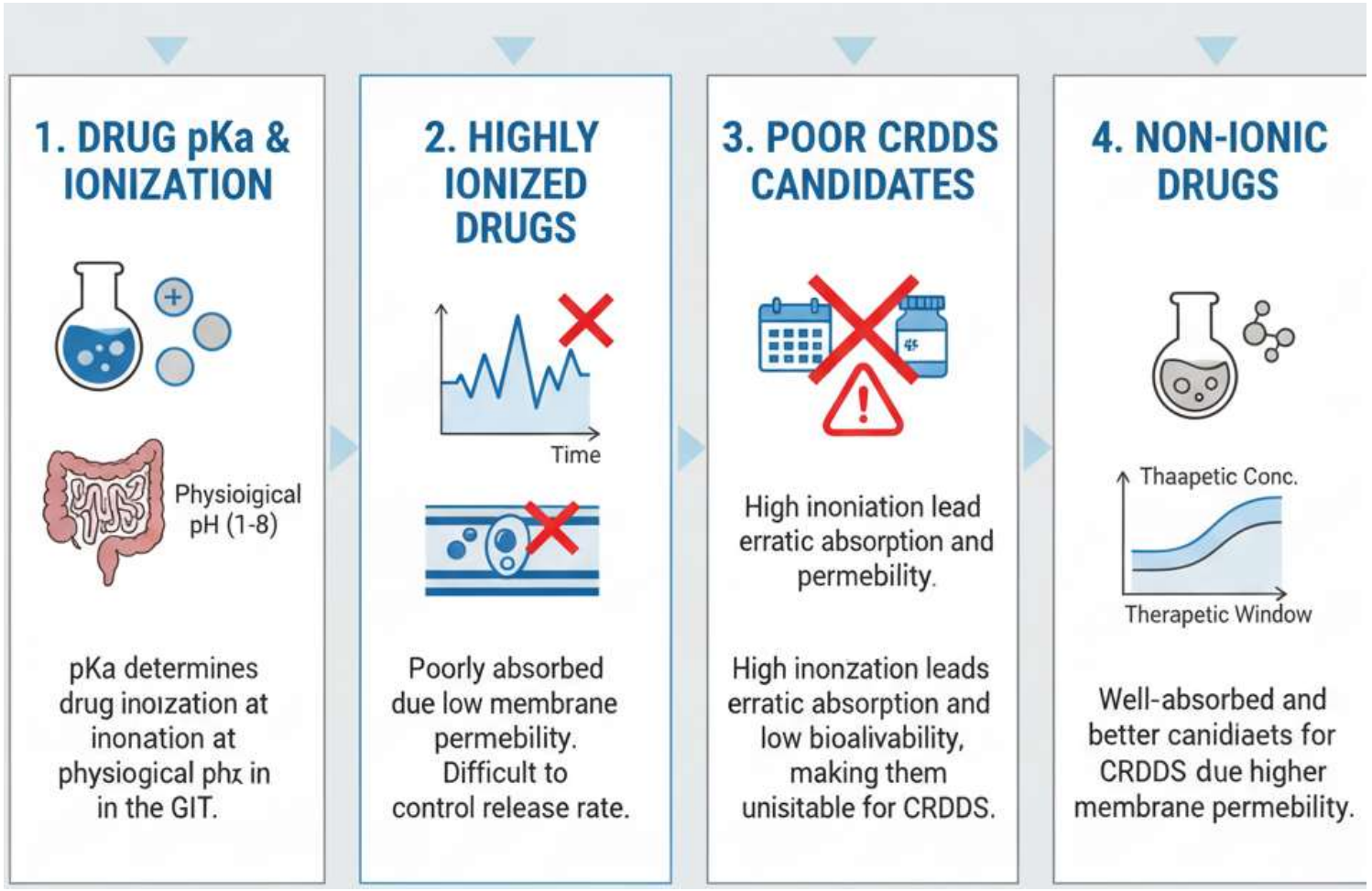
AQUEOUS SOLUBILITY



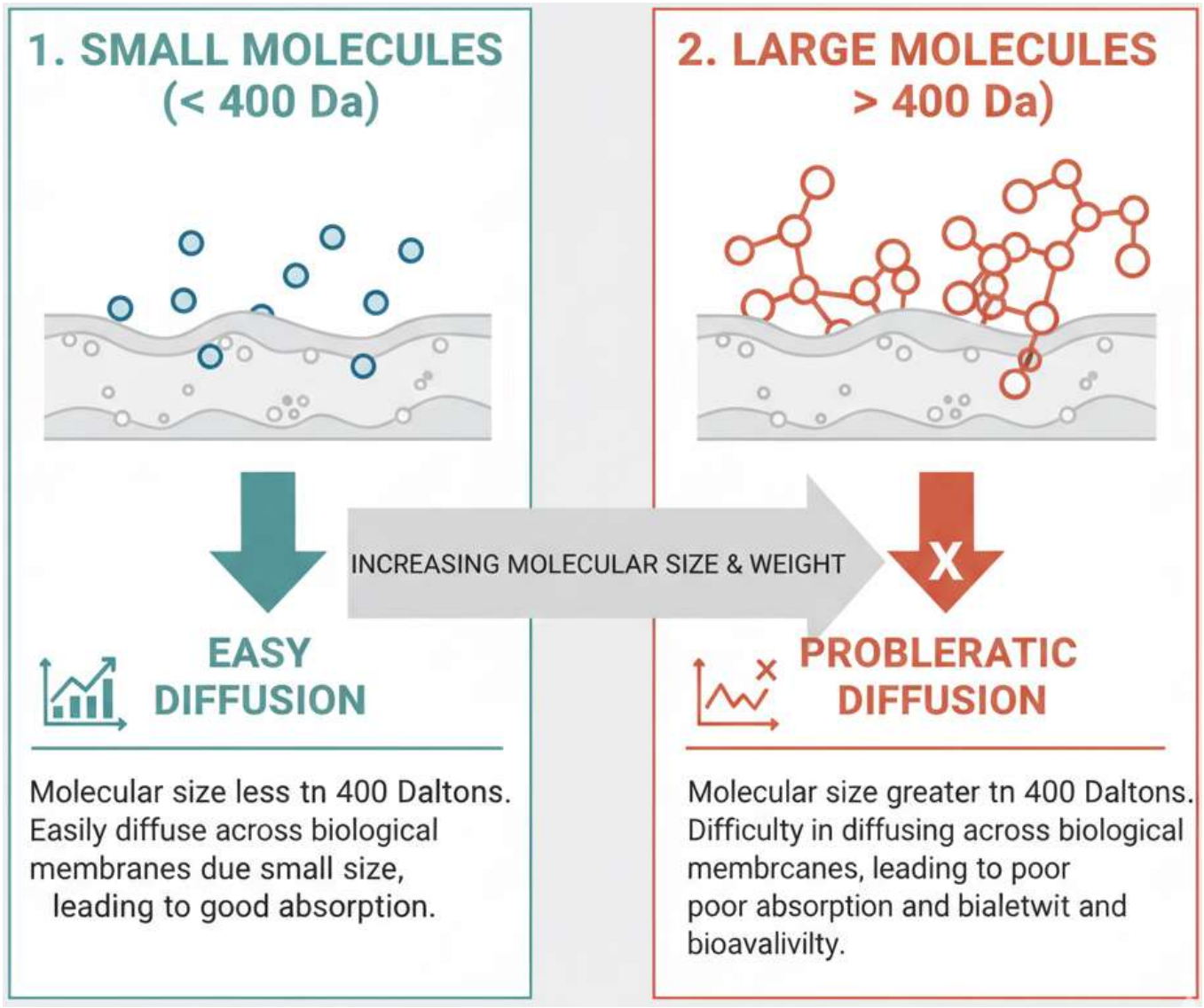
PARTITION COEFFICIENT (P-VALUE)



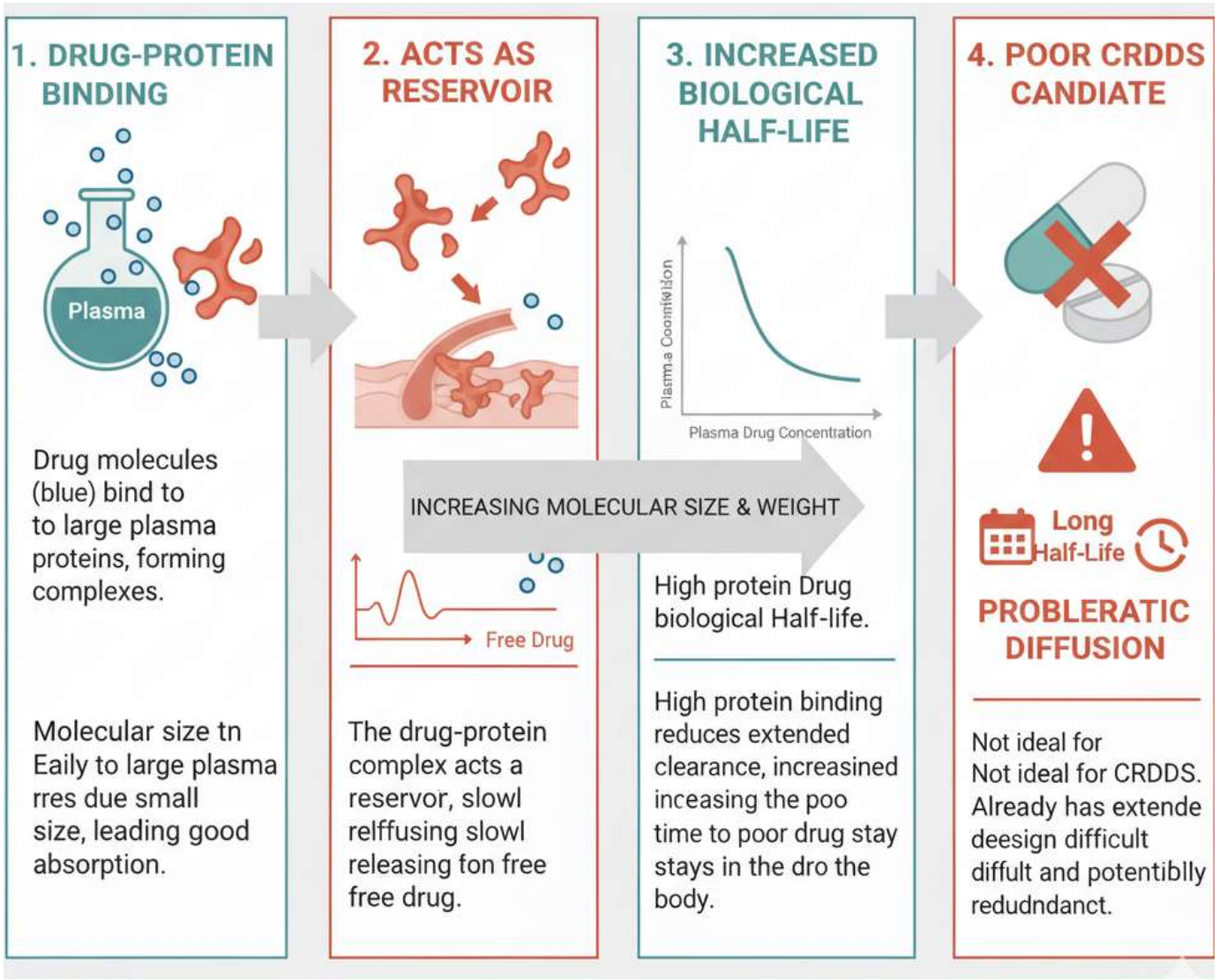
DRUGPKA


1. DRUG pKa & IONIZATION
Physioigical pH (1-8)
pKa determines drug inoization at inonation at physiogical phx in in the GIT.
2. HIGHLY IONIZED DRUGS
Time
Poorly absorbed due low membrane permebility. Difficult to control release rate.
3. POOR CRDDS CANDIDATES
High inoniation lead erratic absorption and permebility.
High inonzation leads erratic absorption and low bioalivability, making them unisitable for CRDDS.
4. NON-IONIC DRUGS
Thaapetic Conc.
Therapetic Window
Well-absorbed and better canidiaets for CRDDS due higher membrane permebility.

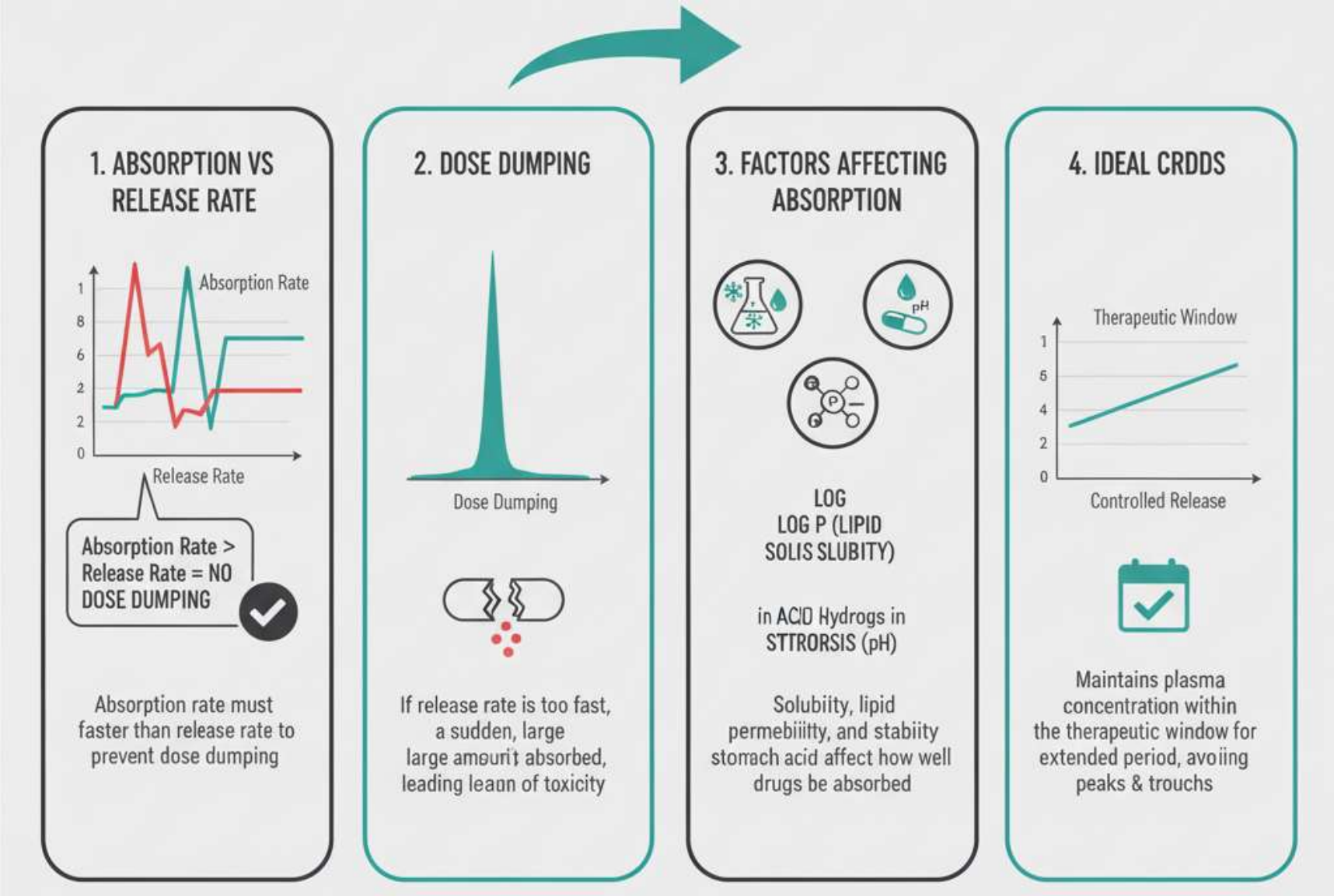
MOLECULAR SIZE & MOLECULAR WEIGHT



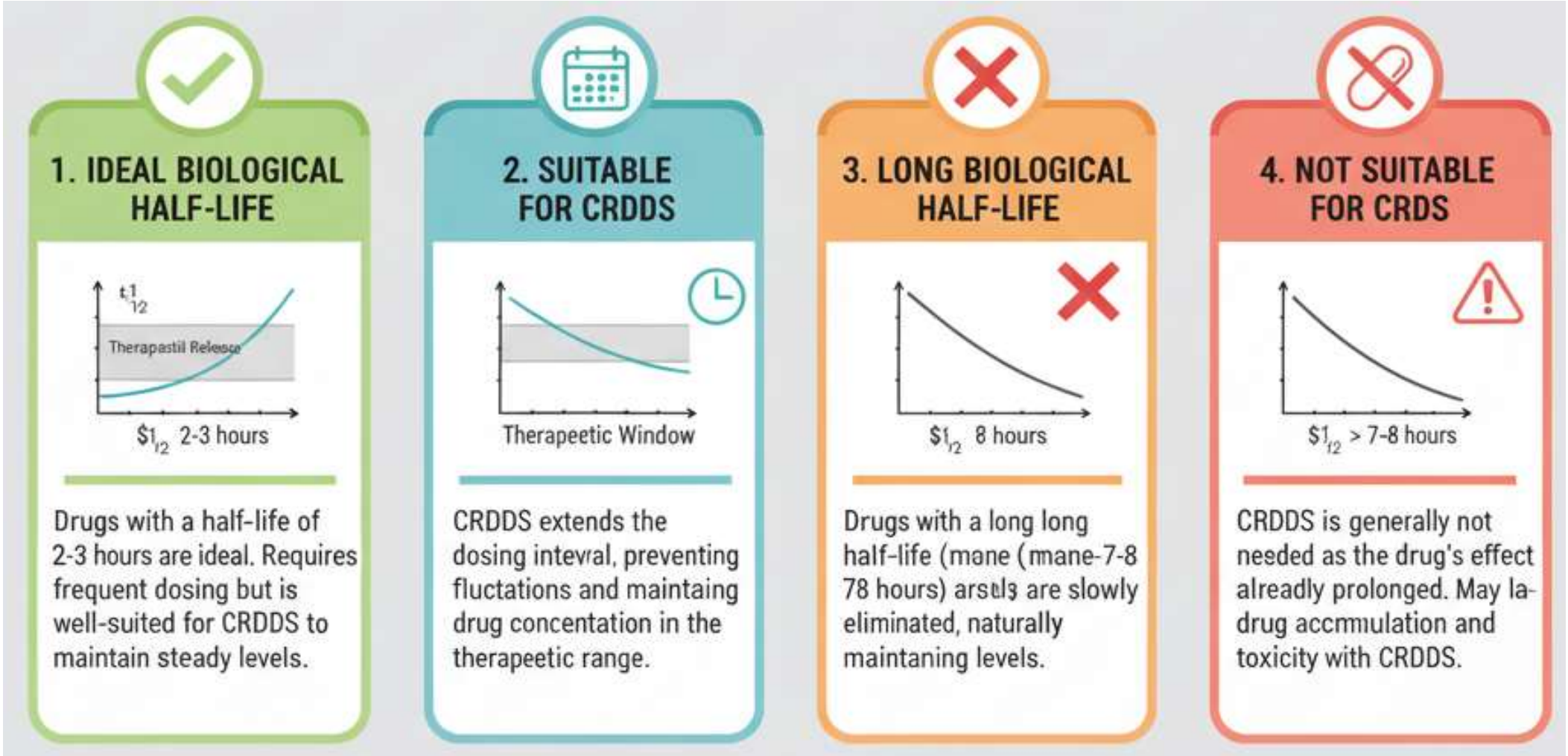
PROTEIN BINDING



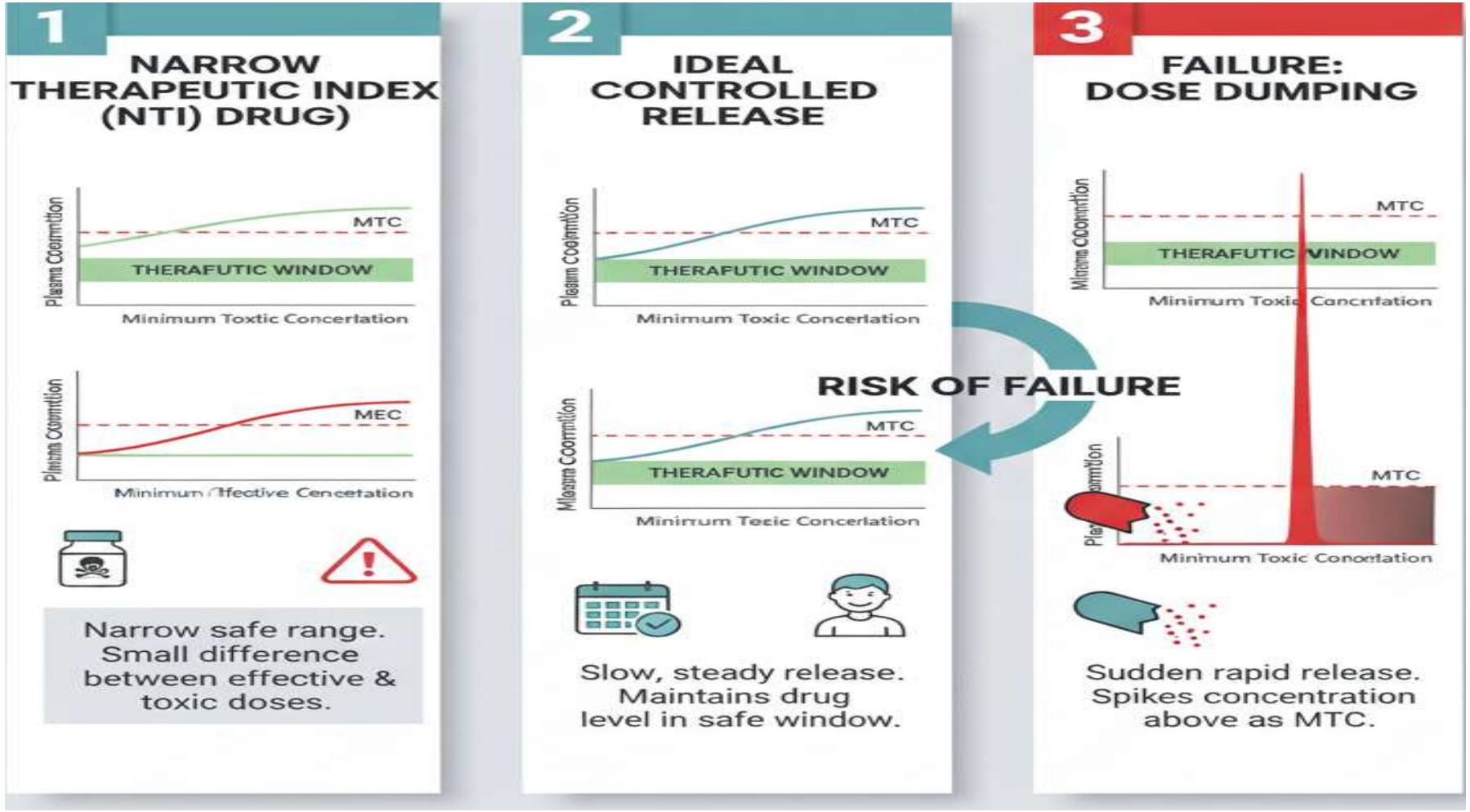
ABSORPTION


1. ABSORPTION VS RELEASE RATE
Absorption Rate
Release Rate
Absorption Rate > Release Rate = NO DOSE DUMPING
Absorption rate must faster than release rate to prevent dose dumping
2. DOSE DUMPING
Dose Dumping
If release rate is too fast, a sudden, large large amount absorbed, leading leaon of toxicity
3. FACTORS AFFECTING ABSORPTION
pH
LOG
LOG P (LIPID
SOLIS SLUBITY)
in ACID Hydrogs in
STTRORSIS (pH)
Solubiity, lipid permebiiiity, and stabiity stomach acid affect how well drugs be absorbed
4. IDEAL CRDDS
Therapeutic Window
Controlled Release
Maintains plasma concentration within the therapeutic window for extended period, avoiing peaks & trouchs

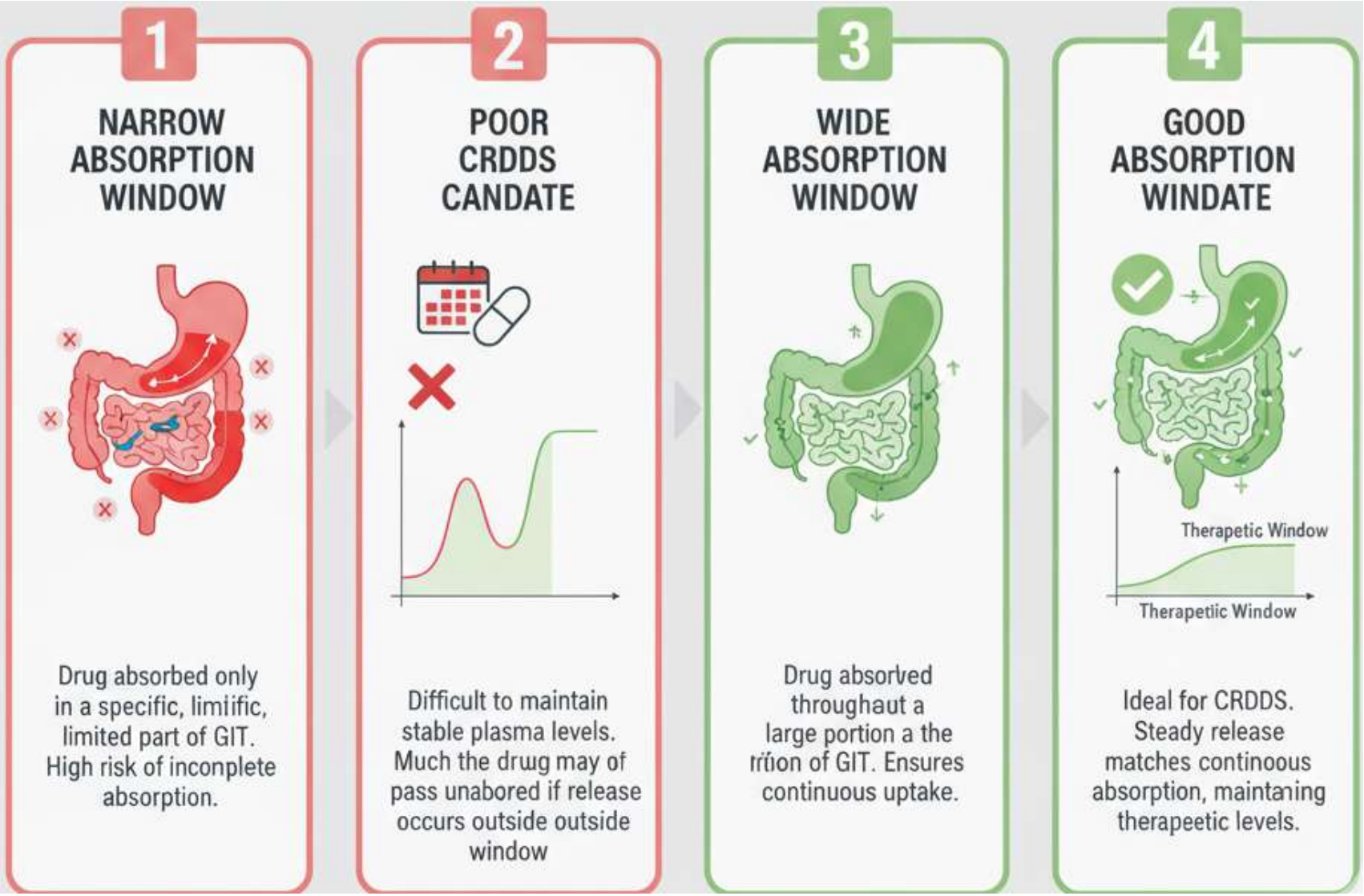
BIOLOGICAL HALF-LIFE



Therapeutic window



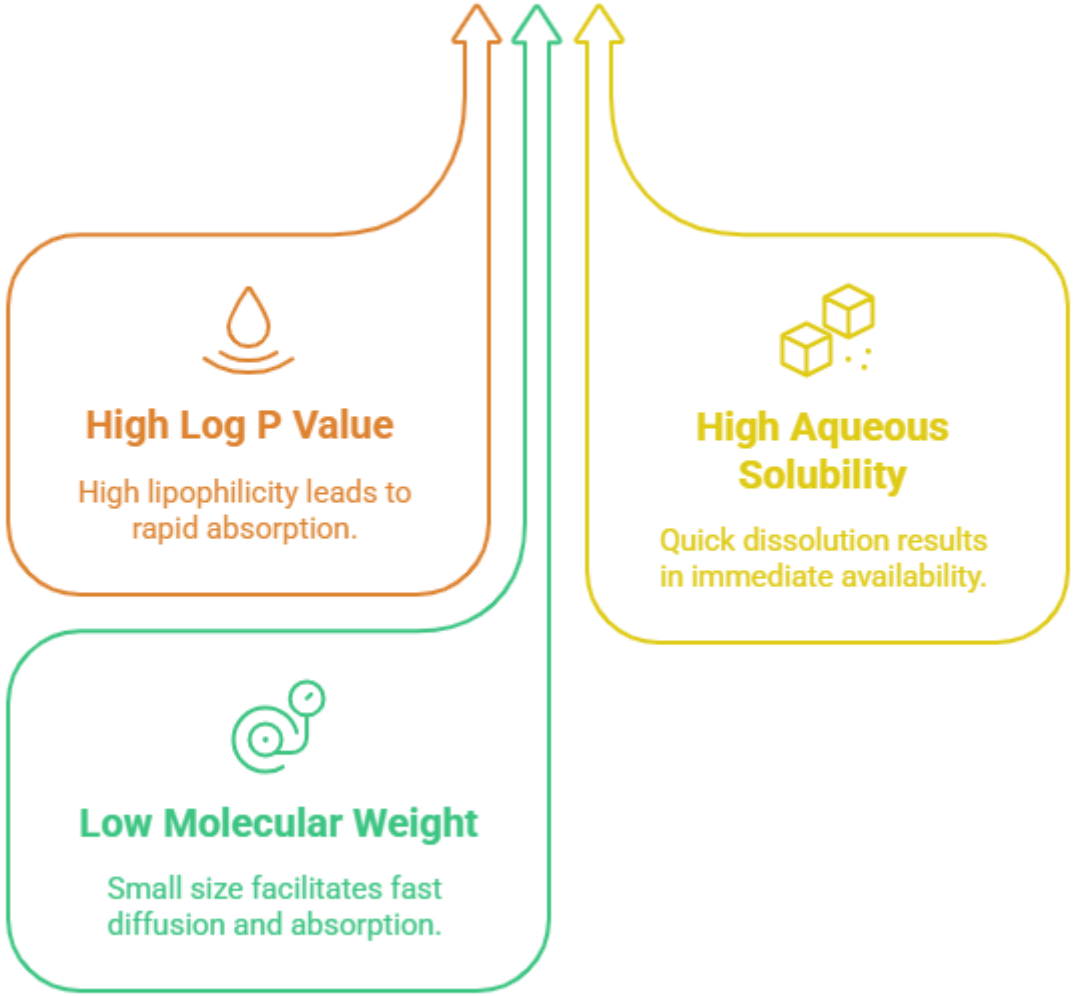
ABSORPTION WINDOW



ASSESMENTS

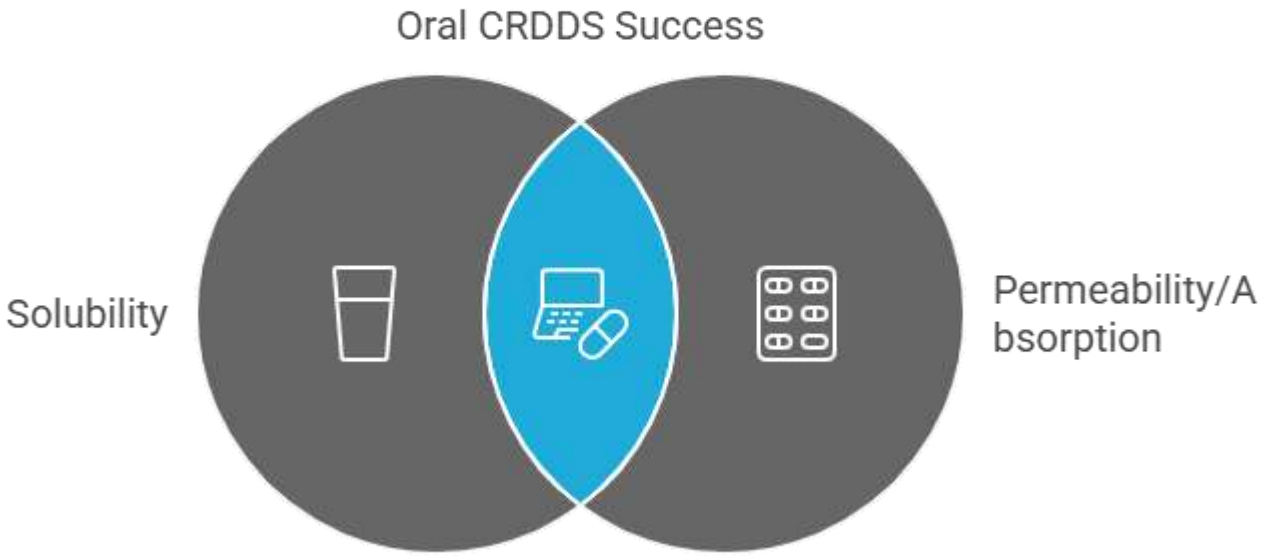
1. Which drug characteristic is most likely to lead to a **"burst release"** followed by a rapid spike in plasma concentration, making controlled release design difficult?

Factors Influencing Drug Release



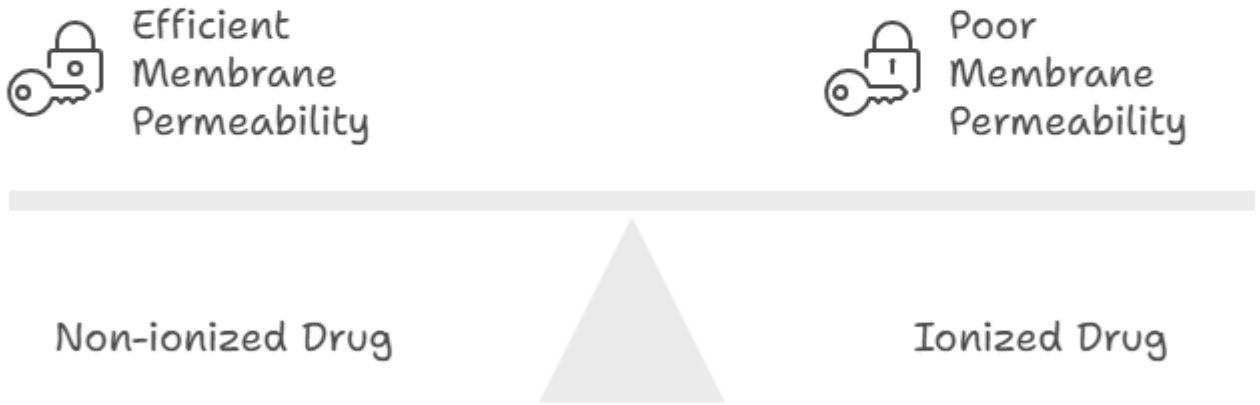
2.BCS Class III (High Solubility, Low Permeability) and Class IV (Low Solubility, Low Permeability) drugs are generally considered poor candidates for oral CRDDS because of issues with which key pharmacokinetic process

Overcoming Oral CRDDS Challenges



3.A drug with a pKa value that results in it being highly ionized at the physiological pH of the Gastrointestinal Tract (GIT) is considered a poor candidate for CRDDS due to which reason?

Non-ionized drugs are better absorbed in the GIT.



REFERENCES

1. Yie W. Chien: Novel Drug Delivery Systems, Second Edition, Marcel Dekker, Inc, 1992 Pg no.816.

2. Joseph R. Robinson: Sustained and Controlled Release Drug Delivery Systems, First edition, Volume 6, Marcel Dekker, Inc,1986,pg.618.

3. https://www.sciencedirect.com/journal/journal-of-controlled-release

4. https://www.tandfonline.com/doi/full/10.1080/10837450.2018.1534376

5. https://www.scribd.com/document/668313752/Controlled-and-Novel-Drug-Delivery-by-N-K-Jain-1st-Editn-Reprint

THANK YOU