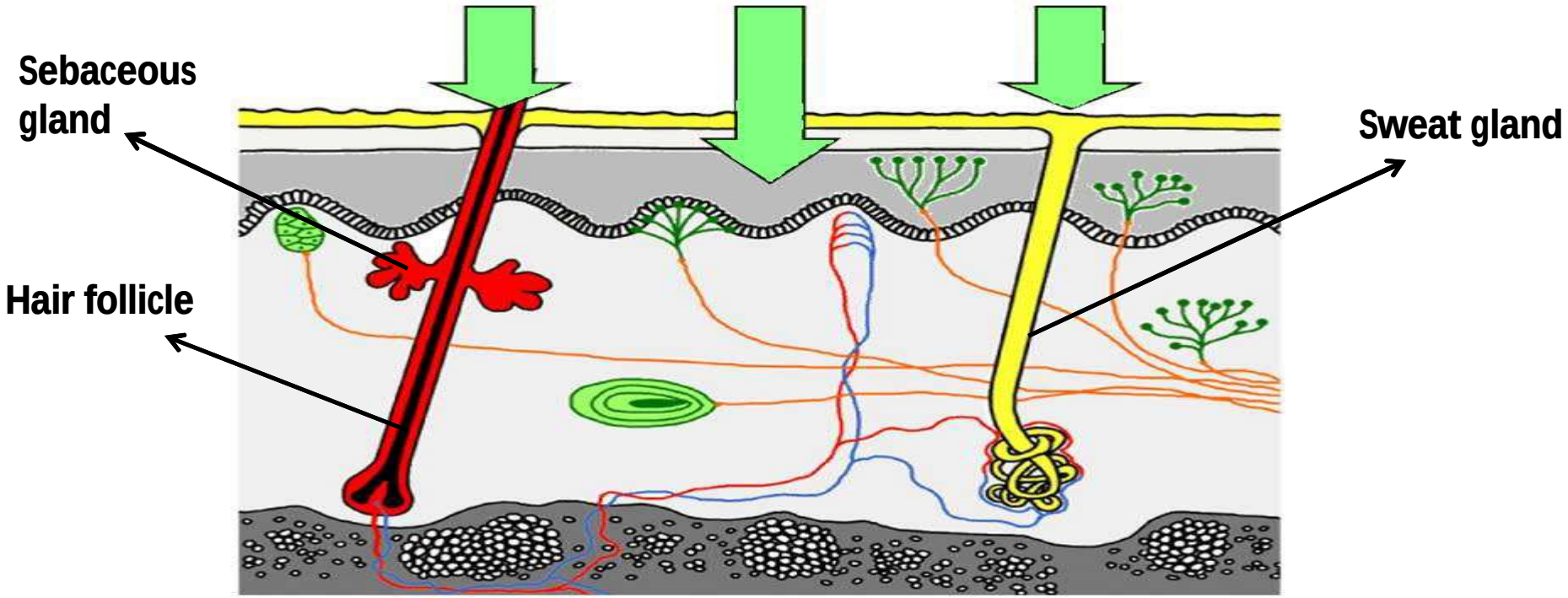
TRANSDERMAL DRUG DELIVERY SYSTEM (TDDS)
Part-2

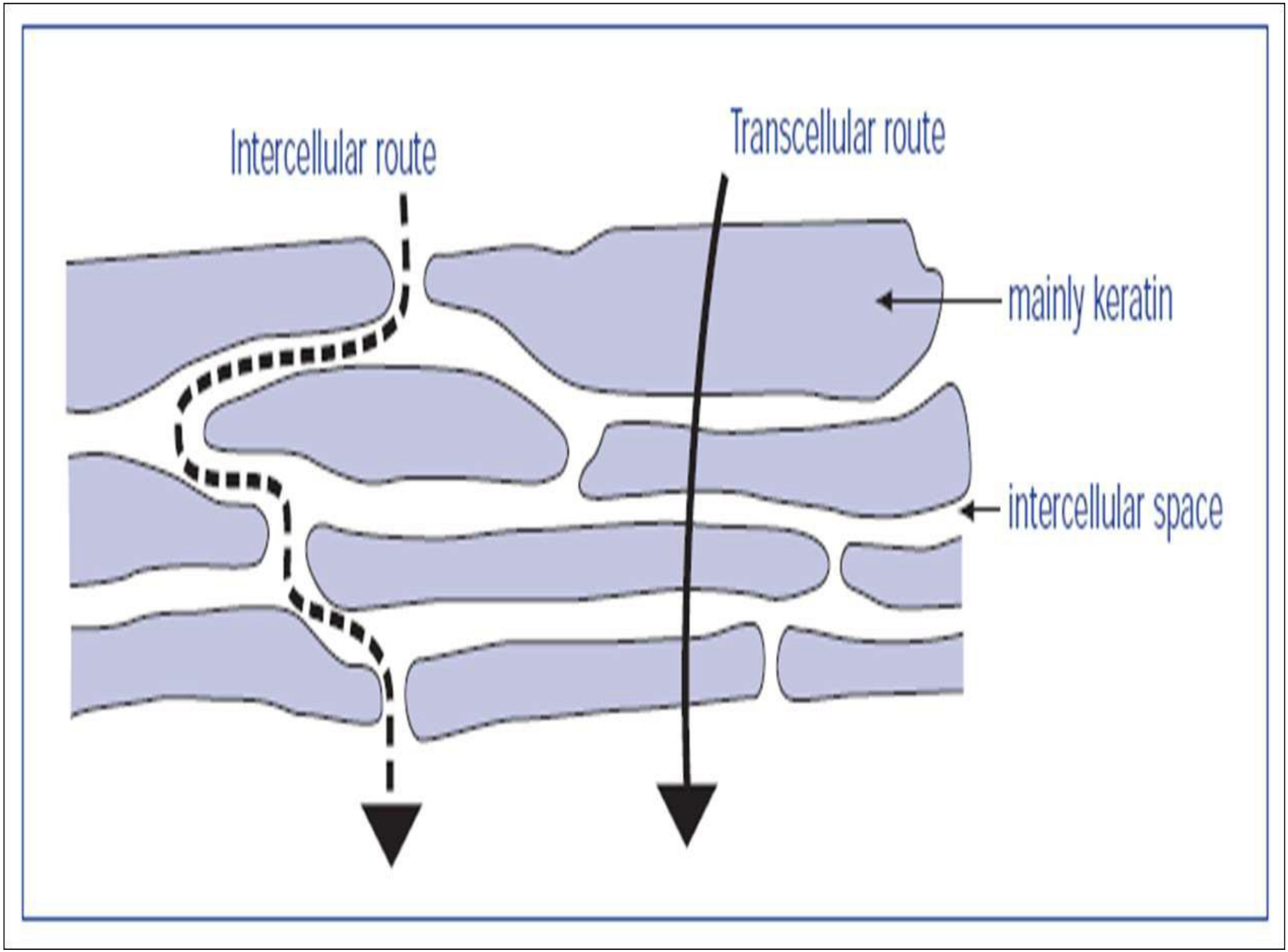
TRANSPORT MECHANISM

Principle mechanism is **passive diffusion of drug** through the skin. macro-routes may comprise:

a. Transepidermal pathway

b. Transfollicular pathway




Intercellular route
Transcellular route
mainly keratin
intercellular space

FACTORS AFFECTING TRANSDERMAL PERMEABILITY

Physico-chemical properties of drug delivery system

Release characteristic

➢Solubility of drug in vehicle determines the release rate.

Composition of drug delivery system

➢It not only effects the rate of drug release but also the permeability of STC by means of hydration mixing with skin lipids. Example methyl salicylate is more lipophilic than its parent acid (Salicylic acid). When applied to skin from fatty vehicle methylsalicylate yielded higher absorption.

Physiological and pathological condition of skin

Lipid film:

It acts as protective layer to prevent removal of moisture from skin. Defeating of this film will decrease TD absorption.

Skin hydration:

It can be achieved by covering skin with plastic sheeting, which leads to accumulation of sweat, condensed water vapors, increase hydration and increase porosity.

Effect of vehicle:

A vehicle can influence absorption by its effect on physical state of drug and skin. Example greases, paraffin bases are more occlusive while water in oil bases are less. Humectants in bases will dehydrate the skin and decrease percutaneous absorption.

Biological factors:

Skin age:

Skin of foetus, young ones and elders is more permeable than adult tissue.

Skin metabolism:

Viable epidermis is metabolically active than dermis. If topically applied drug is subjected to biotransformation during permeation local and systemic bioavailability is affected.

IDEAL DRUG CANDIDATE FOR TDDS

1. Must be non-ionic
2. Low molecular weight (less than 500 Daltons)
3. Lipophilicity (Log Ko/w: 1-3)
4. Low melting point (less than 200 degree C)
5. Dose is less than 50 mg per day, and ideally less than 10 mg per day.

BASIC COMPONENTS OF TRANSDERMAL PATCHES

1- Backing ,

2- Drug,

3- Membrane,

4- Adhesive,

5- Liner.