



THE LASER-IPL GUYS

‘Clinically
Useful’
Penetration
Depth



‘Standard’ Penetration Depth

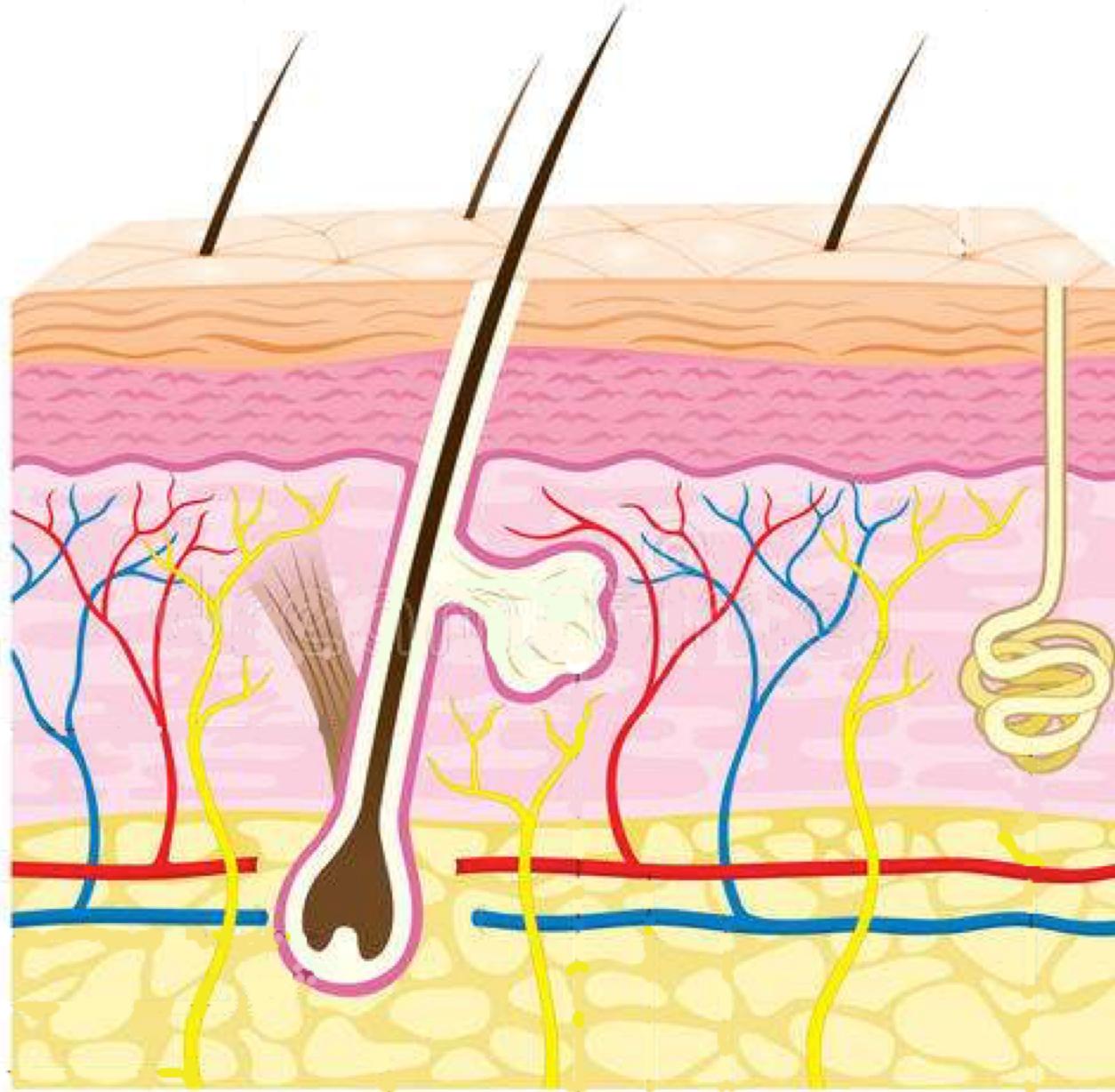
- Depends on....
 - Wavelength
 - Purely ‘scientific’
- No regard for clinical targets



‘Clinically Useful’ Penetration Depth

- Depends on....
 - Wavelength
 - Anisotropy
 - Spot diameter
 - Incident fluence

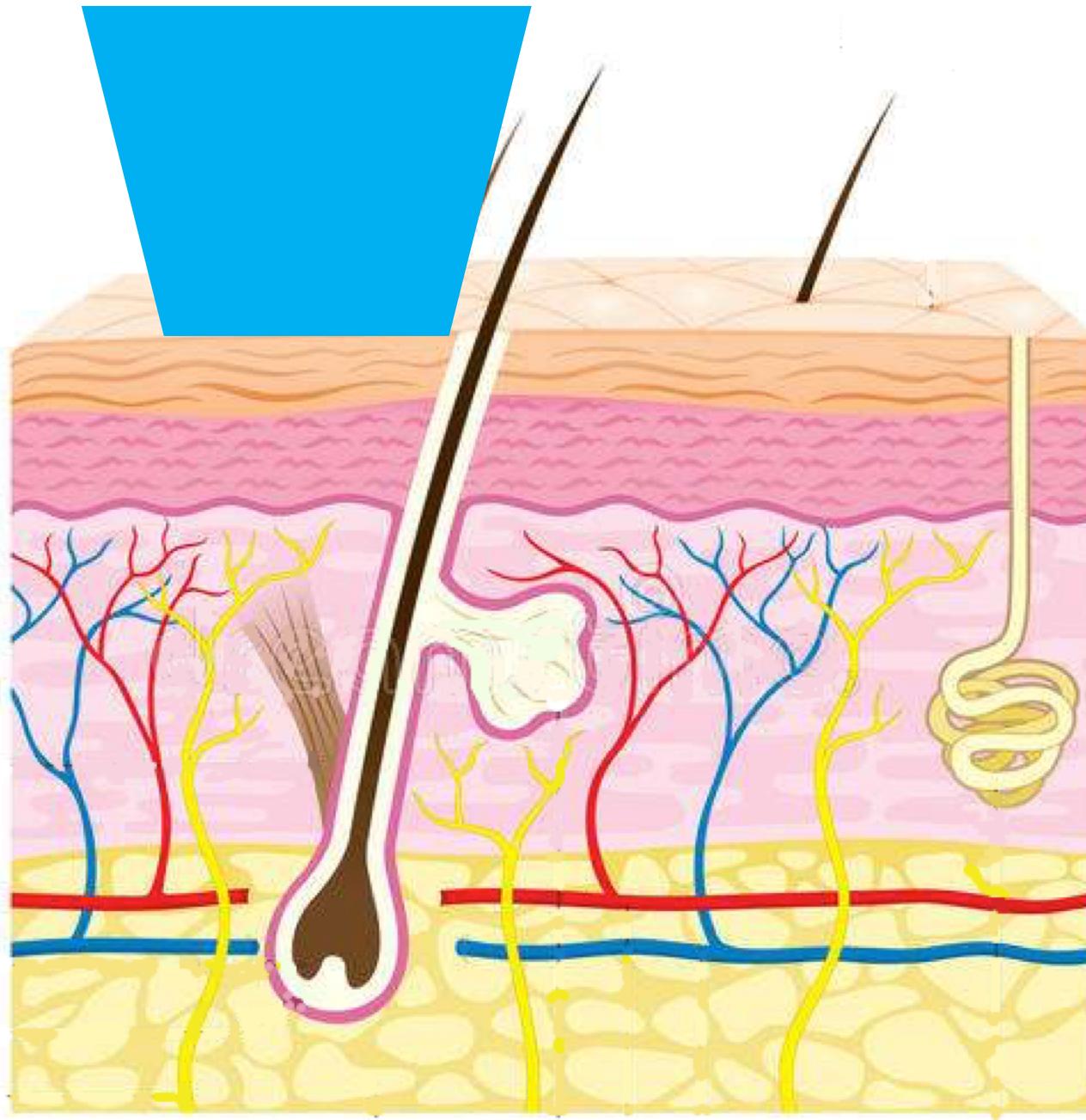
Penetration depth – wavelength & anisotropy



Blue light

Same spot
diameter
Same fluence

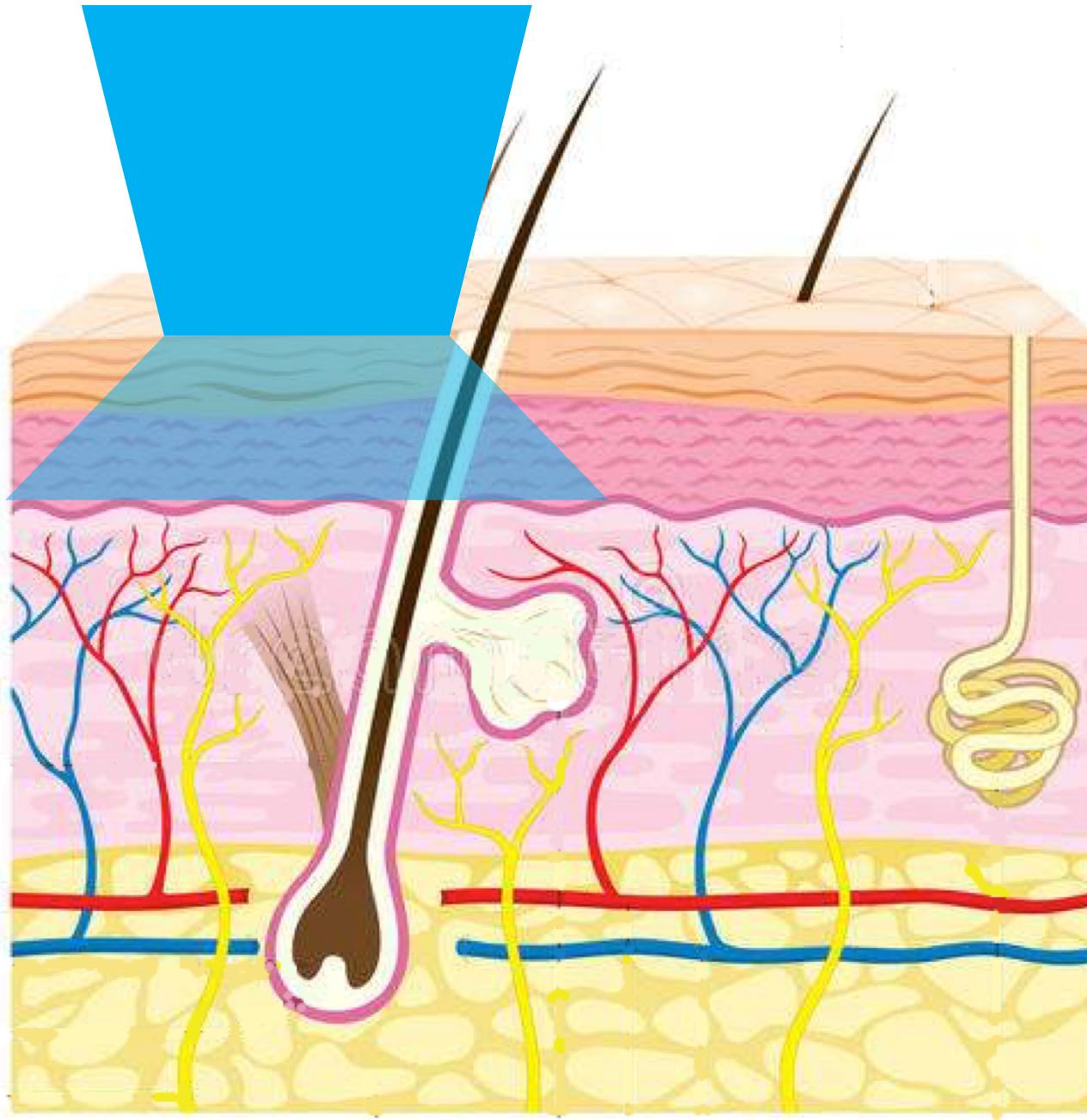
Different
wavelengths



Blue light

Same spot
diameter
Same fluence

Different
wavelengths



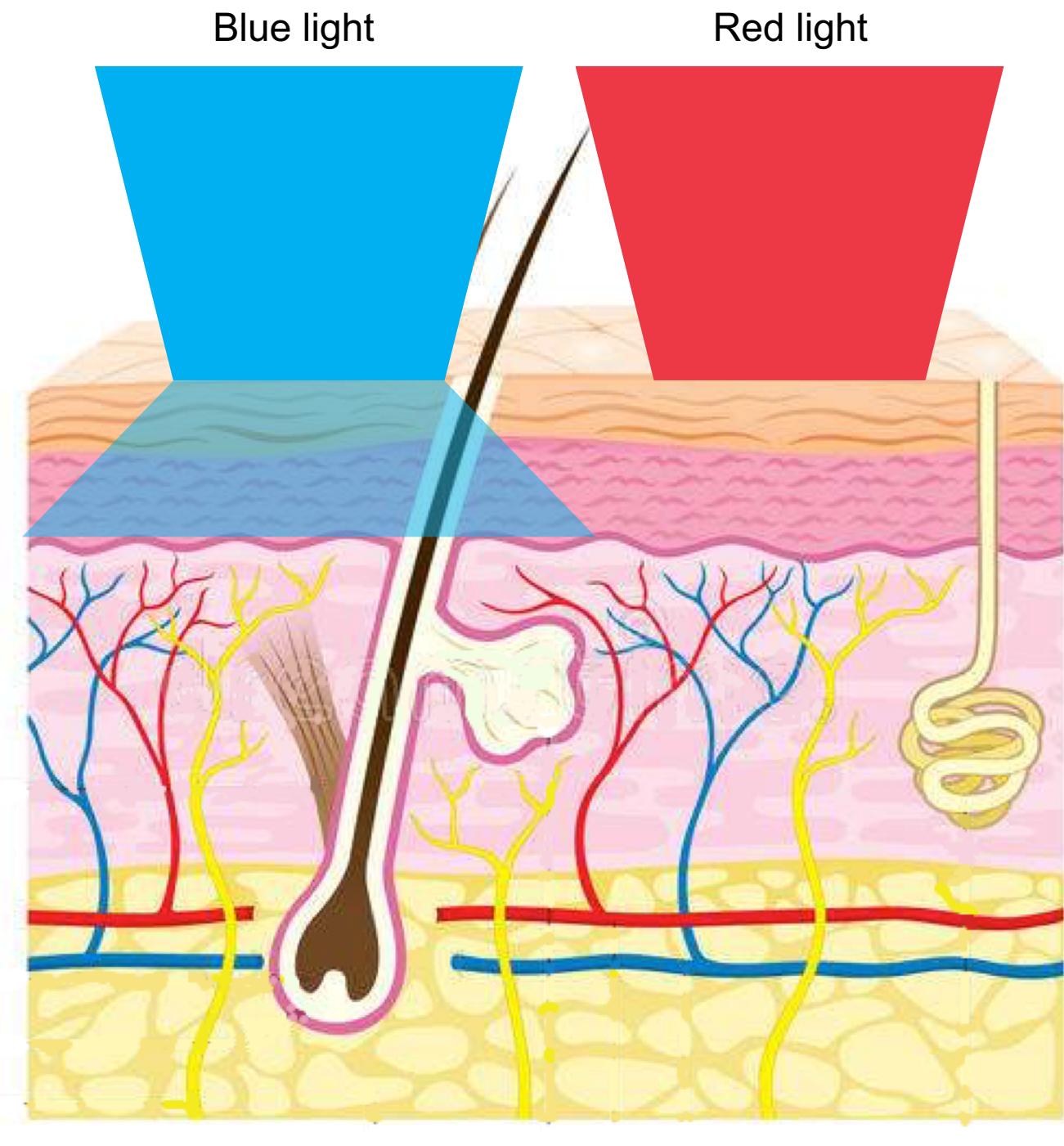


Blue light

Red light

Same spot
diameter
Same fluence

Different
wavelengths



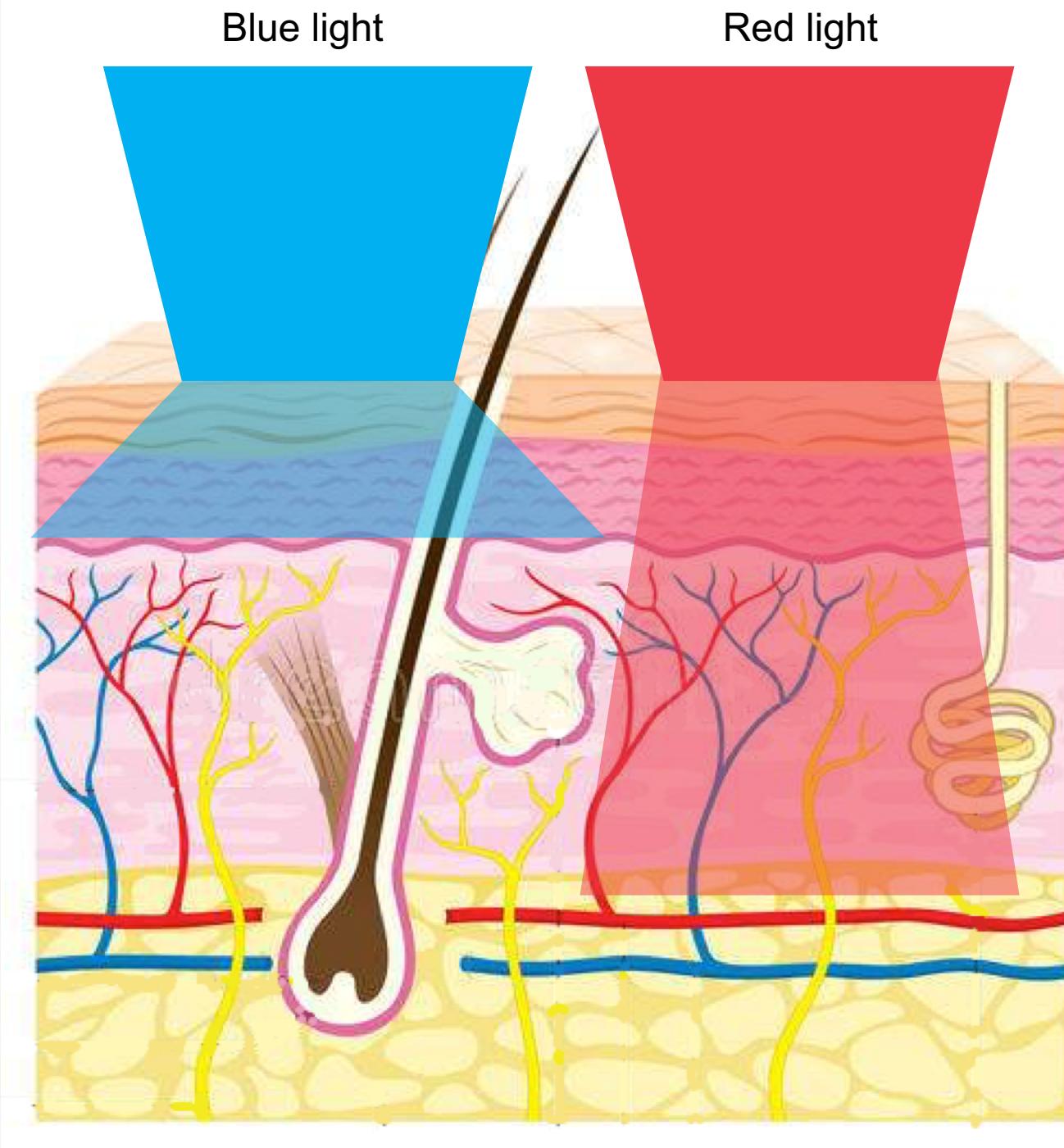


Blue light

Red light

Same spot
diameter
Same fluence

Different
wavelengths

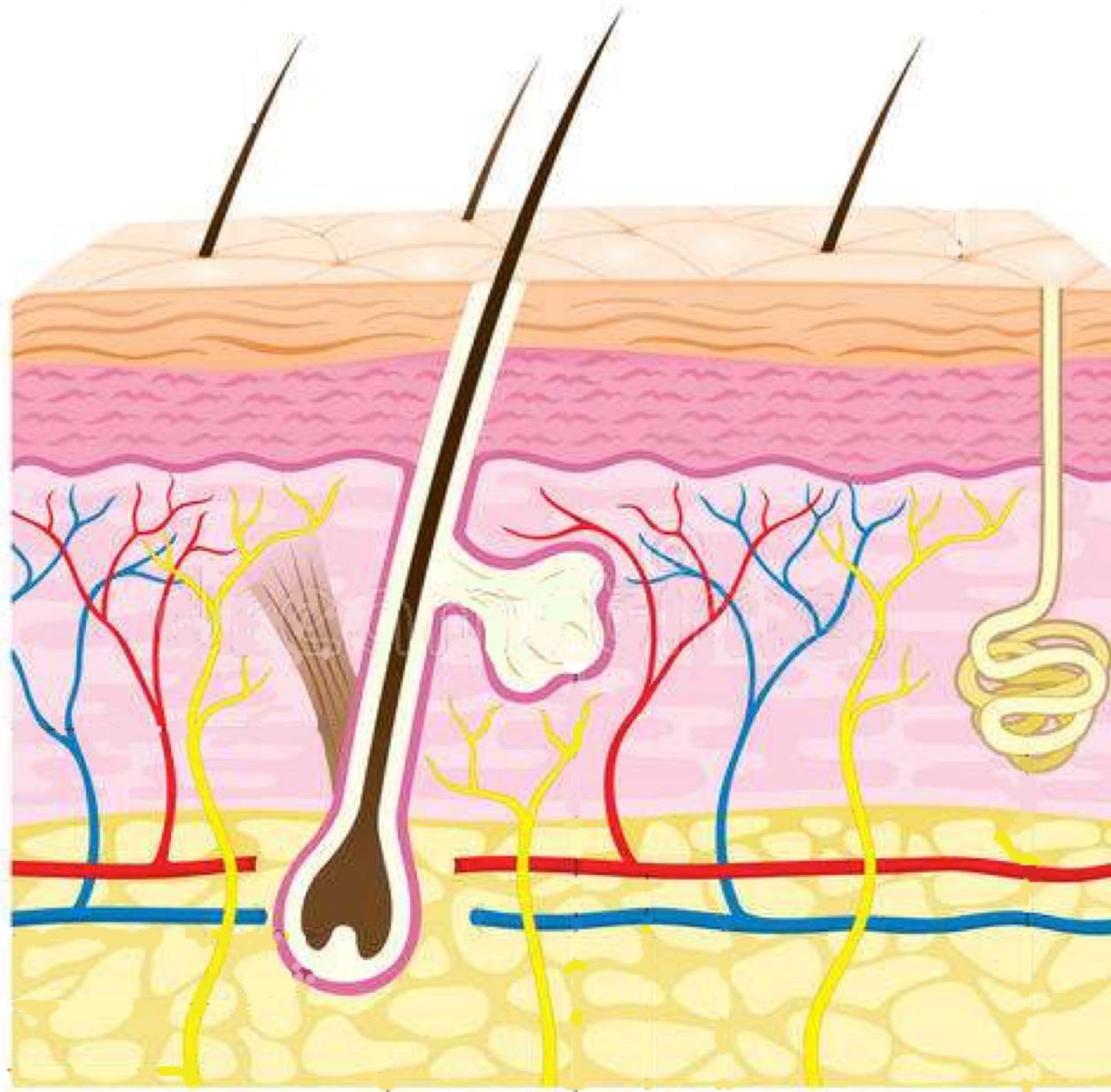


Red light
penetrates
deeper than blue
light

Anisotropy is the
sideways 'spread'
of the light with
depth due to
scattering



Penetration depth – spot diameter

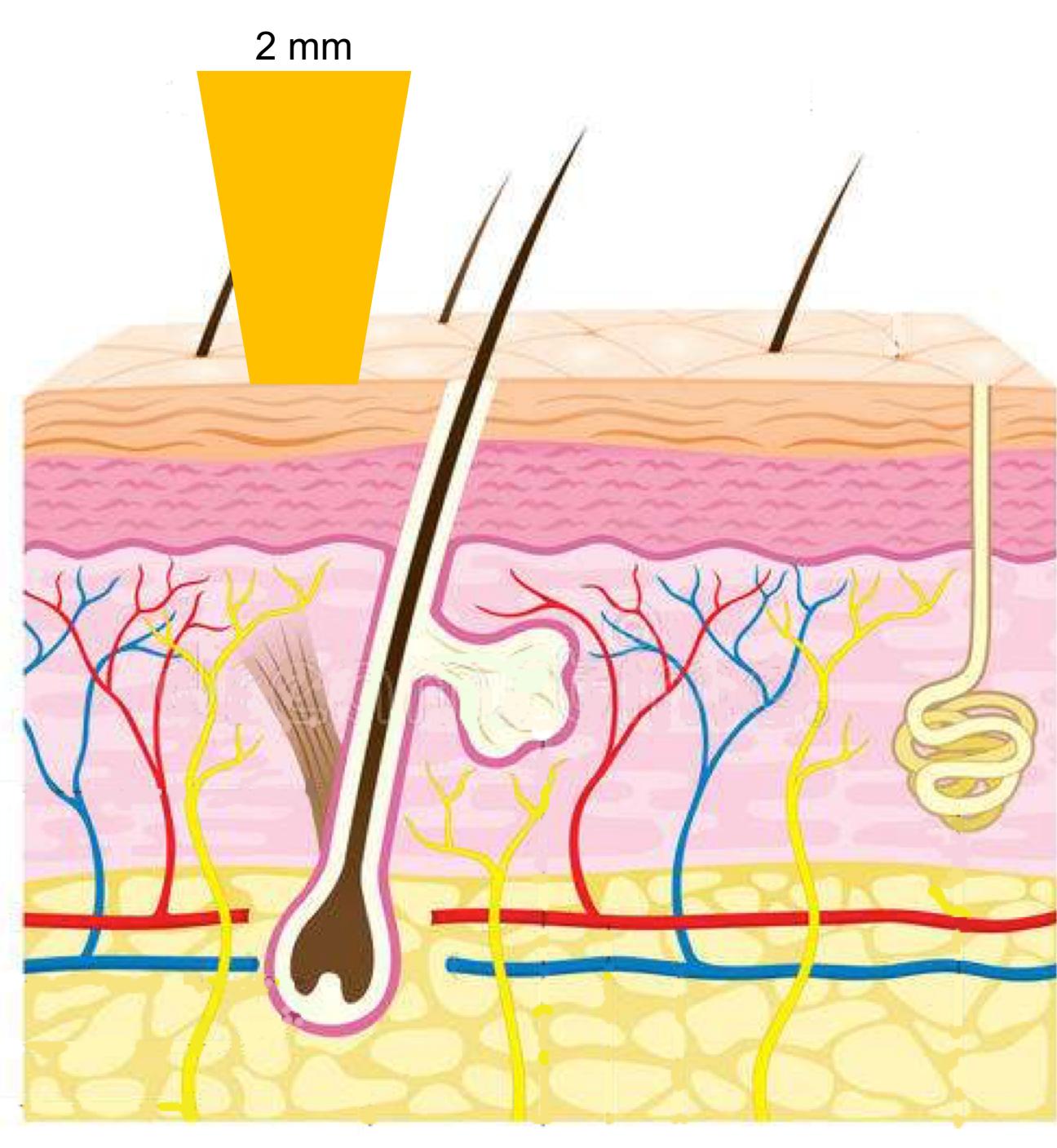




Same
wavelength
Same fluence

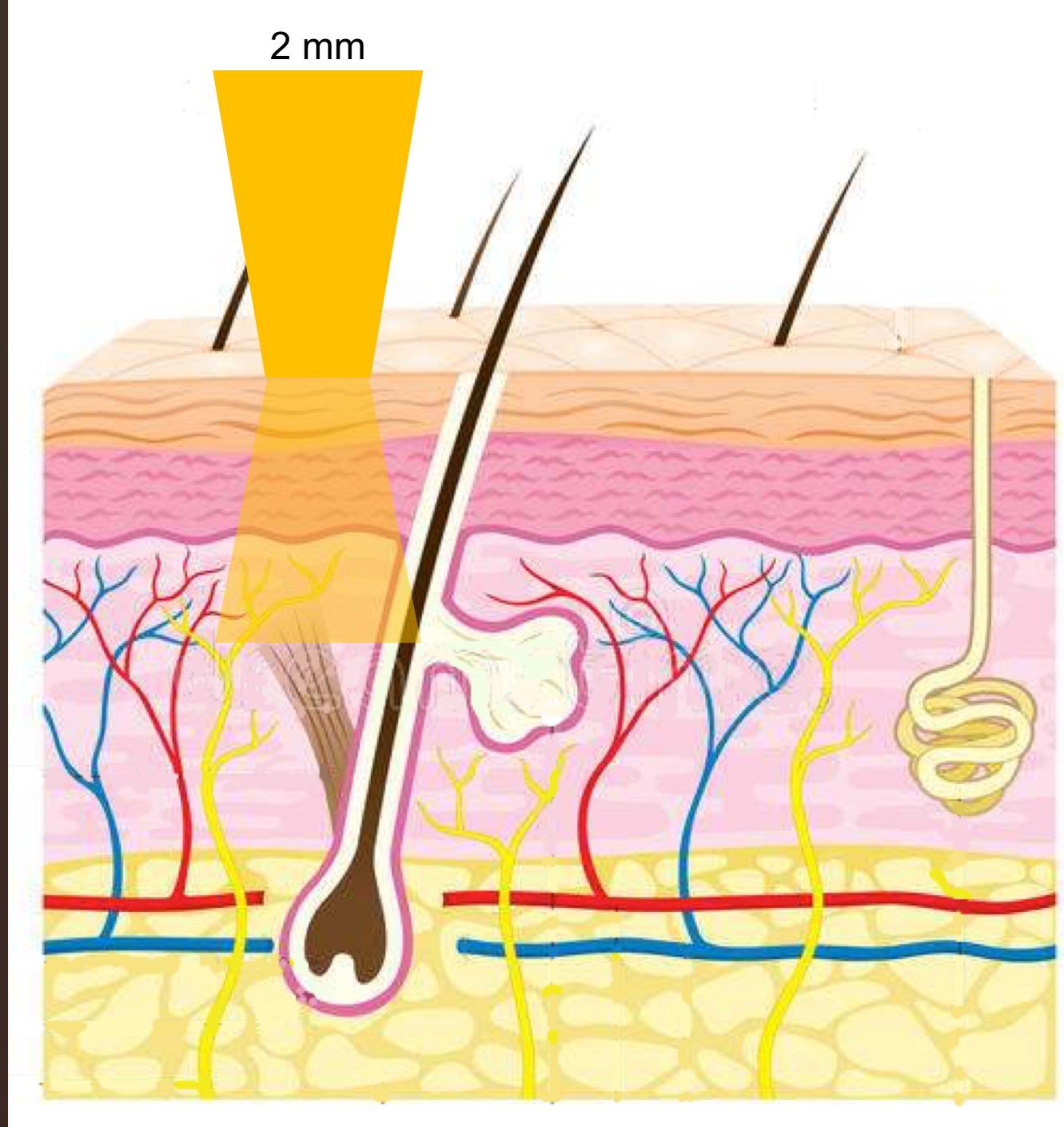
Different spot
diameters

2 mm





Same wavelength
Same fluence
Different spot diameters



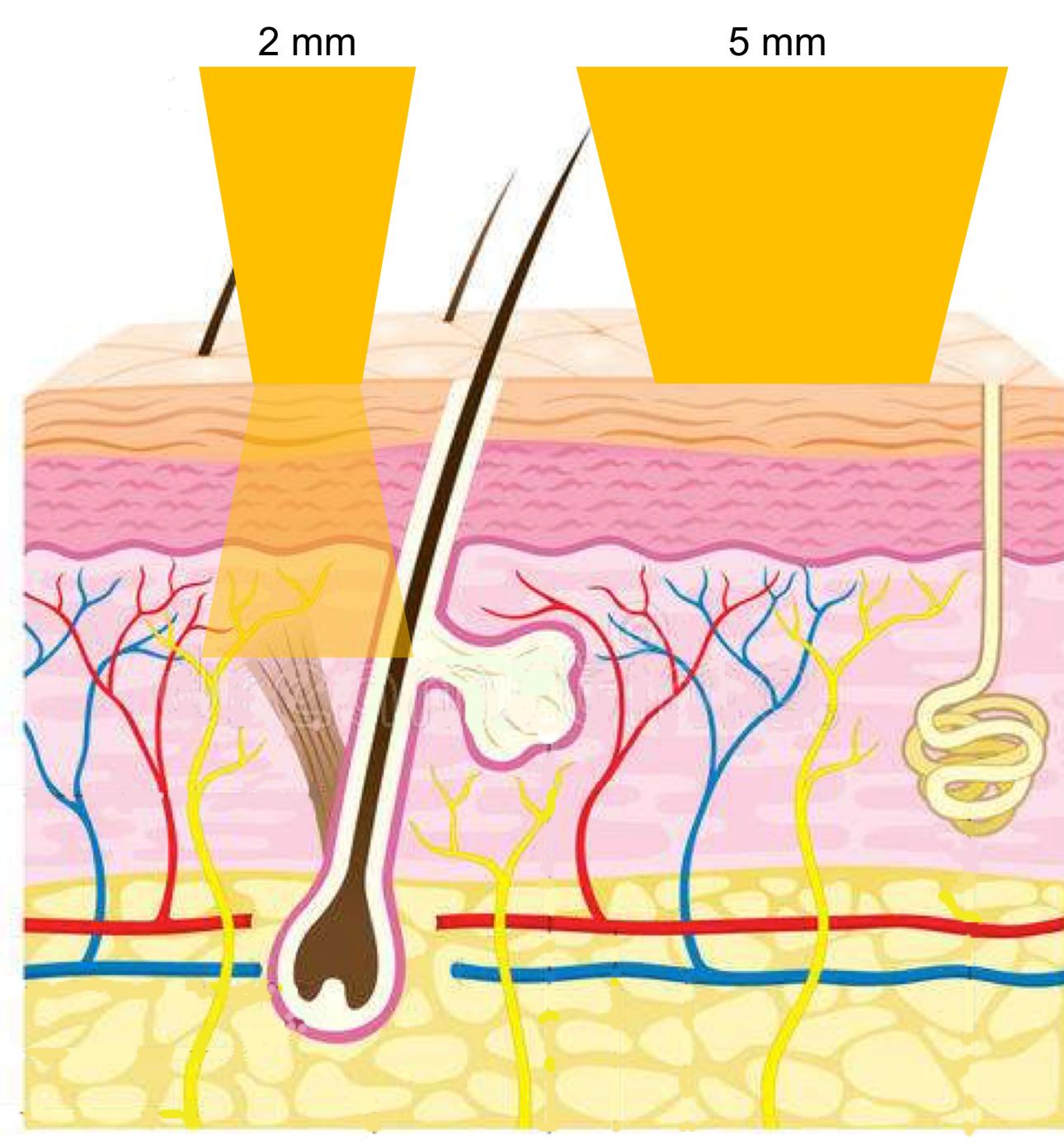


Same
wavelength
Same fluence

Different spot
diameters

2 mm

5 mm



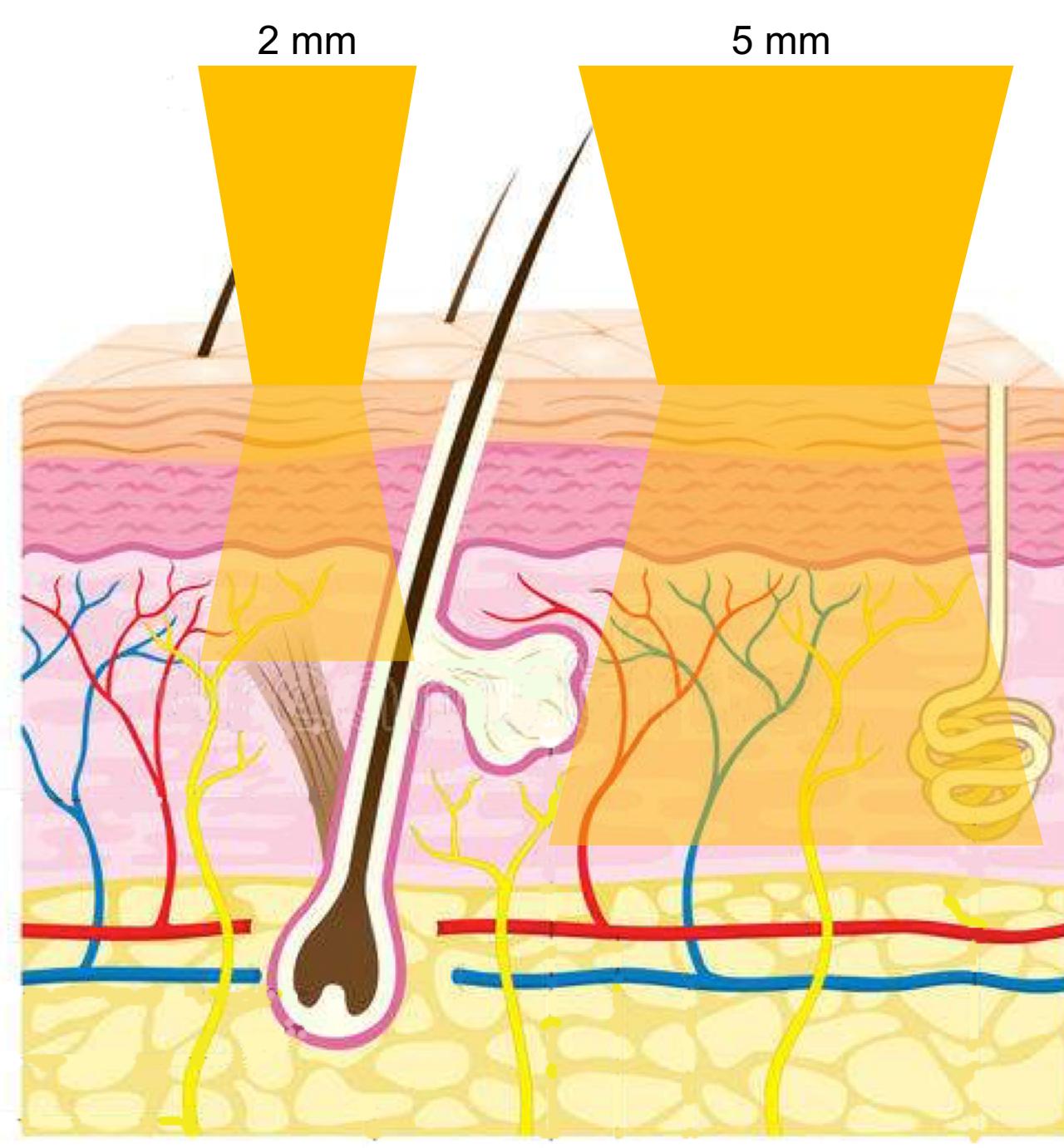


Same wavelength
Same fluence

Different spot diameters

2 mm

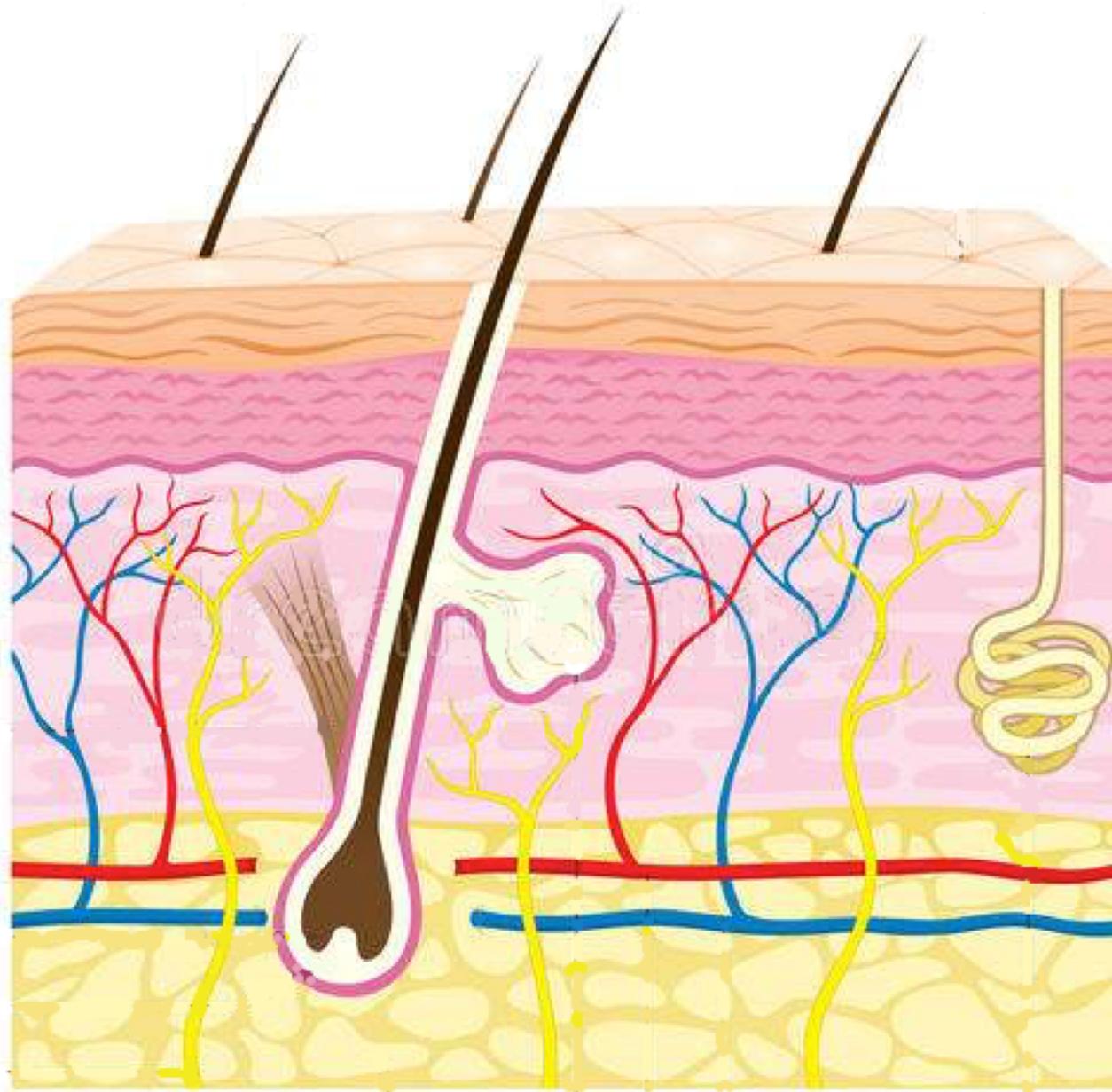
5 mm



Larger spot sizes penetrate deeper in the dermis



Penetration depth – incident fluence

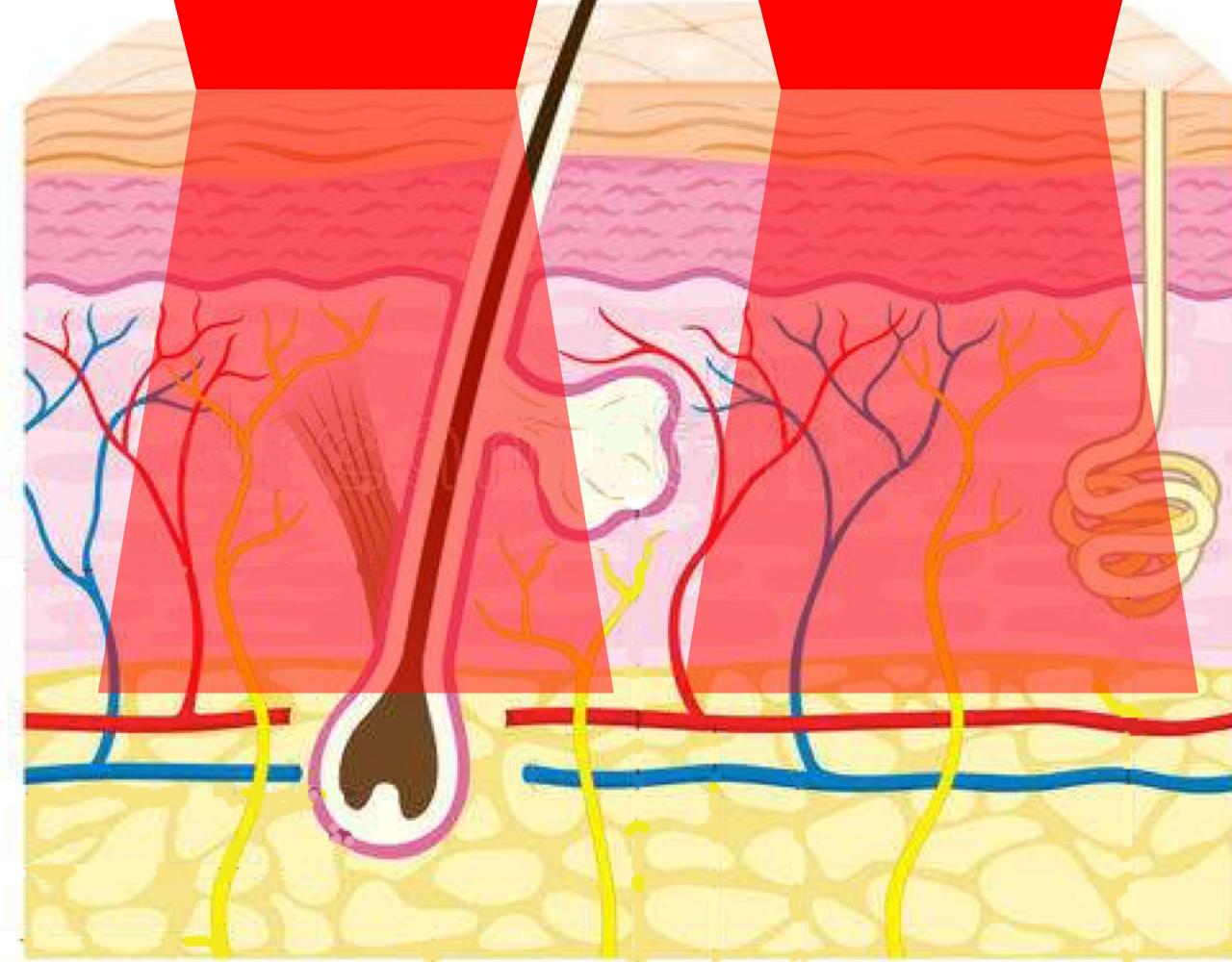




Same
wavelength
Same spot
diameters

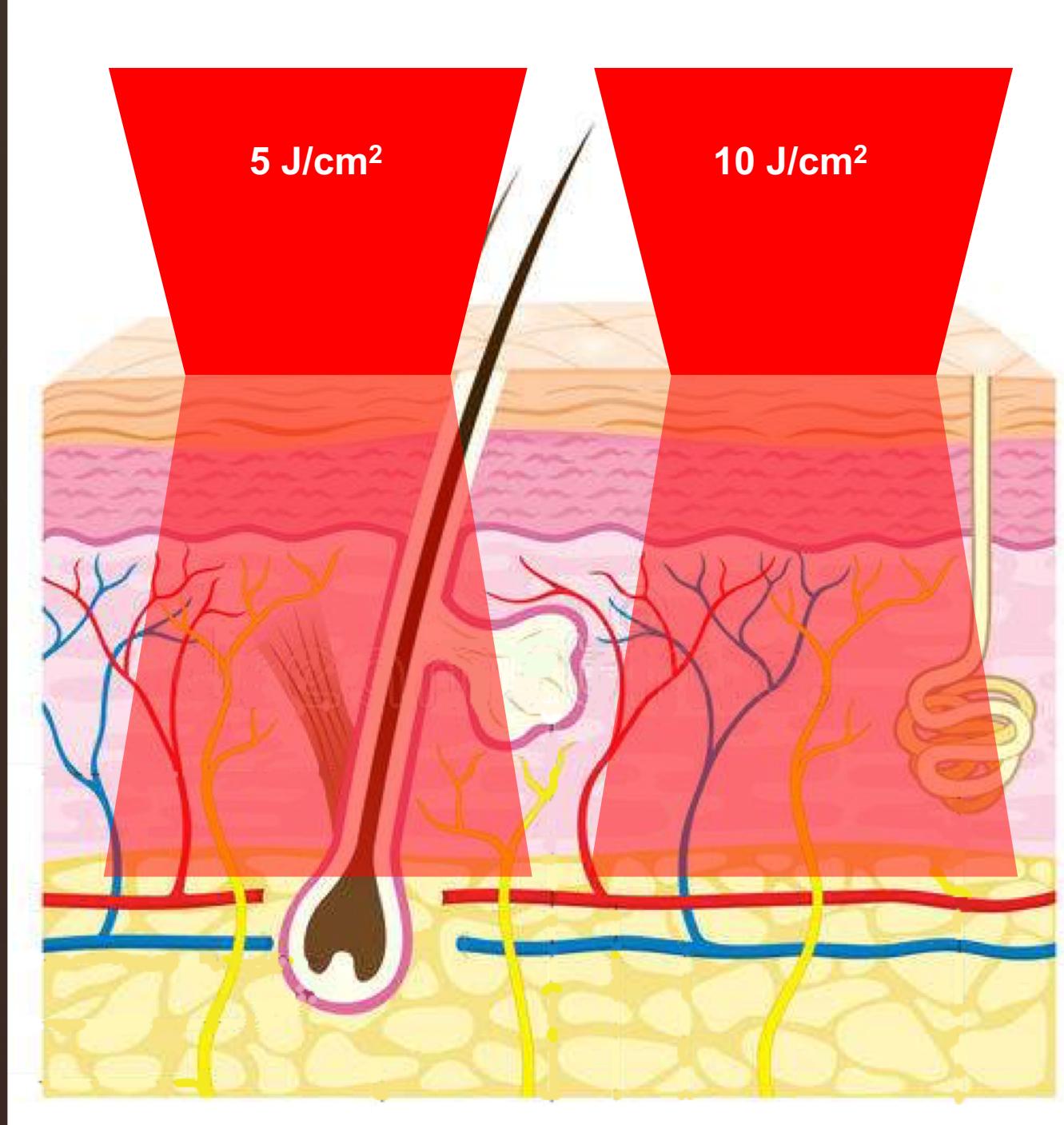
Different
fluences at the
skin surface

5 J/cm²



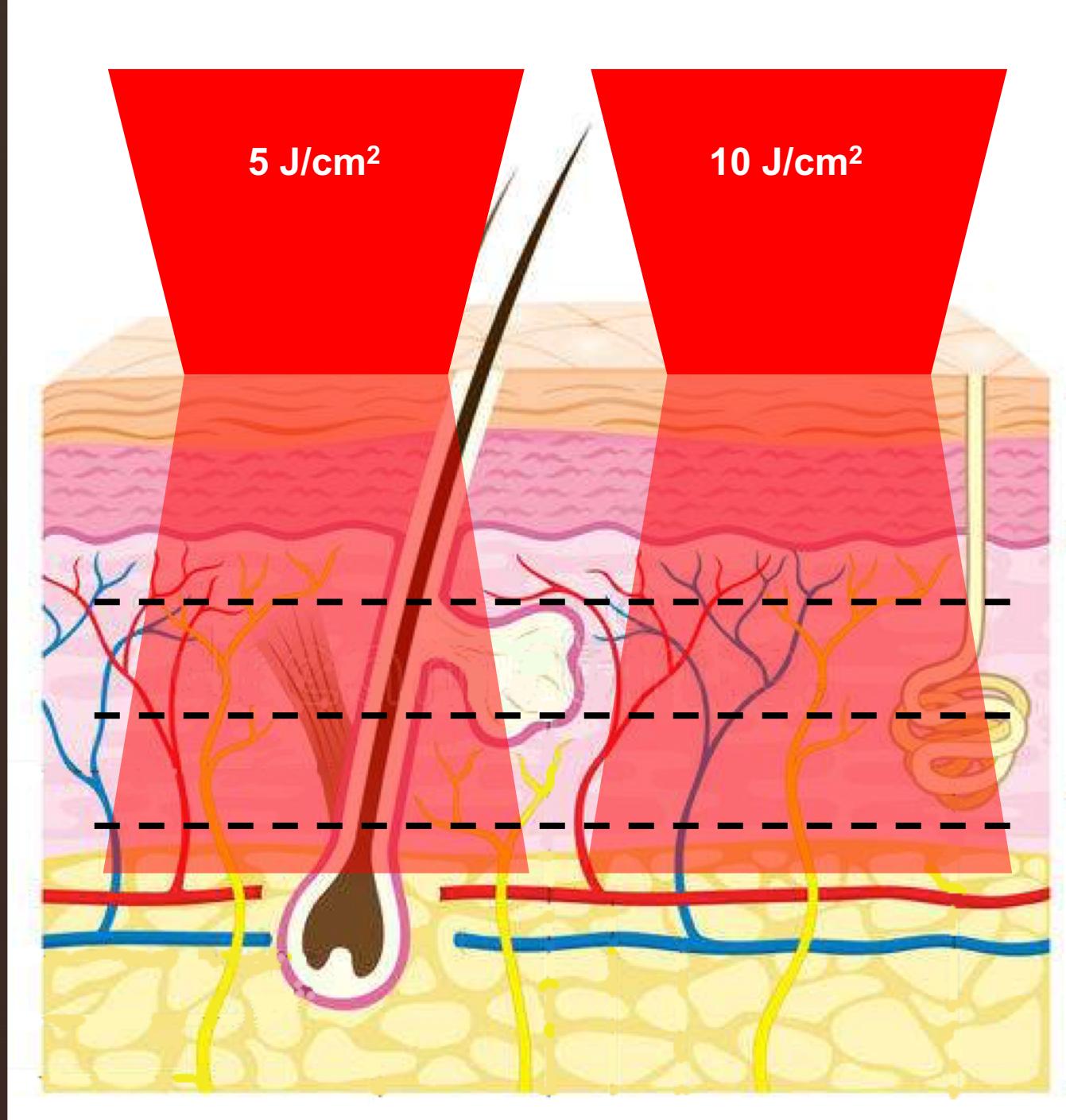
Same
wavelength
Same spot
diameters

Different
fluences at the
skin surface



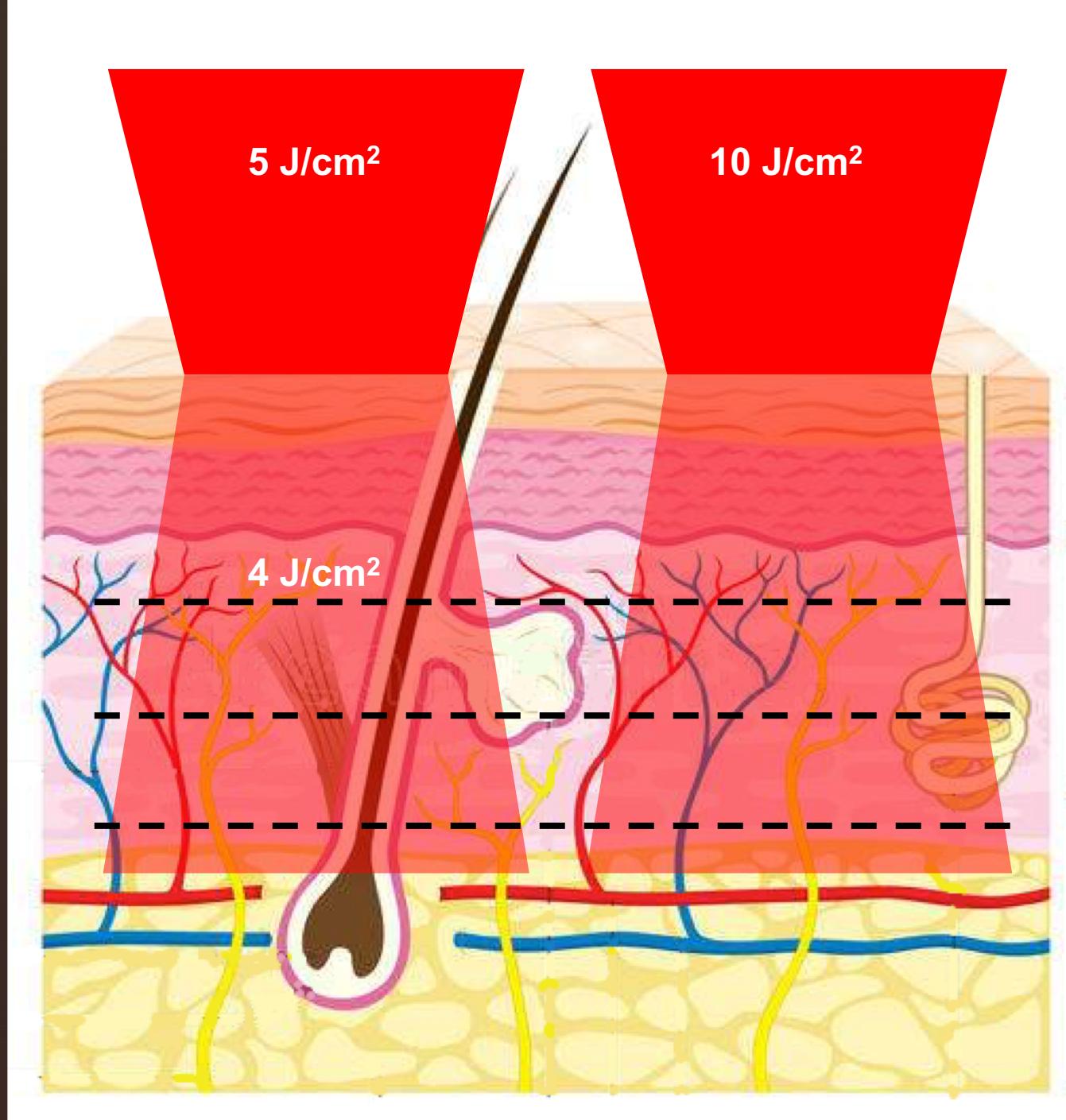
Same
wavelength
Same spot
diameters

Different
fluences at the
skin surface



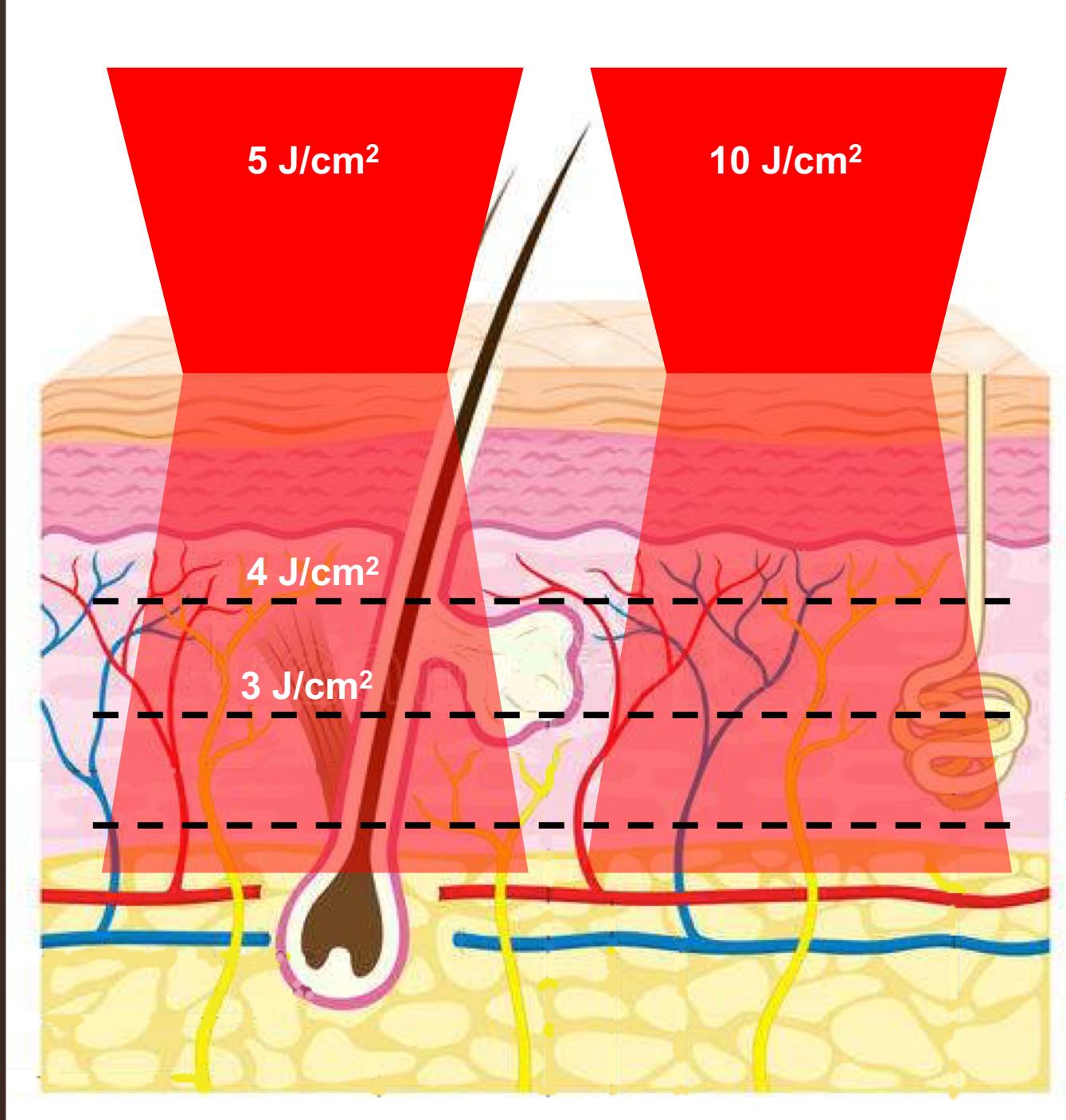
Same
wavelength
Same spot
diameters

Different
fluences at the
skin surface



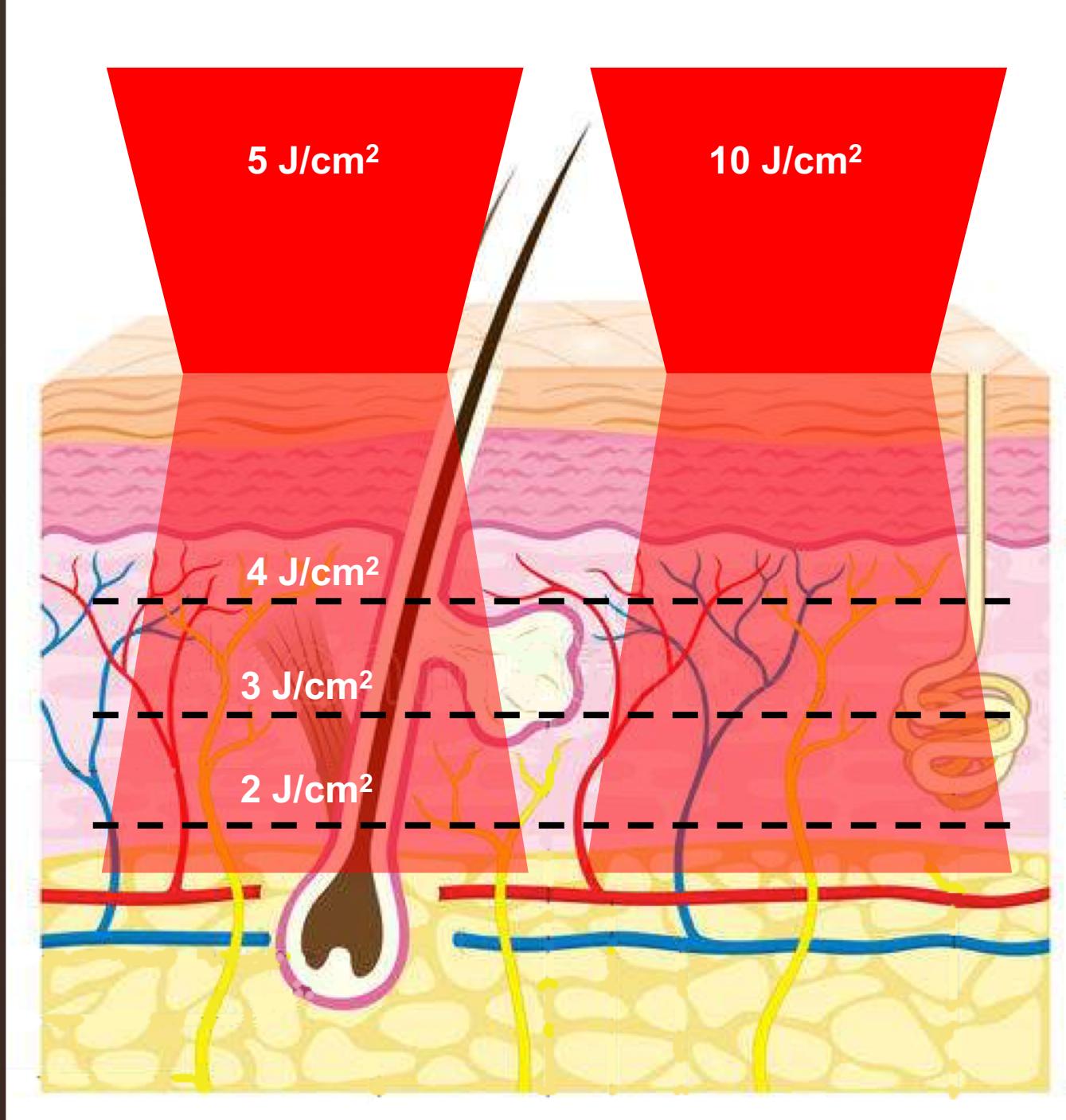
Same
wavelength
Same spot
diameters

Different
fluences at the
skin surface



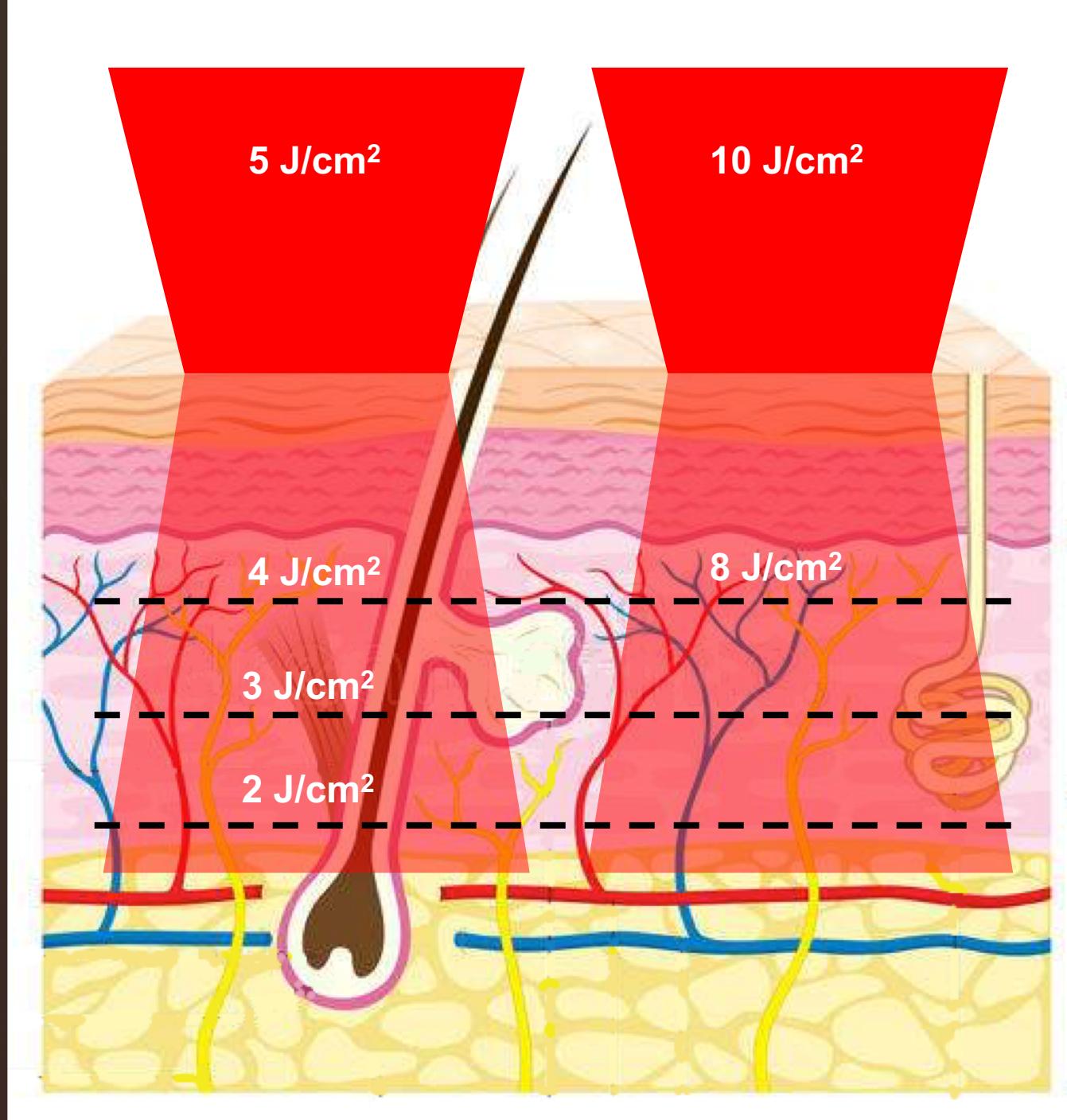
Same
wavelength
Same spot
diameters

Different
fluences at the
skin surface



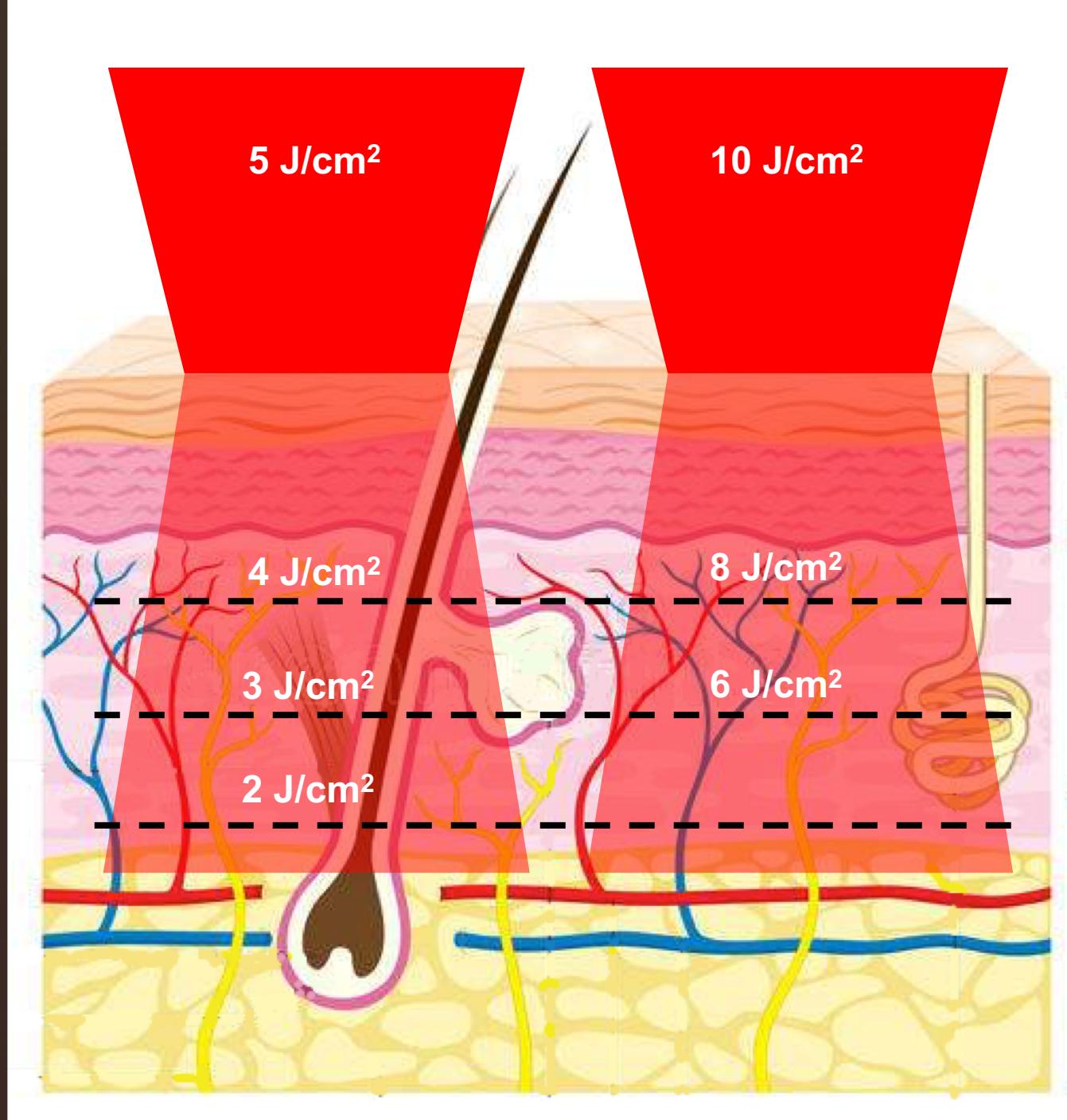
Same wavelength
Same spot diameters

Different fluences at the skin surface



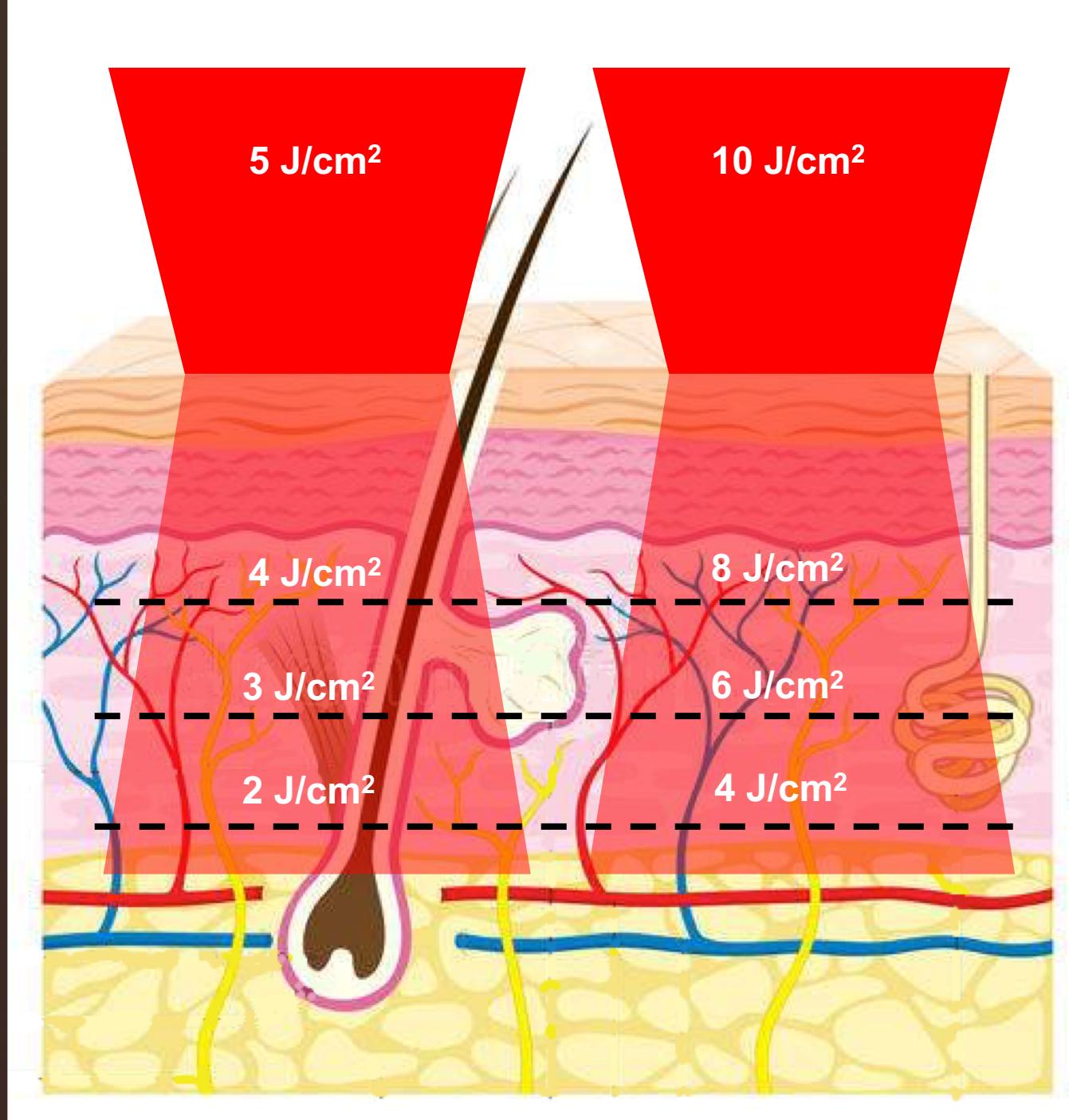
Same wavelength
Same spot diameters

Different fluences at the skin surface



Same wavelength
Same spot diameters

Different fluences at the skin surface



Not actual fluences!
Those depend on other factors...



◀ Clinically Useful Penetration Depth

- Depends on....
 - Wavelength
 - Anisotropy
 - Spot diameter
 - Incident fluence



Clinically Useful Penetration Depth

- A much more ‘useful’ definition for treatment purposes!!



‘Useful’ Penetration Depth

[The Laser-IPL Guys Site](#)