

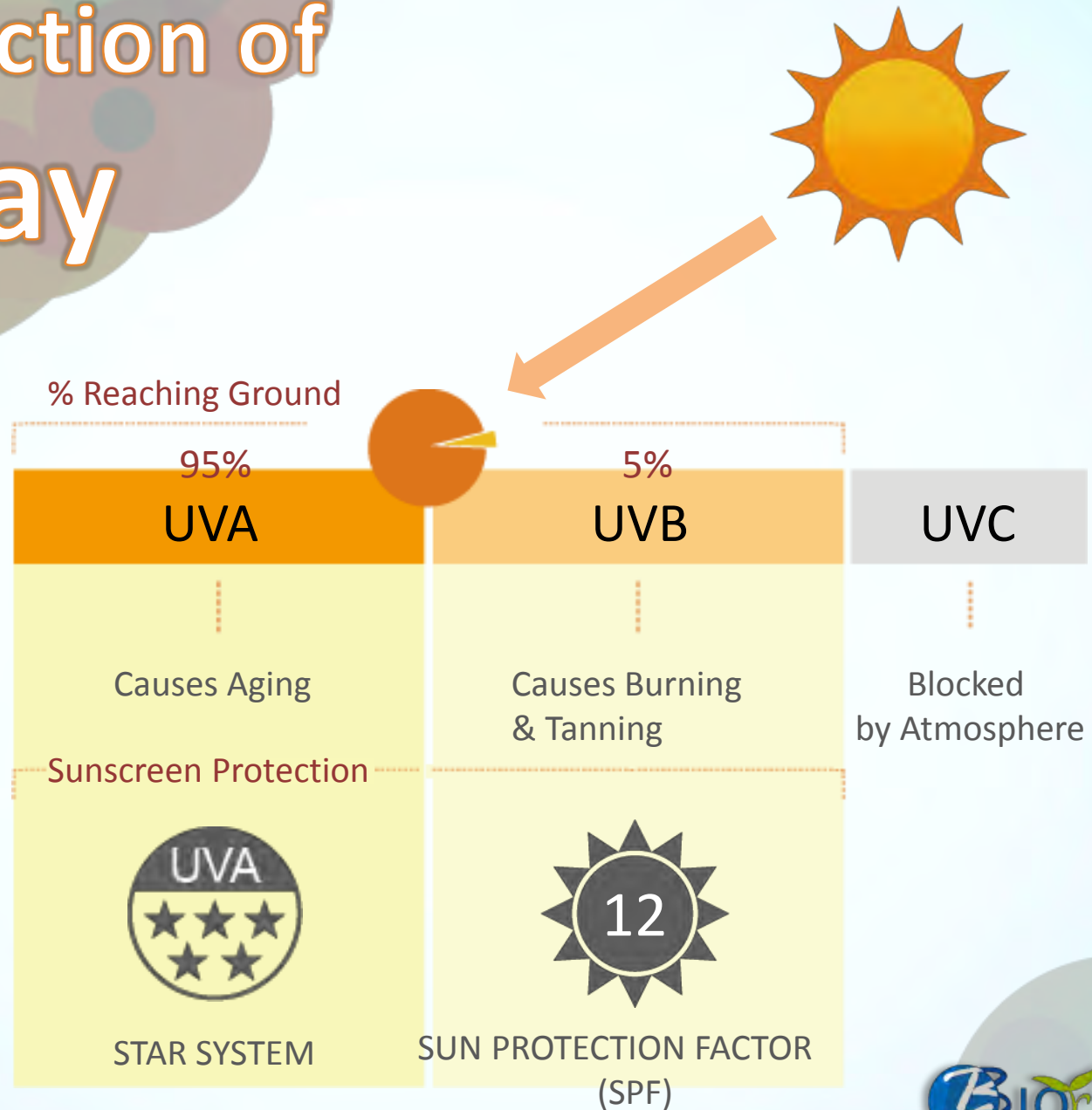
SunCat MTA

*Safe and Efficient Sunscreen
Dispersion*

UVB
290-320 nm
UVA
320-400 nm

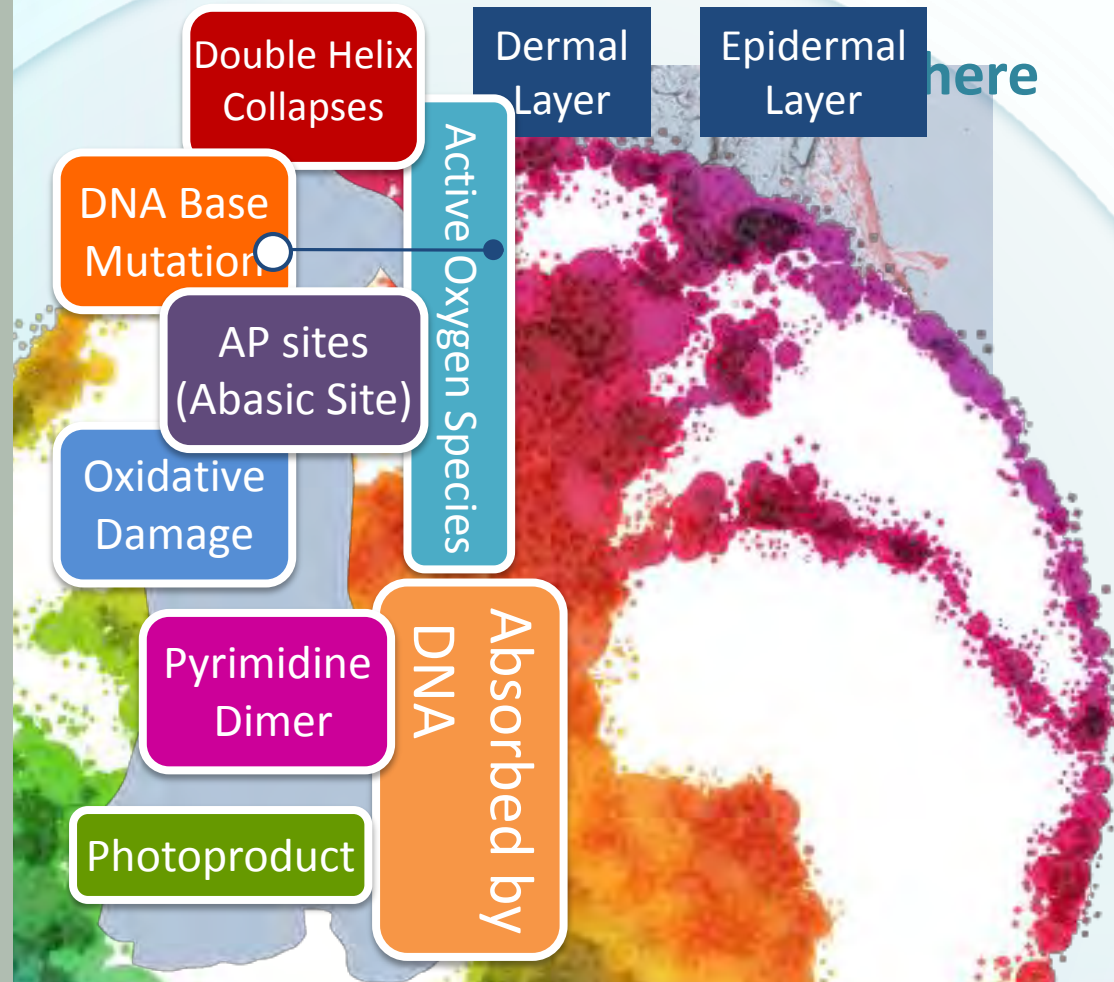


Introduction of UV Ray

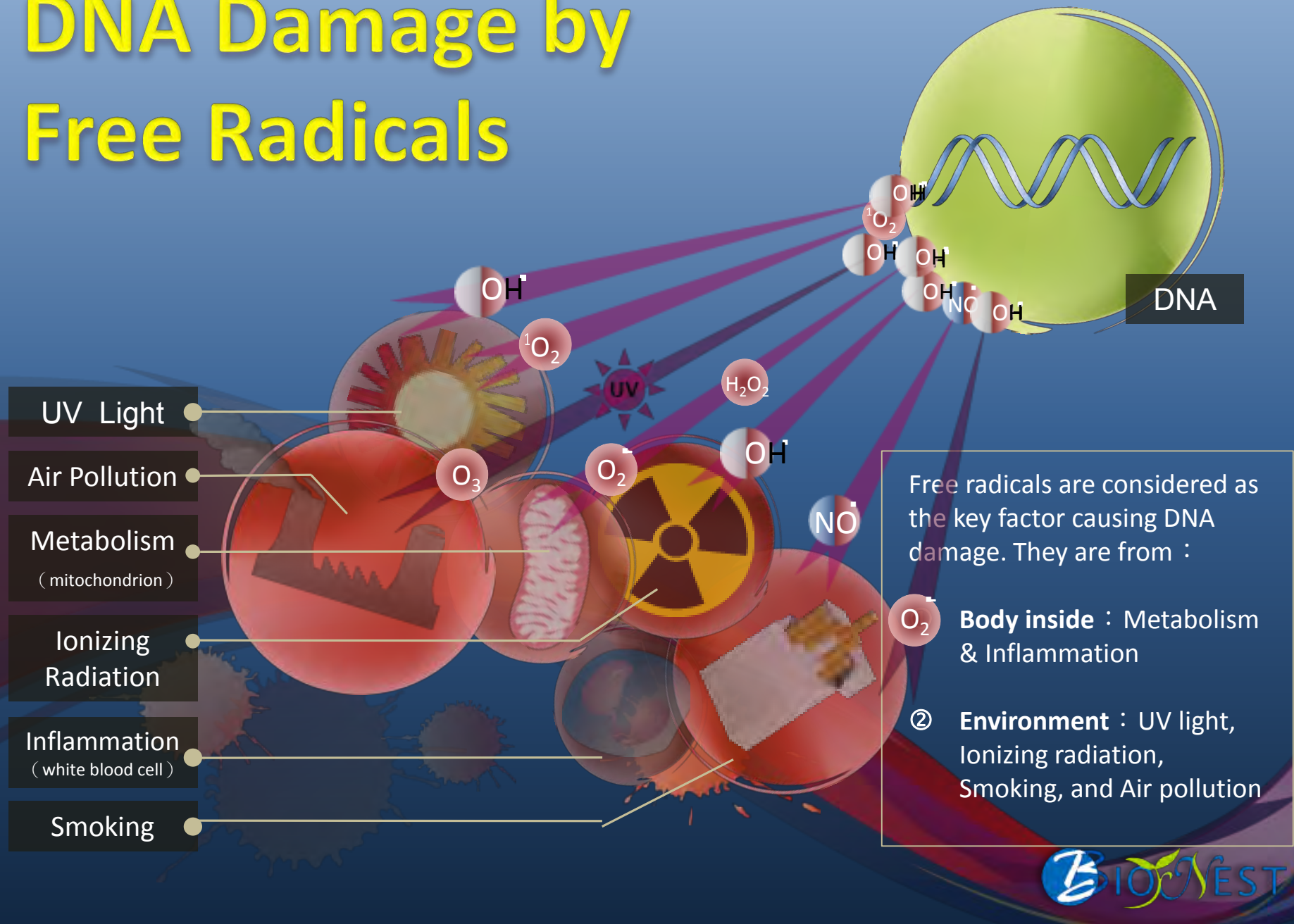


UV Influence to Your Skin

Once UV light contacts skin cell, DNA will be damaged. It might further causes mutation and skin cancer.

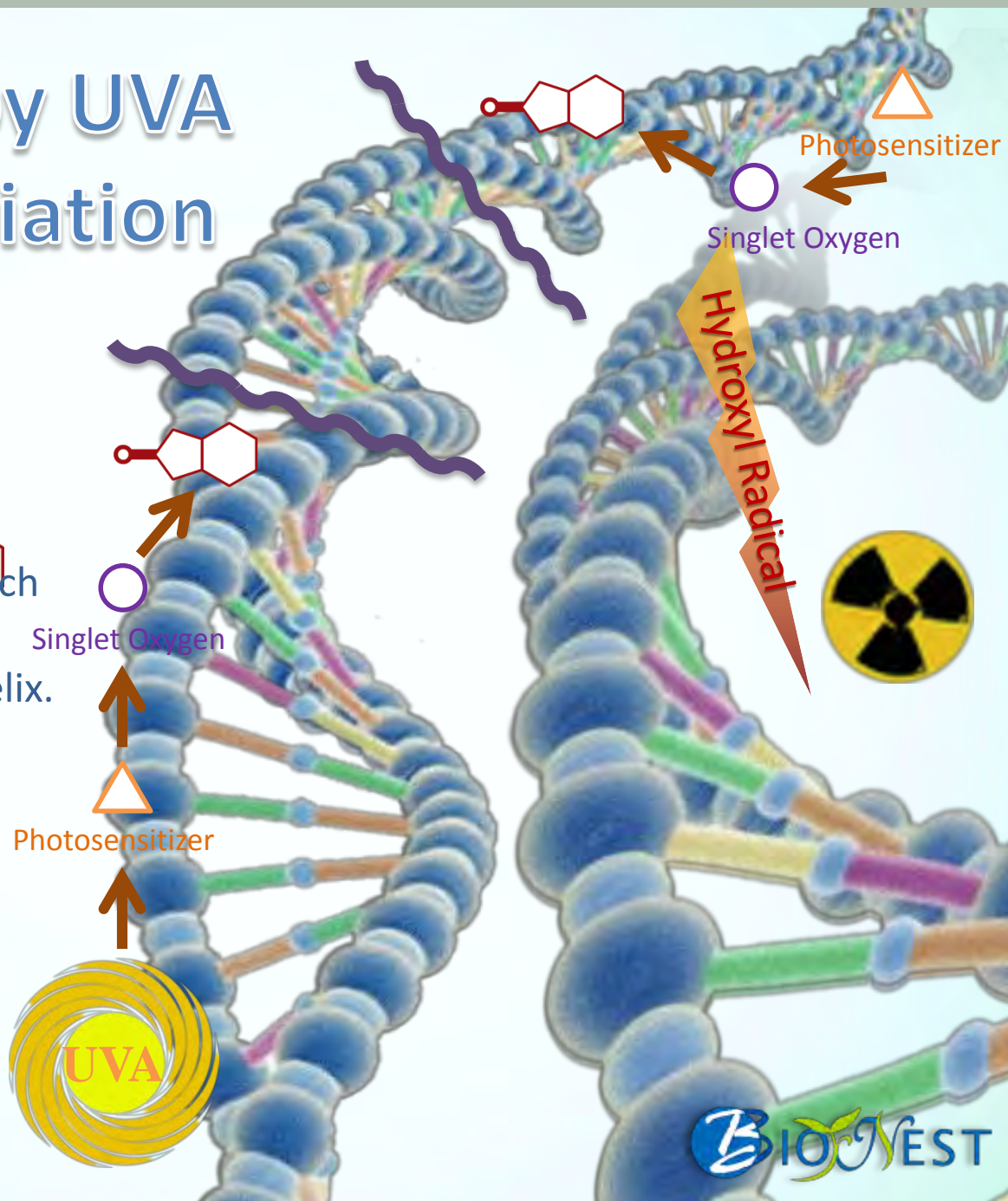
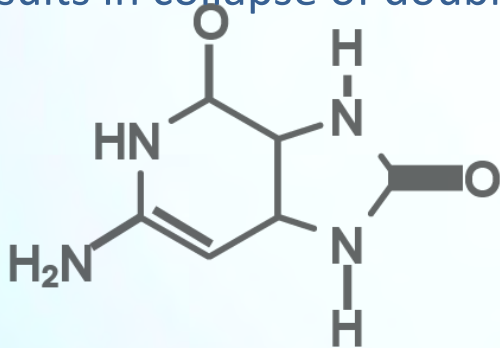


DNA Damage by Free Radicals

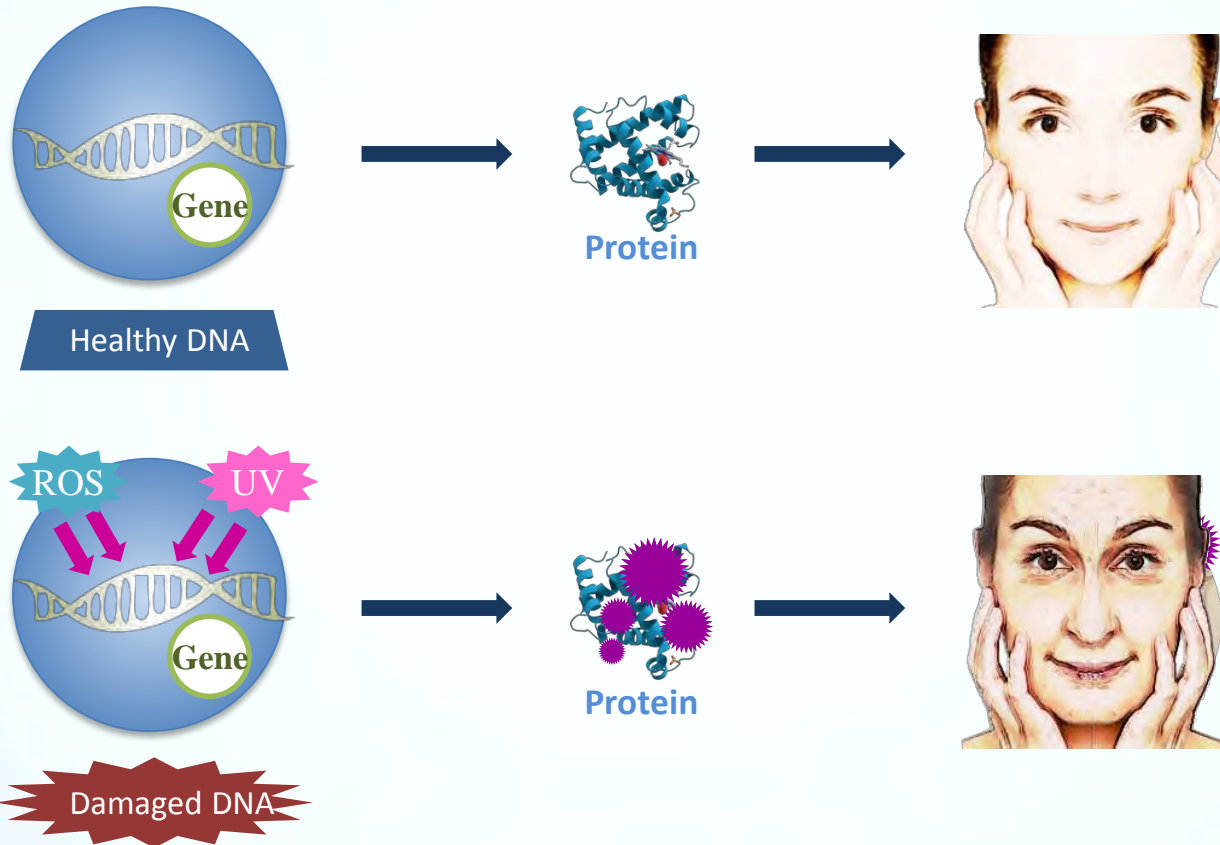


DNA Damage by UVA & Ionizing Radiation

Ionizing radiation generates hydroxyl radicals which break DNA by causing single and double strand breaks. This molecule will lead to mismatch repair and DNA damage. DNA damage results in collapse of double helix.



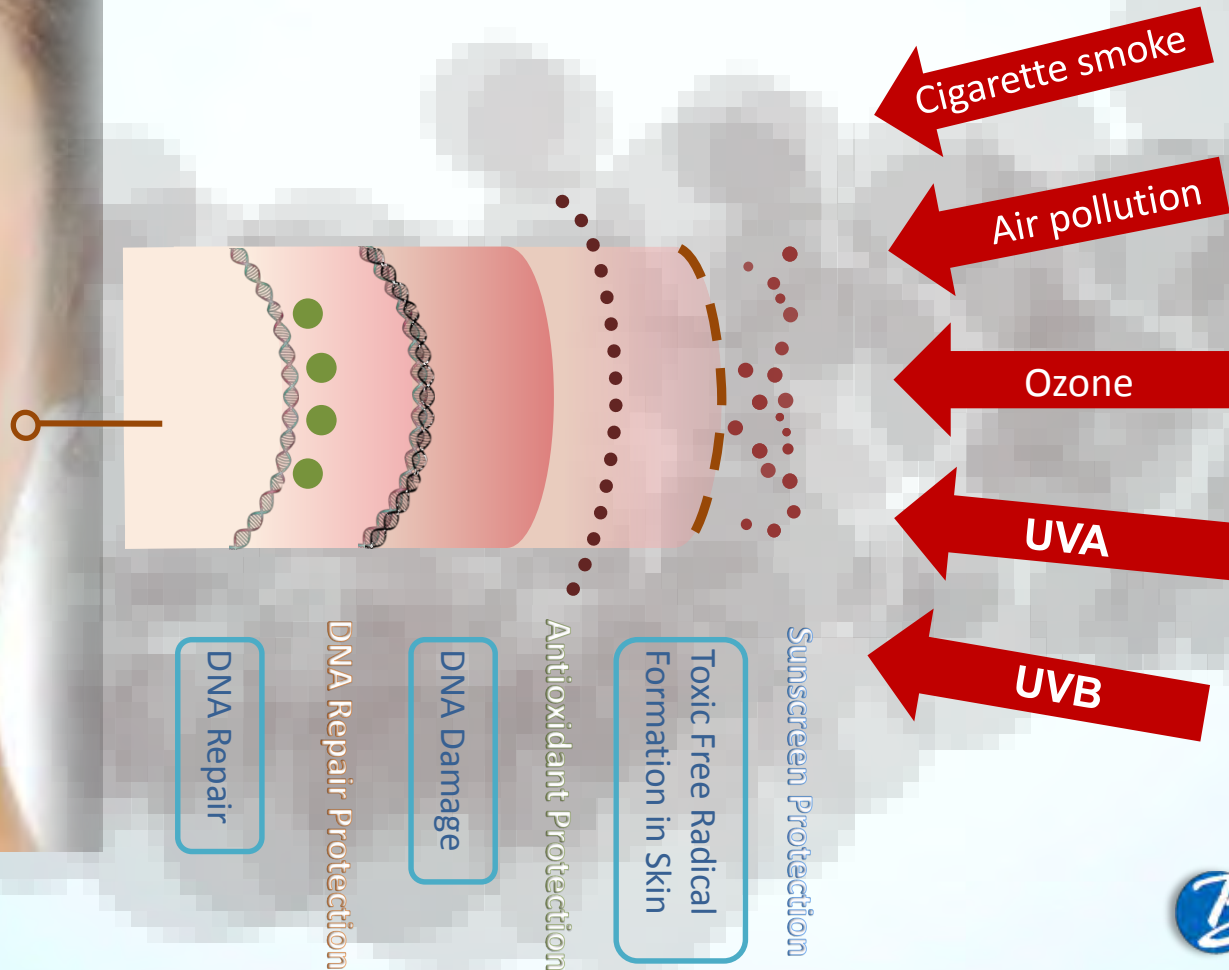
What happens to skin if DNA is damaged?



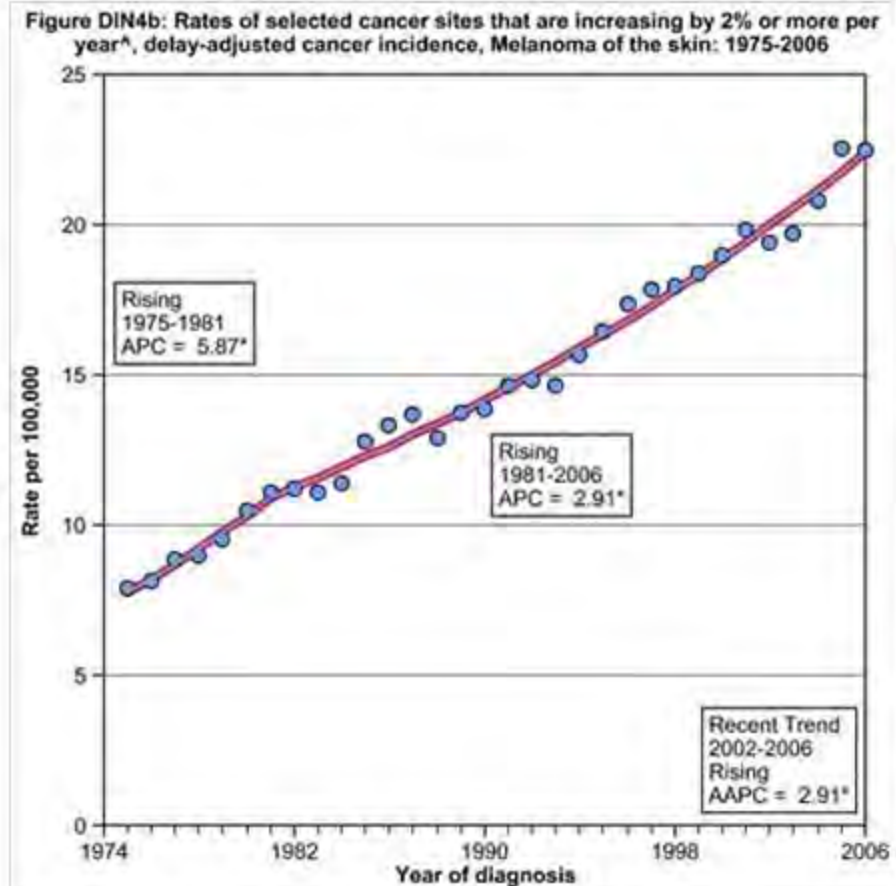
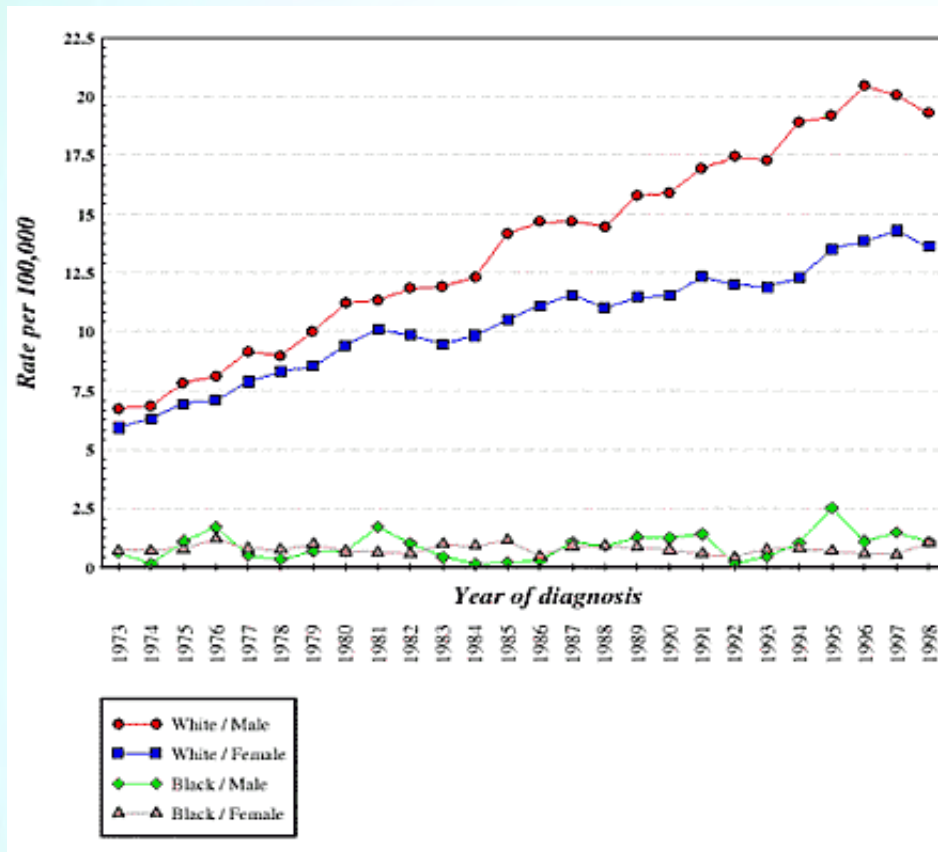
Healthy DNA comes healthy skin!!

Is SPF Really Enough??

Even application of SPF daily, only UVB rays, plus DNA can be blocked. Free radicals penetrate by external factors still penetrate into skin and cause DNA damage.



Statistics of Melanoma Cases in U.S.



(National Cancer Institute)

Graph of melanoma of the skin rates from 1975 to 2006. APC stands for annual percent change and AAPC stands for average annual percent change.

Figure 1. Age-adjusted incidence of melanoma by race and gender; SEER data, 1973–1998.

Source: National Cancer Institute

Our Lifestyles Play A Big Part:

- ✓ More processed foods & animal products
- ✓ Less natural plant foods

Loss of parts of the ozone layer

Why skin cancer cases are increasing?

Misinterpretation on SPF claim and sunscreen products without UVA filter inside

(Harmful) sunscreen ingredient and its decomposed moiety might be absorbed and cause immune and reproduction problem.



Source: <http://www.evolvingwellness.com/>



Sunscreen of the next generation

SunCat

1

Enwrapped form for even protection

- Particles won't aggregate
- Lower dosage for higher SPF
- Extended broad spectrum protection of UVA+UVB

2

Safer on the skin

- Won't get absorbed into skin
- Comfortable and refreshing skin wear

3

Easier formulation

- Water dispersible
- No guesswork for SPF achieved

Enwrapped form

**W/O/W
Enwrapping**



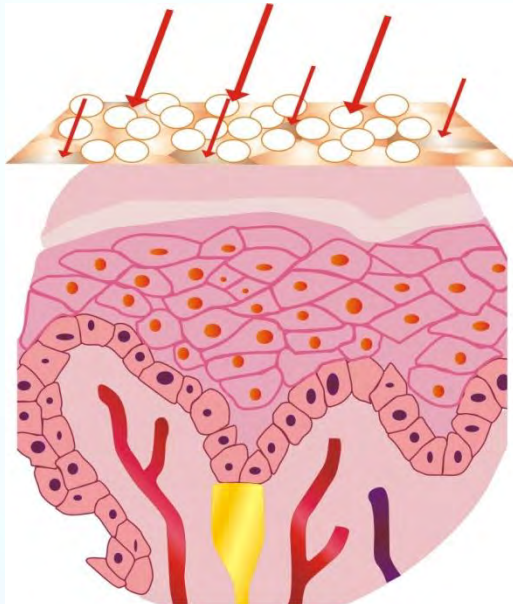
1 micron

● Double sphere enwrapping

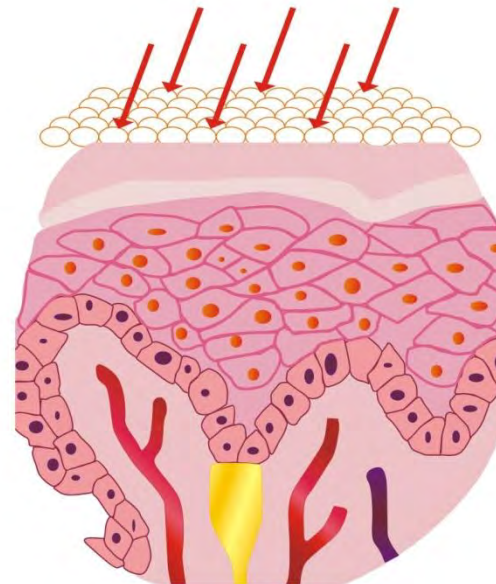
- Pre-solubilized mixture of both liquid and powder chemical sunscreen
- Through a proprietary, high pressure, and high shear process
- Micronized sunscreen enwrapped in double-layered sphere
- Negatively charged outer sphere
- Prevent aggregation

Even protection

- Evenly spread to provide uniform protection



Traditional chemical sunscreen
with uneven protection



Evenly spread protection of SunCat

Safer on the skin



● Comfortable and refreshing safer wear

- Won't get absorbed into skin
- Non-irritant (even to chemical sunscreen sensitive people)
- Longer and safer skin residence time
- No excess oily formulation needed
- Forms a thin layer of water resistant protective shield upon skin
- Allows the skin to breathe freely

Easier formulation

- A specific ratio of sunscreens premixed and solubilized
- No guesswork needed to achieve desired SPF
- Aqueous dispersion suitable for almost every cosmetic formulation
- Compatible with both “cold process” and “hot process” formulation
- Added in the final stage. No pre-emulsion process is needed comparing to conventional UV filters.

Suitable for a wide range of formulation

Compatible with most ingredients used in personal care products

Nonionic, anionic, or cationic emulsifying systems

20% w/w will yield the maximum concentration allowed

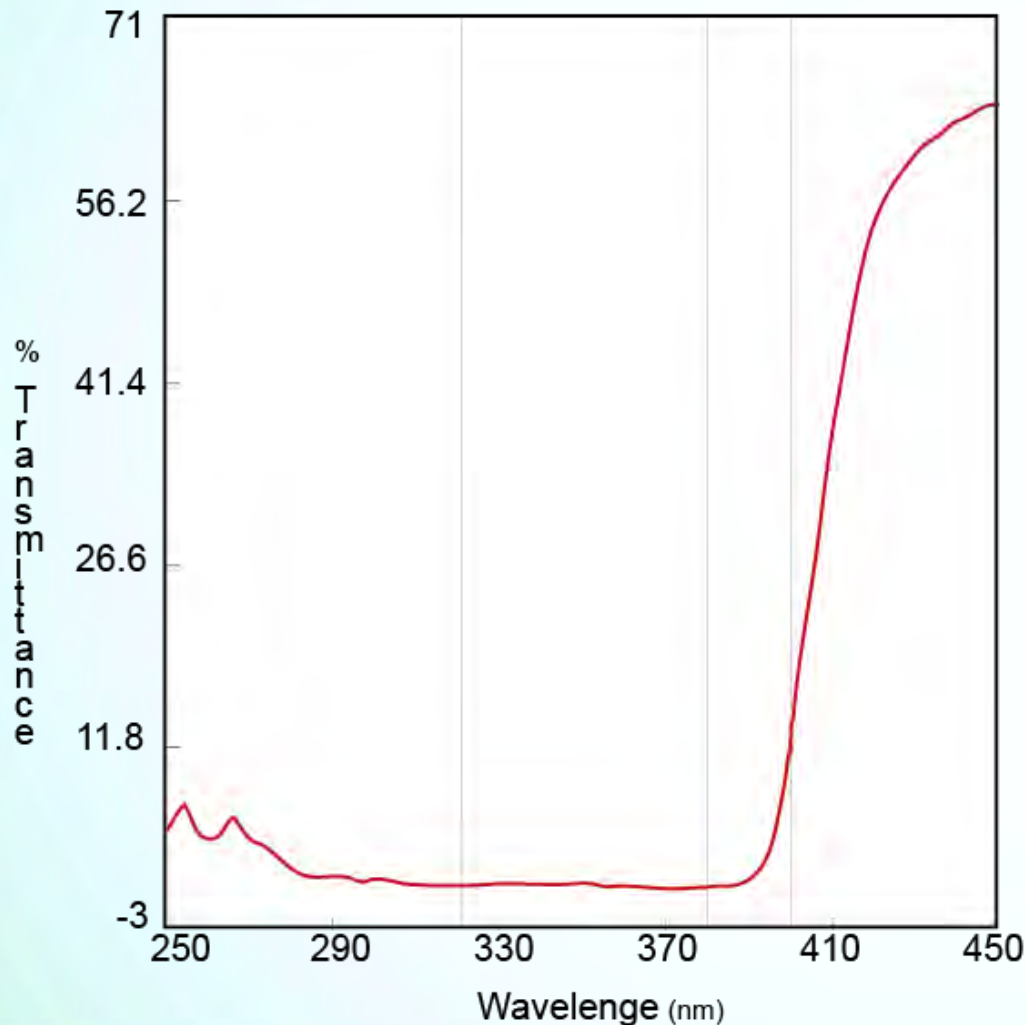
Safely used within a pH range of 5~7.5

Composition

- **The combination of ethylhexyl methoxycinnamate (20%), octocrylene (10%) and butyl methoxydibenzoylmethane (20%) provides perfect full-spectrum protection.**

- *Water (and) Ethylhexyl Methoxycinnamate (and) Butyl Methoxydibenzoylmethane (and) Octocrylene (and) Phospholipids (and) 1,3-Butylene Glycol*
- *20% of usage will stay under the maximum concentration allowed in most countries*

UV transmission test



- Sample: 20% SunCat MTA cream
- Protection range: 280nm~400nm
- 97% UV light can be screened

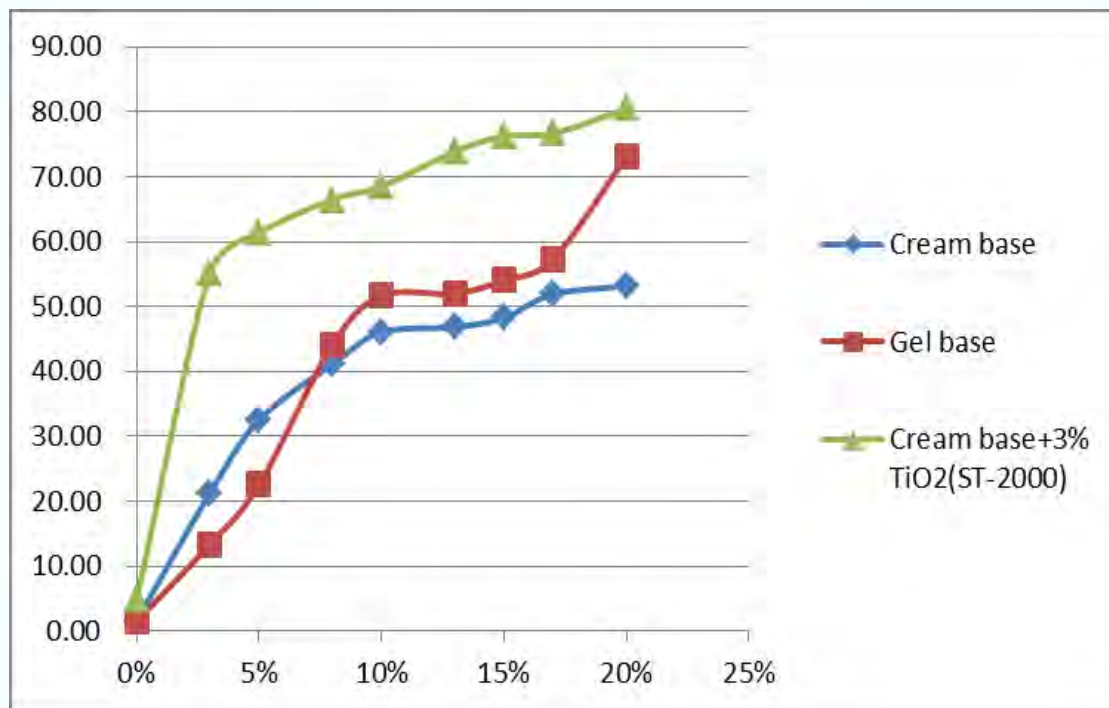
Formulation reference chart

SPF & UVA protection Reference Chart

Base \ W%	0%	3%	5%	8%	10%	13%	15%	17%	20%
Gel	1.57 -	13.39 ***	32.54 *****	44.12 *****	51.66 *****	52.00 *****	54.02 *****	57.26 *****	72.98 *****
Cream	1.63 -	21.26 ***	32.53 *****	41.1 *****	46.04 *****	46.82 *****	48.26 *****	51.89 *****	53.15 *****
Cream+3%TiO₂ (ST-2000)	4.88 *****	55.12 *****	61.34 *****	66.47 *****	68.49 *****	73.86 *****	76.23 *****	76.64 *****	80.43 *****

◆ In vitro tested by Labsphere UV-1000S Ultraviolet Transmittance Analyzer

Correlation between concentration and SPF



The results can be followed by formulators to easily develop new sunscreen formula with their desired sun protection factor in the most efficient way.

Photostability test

▪ Test method

- Expose the slides applied with each sample under the natural sunlight for 2, 4, 6 hours
- After the sun exposure, test the SPF respectively

▪ Sun exposure condition

- October, **Ultraviolet Index**: 6~7
- Time: 10:00 AM ~ 2:00 PM
- Temperature: 30~32°C

UV index	Description	Media graphic color
0-2	Low danger from the sun's UV rays for the average person	Green
3-5	Moderate risk of harm from unprotected sun exposure	Yellow
6-7	High risk of harm from unprotected sun exposure	Orange
8-10	Very high risk of harm from unprotected sun exposure	Red
11+	Extreme risk of harm from unprotected sun exposure	Violet

Source: Wiki

Photostability test (in vitro SPF)

	Cream		Gel		Cream + 3%TiO ₂ (ST-2000)	
SunCat MTA, w%	5%	17%	8%	10%	3%	5%
SPF, before sun exposure	31.86	51.36	42.60	48.39	57.36	63.50
SPF, after 2hrs exposure	36.35	46.81	45.59	51.39	63.91	73.11
SPF, after 4hrs exposure	34.70	46.41	42.92	48.71	67.46	70.17
SPF, after 6hrs exposure	36.52	47.34	46.08	51.69	70.18	72.63

- The photostability of SunCat MTA has been proved to effectively provide perfect sun protection even after continuous sun exposure for 6 hours.

In vivo SPF results

- ✓ 3 subjects panel in skin type II
- ✓ Tests performed by AMA Lab.

	Cream		Gel		Cream + 3 %TiO ₂ (ST-2000)	
SunCat MTA, w%	5%	17%	8%	10%	3%	5%
In vitro SPF	31.86	51.36	42.60	48.39	57.36	63.50
In vivo SPF	35.7	56.2	39.3	62.9	57.2	68.3

- Similar in vivo SPF results are obtained comparing to in vitro ones.

Why SunCat MTA

- SunCat MTA can provide broad spectrum protection throughout the whole UVB and UVA range, from 290nm to 400nm.
- High SPF and excellent photostability can be achieved in low concentration of SunCat MTA.
- More welcomed ingredient: Octocrylene (vs. Benzophenone-3)

Suggested applications

**SunCat
MTA**



Skin care

- Toner, lotion, cream, foundation, sunscreen spray, sunscreen wipe, etc.



Hair care

- Sunscreen toner spray

To remind you again

Aqueous form

- Easier formulation
- Prevent skin absorption
- Very comfortable wear

Enwrapping form to help stabilization

- Prolong the protection capabilities of chemical sunscreen
- Prevent particle aggregation
- Even spread for better protection
- Fewer sunscreen actives and lower concentration used for higher SPF