



PEPHA[®]-PROTECT

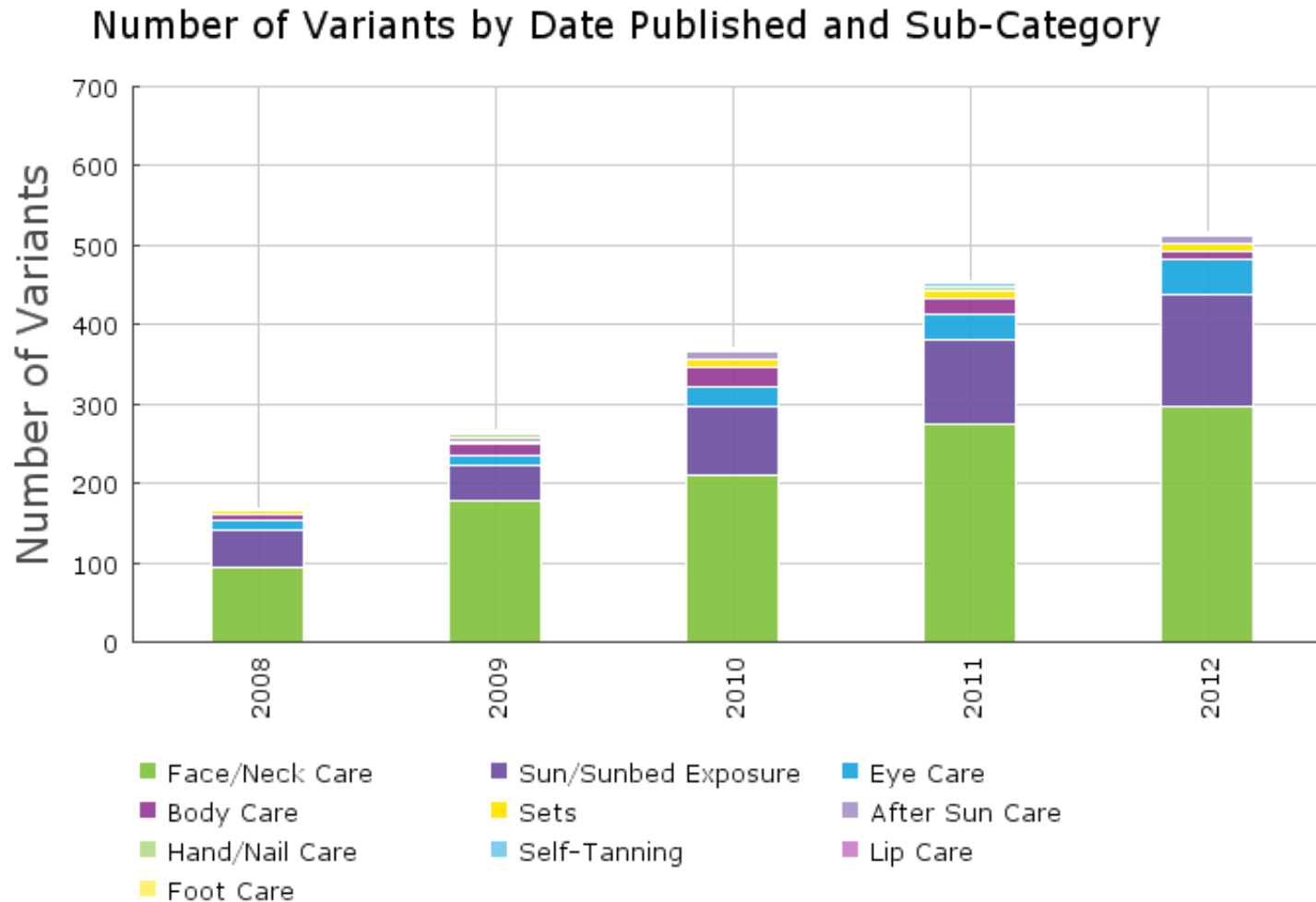
*Powerful bodyguard for
naturally protected skin*

October 2020

Agenda

- 1 DNA Protection - A Growing Trend
- 2 Sun & Skin - Not Always the Best Combination
- 3 PEPHA[®]-PROTECT - A Bodyguard from the Desert
- 4 PEPHA[®]-PROTECT - Outstanding Capabilities
- 5 PEPHA[®]-PROTECT in a Nutshell

+205% Skin Care Launches with Focus “DNA Protection” (2008-2012)



New Skin Care Launches with Focus on DNA



"DNA ACTION COMPLEX"

"DNA PROTECTION"

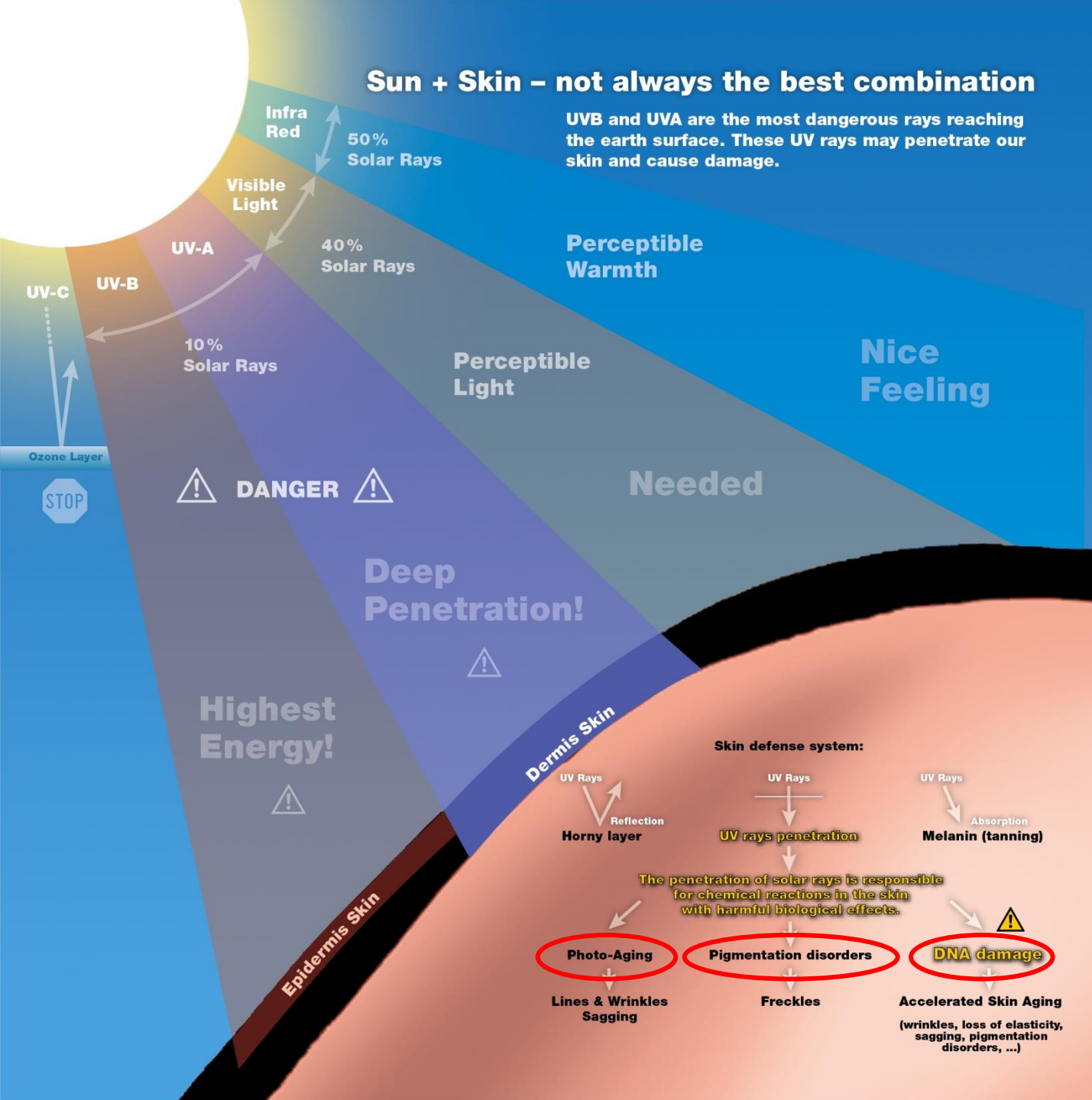
"DNAge"

Agenda

- 1 DNA Protection - A Growing Trend
- 2 Sun & Skin - Not Always the Best Combination**
- 3 PEPHA[®]-PROTECT - A Bodyguard from the Desert
- 4 PEPHA[®]-PROTECT - Outstanding Capabilities
- 5 PEPHA[®]-PROTECT in a Nutshell

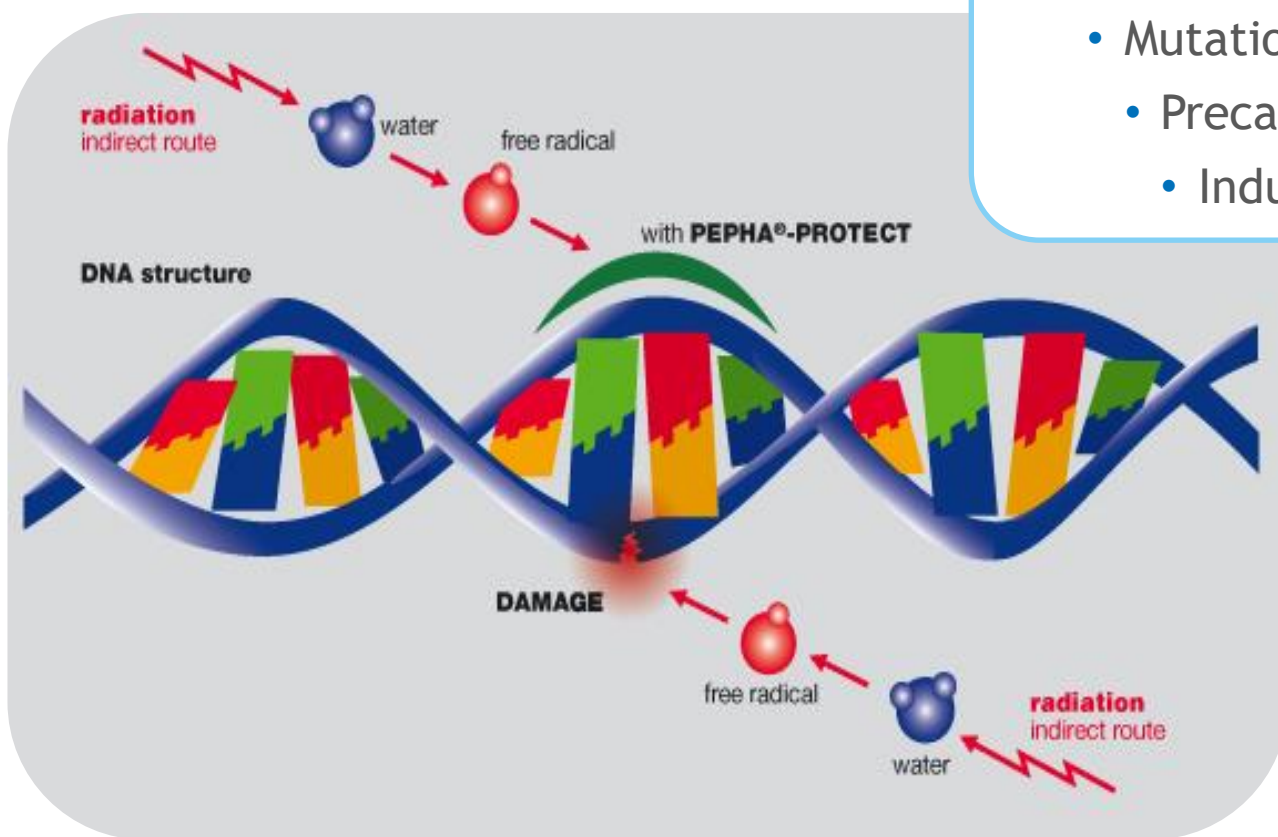
Sun + Skin – not always the best combination

UVB and UVA are the most dangerous rays reaching the earth surface. These UV rays may penetrate our skin and cause damage.



Harmful Consequences of DNA Damages

- Accelerated skin aging
- Apoptosis of skin cells
- Mutations in skin cell DNA
- Precancerous lesions in skin
- Induction of skin lesions



Agenda

- 1 DNA Protection - A Growing Trend
- 2 Sun & Skin - Not Always the Best Combination
- 3 PEPHA®-PROTECT - A Bodyguard from the Desert**
- 4 PEPHA®-PROTECT - Outstanding Capabilities
- 5 PEPHA®-PROTECT in a Nutshell



A Bodyguard from the Desert

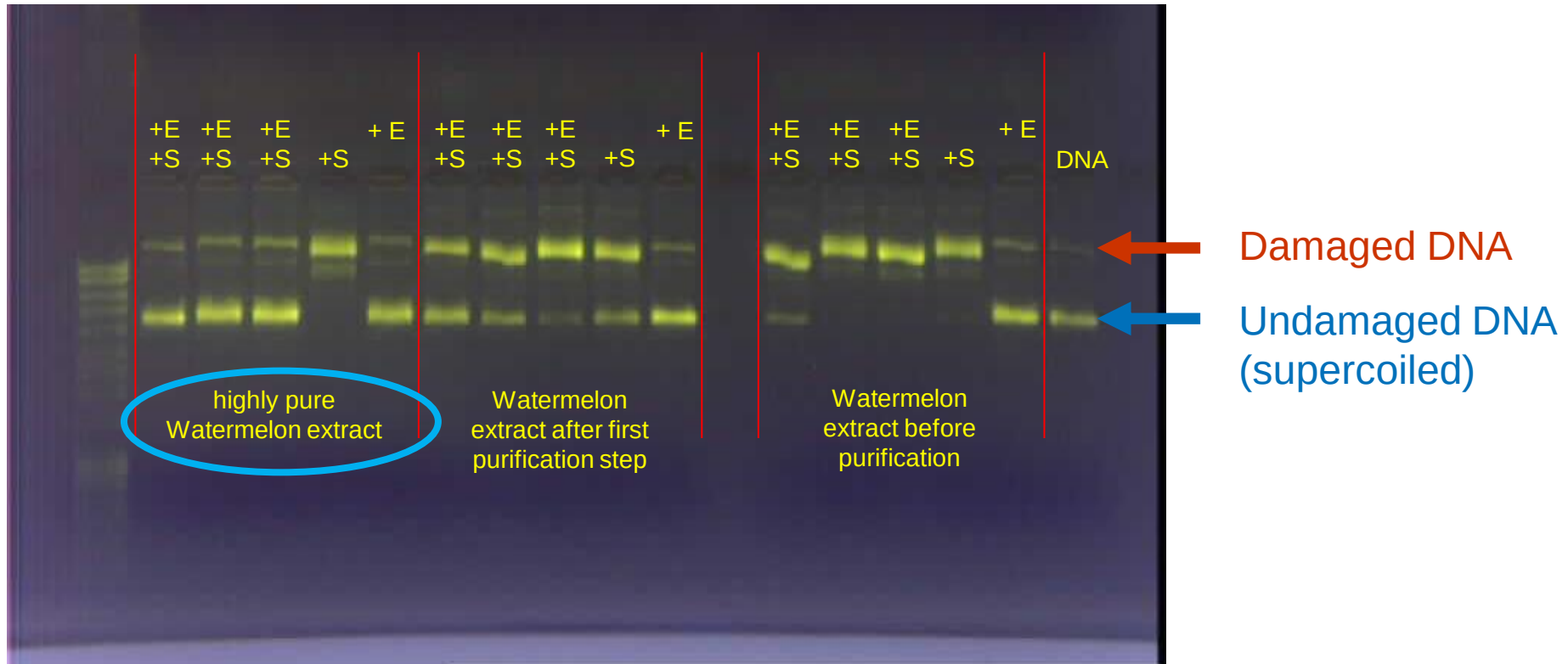
- Plants growing under extreme conditions require exceptional survival strategies;
- In the Kalahari desert grows a special kind of watermelon (*Citrullus lanatus*); in order to survive, it synthesizes tough defensive compounds, so-called **compatible solutes** - to protect important cellular structures such as DNA;
- **PEPHA®-PROTECT** is a highly purified *Citrullus lanatus* extract from a species that originates from Kalahari desert.



Kalahari desert

PEPHA[®]-PROTECT - a Unique Highly Purified Watermelon Extract

Plasmid assay



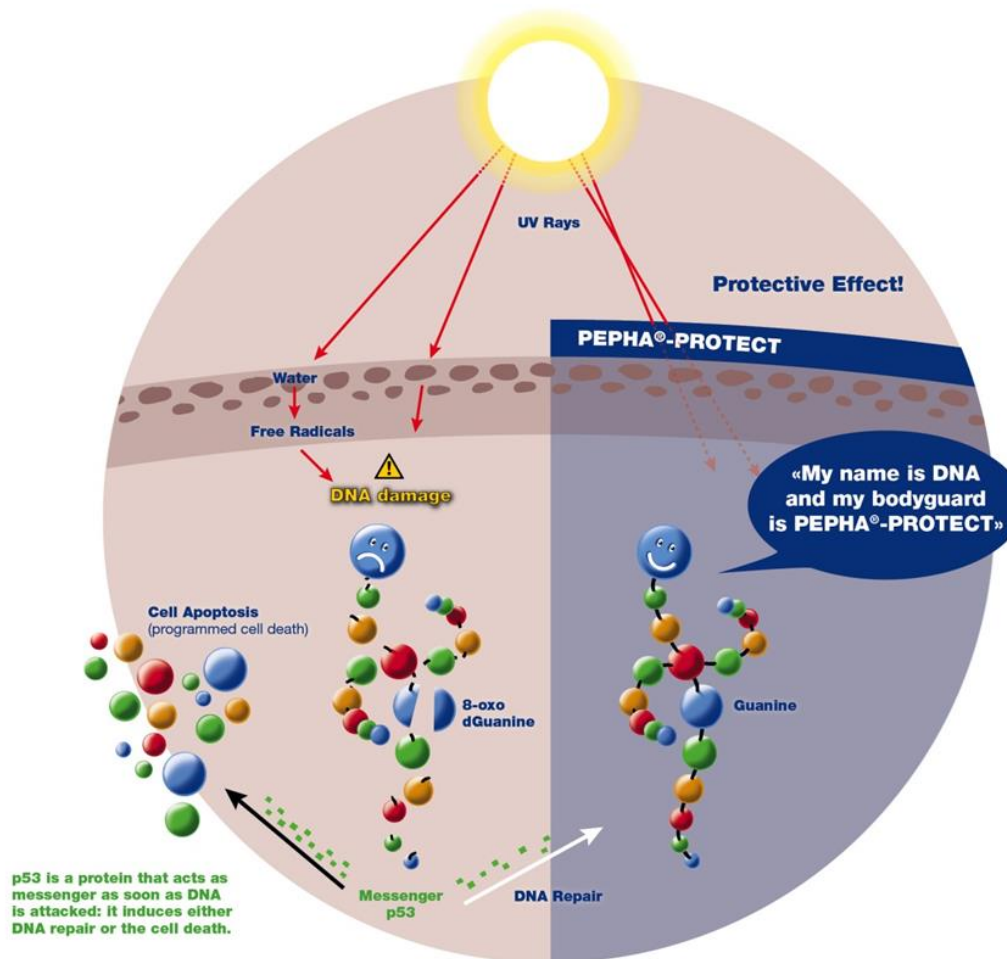
+E = plus Melon Extract

+S = plus H₂O₂ Stress

Agenda

- 1 DNA Protection - A Growing Trend
- 2 Sun & Skin - Not Always the Best Combination
- 3 PEPHA[®]-PROTECT - A Bodyguard from the Desert
- 4 PEPHA[®]-PROTECT - Outstanding Capabilities**
- 5 PEPHA[®]-PROTECT in a Nutshell

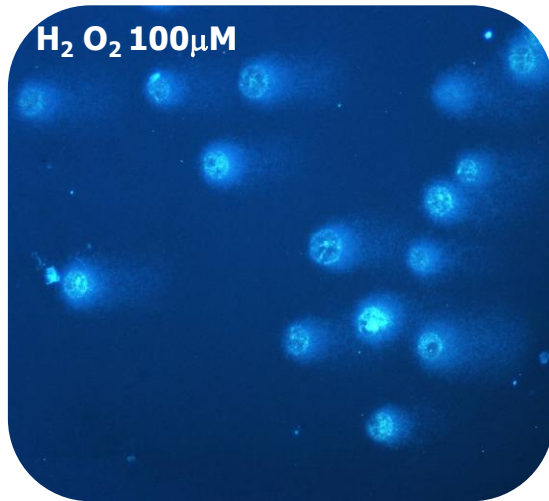
State-of-the-art *in vitro* Assays that Highlight PEPHA®-PROTECT' Strong Capacity to Protect from DNA Damages



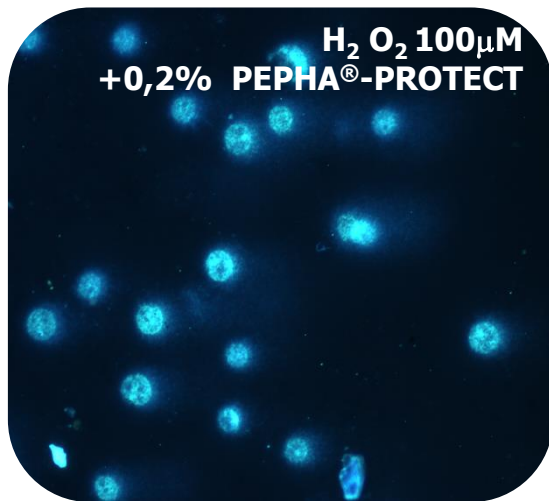
with 0.2% PEPHA®-PROTECT

- **COMET assay** shows 69% decrease of DNA fragmentation
- **P53 assay** shows 75% decrease of phospho-p53 production
- **8-oxo-guanine assay** shows 92% decrease of 8-oxo-dG production

in vitro COMET Assay Shows 69% DNA Protection with 0.2% PEPHA[®]-PROTECT

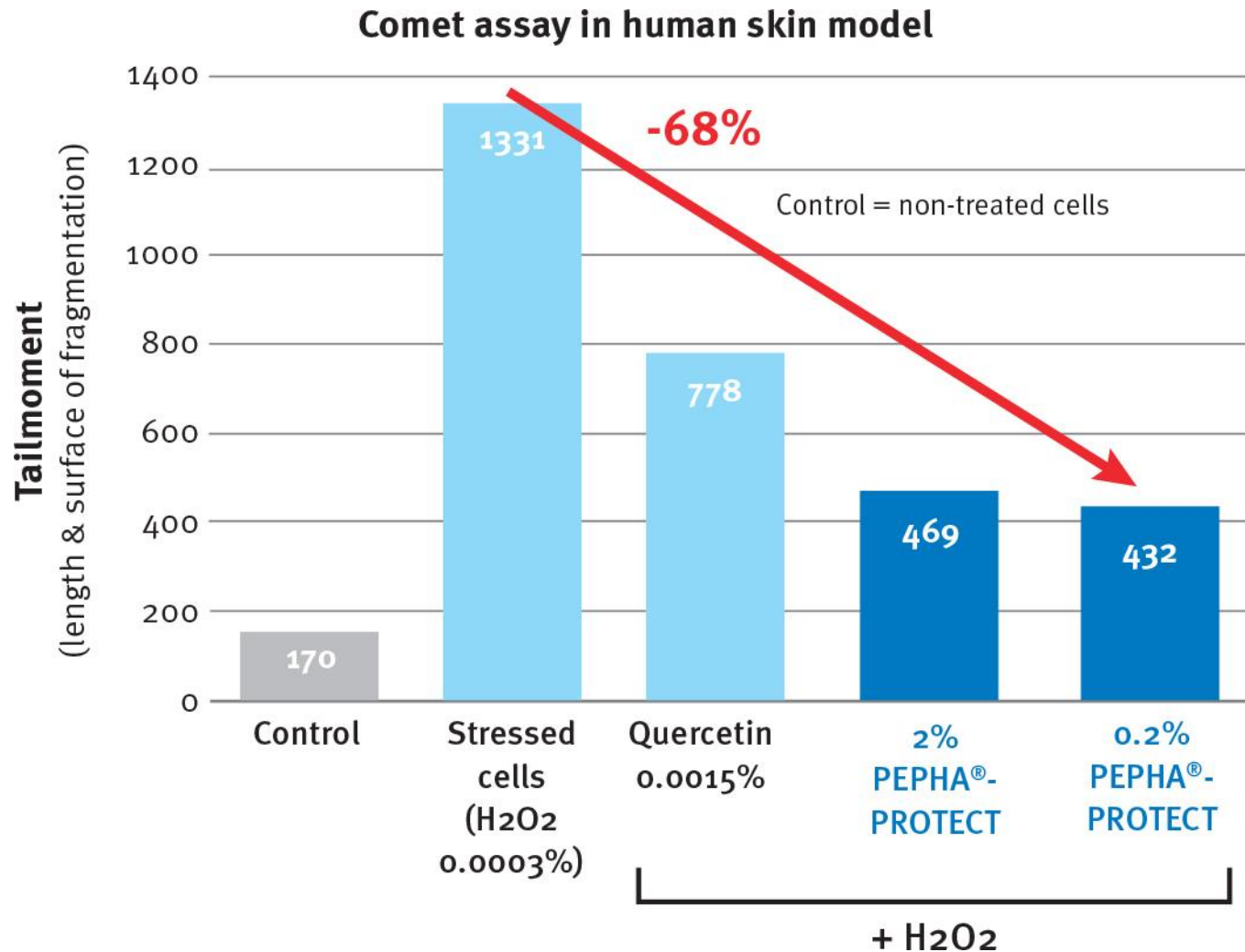


- The keratinocytes of a human skin model are stressed by UV or radicals, which causes DNA fragmentation;
- During electrophoresis small sections of damaged DNA may migrate out of the nucleus into the cytoplasm and thereby lead to the so called comet effect;
- The expansion of the COMET is expressed as tail moment

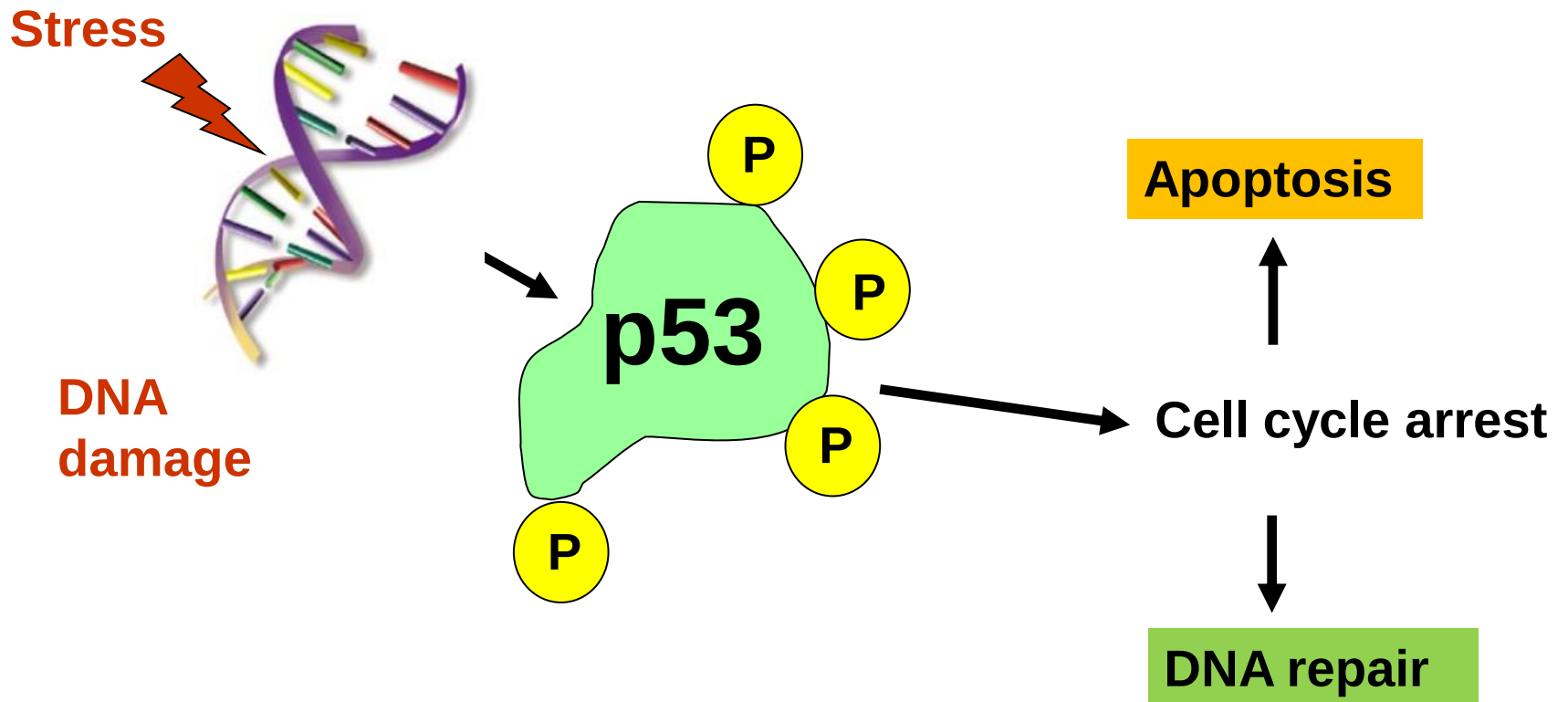


The comets are significantly smaller by using PEPHA[®]-PROTECT

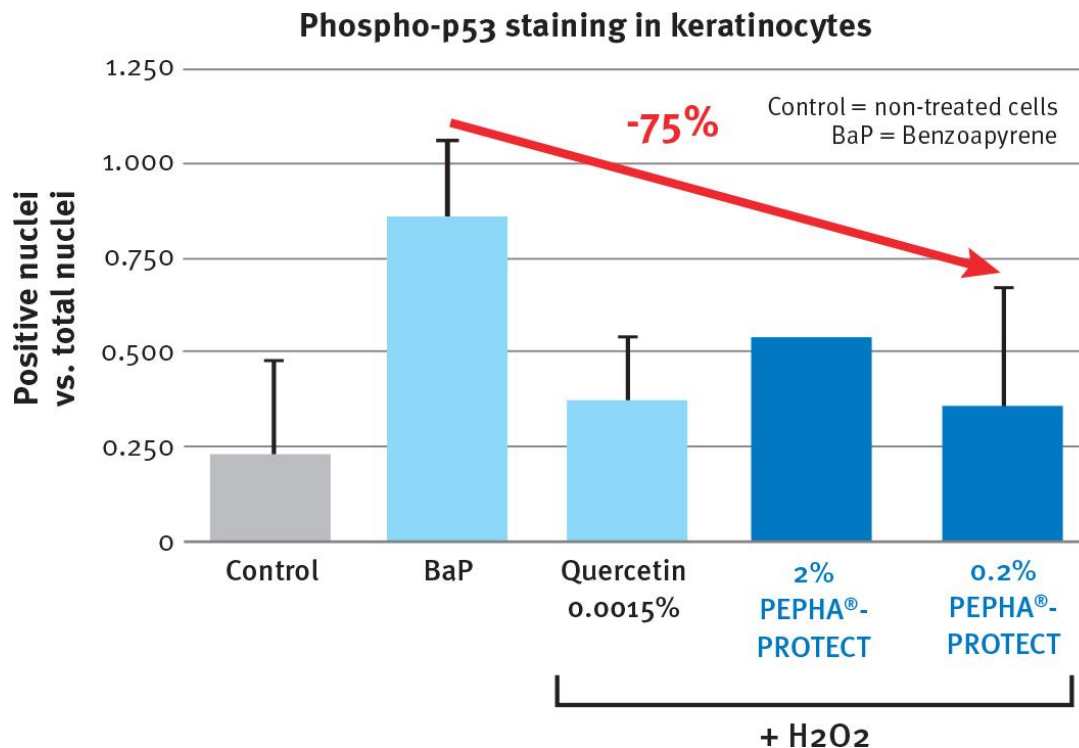
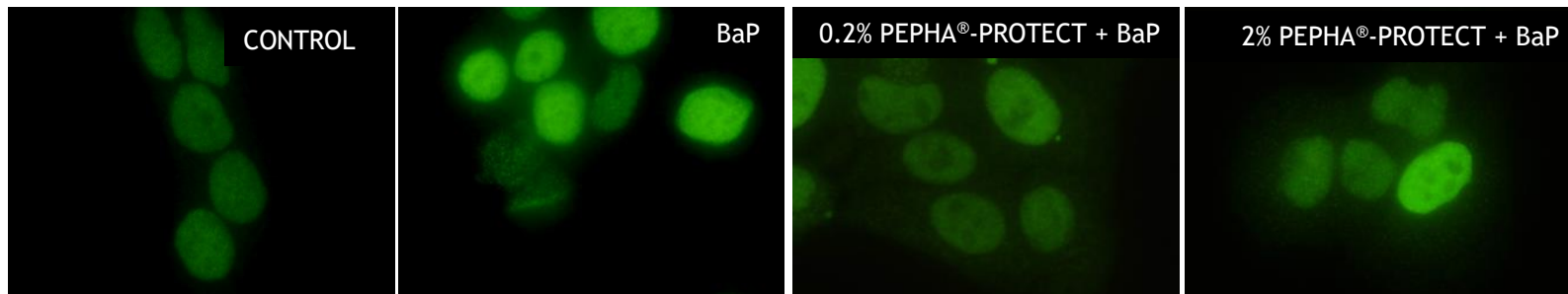
Significant Prevention of DNA Fragmentation



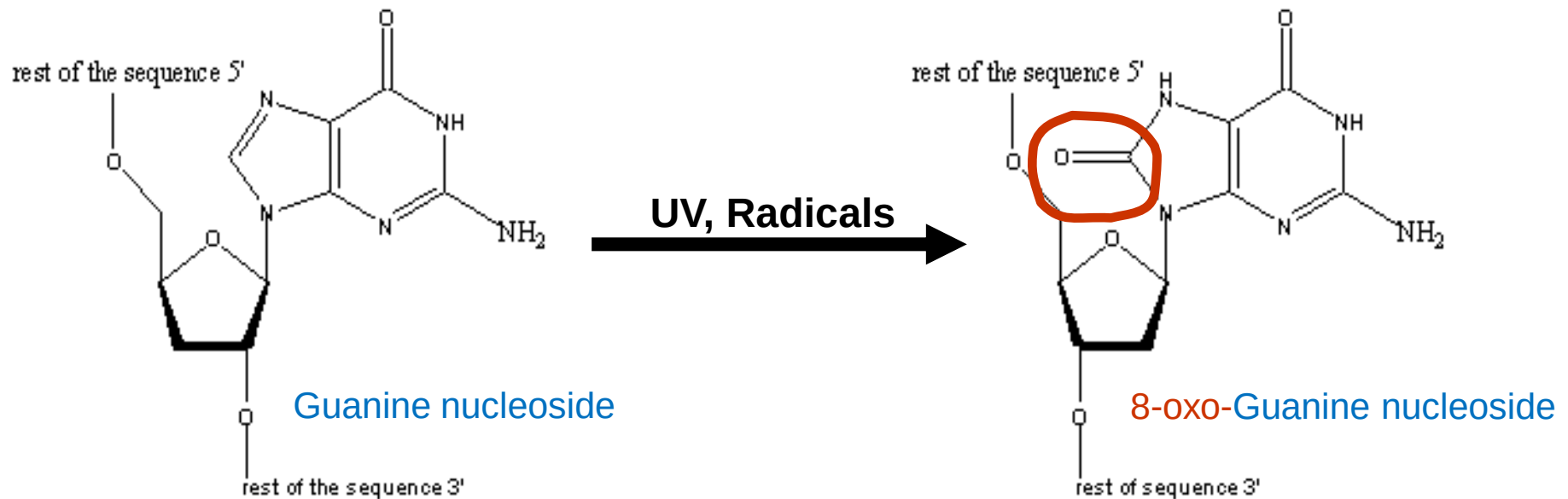
P53 - a Key Cellular Marker for DNA Damage



Significant Phospho-p53 Reduction Proving Strong DNA Protection

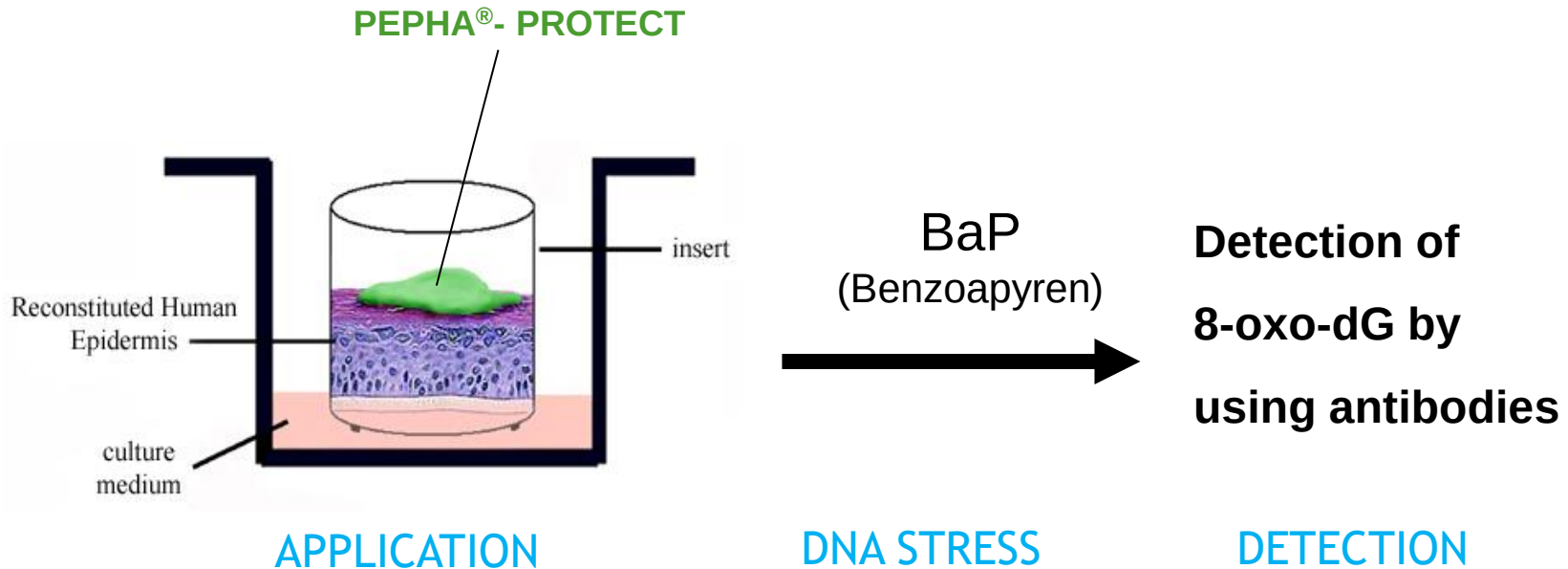


8-oxo-dG is a Molecular *in vitro* Marker for DNA Damage - Mechanism



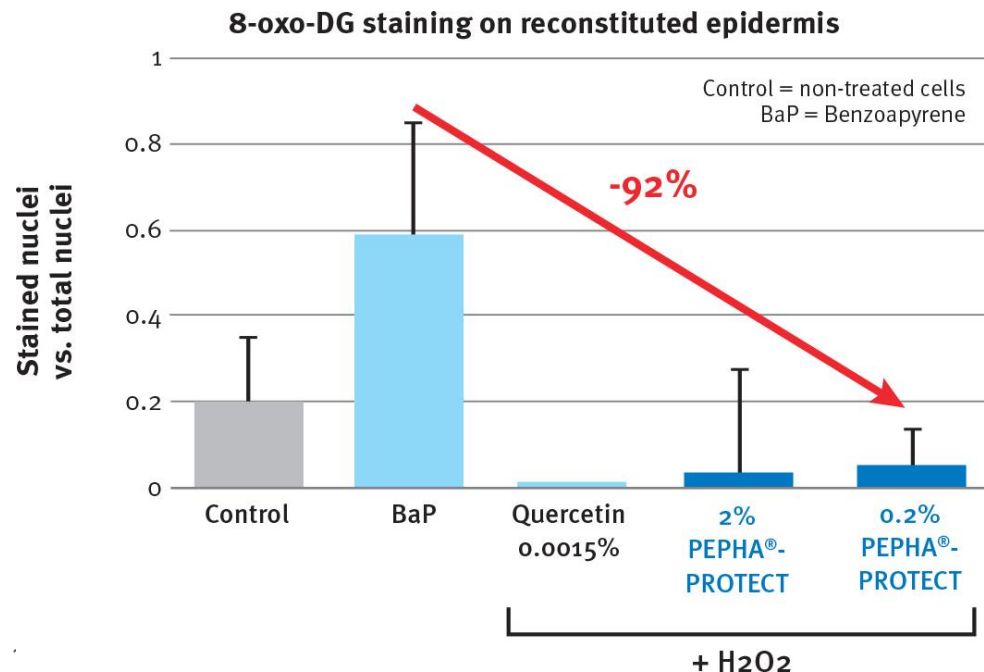
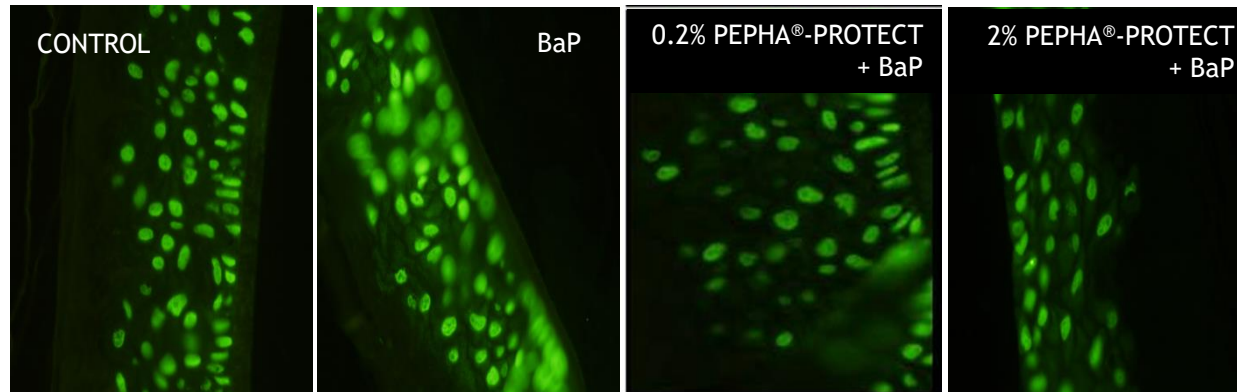
After UV irradiation of the cells, the guanine base is oxidized at the C8 position and thus transformed into 8-oxo-Guanine

8-oxo-dG is an *in vitro* Marker for DNA Damage - Assay

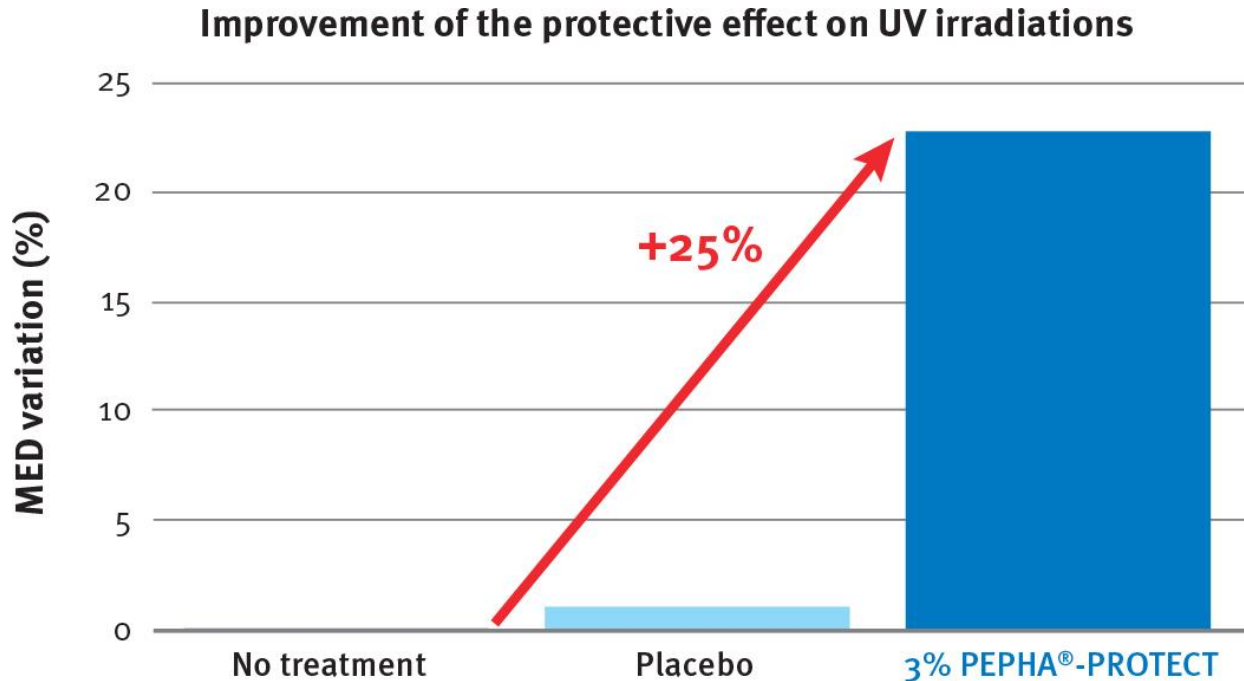


This 8-oxo-Guanine base can be detected with appropriate antibodies which are treated with a marker

Significant 8-oxo-dG Reduction Proving Strong DNA Protection



Strong Reinforcement of the Skin Defense System - *in vivo*



- MED measurement at T0 and T28 days
- Cream containing 3% PEPHA®-PROTECT
- 15 volunteers with skin type II / III

- 25% increase in skin protection
- 60% of volunteers perceived a protective effect

Agenda

- 1 DNA Protection - A Growing Trend
- 2 Sun & Skin - Not Always the Best Combination
- 3 PEPHA®-PROTECT - A Bodyguard from the Desert
- 4 PEPHA®-PROTECT - Outstanding Capabilities
- 5 PEPHA®-PROTECT in a Nutshell**

PEPHA[®]-PROTECT

Powerful bodyguard for naturally protected skin

Unique Product Features

- Unique highly purified *Citrullus lanatus* extract with high concentration of compatible solutes
- Significant DNA protection *in vitro* against UV damage and damage induced by free radicals
- Significant protection of DNA nucleotides *in vitro* from oxidation processes
- *In vivo* proven 25% increase in skin protection



PEPHA[®]-PROTECT

A broad range of application

Benefits

- Strengthens skin's own cell regeneration ability and helps to **protect from DNA damage**
- Protects the skin from UV induced inflammation and irritation, providing a more even skin texture
- Helps **prevent premature skin aging**, the skin's appearance remains younger



Cosmetic application

- Anti-aging day care claiming DNA protection
- Facial care with regenerating and repairing properties
- Skin protection products in combination with UVA/UVB filters

PEPHA®-PROTECT - Perfectly fits with global trend *Pure & Elegant Performance*

- **Overall:**
 - High interest in **beauty innovations**
 - Beauty on all levels: Body, mind, and soul
- **Benefits:** perceivable effects for timeless beauty
- **Ingredients and RTBs:**
 - With an exclusive and **scientific appeal**
 - Nature 2.0: Uncommon natural ingredients **upgraded via technology**
- **Manifestations:**
 - „**HighTech**“ Beauty tools
 - Very **exclusive ingredients**, e.g. discovered on Mars, made from own blood
 - Care products for special body parts, e.g. overnight lash treatment that stimulates lash growth (StimuLashFusion)



PEPHA[®]-PROTECT

Formulation guidelines

Formulation

- Yellowish liquid
- Can be easily be processed warm (<60°C) or during cooling phase
- Recommended concentration: 1 to 3%
- Preservation: Sodium benzoate, Potassium sorbate, Phenoxyethanol

INCI name (active)

Citrullus lanatus (Watermelon) Fruit Extract, Citrulline

Disclaimer

Copyright © 2021 DSM Nutritional Products, 4002 Basel, Switzerland.

www.dsm.com/personal-care. All rights reserved.

Although DSM has used diligent care to ensure that the information provided herein is accurate and up to date, DSM makes no representation or warranty of the accuracy, reliability, or completeness of the information. This presentation only contains scientific and technical information for business to business use. Country or region-specific information should also be considered when labeling or advertising to final consumers. This publication does not constitute or provide scientific or medical advice, diagnosis, or treatment and is distributed without warranty of any kind, either expressly or implied. In no event shall DSM be liable for any damages arising from the reader's reliance upon, or use of, these materials. The reader shall be solely responsible for any interpretation or use of the material contained herein. The content of this document is subject to change without further notice. Please contact your local DSM representative for more details. All trademarks listed in this brochure are either registered trademarks or trademarks of DSM in The Netherlands and/or other countries unless explicitly otherwise stated.

Back up PEPHA®-PROTECT



DNA Protective Pre- & After Sun Cream In Vivo Study

With PEPHA®-PROTECT

This soft cream was formulated for the in vivo study of PENTAPHARM's active PEPHA®-PROTECT which protects the skin against daily stress factors such as UV light and free radicals, reduces the fragmentation of DNA in human keratinocytes and protects DNA from damage.

Phase	Ingredients	INCI Name	% w / w	Supplier
A	Water dem.	Aqua	ad 100	
B	Crodafos CES	Cetearyl Alcohol & Dicetyl Phosphate & Ceteth-10 Phosphate	5.00	100083
	Myritol 331	Cocoglycerides	6.00	100396
	Tegosoft TH	C12-15 Alkyl Benzoate	3.00	100415
	Tegosoft DC	Decyl Cocoate	3.00	100415
	Fitoderme	Squalane	2.00	
	Dow Corning 345 Fluid	Cyclopentasiloxane & Cyclohexasiloxane	3.00	100404
C	Sodium Hydroxide 10% sol.	Sodium Hydroxide	q.s.	
D	Euxyl K 300	Phenoxyethanol & Methylparaben & Propylparaben & Ethylparaben & Butylparaben & Isobutylparaben	0.80	100444
	Aristoflex AVC	Ammonium Acryloyldimethyltaurate & VP Copolymer	0.40	100394
E	PEPHA®-PROTECT	Citrullus Lanatus (Watermelon) Fruit Extract & Citrulline, Aqua & Glycerin & Phenoxyethanol & Potassium Sorbate & Sodium Benzoate	3.00	100288

100001/037

DNA Protection

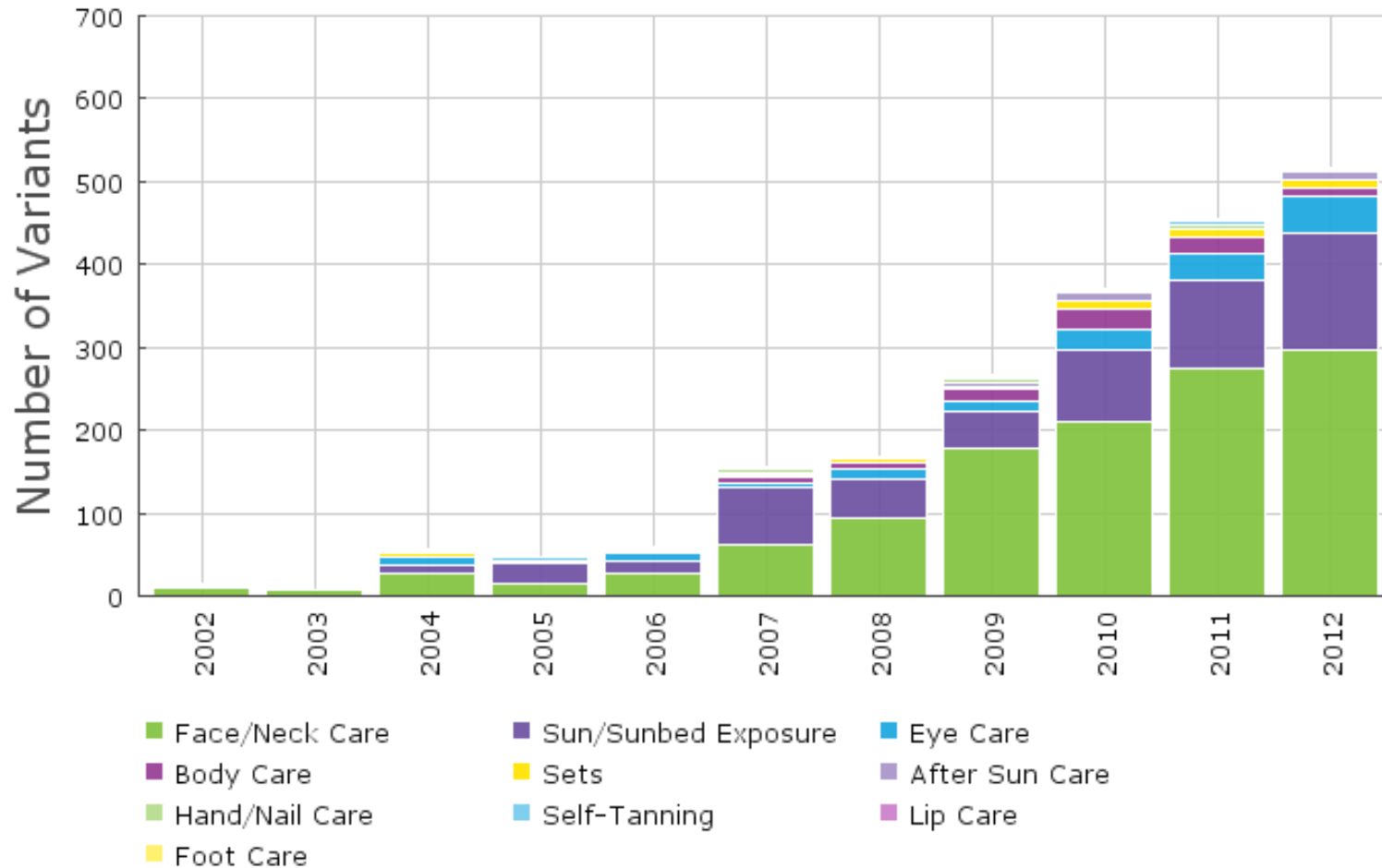
Continuously Growing Trend in Beauty Care

	2008	2012	2008-2012 growth
Skin care launches with “DNA protection” claims	169	516	+205%

	2002	2012	2008-2012 growth
Skin care launches with “DNA protection” claims	14	516	+3585%

Exponential Increase of Skin Care Launches with Focus “DNA Protection”

Number of Variants by Date Published and Sub-Category



Source: GNPD, 2002-2012

Compatible Solutes

The Survival Secret

- What are they?

Small, water soluble molecules such as Trehalose, Glycine, Betaine and Citrulline

- How are they produced?

By organisms under extreme conditions - heat, cold, drought, high salt concentration

- What do they do?

Protect important cell structures - such as DNA - from damage



Market products focusing on DNA claims

Some additional examples...

Source: GNPD 2011-2013

Annemarie Börlind Natural Beauty Sun Anti Aging DNA-Pro...



[1831891](#)

Company: Börlind

Country: Germany

Date Published: Aug 2012

Sub-Category: Sun - Sun/Sunbed Exposure

Price (local): €29.90

Price (major currencies): \$38.17

The Annemarie Börlind Natural Beauty Sun range is claimed to provide UVA/UVB protection with skin-friendly UV filters, and contains kombu algae extract to help prevent sunburn, and a sea buckthorn complex and vitamin E to promote healthy cell activity and prevent premature ageing. Additionally, panthenol provides deep hydration. The paraben-free range includ...



Ingredients: Aqua, Dicaprylyl Carbonate, Diethylamino Hydroxybenzoyl Hexyl Benzoate, Alcohols, Ethylhexyl Triazone, Caprylic/Capric Triglyceride, Bis-ethylhexyloxyphenol Methoxyphenyl Triazine, Glycerin, Ethy...

Claims: GMO-Free, No Additives/Preservatives, Vitamin/Mineral Fortified, For Sensitive Skin, Water Resistant*, Brightening / Illuminating*, Botanical/Herbal, Hypoallergenic, Ethical - Environmentally Friendly Package, UV Protection, Ethical - Animal, Ethical - Environmentally Friendly Product, Ethical - Charity, Organic, No Animal Ingredients, Antioxidant, Dermatologically Tested, Anti-Ageing, Protects Against Elements*, Moisturising / Hydrating, Paraben Free



Christie Brinkley Skincare DNA Renewal System



Company: Christie Brinkley Beauty

Country: USA

Date Published: Jan 2012

Sub-Category: Sets

Price (local): \$99.95

Price (major currencies): €74.32



Christie Brinkley Skincare **DNA Renewal System** is a set containing: Daytime Rejuvenating Treatment, designed to improve the health of skin cells, increase collagen and elastin production and protect skin cells from the damaging effects of the environment; and Overnight Repair Treatment, designed to penetrate the skin to receive maximum ingredient absorption p...

1702033

Ingredients: day time rejuvenating treatment: Aqua, Isododecane, Cyclopentasiloxane, Cetyl Alcohol, Butyrospermum Parkii Butter, Cetearyl Methicone, Glycerin, Maris Aqua, Glyceryl Stearate, PEG-100 Stearate, ...

Claims: All Natural Product, Vitamin/Mineral Fortified, Refill, Botanical/Herbal, UV Protection, Antioxidant, Anti-Ageing, Ethical - Environmentally Friendly Package, Ethical - Animal, Brightening / Illuminating*, Collagen Increasing*, Firming*, Long-Lasting*, Mattifying*, Moisturising / Hydrating, Plumping*, Protects Against Elements*, Reduces Fine Lines / Wrinkles*, Reduces Redness*, Reduces the Appearance of Pores*, For Sensitive Skin, Paraben Free, Toning*, Vegan, Time/Speed, No Animal Ingredients



Decléor Aroma Sun Expert Protective Anti-Wrinkle Face C...



[1809586](#)

Company: Décléor

Country: Germany

Date Published: May 2012

Sub-Category: Sun - Sun/Sunbed Exposure

Price (local): €30.00

Price (major currencies): \$38.76

The Décléor Aroma Sun Expert range is designed to provide a true energy cocktail to protect the skin more effectively, allowing the user to tan safely. Each product features 'new-generation' formulas that are said to be non-greasy, non-sticky and rapidly absorbed ensuring no white finish is left on the skin. Available as part of the range is Anti-Aging Sonne...

Ingredients: Aqua, Octocrylene, C12-15 Alkyl Benzoate, Methylene Bis-benzotriazolyl Tetramethylbutylphenol, Butylene Glycol, Cyclopentasiloxane, Pentylene Glycol, Ethylhexyl Salicylate, Glycerin, Bis-ethylhex...

Claims: No Additives/Preservatives, For Sensitive Skin, Botanical/Herbal, Ethical - Environmentally Friendly Package, UV Protection, Time/Speed, Ease of Use, Antioxidant, Moisturising / Hydrating, Anti-Ageing, Reduces Fine Lines / Wrinkles*



Dr. Santé Rosarium DNA Protection Active Moisturising D...



Company: NPO El'fa

Country: Russia

Date Published: Feb 2011

Sub-Category: Face/Neck Care

Price (local): RUR120.00

Price (major currencies): \$3.99 / €3.03

The Dr. Santé Rosarium **DNA Protection range** is designed to protect skin from age-related changes with its GP4G technology. According to the manufacturer, all the products in the range contain: shore, shea, and olive oil; moisturising properties of hyaluronic acid, avocado oil, seaweed and Nalidon; regenerative properties of ceramides and camellia oil; Avocad...

[1480465](#)

Ingredients: Aqua, Ethylhexyl Cocoate, Ethylhexyl Stearate, Glyceryl Stearate, Ceteareth-20, Ceteareth-12, Cetearyl Alcohol, Cetyl Palmitate, Propylheptyl Caprylate, Glycerin, Mannan, Cetearyl Oliviate, Sorbit...

Claims: Botanical/Herbal, Anti-Ageing, UV Protection, Moisturising / Hydrating

Dior DiorSnow White Reveal D-NA Reverse Night Concentra...



[1842417](#)

Company: Parfums Christian Dior

Country: USA



Date Published: Apr 2012

Sub-Category: Face/Neck Care

Price (local): \$145.00

Price (major currencies): €115.99

Dior DiorSnow White Reveal **D-NA Reverse** Intense Night Concentrate has been relaunched as Night Concentrate, now featuring a new pack design and a new formula with Icelandic Glacial Water and Dior's exclusive Transparency Enhancing Complex (T.E.C.), which acts on the five key features of transparent skin: evenness; luminosity; moisture; texture; and plumpness...

Ingredients: No information available

Claims: Ethnic, Dermatologically Tested, Time/Speed, Whitening, Moisturising / Hydrating, Plumping*

Revlon Age Defying with DNA Advantage Day Cream



Company: Revlon

Country: China



Date Published: Oct 2012

Sub-Category: Face/Neck Care

Price (local): CNY240.00

Price (major currencies): \$37.85 / €30.53

Revlon Age Defying with **DNA Advantage** is a range of anti-ageing products designed and tested for Asian skin. It is formulated with the brand's proprietary Renewist Complex, a combination of copper (copper gluconate), alfalfa, cottonseed botanical extracts and vitamins, which is claimed to enhance the skin's natural repair systems to renew the appearance of s...

1916863

Ingredients: Aqua, Ethylhexyl Methoxycinnamate, C12-15 Alkyl Benzoate, Titanium Dioxide, CI 77947, Steareth-21, Glycerin, Neopentyl Glycol Diheptanoate, Magnesium Aluminum Silicate, Methyl Trimethicone, Penty...

Claims: Vitamin/Mineral Fortified, Ethnic, Botanical/Herbal, Brightening / Illuminating*, Firming*, Moisturising / Hydrating, Anti-Ageing, Reduces Fine Lines / Wrinkles*

The background of the image is an abstract composition of flowing, overlapping waves in various shades of blue and green. The colors range from deep navy blue to light sky blue and vibrant teal. The waves create a sense of movement and depth, with some areas appearing more saturated than others. The overall effect is a dynamic and modern visual texture.

BRIGHT SCIENCE. BRIGHTER LIVING.™