

TeraBiome™



fermentation surfactant & solubilizer

Actera

**INCI**

Glycolipids

**Optional INCI Name**

Starmerella Bombicola/Brassica Oil Ferment

**Physical Description**

Amber liquid

**Applications**

- Gentle cleansing, especially dermatological conditions (e.g. eczema, dry scalp)
- Product for aged or damaged skin or hair
- Shampoo & body washes
- Cleansing conditioners
- Hair refreshers & stylers
- Leave-in conditioners
- Frizz-control and dry shampoos
- Skin toners, wipes, micellar waters
- Homecare applications (hard surface, dish, air care)

**Key Benefits**

- Very high detergency: cleanses oils and makeup at low use-levels
- No irritation: it can be used in rinse-less or rinse-off cleansing solubilizes, fragrances, and actives
- Leave-on products that offer better skin feel and frizz control
- Inhibits biofilms associated with body odor

**Formulation Guidelines**

Use at 0.5 – 2.0%. Add to the water phase or adsorb onto an absorbent powder.

# Bioactive Rationale

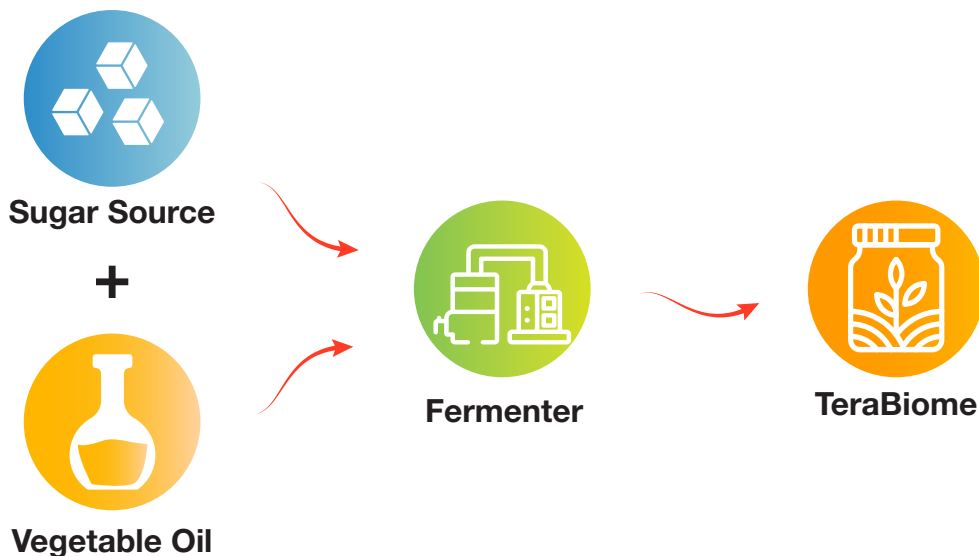
TeraBiome is a sophorolipid surfactant from fermentation that acts as both probiotic and gentle cleanser. It has a bioactive and cleansing effect in the skin, reducing inflammation and ensuring barrier function and balanced microbiome.

Ideal for hand hygiene. TeraBiome reduces the inflammatory cytokine production of skin cells, whereas traditional synthetic surfactants often cause hand irritation and sensitization.

Suitable for both leave-on and rinse-off products. Typical applications include facial toners, body sprays, wipes, as well as hand and face washes. Ideal for non-traditional hair cleansing (no-poo and cleansing conditioners) as well as scalp treatments.

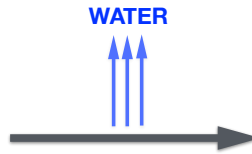
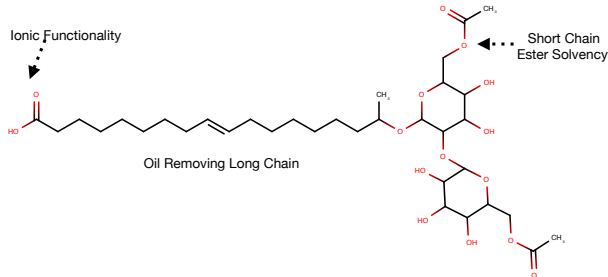
## What is TeraBiome?

- Yeast-fermented, lipid-based, gentle cleansing and water-soluble emollient
- Aligned with consumer sensibilities
- High performance & multi functionality
- Glycolipids (extra-cellular lipids) from fermentation with *Starmella bombicola* yeast
- Lipid source typically vegetable oil
- Complex mixture with multiple properties and functions

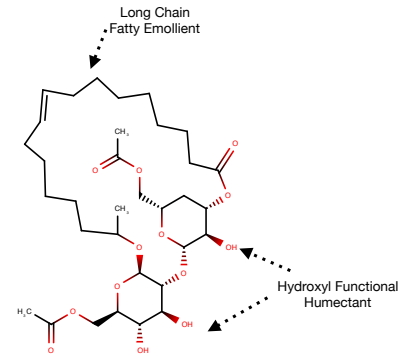


# TeraBiome Molecules: Two Main Forms

## Acid Form (ionic)



## Lactone Form (non-ionic)

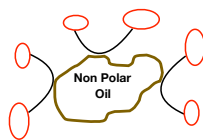


*Removal of water transitions the molecule from ionic to non-ionic*

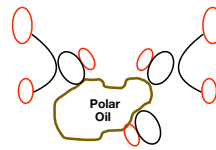
## Inherent Cleansing Synergy

Surfactant			<p>Acid Form (ionic)</p> <ul style="list-style-type: none"> <li>• Two head groups</li> <li>• Can be high HLB , &gt;10 if ionized</li> <li>• Very water soluble</li> </ul>
Solvent			<p>Lactone Form (anionic)</p> <ul style="list-style-type: none"> <li>• Ester polar oil</li> <li>• Fatty and humectant character</li> <li>• Sparingly water soluble</li> </ul>

Multiple TeraBiome structures allow effective cleansing for a range of unclean materials (polar and non-polar)



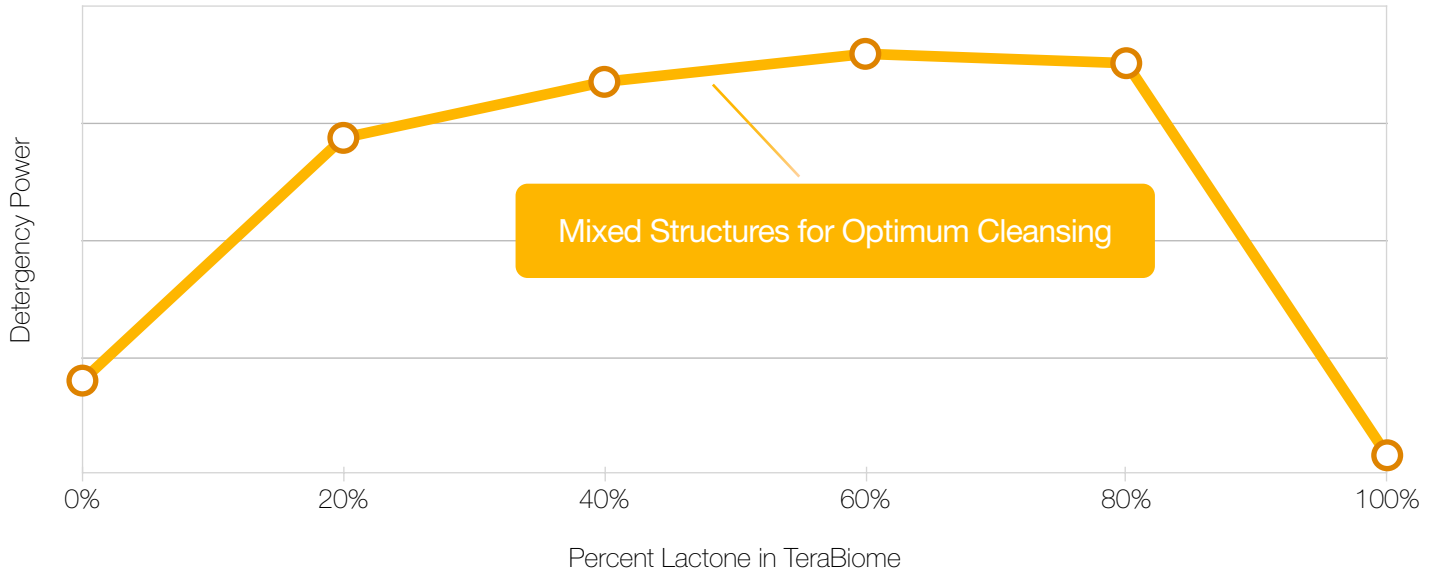
Surfactant



Solvent + Surfactant

# Performance Claims

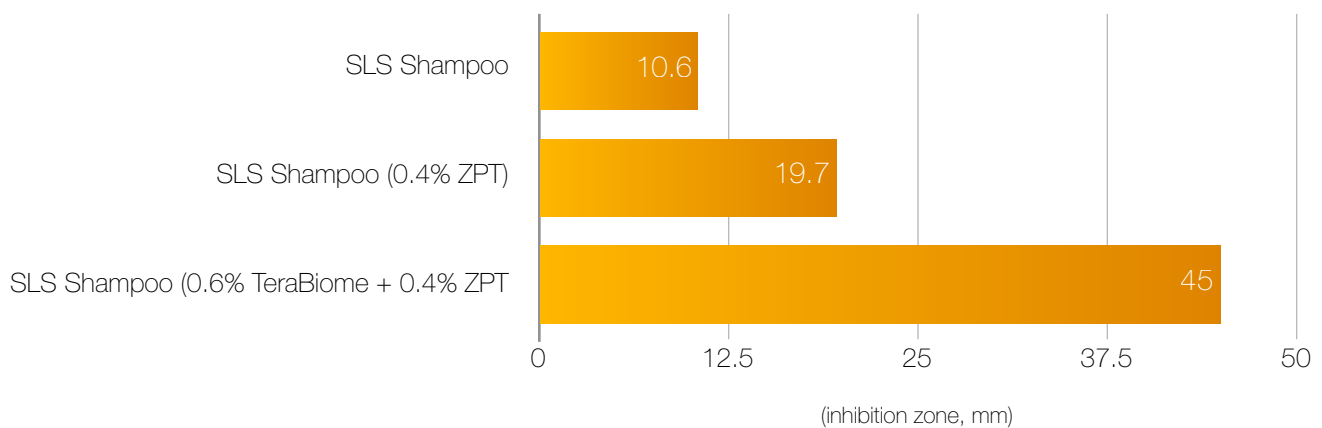
## Inherent Cleansing Synergy



Low Foaming Detergent Compositions, US Patent Application 20040171512

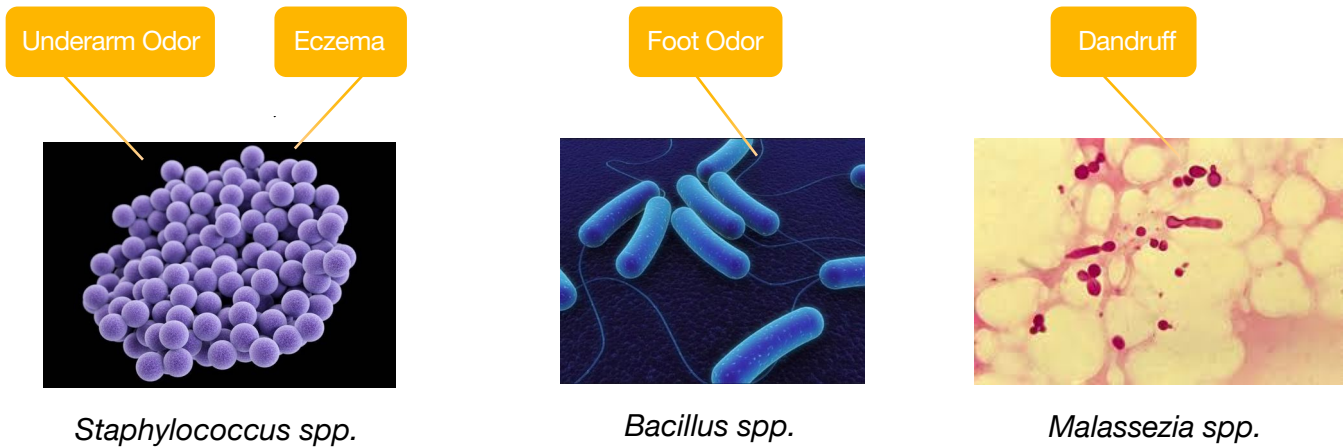
## Dandruff Reduction

TeraBiome is synergistic with typical actives in dandruff shampoos.



## TeraBiome: Topical PreBiotic

As a biological extra-cellular lipid, it is inherently structured to maintain microbial balance



Research on TeraBiome demonstrates inhibition of these microorganisms.

## Odor Causing Gram Positive Bacteria

As a biological extra-cellular lipid, it is inherently structured to maintain microbial balance

	MIC of Sophorolipid (ppm)
<i>Bacillus subtilis</i>	4
<i>Staphylococcus xylosus</i>	1
<i>Streptococcus mutans</i>	1
<i>Propionibacterium acne</i>	0.5

Very low concentration of TeraBiome will inhibit odor-causing organisms.

## Micellular Water

Low levels of TeraBiome remove make-up, and leave smooth lactone deposit

	A	B	C
Water	Q/S	Q/S	Q/S
Propanediol	5	5	
Glycerin	2	2	2
<b>TeraBiome</b> (as-is, 50% solution)	0.5		0.5
Tetrasodium EDTA	0.1	0.1	0.1
Witch Hazel	1	1	1
Lactic Acid, 90%	pH 4.72	pH 4.72	pH 4.72
Benzoic Acid	0.2	0.2	0.2
Benzyl Alcohol	1	1	1



### Method:

1. Non-waterproof mascara was applied to skin and allowed to dry.
2. 25 drops of each formula was applied to a dry cotton pad.
3. Mascara was wiped once with wet cotton pad.
4. Photo was taken to show A removed makeup better than B = the addition of TeraBiome helped with the removal of makeup.
5. Version C was made without Propanediol to show that TeraBiome is an effective makeup remover on its own.

## Low Foaming Cleanser

Superior cleansing to alkyl polyglucosides in rinse-off test

	A	B
Water	90.8	90.8
Sucraclear HC-31 (Cellulose Gum & Carrageenan & Ceratonia Siliqua Gum & Sucrose)	2	2
<b>TeraBiome</b> (as-is, 50% active)	1	
Coco Glucoside (50% active)		1
Jojoba Oil	5	5
Lactic Acid, 90%	pH 4.23	pH 4.23
Benzoic Acid	0.2	0.2
Benzyl Alcohol	1	1
	A	B



### Method:

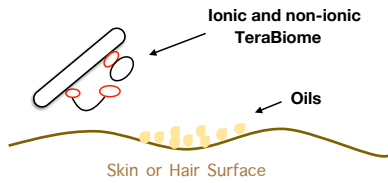
1. Non-waterproof mascara was applied to skin and allowed to dry.
2. Skin was wet with warm water then equal quantities of cleanser was applied and rubbed 5 times with moderate pressure.
3. Skin was rinsed and then patted dry.

## Leave-on or Rinse-off Multifunctionality

Unlike most surfactants, TeraBiome can be left-on the skin and hair, and transformed into non-ionic materials that provide leave-on benefits

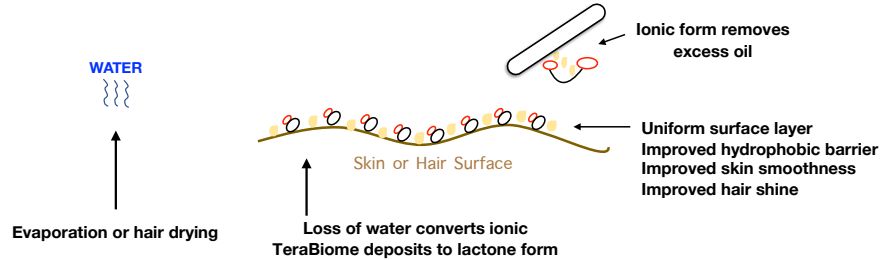
### Application of TeraBiome

Both ionic and lactone molecules applied to skin or hair



### Post Application

All remaining TeraBiome converts to lactone form



## Multifunctional Consumer Benefits

		Product Forms	Claims
Skin Care	Rinse-off	Facial Cleansers Cleansing Oil Hand & Body Wash	<ul style="list-style-type: none"> <li>Glycolipid cleansing</li> <li>Ultra-gentle &amp; non-stripping</li> <li>Supports skin's natural flora</li> <li>ProBiotic or PreBiotic action</li> <li>Odor control</li> </ul>
	Leave-on	Wipes & Sprays Micellar Water, Toners & Essence Facial Masks Hand Sanitizers Deodorants	<ul style="list-style-type: none"> <li>Oil control / Dissolves excessive sebum</li> <li>Evens skin tone</li> <li>Replenishes skin glycolipids</li> <li>Promotes healing</li> <li>Deposits natural Sophorolactone</li> </ul>
Hair Care	Rinse-off	Shampoo Cream Cleansers Cleansing Conditioners (co-wash) Hair Masks Conditioners	<ul style="list-style-type: none"> <li>Dual-functional glycolipids</li> <li>Cleanses &amp; repairs &amp; conditions</li> <li>Extra-cellular lipids</li> <li>Fermented yeast extracts</li> <li>Non-irritating and non-stripping</li> </ul>
	Leave-on	Leave-in Conditioner Styling Sprays Smoothing Creams Curl Enhancers Dry Shampoo	<ul style="list-style-type: none"> <li>Frizz and fly-away control</li> <li>Scalp health &amp; microbial balance</li> <li>Refreshes hair fibers</li> <li>Heat activated</li> <li>Deposits smoothing Sophorolactone</li> </ul>



## Hair Perfecting

Hair control evaluation of (A) TeraBiome 0.5% in water vs. (B) water alone

### TeraBiome treatment provides:

- Anti-Frizz
- Curl Defining
- Weightlessness
- Smoothness
- Shine



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