The Science and Marketing of Cosmetics

Dr. Maria Labedzka

Presenting to the

Marketing Group of the Royal Society of Chemistry

21 March 2011

University of the Arts London
London College of Fashion

LCF FASHIONING THE FUTURE

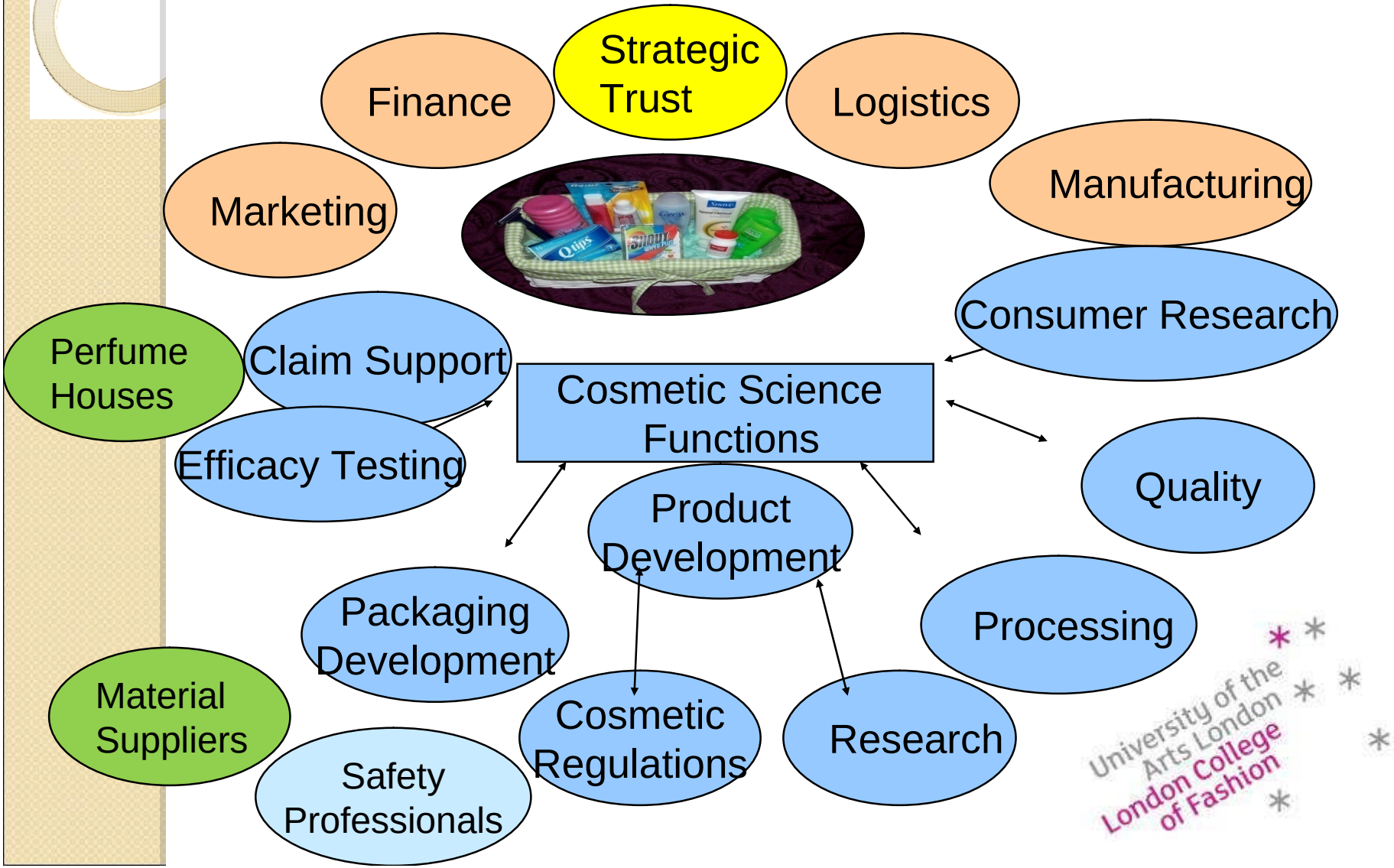
WHAT ARE COSMETICS?

Not just make up but also

- soap
- shower and bath gels
- toothpaste
- shampoo
- body lotion
- anti-ageing creams
- deodorants
- shaving creams … the list is endless

True for Europe but products such as antiperspirants or toothpaste might be regarded as drugs e.g. in the USA

Roles Behind Launching Cosmetic Products



The Role of Research

- Understanding the substrate – the biology and physiology of skin, hair, sweat glands ...

- Researching active ingredients and their combinations to deliver new or improved benefits

- Understanding the mode of action of active ingredients and how to measure their benefit

University of the Arts London
London College of Fashion

To cite this article: JID 124:1099–1110, 2005

Research

Published by the
Dermatology Foundation

Progress in Dermatology

Editor: Alan N. Moshell, M.D.

STRATUM CORNEUM MOISTURIZATION AT THE MOLECULAR LEVEL: AN UPDATE IN RELATION TO THE DRY SKIN CYCLE

Anthony V. Rawlings, Ph.D. and Paul J. Matts, Ph.D.*
AVR Consulting Ltd, Northwich, Cheshire, UK
*Procter & Gamble, Rusham Park, Egham Surrey, UK

Introduction

'Stratum Corneum Moisturization At The Molecular Level' [1] was published over a decade ago to review what was known about the biology of a common cosmetic problem called 'dry skin' (**Figure 1**). At the same time Warner and Lilly [2] in 1994 published 'The correlation of water content with ultrastructure in the stratum corneum' and demonstrated for the first time the precise location of the reduced water content of the skin in dry skin conditions, namely the outermost layers of the stratum corneum (SC). These key publications described the current state of the art of dry skin knowledge. Since then significant advances have been made in our understanding of the pathophysiology of dry skin.

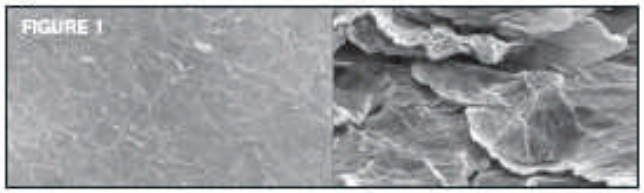


FIGURE 1. – *(Left)* Visible light macrograph of dry skin on the outer lower leg (approx. 50x), showing lifting squame. *(Right)* SEM micrograph of carbon tape applied to dry outer lower leg skin (500x); note compacted corneocytes in disarray.

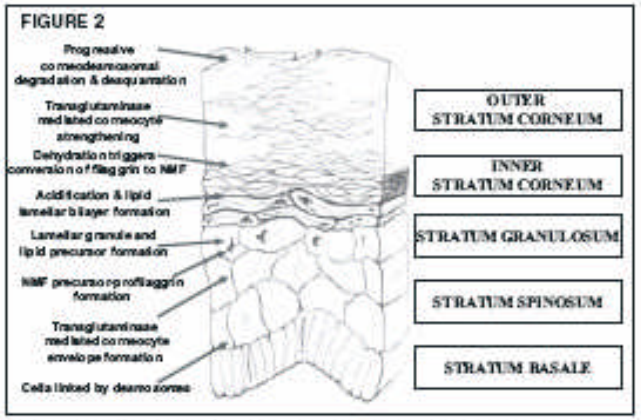
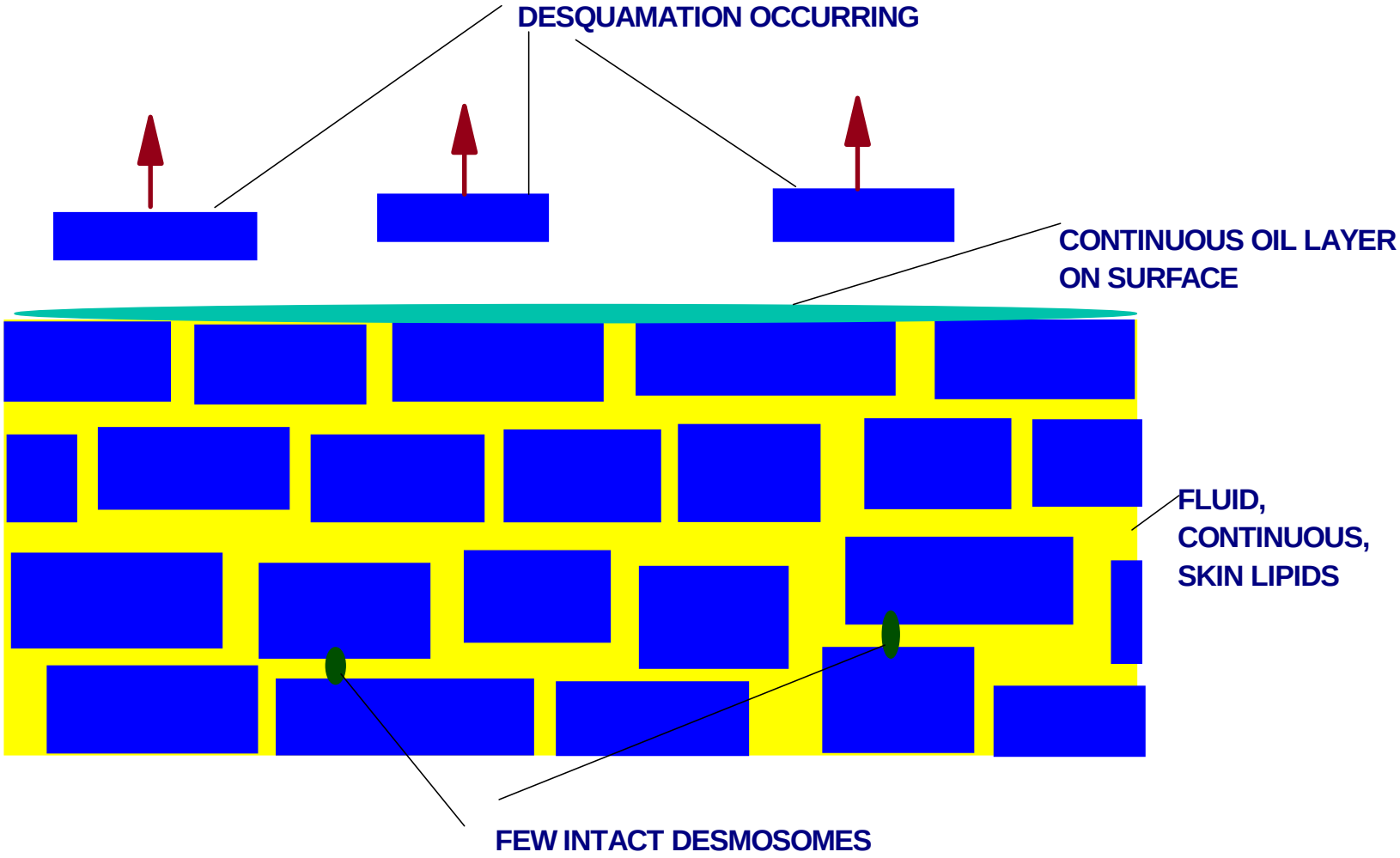


FIGURE 2. Typical structure of the epidermis and critical steps in formation of the stratum corneum. Modified from Rawlings, AV; Scott, IR; Harding, CR & Bowser, PA. Stratum Corneum Moisturization at the Molecular Level. J. Invest. Dermatol. 103 (5) 731-740 (1994) and Rawlings, AV & Harding CR. Moisturization & skin barrier function. Dermatologic Therapy. 17: 43-48 (2004).

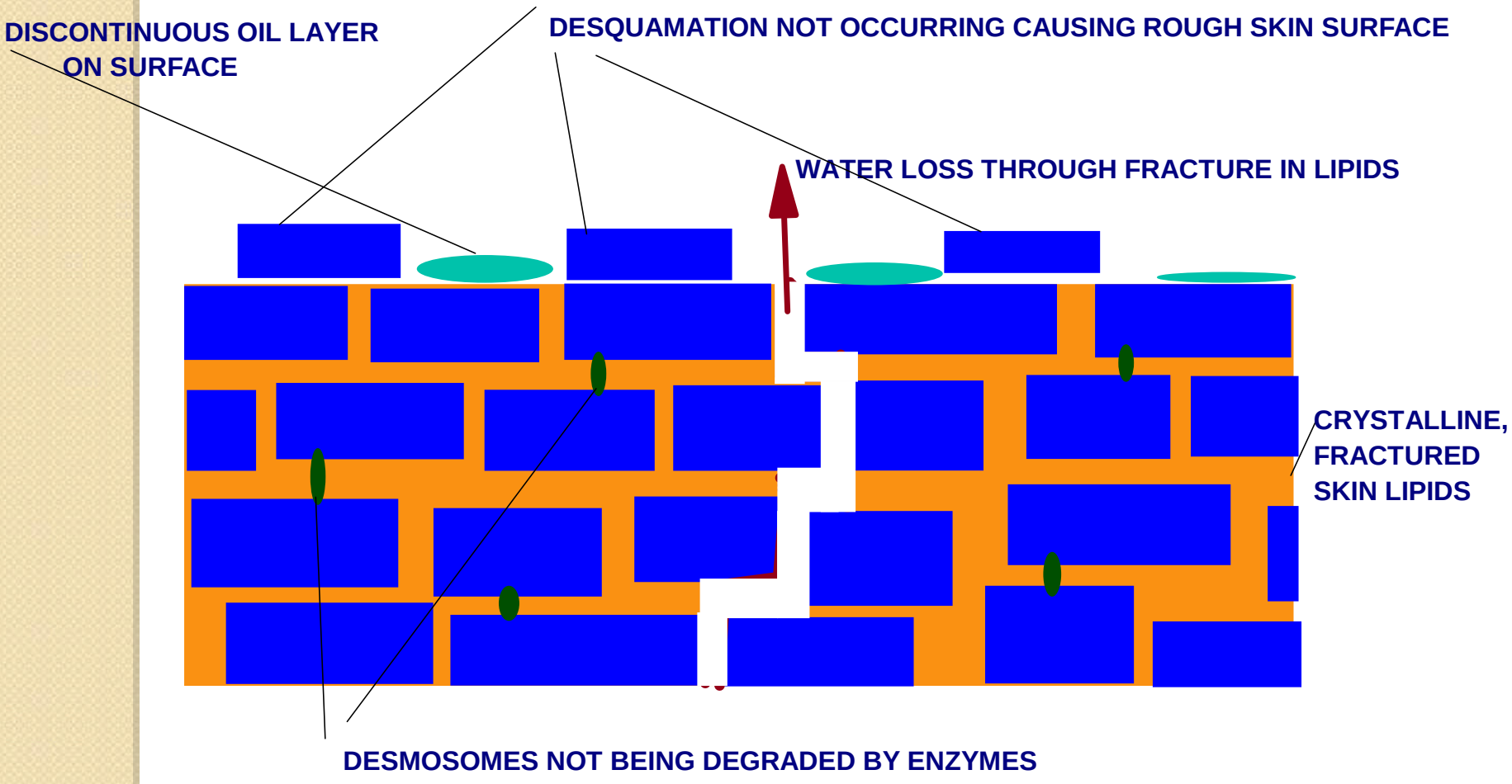
MOISTURISED SKIN

Research



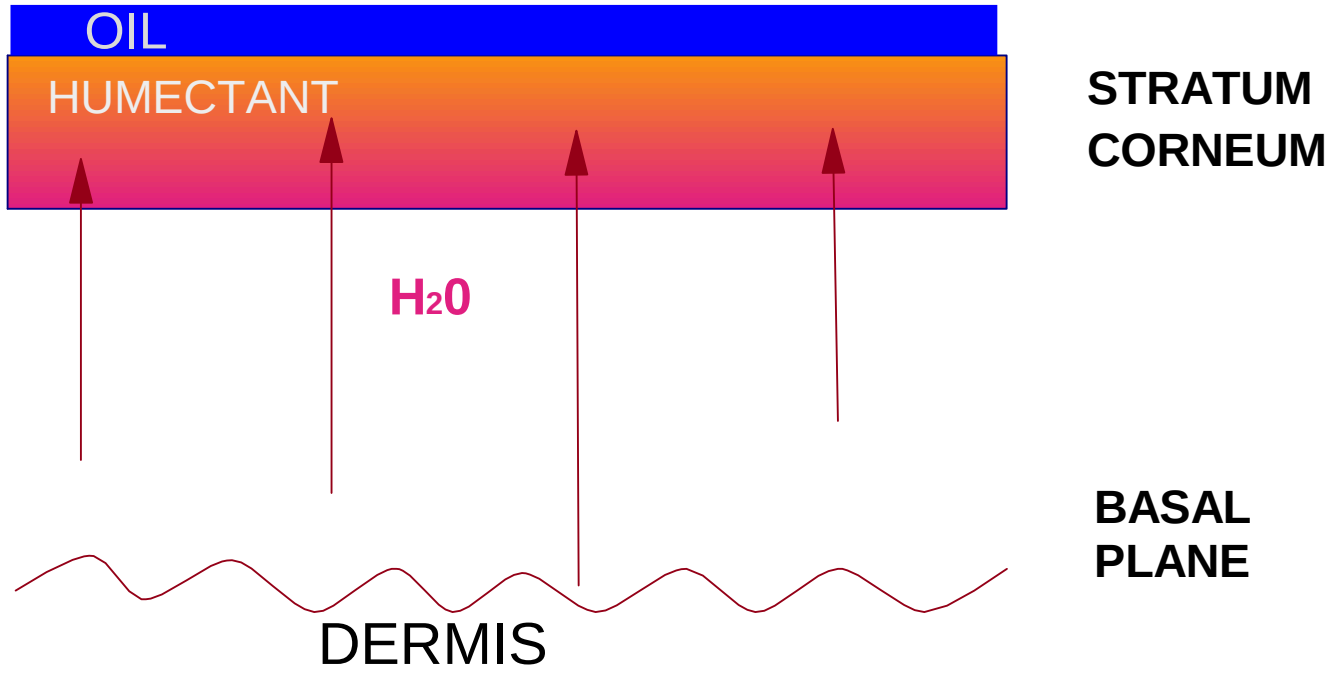
DRY SKIN

Research



ROLE OF MOISTURISING INGREDIENTS

Research



Importance of Cosmetic Regulations

•"The European Cosmetics Regulations are the best in the World."

•**An army of scientists** supports the decisions of the SCCS – **Scientific Committee of Consumer Safety**

•**The EU Cosmetics Directive** regulates the use of specific ingredients – e.g. positive lists for preservatives, UV filters, colorants

•**Risk assessment** is a legal requirement

•Ban on animal testing

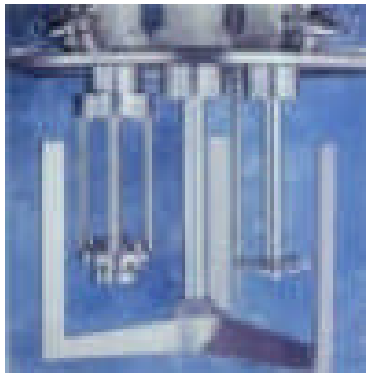
University of the Arts London
London College of Fashion

The Role of Processing

•Development of the processing methods which give the optimum product performance using the available manufacturing facilities

•Engineering and science of behaviour of materials

•Managing specifications of final products and developing GMP - Good Manufacturing Practice



University of the Arts London
London College of Fashion

The Role of

Packaging Development

- Development of packaging materials which not only are attractive for the consumer but also are compatible with the formulations
- **Material science** essential for creating sustainable and cost effective containers which can be efficiently run in the manufacturing process
- Often essential for product performance and safety e.g. Aerosols

University of the Arts London
London College of Fashion

The Role of

Quality

- Quality assurance of raw materials, packaging components and final cosmetic products
- **Science of analytical chemistry, microbiology** and **material testing**
- Essential in creating material specifications with the suppliers as well as specification of the final goods - GMP

QUALITY CONTROL

University of the Arts London
London College of Fashion

The Role of Consumer Research

- Defining the consumer needs and assessing the consumer perceptions of technical product aspects
- **Fragrance and packaging - very important**
- Consumer research science – including psychology, demographics, social, cultural and environmental aspects
- Power of **statistics**

University of the Arts London
London College of Fashion

The Role of

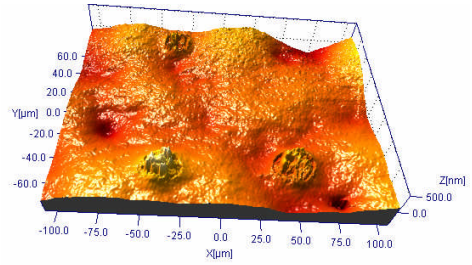
Claim Support

Efficacy Testing

•Proof of effects claimed on cosmetic products is required by law

•Advertising highly regulated in the UK – ASA – Advertising Standards Authority now including web advertising

•Pre-clearance for TV or radio advertising
- Clearcast



University of the Arts London
London College of Fashion

The Role of

Claim Support

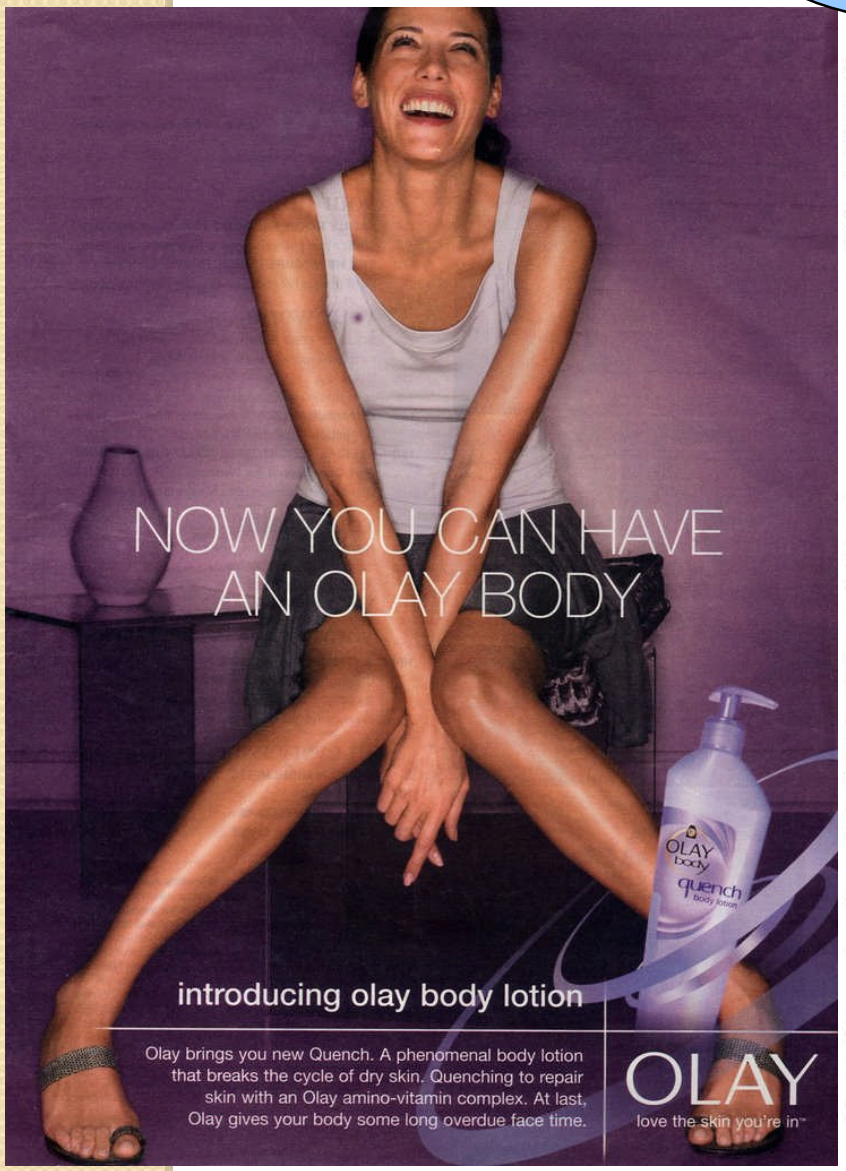
Efficacy Testing

The Role of

Efficacy Testing

Claim Support

Science/ Research



Published by the DF Dermatology Foundation

Progress in Dermatology

Editor: Alan N. Moshell, M.D.

STRATUM CORNEUM MOISTURIZATION AT THE MOLECULAR LEVEL: AN UPDATE IN RELATION TO THE DRY SKIN CYCLE

Anthony V. Rawlings, Ph.D. and Paul J. Matts, Ph.D.*
AVR Consulting Ltd, Northwich, Cheshire, UK
*Procter & Gamble, Rusham Park, Egham Surrey, UK

Introduction

'Stratum Corneum Moisturization At The Molecular Level' [1] was published over a decade ago to review what was known about the biology of a common cosmetic problem called 'dry skin' (**Figure 1**). At the same time Warner and Lilly [2] in 1994 published 'The correlation of water content with ultrastructure in the stratum corneum' and demonstrated for the first time the precise location of the reduced water content of the skin in dry skin conditions, namely the outermost layers of the stratum corneum (SC). These key publications described the current state of the art of dry skin knowledge. Since then significant advances have been made in our understanding of the pathophysiology of dry skin.

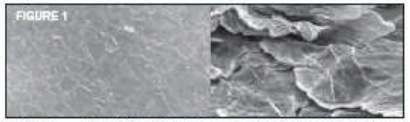


FIGURE 1. – *(Left)* Visible light macrograph of dry skin on the outer lower leg (approx. 50x), showing lifting square. *(Right)* SEM micrograph of carbon tape applied to dry outer lower leg skin (500x); note compacted corneocytes in disarray.

Under normal circumstances, the SC must be as impermeable as possible except for a small amount of water loss to (a) hydrate the outer layers of the stratum corneum to maintain its flexibility and (b) to provide enough water to allow enzyme reactions that facilitate stratum corneum maturation events, together with corneodesmolysis and ultimately desquamation (**Figure 2**) [3-5].

Key in precipitating the condition we call 'dry skin' or cosmetic xerosis is a perturbation of water gradients within the SC. The only study to demonstrate changes in SC water gradients in dry skin is that of Warner et al [2] where about one third of the outer layers of the stratum corneum are reported to contain less than 10% water content (**Figure 3**). As was originally reported by Blank [6] at this water content the SC will be dysfunctional and brittle.

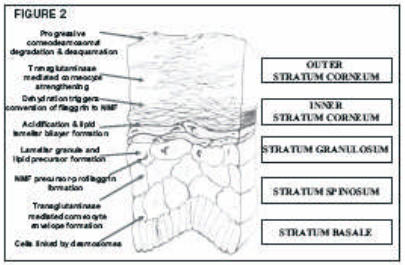


FIGURE 2. Typical structure of the epidermis and critical steps in formation of the stratum corneum. Modified from Rawlings, AV; Scott, IR; Harding, CR & Bowser, PA. Stratum Corneum Moisturization at the Molecular Level. J. Invest. Dermatol. 103 (5) 731-740 (1994) and Rawlings, AV & Harding CR. Moisturization & skin barrier function. Dermatologic Therapy. 17: 43-48 (2004).

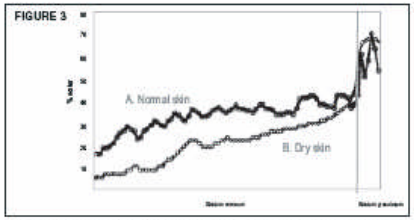
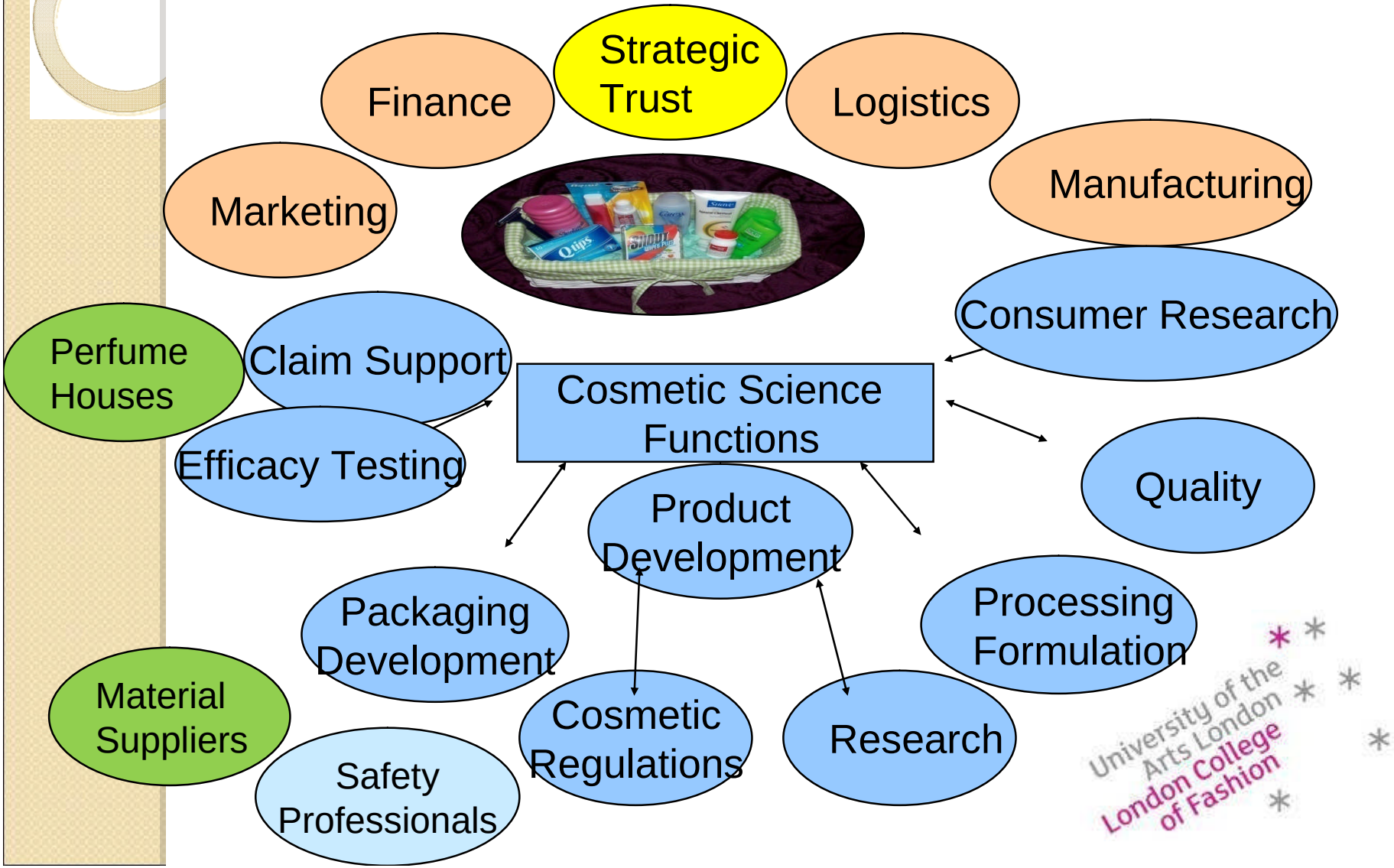
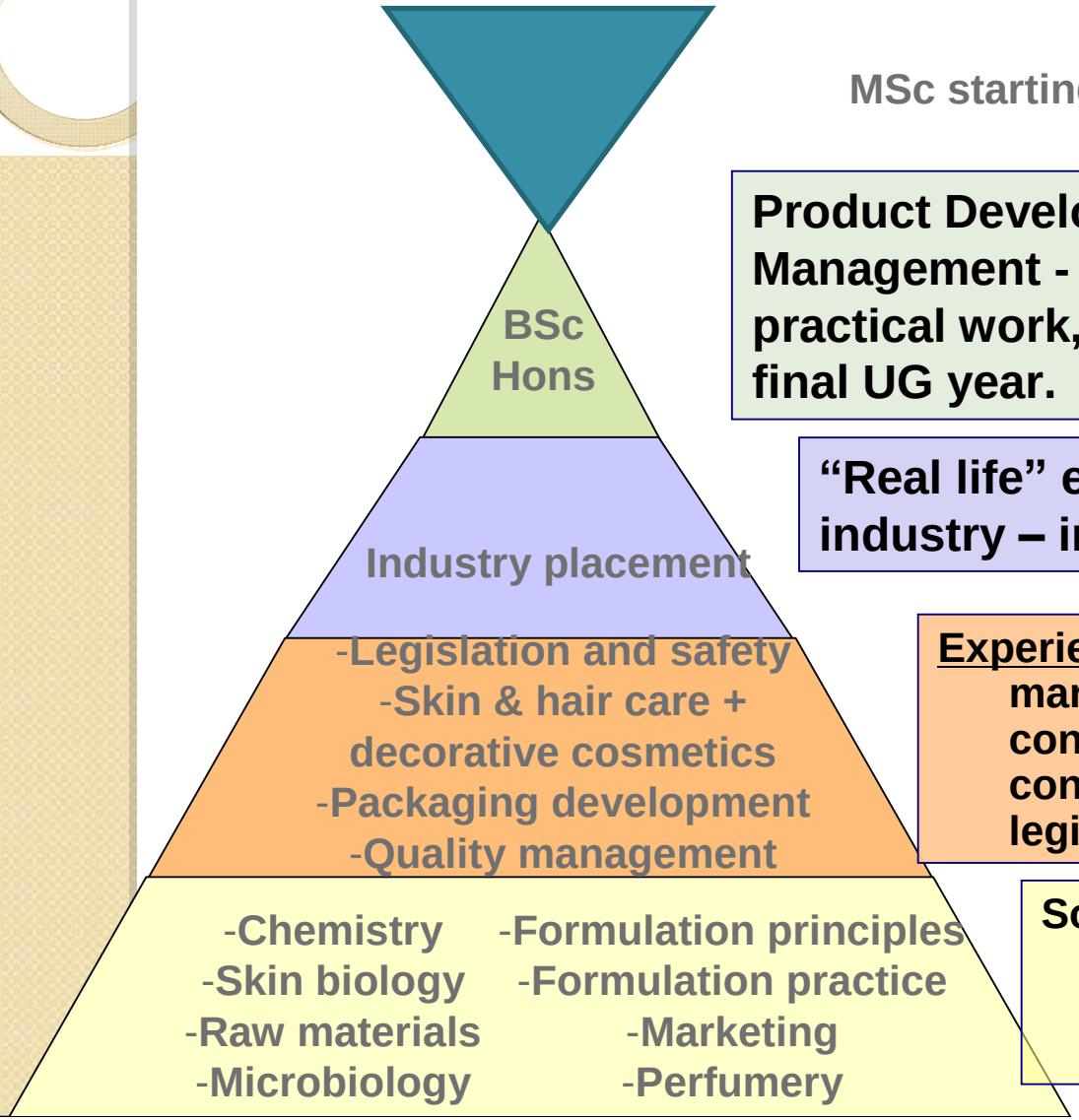


FIGURE 3. Water profile averaged over a single rectangular region of a cryosection obtained from an individual with normal skin, grade 0.5 (A). The horizontal axis is distance across the SC with the SC/granulosum junction indicated by a vertical line. Water profile averaged over a single rectangular region of a cryosection obtained from an individual with dry skin, grade 4 (B). From Warner, RR & Lilly, NA. Correlation of water content with ultrastructure in the stratum corneum. In: Bioengineering of the skin: Water & the stratum corneum. Pp 3-12. Eds: Elsner, P, Berardesca, E & Maibach HI. CRC Press Inc. (1994)

Communication between all functions – essential for success



Cosmetic Science – Education to Highest Standards



MSc starting from 2012

Product Development, Claim Support, Project Management - Self-directed study combining practical work, knowledge and creativity – final UG year.

"Real life" experience in the cosmetic industry – in various functions

Experience in the process of making and marketing Cosmetic Products from the concept to product delivery to the consumer – according to latest legislation

Solid knowledge base across essential elements of Cosmetic Science and related applied fields.

COSMETIC SCIENCE

- Not just make up but also looking at …
- Soap, shower and bath gels, toothpaste, shampoo, body lotion, anti-ageing creams, deodorants, shaving creams …
- Application of sciences: chemistry; biology; physics; physical chemistry
- Science with an end in view … Science for **profit**!

- **Science for wellbeing and self-esteem!**

- See some of our students in action:

www.fashion.arts.ac.uk/video_showcase

Videos – How to make a lipstick
How to make a foundation

Acknowledgments

- Dr Emma Meredith – CTPA
- Dr Danka Tamburic – London College of Fashion, science programme director
- Dr Paul Matts – principal scientist P & G also a Visiting Professor at LCF

University of the Arts London
London College of Fashion