Preface .... v
Contributors .... xi

PART I  STRATUM CORNEUM & EPIDERMAL BIOLOGY

1. The Keys to Epidermal Differentiation  1
   Truus Roelandt and Jean-Pierre Hachem

2. Lipid Organization of the Skin Barrier  17
   Joke A. Bouwstra

3. Untangling the Role of Keratin in Stratum Corneum  41
   Lars Norlén

4. The Role of Filaggrin in Skin Diseases  57
   Jouni Uitto and John A. McGrath

5. Peptidylarginine Deiminases in Skin Biology  69
   Michel Simon, Stéphane Chavanas, Guy Serre, and Hidenari Takahara

6. Cornified Envelope  83
   Tetsuji Hirao

7. Corneodesmosomal Proteins  99
   Nathalie Jonca, Cécile Caubet, Marina Guerrin, Michel Simon, and Guy Serre

8. Kallikrein-Related Peptidases: An Emerging Family of Pivotal Players in Epidermal Desquamation and Barrier Function  125
   Azza Eissa and Eleftherios P. Diamandis

9. Aquaporins and Tight Junctions  149
   Johanna M. Brandner

10. Epidermal pH  163
    Martin J. Behme
PART II XEROTIC SKIN CONDITIONS & SC PROPERTIES

11. The Molecular Aspects of Dry, Flaky Skin Conditions  181
Aurelie Laloeuf and Adam J. Byrne

12. Xerotic Skin Conditions and SC Properties: Diabetic Dry Skin  197
Shingo Sakai and Hachiro Tagami

13. Skin Barrier Dysfunction in Atopic Dermatitis  211
Michael J. Cork, Manar Moustafa, Simon Danby, Yiannis Vasilopoulos, Rachid Tazi-Ahnini, Simon J. Ward, Jonathan Hadgraft, Majella Lane, Richard Guy, and Alice MacGowan

14. Self-Perceived Sensitive Skin: A New Understanding Based on Epidermal Nerves  241
Olivier de Lacharrière

15. Psychological Stress and Skin  251
Neelam Muizzuddin, Daniel Maes, and Paolo Giacomoni

16. Stratum Corneum Biomechanics  259
Anne Potter, Gustavo Luengo, Roberto Santoprete, and Bernard Querleux

PART III EFFICACY OF MOISTURIZERS & MOISTURIZING INGREDIENTS

17. Glycerol as Humectant in Cosmetic Formulations  279
Kristien De Paepe and Vera Rogiers

18. Lanolin and the Skin  295
Ian Steel

19. Moisturization Mechanisms: Internal Occlusion by Orthorhombic Lipid Phase Stabilizers—A Novel Mechanism of Action of Skin Moisturization  309
Johann W. Wiechers, J. Chris Dederen, and Anthony V. Rawlings

20. The Effects of Niacinamide-Containing Moisturizers  323
Paul J. Matts and Anthony V. Rawlings

21. Urea As a Moisturizing and Barrier-Enhancing Ingredient  335
Marie Loden

22. Hydroxyacids and Salicylic Acid  347
Eve Merinville

23. Stratum Corneum Serine Proteases and Effect of Inhibitors on Dry Skin  363
Rainer Voegeli and Anthony V. Rawlings
24. Cannabinoids and Pruritus 377
   Sonja A. Grundmann and Sonja Ständer

25. Microdermabrasion: Clinical, Histologic, and Molecular Effects 391
   James J. Leyden

26. Cosmetic Benefits Derived from the Topical Application of Acid Proteases 397
   Walter P. Smith, Michael A. Bishop, and Scott J. Norton

27. Skin Moisturization by Dermonutrition 411
   E. Krahn-Bertil, F. Hazane-Puch, T. Lassel, and Anthony V. Rawlings

PART IV NOVEL EVALUATION METHODOLOGIES

28. Capacitance Imaging for Viewing and Measuring Skin Surface Hydration 427
   Jean Luc Lévêque

29. Vibrational Imaging and Microspectroscopy of Natural Moisturizing Factor Concentration in Human Corneocytes 433
   David J. Moore, Mihaela Gorcea, and Xiaohong Bi

30. Measuring Water Gradients Using Confocal Raman Microspectroscopy 441
   Jonathan M. Crowther and Paul J. Matts

31. New Developments in Skin Barrier Measurements 463
   R.E. Imhof, M.E.P. De Jesus, P. Xiao, L.I. Ciortea, and E.P. Berg

Index .... 481