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EDUCATION:

Ph.D., biophysics, Oregon State University, Corvallis Oregon, 1973
B.A., chemistry, Western Washington State College, Bellingham Washington, 1968

WORK EXPERIENCE:

7/93-Present: President R. Randall Wickett Consulting Services, providing services to the Personal Care and Pharmaceutical Industries on claim support, research guidance, test design, clinical monitoring, custom formulation and technical training in skin and hair care science and technology, experienced expert witness in patent and claim support litigation including trial testimony. References are available on request.

1/14-Present: Professor Emeritus of Pharmaceutics and Cosmetic Science. University of Cincinnati College of Pharmacy

9/98-2013: Professor of Pharmaceutics and Cosmetic Science, University of Cincinnati, College of Pharmacy: In charge of graduate program in skin pharmaceutics and cosmetic science.

7/91-9/98: Associate Professor of Pharmaceutics and Cosmetic Science, University of Cincinnati, College of Pharmacy.

9/88-7/91: Research Associate, Dermal Research Department, S.C. Johnson Wax, Racine WI. In charge of clinical and biophysical research group, conducting *in vitro* and *in vivo* testing for guidance of product development and advertising claim support in skin and hair care.

10/85-9/88: Senior Scientist, Department of Dermal Research, S.C. Johnson Wax, Racine WI: Responsible for biophysical testing of skin and hair care product efficacy for research guidance and advertising claim support.

7/74-10/85: Staff Scientist, Procter & Gamble, Cincinnati OH: Basic and applied research on skin and hair.

9/72-6/74: Post-Doctoral Fellow, University of Minnesota Minneapolis MN: Research on protein conformational dynamics.

PROFESSIONAL AWARDS AND HONORS:

Maison G. deNavarre Medal Award from the Society of Cosmetic Chemists (SCC), awarded December 1997. This is the Society's highest honor, awarded for technical contributions to cosmetic science.

International Journal of Cosmetic Science Award for best paper published in the Journal in 2011 (with M. Visscher and M. Robinson)

Appointed an International Corresponding Member of the Chilean Academy of Pharmaceutical Sciences, August 7, 2009

Society of Cosmetic Chemists Merit Award for distinguished contributions, achievement and service to the Society December 7, 2007

Society of Cosmetic Chemists 2001 Literature Award for outstanding contributions to the cosmetic science literature

International Flavors and Fragrances Award for best paper presented to the Society and published in the Journal of the Society of Cosmetic Chemists during 1998 (With A Shah and S. Mukerjee).

Elected a Fellow of the Society of Cosmetic Chemists, September 1996

Joseph P. Ciaudelli award for the best paper on hair care technology, published in the Journal of the Society of Cosmetic Chemists during 1996 (with M. Manuszak and E. Borish).

International Flavors and Fragrances Award for best paper presented to the Society and published in the Journal of the Society of Cosmetic Chemists, 1996 (with M. Manszak and E. Borish).

Shaw Mudge Award for best paper presented at the SCC Annual Scientific Seminar, May 1996 (with D. Imbert and G. Kasting, paper presented by D. Imbert).

Dragoco Award for best paper presented at the SCC Annual Scientific Meeting, December 1994 (with A. Warrior, R. Harper, J. Bowman and A. Kligman, paper presented by R. Wickett).

SCC Ohio Valley Chapter Award for best scientific paper presented to the SCC Ohio Valley Chapter during 1991.

International Flavors and Fragrances Award for best paper presented to the SCC and published in the Journal of the Society of Cosmetic Chemists during 1983.

Shaw Mudge Award for best paper presented at the SCC Annual Scientific Seminar, May 1983.

PROFESSIONAL SERVICE:

Chairman: International Society for Stratum Corneum Research, September 2014-Present

President: Society of Cosmetic Chemists, December 2010 – December 2011

Vice President: Society of Cosmetic Chemists, December 2009-December 2010

Vice President Elect: Society of Cosmetic Chemists, December 2008 December 2009

Chairman: International Society for Bioengineering and the Skin, March 2000-October 2005

Editor: Journal of the Society of Cosmetic Chemists, January 1991- December 1997.

Committee on Scientific Affairs: Society of Cosmetic Chemists, 2000-2004

Education Advisory Board: Society of Cosmetic Chemists 2000-2003

US Program Convenor: International Society for Bioengineering and the Skin (ISBS), 1988 to present

Editorial Committee: Journal of the Society of Cosmetic Chemists, Skin Research and Technology, International Journal of Cosmetic Science, Romanian Society of Cosmetic Chemists Magazine

Program Chairman: Ohio Valley Chapter of the SCC, 1993-1994, 1996-1998.

50th Anniversary Committee: Society of Cosmetic Chemists, 1995.

PATENTS:

S. B. Hoath, W.L. Pickens, M. O. Visscher, A. Tansirikongkol, R. R. Wickett, Simulated vernix compositions for skin cleansing and other applications, U.S. Patent 7959935, June 14, 2011

H. R. Elden and R. R. Wickett, S Ollmar, Method and apparatus for non-invasive determination of glucose in body fluids, U.S. Patent 6,517,482 February 11, 2003

H. R. Elden and R. R. Wickett, Method and apparatus for non-invasive determination of glucose in body fluids, European Patent EP0959758 A, December 1, 1999

E. R. Cooper, M.E. Loomans and R.R. Wickett, Penetrating topical pharmaceutical compositions, U.S. Patent No. 4,954,487, September 4, 1990

R. R. Wickett, E. R. Cooper and M. E. Loomans, "Penetrating topical pharmaceutical compositions", European Patent No. 81303128.3, July 6, 1981

R. R. Wickett and W. R. Kock, "Topical compositions and treatment of skin lesions therewith", U.S. Patent No. 4,163,800, August 7, 1979

PUBLICATIONS:

Wickett RR, Damjanovic B, Quantitation of 24-hour moisturization by electrical measurements of skin hydration *J Wound Ostomy Continence Nurs.* 2017 44: 487-491.

MO Visscher, SA.Burkes, DM Adams, AM Hammill, RR Wickett, Infant Skin Maturation: Preliminary Outcomes for Color and Biomechanical Properties, *Skin Res Technol* 2017 Nov;23(4):545-551.

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GR Kelm, RR Wickett The Role of Fatty Acids in Cosmetic Technology in Fatty Acids Chemistry, Synthesis and Applications, UA Moghis Editor, 2017, AOCS Press, pp 385-404.

S Baswan, GB Kasting, SK Li, R Wickett, B Adams, S Eurich and R Schamper, Understanding the Formidable Nail Barrier: A Review of the Nail Microstructure, Composition and Diseases, Mycoses. 2017 Jan 18. doi: 10.1111/myc.12592. [Epub ahead of print]

Y Zhang, L Zhou, K Yang, RR Wickett, Thomas Andl, Dermal Sheath Cells Contribute to Postnatal Hair Follicle Growth and Cycling, *J. Dermatol. Sci.* 2016 82(2):129-31.

MO Visscher, SA Burkes, RR Wickett, KP Eaton, From Image to Information: Image Processing in Dermatology and Cutaneous Biology. In: *Imaging and Dermatology*, Hamblin MR, Avci P, Gupta A. Elsevier, Amsterdam, 2016 p. 519-535

KS Wei, C Stella, KR. Wehmeyer, J Christman, A Altemeier, RI Spruel, RL Wimalasena, GM. Fadayel, RA. Reilman, Safa Motlagh, PJ. Stoffolano, K Benzing and RR Wickett, Effects of Season on Stratum Corneum Barrier Function and Skin Biomarkers, *J. Cosmetic Sci*, **67**, 185-203 (2016).

L Zhou, M Xu, Y Yang, K Yang, RR Wickett, T Andl, SE Millar, Y Zhang, Activation of β -Catenin Signaling in CD133-Positive Dermal Papilla Cells Drives Postnatal Hair Growth, *PLOS ONE* 11 (7), e0160425

MO Visscher, SA Burkes, DM. Adams, A Gupta, RR Wickett, Biomechanical Properties of Infantile Hemangiomas: Clinical Stage and Effect of Age, *Skin Research and Technology*, 2016, Jun 5. doi: 10.1111/srt.12290. [Epub ahead of print]

SA Burkes, M Patel, D Adams, K Eaton, RR Wickett, M Visscher, Infantile Hemangioma Status by Dynamic Infrared Thermography – A Preliminary Study, *Int. J. Dermatol.* 2016 (10):e522-32.

P Leelapornpisid, RR Wickett, S Chansakaow and N Wongwattananukul Potential of Native Thai Aromatic Plant Extracts in Anti-wrinkle Body Creams, *J. Cosmet Sci* 66, 219-231 (2015)

L Zhou, K Yang, T Andl, RR Wickett, Y Zhang, Perspective of targeting cancer-associated fibroblasts in melanoma, *J Cancer* 6(8) 717-726 (2015)

RR Wickett and M Tate, Compromised Skin in the Elderly, In *Harry's Cosmeticology 9th Edition*, Volume 1, M Rosen Editor, 2015. Chemical Publishing Co. USA, pp 282-328

SA Burkes, DM Adams, AM. Hammill, C Chute, KP Eaton, JA Welge, RR Wickett and MO Visscher, Skin Imaging Modalities Quantify Progression and Stage of Infantile Hemangiomas, *British J Dermatol* 2015 173(3):838-41

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K Kiattisin, RR Wickett, P Jantrawut A Phrutivorapongkul and P Leelapornpisid Marigold Flower Extract Loaded Nanoemulsion by Pit Technique for Cosmetic Application: Optimization and Characterization, *Int.J.Ph.Sci.*,(2013) 5(3)2090-2101

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MO Visscher, R Utturkar, WL Pickens, A. LaRuffa, M Robinson, RR Wickett, V Narendran and SB Hoath. Neonatal Skin Maturation – Vernix Caseosa and Free Amino Acids, *Pediatric Dermatology* 28 122–132, 2011

JA Davis, MO Visscher, RR Wickett, SB Hoath, Role of TNF- α polymorphism -308 in Neurosensory Irritation, *International Journal of Cosmetic Science* 2011 33(2):105-12

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JA Davis, MO Visscher, RR Wickett, SB Hoath, Influence of TNF α polymorphism -308 and Atopy on Irritant Contact Dermatitis in Health Care Workers, *Contact Dermatitis* 2010 Dec;63(6):320-32

MO Visscher, M Robinson and RR Wickett, Regional Variation in Free Amino Acids in the Stratum Corneum, *J. Cosmetic Science* 2010 Jul-Aug;61(4):303-9.

MO Visscher, D Said, RR Wickett, Stratum Corneum Cytokines and Structural Proteins: Effects of Repetitive Hand Hygiene, *Skin Research and Technology*, 2010 May;16(2):229-36

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A Tansirikongkol, M.O. Visscher and RR Wickett, Water handling properties of vernix caseosa and a synthetic analog, *J. Cosmet. Sci.* 58(6):651-662 (2007)

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RR Wickett, E Kossmann, A Barel, N Demeester, P. Clarys, D Vanden Berghe, M. Calomme Effect of oral intake of choline-stabilized orthosilicic acid on hair tensile strength and morphology in women with fine hair. *Arch Dermatol Res* **299(10)**:499-505. (2007)

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RR Wickett, LD Rhein, L.D. and S. Babajanyan, Non-invasive Techniques to Measure Cutaneous Effects of Skin Care Products in *Surfactants in Personal Care Products and Decorative Cosmetics* L Rhein, T O'Lenick, MI Schlossman, and P Somasundaran editors CRC Press Boca Raton, 2007 pp 57-93

JA Davis and RR Wickett, New directions for sensitive skin research, *Cosmetics and Toiletries*, 121(12) 55-60 (2006)

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MO Visscher, J Canning, D Said, RR Wickett, and P Bondurant, Effect of Hand Hygiene Regimens on Skin Condition in Health Care Workers (HCWs), *Am J Infect Control*; **34(10 Suppl)**:S111-S123. (2006)

RR Wickett and MO Visscher, Structure and Function of the Epidermal Barrier, *Am J Infect Control*; **34(10 Suppl)**:S98-S110. (2006)

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RR Wickett How do sunless tanners work? *Scientific American* August 2004, 100

LK Smalls, J Whitestone, GJ Kramer, D Passeretti, RR Wickett, WJ Kitzmiller, and MO Visscher, The Dimple Phenomenon: Three Dimensional Quantitation of Cellulite and Relationships to Perceptual Assessment, *Proceedings of the 23rd IFSCC* Orlando Fl. October 23-27, 2004 pp 279-283

RR Wickett, Hardware and Measuring Principle: The NOVA DPM, in *Bioengineering and the Skin Water and the Stratum Corneum 2nd Edition*, J. Fluhr, P. Elsner, E. Berardesca and H.I. Maibach Editors, CRC Press New York, 2004 pp. 263-274

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MO Visscher, GT Tolia, RR Wickett and, SB Hoath, Effect of Water Soak and solvent extraction on Stratum Corneum Water Handling Properties, *Journal of Cosmetic Science* **54**, 289-300 (2003)

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MO Visscher, SB Hoath, E Conroy, RR Wickett, Effect of semipermeable membranes on skin barrier repair following tape stripping, *Archives of Dermatological Research*, **293**:491-499 (2001)

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RR Wickett, G Tolia, B Fugitt, M Visscher and SB Hoath, Bioengineering evaluation of the water handling capabilities of stratum corneum *in vivo*. Creation and Hope, Proceedings of the 2001 IFSCC International Conference, Taipei, Taiwan, pp 37-46.

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L Minwalla, Y Zhao, J Cornelius, G Babcock, RR Wickett, IC Le Poole and RE Boissy, Inhibition of melanosome transfer to keratinocytes by lectins and neoglycoproteins in an in vitro model system. *Pigment Cell Res.* **14**, 185-194 (2001)

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MLB Bautista, RR Wickett, MO Visscher, WL Pickens and SB Hoath, Characterization of Vernix Caseosa as a natural biofilm: Comparison to standard oil-based ointments, *Pediatric Dermatology*, **17**, 253-260(2000)

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RR Wickett, A Review of Stratum Corneum Plasticization Mechanisms, *Bioengineering and The Skin* **3**:383-388 (1987)

RR Wickett, Permanent waving or straightening of hair, *Cutis* **39**:496-497 (1987)

RR Wickett and R Mermelstein, Single-fiber stress relaxation studies of hair reduction and depilation, *J. Soc. Cosmet. Chem.* **37**:461-473 (1986)

RR Wickett and BG Barman, Factors affecting the kinetics of disulfide bond reduction in hair, *J. Soc. Cosmet. Chem.* **36**:75-86 (1985)

RR Wickett, Kinetic studies of hair reduction using a single fiber technique, *J. Soc. Cosmet. Chem.* **34**:301-316 (1983)

R. Randall Wickett, Ph.D.

RR Wickett, GJ Ide and A Rosenberg, A hydrogen exchange study of lysozyme conformational changes induced by inhibitor binding, *Biochemistry* **13**:3273-3277 (1974)

HJ Li, RR Wickett, AM Craig and I Isenberg, "Conformational changes in Histone IV", *Biopolymers* **11**:375-397 (1972)

RR Wickett, HJ Li and I Isenberg, Salt effects on Histone IV conformation, *Biochemistry* **11**:2952-2957 (1972)

RR Wickett, HJ Li and I Isenberg, Use of intrinsic protein fluorescence to study DNA-protein binding", *Anal. Biochem.* **50**:608-611 (1972)

RR Wickett and I Isenberg, The interaction of Histone IV with nucleoside triphosphates, *Proc. Natl. Acad. Sci.* **69**:2687-2690 (1972)

PUBLISHED ABSTRACTS

RR Wickett, and MO Visscher, Factors influencing hand skin health in health care workers: Practices, Environment, Genetics and Treatment Response, *Journal of Cosmetic Science* **63**, 74-75 (2012).

RR Wickett, R. Utturkar, M. Visscher, W, Pickens and S.B. Hoath, Neonatal Skin Maturation – vernix caseosa and natural moisturizing factor, *Skin Research and Technology*, **16**, 476 (2010)

RR Wickett, J. Davis, M. Visscher, Influence of TNF α polymorphism – 308 on irritant dermatitis in health care workers, *Skin Research and Technology*, **16**, 509-510 (2010)

MH Robinson, MA Visscher and RR Wickett, Barrier repair after tape stripping: Effects of semi-permeable membranes on the natural moisturizing factors of the skin (NMF), *J. Cosmetic Science* **59**, 378-379 (2008)

J. Smith Canning, B. Barford, RR Wickett and MO Visscher, Use of digital photography and image analysis to assess stratum corneum compromise in health care workers, *J. Cosmetic Science* **57**, 412-413 (2006)

RR Wickett Basics of Skin Structure, *J. Cosmetic Science*, **55** 132-133 (2004)

MH Robinson and RR Wickett, Biochemical and Bioengineering Analysis of the Skin's Natural Moisturizing Factors, *J. Cosmetic Science*, **55**, 211-212 (2004)

SH Hamed, P Sriwiyinanont, RR Wickett and R Boissy, Effect of deoxyarbutin on melanogenesis: in vivo comparison with other melanogenesis inhibitor, *J. Cosmetic Science*, **55**, 118-119 (2004)

M Visscher, J. Smith, R. Wickett and SB Hoath, Effect of hand hygiene regimens on stratum corneum structure and function, *Skin Research and Technology* **10** A11 (2004).

L. Minwalla, Y. Zhao, I.C. LePoole, R. R. Wickett and R. E. Boissy, The differential distribution patterns of transferred melanosomes in the keratinocyte is regulated by the recipient keratinocyte. *J. Cosmet Sci.* **53**, 145-146. (2002)

RR Wickett, MO Visscher and S.B. Hoath, Evaluation of Skin Barrier Properties by measurement of electrical properties under probe occlusion, *Skin Research and Technology*, **6**, 142 (2000)

R Wickett, F Li, E Conroy and M Visscher, Influence of formulations containing salt and glycerin on electrical properties of skin: Correlation between single treatments and long-term results., *J. Cosmet. Sci.* **52**, 79-81(2001)

F. Li, E. Conroy, M. Visscher and RR Wickett, Influence of salt and glycerin on the electrical properties of skin: correlation between single treatments and long-term results. *Skin Research and Technology*, **6**, 154 (2000)

WL Pickens, Y Zhou, RR Wickett, MO Visscher and SB Hoath, Antioxidant defense mechanisms in vernix caseosa: Potential role of vitamin E. *Pediatric Research* **47**:425A(2000)

L Minwalla, IC Le Poole, RR Wickett and RE Boissy, Inhibition of melanosome transfer to keratinocytes by lectins and neoglycoproteins in an in vitro model system. *Pigment Cell Res* **12**:211 (2000)

WJ Kitzmiller, L Singer, D Page, M Visscher and RR Wickett, Use of noninvasive bioengineering techniques to compare the effects of laser resurfacing and dermabrasion on perioral skin. *Skin Research and Technology* **5**, 112 (1999).

Narendran V, Pickens WL, Wickett RR, Hoath SB, Interaction between pulmonary surfactant and vernix: A potential mechanism for induction of amniotic fluid turbidity, *Pediatric Research* **45**:1257 (1999)

ST Boyce, AP Supp, RR Wickett, GD Warden, Biophysical instrumentation for non-invasive assessment of skin wounds. *J. Burn Care Rehabil.* **18**:S198 (1997)

A Sah, S Mukherjee, RR Wickett, Effects of product structure and formulation on the delivery of AHA to skin, *J Soc Cosmet Chem* **48**: (1) 55-56 (1997)

JK Mills, BR Vowels, A Pagnoni, T Stoudemayer, JP Bowman, RA Harper, AG Warriar RR Wickett, Comparison of image analysis of lipid absorbent tapes and thin layer chromatography (TLC) for determination of sebum excretion, *J. Invest. Dermatol* **106**:919 (1996)

FA Okah FA, WL Pickens, RR Wickett, and SB Hoath, Prenatal steroids accelerate the development of skin surface hydrophobicity in the premature rat *Pediatric Research* **35**:A73, (1994)

Boyce ST, Hoath SB, Wickett RR, Harriger MD, Williams ML, Loss of EGF requirement by cultured analogs of normal human skin - biochemical and physiological analyses, *J. Invest. Dermatol.* **100**: 579 (1993)

Hoath SB, Tanaka R, Nath V, Wickett RR, Kinetics of epidermal water desorption in the newborn rat - does terminal differentiation of the fetal periderm lead to formation of a hydrophobic postnatal skin surface? *J. Invest. Dermatol.* **100**:529 (1993) Abstract

INVITED PRESENTATIONS

Human Skin Anatomy and Physiology in Health and Disease, Dermatological Drug Products, Development and Regulatory Considerations, Workshop, American Association of Pharmaceutical Sciences, San Diego CA, November 11-12, 2017.

Combining Biomarkers and Instrumental Measurements in Skin Research, Keynote address 40th Anniversary meeting of the South African Society of Cosmetic Chemists, Johannesburg South Africa September 13-14 2017

Postnatal development of infant skin function, 40th Anniversary meeting of the South African Society of Cosmetic Chemists, Johannesburg South Africa September 13-14, 2017

Effects of season on stratum corneum barrier function and skin biomarkers, Southwest Chapter Society of Cosmetic Chemists, Dallas TX, May 11, 2017

Latest methods for evaluating cosmetic product effects on skin, including biomarkers and instrumentation, Chiang Mai University, Chiang Mai Thailand, November 7, 2016

Role of structural and sebaceous lipids in skin health, American Oil Chemists Society Meeting, Salt Lake City, UT, May 2-4, 2016

Cytokines and Structural Proteins as Biomarkers of Skin Health, Workshop on Omics, In Cosmetics Paris France April 12, 2016

Skin Structure and Device Interfacing, Skin for Engineers Workshop, Miami Fl. January 19-20, 2016

Innovative Actives and Current Trends in Cosmeceuticals, Faculty of Pharmacy, Chiang Mai University, Chiang Mai Thailand, November 6, 2015

Surfactants and human skin: Perspectives from 40 years of skin research, Joint meeting of the American Oil Chemists Society and the Society of Cosmetic Chemists, Orlando FL, May 4-6, 2015

Variable Responses to Skin Irritants, Ohio Valley Chapter of the Society of Cosmetic Chemists, Cincinnati OH, February 18, 2015

Topical Delivery Fundamentals: Mini-Breakfast Seminar, Society of Cosmetic Chemists Annual Scientific Meeting, New York NY, December 12, 2014

Mechanical and Optical Evaluation of Skin, World Congress of International Society for Biophysics and Imaging of the Skin, Mystic CT, June 2, 2014

Reflections on 40 years in Skin Science, Ohio Valley Chapter of the Society of Cosmetic Chemists, Cincinnati OH, April 16, 2014

Skin Barrier to Cosmetic Ingredient Delivery: Symposium-Moving Forward to Skin Care Cosmetic Innovation: Bangkok Thailand, February 13, 2014

Skin Measurements, in House, in a CRO or in the "Real World", Key Note Address, California Chapter of the Society of Cosmetic Chemists Suppliers Day, Los Angeles CA, September 24-25, 2013

Biochemistry and Biophysics of the Skin, Mini-Breakfast Seminar, Society of Cosmetic Chemists Annual Scientific Seminar, St. Louis MO, June 6-7, 2013

Cosmeceuticals: What are they and how do they work? Perspectives in Percutaneous Penetration, 13th International Conference, La Grande Motte France April 10-14, 2012

Development and Testing of Natural Cosmeceuticals, Keynote Lecture, International Federation of Society of Cosmetic Chemists Conference Bangkok Thailand, December 12-14, 2011

Skin Research in the "Real World", US symposium of the International Society for Biophysics and Imaging of the Skin, Tampa FL April 7-9, 2011

New Dimensions in Personal Care: Harnessing the Synergy between Dietary Nutrients and Cosmeceuticals, Conference on Natural and Functional Ingredients, Bangkok Thailand March 16, 2011

Future Trends for Development and Testing of Cosmeceuticals from Nature, Keynote Lecture 3rd International Conference of Natural Products for Health and Beauty, Bangkok Thailand March 16-18, 2011

The Future of Non-invasive testing of skin care products, 3rd International Conference of Natural Products for Health and Beauty, Bangkok Thailand March 16-18, 2011

Measurement Technology Transfer between Medical and Cosmetic Applications, Technology Transfer Conference of the New York Society of Cosmetic Chemists, Newark NJ, October 20, 2010

The Future of Noninvasive Measurements for Cosmetic Claim Support, Annual Scientific Seminar of the California Society of Cosmetic Chemists, Los Angeles CA, October 7, 2010

Mechanical and Surface Properties of Skin, World Congress of the International Society for Biophysics and Imaging of the Skin Buenos Aires Argentina, September 24-26, 2010

Influence of TNF- α polymorphism -308 on Neurosensory Response and Irritant Dermatitis, Twin Cities Chapter of the Society of Cosmetic Chemists, Minneapolis MN April 20, 2010

Measuring Cosmetic Efficacy, Conference on Wisdom and Research Application in Thai Herbal Cosmeceuticals, Bangkok Thailand, December 17-18, 2009

Current Research in Cosmeceuticals, Conference on Wisdom and Research Application in Thai Herbal Cosmeceuticals, Bangkok Thailand, December 17-18, 2009

Neonatal Skin Maturation – *Vernix Caseosa* and Natural Moisturizing Factor, International Society for Biophysics and Imaging of the Skin, Besancon France September 9-12, 2009

Effects of Hand Hygiene Procedures and Aggressive Lotion Intervention on Irritant Dermatitis in Health Care Workers in the “Real World”, Chilean Academy of Pharmaceutical Sciences, University of Chile, Santiago Chile August 17th 2009

Measuring Cellulite, 34th International Meeting of the Chilean Society of Cosmetic Chemists, Santa Cruz, Chile August 14-16, 2009

Basic Bioengineering Techniques for Skin Measurement, 34th International Meeting of the Chilean Society of Cosmetic Chemists, Santa Cruz, Chile August 14-16, 2009

Skin Rejuvenation from a Scientific Perspective, ENSAS-Estonian Dermatological Society Meeting, Tallinn Estonia, May 8, 2009

Effect of Lotions and Creams on Irritant Dermatitis in Health Care Workers, Southeast Chapter Society of Cosmetic Chemists, Memphis TN April 29, 2009

Mechanical Properties of Skin, International Society for Biophysics and Imaging of the Skin, Dallas TX, March 18-21 2009

Influence of Dressings on Barrier Repair: Effects on Biophysical Measurements and Natural Moisturizing Factors International Society for Biophysics and Imaging of the Skin, Dallas TX, March 18-21 2009

Oxidative Stress and Skin Aging, Bruno Werdleman Foundation Lecture, Department of Chemistry, Chiang Mai University, Chiang Mai Thailand December 22, 2008

Effect of oral intake of choline-stabilized orthosilicic acid on hair tensile strength and morphology in women with fine hair, 2nd International Conference of Natural Products for Health and Beauty, Phayao Thailand December 17-19 2008

Molecular Biology of Oxidative Stress in Photoaging of Skin, Society for Free Radicals Thailand Conference, Chiang Mai Thailand December 16, 2009

Racial and ethnic variations in Skin Properties and Response to Irritant, Formulating for Diversity Fall Technical Symposium, Midwest Chapter Society of Cosmetic Chemists, Chicago IL October 17, 2008

Vernix Caseosa, The Natural Moisturizer of a New Born Baby’s Skin, Symposium in honor of Professor Ubonthip Nimminent, Chulalongkorn University Bangkok Thailand August 1-2 2008

R. Randall Wickett, Ph.D.

Clinical Studies of Anti-aging products, "Symposium on the Evaluation of Cosmetic Products: Antiaging and Hair care Products", Bangkok Thailand September 6-7, 2007

Measuring Skin Irritation, "Symposium on the Evaluation of Cosmetic Products: Antiaging and Hair care Products", Bangkok Thailand September 6-7, 2007

Evaluating Hair, "Symposium on the Evaluation of Cosmetic Products: Antiaging and Hair care Products", Bangkok Thailand September 6-7, 2007

Measurement of Cellulite, 1st Symposium on Cosmetic and Health Innovations, Bangkok Thailand, May 26-27, 2007

Skin Pigmentation and Skin Lightening: Overview and Results with Deoxyarbutin and its Second Generation Derivatives, 1st Symposium on Cosmetic and Health Innovations, Bangkok Thailand, May 26-27, 2007

Structure and Function of the Epidermal Barrier, Back to Basics Skin care Symposium, Ohio Valley Society of Cosmetic Chemists, April 18, 2007

Electrical Measurements on Skin, International Society for Skin Imaging and Biophysics Meeting, Atlanta GA October 12-14, 2006

Effect of Weight Loss on Cellulite Severity, 20th Brazilian Congress on Cosmetology, San Paulo Brazil April 18-20, 2006.

Skin Color and Skin Lightening, Overview and results with a new skin lightening agent, Asociación Argentina de Químicos Cosméticos meeting, Buenos Aires Argentina, April 17, 2006

Function and analysis of skin's natural moisturizers, Asociación Argentina de Químicos Cosméticos meeting, Buenos Aires Argentina, April 17, 2006

Biochemical and Biophysical Studies of Skin's Natural Moisturizers, COSCEM 2005, Johannesburg, South Africa, October 5-6, 2005

Comparing African American and European American Skin: Biophysical Properties and Response to Irritant, 2nd World Congress on Non-Invasive Methods and the Skin, Philadelphia PA, September 29-October 1, 2005

Cutaneous Biometrology in Neonatal Medicine, Symposium in Honor of Pierre Agache, International Association of Cosmetic Dermatology Meeting, Paris France, July 3-5, 2005

Permanent Waving and Depilation, Society of Cosmetic Chemists Annual Scientific Seminar, Las Vegas, NV, June 2-3, 2005.

Bioengineering advances in the analysis of cellulite, Congress on Bioengineering and Biometrics of Skin and Hair, San Paulo Brazil, July 25,26 2004.

A new method for biochemical skin evaluation, Congress on Bioengineering and Biometrics of Skin and Hair, San Paulo Brazil, July 25,26 2004.

Basic Skin Evaluation Methods, Society of Cosmetic Chemists Annual Scientific Seminar, Uncasville CT, May 7-8, 2004.

Hair Structure, Chemistry and Product Evaluation, Symposium on Evaluation of Hair Care Products Chulalongkorn University, Bangkok Thailand, December 22-23, 2003

Basics of Skin Structure, Society of Cosmetic Chemists Annual Meeting, New York NY Dec 4-5 2003.

Basic Research on Ethnic Hair, to Second International Symposium on Ethnic Hair and Skin, Chicago IL, September 19-21, 2003

Bioengineering Evaluations of Exogenous and Endogenous Moisturizers, Midwest Chapter of the Society of Cosmetic Chemists, Chicago IL March 11, 2003

Skin color measurements, Symposium on Evaluation of Cosmetic Products, Chulalongkorn University, Bangkok Thailand, December 19-20, 2002

Use of Bioengineering Methods in Product Efficacy Studies, Symposium on Evaluation of Cosmetic Products, Chulalongkorn University, Bangkok Thailand, December 19-20, 2002

Electrical Measurements of Skin, International Society for Bioengineering and the Skin Workshop, Baltimore MD., October 24, 2002.

Current Research in Skin Moisturization: International Cosmetic Expo. Miami FL February 21, 2002.

Cosmetic Science Education at the University of Cincinnati, Naresuan University, Phitsanulok Thailand, October 13, 2001

Mechanisms of Skin Moisturization, Conference on Cosmetic Science, Mahidol University Bangkok Thailand, October 12, 2001

Skin Bioengineering and Biochemistry, Conference on Cosmetic Science, Mahidol University Bangkok Thailand, October 11, 2001

Overview of Skin Science Research at the University of Cincinnati, Providence University, Taichung, Taiwan, September 21, 2001

Recent Studies of Stratum Corneum Barrier Formation and Homeostasis, Taipei Medical University, Taipei Taiwan, September 20, 2001

Bioengineering evaluation of the water handling capabilities of stratum corneum *in vivo*, Creation and Hope, IFSCC International Conference, Taipei, Taiwan, September 17-19, 2001

Non-invasive evaluation of stratum corneum function: Fifth Romanian International symposium on Cosmetic and Flavour Products: Iasi Romania, May 29-June 1, 2001

Skin Biochemistry, Society of Cosmetic Chemists Annual Scientific Seminar New Orleans, LA, May 9, 2001.

Use of the Moisture Accumulation Test to Assess Skin Breakdown and Repair, Society of Cosmetic Chemists and International Society for Bioengineering and the Skin: Joint Educational Symposium: Evaluation of the Skin Barrier: Breakdown and Repair, New York, NY, Wednesday December 6, 2000

Evaluation of Stratum Corneum Function Using the Moisture Accumulation Test, Department of Dermatology, Veteran's Administration Hospital, San Francisco, CA, October 29, 2000.

Stratum Corneum Physiology and Moisturizing Mechanisms, St. Louis Society of Cosmetic Chemists Annual Scientific Seminar, St Louis, MO, September 29, 2000

Hair care product testing, Consumer Products - Business Unusual, Symposium of the Connecticut Chapter of the Society of Cosmetic Chemists, Stamford Connecticut, September 19, 2000.

Evaluation of skin barrier function by measurement of electrical properties under probe occlusion, International Society for Bioengineering and the Skin, Jerusalem, Israel March 26-30, 2000

R. Randall Wickett, Ph.D.

Skin Care: Meeting of the Western Ohio American Association of Diabetes Educators, Dayton OH, March 9, 2000.

We need better than Neanderthal techniques to study the neonatal barrier, 12th International Contact Dermatitis Symposium, San Francisco CA, October 14-18, 1999.

How do cosmetics moisturize skin?, Society of Cosmetic Chemists, Long Island Chapter, 1998 Educational Seminar, Melville NY, September 9, 1999.

Effects of α -hydroxy acids on human skin, 4th Romanian International Symposium on Cosmetic and Flavor Products, Iasi Romania, June 1-4, 1999

Similarities and Differences in Physical Properties of Gray and Pigmented Hair, Second Intercontinental Meeting of Hair Research Societies, Washington DC, November 5-7, 1998.

Comparing the effects of lactic acid and glycerin on human skin *in vivo*, Society of Cosmetic Chemists Area IV Symposium, Emerging Technologies in Skin Care, Myrtle Beach, SC October 9-10, 1998.

Skin Care Products in the Nursery, National Association of Neonatal Nurses, Annual Meeting, Cincinnati OH, September 25, 1998.

Racial Differences in Skin Barrier Function in Adults and Infants, Society of Cosmetic Chemists, Long Island Chapter, 1998 Educational Seminar, Melville NY, September 10, 1998.

Comparing the effects of lactic acid and glycerin delivered from simple formulations, Society of Cosmetic Chemists (SCC), Area II Technical Symposium, Chicago IL, September 19, 1997.

Using the Cutometer and Dermal Torque Meter for skin elasticity measurements, Ohio Valley Chapter of the SCC, Cincinnati OH, September 17, 1997.

Practical Aspects of Skin Elasticity Measurement, University of Cincinnati, Department of Dermatology Procter and Gamble Lecture, Cincinnati OH, June 19, 1997.

Gray and Pigmented Hair: Are they different, Scientific Seminar on Haircare, California Chapter of the SCC, Los Angeles CA, May 6, 1997.

Differences in mechanical properties and set in gray and pigmented human hair, Mid Atlantic Chapter of the SCC, Baltimore MD March 11, 1997.

AHA Update, California Chapter of the SCC, Los Angeles CA, February 25, 1997

Skin Elasticity Measurements for Cosmetic Science, Lake Erie Chapter of the SCC, Akron OH, February 18, 1997.

Modeling Stratum Corneum Elasticity with the Dermal Torque Meter, 11th Biannual Symposium of the International Society for Bioengineering and the Skin (ISBS), Zurich, Switzerland, October, 3-5, 1996.

Biomechanical Properties of Skin, Dermal Clinical Evaluation (DCES) Society Annual Educational Seminar, Tarrytown, NY, September 20, 1996.

Latest concepts from academia, The living stratum corneum, HBA Global Expo, Symposium on 21st Century Skin Care, New York, NY, June 3, 1996.

Comparison of Cutometer and Dermal Torque Meter for skin elasticity measurements, ISBS, 20th Anniversary Symposium, Miami, FL, February 15-17, 1996.

Mechanical properties and set in gray and pigmented hair, ISBS, 20th Anniversary Symposium, Miami, FL, February 15-17, 1996.

Practical protocols for mildness evaluation using bioinstruments, Joint SCC-ISBS Symposium, Instrumental Testing of Claim Support, New York, NY December 6, 1995

Alpha-hydroxy Acids, Cosmeceuticals?, "New Compounds in Skin Care: The future of topical preparations, Symposium Sponsored by Bausch & Lomb, Amelia Island, Florida, April 8, 1994.

Fruit Acids in Cosmetics, American Academy of Dermatology, Cosmetic Forum, Washington DC, December 8, 1993.

Use of electrical measurements to assess skin barrier function, Cutaneous Biometrics & Bioengineering of Skin, New York, NY, December 8, 1993.

Biophysical assessment of skin condition: A practical overview, DCES Education Seminar IX, Washington DC, September 11, 1992.

Effects of moisturizer treatment on some clinical and biophysical properties of aging skin, Technical Seminar of the Lake Erie and Ohio Valley Chapters of the SCC, Columbus, Ohio October 25, 1991.

Biophysical evaluation of efficacy in skin and hair care products, Fall Symposium of the Golden Gate Chapter of the SCC, San Francisco, CA, October 11, 1991

Biophysical methods as adjuncts to clinical testing of hand and body lotions, SCC-ISBS, Joint Symposium on Biophysical Methods for Product Evaluation, Chicago IL, May 1, 1991.

Product Effects on the Biophysical Properties of Skin, Annual Education Seminar VII of the DCES, Washington DC, September 14, 1990.

The relationship between the effects of chemical and physical properties of hair and the development of permanent set, Midwest Chapter of the SCC, September 1989.

Viscoelastic properties of skin and hair, 7th ISBS Symposium, Milwaukee Wisconsin, June 1988

Stress Decay Studies of Hair Reduction, ISBS Symposium on Biophysical Measurements of Skin, Hair and Nails, Philadelphia, PA, September 1987

Mechanisms of Stratum Corneum Plasticization, Joint ISBS-SCC Symposium in honor of Tom Cook, New York, NY, December 1986.

Physical and Mechanical Testing of Skin, Skin Science Symposium sponsored by the Florida Chapter of the SCC. April 19, 1986.

Kinetic Studies of Hair Reduction using a Single Fiber Method, Ohio Valley Chapter, Society of Cosmetic Chemists, October 1985.

Thermal analysis of human and swine stratum corneum structure: Identification of transitions due to cell envelopes, Sixth Conference on Epidermal Differentiation, St. Claire, Michigan, July, 1977

SHORT COURSES AND WORKSHOPS

Clinical and Instrumental Testing of Skin, One-day course, Society of Cosmetic Chemists, New York NY December 7, 2016

Basic and Advanced Skin Science, Two-day course for the US Food and Drug Administration College Park MD, September 7-8 2016

Basic and Advanced Skin Science, Two-day course for the Society of Cosmetic Chemists, New York NY March 14-15 2016

Advanced Skin Care Science, One day course for the Society of Cosmetic Chemists, New York NY, May 22, 2015

Instrumental testing for Skin Science, Twin Cities Chapter of the Society of Cosmetic Chemists, Minneapolis MN, April 22, 2015

Electrical and Mechanical Testing of Skin, Hands on Workshop, Cosmetics and Toiletries Summit, Philadelphia, PA, June 25-27, 2014

Basic Skin Science, One day course for the Society of Cosmetic Chemists, Philadelphia PA June 24, 2014.

Instrumental Testing of Skin Care Product Effects on Skin, One day course taught for the Society of Cosmetic Chemists, Newark NJ, April 2, 2014

Skin Care Science – Two day course taught for the International Federation of Societies of Cosmetic Chemists, Moscow Russia, October 7-8, 2013

Biochemistry of the Skin, One day course taught prior to the Society of Cosmetic Chemists Annual Scientific Seminar, St. Louis MO, June 5, 2013

Advanced Skin Science: One day course taught for the Ontario Chapter of the Society of Cosmetic Chemists, Toronto Ontario, March 26 2013

Basic and Advanced Skin Science, 2 day course taught for the Society of Cosmetic Chemists, Newark NJ, April 2-3, 2012

Cosmetic Product Evaluation, 5 day course taught for the International MS in Pharmaceutical Technology, Chulalongkorn University, Bangkok Thailand, August 23-September 3, 2010

Topical Delivery, 5 day course taught for the International MS in Pharmaceutical Technology, Chulalongkorn University, Bangkok Thailand, August 16-20, 2010

Advanced Skin Science, 1 day course for the Society of Cosmetic Chemists Newark NJ, March 23, 2009

Skin Biochemistry, 1 day course for the Florida Chapter of the Society of Cosmetic Chemists, Ft. Lauderdale FL, November 6 2008

Clinical and Instrumental Testing of Skin, 1 day course Society of Cosmetic Chemists, New York NY, December 5, 2007

Advanced Skin Science 1 day course Society of Cosmetic Chemists, Salt Lake City UT, November 11 2007

Skin Science 1 day course XVIII COLAMIQ, Guatemala City, Guatemala October 21, 2007

Hair Care Science, 1 day course, International Federation of Societies of Cosmetic Chemists, Amsterdam, Netherlands September 24, 2007

Skin Care Science for the Cosmetic Scientist, 1 day course, Society of Cosmetic Chemists, Newark New Jersey, June 21, 2007

R. Randall Wickett, Ph.D.

Formulation and Development of Color Cosmetics, Mae Fah Luang University, MS in Program in Cosmetic Technology, Bangkok branch, Bangkok Thailand, June 2-3, 2007

Lectures in Cosmetic Science, Mae Fah Luang University, Chiang Rai Thailand, May 28 – June 1, 2007

Skin Care Science 1 day course Society of Cosmetic Chemists, Newark NJ, June 21 2007

Advanced Skin Care, 1 day course Society of Cosmetic Chemists Boston MA, May 10, 2006

Basic Skin Care for the Cosmetic Scientist, 1 day course Society of Cosmetic Chemists, Las Vegas, NV June 1, 2005

Cosmetic Product Evaluation, Chulalongkorn University, International MS Program in Pharmaceutical Technology, Bangkok Thailand, December 22-31, 2003

Skin Care Science for the Cosmetic Scientists, 1 day course for the Society of Cosmetic Chemists, New York NY, December 10, 2003.

Skin Science, Intensive course at Chulalongkorn University, International MS Program in Pharmaceutical Technology, Bangkok Thailand, August, 20-24, 2001

Skin Care Science: A basic course for the cosmetic scientist, Society of Cosmetic Chemists annual scientific seminar, Toronto, Ontario Canada, May 10, 2000.

Bioengineering Evaluation of Aging Skin, International Symposium on Bioengineer and Claim Support in honor of Ronald Marks, Liege Belgium, September 10-12, 1999 with GL Grove).

Hair Care Science: A basic course for the cosmetic scientist, Society of Cosmetic Chemists, Los Angeles CA, February 26, 1997.

Ins & outs of testing skin care products: Including new methods to monitor skin changes. Workshop presented at New Technologies in Anti-aging Skin Care, September 9,10 - 1996, Woodcliff Lake, NJ.(with G. Grove)

Skin Care Science for the Cosmetic Scientist:(with L Rhein) Educational Workshop, presented to the Society of Cosmetic Chemists(SCC), New York NY, December 11, 1996.

R. R. Wickett, Hair Removal, Breakfast Workshop, American Academy of Dermatology, Breakfast Symposium, Washington DC, December 6, 1993 (with A. Kligman)

Biophysical Measurements on Skin: A hands-on course, Educational workshop for the SCC, Atlantic City NJ, May 20, 1992. (with GL Grove)

Can non-invasive methodology replace animal testing? Workshop presented to 8th International Symposium on Bioengineering and the Skin, Stresa Italy, June 1990. (with D. L. Miller)

Evaluation of Hair and Nails, Workshop Presented to 7th International Symposium on Bioengineering and the Skin, Milwaukee Wisconsin, June 1988 (with A. Finlay).

RECENT PODIUM AND POSTER PRESENTATIONS:

RR Wickett, D. Adams, S Burkes and MO Visscher Infant Skin Maturation: Color Features and Biomechanical Properties Over the First Years of Life, World Congress of International Society for Biophysics and Imaging of the Skin, Lisbon Portugal May 31-June 3, 2016

RR Wickett, S Burkes and MO Visscher, Biomechanical Properties of Pediatric Skin and Infantile Hemangiomas, World Congress of International Society for Biophysics and Imaging of the Skin, Mystic CT, June 2-4, 2014

RR. Wickett, Gray and Pigmented Hairs from the Same Individuals may Differ in Both Temporary and Permanent Set. Hairs's13 Conference of the German Wool Research Institute, Lubeck Germany September 4-6, 2013

S. Burkes, RR Wickett, D Adams, MO Visscher *Determination of Infantile Hemangioma Progression Using Non-Invasive Imaging Modalities*. Poster at Society of Cosmetic Chemists Annual Scientific Seminar, St. Louis MO, June 2013 awarded best student poster

K Wei, C Stella, K Wehmeyer, J Christman, R Johnson, R Wimalasena, T Huggins, L Simms RR Wickett Skin Biomarkers as Objective Measures of Stratum Corneum Barrier Function and Health for Formulating Personal Care Compositions Poster 2617 World Congress of Dermatology Seoul Korean May 24-29 2011

RR Wickett, and MO Visscher, *Factors influencing hand skin health in health care workers: Practices, Environment, Genetics and Treatment Response*, Podium Presentation Society of Cosmetic Chemists Annual Meeting, New York NY, December 2011-

RR Wickett, A Evans and J Marsh, *Interaction of Water Hardness Metals with Human Hair*, Poster at Hairs'11, Meeting of the German Wool Research Institute Munich Germany, September 2011

S. Burkes, K. Burns, MO Visscher and RR Wickett, *Early Effects of the Pulsed Dye Laser on Skin Properties of Burn Scars in Pediatric Patients*" Podium Presentation by S. Burkes, World Congress of International Society for Biophysics and Imaging of the Skin, in Buenos Aires Argentina September 24-26, 2010., awarded outstanding presentation at the conference

RR Wickett, *Influence of TNF- α Polymorphism -308 on Neurosensory Response and Irritant Dermatitis*, International Federation of Societies of Cosmetic Chemists Meeting Buenos Aires Argentina, September 2010

RR Wickett, J Davis, D. Said and MO Visscher, *Effect of Hand Hygiene Procedures on Skin Cytokines in Health Care Worker*, Podium Presentation Occupational and Environmental Exposure of Skin to Chemicals, Edinburgh Scotland 14-17 June, 2009

AO Evans and RR Wickett, *A multiparametric study of the impact of water hardness on metals on human hair*, Poster Annual Scientific Seminar Society of Cosmetic Chemists Chicago II, June 4-5, 2009

JA Davis, MO Visscher, RR Wickett, *Role of Cytokine Polymorphism in the severity and treatment of hand dermatitis among health care workers*, Poster Annual Scientific Seminar Society of Cosmetic Chemists Chicago II, June 4-5, 2009

COURSES TAUGHT AT THE UNIVERSITY OF CINCINNATI – (ON CAMPUS AND ONLINE)

Skin Care Science: (with Professor Gerald Kasting)

Lectures and homework assignments covering, basic skin anatomy, epidermis and dermis, dermatological terminology, basic biophysical methods for evaluation of skin, structure of the stratum corneum (SC) and SC barrier homeostasis, skin penetration, skin immune system, skin color, sunscreens, phototoxicity, skin moisturizers and anti-aging products and surfactant skin interactions. **Credit Level: G Credit Hours: 3**

Cosmetic Science Laboratory

Laboratory assignments including formulation of oil-water and water-in-oil emulsions using the HLB method. Formulation of moisturizers. Formulation of shampoos and conditioners. Measurement of viscosity. Product stability testing. Use of emollients to improve skin feel and use of polymers to control product rheology.

Hair Care Science

This course covers the science of hair and hair care products. Topics will include hair growth, morphological and macromolecular structure of hair, physical properties of Hair, reducing agents, reactions and kinetics, permanent waving, straightening and depilation, hair coloring and bleaching, shampoos and conditioners, laboratory and consumer testing methods for evaluating hair properties, hair damage and repair, hair fixatives, dandruff. **Credit Level: G Credit Hours: 2**

Clinical and Instrumental Testing of Skin

This course covers principles of skin clinical testing, including human subject protection, study design and testing on special populations such as infants. The principles behind the most commonly used instruments for studying skin in-vivo are covered along with their use in clinical protocols. Methods covered include skin water loss measurements, electrical measurements, mechanical measurements, Laser Doppler blood flow, Ultrasound imaging, surface contour imaging, optical coherence tomography, skin color measurements, confocal microscopy, skin spectroscopy and magnetic resonance imaging. Protocols for testing moisturizers, cleansing products and "anti-aging" are among those covered. **Credit Level: G Credit Hours: 2**

Molecular Biology of Skin (with Professor Raymond Boissy)

This is an advanced course focusing on the molecular biology of skin. The molecular structure of the epidermis, dermis and dermal epidermal junction will be covered in detail along with key cell signaling pathways in the skin. **Credit Level: G Credit Hours: 2**

Cosmetic Formulation I (with Professor Gerald Kasting)

Lectures and homework assignments covering application of surface and interface science to liquid dosage formulation, surfactant structures and properties, surfactant phase behavior in relation to cosmetic and pharmaceutical formulations, application of surfactant/oil water phase diagrams to emulsion formulation, applications of colloid theory in liquid and semisolid dosage forms, methods for preparing and stabilizing emulsions, particle size characterization in disperse systems rheology, thickening of cosmetic products, silicones in cosmetic formulations, antiperspirants and sunscreen formulation, nanotechnology for cosmetics. **Credit Level: G Credit Hours: 3**