

CENTER FOR DERMAL RESEARCH

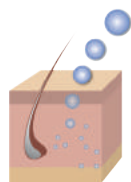


2014 ANNUAL REPORT



RUTGERS
THE STATE UNIVERSITY
OF NEW JERSEY





CENTER FOR DERMAL RESEARCH

The New Jersey Center for Biomaterials, 145 Bevier Road, Suite 101
Piscataway, New Jersey 08854 Tel: 848.445.3589



As the year draws to a close, it is worthwhile to look back at 2014 to see all our accomplishments at the Center for Dermal Research CDR. This was a very busy year and we offered a total of 13 CDR seminars including three presented jointly with Basic and Applied Dermatology Forum (speakers were Drs.

Richard Berger, Anna Langerveld, Kishore Shah and Paul Thau) and one event on new EU Regulations for Claims Testing co-organized with Skin Science and Research (speakers were Dr. Nava Dayan and Annie Ugurlayan).

The 6th Annual Workshop Natural Products and the Skin was held on April 23 in the Life Sciences Building on the Busch Campus of Rutgers University. This event featured an array of speakers that focused on the developments in the organic/natural formulations for skin care. For this event, our plenary speaker was Dr. Miri Seiberg of Seiberg Consulting, LLC.

The CDR programs in October were particularly exciting since the Fall usually heralds the time of the main CDR annual symposium. On October 8 we held our annual Innovations in Dermatological Sciences 2014, and on October 21st the United States Pharmacopeia USP held a course here at Rutgers entitled Focused, Relevant Instruction on the Effective Use of the USP-NF Supplements and Pharmacopeial Forum.

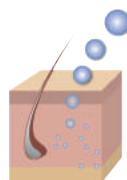
Our 2nd Annual Innovations in Dermatological Sciences conference or “Derm Day” brought together over 100 attendees at the Heldrich Hotel in New Brunswick, New Jersey. The day was replete with poster sessions and exhibitors. It featured several notable speakers familiar with this years title University, Industry and

Government Partnerships, including Plenary Speaker Dr. Alice Gottlieb (Tufts University) who discussed how collaboration with industry has revolutionized topical treatments for psoriatic disease. Peter Nicholson of Galderma joined us and spoke on Galderma becoming a part of the Nestle family.

Dr. Epperly (Stiefel Laboratories) also spoke at the “Derm Day” and she discussed the value of partnerships in delivering science-led innovations in skin health. Charles Niebylski of the National Center for Advancing Translational Sciences (NCATS) at the NIH gave an informative talk on collaboration models at the NIH. Dr. Samir Mitragotri came from USC Santa Barbara to address the new technologies in transdermal drug delivery.

Galderma was awarded the CDR Sponsor of the Year Award at the “Derm Day” event. Dr. Bozena Michniak-Kohn presented the award to Peter Nicholson from Switzerland, in recognition of their generous support of CDR and the Innovations in Dermatological Sciences conference. In addition, we thank Dr. Bill Ju from Advancing Innovation in Dermatology, Inc. & David M.C. Ju Foundation for his continuous support and encouragement for this annual CDR event.

This event, our second in this series of annual meetings, was an overwhelming success and we look forward to even more exciting topics for the event in 2015! Check our websites www.derm.rutgers.edu and www.centerfordermalresearch.org for the latest updates and for registration.



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CDR MEMBERSHIP PROGRAM

This year we also expanded our CDR Advisory Council to include the following members:

Angela Christiano - Dermatology, Columbia University
Gary Cleary - Cyterion, Inc. CA
Adam Friedman - Montefiore-Einstein College of Medicine
Vince Gruber - Sensient
Julie Hirsch - Johnson & Johnson
William Ju- Advancing Innovation in Dermatology, Inc.
Philip Ludwig - LONZA
John Lyga - Avon
Gopi Menon - Ashland
Amy Pappert - Rutgers, RWJ Medical School
Miri Seiberg - Seiberg Consulting

The Center for Dermal Research offers pharmaceutical, personal care, cosmetic and other companies an opportunity to participate in its programs and meetings. Membership affords companies and their key employees opportunities to learn about the latest developments at the Center for Dermal Research at Rutgers and to meet scientists and researchers who are making progress in developing new concepts and products in the science. Through their participation members also have the opportunity to contribute to the research that is being conducted by the Center.

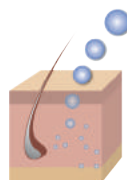
For a limited time we are offering members who wish to renew their membership at a higher level a 5% discount.

Double-Diamond Level (\$50,000). The membership affords companies with more say in how their membership funds are spend and grants them further access to resources at the CDR.

- Sponsor a student or graduate student who will present a talk at the company once a semester (two presentations per membership year)
- Opportunity for an employee to shadow a Lab Tech or Researcher for a week
- Attendance for two new employees at a lab training session
- Two seats on the CDR Advisory Board
- Six attendees at CDR events held through the membership year
- 1/2 day per month face time with Dr. Bozena Michniak-Kohn and/or key lab members
- Two seats on CDR Program Committees
- Full access to Archived Lectures
- Your firm will be able to present an exhibit at all events, your company representative will have the opportunity to present a 15-minute talk to the attendees, and your company logo will also be featured prominently in all meeting and event marketing materials.
- Special seating at the VIP table during the reception with CDR leadership and speakers of the evening.



DR. KISHORE SHAH - POLYTHERAPEUTICS
DR. BAKAR RAO
MEYER ROSEN - INTERACTIVE CONSULTING, INC.
DR. MIRI SEIBERG - SEIBERG CONSULTING
MARC TAYMAN



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CDR MEMBERSHIP PROGRAM

Diamond Level (\$20,000). This new member level opens up a whole new realm of opportunities and level of involvement for members of the CDR.

- One seat CDR Advisory Board
- Six attendees at CDR events held through the membership year
- 1/4 day per month face time with Dr. Bozena Michniak-Kohn and/or key lab members
- One seat on CDR Program Committees
- Full access to Archived Lectures
- Your firm will be able to present an exhibit at all events, your company representative will have the opportunity to present a 10-minute talk to the attendees, and your company logo will also be featured prominently in all meeting and event marketing materials.
- Special seating at the VIP table during event reception with CDR leadership and speakers of the evening.

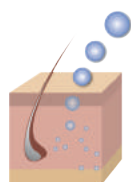
Platinum Level (\$5000). Your firm will be able to present an exhibit at all events, your company representative will have the opportunity to present a 5-minute talk to the attendees, and your company logo will also be featured prominently in all meeting and event marketing materials. Attendance of up to four company representatives at no additional charge for all CDR events held through the membership year. * In addition, special seating at the VIP table during the reception with CDR leadership and speakers of the evening.

Gold Level (\$2500). Your firm will be able to present a tabletop exhibit at all events and your company logo will also be featured in all meeting and event marketing materials. Attendance by up to two company representatives at no additional charge for any CDR event held through the membership year.

Silver Level (\$1000). Your firm's logo will be featured in all meeting and event marketing materials. Attendance by one company representatives at any CDR event held through the membership year at reduced or no cost.

Individual Memberships (\$250). Attendance at any CDR event held through the membership year at reduced or no cost.





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2014 RESEARCH HIGHLIGHTS OF THE CDR

This year the students at the CDR received the **Controlled Release Society CRS 2014 Outstanding Student Chapter of the Year Award for the NJ/ NY/PA CRS Student Chapter** (Dr. Michniak-Kohn is the Faculty Advisor) that was presented at CRS annual meeting July 13-15, 2014 in Chicago.



Michniak-Kohn Ph.D. graduate student **Pei-Chin Tsai** was awarded the **AAPS Graduate Student Research in Biotechnology Award** in 2014. She presented her work entitled “Constructing full-thickness human skin equivalents (HSEs) on decellularized mesothelial extracellular matrix for in vitro testing applications” at the AAPS annual meeting in San Diego, CA, November 2-6, 2014.

Michniak-Kohn Ph.D. graduate student **Pei-Chin Tsai** was awarded the **NYSCC Third Best Poster Award** for “Constructing full-thickness human skin equivalents (HSEs) on decellularized mesothelial extracellular matrix for in vitro testing applications” at the NYSCC 2014 Sun Exposure Symposium October 15th 2014, The Pines Manor, Edison NJ.



Michniak-Kohn Ph.D. graduate student **Tannaz Ramezanli** received the **AAPS & Catalent Applied Drug Delivery Institute's 3rd Annual Global Academic Competition for Life Science Leaders of Tomorrow Award**, with her review of “Stem Cells as Novel Carriers for Cancer Therapy” on June 11, 2014.



Michniak-Kohn Laboratory Researcher **Golshid Keyvan** has officially now become a Ph.D. student with Fernando Muzzio as Co-Advisor in the Chemical Engineering Department at Rutgers University.



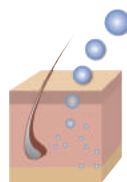
Michniak-Kohn Ph.D. graduate student **Tannaz Ramezanli** received the American Society of Iranian Pharmaceutical Scientists (ASIPS) Graduate Student Award, November 2014.



Michniak-Kohn Ph.D. graduate student, **Krizia Karry** received **3rd place award in “Professionals and Post-Docs” Category for the “On-Site Chemometrics Shootout”** at the 17th International Diffuse Reflectance Conference (IDRC 2014) held in Chambersburg, PA August 2-8th, 2014.

Michniak-Kohn Post Doctoral Fellow, **Oluwatoyin “Olu” Adeleke, Ph.D.** from the Center for High Performance Computing, Material Science and Manufacturing, Pretoria, South Africa was awarded a **Fulbright Fellowship** for 2014-2015 to work on the design and development of orodispersible buccal polymer films containing isoniazid and rifampicin. The interactions between the drug, polymer and excipients within the edible film is being modeled using computational simulations and will add a novel aspect to this type of research. We hope that these simulations will be able to predict the optimization of films without initially performing lots of experiments in the laboratory.





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2014 RESEARCH HIGHLIGHTS OF THE CDR

Michniak-Kohn Post Doctoral Fellow, **Oluwatoyin “Olu” Adeleke, Ph.D.** was awarded the **UNESCO/L’Oreal Award** for 2014.

The L’Oréal-UNESCO for Women in Science Sub-Saharan Africa Fellowship aims to promote and encourage young African women in science. This prestigious and competitive fellowship award program identifies and rewards talented young female scientists in the field of Life Sciences and Physical Sciences. The Program honors every year, 10 talented African women (5 Ph.D. students and 5 Postdoctoral Researchers) for the quality of their research and encourages them to pursue a brilliant career in science in any Sub-Saharan African country. Only two out of the ten Fellowships, one at the doctorate and one at post-doctorate level, were given to African women studying or working in South Africa. The L’Oréal-UNESCO for Women in Science Sub-Saharan Africa Fellowship is granted by the L’Oréal Foundation and L’Oréal South Africa in partnership with the UNESCO Multisectoral Office in Eastern Africa and the African Network of Scientific and Technological Institutions (ANSTI). Olu was selected to be awarded a Fellowship (South Africa) to the value of ten thousand Euros (€ 10,000) for the completion of her postdoctoral research. The award ceremony took place in Johannesburg, South Africa on Wednesday 26 November, 2014.

Michniak-Kohn Postdoctoral fellow, **Agnieszka Nawara-Hultzsch, Ph.D.** from Germany was working on delivery of novel centrally -acting (CNS) drugs using the transdermal route of administration. She and her husband received positions at the University of Vienna, Austria and moved there this summer.

We wish them well!!!!

Laura Osorno, a Masters student from NJIT (with Dr. Mike Jaffe’s group) with the assistance of the Michniak-Kohn group is looking at solving the problem of stretch marks. We hope to solve the problem by understanding the mechanism by which stretch marks are formed. Fibroblasts are being cultured with and without hormones in order to mimic the appearance of stretch marks. The main hypothesis is that the stretching of the skin, in the presence of specific hormones, induces changes in the ECM and the cells the affect ECM-cell interactions.



Sergio Campos da Silva from the University of Coimbra, Coimbra, Portugal who completed part of his Ph.D. work at the Michniak-Kohn laboratory in 2013 on “Strategies to Improve Transdermal Drug Delivery: Hydrogel Vehicles, Permeation Enhancers and Iontophoresis”, received a **three year Post Doctoral FCT Fellowship from the Fundação para a Ciência e Tecnologia (Portuguese Foundation for Science and Technology; Main Scientific Domain: Diagnostic, Therapies and Public Health)**. He will spend part of his time at the University of Lisbon and also at the Michniak-Kohn LDD laboratory. The title of his research is “A novel combined therapeutic approach for modulation of lung cancer cell survival”.

Dr. Michniak-Kohn was invited as an **Editorial Board Member for the “Journal of Drug Research and Development”**, Sciforshen, CA USA. October 2014.

Dr. Michniak-Kohn was invited to be the **Academic Lead** in the Transdermal area of the new Catalent Drug Delivery Institute launched this year in San Diego, CA- see below from www.drugdeliveryinstitute.com.

2014 RESEARCH HIGHLIGHTS OF THE CDR



Catalent Institute Hosted Successful Launch of “Non-Invasive Macromolecule Consortium” Event at Bio International Convention June 23, 2014 San Diego, CA

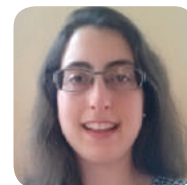


Left Side, from front to back- Dr. Michniak, Terry Robinson (Catalent), Claus-Michael Lebr

Right Side from front to back- Ralph Lipp, Jeremie Trochu (Catalent), Ronak Salva

The Catalent Applied Drug Delivery Institute successfully launched the “Non-Invasive Macromolecule Drug Delivery Consortium” on Monday, June 23rd, 2014 in San Diego, CA. This exclusive one-day workshop welcomed scientists and experts focused on oral, pulmonary/nasal, transdermal or ocular drug delivery of large molecules. This consortium was created by the Catalent Applied Drug Delivery Institute and is co-sponsored by Genentech, 3M, Takeda/Millennium and Allergan.

Michniak-Kohn Pharmacy Honors student, **Rose Soskind** (co-mentor Dr. Kathryn Uhrich, Chemistry) has been studying amphiphilic macromolecules activated by external stimuli for targeted drug delivery. Several classes of drugs, including many anticancer, antioxidant, and anti-inflammatory drugs, may not provide therapeutic effectiveness when delivered using conventional techniques.



Amphiphilic macromolecules (AMs) are polymers containing both hydrophobic and hydrophilic regions that can be used to address this drug delivery issue. In solution, AMs form clusters called micelles that can be employed to encapsulate drugs for delivery. Owing to their small size and low toxicity in the body, micelles serve as drug carriers that can provide enhanced drug release upon exposure to external stimuli. This technique can be used for targeted drug delivery, which has the advantages of bypassing the gastro-intestinal tract and avoiding the first pass hepatic effect. Rose in the Uhrich laboratory synthesized two types of novel AMs activated through either pH or light stimuli for targeted drug delivery, such as for dermal delivery. These were tested for preliminary drug release that provides a basis for further targeted drug delivery studies such as for dermal drug delivery applications. Rose will be presenting her work at Pharmacy Research Day in 2015.

STUDENT UPDATES

Summer Interenship

The CDR and the Michniak-Kohn laboratory hosted a summer exchange student from Brazil this summer. **Jessica Sao Jose** was from UNIVERSIDADE DE SÃO PAULO FACULDADE DE CIÊNCIAS FARMACÊUTICAS DE RIBEIRÃO PRETO, Sao Paulo, Brazil. She worked with Dr. Michniak-Kohn's Ph.D. student **Mania Dorrani** on cutaneous delivery of a topical skin formulation containing short-interfering RNA (siRNA) and its effectiveness against skin cancer cells, specifically melanoma.

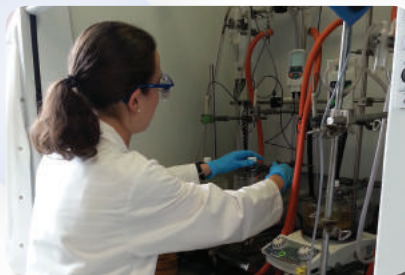


Jessica Sao Jose (Brazil) summer intern in LDD and friends in Boston - Jessica is in center

Rose Soskind at the Max Planck Institute in Germany

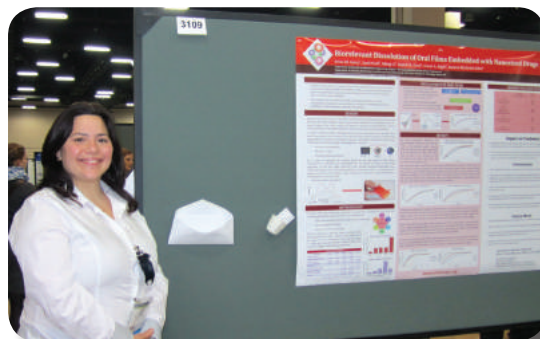
Rose performed research at the Max Planck Institute for Polymer Research in Mainz, Germany. The work consisted of synthesizing and characterizing sugar-based polymer nanocapsules for targeted biomedical and drug delivery applications. This type of therapeutic delivery system has several advantages, including enhanced biocompatibility, decreased toxicity, and higher body retention time to enhance therapeutic effect. A novel method for creating nanocapsules employing an olefin cross metathesis reaction was used to form the polymer nanocapsule shells. This technique has the potential for fewer synthetic byproducts and hazardous wastes as compared to other synthetic routes. Stable nanocapsule formation was achieved by an inverse emulsion using ultrasonification. Polymer and nanocapsule characterization techniques included nuclear magnetic resonance spectroscopy to determine polymer structure, dynamic light scattering to determine the sizes of the nanocapsules in solution, and transmission electron microscopy to further investigate the nanocapsule shape and size. The studies were conducted in collaboration

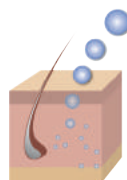
with the Mainz University Medical Center, with potential applications for targeted gene therapy.



Krizia Karry at Pfizer

This summer Krizia had the opportunity to work in the Advanced Manufacturing Team at Pfizer, Inc. Her main roles included support for investigations and product transfers via batch multivariate data analysis, chemometric preprocessing of Raman data for in-line multicomponent predictions in bioprocesses, optimization of abuse-deterrent pharmaceutical formulations and the development of virtual training modules for NIR and chemometrics. This summer opportunity allowed Krizia to consider possible future endeavors and how to best direct efforts towards the completion of her doctoral studies.



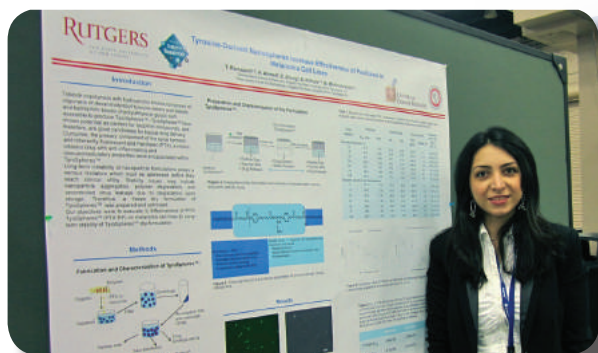


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STUDENT UPDATES

Tannaz Ramezanli at Merck, PA

Tannaz spent her summer (including moving her apartment to PA) at Merck & Co. Inc., Department of Biopharmaceutics, West Point, PA. Tannaz was studying scientific data mining on the marketed transdermal products and their oral counterparts in order to validate three in silico models. These were designed to predict maximum transdermal flux and ultimately support development of discovery-stage transdermal drug delivery system feasibility assessment.



New Graduate Students in LDD

Nathaly Cristin Martos Gibaile (Masters in Pharmaceutical Sciences-Rutgers Pharmacy), Fall 2014-Fall 2016. Nathaly has come all the way from Brazil to study for her Masters thesis in the Michniak-Kohn laboratory. She will be working on novel sunscreen formulations and challenges in delivery and efficacy.

Dina Wadie Ameen (Rutgers Pharmacy) started Ph.D. studies Fall 2013. Dina is exploring the delivery of central nervous drugs using the transdermal route for the treatment of conditions such as Parkinsonism, multiple sclerosis, dementia and Alzheimer's disease.

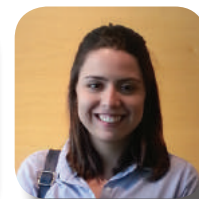
Amitkumar Virani (Rutgers Pharmacy) will be joining the LDD laboratory in January 2015 as a part time Ph.D. student. He is employed full-time in Novel Laboratories in Somerset, NJ. His current responsibilities include supervising and monitoring the execution of experimental, scale-up product development, technical transfer and submission batches for stability and clinical study. Prior to Novel, he had been with MEND (Medicine in Need) Biotechnology Research Labs., Boston, MA as a formulation scientist.

Graduate Students that received Ph.D.'s in 2015

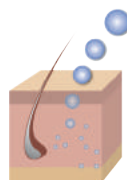
Jenna Leschek-Terebetski (Rutgers Pharmacy) Influence of Polymers on Supersaturation of Ibuprofen Sodium in Vitro and in Vivo: A Mechanistic Evaluation. Fall 2007-Spring 2014. Ph.D. Thesis defended on February 28th 2014.

Marlena Brown (Rutgers Biomedical Engineering). Drop-on-demand polymeric films for transdermal drug delivery. Fall 2006-Spring 2014. Defended Thesis January 2014. (Co-advisor Dr. P. Takhistov).

Serom Lee (Rutgers Biomedical Engineering) Classification Models for Identifying Skin Sensitizers using In Vitro Alternatives to Animal Testing. Fall 2014. Thesis defended October 2014 (Co-Advisor with M. Yarmush-BME Rutgers).



Left to right (clockwise): Dina W Ameen, Jenna Leschek-Terebetski, Nathaly Cristin Martos Gibaile, Serom Lee



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INNOVATIONS IN DERMATOLOGICAL SCIENCES 2014

On October 8th, 2014, thought leaders from the university, industry and government sectors gathered at the Heldrich Hotel in New Brunswick, NJ to share their experiences with successfully partnering to translate cutting-edge dermatological research into clinical use - including successes, best-practices, and lessons learned.

IDS-2014 hosted industry leaders - people and organizations, who by collaborating, can significantly advance product innovation in dermatology and translate basic dermatological discoveries to successful products that will improve patient's lives.



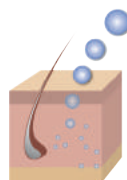
Thank you to CDR Sponsor of the year!



Speakers at Innovations in Dermatological Sciences 2014

- **Dr. Bozena "Bo" Michniak-Kohn**, Director CDR, and Professor, Rutgers School of Pharmacy, **Dr. William Ju**, President, Advancing Innovation in Dermatology, Inc. **Dean Joseph A. Barone**, Dean, Rutgers School of Pharmacy
- **Chris Molloy**, Ph.D., Senior Vice President for Research and Economic Development, Rutgers
- **Alice Gottlieb**, Ph.D., Professor of Dermatology, Tufts University
- **Peter Nicholson**, MBA., Senior Director, Business Development, Galderma S.A.
- **Andrea Epperly**, Ph.D., Senior Director, Business Development & Licensing, Stiefel Laboratories, a GSK company
- **Samir Mitragotri**, Ph.D., Professor, Department of Chemical Engineering and Director of UCSB's Center for Bioengineering, University of California Santa Barbara
- **Audra L. Stinchcomb**, Ph.D., Professor University of Maryland School of Pharmacy and Chief Scientific Officer/Founder AllTranz
- **Gurpreet Ahluwalia**, Ph.D., Senior Director of Dermatology Clinical R&D, Allergan
- **Terry Robinson**, BA, Executive Director, Catalent Applied Drug Delivery Institute
- **Charles Niebylski**, Ph.D., Strategic Alliances Manager for the National Institutes of Health's National Center for Advancing Translational Sciences (NCATS)
- **Michael Davitz**, M.D. J.D., Principal, Ascenda Law Group, PC





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6TH ANNUAL CDR SKIN WORKSHOP “NATURAL PRODUCTS AND SKIN”

MAJOR NETWORKING EVENT FOR NATURAL PRODUCTS & COSMETIC PHARMA PROFESSIONALS

The ancient Egyptians knew the value of natural products to care for the skin. They incorporated many locally sourced substances such as bullock's bile; whipped ostrich eggs and olive oil to create their pharmacopeia of skin care potions. With the increasing popularity of organic foods and naturally occurring ingredients, many skin care manufacturers have begun to label their products as such. Yet, the FDA has no definition for the word “natural”.

Whether these ingredients are: Argan oil, derived from the fruit of a tree that grows in Morocco, or vitamin E-rich oil, or even extracts from licorice, mulberries or from citrus fruits like grapefruit and limes the cosmetic and skin-care industry is incorporating them into new products for the consumer.

The Sixth Annual CDR Skin Workshop focused on the developments in the natural skin care arena and allowed attendees an opportunity to meet with researchers who are at the cutting edge of this developing field.

April 23rd 2014.

SK⁶thIN
workshop



BASIC & APPLIED DERMATOLOGY FORUM EVENTS

May 13th - "What a Dermatologist looks for in Skin Products" *Richard S. Berger, M.D. FAAD*

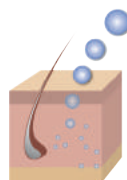


June 3rd - "Incorporating Genomics into Skin Care Product Development: How Do Products Really Work?" *Anna Langerveld, PhD, President and CEO of Genemarkers*



November 12th - "The Evolution of Water-in-Oil Emulsion Technology" *Paul Thau, B.S. (Pharmacy), PaCar Tech, Kishore R. Shah, Ph.D., President of Polytherapeutics*





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NEW IN THIS YEAR

LOOKING AHEAD TO 2015

- The CDR evening seminar series continues with a slate of brand new speakers not featured in past CDR seminars
- E-learning website - over 20 slide presentations with audio (free for CDR members) with new additions each month
- Main CDR annual symposium November 10th, 2015 “Innovations in Dermatological Sciences” at Heldrich Hotel, New Brunswick - derm.rutgers.edu
- CDR Blog
- Reduced rates for CDR members for CDR events and webinars
- Priority access to research laboratory facilities & instrumentation to CDR members
- Exceptional networking at CDR events with pharma, personal care & cosmetic companies

SOME OF THE 2015 EVENTS:

- Spring 2015 / Graduate Course “Dermaceutics”
- February 9th / CDR Seminar Series - Kathryn Uhrich
“Polymer Therapeutics: Polymers from Bioactives for Topical Applications”
- March 23rd / CDR Seminar Series - Hilton Kaplan
“Enhanced Vitamin Penetration - the Holy Grail in Non-Invasive Facial & Body Rejuvenation”
- April 27th / CDR Seminar Series - Anis Rahman
“Terahertz sub-surface imaging and spectroscopy for cellular level identification of skin abnormalities”
- May 11th / CDR Seminar Series - Lucyanna Barbosa - Barros and Olga Lopez, Bicosome, Barcelona, Spain
- June / CDR Seminar Series - Mike Southall
- August / CDR Seminar Series - Marianna Folvari, University of Waterloo, Canada
- November 10th / CDR Annual Symposium
“Innovations in Dermatological Sciences 2015”

MORE TO COME

PLEASE CHECK OUR WEBSITE / WWW.CENTERFORDERMALRESEARCH.ORG

2014 CDR EVENTS

February 10th - CDR Seminar - Grazia Stagni, Long Island University, *"Skin Microdialysis: Insights and Applications to Topical and Transdermal Delivery"*

March 26th - CDR Seminar - Dr. Joachim Kohn, New Jersey Center for Biomaterials, *"Nanoparticulate Drug Carriers for the Delivery of Actives"*

April 23rd - 6th ANNUAL SKIN WORKSHOP ON "NATURAL PRODUCTS AND SKIN"

April 28th - CDR Seminar - Hilton Kaplan, *"Platelet-mediated percutaneous collagen induction through microneedling the skin"*

May 7th - Rutgers' Center for Dermal Research (CDR) Insights Session - Ni'Kita Wilson, Catalyst Cosmetic Development Essence Magazine, *"Pathways to Develop and Make Skin Care Products"*

May 13th - Basic & Applied Dermatology Forum Event, *"What a Dermatologist looks for in Skin Products"*
Richard S. Berger, M.D. FAAD

May 19th - Mark Chandler, ACT Solutions Corp. Performance and Patient Compliance - A Perspective Viewing Topical Product Design in a New Light

June 2nd - CDR Seminar - Sam Shefer, Salvona, *"Nanotechnology delivery system to treat Acne - Practical approach"*

June 3rd - Basic & Applied Dermatology Forum Event, *"Incorporating Genomics into Skin Care Product Development: How Do Products Really Work?"*

August 4th - CDR Seminar Series - Linda Rhein, *"Mechanisms of Photodamage and Protection with Sunscreens"*

August 11th - CDR Seminar Series - Mike Southall, Johnson & Johnson, *"Paradoxical anti-inflammatory activity from Sertaconazole Nitrate Through Induction of Pro-inflammatory Signaling Cascades"*

September 15th - ONE DAY EDUCATIONAL CLASS - Nava Dayan LLC, *"Claims Substantiation for Topical Products - Comprehensive & Updated"*

September 29th - CDR Seminar Series - Frank Romanski, BASF, *"Excipients: The key to effective Drug Delivery, Formulation Mildness, and Optimized Sensory Performance for Topical Pharmaceutical Products"*

October 8th - INNOVATION IN DERMATOLOGICAL SCIENCES at the Heldrich Hotel, New Brunswick

October 21st - United States Pharmacopeia (USP) Course - Focused, relevant instruction on the effective use of the USP-NF, USP-NF Supplements, and Pharmacopeial Forum

December 8th - CDR Seminar Series - Marion K. Gordon Ph.D., Rutgers University, *"The Role of Provisional Matrix in Corneal Epithelial Wound Healing"*

2014 PUBLICATIONS:

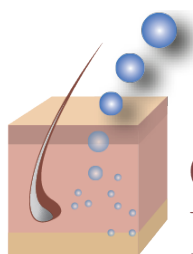
- 1) Terebetski, J. and Michniak-Kohn, B. Combining ibuprofen sodium with cellulosic polymers: A deep dive into mechanisms of prolonged supersaturation. *Int. J. Pharm.* (2014), 475 (1-2), 536-546.
- 2) Terebetski, J. and Michniak-Kohn, B. Probing the speciation of ibuprofen in the presence of polymers during in vitro supersaturation. *Drug Development & Industrial Pharmacy* (2014). In press.
- 3) Terebetski, J. Cummings, J. J., Fauty, S.E. and Michniak-Kohn, B. Combined use of crystalline sodium salt and polymeric precipitation inhibitors to improve pharmacokinetic profile of ibuprofen through supersaturation. *AAPS Pharm. Sci. Tech.* (2014), 15 (5), 1334-1344.
- 4) Dorrani, M., Kaul, M., Pilch, D., Parhi, A., LaVoie, E.J., Michniak-Kohn, B. TXA497 as a topical antibacterial agent: Comparative anti-Staphylococcal, skin deposition, and skin permeation studies with mucipirocin. *Int J. Pharmaceutics* (2014), 476, 199-204.
- 5) Michniak-Kohn, B. Editor of "Structure and Function of Human Skin" section for *Harry's Cosmeticology* 9th edition, 2014. Chemical Publishing Company Revere, MA. Editor-in-Chief Rosen, M. Authors in section: Menon, G., Pappert, A., Wertz, P., Sharma, N., Burke, K., Langerveld, A., Dayan, N., Poillot, A. and Polla, B. and Polla, A. (2014) In Press.
- 6) Zheng, Z., Ramezanli, T., Tsai, P., Michniak-Kohn, B. Drug Delivery Systems based on Tyrosine-derived Nanospheres (Tyrospheres) in "Nanotechnology and Drug Delivery Volume I - Nanoplatfoms in Drug Delivery" Guest Editor Arias, J. Chapter 6, pp. 210-232, L. Taylor & Francis Group, CRC Press, ISBN : 978-1-9947-5, 2015.
- 7) Ramezanli, T. and Michniak-Kohn, B. Transdermal Delivery of Large Molecules in Shao, J. (editor) *Non-Invasive Macromolecule Delivery Guide*. Published by Catalent Applied Drug Delivery Institute, June 2014.

PRESENTATIONS BY DR. MICHNIAK-KOHN

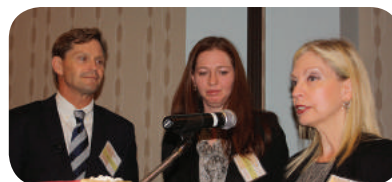
- 1) Michniak-Kohn, B. Challenges in delivery of compounds into skin layers in personal care formulations. Invited talk at Colgate Palmolive, Piscataway, NJ. October 17th, 2014.
- 2) Michniak-Kohn, B. Transdermal Drug Delivery: Challenges and Best Current Approaches. Invited talk at the Catalent Applied Drug Delivery Institute launch of the Non-Invasive Macromolecule Delivery Consortium in San Diego, June 23rd, 2014.
- 3) Michniak-Kohn, B. Topical Treatment of Skin Disorders. Invited lecture at the Dermatological Society of New Jersey Annual Meeting, Princeton, NJ. May 17-18, 2014.
- 4) Michniak-Kohn, B. Nanocarriers for Topical Treatment of Psoriasis. Invited lecture at University of California-Riverside, February 24th 2014.
- 5) Michniak-Kohn, B. Future of Pharmacy Education: Professional and Graduate. Invited lecture at School of Pharmacy, University of Michigan, Ann Arbor, MI. February 6th 2014.

2014 POSTER PRESENTATIONS AT CONFERENCES:

- 1) Kalaria, S., Karry, K. and Michniak-Kohn, B.B. Novel strategy for bioavailability enhancement of poorly soluble drugs embedded into oral biofilms. American Pharmaceutical Association (APhA) Annual Meeting, Orlando, March 28-31, 2014.
- 2) Welsh, W. Isukapalli, S., Cuitino, A., Muzzio, F., Romanach, R., Michniak-Kohn, B. Non-destructive characterization and assessment of pharmaceutical oral dosages in continuous manufacturing. IFPAC® Annual Meeting (28th INTERNATIONAL FORUM AND EXHIBITION PROCESS ANALYTICAL TECHNOLOGY, Jan. 21 - Jan. 24, 2014, Arlington, VA (Washington DC), U.S.A.
- 3) Karry, K. M., Romanski, F., Kalaria, S., Lin, E., Michniak-Kohn, B. Transoral solid dispersions for solubility and bioavailability enhancement of poorly soluble drugs. GRASP (Graduate Research Association of Students in Pharmaceutics) annual meeting at St. John's University, Queens, NY, June 5-7, 2014.
- 4) Ramezanli, T., Zhang, Z., Kohn, J., Michniak-Kohn, B. Tyrosine-derived Nanospheres (TyroSphere™): A New Carrier System for Topical Delivery of Adapalene. 41st Annual Meeting & Exposition of the Controlled Release Society, Chicago, IL. Abstract ID 10618. July 13-16, 2014. PODIUM SESSION.
- 5) Karry, K., Romanski, F., Kalaria, S., Lin, E., Michniak-Kohn, B. Transoral solid dispersions for solubility and bioavailability enhancement of poorly soluble drugs. AAPS Annual Meeting and Exposition, San Diego, CA, Nov.2-6, 2014. Poster # T2166.
- 6) Ramezanli, T., Zheng, Z., Michniak-Kohn, B. Development & characterization of adapalene- nanoparticle gel formulations for hair follicle-targeted drug delivery. AAPS Annual Meeting and Exposition, San Diego, CA, Nov.2-6, 2014. Poster # M1093.
- 7) Dorrani, M., Garbuzenko, O., Minko, T., Michniak-Kohn, B. Topical delivery of siRNA by novel ultradeformable liposomal system to knockdown the overexpression of BRAF protein involved in cell proliferation pathways in melanoma. AAPS Annual Meeting and Exposition, San Diego, CA, Nov.2-6, 2014. Poster # T2117.
- 8) Tsai, P.-C., Zheng, Z., Florek, C., Michniak-Kohn, B. Constructing full-thickness human skin equivalents (HSEs) on decellularized mesothelial extracellular matrix for in vitro testing applications. AAPS Annual Meeting and Exposition, San Diego, CA, Nov.2-6, 2014. Poster # W5086.
- 9) Dorrani, M., Garbuzenko, O., Minko, T., Michniak-Kohn, B. Topical Delivery of siRNA by Novel Ultradeformable Liposomal System. Innovations in Dermatological Sciences Conference 2013, New Brunswick, NJ, October 8th, 2014.
- 10) Tsai, P.-C., Zheng, Z., Florek, C., Michniak-Kohn, B. Innovations in Dermatological Sciences Conference 2013, New Brunswick, NJ, October 8th, 2014. WON THIRD PRIZE in Best Poster Award Competition.
- 11) Ramezanli, T., Zheng, Z., Michniak-Kohn, B. Innovations in Dermatological Sciences Conference 2013, New Brunswick, NJ, October 8th, 2014. WON SECOND PRIZE in Best Poster Award Competition.
- 12) Tsai, P.-C., Zheng, Z., Florek, C., Michniak-Kohn, B. Constructing full-thickness human skin equivalents (HSEs) on decellularized mesothelial extracellular matrix for in vitro testing applications. NYSCC 2014 Sun Exposure Symposium, Pines Manor, Edison NJ, October 15th, 2014.



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