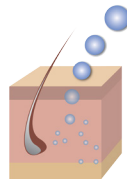


# CENTER FOR DERMAL RESEARCH



# 2013 ANNUAL REPORT





## CENTER FOR DERMAL RESEARCH

The New Jersey Center for Biomaterials, 145 Bevier Road, Suite 101  
Piscataway, New Jersey 08854 Tel: 732.445.0488



The CDR has now been in existence since March 2011. We have grown rapidly as a Center in these last two and a half years. We have established the CDR Seminar Series as well as the CDR Annual Skin Workshop. This year thanks to our Rutgers University/CDR donor, Dr. William "Bill" Ju (President, Advancing Innovation in Dermatology, Inc.), we held our "Innovations in Dermatological Sciences" event at the East Brunswick Hilton hotel. This was the first in a series of annual meetings and we look forward to the next one on October 8th 2014 at the Heldrich Hotel - see website [www.derm.rutgers.edu](http://www.derm.rutgers.edu) for registration and updates. As 2013 draws to a close and the new year approaches, it is good to look back at the past twelve months to see what we have accomplished at the CDR. During 2013, we have offered a total of 16 CDR seminars including three jointly presented with TRI Princeton (speakers for these events were: Drs. Karen Burke - held at TRI Princeton, Milind Rajadhaksha at Rutgers, and Richard Mendelsohn at Rutgers).

Throughout the year Dr. Nava Dayan presented a series of 12 webinars that covered such diverse subjects as "Testing for Cytotoxicity-Basics and Approaches for the Prediction of Acute Toxicity" and "Eye Irritation" to "Testing for Skin

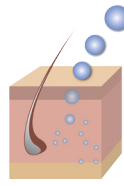
Adverse Side Effects through Biomarker Analysis". October was a very busy month for the CDR. We held the one-day Educational Class Claims for Skin Care Products- From Biomarkers to Human Studie. Again in October, we offered the One Day Skin Course presented by Drs. Otto Mills, Joel Zatz and David Steinberg.

In addition, on October 24th the CDR offered members a CDR Training Day with speakers from PermeGear Inc. [www.permeGear.com](http://www.permeGear.com), Hellertown, PA. The training provided information on ways of measuring and quantifying permeation rates in skin membranes. Exhibitors included PermeGear Inc. with sets of Franz diffusion cells and Pion Inc. (Billerica, MA) [www.pion-inc.com](http://www.pion-inc.com) who demonstrated the Skin PAMPA Test System that can be used as a complimentary screen prior to Franz Cell testing due to the lower cost, enhanced usability, higher throughput and reduced sample requirements. Pre-coated with a proprietary formulation, the 96 well plates are disposable, which completely eliminates cross contamination and the additional time and labor required for washing glass cells.

We are now looking at a very exciting program for 2014 with brand new speakers and event topics. I hope to see you at these CDR events!

### **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 - Lonza  
Julie Hirsch - Johnson & Johnson  
William Ju- Advancing Innovation in Dermatology, Inc.  
John Lyga - Avon  
Gopi Menon - Ashland  
Amy Pappert - RWJ Medical School, Rutgers  
Miri Seiberg - Seiberg Consulting



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## CDR MEMBERSHIP PROGRAM

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.



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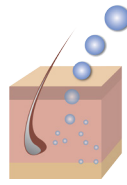
DR. NAVA DAYAN  
DR. CRAIG D. FRIEDMAN  
VICKI GEEGER  
DR. EDWIN KEATES  
ANNA LANGERVELD - GENEMARKERS LLC

DR. KEMAL LEVI - BIO-X CONSULTING  
JAYNE MACKTA - NJABR  
DR. AMY PAPPERT  
DR. KISHORE SHAH - POLYTHERAPEUTICS  
DR. BABAR RAO

NORM RICHARDSON  
DR. FRANK ROMANSKI  
MEYER ROSEN - INTERACTIVE CONSULTING, INC.  
DR. MIRI SEIBERG - SEIBERG CONSULTING  
MARC TAYMAN

CRODA

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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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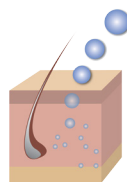
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# 2013 RESEARCH HIGHLIGHTS OF THE CDR

The work with the tyrosine-based self-assembling nanospheres continues with a novel focus on delivery of drugs such as adapalene (to hair follicles for the treatment of acne) and riluzole for the treatment of melanoma (Tannaz Ramezanli - Graduate Student)

Sergio Silva received his Ph.D. (with Honors and Distinction) at the University of Coimbra, Coimbra Portugal. The work was performed jointly at Rutgers University and University of Coimbra and the title of Sergio's thesis was "Strategies to Improve Transdermal Drug Delivery: Hydrogel Vehicles, Permeation Enhancers and Iontophoresis".

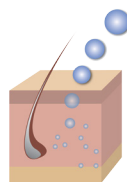
The CDR hosted a Visiting Scientist Francisco Javier Palma Gavalian, B.S. from Departamento de Ingeniería Química y Bioprocesos, Pontificia Universidad Católica de Chile, Santiago, Chile, January - July 2013. Francisco worked on novel polymer films.



New work began this year in the area of siRNA delivery to human skin (Mania Dorrani - Graduate Student)

Work is continuing on human skin equivalents and in particular using decellularized tissues as skin models (Pei-Chin Tsai - Graduate Student)

Biorelevant dissolution studies continue as well as the design & characterization of novel edible oral polymer films (Krizia Karry & Golshid Keyvan - Graduate Students)



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# 2013 RESEARCH HIGHLIGHTS OF THE CDR

**Two recent part-time Ph.D. students Sonali Bose from Novartis and Indrajit Ghosh from Celgene who graduated in 2012 had their last set of papers published this year.** Dr. Bose's work involved the "Development and Characterization of Lipid Based Nanosystems of Quercetin for Topical Delivery". Dr. Ghosh's work involved the "Design and Evaluation of Supersaturated and Submicron Topical Formulations of a Poorly Water Soluble Drug for Enhancing Skin Permeability-A Case Study with Ibuprofen".

**Dina Ameen, a new Ph.D. student joined the Michniak-Kohn group** in Spring. She will be working on novel transdermal delivery approaches.

**A new Master's student Siddhartha Vattikuti** (Masters in Pharmaceutical Engineering - Chem. Eng.) joined the Michniak-Kohn group. He plans to work on the designing novel transdermal patches for omeprazole and other drugs.

**A patent application was published:** Damaj, B.B., Martin, R., Michniak-Kohn, B. Hu, L.S. . "Enhanced transbuccal drug delivery system and compositions". US Patent Application US 2013/0178463 A1 July 11, 2013. Licensed in 2012 to Apricus Biosciences, Inc. California.

**A patent application was published:** Muzzio, F., Takhistov, P. Michniak-Kohn, B., "Pharmaceutical preparations having individualized dosage and structure". International Patent Application PCT/ US10/55752, filed November 6, 2010 and International Patent Publication No. WO

2011/057164 A1- May 12, 2011. United States Patent Publication US 2013/0053446 A1 issued February 28, 2013.

**Dr. Michniak-Kohn was a Plenary Speaker at the 21st COLAMIQC (Congreso Latinoamericano e Iberico de Quimicos Cosméticos) Transamerica Expo Center, Sao Paulo, Brazil, May 14-16th 2013.** The title of her talk was "Novel nanospheres that deliver actives to skin layers". The co-authors on this paper were Zhang, Z., Kilfoyle, B., Sheihet, L., Kohn, J.

**Dr. Michniak-Kohn was a Plenary Speaker at the opening of the Center for the Teaching and Research in Nanotechnology** (Centrum Dydaktyczno-Badawcze Nanotechnologii), West Pomeranian University of Technology, Szczecin, Poland, June 15-23, 2013. The title of her talk was "Nanoparticles for Skin Delivery".





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## INNOVATIONS IN DERMATOLOGICAL SCIENCES 2013

On **November 19th, 2013** the CDR co-hosted the first “Innovations in Dermatological Sciences”. This event brought together over 100 attendees at the East Brunswick Hilton hotel. The day was replete with poster sessions and exhibitors. The event featured several notable speakers such as **Dr. Rox Anderson** (Harvard Medical School), who discussed use of laser treatment in skin and **Dr. Nancy Montiero-Riviere** (Kansas State University) who addressed the risks of skin exposure to nanoparticles **Dr. Miri Seiberg** presented on the use of soy products, while **Peter Nicholson** of Galderma, Switzerland discussed how academia and industry can work together.

This was the first in a series of annual meetings and we look forward to the next one on **October 8th, 2014** at the Heldrich Hotel see website [www.derm.rutgers.edu](http://www.derm.rutgers.edu) for registration and updates.



*“A great opportunity to see the latest trends...”*  
*“A one-stop shop for all things derma.”*  
*“Very good overview...”*  
*“Perfectly balanced program”*  
*“Definitely worth attending.”*



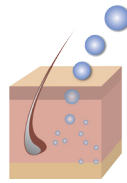
*“...I enjoyed this year’s conference, and I am planning to attend next year’s event”*  
*“... one of the most informative, inspiring and motivational symposia”*  
*“The depth and volume of data covered in the presentations was tremendous.”*  
*“I look forward to future events.”*  
*“I highly recommend anyone interested in dermatology, skin research or skin therapeutics to attend.”*



*Poster Session- Innovations in Dermatological Sciences 2013. Zheng Zhang, the winner of the Poster Session received a membership to the CRS (Controlled Release Society).*



*Poster Session- Innovations in Dermatological Sciences 2013. Pictured from left to right, are Renea Faulknor, Serom Lee, and Zheng Zhang, the award winners of the Poster Session*



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## 5TH ANNUAL CDR SKIN WORKSHOP “STEM CELLS AND THE SKIN”

November 6<sup>th</sup>, 2013.



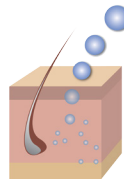
The 5th Annual Skin Workshop on “Stem Cells and the Skin” was held at the Life Sciences building at Rutgers University on November 6th. This event featured an outstanding set of speakers that represented the frontiers of research in this hot topic area. The plenary speaker at this event was Dr. Elaine Fuchs from Rockefeller University.

Dr. Fuchs is a cell biologist, famous for her work on the molecular mechanisms of skin and skin diseases, and has led the modernization of dermatology. Fuchs also pioneered reverse genetics approaches, which assess protein function first and then assesses its role in development and disease. In particular, Fuchs researches skin stem cells, and their production of hair and skin layers. As an HHMI investigator, she is currently the Rebecca C. Lancefield Professor of Mammalian Cell Biology and Development at Rockefeller University. The plenary session was followed by talks from Drs. Valerie Horsley (Yale University), Elena Ezhkova and Michael Rendl (Mount Sinai Hospital, NY), Angela Christiano (Columbia University Medical Center) and Sarah Millar (Pennsylvania).



*Avon was this year's CDR Sponsor of the Year. Dr. Michniak-Kohn presented the award to Siming Chen and Yong Zhuan from Avon.*





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# ONE DAY SKIN COURSE: "INSIGHTS INTO SKIN PRODUCTS"

### DR. STEINBERG

Formulations-Critical Components of Skin Product Formulations. It was a brief overview of such critical areas of formulation science, which included preservatives, antioxidants, chelation, humectants and emollients. As well as how understanding these parts of the formulation can give the know-how to solve common marketing problems.

The Changing Regulatory Landscape, i.e. the regulations of drugs and cosmetics in the US. This included the recent laws passed by California, which affect the cosmetic and drug industries. He also discussed the latest regulations in Canada and Europe.

### DR. OTTO MILLS

Conducting and Interpreting Human Testing and Acne to Xerosis-Changing Paradigms. The lecture provided insight into predictive testing by considering the phenomena and protocols for contact irritation, contact allergy, phototoxicity and photo allergy. In addition to clinical

evaluations of toxicity and safety, roles for non-invasive sampling and instrumental evaluations were addressed.

Acne to Xerosis, common chronic disorders and diseases that impact large populations with numerous products available from personal care to OTC and prescription sector were discussed.

### DR. ZATZ

The Aspects of Product Quality and Horny Layer Basics. Dr. Zatz spoke on how the final skin product should satisfy four basic requirements: stability, efficacy, biocompatibility and patient/consumer acceptance.

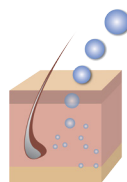
Skin Delivery and Delivery Systems. This topic included optimization of skin delivery requirements and an understanding of the nature of the problem to be solved/benefited/achieved as well as what measurements should be focused on or at the least included.



*Pictured from left to right, are Drs. Otto Mills, Joel Zatz and David Steinberg*



*Dr. Joel Zatz presenting his lecture*



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# NEW IN THIS YEAR

## LOOKING AHEAD TO 2014

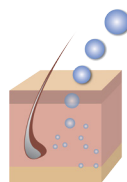
- The CDR evening seminar series continues with a slate of brand new speakers not featured in past CDR seminars
- One Spring and one Fall CDR/TRI Princeton Joint Seminar
- NEW!!! E-learning website - over 20 slide presentations with audio (free for CDR members) with new additions each month
- Sixth CDR Annual Workshop on “Natural Products and the Skin” being planned for late Spring 2014 at Rutgers
- Main CDR annual symposium October 8th, 2014 “Innovations in Dermatological Sciences 2014” at Heldrich Hotel, New Brunswick - [derm.rutgers.edu](http://derm.rutgers.edu)
- New!!! 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

## 2014 CALENDAR OF EVENTS:

- February 10<sup>th</sup> / 5.30pm CDR Seminar - Grazia Stagni, Long Island University
- March 26<sup>th</sup> / 5.30pm CDR Seminar - Dr. Joachim Kohn, New Jersey Center for Biomaterials
- April 23<sup>rd</sup> / 9am-5pm 6th ANNUAL SKIN WORKSHOP on “NATURAL PRODUCTS AND SKIN”
- April 28<sup>th</sup> / 5.30pm CDR Seminar - Hilton Kaplan, Rutgers University “Platelet-mediated percutaneous collagen induction through microneedling the skin”
- May 15-16<sup>th</sup> / Human Hair/Cosmetic Interactions Course
- May 19<sup>th</sup> / 5.30pm CDR Seminar - Mark Chandler, ACT Solutions Corp.
- June 2<sup>nd</sup> / 5.30pm CDR Seminar - Sam Shefer, Salvona “Nanotechnology delivery system to treat Acne - Practical approach”
- Sept 15<sup>th</sup> / 9am-4pm ONE DAY EDUCATIONAL CLASS - Nava Dayan, Dr. Nava Dayan LLC “Claims Substantiation for Topical Products - Comprehensive & Updated”
- October 8<sup>th</sup> / 9am-5pm INNOVATION IN DERMATOLOGICAL SCIENCES 2014 at the Heldrich Hotel, New Brunswick
- October 21<sup>st</sup> / 9am-5pm United States Pharmacopeia (USP) Course - Topics TBD
- November 18<sup>th</sup> / 9am-4pm PROTEOMICS IN SKIN CARE: BEYOND GENE EXPRESSION-one day event with invited speakers

## MORE TO COME

PLEASE CHECK OUR WEBSITE / [WWW.NJBIOMATERIALS.ORG](http://WWW.NJBIOMATERIALS.ORG)

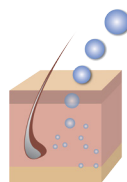


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# 2013 CDR EVENTS

- January 31<sup>st</sup>** - First in series of 12 Webinars presented by Dr. Nava Dayan, "Introduction to Skin Toxicology"
- February 4<sup>th</sup>** - CDR Seminar Series - Jeffrey Stock, "Novel Non-Steroidal Lipid Therapeutics for Chronic Skin Conditions Associated with Oxidative Stress and Inflammation"
- February 14<sup>th</sup>** - TRI/CDR Seminar, Princeton Dr. Karen Burke M.D.
- February 18<sup>th</sup>** - CDR Seminar Series - Robert Falcone, "Techniques/Technologies to address skin hyper-pigmentation."
- February 19<sup>th</sup>** - Basic and Applied Dermatology Forum, Marc Chandler
- February 26<sup>th</sup>** - Second in series of 12 Webinars presented by Dr. Nava Dayan, "Currents in alternative methods for skin safety assessment"
- March 6<sup>th</sup>** - Third in series of 12 Webinars presented by Dr. Nava Dayan, "Cytotoxicity"
- March 11<sup>th</sup>** - CDR Seminar Series - Dr. Sonali Bose - Novartis, NJ
- March 18<sup>th</sup>** - CDR Seminar Series - Ilya Raskin, "Phytochemicals for human health & beauty"
- April 1<sup>st</sup>** - CDR Seminar Series - Diksha Kaushik, "Percutaneous Penetration Modifiers & Formulation Effects"
- April 8<sup>th</sup>** - CDR Seminar Series - Susie Chen
- April 17<sup>th</sup>** - A One Day Skin Permeability Training, CDR and PermeGear, Inc.
- April 24<sup>th</sup>** - Fourth in series of 12 Webinars presented by Dr. Nava Dayan, "Skin Irritation"
- May 6<sup>th</sup>** - CDR Seminar Series - Dr. Neelam Muizzuddin - Estee Lauder Companies, "Topical 5a reductase inhibitors effectively reduce skin surface sebum production"
- May 21<sup>st</sup>** - Fifth in series of 12 Webinars presented by Dr. Nava Dayan, "Basics of Skin Sensitization and Newest Testing Methods"
- June 4<sup>th</sup>** - Basic & Applied Dermatology Forum - Dr. Raj Mehta, "Addressing Microbial Resistance"
- June 12<sup>th</sup>** - CDR Seminar Series - Kemal Levi - Bio-X Consulting "UV Damage and Sun Care: Deciphering Mechanics of Skin to Develop Next Generation Therapies"
- June 25<sup>th</sup>** - Sixth in series of 12 Webinars presented by Nava Dayan, "Basics of Skin Sensitization and Newest Testing Methods"
- July 22<sup>nd</sup>** - CDR Seminar Series - Robert Falcone, Peter Thomas Roth, Clinical Sciences
- July 30<sup>th</sup>** - Seventh in series of 12 Webinars presented by Nava Dayan, "Genotoxicity"
- August 6<sup>th</sup>** - Eighth in series of 12 Webinars presented by Nava Dayan, "Skin Absorption"
- August 26<sup>th</sup>** - CDR Seminar Series, Kishore R. Shah, Ph.D., Polytherapeutics, Inc., Bridgewater, NJ. "PharmaDur® "Virtual Patch" Technology for Dermal & Transdermal Products"
- September 9<sup>th</sup>** - CDR Seminar Series - Frank Romanski, Ph.D. and Norman Richardson, Ph.D., BASF - The Chemical Company, "The delivery of drugs, skin sensory benefits and increased mildness through topical pharmaceutical excipient selection"
- September 18<sup>th</sup>** - Ninth in series of 12 Webinars presented by Nava Dayan, Ph.D., "Skin Toxicokinetics"
- September 24<sup>th</sup>** - TRI/CDR Fall Seminar - Milind Rajadhyaksha, Ph.D., "Confocal microscopy of skin cancers: current topics in technology and translational research", Memorial Sloan Kettering Cancer Center
- October 1<sup>st</sup>** - One Day Educational Class - Nava Dayan Ph.D., NEW and EXPANDED - Claims for Skin Care Products - From Biomarkers to Human Studies
- October 7<sup>th</sup>** - CDR Seminar Series - Laurie Joseph Ph.D.
- October 8<sup>th</sup>** - One Day Event - USP Forum hosted by CDR, [www.usp.org/goto/UserForums](http://www.usp.org/goto/UserForums)
- October 23<sup>rd</sup>** - Tenth in series of 12 Webinars presented by Nava Dayan Ph.D., "Eye Irritation"
- October 29<sup>th</sup>** - One Day Educational Class - "Insights into Skin Product Development" - Otto Mills, Ph.D., Joel Zatz, Ph.D. and David Steinberg, FRAPS
- November 5<sup>th</sup>** - Eleventh in series of 12 Webinars presented by Nava Dayan Ph.D., "Endocrine Disruption"
- November 6<sup>th</sup>** - CDR Fifth Annual Skin Workshop, 9 a.m. - 5:00 p.m., "Stem Cells and Skin"
- November 19<sup>th</sup>** - One Day Fall Event, "Innovations in Dermatological Sciences", hosted by Rutgers University and Center for Dermal Research CDR, East Brunswick Hilton, New Brunswick, NJ
- November 25<sup>th</sup>** - TRI/CDR Winter Seminar, 5:30 p.m. - Richard Mendelsohn, Ph.D.
- December 9<sup>th</sup>** - Twelfth in Series of Webinars presented by Nava Dayan Ph.D., "Chronic Cumulative Exposure Prediction through Gene Expression"
- December 16<sup>th</sup>** - CDR Seminar Series - Dr. Miri Seiberg, Seiberg Consulting - "Hair Graying"

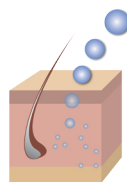


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### 2013 PUBLICATIONS:

- 1) Ghosh, I., Michniak-Kohn, B. Influence of critical parameters of nanosuspension formulation on the permeability of a poorly soluble drug through the skin-A case Study. *AAPS- Pharm. Tech.* (2013), doi: 10.1208/s12249-013-9995-4.
- 2) Bose, S., Du, Y., Takhistov, P., Michniak-Kohn, B. Formulation optimization and topical delivery of quercetin from solid lipid based nanosystems. *Int. J. Pharmaceutics* (2013), 441, 56-66.
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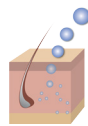
### 2013 POSTER PRESENTATIONS AT CONFERENCES:

- 1) Michniak-Kohn, B., Zheng, Z., Kilfoyle, B., Sheihet, L., Kohn, J. Novel nanospheres that deliver actives to skin layers. Invited as International Keynote Speaker at 21st COLAMIQC (Congreso Latinoamericano e Iberico de Quimicos Cosméticos) and FCE Cosmetic Exhibition, Transamerica Expo Center, Sao Paolo, Brazil, May 14-16, 2013. INVITED PLENARY SPEAKER.
- 2) Joshi, V., Pitt, A., Dorrani, M., Ramreddy, S., Michniak-Kohn, B. Formulation rank ordering in transdermal delivery: Use of synthetic membrane as model in place of human skin. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 3) Dorrani, M., Ramreddy, S., Joshi, V., Pitt, A., Michniak-Kohn, B. A synthetic membrane for studying in vitro transdermal penetration of actives. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 4) 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. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 5) Karry, K.M., Susarla, R., Afolabi, A., Dave, R.N., Biligili, E., Michniak-Kohn, B. Biorelevant dissolution of oral films embedded with nanosized drugs. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 6) Ghosh, I., Michniak-Kohn, B. Formulation design & stabilization of nanosuspension formulation for enhancing the permeability of poorly water soluble drug through the skin. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 7) Dorrani, M. Garbuzenko, O., Salva, R., Minko, T. Michniak-Kohn, B. Lipid nano particle-based skin delivery of siRNA. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 8) Ramezanli, T., Zheng, Z., Michniak-Kohn, B. Tyrosine-derived nanospheres increase effectiveness of paclitaxel in melanoma cell lines. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 9) Tsai, P-C., Zhang, Z., Florek, C., Michniak-Kohn, B. Construction of human skin equivalents on decellularized porcine mesothelium. AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 10) Zhang, Z., Morrow, T.J., Goyal, R., Kohn, J. Michniak-Kohn, B. Delivery of curcumin using tyrosine-derived nanospheres (Tyrospheres). AAPS Annual Meeting and Exposition, San Antonio, TX, Nov. 10-14, 2013.
- 11) Velez-Burgos, T. Michniak-Kohn, B. Effect of plasticizers on the physical and permeability properties of chitosan-gelatin edible films. Annual Biomedical Research Conference for Minority Students (ABRCMS), Nashville TN Nov 13-16, 2013.
- 12) Tsai, P-C., Zhang, Z., Florek, C., Michniak-Kohn, B.B. Construction of human skin equivalents on decellularized porcine mesothelium. NYSCC Cosmetic Technology Transfer Conference, Renaissance Woodbridge Hotel, Iselin, NJ November 13, 2013.
- 13) Zhang, Z., Morrow, T.J., Goyal, R., Kohn, J., Michniak-Kohn B.B. Delivery of curcumin using tyrosine derived nanospheres (Tyrospheres). NYSCC Cosmetic Technology Transfer Conference, Renaissance Woodbridge Hotel, Iselin, NJ November 13, 2013.
- 14) Zhang, Z., Morrow, T.J., Goyal, R., Kohn, J., Michniak-Kohn B.B. Delivery of curcumin using tyrosine derived nanospheres (Tyrospheres). Innovations in Dermatological Sciences Conference 2013, New Brunswick, NJ, November 19th, 2013. WON BEST POSTER AWARD.
- 15) Tsai, P-C., Zhang, Z., Florek, C., Michniak-Kohn, B.B. Construction of human skin equivalents on decellularized porcine mesothelium. Innovations in Dermatological Sciences Conference 2013, New Brunswick, NJ, November 19th, 2013.
- 16) Ramezanli, T., Zhang, Z., Michniak-Kohn, B. Tyrosine-derived nanospheres, a new carrier system for topical delivery of adapalene. Innovations in Dermatological Sciences Conference 2013, New Brunswick, NJ, November 19th, 2013.



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