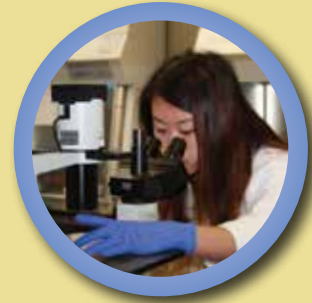


CENTER FOR DERMAL RESEARCH



2015 ANNUAL REPORT







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



This past year has been one of hard work and implementation of the new five-year vision for the CDR... After all, 2016 marks the 5th anniversary of the founding of the Center (March 2011)! Sometimes I find it hard to believe how many events we have organized in the last five years, but the ones that stand out have been the CDR Workshops, the CDR Seminar Series and most significant of all, the annual conference “Innovations in Dermatological Sciences” held each Fall.

In the Spring 2015 semester, the Dermaceutics graduate course met every week for 3 hours with a record number of students (over 50). Most graduate courses at Rutgers have between 5-15 students. The CDR set a record with such a large group!! In fact, there are multiple requests from many Rutgers programs to run this course (or a version of it) regularly each academic year. Many of the attendees of the 2015 course were from the Rutgers Pharmacy graduate program, but a large group also came from the Rutgers Professional Science Master's program (Masters of Business and Science –MBS). We also had a group of participants from the CDR's member companies.

The CDR Seminar Series had a wide variety of speakers: four from industry, four from academia, and one international speaker from Spain. Dr. Olga Lopez, a Scientific Researcher at the Spanish National Research Council and co-founder of the company Bicosome spoke about “New Lipid Technology for Skin Treatment”.

Dr. Lopez has over 100 articles published in prominent international journals focused on biophysics of lipids and other amphiphilics, self-assembled nanostructures and study of the skin barrier function. Bicosome technology is an innovative lipid platform formed by smart biocompatible nanostructures enclosed in vesicles that are able to penetrate through the narrow intercellular spaces of the skin and to reach specific target layers. Once inside the skin, Bicosome systems self-aggregate and grow being retained in between skin cells. This effect allows for the active ingredients carried by Bicosomes to be anchored in target skin layers being slowly delivered, which results in higher efficacy and long lasting benefits. Dr. Lopez's stimulating talk drew in a nice sized crowd.

On November 10th, the annual conference “Innovations in Dermatological Sciences” at the Heldrich Hotel in New Brunswick, NJ brought together over 130 attendees, 13 posters presenters and 10 exhibitors. The conference had a focus on “Skin Sensations: Itch, Pain, and Touch”. The plenary speaker

was Dr. Gil Yosipovitch, MD, Professor and Chair of the Department of Dermatology at Temple University School of Medicine. He is an internationally recognized leader in the field of itch and a renowned clinician and investigator into the origins and treatment of complex skin diseases, and diseases of other organ systems with skin manifestations. Other speakers included Ethan Lerner (Harvard), Kathy Albers (Pittsburgh), Ellen Lumpkin (Columbia), David Owens (Columbia), Lee Zane (Anacor, CA) Didier Leclercq (Galderma-SHIELD), Tina Garyantes (Chromocell, NJ), Gareth Winckle (Galderma) and Miri Seiberg (Seiberg Consulting) gave the overview presentation. The 2015 CDR Sponsor of the Year was awarded to Dr. William Ju of Advancing Innovation in Dermatology, Inc. for his continuous support of the CDR over the past four years.

This was our final event that was held at the Heldrich Hotel in New Brunswick. In 2016 the event will be expanded to a two-day conference at the Renaissance Woodbridge Hotel, Iselin NJ. It will be a larger meeting space with abundant parking. In addition, a two-day Skin Course will also be offered at TRI Princeton at their Prospect Street headquarters. This is an exciting plan for the new and expanded Innovations event in 2016.

This year, the CDR developed new strategic partnerships with TRI Princeton (skin, nail, and hair imaging) and Gregory Biancone of Gregory Biancone Consulting, Inc. that provides full service clinical research and medical communications consulting services to pharmaceutical, biotechnology, and medical device companies. In addition, we have collaborators at Rutgers RWJ Medical School, Drs. Amy Pappert and Babar Rao, who can also assist with clinical investigations of novel therapeutics.

As far as the research laboratory goes, we are proud to announce the successful PhD graduations of Mania Dorrani and Krizia Karry. We also welcomed new students Anika Alam, Rose Soskind (in Pharm.D./Ph.D. program) and Julia Zhang. New Visiting Scientists at CDR are Kavita Beri, MD, a dermatologist from Ocean City, NJ and Sam Gurion-Arsiquaud from TRI Princeton. We have also added a new position of CDR Manager for Industrial Projects filled by Dr. Sonia Trehan. Welcome to all!!!

Wishing all our CDR supporters, members, and professional colleagues a very happy, healthy and productive 2016, and we hope to see you at the events planned for 2016!!!

CDR MEMBERSHIP PROGRAM

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

Abhijit Bidaye - Croda
 Angela Christiano - Dermatology, Columbia University
 Gary Cleary - Cyterion, Inc. CA
 Adam Friedman - Montefiore-Einstein College of Medicine
 Vince Gruber - Sensient
 William Ju- Advancing Innovation in Dermatology, Inc.
 Peter Landa - TRI Princeton
 Russell Elliott - 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.

Double-Diamond Level (\$50,000). The membership affords companies with more say in how their membership funds are spent 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 company 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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RESEARCH EDUCATION SERVICE



AVON



JON ANDERSON-ACTIVES INTERNATIONAL
 NAVA DAYAN-SKIN SCIENCE & RESEARCH
 ROBERT FALCONE
 JOANNE GERE-BIOPHARMA RESEARCH
 COUNCIL

JUSTIN Z/ANNA/KATE GOLDER-GENEMARKERS
 WILLIAM JU-ADVANCING INNOVATION IN
 DERM
 AMY PAPPERT-RUTGERS-RWJ
 MEYER ROSEN-INTERACTIVE CONSULTING

KISHORE SHAH-POLYTHERAPEUTICS, INC.
 MIRI SEIBERG-SEIBERG CONSULTING
 PAUL THAU-PACAR TECH
 JOE VANDYK-CLINICAL RESEARCH LABORATORIES

CDR MEMBERSHIP PROGRAM

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

- One seat on the 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 company 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 company 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 reduced or no cost 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 company 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 reduced or no cost for any CDR event held through the membership year.

Silver Level (\$1000). Your company'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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LONZA

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Johnson & Johnson

AVON



THE NEOSTRATA
CORP

JON ANDERSON-ACTIVES INTERNATIONAL
NAVA DAYAN-SKIN SCIENCE & RESEARCH
ROBERT FALCONE
JOANNE GERE-BIOPHARMA RESEARCH
COUNCIL

JUSTIN Z/ANNA/KATE GOLDER-GENEMARKERS
WILLIAM JU-ADVANCING INNOVATION IN
DERM
AMY PAPPERT-RUTGERS-RWJ
MEYER ROSEN-INTERACTIVE CONSULTING

KISHORE SHAH-POLYTHERAPEUTICS, INC.
MIRI SEIBERG-SEIBERG CONSULTING
PAUL THAU-PACAR TECH
JOE VANDYK-CLINICAL RESEARCH LABORATORIES

2015 RESEARCH HIGHLIGHTS OF THE CDR

LAB MEMBER AWARDS



Tannaz Ramezanli, a Ph.D. graduate student in the Pharmaceutical Sciences at Rutgers University, New Jersey was one of six graduate students to be awarded the prestigious Excipient Graduate Student Scholarships sponsored by the International Pharmaceutical Excipients Council (IPEC) Foundation this year. This award recognizes excellence in research conducted at the graduate level in the field of excipients.

Students with recent significant contributions to formulation science and technology through innovative research with excipients are selected for this award and scholarship winners are those individuals who have provided the most outstanding contributions to the field through their current work.

Tannaz utilized nanotechnology to encapsulate adapalene in tyrosine-derived nanospheres (TyroSpheres) to facilitate skin delivery. The purpose of the study was to develop an alternative topical formulation of adapalene for acne and minimize skin irritation. She has independently designed experiments and has data to support that the new adapalene formulations she designed have superior delivery into hair follicles compared to an existing commercially marketed product. Her poster title was: "Development of a Novel Adapalene Formulation for the Treatment of Acne." The IPEC Foundation 2015 Award Recipients were recognized and honored during the AAPS, 2015 Annual Meeting in Orlando, FL.



Rose Soskind received an American Foundation for Pharmaceutical Education (AFPE) Gateway Scholarship for Doctorate Studies, June 2015-2016.



Mania Dorrani, of Rutgers University and the Ernest Mario School of Pharmacy was chosen as one of the four winners in the AAPS & Catalent Applied Drug Delivery Institute's 4th Annual Global Academic Competition for Life Science Leaders of Tomorrow Award.

Mania's review entitled "Topical siRNA Delivery and Challenges and Prospects", showcased innovation and relevance. The challenge of delivery for RNAi still remains significant. However, moving forward, the research focus is now on developing safe and effective materials for RNAi delivery.

The annual competition aims to identify emerging scientific talent, foster drug delivery education and reward academic excellence. The competition entries consisted of submitted original review articles with topics such as drug development, delivery technologies, improving therapeutic profiles and bioavailability, pre-formulation, and pediatric drugs. This competition is consistent with the Catalent Institute's vision of driving forward the future of pharmaceutical innovation. The efforts to connect drug delivery experts in industry with academia will foster education and support the incubation and adoption of advanced drug delivery technologies. Hopefully these partnerships are able to bring fruit and transform research into the therapeutics that patients need most.

Mania Dorrani received the American Society of Iranian Pharmaceutical Scientists (ASIPS) Graduate Student Award, November 2015.

2015 HIGHLIGHTS OF THE CDR

DR. BOZENA MICHNIAK-KOHN AWARDS

Elected to The Kosciuszko Foundation Collegium of Eminent Scientists as a Distinguished Fellow of the Collegium for Outstanding Achievements and Contributions to the Polish Scientific Community, February, 2015.

DR. BOZENA MICHNIAK-KOHN MEMBERSHIP ON BOARDS

Member of Board of Trustees for the Textile Research Institute, (TRI) Princeton, NJ. Elected August 2015.

Editorial Board Member for the “Clinical Dermatology Research Journal”, SciTechnol at <http://www.scitechnol.com>. Peer-reviewed journal in all areas of Dermatology.

Honorary Editorial Board Member of the journal “Research and Reports in Transdermal Drug Delivery”- Dove Medical Press, Ltd., New Zealand. Appointed in Spring 2015.

DR. BOZENA MICHNIAK-KOHN COMMITTEE MEMBERSHIP

Organizing Committee member for the 6th International Conference on Clinical & Experimental Dermatology, Chicago, May 5-7th, 2016.

Link: <http://dermatology.conferenceseries.com>.



NEWEST MEMBER OF OUR LAB



Sonia Trehan Ph.D., Visiting Scientist in Spring 2015 and then Rutgers University Center for Dermal Research (CDR) Manager for Industrial Projects (April 1, 2015-present).

Sonia is a pharmaceutical research professional with a PhD in pharmaceutical science and drug delivery. She has more than 13 years of experience in pharmaceutical research and development in industry and academia with managerial roles.

Sonia is managing industrial projects of the CDR to ensure smooth and timely delivery of all the projects according to prerequisite standard protocols. Prominence through effective communication and collusion with different stakeholders associated with the projects and unsurpassed efforts are focused to propose, develop, strategize, finalize the budgets and protocols along with professional and technical suggestions to ensure a quality driven final outcome including reports, related documents and client satisfaction.

We have made a substantial contribution to the various projects of many companies such as Lonza, Amneal Pharmaceuticals, Primera, Croda, Pocono Coated Products, Protea Biosciences, Chattem and TKL. Captivatingly, for few industries, we have made a marked contribution towards pilot as well as clinical studies related to the topical formulations required for regulatory approval.

STUDENT UPDATES

SUMMER INTERNSHIPS FOR LDD STUDENTS

Mania Dorrani at GSK

This past summer, Mania joined GlaxoSmithKline Pharmaceutical Company as a student scientist. During her internship, she applied FTIR Microspectroscopy to identify chemicals, evaluated homogeneity of coating materials, and analyzed the distribution of a multitude of different components in complex mixture. In addition, she made formulation shelf life predictions using an Accelerated Stability Assessment Program. Mania, defended her PhD thesis that was about formulating lipid based drug delivery systems for the topical delivery of macromolecules such as siRNA. It's worth to mention that in 2015, Mania won several awards such as global academic competition of AAPS and Catalent Applied Drug Delivery Institute, ASIPS Senior PhD Student Award, and was nominated for the best teaching assistant award by Rutgers graduate school. Mania also has 5 publications and a book chapter.

Pei-Chin Tsai at GSK

Pei-Chin Tsai, our Ph.D. graduate student from Pharmaceutical Sciences at Rutgers University was selected to participate in a twelve-week summer internship at GlaxoSmithKline, Consumer Health Care located at Parsippany, NJ.

During her summer internship, she worked with GSK's Smokers Health New Product R&D team on an independent project to facilitate innovation in nicotine replacement therapy (NRT) product formulations. In addition to her independent project, she was able to have an overview with different functions within the company. The internship program allowed her to interact with professionals from finance, marketing, legal, regulatory and medical affairs departments and she now has a much better understanding of how GSK operate their global business.

Rose Soskind at Bristol-Myers Squibb

This past summer, Rose participated in an Analytical and Bioanalytical Development internship as part of Product Development at Bristol-Myers Squibb. She conducted spectroscopic studies on protein-based pharmaceuticals primarily through the use of infrared and Raman spectroscopies. She was also able to learn about other laboratory techniques, such as differential scanning microcalorimetry. Through these studies, she was able to discern changes in protein secondary structure and determine the presence of protein aggregates. Since this was her first internship in the pharmaceutical industry, she was able to learn about the considerable process behind discovering, developing, and manufacturing medications. Later in the summer, Rose participated in a hospital rotation for my Doctor of Pharmacy studies, and it was rewarding for Rose to see drugs that she worked with during her internship being used in a clinical setting in order to improve the health of patients.

INTERNATIONAL VISITORS



Isabelle Nguyen, University of Nice Sophia-Antipolis, France in Biomedical Engineering, Summer Internship at the Center for Dermal Research (CDR), Rutgers University, May - August 2015.



Bianca Aparecida Savoldi Picoli, Brazil Scientific Mobility Program at University of Toledo, Summer Internship at the Center for Dermal Research (CDR), Rutgers University, May - August 2015.



Gislaiane Ricci Leonardi, Ph.D., Professor (UNIFESP)-Universidade Federal de Sao Paulo, Campus Diadema, Rua Sao Nicolau, Sao Paulo, Brazil - July 2015.

STUDENT UPDATES

GRADUATE STUDENTS THAT RECEIVED DEGREES IN 2015

Krizia Karry (Rutgers Chemical & Biochemical Engineering) Ph.D.

Thesis “Flexible Continuous Manufacturing Platforms for Solid Dispersion Formulations” Fall 2011- Fall 2015. Thesis defended September, 2015.

Mania Dorrani (Rutgers Pharmacy) Ph.D.

Thesis “Overcoming Challenges for Skin Deposition of Drugs: SiRNA and Antimicrobial Agents” Spring 2012- May 2016. Thesis defended November, 2015.

Laura Osorno (Biomedical Engineering) M.S.

Master’s Thesis “Behavior of Human Dermal Fibroblasts Seeded on a Silicon Membrane Under Applied Multi-axial Mechanical Forces.” Masters defense date May 2015. Her main advisor was Dr. Michael Jaffe at NJIT.

Robert Falcone (Biomedical Engineering) Ph.D.

Thesis “New Screening Methodology for Selection of Polymeric Materials for Transdermal Drug Delivery Devices” Thesis defended January 2015. His main advisor was Dr. Mike Jaffe at NJIT.

NEW GRADUATE STUDENTS



Anika Haq Alam, Ph.D. Student

Full time

Research interests:

- Nanotechnology and drug delivery
- Development and analysis of Human Skin Equivalents
- Diffusion studies of drugs and different permeation enhancers across human skin and their human equivalents
- Drug formulation



Ben Goodyear, Ph.D. Student

Part time

Research interests:

- Formulation development for topical & transdermal drug delivery systems
- Polymeric drug delivery systems
- Oral dissolvable thin films



Julia Zhang, Ph.D. Student

Part time

Research interests:

- Formulation development of targeted drug delivery system
- Nanotechnology



Parin Shah, Ph.D. Student

Part time

Research interests:

- Formulation development, evaluation and optimization of topical drug delivery
- Drug delivery technology, preformulation studies and development of topical formulations

VISITING SCIENTISTS

Kavita Beri, MD, practicing clinical dermatologist from Ocean City, NJ. Spring 2015-present.



Kavita Beri, Medical Director, BE Skin & Laser Med Spa, Jersey Shore University Medical Center

Dr. Beri is a Board Certified Physician in the USA and an active member of the American Society of Laser Medicine and Surgery. She is also the Medical Director and owner of an

Aesthetic Anti-Aging Medical Spa practice in NJ.

She currently holds a position as a Visiting Scientist at the New Jersey Center for Biomaterials and Center for Dermal Research at Rutgers - The State University of NJ. She is also an active staff member in the Department of Medicine in Jersey Shore University Medical Center.

She holds two research patents and has presented at several international regenerative medicine conferences. She holds a Distinction in Biochemistry and has contributed to several publications. Her passion is research in the regenerative medicine field of tissue engineering with stem cells combined with lasers, including cancer stem cells and medicinal properties of plant stem cells in wound healing and skin regeneration. She holds a strong interest and is a follower of yoga science and Vedic philosophy and its influence on scientific research.



Sonia Trehan, Ph.D., visiting scientist in Spring 2015 and then Rutgers University, Center for Dermal Research (CDR) Manager for Industrial Projects April 1, 2015-present.

Samuel Gourion-Arsiquaud, Ph.D., spectroscopist from TRI, Princeton NJ. Spring 2015-present.



Dr. Gourion-Arsiquaud is a principal research scientist at TRI Princeton.

He is using various spectroscopic and microscopic techniques for the characterization and the analysis of modifications in biomaterials associated with specific conditions like aging, disease, environmental stress or chemical treatment (product application or drug therapy).

Dr. Gourion-Arsiquaud's expertise lies in multiple biophysical techniques with a special emphasis on vibrational spectroscopies (FTIR & Raman) for biomaterial sciences; bone, teeth, nail, hair and skin. He has more than 10 years of research experience, including technique development, project design and coordination, as well as a successful track record of achievements.

After a doctorate in Biochemistry/Biophysics (France), he began his career at the Hospital for Special Surgery (HSS/Cornell University) studying the mechanisms of biomineralization in bone and teeth. Then, he became associate researcher at Rutgers University, where he examined the structural and functional analysis of lipid/protein interactions involved in the host - defense mechanism, as well as the biophysical aspects of skin to understand its physiological barrier function.

Since 2011, Dr. Gourion-Arsiquaud joined TRI where he is developing innovative tests, research areas and product evaluations relevant to cosmetic sciences and material analysis; from technology development to product design and performance evaluation on hair, nail and skin care products.

INNOVATIONS IN DERMATOLOGICAL SCIENCES 2015

“SKIN SENSATIONS: ITCH, PAIN AND TOUCH”

The third annual conference on dermatological sciences was held on Tuesday, November 10, 2015 at the Heldrich Hotel in New Brunswick, NJ. The theme of this year's conference was itch, pain and touch. The program focused on research and development topics that represent the most current and promising directions for skin sensations as well as innovations and perspectives in skin biology, delivery of actives to skin and skin models.

Thank you for joining us on this special day, bringing leaders from the university, industry and government sectors to share their experiences and insight.



Heldrich Hotel, New Brunswick, New Jersey

SPEAKERS

Miri Seiberg - Seiberg Consulting, LLC,
Itch- an Overview

Ethan Lerner - Harvard University,
Targeting Itch: Are We There Yet?

Gil Yosipovitch - Temple University,
Itch: More Than Scratching the Surface

Kathy Albers - University of Pittsburgh,
Keratinocytes and Activation of Pain Fiber Signaling

Ellen Lumpkin - Columbia University,
Illuminating Mechanisms Of Mammalian Touch

David Owens - Columbia University,
The Touch Dome Stem Cell Niche

Lee Zane - Anacor Pharmaceuticals, Inc.,
Discovery and Development of a Topical PDE-4 Inhibitor for the Potential Treatment of Atopic Dermatitis

Didier Leclerq - Galderma - SHIELD, *Skin Health Investigation, Education and Longevity Development*

Tina Garyantes - Chromocell,
Learnings from a Novel, Selective NaV1.7 Inhibitor for the Systemic Inhibition of Pain and Itch

Gareth Winckle - Galderma,
Sensorial Aspects Of Topical Formulation: Art And Science

INNOVATIONS IN DERMATOLOGICAL SCIENCES 2015



NEW IN 2016

LOOKING AHEAD TO 2016

- CDR annual symposium September 29-30, 2016 “Innovations in Dermatological Sciences” at Marriott Renaissance Woodbridge Hotel, Iselin NJ
- The CDR evening seminar series continues with a slate of brand new speakers not featured in past CDR seminars
- New microstructure of formulations workshop in the Spring with guest speaker from the FDA
- Priority access to research laboratory facilities & instrumentation to CDR members
- Exceptional networking at CDR events with pharma, personal care & cosmetic companies



SOME OF THE 2016 EVENTS

- **January 18th** / CDR Seminar Series joint with TRI Princeton - Mark Chandler, ACT Solutions Corp., “*Emulsions and Their Impact on Sensory, Formulation, Deposition and Delivery Systems*”
- **February 8th** / CDR Seminar Series joint with TRI Princeton - Manasi Chavan, BASF, “*Age Associated Changes in Skin Elasticity*”
- **March 14th** / CDR Seminar Series - Amy Ethier, BASF, “*Excipient Selection and the Effect on Performance and Physical Properties of Semi-solids*”
- **April 18th** / CDR Seminar Series joint with TRI Princeton - Angela Christiano, Columbia University, “*Efficacy of JAK Inhibitors in the Treatment of Alopecia Areata*”
- **May 24th** / “*Topical Semi-solid Microstructure and its Significance in Formulation Performance and Efficacy*”, workshop co-hosted with BASF
- **June 7th** / CDR Seminar Series - Donald Schaffner, Food Science-Rutgers University, “*Viewing Handwashing and Hand Sanitizers from the Perspective of a Food Microbiologist*”
- **September 12th** / CDR Seminar Series - Serom Lee, BME-Rutgers, “*An In Vitro Approach to Identify Skin Sensitizers*”
- **September 28-29th** / CDR Annual Symposium Innovations in Dermatological Sciences “*Delivery of Actives to Skin*”
- **October 17th** / CDR Seminar Series - Hilary Baldwin, MD, “*The Inflammatory Nature of Acne and Therapeutic Approaches*”
- **November 7th** / CDR Seminar Series - David Moore, GSK, “*Biophysical Studies of Skin pH*”

MORE TO COME

PLEASE CHECK OUR WEBSITE / WWW.CENTERFORDERMALRESEARCH.ORG

CALENDAR OF CDR 2015 EVENTS

January 22nd - May 8th - 2015 Graduate Course, “*Dermaceutics*”, Course Coordinator- Professor B. Michniak-Kohn

February 9th - CDR Seminar - **Kathryn Uhrich**, Rutgers-Chemistry, “*Polymeric Bioactives: Polymers from Bioactives*”

March 23rd - CDR Seminar - **Hilton Kaplan**, NJCBM , “*Enhanced Vitamin Penetration - the Holy Grail in Non-Invasive Facial & Body Rejuvenation*”

April 27th - CDR Seminar - **Anis Rahman**, Applied Research and Photonics, Inc., “*Terahertz Sub-Surface Imaging and Spectroscopy for Cellular Level Identification of Skin Abnormalities*”

June 8th - CDR Insight Series - **Prof. Somasundaran**, Columbia University, “*New Possibilities of Greener Chemicals for Sustainable and Benign Consumer Products*”

August 10th - CDR Seminar - **Patricia Aikens**, BASF, “*Sunscreens: A Review of Technical Aspects of Photo-protection For the Skin*”

August 24th - CDR Seminar - **Olga Lopez**, Bicosome (Spain), “*Bicosome: New Lipid Technology for Skin Treatment*”

September 28th - CDR Seminar - **Jennifer Donahue**, Croda, “*Sensory Mapping Methodology Detects the Unexpected Effect of Emulsifiers in Emulsions*”

October 12th - CDR Seminar - **Ricardo Diez**, Rutgers - MBS Program, “*Cleansers Beyond Expectations: Not Only Cleansing But Also Improving The Skin*”

November 10th - **Innovations in Dermatological Sciences**, “*Skin Sensations: Itch, Pain and Touch*”

December 7th - CDR Seminar Series - **Tuğrul Özel**, Rutgers - Industrial Engineering “*Microneedle Arrays for Transdermal Delivery*”

Each year the Center for Dermal Research hosts many events. These include:

- Seminars throughout the year that feature new speakers with an array of exciting topics
- Annual Innovations in Dermatological Sciences Symposium
- Featured events jointly hosted with TRI Princeton and the Basic and Applied Dermatology Forum
- Dermaceutics course held once every three years, and training sessions

2015 PUBLICATIONS:

- 1) Sun, X.L., Tsai, P., Bhat, R., Bonder, E. M., Michniak-Kohn, B., Pietrangelo, A. Thermoresponsive block copolymer micelles with tunable pyrrolidone-based polymer cores: Structure/Property correlations and application as drug carriers. *Journal of Materials Chemistry B* (2015), 3, 814-823.
- 2) Tsai, P., Lee, S. and Michniak-Kohn, B. In Vitro Methods for Screening Transdermal Formulations. *Therapeutic Delivery-Special Focus edition of journal- Advances and Challenges in Transdermal Drug Delivery* (2015), Sept. 30 [Epub. ahead of print] PMID 26419344.
- 3) Bhat, R., Tsai, P., Sun, X.-L., Daoud, D., Lalancette, R.A., Michniak-Kohn, B., Pietrangelo, A. Effect of residue structure on the thermal and thermoresponsive properties of w-substituted poly(N-acryloyl-2-pyrrolidone)s. *Polymer Chemistry* (2015), 6, 5993-6000 PLUS JOURNAL COVER.
- 4) Tsai, P., Zhang, Z., Roberts, K., Florek, C, Michniak-Kohn, B. Constructing human skin equivalents on porcine mesothelial acellular peritoneum extracellular matrix for in vitro irritation testing, *Tissue Engineering* (2015), Sept. 28 [Epub. ahead of print], PMID 26415037.
- 5) Adeleke, O., A., Monama, N.O., Tsai, P. Sithole, H.M., Michniak-Kohn, B. Application of a combination of atomistic molecular calculations and experimental investigations to the architecture, screening, optimization and characterization of pyrazinamide containing oral film formulations for tuberculosis management. *Molecular Pharmaceutics*, 2015, DOI: 10.1021/acs.molpharmaceut.5b00698.
- 6) Michniak-Kohn, B. Editor of “The Skin: Structure, Biochemistry, and Function” section for *Harry’s Cosmeticology* 9th edition, 2015. Chemical Publishing Company, Los Angeles, CA. 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. ISBN 9780820601762- Volumes I, II and III, total pages in trilogy 2600. Part 3.1, section 3.1.1. Volume I, pp. 196-247. See www.chemicalpublishing.com and www.harryscosmeticology.com.
- 7) 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.
- 8) Ramezanli, T., Tsai, P., Dorrani, M., Michniak-Kohn, B. Aromatic iminosulfuranes: a novel class of transdermal penetration enhancers. In *Percutaneous Penetration Enhancers, Volumes 1-5: Chemical Methods in Penetration Enhancement* (2015). Edited by Dragicevic-Curic and H.I. Maibach. Springer Publishers, Palo Alto, CA. ISBN 978-3-662-47038-1, Chapter 7, pp. 107-114.

PRESENTATIONS BY DR. MICHNIAK-KOHN IN 2015

- 1) Michniak-Kohn, B. Chair, Organizer and Panelist at AAPS session “Topical semi-solid microstructure and its significance in formulation performance and efficacy”. AAPS Annual Exposition and Meeting, Orlando, FL, October 25-29, 2015.
- 2) Michniak-Kohn, B. Invited Seminar at the Dept. of Basic Pharmaceutical Sciences, University of South Carolina, Columbia, SC. “Transdermal Permeation of Dimethyl Fumarate” July 22, 2015.
- 3) Michniak-Kohn, B. Skin models for in vitro performance testing of transdermal drug delivery systems. Invited talk at FDA/CDER’s Center for Advancing Scientific Education (CASE) Workshop on “Product Quality of Transdermal Systems” May 5-6, 2015. Organizer K. Yellela Ph.D., Division of Product Quality Research, CDER/OPS/OTR at FDA.

2015 POSTER PRESENTATIONS AT CONFERENCES:

- 1) Palma, F, Michniak-Kohn, B., Perez-Correa, J.R., Hernandez, E., Romanach, R.J., Valenzuela, L.M. Characterization of structure and mechanical properties of gelatin-chitosan edible films with plasticizers. *Frontiers in Polymer Science Symposium*, Riva del Garda, Italy, May 20-22nd, 2015.
- 2) Ramezanli, T., Zheng, Z., Michniak-Kohn, B. Adapalene-nanoparticle gel formulations for hair follicle-targeted drug delivery. *2015 BIO International Convention*, June 15-18, 2015, Pennsylvania Convention Center, Philadelphia, PA.
- 3) Nallaseth, F. S., Woodbury, D., Medina, D., Tsai, P.C., Walton, K., Batheja, P., Foty, R.A., Michniak-Kohn, B. Morphogenesis of skin in 3D co-culture-sorting and mixing of interspecific, intraspecific, differentiated and stem cells with lineage specific keratins. *NY Academy of Sciences Meeting: Quantitative Biology: From Molecules to Man*, NYAS, New York, June 18th 2015.
- 4) Grove, J, Rahman, A., Ramezanli, T., Rahman, A., Michniak-Kohn, B., Terahertz characterization of permeation of gold nanoparticles through human stratum corneum in vitro. Session "Advances in Terahertz Spectroscopy and Imaging #413, *PacificChem 2015 Congress*, Honolulu, Hawaii, December 15-20, 2015. **PODIUM SESSION.**
- 5) Adeleke, O.A., Karry, K.M., Michniak-Kohn, B.B., Monama, N.O. Computer aided construction and investigation of a thermodynamically stable orodispersible film containing isoniazid. *AAPS Annual Meeting and Exposition*, Orlando, FL, October 25-29, 2015.
- 6) Adeleke, O.A., Tsai, P.-C., Michniak-Kohn, B.B. Preparation, characterization and ex vivo evaluation of an orally disintegrating film formulation containing pyrazinamide. *AAPS Annual Meeting and Exposition*, Orlando, FL, October 25-29, 2015.
- 7) Ramezanli, T., Zheng, Z., Michniak-Kohn, B.B. Development of a novel adapalene formulation for the treatment of acne. *AAPS Annual Meeting and Exposition*, Orlando, FL, October 25-29, 2015.
- 8) Dorrani, M., Garbuzenko, O.B., Minko, T., Michniak-Kohn, B. Development of topical hydrogel system for the treatment of melanoma. *AAPS Annual Meeting and Exposition*, Orlando, FL, October 25-29, 2015.
- 9) Ameen, D., Michniak-Kohn, B. Transdermal permeation of dimethyl fumarate: effect of penetration enhancers. *AAPS Annual Meeting and Exposition*, Orlando, FL, October 25-29, 2015.
- 10) Tsai, P., Zhang, Z., Florek, C., Michniak-Kohn, B. Constructing human skin equivalents (HSEs) on porcine acellular peritoneum extracellular matrix for in vitro irritation applications. *AAPS Annual Meeting and Exposition*, Orlando, FL, October 25-29, 2015.

CDR PARTNERSHIPS



CDR SPONSOR OF THE YEAR

William Ju was awarded the CDR Sponsor of the Year award for his planning CDR activities and sponsoring the CDR, particularly the Annual Symposium “Innovations in Dermatological Sciences”. In addition, the CDR very much appreciates his continued support of CDR activities.

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Gregory Biancone Consulting Mr. Biancone has over 20 years of experience in the pharmaceutical, medical device and clinical diagnostics industry. Working with companies both large and small, his unique expertise spans the continuum from product discovery through commercialization. Most important is his ability to custom design value added solutions in line with time and budget requirements.

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