

# FINAL PROGRAM GUIDE

34th Annual Meeting & Exposition of the Controlled Release Society



**July 7–11, 2007**  
**Long Beach Convention Center**  
**Long Beach, California U.S.A.**

**The Place to Be for Industry**  
**News, Research, and Connections**



# Welcome from the President



Dear Colleagues,

On behalf of the Controlled Release Society (CRS), I welcome you to my backyard—California. Of course, I also welcome you to the 34th Annual Meeting & Exposition of the CRS. Our 2007 annual meeting on the California coast provides another opportunity to meet colleagues from all over the world, exchange stimulating ideas, and network with peers. Face-to-face discussions still represent the most important stimulator of scientific thought. I hope that each of you comes away from this year's annual CRS meeting with new ideas, new collaborations, and an even greater appreciation for how important this meeting is for our society and its members to grow and prosper.

The CRS embodies a particularly wide and rich spectrum of scientific interests; all with the basic tenet of improving our quality of life. It is these unifying interests in various disciplines that focus on improving veterinary practice, consumer products, as well as the delivery of pharmaceutical agents that bring us together to share our findings, our thoughts, and our philosophies from around the world. The CRS, as the premier international society for the delivery and administration of active agents, is successful because it embraces the various dynamic aspects of disciplines associated with these emerging technologies. For that reason, our society is significant like never before.

It is this leading-edge aspect of the CRS that makes our annual meetings so important for our membership. The 2007 program is (again) strong and exciting, with 5 outstanding plenary speakers, more than 30 invited speakers, 5 mini-symposia, and more than 30 scientific sessions. In addition, you will be able to visit over 100 exhibiting companies, attend a Young Scientists Education Program, educational workshops, Pearls of Wisdom sessions, and much more. I am sincerely grateful to all members of our Program Committee, who have given their time and efforts to put such a strong program together.

Come, see, listen, learn, teach, and enjoy! Enjoy the science of controlled release that unifies us all. Enjoy Long Beach, an open walkable coastal city of California, with plenty of sunshine and breezes to keep us going every day. Take home memories that will enrich not only your professional but also your personal life.

A handwritten signature in black ink, consisting of a stylized 'R' followed by a long horizontal stroke that tapers to the right.

Randall Mrsny  
*President*

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Aaron Kowalski	Teresa Virgallito
Ravi Kumar	Masayuki Yokoyama
Vinod Labhasetwar	
Jean-Christophe Leroux	



# PROGRAM HIGHLIGHTS

34th Annual Meeting & Exposition of the Controlled Release Society



Courtesy of the Long Beach CVB.

# Program Highlights

## Young Scientist Workshops

**Saturday, July 7**

08:00 – 16:30 • Room 203

*Sponsored by*



This one-day workshop is focused on the application of basics of pharmaceutical sciences in drug delivery. It will offer information on diffusion, solubility, rheology, colloid chemistry, and polymeric systems including hydrogels and methacrylate matrix systems. This workshop will also discuss the considerations and challenges for developing sustained-release formulations both from academic and industrial points of view.

**Sunday, July 8**

08:00 – 13:00 • Room 203

This workshop will provide young scientists with an introduction of various controlled release technologies in the area of consumer and diversified products. The participants in this workshop will be given an overview of microencapsulation technologies used in the areas of personal care, flavor and fragrance, and industrial applications. The students will learn how to do IP searches in the field of controlled release technologies. The workshop will give an introduction to fluid bed technology.

## Welcome Reception

**Sunday, July 8**

18:30 – 19:30 • Hall A

Connect with old friends and make new acquaintances during this relaxing opening event. Sample California wines, visit the exhibits, and experience Long Beach hospitality. The welcome reception will be held in the Poster/Exhibit Hall A of the Long Beach Convention Center. This reception is open to all registered attendees of the CRS Annual Meeting & Exposition.

## Highlights of Student Posters

**Sunday, July 8**

16:00 – 17:30 • Room 101B

*Sponsored by*



Selected graduate students from reviewed posters will have an opportunity to highlight their major research conclusions. This session will provide a unique opportunity for attendees to learn about important scientific achievements and obtain a concise preview of some of the best poster sessions at the annual meeting and exposition. These short presentations will open the forum for further discussion during the poster viewing sessions but are not a replacement for the poster sessions. Please join us on Sunday to support high-quality, promising research and graduate students.

## Lunch with the Experts

**Monday, July 9**

12:30 – 13:30 • Room 103C

*William Partridge and Vladimir Torchilin*

**Tuesday, July 10**

11:30 – 12:30 • Room 103C

*Muthiah Manoharan and Jennifer West*

The Lunch with the Experts program provides students the opportunity to meet informally with experts from around the world. CRS Experts will facilitate discussions allowing students to present questions, gaining new perspectives on the subjects discussed. Tickets are very limited and are available onsite on a first-come, first-served basis. Please note that the Lunch with the Experts sessions are restricted to registered students only. No media will be admitted. The tickets are complimentary and can be obtained at the Attendee Services Desk starting Saturday, July 7, at 07:00. Lunch will be provided.

## Get Up; Get Educated!

Students, and those new to controlled release and delivery, should set their alarm clocks and get up early for these informational presentations. You won't want to miss these two talks that are guaranteed to enlighten.

### Monday, July 9

07:00 – 08:00 • Room 102

The Basics of *In Vitro* Dissolution Testing

Brian Crist, Varian, U.S.A.

### Tuesday, July 10

07:00 – 08:00 • Room 102

*In-vitro/In-vivo* Correlation

Raimar Loebenberg, University of Alberta, Canada

## Poster Sessions

*Sponsored by Informa Healthcare and Johnson & Johnson Pharmaceutical Research and Development, a division of Janssen Pharmaceutica n.v.*

### Exhibit Hall A

Take advantage of the opportunity to exchange ideas with authors in an informal setting. Both poster sessions will be available for viewing Sunday – Wednesday.

### Poster Viewing

Sunday, July 8 18:30 – 19:30

Monday, July 9 10:00 – 18:00

Tuesday, July 10 09:00 – 17:00

Wednesday, July 11 09:30 – 13:00

### Poster Session I – Authors Present

#### Monday, July 9

10:00 – 10:45

15:00 – 16:00

### Poster Session II – Authors Present

#### Tuesday, July 10

09:00 – 09:30

14:00 – 14:30

#### Wednesday, July 11

09:30 – 10:00

## Vet Get Together

### Monday, July 9

18:30 – 19:30 • Room 103C

*Sponsored by*



## Pfizer Animal Health

Join colleagues in the veterinary field for a lively reception. Ramesh Panchagnula, Director and Head of Formulations Science/Veterinary Medicine Pharmaceutical Sciences of Pfizer Animal Health/Pfizer Pharmaceutical India Pvt Ltd, India, will be the guest speaker.

## Closing Reception/Banquet

### Tuesday, July 10

18:30 – 22:00 • Aquarium of the Pacific

Join your colleagues for a festive and informative evening at the Aquarium of the Pacific. Enjoy your favorite beverage while viewing the more than 12,000 ocean animals on display in exhibits ranging in size from 5,000 to 350,000 gallons! The dinner banquet includes a brief awards ceremony and the installation of the new CRS President via the official passing of the gavel.

## Mini-symposia

### Monday, July 9

10:45 – 12:45 • Room 101

Gastroretention–Animal vs. Human

Co-chairs: Craig Bunt and Sevda Senel

16:00 – 18:00 • Room 101

Delivery for Bioimaging

Co-chairs: Alexei Bogdanov and Zheng-Rong Lu

### Tuesday, July 10

09:30 – 12:00 • Room 101

Recent Delivery in Diabetes

*Sponsored by*



*dedicated to finding a cure*

Co-chairs: Julia Greenstein and Aaron Kowalski

14:30 – 16:30 • Room 101

Liposomes: Alive & Kicking

Co-chairs: Raymond Schiffelers and Stavroula Sofou

*Sponsored by*



### Wednesday, July 11

10:00 – 12:00 • Room 101

Stimuli Responsive Nanosystems

Co-chairs: You Han Bae and Nobuhiro Nishiyama



# Pearls of Wisdom

What can you expect from the 2007 Pearls of Wisdom sessions? Controversial topics, outrageous points-of-view, and audience participation like you have never seen before. Our health warning reads: beware, you could get excited! The debates will be as gladiatorial as the venue will allow and feature seasoned public speakers engaging in intellectual and verbal gymnastics. Some topics will be serious and some...well, a little light-hearted. The debates will kick off with the proposer of the motion presenting 10 minutes of evidence to support the proposition. This will be followed by the opponent of the motion presenting 10 minutes of counter evidence to destroy the proposition. Once the illustrious debaters conclude their volley of words, the floor is yours—at the discretion of the chair, of course. Can you afford to miss this? Somehow we don't think so.

**Sunday, July 8 • 17:30 – 18:30**

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## **Bioactive Materials Pearls of Wisdom—Viral vs Non-viral Gene Delivery**

*Room 102A*

**Pro Speaker:** John Chiorini, *National Institutes of Health, U.S.A.*

Viral Vectors are Superior to Non-viral for Gene Therapy

**Con Speaker:** Leaf Huang, *University of North Carolina, U.S.A.*

Viral Vectors are Not Superior to Non-viral

**Moderator:** Justin Hanes, *Johns Hopkins University, U.S.A.*

Two heavy-weights in the gene therapy arena will square off in this no-holds-barred “Pearls of Wisdom” debate. Each speaker will make his case to the audience, following which a lively discussion will ensue where members of the audience are encouraged to declare the “winning side” prior to asking a pointed question to the “other” speaker. No matter who is left standing in the end, the audience will get their money’s worth in this entertaining and fun-filled debate of the question to which every person in the field wants an answer!

## **Veterinary Pearls of Wisdom—In Vitro Drug Release Tests are Invaluable Tools in Veterinary Product Development and Quality Control**

*Room 102B*

**Pro Speaker:** Avinash Thombre, *Pfizer, U.S.A.*

**Con Speaker:** Michael Rathbone, *InterAg, New Zealand*

**Moderator:** Sevda Senel, *Hacettepe University, Turkey*

Read any literature on *in vitro* drug release testing and it will lead you to believe that it is an invaluable tool in product development and quality control and who amongst you would question this commonly held belief? To reassure you, one person will provide evidence to support this traditional way of thinking; however, one person will stand up, scorn its value, and change your views on the myths and mistruths of this test and reveal how irrelevant such a test is in the research, development, and QC of veterinary pharmaceuticals.

## **Consumer and Diversified Products Pearls of Wisdom—Nanotechnology: Economic Benefit or Potential Hazard**

*Room 102C*

**Moderator:** Charles Frey, *Coating Place, Inc., U.S.A.*

C&DP has selected nanotechnology as its Pearls of Wisdom topic area. This session will focus on the technological and economic benefits of nanotechnology and risk assessment of some of the potential hazards associated with nanotechnology. The main thoughts behind the topic are that it is a subject of significant current interest, and beyond the economic or technological benefits, there is the need to adequately address the potential health, safety, and environmental concerns related to generating, handling, and containing these materials that are easily overlooked.

# Plenary Speakers

## Monday, July 9

### Non-Canonical Amino Acids in Protein Design, Evolution, and Analysis

David Tirrell, *California Institute of Technology, U.S.A.*  
09:00 – 10:00 • Grand Ballroom B



David A. Tirrell is the Ross McCollum-William H. Corcoran Professor and Chairman of the Division of Chemistry and Chemical Engineering at the California Institute of Technology. After earning a B.S. in chemistry at MIT, Tirrell enrolled in the Department of Polymer Science and Engineering at the University of Massachusetts, where he was awarded a Ph.D. in

1978 for work done under the supervision of Otto Vogl. After a brief stay with Takeo Saegusa at Kyoto University, Tirrell accepted an assistant professorship in the Department of Chemistry at Carnegie-Mellon University in the fall of 1978.

Tirrell returned to Amherst in 1984 and served as Director of the Materials Research Laboratory before moving to Caltech in 1998. He has been a Visiting Professor at the University of Queensland, the Institut Charles Sadron in Strasbourg, the University of Wisconsin, and the Institut Curie in Paris. He was Editor of the *Journal of Polymer Science* from 1988 until 1999 and has chaired the Gordon Research Conferences on *Polymers in Biosystems* and on *Chemistry of Supramolecules and Assemblies*.

Tirrell's contributions to macromolecular chemistry have been recognized in a variety of ways, including his election to the American Academy of Arts and Sciences and the National Academy of Sciences. He has been awarded the Arthur C. Cope Scholar, Carl Marvel, Harrison Howe, S. C. Lind and Madison Marshall Awards of the American Chemical Society, as well as the American Chemical Society Award in Polymer Chemistry. He holds the Chancellor's Medal of the University of Massachusetts and the degree of *Doctor honoris causa* from the Technical University of Eindhoven.

## Tuesday, July 10

### Improved Childhood Vaccines—A Grand Challenge in Global Health

Steven Buchsbaum, *Bill and Melinda Gates Foundation, U.S.A.*

08:00 – 09:00 • Grand Ballroom B



Dr. Buchsbaum received a Ph.D. in physics from the University of California, San Diego and a Masters in Pacific International Affairs from the Graduates School International Relations and Pacific Studies. Dr. Buchsbaum has held positions at the Marine Physical Laboratory of Scripps Institute of Oceanography, the Institute for Nonlinear Science at University of California, San Diego and the University of

California, Santa Cruz, and the Center for Material Science at Los Alamos National Laboratory, Science Applications International Corporation, Bermuda Associates, and Draper Laboratory. Dr. Buchsbaum served as an Associate Editor for the *Journal of Environment and Development*. He has also served in the U.S. State Department as the Science and Technology Officer for South Asia, as a Program Manager in the Defense Advanced Research Projects Agency, and as the Founding Director of the Office of Chemical, Biological, Radiological, Nuclear and Explosive Defense in the Homeland Security Advance Research Projects Agency of the Department of Homeland Security. Dr. Buchsbaum has been selected and has served as an American Association for the Advancement of Science, Science and Diplomacy Fellow and was registered into the U.S. Foreign Service, and was also selected, but did not serve, as an American Physical Society Congressional Fellow. Currently, Dr. Buchsbaum is a Senior Program Officer in the Global Health Technologies program at the Bill & Melinda Gates Foundation.

# Plenary Speakers

## Cell Sheet Tissue Engineering and Their Clinical Applications

Teruo Okano, *Tokyo Women's Medical College, Japan*

13:00 – 14:00 • Grand Ballroom B

Sponsored by NOF



Teruo Okano is Professor and Director of the Institute of Advanced Biomedical Engineering and Science at Tokyo Women's Medical University (TWMU). He received his Ph.D. in polymer chemistry from the Department of Applied Chemistry at Waseda University in 1979. After several years at TWMU as an Assistant Professor, he joined the University of Utah as a Research Assistant Professor from 1984-1986

and later served as a Research Associate Professor from 1986-1988. He returned to TWMU in 1998 as an Associate Professor, becoming a Full Professor in 1994 and later Institute Director in 1999. Currently, he also is an Adjunct Professor at the Center for Controlled Chemical Delivery at the University of Utah. He has been a Fellow of the American Institute of Medical and Biological Engineering since 1997 and also a Fellow of the International Union of Societies for Biomaterials Science and Engineering since 2000.

His research interests currently involve the use of intelligent biomaterials for research applications in various fields such as tissue engineering, drug and gene delivery, green chromatography, microfluidics, and cell-based on-chip assays. Specifically, Professor Okano's research group has successfully modified the temperature-responsive polymer, poly(*N*-isopropylacrylamide) (PIPAAm) onto ordinary polystyrene tissue culture surfaces by controlling its thickness and nanostructure. These surfaces show temperature-responsive hydrophilic/hydrophobic changes, such that under typical culture conditions at 37°C, the surfaces are hydrophobic, allowing cells to attach, spread, and proliferate. By simply lowering the incubation temperature to 20°C, the polymer becomes hydrophilic, enabling all the cultured cells to be harvested as intact sheets. Based on temperature-responsive surfaces, they have proposed a new concept of "Cell Sheet Engineering," which is an innovative technology for tissue and organ regeneration, using only manipulated cell sheets.

Professor Okano is the author or co-author of 360 peer-reviewed journal articles, as well as 109 books or book chapters. He currently serves as an Associate Editor for the *Journal of Biomedical Materials Research*, *Bioconjugate Chemistry*, and *Tissue Engineering*. He is also a member of the editorial boards for the *Journal of Controlled Release*, *Drug Targeting*, and *Advanced Drug Delivery Reviews*.

Professor Okano was the recipient of the Science News Award (1983) and awarded with the 48<sup>th</sup> and 49<sup>th</sup> Noteworthy Inventions (1989 and 1990), given by the Science and Technology Agency of Japan. He also previously received the Outstanding Paper Award (1990, 1995, and 1996), given by the Controlled Release Society. In 1992, he received the Award of the Japanese Society for Biomaterials. He received the Outstanding Pharmaceutical Paper Award (1997) from the Controlled Release Society and the Clemson Award for Basic Research (1997) given by the Society for Biomaterials (U.S.A.). More recently, he has also received the Award of the Society Polymer Science, Japan (1998), the Founders Award (2000) from the Controlled Release Society, Leona Esaki prize (2005), and Nagai Innovation Award from Controlled Release Society (2006).

## Wednesday, July 11

### Organic Delivery Vehicles for Probing and Treating Biological Systems: Adapting Fabrication Processes from the Electronics Industry for Use in Nanomedicine

Joseph DeSimone, *University of North Carolina, U.S.A.*

08:30 – 09:30 • Grand Ballroom B



Joseph DeSimone is the William R. Kenan Jr. Distinguished Professor of chemistry at the University of North Carolina at Chapel Hill (UNC-CH) and professor of chemical engineering at North Carolina State University. DeSimone has published over 200 scientific articles and has over 100 patents in his name. In 2005 DeSimone was elected into the National Academy of Engineering

and the American Academy of Arts and Sciences. DeSimone was also the recipient of the 2005 ACS Award for Creative Invention. In 1999 DeSimone became director of the \$40-million NSF Science and Technology Center for Environmentally Responsible Solvents and Processes. In 2000 DeSimone received the Oliver Max Garner Award from the University of North Carolina. In 2002 DeSimone, along with Dr. Richard Stack a cardiologist at Duke, co-founded Bioabsorbable Vascular Solutions (BVS) to commercialize a fully bioabsorbable, drug-eluting stent. BVS was acquired by Guidant Corporation in 2003, and these stents were recently brought into the clinic with a 60-patient clinical trial. DeSimone's group is now heavily focused on learning how to bring the precision, uniformity, and mass production techniques associated with the fabrication of nanoscale features found in the microelectronics industry to the nano-medicine field for the fabrication and delivery of therapeutic, detection, and imaging agents for the diagnosis

and treatment of diseases. In 2005 DeSimone reported (*J. Am. Chem. Soc.* 2005, 127, 10096) a breakthrough called PRINT (Particle Replication in Non-wetting Templates) to directly fabricate uniform populations of monodisperse, shape-specific nano-biomaterials capable of delivering various therapeutic, detection, and imaging agents to specific sites within living organisms. DeSimone recently launched Liquidia Technologies ([www.liquidia.com](http://www.liquidia.com)) along with three former members of his laboratory (Dr. Jason Rolland, Dr. Ginger Denison, and Dr. Ben Maynor) to commercialize these recent breakthroughs from his laboratory. These results from DeSimone's laboratory most recently became a foundation for the new \$26.3-million Carolina Center for Cancer Nanotechnology Excellence funded by the National Cancer Institute. DeSimone is the co-PI of this newly established Center along with Dr. Rudy Juliano.

### **The Role of Biomarkers and Biologically Interactive Delivery Systems (receptor mediated transcytosis) in the Future of Chemotherapy**

Patrick Soon-Shiong, *Abraxis BioScience, Inc., U.S.A.*  
13:00 – 14:00 • Grand Ballroom B



Patrick Soon-Shiong, M.D., FRCS(C), FACS, is the Chairman of the Board and Chief Executive Officer of Abraxis BioScience, Inc., an integrated, global biopharmaceutical company. Dr. Soon-Shiong is a noted research scientist, as well as a physician and surgeon, and has devoted his career to developing next-generation technology to enhance the medical care of patients with life-threatening

diseases, including cancer, diabetes, and heart disease. Dr. Soon-Shiong performed the world's first encapsulated islet transplant in a diabetic patient and developed and co-invented the nanoparticle delivery technology upon which the cremophor-free form of paclitaxel compound known as ABRAXANE® is based. ABRAXANE was approved in January 2005 by the FDA for treatment of advanced stage metastatic breast cancer and is being developed for adjuvant breast, lung, ovarian, prostate, melanoma, and head and neck cancers.

Dr. Soon-Shiong's research has been recognized by noted organizations, with numerous national and international awards, such as the Association for Academic Surgery Award for Research, the American College of Surgeons Schering Scholar, the Royal College Physicians and Surgeons Research Award, the Peter Kiewit Distinguished Membership in Medicine Award, and the International J.W. Hyatt Award for Service to Mankind. Dr. Soon-Shiong received the 2007 Gilda Club Award for the advancement of cancer medicine. He is a co-inventor of over 50 issued U.S. patents and has published more than 100 scientific papers.

Dr. Soon-Shiong currently serves on the Board of Directors for the National Institute of Transplantation, as well as, the Technology Council for the new Center for Cancer Nanotechnology Excellence at Northwestern University, which is part of the National Cancer Institute's five-year initiative for nanotechnology in cancer research. He also serves on two advisory boards for the RAND Corporation, the RAND Center for Asia Pacific Policy and the RAND Health Board of Advisors. Dr. Soon-Shiong holds a degree in medicine from the University of the Witwatersrand, South Africa; and a Master of Science from the University of British Columbia, Canada. He is a fellow of the American College of Surgeons and the Royal College of Physicians and Surgeons of Canada.



# 35th Annual Meeting & Exposition of the Controlled Release Society

*Responding to Global Needs through Delivery Science*

**Mark Your Calendars**

**July 12–16, 2008  
Hilton New York  
New York, New York**

**Abstract Submissions Opens November 2007**

**Interested in Exhibiting?**

Sign up in the Exhibit Hall at Booth #720–723,  
or visit the website for more information.

[www.controlledreleasesociety.org/meeting](http://www.controlledreleasesociety.org/meeting)



# Special Sessions

## Industrial Session

*Sponsored by Pfizer*



**Monday, July 9 and Tuesday, July 10**

Promenade Ballroom A

This special session is back by popular demand. Join Co-chairs Ted Broman (Vivus, Inc., U.S.A.), Susan Cady (Intervet, Inc., U.S.A.), and David Friend (Consultant, U.S.A.) in this four-part session on Monday and Tuesday for these sure to be standing-room-only sessions. The featured speakers and their topics are:

- George Baskinger, Vyteris, Inc., U.S.A. - Regulatory Issues in Obtaining Approval of Drug-device Combination Products
- Debra Bingham, Valeo Partners, U.S.A. - Preparing for Liquidity Events
- Laura Bix, Michigan State University, U.S.A. - Packaging of Drug-device Combination Product
- Diane Burgess, University of Connecticut, U.S.A. - *In Vivo*-*In Vitro* Correlations
- David Friend, Consultant, U.S.A. - Development of Drug-device Controlled Release Products
- John Gibson, Durect Corporation, U.S.A. - Biodegradable Polymers: Current Uses and Future Trends
- Ian Hardy, Merck Sharp & Dohme, U.K. - Design and Selection of Extended Release Dosage Forms—An Industrial Perspective
- Mai Huynh, FDA-Center for Vet Medicine, U.S.A. - Quality Attributes Influencing the Performance of Parenteral Controlled Release Systems
- Nirdosh Jagota, Wyeth Research, U.S.A. - Quality by Design: Industry Perspective
- Anne-Marie Lademann, LifeCycle Pharma, Denmark - The Interface Between Intellectual Property Rights and the Legal Framework of the Pharmaceutical Regulatory Process
- Marilyn Martinez, FDA-Center for Vet Medicine, U.S.A. - Safety Considerations Associated with Veterinary Parenteral Controlled Release Systems
- Franklin Okumu, Durect Corporation, U.S.A. - Protein Formulation for Injectable Drug Delivery Systems
- John Patton, Inhale Therapeutic Systems, U.S.A. - Challenges in Inhalation Product Development
- Avinash G. Thombre, Pfizer, Inc., U.S.A. - Oral Controlled Release Product Scale-up
- Vladimir P. Torchilin, Northeastern University, U.S.A. - Nanotechnology

## Eurand Special Session

*Sponsored by Eurand*



**Monday, July 9**

16:00 – 17:30 • Room 102

The Eurand Novel Approaches Award is recognized as a premiere industry award and is designed to encourage, recognize, and reward innovative approaches in oral drug delivery. During this Special Session, three Eurand Novel Approaches Honorees, along with Lisbeth Illum, recipient of the Eurand Career Achievement in Commercialized Technology of Oral Drug Delivery Award, will present their research. The Novel Approaches Grand Prize winner will be selected during this session and announced by Stephen Perrett of Eurand.

## Capsugel Special Session

*Sponsored by Capsugel*



**Tuesday, July 10**

14:30 – 17:15 • Room 102

You will hear four outstanding students present their award-winning abstracts on innovative aspects of oral drug delivery and absorption. The invited speakers are Randall Mrsny, University of Wales and Trinity BioSystems, U.K. and U.S.A.; Veronique Preat, University Catholique de Louvain, Belgium; and Shinji Yamashita, Setsunan University, Japan. At the conclusion of the session, Dennis Murachanian of Capsugel will announce the winner of the Capsugel Special Session Grand Prize.



# Social and Business Calendar

## Sunday, July 8

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**Local Chapter Meeting**  
13:30 – 15:00 • Room 103C

**Board of Scientific Advisors Meeting**  
14:30 – 15:30 • Room 103B

**Highlights of Student Posters**  
16:00 – 17:30 • Room 101B  
*Sponsored by*



**Pearls of Wisdom**  
17:30 – 18:30

**Bioactive Materials**  
Room 102A  
*Viral vs. Non-viral Gene Delivery*

**Consumer and Diversified Products**  
Room 102C  
*Nanotechnology: Economic Benefit or Potential Hazard*

**Veterinary**  
Room 102B  
*In Vitro Drug Release Tests are Invaluable Tools in Veterinary Product Development and Quality Control*

**Welcome Reception**  
**Exhibitor Networking/Poster Viewing**  
18:30 – 19:30 • Exhibit Hall A

## Monday, July 9

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**Welcome to CRS**  
Award Ceremony & CRS Member Meeting  
08:00 – 09:00 • Grand Ballroom B

**Exhibitor Networking/Refreshment Break**  
**Poster Session I Authors Present**  
10:00 – 10:45 • Exhibit Hall A

**Exhibitor Networking**  
**Poster Viewing**  
*Lunch available for purchase in Exhibit Hall A*  
12:15 – 14:00 • Exhibit Hall A

**Consumer & Diversified Products Committee Meeting**  
13:00 – 14:00 • Room 203C

**Exhibitor Networking/Refreshment Break**  
**Poster Session I Authors Present**  
15:00 – 16:00 • Exhibit Hall A

**Vet Get Together**  
18:30 – 19:30 • Room 103C  
*Sponsored by*



**Pfizer Animal Health**

## Tuesday, July 10

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**Exhibitor Networking/Refreshment Break**  
**Poster Session II Authors Present**  
09:00 – 09:30 • Exhibit Hall A  
*Sponsored by*

*Enabling your success*

**3M Drug Delivery Systems**

**Veterinary Committee Meeting**  
12:00 – 13:00 • Room 203C

**Exhibitor Networking**  
**Poster Viewing**  
*Lunch available for purchase in Exhibit Hall A*  
11:00 – 13:00 • Exhibit Hall A

**Exhibitor Networking/Refreshment Break**  
**Poster Session II Authors Present**  
14:00 – 14:30 • Exhibit Hall A  
*Sponsored by*



**Education Committee Meeting**  
16:00 – 17:00 • Room 203C

**Closing Reception and Banquet**  
18:30 – 22:00 • Aquarium of the Pacific

## Wednesday, July 11

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**Exhibitor Networking/Refreshment Break**  
**Poster Session II Authors Present**  
09:30 – 10:00 • Exhibit Hall A

**Exhibitor Networking**  
**Poster Viewing**  
*Lunch available for purchase in Exhibit Hall A*  
11:30 – 13:00 • Exhibit Hall A

**Refreshment Break**  
14:00 – 14:15 • Promenade Foyer

# General Meeting Information

**Program Modifications**—All information is subject to change without notice.

## Attendee Services Desk

The Attendee Services Desk is located in the Main Entrance Lobby of the Long Beach Convention Center. The Attendee Services Desk will be open as follows:

Saturday, July 7	07:00 – 17:30
Sunday, July 8	07:00 – 20:00
Monday, July 9	06:30 – 18:30
Tuesday, July 10	06:30 – 17:30
Wednesday, July 11	08:00 – 13:30

## Committee Meetings

Committees of the Controlled Release Society are invited to schedule committee meetings. Use of the committee meeting room is by reservation only. Reservations can be made at the Attendee Services Desk.

## Exposition Hours

The Exposition is located in Hall A. The Exposition schedule is as follows:

### Sunday, July 8

18:30 – 19:30 Welcome Reception

### Monday, July 9

10:00 – 18:00 Exhibit/Poster Hall Open  
10:00 – 10:45 Refreshment Break  
12:15 – 14:00 Lunch available for purchase in Hall  
15:00 – 16:00 Refreshment Break

### Tuesday, July 10

09:00 – 17:00 Exhibit/Poster Hall Open  
09:00 – 9:30 Refreshment Break  
11:00 – 13:00 Lunch available for purchase in Hall  
14:00 – 14:30 Refreshment Break

### Wednesday, July 11

09:30 – 13:00 Exhibit/Poster Hall Open  
09:30 – 10:00 Refreshment Break  
11:30 – 13:00 Lunch available for purchase in Hall

## Membership

Start taking advantage of everything that CRS has to offer. Whether you are new in your career, a seasoned professional, or somewhere in between, CRS will provide you with the resources to help you succeed. Information and applications are available at the CRS Membership Information Booth (Booths 720-723) in the Exhibit Hall.

## Message Board

For your convenience, the Message Board is located in the Main Entrance Lobby.

## Meeting and Future Event Literature

Space for the display of promotional materials for future educational meetings is available in the Exhibit Hall. Organizers of educational meetings and events may display their materials in the reserved location. Any literature that does not promote educational meetings will be discarded.

## Poster Session Hours

*Sponsored by Informa Healthcare and Johnson & Johnson Pharmaceutical Research and Development, a division of Janssen Pharmaceutica n.v.*

The Posters are located in Hall A. Both Poster Sessions are available for viewing Sunday – Wednesday. The Poster Session schedule is as follows:

### Assembly

Sunday, July 8 08:00 – 15:00

### Poster Viewing

Sunday, July 8 18:30 – 19:30  
Monday, July 9 10:00 – 18:00  
Session I Authors present  
10:00 – 10:45 & 15:00 – 16:00  
Tuesday, July 10 09:00 – 17:00  
Session II Authors present  
09:00 – 09:30 & 14:00 – 14:30  
Wednesday, July 11 09:30 – 13:30  
Session II Authors present  
09:30 – 10:00

### Dismantle

Wednesday, July 11 13:15 – 18:00

## Speaker Preparation Room

*Promenade Ballroom C*

The Speaker Preparation Room will be available for PowerPoint previewing and downloading presentation materials to the network. Please check-in with the audio-visual technicians at least 24 hours in advance of your scheduled presentation to check compatibility and allow for advance set-up of your presentation.

### The Speaker Preparation Room will be staffed:

Saturday, July 7 07:00 – 17:00  
Sunday, July 8 07:00 – 16:00  
Monday, July 9 06:30 – 16:00  
Tuesday, July 10 06:30 – 16:00  
Wednesday, July 11 07:30 – 14:30

## Web Café

*Co-sponsored by*



The Web Café will be located in Exhibit Hall A and is available for all attendees to check and send e-mail while in Long Beach. The Web Café will be open the following hours:

Monday, July 9 10:00 – 17:30  
Tuesday, July 10 09:00 – 16:30  
Wednesday, July 11 09:30 – 12:30



# WORKSHOPS

34th Annual Meeting & Exposition of the Controlled Release Society

Workshops



Courtesy of the Long Beach CVB.

# Releasing Technology Workshops

## Sunday, July 8

*A series of complimentary workshops are scheduled throughout the day and open to all registered attendees. These informative sessions focus on in-depth facets of controlled release technology and are presented by technical exhibitors and donors. Seating for each workshop is limited; arrive early to reserve your seat.*

13:00 – 14:00	RTW A	Hosted by: Altea Therapeutics • Room 102A
13:00 – 15:00	RTW B	Hosted by: Colcorcon, Inc. • Room 103A
13:30 – 14:30	RTW C	Hosted by: ChemImage Corporation • Room 102B
14:00 – 15:00	RTW D	Hosted by: CMA/Microdialysis • Room 102A
15:00 – 16:00	RTW E	Hosted by: Genzyme • Room 102C
15:30 – 16:30	RTW F	Hosted by: Capsugel • Room 103A

### RTW A

13:00 – 14:00 • Room 102A

#### **Transdermal Drug Delivery through Microporated Skin**

*Hosted by: Altea Therapeutics*



**Presented by:** David Enscore, Senior Vice President  
Research & Development

The workshop will focus on the delivery of water-soluble low molecular weight drugs and proteins through microporated skin with comparison to delivery of drugs through intact skin. The Altea Therapeutics PassPort™ System for drug delivery across microporated skin will be described. The attributes of the ideal drug for delivery and the mechanism of delivery for both intact and microporated skin will be discussed. The requirements for patch materials for each of the ideal drug types will be described. A pharmacokinetic comparison of transdermal delivery across intact and microporated skin will be presented. The workshop will conclude with a summary discussion of the advantages of transdermal delivery across microporated skin as compared to delivery across intact skin.

### RTW B

13:00 – 15:00 • Room 103A

#### **Oral Extended Drug Release Based on Hydrophilic Polymers: Single and Multi-Unit Systems**

*Hosted by: Colorcon, Inc.*



**Presented by:** Ali Rajabi-Siabhoomi, Global Technical  
Director, Modified Release Technologies

In the pharmaceutical industry, the use of hydrophilic water-soluble or insoluble polymers, to develop extended release formulations, is increasing. Although these polymers are widely studied and used, the formulation, performance testing and prediction still remain as main challenges in the industry. Aspects such as drug release modulation, use of mathematical modeling to predict performance, and functionality by design will be discussed at this workshop. These are topics frequently requested by formulation scientists and it is the intention to uncover some of the complexity and challenges in these areas, as well as to discuss recent research results and advances that have been made in the field.



## RTW C

13:30 – 14:30 • Room 102B

### Hyperspectral Chemical Imaging for the Physical and Chemical Characterization of Drugs in Polymers

Hosted by: ChemImage Corporation



**Presented by:** David Tuschel, Director of Product and Applications Development

Full field-of-view hyperspectral imaging by Raman and luminescence modalities have been developed and applied for the characterization of crystallinity, density and defects in bulk, extruded and coated polymers. Polymer blends can be imaged for characterization of degree of mixing, orientation and chemical interaction. In addition, drug-polymer physical mixtures and solid solutions can be imaged *in situ* to reveal the physical and chemical state of the drug in the polymer. We will review some aspects of the physical chemistry that forms the underlying basis of the chemical and physical characterization of polymers by vibrational spectroscopy. Results of hyperspectral imaging studies of polymers and polymer blends will be presented and discussed with particular emphasis on the spatial heterogeneity revealed by full field-of-view imaging. Also, the results of a hyperspectral imaging study of drugs in cast polyvinylpyrrolidone will be emphasized.

## RTW D

14:00 – 15:00 • Room 102A

### Microdialysis: Continuous In Vivo or In Vitro Drug & Target Collection

Hosted by: CMA/Microdialysis



**Presented by:** Kathleen Gariepy, Senior Marketing & Product Manager

Learn to continuously sample unbound drugs and endogenous compounds in target tissue (including liver, muscle, lung, adipose, tumor, as well as the CNS, subcutaneous sites, and blood) without introducing fluid into or removing fluid from intact biological tissues. We will show how microdialysis is used to obtain simultaneous *in vivo* temporal information for studies on drug delivery, drug metabolism, PK/PD, bioavailability, bioequivalence and pharmacological efficacy. Understand that Microdialysis can be used to: (1) Assess controlled release of drug from encapsulation either *in vivo* or *in vitro*, (2) Collect endogenous target compounds to determine pharmacological effect. (3) Sample unbound drug and/or active metabolites

upon arrival to the target tissue, and (4) Deliver drug locally into an organ or tissue through the probe.

## RTW E

15:00 – 16:00 • Room 102C

### LipoBridge®: A Molecular Queen Mary for Crossing the BBB

Hosted by: Genzyme



**Presented by:** Peter Hoffmann, Vice President, Technology Development

Due to a natural defense of the Blood Brain Barrier (BBB), sufficient quantities of potentially effective therapeutic agents for the treatment of central nervous system (CNS) based pathologies such as Alzheimer's, Glioma, Multiple Sclerosis, Stroke and Brain cancer have been unsuccessfully delivered to the site of their required action. Working closely with academic collaborators, Genzyme Pharmaceuticals have designed LipoBridge® to penetrate higher concentrations of a variety of molecules across the BBB.

## RTW F

15:30 – 16:30 • Room 103A

### Liquid Filled Two-Piece Capsules for Challenging Molecules

Hosted by: Capsugel



**Presented by:** Dennis Murachanian, Senior Manager of Global Business Development

The purpose of this workshop will be to educate pharmaceutical formulators on the benefits of two-piece capsules for challenging compounds. The primary benefit of using two piece capsules is for poorly soluble compounds where the drug may be solubilized for improved bioavailability. Another principal application is in the area of semisolid formulations where dispensing at elevated temperatures is required. Other important benefits are for dust containment of highly potent compounds and improved content uniformity of very low dose drugs. The technology offers the flexibility of being produced in-house or at a third party. Capsugel's role in this field has been to refine the technology through the introduction of innovative capsules and filling/sealing equipment. Additionally Capsugel has opened a formulation development center where we are able to formulate our customer's most challenging molecules and to provide formulation assistance.

# Soapbox Session

## Emerging Drug Delivery and Biotech Companies

Sunday, July 8

Promenade Ballroom A

**Co-chairs:** Philippe J.M. Dor, MacuSight, Inc., U.S.A.,  
and Eyal S. Ron, MADASH, LLC, U.S.A.

Sponsored by Molecular Profiles Ltd.



molecular profiles  
experts in analysis

*Identify new ideas and potential collaborations in these fast-paced presentations, where technology-driven emerging and established businesses present their technologies, products, and services*

13:30 **Introduction** – Claire Madden-Smith, Molecular Profiles Ltd.

13:35 **Welcome** – Philippe J.M. Dor, MacuSight, Inc. and Eyal S. Ron, MADASH, LLC

### Session 1

Chair: Philippe J.M. Dor, MacuSight, Inc., U.S.A.

13:40 **Biodegradable Diclofenac Microcapsules for Sustained Drug Delivery System**  
Manoj Charde, RTM Nagpur University

13:45 **Innovative Applications Using Shin-Etsu's Cellulosic Excipients**  
Shilpa Mistry, RW Unwin Co & Ltd

13:50 **Transdermal Drug Delivery with Raid Dissolving Micro-Needle Patch**  
Sung-Yun Kwon, Theraject, Inc.

13:55 **GMP-manufacturing of Liposomes by Polymun's Technology**  
Dietmar Katinger, Polymun Scientific GmbH

14:00 **OSDRC: One-step Dry-coated Tablet**  
Joseph Fix, Sanwa Kagaku Kenkyusho Co., Ltd.

14:05 **Design for Peptide Delivery**  
Thomas Tice, Brookwood Pharmaceuticals, Inc.

14:10 **Advanced Gastrointestinal Imaging by Use of Magnetic Marker Monitoring Technique**  
Henning Blume, SocraTec R&D GmbH

14:15 **Break**

### Session 2

Chair: Eyal S. Ron, MADASH, LLC, U.S.A.

14:30 **Optimized Drug Delivery for Therapeutic Added Value**  
Werner Weitschies, Aristocon

14:35 **Coatings and Polymer Matrices for Controlled Protein Delivery**  
Aron Anderson, SurModics

14:40 **Ceramisphere: An Alternative Micro-encapsulation Technology**  
Chris Barbe, Ceramisphere Pty Ltd

14:45 **Encapsulation at Southwest Research Institute**  
Neal Vail, Southwest Research Institute

14:50 **Enhance Technology—A Revolution in Drug Dispersion: Recent Developments**  
Mark S. Wilson, Halozyme Therapeutics, Inc.

14:55 **Xybrex—Implantable Anesthetic Matrix**  
David Knaack, Orthocon

15:00 **Dendrimers—An Enabling Nanotechnology Platform for Drug Delivery**  
Sonke Svenson, Dendritic Nanotechnologies, Inc.

15:05 **Break**



### Session 3

Chair: Philippe J.M. Dor, MacuSight, Inc., U.S.A.

- 15:20 **Hisamitsu's Patch Technology**  
Katsuhiko Nakamura, Hisamitsu Pharmaceutical Co., Ltd.
- 15:25 **Optimising Human Drug Absorption in Clinical Development Using the Enterion™ Capsule**  
Matthew Paterson, Pharmaceutical Profiles Ltd.
- 15:30 **Disposable Device for Oral Slow Release of Medications**  
Eli Katz, Utility Development Corporation
- 15:35 **Supercritical Fluid Technology**  
Joseph Fix, CritiTech, Inc.
- 15:40 **Labopharm: From Macro to Nanodelivery**  
Francois Ravenelle, Labopharm Inc.
- 15:45 **Break**

### Session 4

Chair: Eyal S. Ron, MADASH, LLC, U.S.A.

- 16:00 **LBL-Technology: Nanoparticulate Carriers for Enhanced Drug Delivery**  
Silvana DiCesare, Capsulation NanoScience AG
- 16:05 **DURIN™ Biodegradable Implants**  
Sanjay Goskonda, Durect Corporation
- 16:10 **Novel Oral Controlled Drug Delivery System**  
Nitin Dharmadhikari, Sun Pharmaceutical Industries
- 16:15 **Manufacture and Benefits of Advanced Active Pharmaceutical Ingredients**  
Doug Hecker, Hovione
- 16:20 **Nanoscreening Material Properties**  
Andrew Parker, Molecular Profiles Ltd.
- 16:25 **Microdialysis—A New Technology to Continuously Sample Drug Levels and Targets *In Vivo***  
Kathleen Gariepy, CMA/Microdialysis
- 16:30 **Break**
- 16:45 **End of Session**

### Tuesday, July 10

Promenade Ballroom A

- 09:30 **Welcome/Introduction** – Eyal S. Ron, MADASH, LLC

### Session I

Chair: Eyal S. Ron, MADASH, LLC, U.S.A.

- 09:35 **MicroCor™—A Novel Mechanical Microporation Technology**  
Gary Cleary, Corium International, Inc.
- 09:40 **Raman Chemical Imaging for Pharmaceutical Applications**  
David Tuschel, ChemImage Corporation
- 09:45 **Gel Formulation with Dimethyl Sulfoxide USP, Ph. Eur.**  
Artie McKim, Gaylord Chemical
- 09:50 **Novel Transdermal Patches for Proteins and Water-Soluble Drugs**  
David Ensore, Altea Therapeutics Corporation
- 09:55 **New Transdermal Adhesive Fills a Void**  
Paul Foreman, National Starch & Chemical Corporation
- 10:00 **Break**
- 10:15 **End of Soapbox Session/Beginning of Industrial Session III**

# Educational Workshops

The following workshops will be offered at the 34th Annual Meeting & Exposition of the Controlled Release Society in Long Beach. The three educational workshops and the Young Scientist Workshop are scheduled for Saturday, July 7, and some will continue on Sunday, July 8.

## Workshop I

### Micro- and Nanoencapsulation: Formulation, Applications, and Processes

Generously Sponsored by



**Co-chairs:** J. Chris Soper, *Givaudan Flavors, U.S.A.* and Paul Richardson, *Balchem Corporation, U.S.A.*

This two-day workshop will provide an introduction to basic concepts of various controlled release technologies. It will offer information on release mechanisms and behaviors of key technologies in commercial use. A nanoencapsulation segment in the workshop will present overviews of nanocapsule and nanocrystal processes and their applications in pharmaceutical and polymer fields.

After attending this workshop, attendees should be able to examine a planned commercial product and determine initially the usefulness of encapsulation, the most likely encapsulation dosage form, the cost of encapsulation, and the manufacturing method to put encapsulation into the product.

#### Saturday, July 7 • Room 101B

08:00 – 08:30	Breakfast
08:30 – 08:45	Introduction Paul Richardson, <i>Balchem Corporation, U.S.A.</i> and Ronald Versic, <i>Ronald T. Dodge Company, U.S.A.</i>
08:45 – 09:30	Atomization Processes Irwin Jacobs, <i>KV Pharmaceutical Company, U.S.A.</i>
09:30 – 10:15	Mechanisms and Factors in Controlled Release Robert Sparks, <i>Particle and Coating Technologies, Inc., U.S.A.</i>
10:15 – 10:30	Break
10:30 – 11:00	Fluid Bed Processing Michael Valazza, <i>Cardinal Health, U.S.A.</i>
11:00 – 11:30	Diffusion Analysis for Microcapsules Robert Wieland, <i>Givaudan Flavors, U.S.A.</i>
11:30 – 12:00	Novel Processes and Selection Niraj Vasishtha, <i>BDS International, U.S.A.</i>
12:00 – 12:30	Coacervation in Controlled Release Ronald Versic, <i>Ronald T. Dodge Company, U.S.A.</i>
12:30 – 14:00	Lunch break on your own

14:00 – 14:30	Extrusion Jet Processes Niraj Vasishtha, <i>BDS International, U.S.A.</i>
14:30 – 15:00	Flavor Encapsulation Birgit Schleifenbaum, <i>Firminich Geneva, Switzerland</i>
15:00 – 15:30	Application of Lipid Encapsulates Paul Richardson, <i>Balchem Corporation, U.S.A.</i>
15:30 – 15:45	Break
15:45 – 16:15	Nano and Microencapsulation for Controlled Release Joerg Kreuter, <i>J.W. Goethe University, Germany</i>
16:15 – 16:45	Nanoparticles and Capsules from Emulsions Ruth Schmid, <i>SINTEF, Norway</i>
16:45 – 17:00	Conclusion Paul Richardson, <i>Balchem Corporation, U.S.A.</i> and Ronald Versic, <i>Ronald T. Dodge Company, U.S.A.</i>

#### Sunday, July 8 • Room 101B

09:00 – 09:30	Breakfast
09:30 – 10:00	Functional Nano Systems for Pharmaceutical Ijeoma Uchegbu, <i>University of London, U.K.</i>
10:00 – 10:30	Encapsulation for Foods Gary Reineccius, <i>University of Minnesota, U.S.A.</i>
10:30 – 10:45	Break
10:45 – 11:15	Lipid Nanoparticles for Encapsulation of Actives: Dermal and Oral Formulations Rainer Mueller, <i>University of Berlin, Germany</i>
11:15 – 11:45	Applications in Controlled Release Ronald Versic, <i>Ronald T. Dodge Company, U.S.A.</i>
11:45 – 12:00	Conclusion Paul Richardson, <i>Balchem Corporation, U.S.A.</i> and Ronald Versic, <i>Ronald T. Dodge Company, U.S.A.</i>

## Workshop 2

### Molecular Imaging and Drug Delivery

Generously Sponsored by



MYLAN TECHNOLOGIES INC.



**Co-chairs:** Alexei Bogdanov, *University of Massachusetts Medical School, U.S.A.* and Zheng-Rong Lu, *University of Utah, U.S.A.*

This one-day workshop will address the hot topics in molecular imaging and drug delivery. You will learn how molecular imaging could assist in drug development and translational research. The workshop will also cover non-invasive issues, such as evaluating therapeutic response with dynamic MRI and visualization of *in vivo* drug delivery with polymers. Presentation on targeted delivery will be given—from microbubbles to nanomaterials to enzyme-sensitive optical imaging agents. The workshop will provide information on how the concept of drug delivery can be used in the development of novel imaging agents and how molecular imaging can advance drug delivery and translational research.

#### Saturday, July 7 • Room 102A

07:30 – 08:00	Breakfast
08:00 – 08:05	Introduction Alexei Bogdanov, <i>University of Massachusetts Medical School, U.S.A.</i> and Zheng-Rong Lu, <i>University of Utah, U.S.A.</i>
08:05 – 08:50	Perspective: Targeted Delivery and Molecular Imaging Vladimir Torchilin, <i>Northeastern University, U.S.A.</i>
08:50 – 09:00	Discussion
09:00 – 09:45	Bioconjugated Nanoparticles for Molecular Imaging and Drug Delivery Shuming Nie, <i>Emory University and Georgia Tech, U.S.A.</i>
09:45 – 09:55	Discussion

09:55 – 10:10	Break
10:10 – 10:55	Perspective: How Molecular Imaging Could Assist in Drug Development and Translational Research Alexei Bogdanov, <i>University of Massachusetts Medical School, U.S.A.</i>
10:55 – 11:05	Discussion
11:05 – 11:50	Microbubbles for Targeted Imaging and Drug Delivery Alexander Klibanov, <i>University of Virginia, U.S.A.</i>
11:50 – 12:00	Discussion
12:00 – 13:00	Lunch break on your own
13:00 – 13:45	PET Imaging in Drug Discovery and Development John Hoffman, <i>University of Utah, U.S.A.</i>
13:45 – 13:55	Discussion
13:55 – 14:40	MicroPET and Bioluminescence Imaging in Small Animals Jung-Joon Min, <i>Chonnam University, South Korea</i>
14:40 – 14:50	Discussion
14:50 – 15:05	Break
15:05 – 15:50	Imaging of Apoptosis <i>In Vivo</i> Eyk Schellenberger, <i>Charité-Berlin, Germany</i>
15:50 – 16:00	Discussion
16:00 – 16:45	Non-invasive Visualization of <i>In Vivo</i> Drug Delivery and Evaluation of Therapeutic Efficacy with Contrast Enhanced MRI Zheng-Rong Lu, <i>University of Utah, U.S.A.</i>
16:45 – 16:55	Discussion
16:55 – 17:00	Conclusion Alexei Bogdanov, <i>University of Massachusetts Medical School, U.S.A.</i> and Zheng-Rong Lu, <i>University of Utah, U.S.A.</i>

## Workshop 3

### Sustained Release Parenteral Products: *In Vitro* and *In Vivo* Considerations

Generously Sponsored by



**Co-chairs:** Marilyn Martinez, *FDA Center for Veterinary Medicine, U.S.A.* and Michael Rathbone, *InterAg, New Zealand*

This one-day workshop will discuss the considerations and challenges associated with the development of discriminative and biologically relevant *in vitro* methods for assessing drug release for parenteral products; identify the critical biopharmaceutical issues, such as important physiological variables influencing drug release and the impact of altering injection volume and concentration; and address the possibility of establishing *in vitro* and *in vivo* correlations. Presentations will also provide an overview of experiences in correlating specific types of test procedures with categories of parenteral controlled release products—implants, microspheres, and suspensions. These insights are intended to be used by both drug sponsors and regulators for setting *in vitro* release test specifications that can ensure product quality and performance and can be used in lieu of very long and expensive *in vivo* studies to support the chemistry and manufacturing changes likely to occur over the lifespan of a pharmaceutical product.

Human and veterinary medicine share similar challenges when trying to establish biologically relevant *in vitro* release methods and specifications for parenteral controlled release products. This workshop will provide an opportunity for an exchange of ideas across both human and veterinary experiences and on the corresponding challenges encountered in establishing discriminative and standardized *in vitro* methods and experiences with efforts to correlate the results of these *in vitro* tests with *in vivo* product performance.

**Saturday, July 7 • Room 103A**

#### Morning Session: Developing *In Vitro* Test Methods and Setting *In Vitro* Release Specifications

07:30 – 08:00	Breakfast
08:00 – 08:10	Welcome Moderator: Michael Rathbone, <i>InterAg, New Zealand</i>
08:10 – 08:40	Human Parenteral Sustained Release Formulations: Examples and Regulatory Challenges Mansoor Khan, <i>FDA/CDER, U.S.A.</i>

08:40 – 09:10	Veterinary Parenteral Sustained Release Formulations: Examples and Regulatory Challenges Mai Huynh, <i>FDA/CVM, U.S.A.</i>
09:10 – 09:40	Microspheres: Developing <i>In Vitro</i> Test Methods and Setting <i>In Vitro</i> Release Specifications Diane Burgess, <i>University of Connecticut, U.S.A.</i>
09:40 – 10:10	Subcutaneous Implants: Developing <i>In Vitro</i> Test Methods and Setting <i>In Vitro</i> Release Specifications Jeremy Wright, <i>DURECT Corporation, U.S.A.</i>
10:10 – 10:30	Break
10:30 – 11:00	Liposomes: Developing <i>In Vitro</i> Test Methods and Setting <i>In Vitro</i> Release Specifications Diane Burgess, <i>University of Connecticut, U.S.A.</i>
11:00 – 11:30	Lipophilic Solutions and Suspensions: Developing <i>In Vitro</i> Test Methods and Setting <i>In Vitro</i> Release Specifications Susan Weng Larsen, <i>University of Copenhagen, Denmark</i>
11:30 – 12:00	<i>In Vitro-In Vivo</i> Correlations: Human Examples Jaymin C Shah, <i>DURECT Corporation, U.S.A.</i>
12:00 – 13:00	Lunch break on your own

#### Afternoon Session: The Impact of Host Physiology on *In Vivo* Product Performance

13:00 – 13:30	Physiological Variables Influencing Product Performance Natalie Medlicot, <i>University of Otago, New Zealand</i>
13:30 – 14:00	Factors Influencing <i>In Vivo</i> Drug Release: Microspheres, Nanoparticles and Implants Uday Kompella, <i>University of Nebraska, U.S.A.</i>
14:00 – 14:30	Unique <i>In Vivo</i> Challenges with Parenteral Liposomal Preparations: Describing Pharmacokinetic Behavior Daryl C. Drummond, <i>Hermes Biosciences, Inc., U.S.A.</i>

- 14:30 – 15:00 Human Safety Considerations: Dose Dumping, Safety of Excipients, Safety of Vehicles, and Degradation Products  
Patrick Marroum, *FDA/CDER, U.S.A.*
- 15:00 – 15:30 Break
- 15:30 – 16:00 Veterinary Safety Considerations: Novel Excipients, Tissue Residues, Human Food Safety Concerns, and Long Term Safety in Companion Animals  
Marilyn Martinez, *FDA/CVM, U.S.A.*
- 16:00 – 17:00 Roundtable discussion (speakers from both sessions): How can we develop prognostic *in vivo-in vitro* correlations for the various parenteral controlled release products? What are the potential pitfalls we need to consider? How can we apply these correlations: setting expiry, biowaivers, and establishment of product *in vitro* release specifications?

## CRS Headquarters & Staff

3340 Pilot Knob Road  
St. Paul, MN 55121 U.S.A.  
**Telephone:** +1.651.454.7250  
**Facsimile:** +1.651.454.0766  
**www.controlledreleasesociety.org**

**Steven C. Nelson**, *Executive Vice President*  
+1.651.994.3832  
snelson@scisoc.org

**Barbara Mock**, *Director of Finance*  
+1.651.994.3829  
bmock@scisoc.org

**Amy Hope**, *Vice President of Operations*  
+1.651.994.3827  
ahope@scisoc.org

**Jody Grider**, *Director of CRS Operations*  
+1.651.994.3862  
jgrider@scisoc.org

---

**Lisa Anderson**, *Administrative Coordinator*  
+1.651.994.3809  
landerson@scisoc.org

**Jordana Anker**, *Technical Editor*  
+1.651.994.3866  
janker@scisoc.org

**Leah Barna**, *Meeting Planner*  
+1.612.813.0363  
lbarna@scisoc.org

**Susan Casey**, *Meeting Coordinator*  
+1.651.994.3846  
scasey@scisoc.org

**Beth Elliott**, *Marketing Associate*  
+1.651.994.3847  
belliott@scisoc.org

**Cheryl Sundquist**, *Member Relations Specialist*  
+1.651.994.3801  
csundquist@scisoc.org

**Ronda Thompson**, *Education Manager & Sponsorship Sales*  
+1.651.994.3836  
rthompson@scisoc.org

**Debby Woodard**, *Exhibits & Advertising Sales*  
+1.651.994.3817  
dwoodard@scisoc.org



## Young Scientist Workshops

Generously Sponsored by



### Saturday, July 7 • 08:00 – 16:30 • Room 203

**Co-chairs:** Farid Dorkoosh, *Synthon BV, The Netherlands* and Roderick Walker, *Rhodes University, South Africa*

This one-day workshop is focused on the application of basics of pharmaceutical sciences in drug delivery. It will offer information on diffusion, solubility, rheology, colloid chemistry, and polymeric systems including hydrogels and methacrylate matrix systems. This workshop will also discuss the considerations and challenges for developing sustained release formulations both from academic and industrial points of view.

07:45 – 08:15	Breakfast
08:20 – 08:30	Welcome and Introduction Farid Dorkoosh, <i>Synthon BV, The Netherlands</i>
08:30 – 09:00	Diffusion Juergen Siepmann, <i>University of Lille II, France</i>
09:00 – 09:30	Solubility Thomas Rades, <i>Otago University, New Zealand</i>
09:30 – 10:00	Flow, Rheology, and Viscosity Raid Alany, <i>University of Auckland, New Zealand</i>
10:00 – 10:30	Break
10:30 – 11:00	Polymeric Surfactant Chemistry Glen Kwon, <i>University of Wisconsin, U.S.A.</i>
11:00 – 11:30	Colloid Chemistry Sven Frokjaer, <i>Danish University, Denmark</i>
11:30 – 12:00	Hydrogels: Preparation, Characterization, and Pharmaceutical Applications Wim Hennink, <i>University of Utrecht, The Netherlands</i>
12:00 – 13:00	Lunch break on your own
13:00 – 13:30	Controlled Release Tablet and Pellet Technologies—An Overview Rod Walker, <i>Rhodes University, South Africa</i>
13:30 – 14:30	Formulation and Processing of Multiparticulate Sustained Release Systems and Formulation and Processing of Matrix Sustained Release Systems Brian A.C. Carlin, <i>FMC BioPolymer, U.S.A.</i>
14:30 – 15:00	Formulation and Processing of Methacrylate Multiparticulate Sustained Release Systems Nasser Nyamweya, <i>Degussa Pharma Polymers, U.S.A./Canada</i>
15:00 – 15:30	Break

15:30 – 16:00	Functional Film Coating—Processes, Parameters, Formulations Brigitte Skalsky, <i>Degussa, Germany</i>
16:00 – 16:30	Considerations of Solubility and Other Physico-Chemical Characteristics in the Development of Oral CR Dosage Forms Vishal Gupta, <i>Tyco Healthcare Mallinckrodt, U.S.A.</i>

### Sunday, July 8 • 08:00 – 13:00 • Room 203

**Co-chairs:** Farid Dorkoosh, *Synthon BV, The Netherlands* and Roderick Walker, *Rhodes University, South Africa*

This workshop will provide the young scientists with an introduction of various controlled release technologies in the area of Consumer and Diversified Products. The participants in this workshop will be given an overview of microencapsulation technologies used in the areas of Personal Care, Flavor and Fragrance, and Industrial Applications. The students will learn how to do IP searches in the field of controlled release technologies. The workshop will give an introduction to fluid bed technology.

07:45 – 8:15	Breakfast
08:20 – 08:30	Welcome/C&DP Overview Teresa Virgallito, <i>Givaudan Flavors, U.S.A.</i>
08:30 – 09:00	IP Search of Controlled Release Technologies Ronald Versic, <i>Ronald T. Dodge Company, U.S.A.</i>
09:00 – 09:30	Controlled Release in Personal Care Nava Dayan, <i>Lipo Chemicals Inc., U.S.A.</i>
09:30 – 10:00	Controlled Release of Fragrances Claudio Ortiz, <i>Colgate-Palmolive Company, U.S.A.</i>
10:00 – 10:30	C&DP Display/Break
10:30 – 11:00	Controlled Release in Food Applications Anil Gaonkar, <i>Kraft Foods, U.S.A.</i>
11:00 – 11:30	Flavor Delivery Systems Teresa Virgallito, <i>Givaudan Flavors, U.S.A.</i>
11:30 – 12:00	Encapsulation Systems for Industrial Application Douglas Dale, <i>Genencor, A Danisco Division, U.S.A.</i>
12:00 – 12:30	Fluid Bed Technology Charles Frey, <i>Coating Place Inc., U.S.A.</i>
12:30 – 13:00	C&DP Product Display



# PODIUM

34th Annual Meeting & Exposition of the Controlled Release Society



Courtesy of the Long Beach CVB.

Podium



# Daily Schedule

## Saturday, July 7

07:00 – 17:30 • **Main Entrance Lobby**

Attendee Services Desk Open

07:00 – 17:00 • **Promenade Ballroom C**

Speaker Preparation Room Open

07:30 – 17:00 • **Room 102A**

Workshop 2: Molecular Imaging and Drug Delivery

*Sponsored by*



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**SOLIQS**

07:30 – 17:00 • **Room 103A**

Workshop 3: Sustained Release Parenteral Products:  
In Vitro and In Vivo Considerations

*Sponsored by*



08:00 – 16:30 • **Room 203**

Young Scientist Workshop

*Sponsored by*



08:00 – 17:00 • **Room 101B**

Workshop 1: Micro- and Nanoencapsulation: Formulation,  
Applications, and Processes

*Sponsored by*



## Sunday, July 8

07:00 – 20:00 • **Main Entrance Lobby**

Attendee Services Desk Open

07:00 – 16:00 • **Promenade Ballroom C**

Speaker Preparation Room Open

08:00 – 13:00 • **Room 203**

Young Scientist Workshop

08:30 – 12:00 • **Room 101B**

Workshop 1: Micro- and Nanoencapsulation: Formulation,  
Applications, and Processes

*Sponsored by*



13:00 – 16:30 • **Rooms 102A, 102B, 102C, 103A**

Releasing Technology Workshops

13:30 – 15:00 • **Room 103C**

Local Chapter Meeting

13:30 – 16:45 • **Promenade Ballroom A**

Soapbox Sessions

*Sponsored by*



molecular profiles  
experts in analysis

14:30 – 15:30 • **Room 103B**

Board of Scientific Advisors Meeting

16:00 – 17:30 • **Room 101B**

Highlights of Student Posters

*Sponsored by*



17:15 – 18:00 • **Exhibit Hall A**

Exhibitor Welcome & Orientation

17:30 – 18:30 • **102A**

Bioactive Materials Pearls of Wisdom—Viral vs. Non-viral  
Gene Delivery

17:30 – 18:30 • **102C**

Consumer and Diversified Products Pearls of Wisdom—  
Nanotechnology: Economic Benefit or Potential Hazard

17:30 – 18:30 • **102B**

Veterinary Pearls of Wisdom—*In Vitro* Drug Release Tests  
are Invaluable Tools in Veterinary Product Development  
and Quality Control

18:30 – 19:30 • **Hall A**

Welcome Reception

Exhibitor Networking and Poster Viewing

## Monday, July 9

Bioactive Materials education is sponsored by



Consumer and Diversified Products (C&DP) education is sponsored by



**Coating Place Inc.**  
THE ORIGINAL WURSTER TECHNOLOGY SOURCE

**06:30 – 18:30 • Main Entrance Lobby**  
Attendee Services Desk Open

**06:30 – 16:00 • Promenade Ballroom C**  
Speaker Preparation Room Open

**07:00 – 08:00 • Room 102**  
Get Up; Get Educated!  
The Basics of *In Vitro* Dissolution Testing  
Brian Crist, Varian, U.S.A.

**08:00 – 09:00 • Grand Ballroom B**  
Welcome to CRS  
Award Ceremony & CRS Member Meeting

**09:00 – 10:00 • Grand Ballroom B**  
Plenary Presentation: Non-Canonical Amino Acids in Protein Design, Evolution and Analysis  
David A. Tirrell, California Institute of Technology, U.S.A.

**10:00 – 10:45 • Exhibit Hall A**  
Exhibitor Networking Opportunity at Refreshment Break  
Poster Session I Authors Present

**10:00 – 18:00 • Exhibit Hall A**  
Exhibit Hall Open  
Poster Viewing Available

**10:00 – 17:30 • Exhibit Hall A**  
Web Café Open – *Sponsored by*



**10:45 – 12:15 • Room 102**  
Advances in Peptide and Protein Delivery

**10:45 – 12:15 • Room 103 A/B**  
Advances in Polymer Micelles

**10:45 – 12:15 • Room 202**  
Biodegradable/Biocompatible Polymers

**10:45 – 12:15 • Grand Ballroom B**  
Cellular Barriers

**10:45 – 12:15 • Room 203 A/B**  
Advances in Process Technology

**10:45 – 12:45 • Room 101**  
Gastroretention—Animal vs. Human Mini-symposium

**10:45 – 12:45 • Promenade Ballroom A**  
Industrial Session I  
*Sponsored by*



**12:15 – 14:00 • Exhibit Hall A**  
Exhibitor Networking Opportunity and Poster Viewing  
*Lunch on own. Available for purchase in Exhibit Hall.*

**12:30 – 13:30 • Room 103C**  
Lunch with the Experts

**14:00 – 14:30 • Grand Ballroom B**  
Founders Award Recipient Presentation: Allan Hoffman, University of Washington, U.S.A.

**14:30 – 15:00 • Grand Ballroom B**  
Young Investigator Award Recipient Presentation: David Putnam, Cornell University, U.S.A.

**15:00 – 16:00 • Exhibit Hall A**  
Exhibitor Networking Opportunity at Refreshment Break  
Poster Session I Authors Present

**16:00 – 17:30 • Room 102**  
Eurand Special Session  
*Sponsored by*



**16:00 – 17:30 • Room 103 A/B**  
Advances in Vaccine Delivery  
*Sponsored by*



**16:00 – 17:30 • Grand Ballroom B**  
Nanotechnology I

**16:00 – 17:30 • Room 203 A/B**  
New Polymers for Drug Delivery

**16:00 – 17:30 • Room 202**  
Controlled Release in Food

**16:00 – 18:00 • Room 101**  
Delivery for Bioimaging Mini-symposium

**16:00 – 18:00 • Promenade Ballroom A**  
Industrial Session II  
*Sponsored by*



**18:30 – 19:30 • Room 103C**  
Vet Get Together  
*Sponsored by*



**Pfizer Animal Health**

## Monday Morning

	Room 102 <b>Advances in Peptide and Protein Delivery</b> R Niven, S Schwendeman	Room 103 A/B <b>Advances in Polymer Micelles</b> C Allen, J-C Leroux	Room 203 A/B <b>Advances in Process Technology</b> J Paik, T Virgallito	Room 202 <b>Biodegradable/Biocompatible Polymers</b> M Chaubal, D Putnam
10:45	<b>1 Invited Speaker: Advances in Peptide and Protein Delivery</b> E Mathiowitz, A Morello, B Laulicht, H Qian, J Reineke, M Harrison, P Cheifetz, S Furtado, R Burrill Brown University, USA	<b>6 Invited Speaker: Polymeric Micelles for Combination Drug Delivery</b> G Kwon University of Wisconsin, USA	<b>11 Invited Speaker: Plasma Generated Polymer Films for Drug Delivery Applications</b> D Bhattacharyya, C Susut, J Cho, L Tang, R Timmons University of Texas at Arlington, USA	<b>16 Invited Speaker: <i>In Situ</i> Gelling Biodegradable Polymers - Intratumoral Delivery of Paclitaxel</b> A Shikanov, B Vaisman, A Domb Hebrew University, Israel
11:00				
11:15	<b>2 Preparation and Characterization of Polyethylene glycol-modified TNF-Related Apoptosis Inducing Ligand (TRAIL)</b> C Jin, S Cho, S Chae, K Lee Sungyunkwan University, Korea	<b>7 Poly (ethylene oxide)-poly(E-caprolactone) micelles in different morphologies: Advantages of worm-like micelles for delivery of paclitaxel in lung cancer therapy</b> S Cai, T Minko, D Discher University of Pennsylvania, USA	<b>12 Control Release of Biocide Incorporated Drawn Polymers: Molecular Orientation or/and Dispersion?</b> S Iconomopoulou, A Nohos, N Zoitos, G Voyiatzis FORTH/ICE-HT, Greece	<b>17 Synthesis of Degradable Linear Poly(ethylene glycol) As Multifunctional Drug Delivery Carriers</b> N Wang, A Dong, E Van Kirk, H Tang, W Murdoch, M Radosz, Y Shen University of Wyoming, USA
11:30	<b>3 Clinical Trial of Recombinant Human PH20 Hyaluronidase's Effect on Subcutaneous Absorption and Pharmacokinetics of a Large Protein Molecule Therapeutic</b> R Yocum Halozyme Therapeutics, Inc, USA	<b>8 Temperature-Controlled Intracellular Localization of Thermoresponsive Polymeric Micelles</b> J Akimoto, M Nakayama, K Sakai, T Okano Waseda University, Japan	<b>13 Effect of Different Plasticizers on the Storage Stability of Enteric Coated Soft Gelatine Capsules</b> B Hans, R Thomas, F Thomas Degussa, Germany	<b>18 Self-Expandable Polymeric Stents with a Shape-Memory Property</b> M Chen, F Mi, C Liu, W Lai, H Sung National Tsing Hua University, Taiwan
11:45	<b>4 Self-assembled Green Tea-Nanocomplex Which Achieves Synergistic Effects</b> J Chung, M Kurisawa, L Zhuo Institute of Bioengineering & Nanotechnology, Singapore	<b>9 Hydrolyzable Core Crosslinked Thermosensitive Polymeric Micelles</b> C Rijcken, C Van Nostrum, W Hennink University Utrecht, The Netherlands	<b>14 Monitoring a Cross-Linked Hydrogel Reaction By FT-NIR Spectroscopy</b> P McDonald, R Cochrane, C Colligan, F Salim, D Carr, M Livingstone, J Halliday Controlled Therapeutics, UK	<b>19 <i>In vitro</i> differentiation of mouse embryonic stem cells into pancreatic insulin producing cells using three dimensional alginate scaffolds</b> N Wang, S Stolnik, L Buttery, G Adams University of Nottingham, UK
12:00	<b>5 MRI Contrast Enhanced Polyelectrolyte Complexes for Traceable VEGF Delivery</b> M Huang, V Samadhi, J Huang, M Bilgen, C Berkland University of Kansas, USA	<b>10 pH responsive Elastin-Like Polypeptides (ELPs) for low pH-induced drug release</b> D Callahan, A Chilkoti Duke University, USA	<b>15 Application of multivariate analysis in understanding polymorphic transformation models</b> F Tian, N Sandler, T Rades University of Otago, New Zealand	<b>20 Characterization of Charged Hydrogels for Nerve Regeneration</b> M Dadsetan, A Knight, K Arcaute-Cantu, C Brophy, H Mirzadeh, R Wicker, A Windebank, M Yaszemski Mayo Clinic, USA
12:15	<b>End of Session</b>	<b>End of Session</b>	<b>End of Session</b>	<b>End of Session</b>
12:30				
12:45				

	Grand Ballroom B <b>Cellular Barriers</b>  P Junginger, R Boado	Promenade Ballroom A <b>Industrial Session I</b>  D Friend	Room 101 <b>Mini-symposium: Gastroretention – Animal vs. Human</b>  R Alany, S Senel
10:45	<b>21 Invited Speaker: Blood-Brain Barrier Delivery with Molecular Trojan Horses</b> <u>W Partridge</u> UCLA, USA	<b>25 Invited Speaker: Biodegradable Polyesters as Excipients for Controlled Release Products</b> <u>J Gibson</u> Durect Corporation, USA	<b>29 Invited Speaker: Human versus veterinary species comparison in GI physiology</b> <u>K Sagawa</u> Pfizer Global Research & Development, USA
11:00			
11:15	<b>22 Invited Speaker: Understanding Endocytic Pathways Towards Improved Intracellular Delivery and Targeting of Therapeutic Macromolecules</b> <u>A Jones</u> Cardiff University, UK	<b>26 Invited Speaker: Protein Formulation for Injectable Drug Delivery Systems</b> <u>F Okumu</u> Durect Corporation, USA	<b>30 Invited Speaker: Accidental gastroretention</b> <u>C Wilson</u> SIPBS, UK
11:30			
11:45	<b>23 The role of apolipoproteins in nanoparticle-mediated transport of drugs into the brain</b> <u>J Kreuter</u> , T Hekmatara, S Dreis, T Vogel, K Langer, A Khalanski, S Gelperina Johann Wolfgang Goethe University, Germany	<b>27 Invited Speaker: Multifunctionality–Novel Set of Requirements Towards Pharmaceutical Nanocarriers</b> <u>V Torchilin</u> Northeastern University, USA	<b>31 Invited Speaker: Gastro-retention – Large (Ruminant) Animals Versus Human</b> <u>K Ellis</u> Consultant, Australia
12:00	<b>24 Controlled Cellular Delivery of Bcr-Abl Coiled-Coil Domain for Apoptosis of Chronic Myelogenous Leukemia Cells</b> M Kakar, J Davis, <u>C Lim</u> University of Utah, USA		
12:15	<b>End of Session</b>	<b>28 Invited Speaker: The Interface Between Intellectual Property Rights and the Legal Framework of the Pharmaceutical Regulatory Process</b> <u>A Lademann</u> LifeCycle Pharma, Denmark	<b>32 Invited Speaker: <i>In Vivo</i> and <i>In Vitro</i> Factors Influencing the Performance of Parenteral Controlled Release Systems</b> <u>M Martinez</u> Food and Drug Administration, USA
12:30			
12:45		<b>End of Session</b>	<b>End of Session</b>



## Monday Afternoon

	Room 103 A/B <b>Advances in Vaccine Delivery</b>  O Alpar, S Hook	Room 202 <b>Controlled Release in Food</b>  A Gaonkar, P Richardson	Room 102 <b>Eurand Special Session</b>  L Illum, S Perrett	Promenade Ballroom A <b>Industrial Session II</b>  S Cady
16:00	<b>33 Invited Speaker: Building New Vaccines Against TB</b> <u>Y Perrie</u> Aston University, UK	<b>38 Invited Speaker: Formation and stability of biopolyelectrolyte multilayers and their potential use for the encapsulation and controlled release of active ingredients in foods</b> J Moffat, <u>R Parker</u> , T Noel, S Ring Institute of Food Research, UK	<b>43 Invited Speaker: A passionate affair with chitosan</b> <u>L Illum</u> IDentity, UK	<b>47 Invited Speaker: In Vivo-In Vitro Correlation</b> <u>D Burgess</u> University of Connecticut, USA
16:15				
16:30	<b>34 Liposaccharides in vaccine delivery</b> <u>I Toth</u> , P Moyle, P Simerska, Y Fujita, A Abdel-Aal, C Olive, M Good University of Queensland, Australia	<b>39 Flavour Encapsulation into Yeast Cells and Cooking Stability in Aqueous Food Products</b> <u>E Heinrich</u> Unilever, The Netherlands	<b>44 Eurand Awardee – To be announced</b>	<b>48 Invited Speaker: Safety Considerations Associated with Veterinary Parenteral Controlled Release Systems</b> <u>M Martinez</u> Food and Drug Administration, USA
16:45	<b>35 Novel N-trimethyl chitosan - poly (<math>\gamma</math>-glutamic acid) nanoparticles for mucosal delivery of vaccines</b> S Salomon, E Cevher, S Somavarapu, X Li, S Brocchini, T Sesardic, <u>H Alpar</u> University of London, UK	<b>40 Innovative Microencapsulation and Release Technology for Accelerating Cheese Ripening</b> <u>K Kailasapathy</u> University of Western Sydney, Australia	<b>45 Eurand Awardee – To be announced</b>	
17:00	<b>36 Adsorption of Protein Antigens onto PLG Microparticles Studied by X-ray Photoelectron Spectroscopy (XPS) and Time of Flight Secondary Ion Mass Spectrometry (ToF-SIMS)</b> M Perkins, C Madden-Smith, N Patel, <u>A Parker</u> , S Luk, J Chesko, D O'Hagan, M Singh Molecular Profiles, Nottingham, UK	<b>41 Microspheres based on soy, zein protein as oral delivery vehicles. II. In vitro study with a dynamic artificial digestive system</b> <u>L Chen</u> , G Hébrard, S Denis, E Beyssac, M Alric, M Subirade Université Laval, Canada	<b>46 Eurand Awardee – To be announced</b>	<b>49 Invited Speaker: Quality Attributes Influencing the Performance of Parenteral Controlled Release Systems</b> <u>M Huynh</u> Food and Drug Administration, USA
17:15	<b>37 Comparison of immunogenicity of sustained release implants containing imiquimod, alpha-galactosylceramide or Quil-A</b> <u>J Myschik</u> , W McBurney, T Hennessy, T Rades, S Hook University of Otago, New Zealand	<b>42 Tailoring efficacy by choosing the appropriate encapsulation technology</b> <u>F Weinbreck</u> NIZO Food Research, The Netherlands	<b>End of Session</b>	
17:30	<b>End of Session</b>	<b>End of Session</b>		<b>50 Invited Speaker: Positioning for a Liquidity Event</b> T Howard, <u>D Bingham</u> Valeo Partners, USA
17:45				
18:00				<b>End of Session</b>

	Room 101 Mini-symposium: Delivery for Bioimaging A Bogdanov, Z-R Lu	Grand Ballroom B Nanotechnology I D Dale, D Oupicky, N Vasisht	Room 203 A/B New Polymers for Drug Delivery N Medicott, M Yokoyama
16:00	<b>51 Invited Speaker: Biodegradable Macromolecular MRI Contrast Agents</b> <u>Z Lu</u> University of Utah, USA	<b>55 Invited Speaker: Bio-inspired Nanomaterials for Tissue Regeneration and Sensing</b> <u>M Stevens</u> Imperial College London, UK	<b>60 Invited Speaker: Supramolecular Polyrotaxanes for Drug Delivery</b> <u>N Yui</u> Japan Advanced Institute of Science and Technology, Japan
16:15			
16:30	<b>52 Invited Speaker: Imaging Molecular Processes by Optical Methods</b> W Akers, M Berezin, A Almutain, J Frechet, <u>S Achilefu</u> Washington University, USA	<b>56 Surface and nano-environmental influences induced by polymer-based nanoparticles on skin penetration of a lipoidic drug</b> <u>M Schneider</u> , J Luengo, A Schneider, C Lehr, U Schaefer Saarland University, Germany	<b>61 Polyarginine Segments in Block Copolypeptides Drive Vesicular Formation and Cellular Entry</b> E Holowka, <u>V Sun</u> , D Kamei, T Deming UCLA, USA
16:45		<b>57 Gold Nanorods as a Photosensitizer for Photothermal Therapy</b> <u>T Niidome</u> , Y Niidome, M Yamagata, T Kawano, T Mori, Y Katayama Kyushu University, Japan	<b>62 Well-defined Diblock Copolymers Synthesized by Atom Transfer Radical Polymerization for Gene Delivery</b> R Tang, <u>C Wang</u> University of Minnesota, USA
17:00	<b>53 Invited Speaker: Monitoring Drug Delivery and Tissue Engineering by ESR and NMR Spectroscopy and Imaging</b> <u>K Maeder</u> Martin Luther University Halle, Germany	<b>58 Nanofabricated Particles for Engineered Drug Therapies: A Preliminary Biodistribution Study of PRINT™ Nanoparticles</b> <u>S Gratton</u> , P Pohlhaus, J Lee, J Guo, M Cho, J Desimone University of North Carolina at Chapel Hill, USA	<b>63 PEHAM Dendrimers for Drug Delivery Applications</b> <u>S Svenson</u> , A Chauhan, L Reyna, D Tomalia Dendritic Nanotechnologies, Inc, USA
17:15		<b>59 Intracellular Uptake of Silica-Iron Oxide Nanotubes</b> <u>A Nan</u> , X Bai, S Son, S Lee, H Ghandehari University of Maryland at Baltimore, USA	<b>64 Cyclic Polymers as Scaffolds for Drug Delivery</b> <u>S Grayson</u> Tulane University, USA
17:30	<b>54 Invited Speaker: In Vivo Applications of "Sensing" Imaging Agents</b> <u>A Bogdanov</u> University of Massachusetts, USA	<b>End of Session</b>	<b>End of Session</b>
17:45			
18:00	<b>End of Session</b>		

# Daily Schedule

**Tuesday, July 10**

*Bioactive Materials education is sponsored by*



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**06:30 – 16:00 • Promenade Ballroom C**  
Speaker Preparation Room Open

**06:30 – 17:30 • Main Entrance Lobby**  
Attendee Services Desk Open

**07:00 – 08:00 • Room 102**  
Get Up; Get Educated!  
*In-vitro/In-vivo* Correlation  
Raimar Loebenberg, University of Alberta, Canada

**08:00 – 09:00 • Grand Ballroom B**  
Plenary Presentation: Improved Childhood Vaccines—A Grand Challenge in Global Health  
Steven Buchsbaum, Bill and Melinda Gates Foundation, U.S.A.

**09:00 – 09:30 • Exhibit Hall A**  
Exhibitor Networking Opportunity at Refreshment Break  
Poster Session II Authors Present

**09:00 – 17:00 • Exhibit Hall A**  
Exhibit Hall Open  
Poster Viewing Available

**09:00 – 16:30 • Exhibit Hall A**  
Web Café Open – *Sponsored by*



**09:30 – 11:00 • Room 103 A/B**  
Oral Delivery  
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**09:30 – 11:00 • Grand Ballroom B**  
Nanotechnology II

**09:30 – 11:00 • Room 202**  
Polymer Conjugates

**09:30 – 11:00 • Room 203 A/B**  
Nonviral Gene Delivery

**09:30 – 11:00 • Promenade Ballroom B**  
Advances in Colloidal Drug Delivery

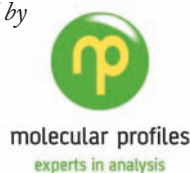
**09:30 – 11:00 • Room 102**  
Emerging Role of Alternative Delivery in Veterinary Medicine

*Sponsored by*

**09:30 – 12:00 • Room 101**  
Recent Delivery in Diabetes Mini-symposium  
*Sponsored by*



**09:30 – 10:15 • Promenade Ballroom A**  
Soapbox Sessions Opens Industrial Session III  
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**10:15 – 11:45 • Promenade Ballroom A**  
Industrial Session III  
*Sponsored by*



**11:00 – 13:00 • Exhibit Hall A**  
Exhibitor Networking Opportunity and Poster Viewing  
*Lunch on own. Available for purchase in Exhibit Hall.*

**11:30 – 12:30 • Room 103C**  
Lunch with the Experts

**13:00 – 14:00 • Grand Ballroom B**  
Plenary Presentation: Cell Sheet Tissue Engineering and Their Clinical Applications  
Teruo Okano, Tokyo Women's Medical University, Japan  
*Sponsored by NOF*

**14:00 – 14:30 • Exhibit Hall A**  
Exhibitor Networking Opportunity at Refreshment Break  
Poster Session II Authors Present

14:30 – 17:15 • Room 102

Capsugel Special Session

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14:30 – 16:00 • Promenade Ballroom B

Pulmonary Delivery

Sponsored by



14:30 – 16:00 • Room 202

Biomaterials and Biointerfaces

14:30 – 16:00 • Room 203 A/B

Innovative Materials and Release Mechanisms

14:30 – 16:00 • Room 103 A/B

Biological Responses to Nanomaterials

14:30 – 16:30 • Room 101

Liposomes: Alive & Kicking Mini-symposium

Sponsored by



14:30 – 16:30 • Promenade Ballroom A

Industrial Session IV

Sponsored by



18:30 – 22:00 • Aquarium of the Pacific

Closing Reception and Banquet

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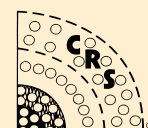
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## Tuesday Morning

	Promenade Ballroom B <b>Advances in Colloidal Drug Delivery</b> M Nacucchio, L Rosenmayr-Templeton	Room 102 <b>Emerging Role of Alternative Delivery in Veterinary Medicine</b> R Alany, S Senel	Room 101 <b>Mini-symposium: Recent Delivery in Diabetes</b> J Greenstein, A Kowalski	Grand Ballroom B <b>Nanotechnology II</b> D Dale, J Fix, N Vasisht
9:30	<b>65 Invited Speaker: Theragnostic Imaging of Tumors by Delivery Carriers</b> <u>I Kwon</u> , K Kim, J Kim, K Park, H Nam, S Lee, K Choi, I Kim Korea Institute of Science and Technology, Korea	<b>70 Invited Speaker: Canine Pharmacogenetics</b> <u>K Mealey</u> Washington State University, USA	<b>75 Invited Speaker: Diabetes Research Obstacles and Opportunities</b> <u>A Kowalski</u> Juvenile Diabetes Research Foundation, USA	<b>81 Invited Speaker: Nanotechnology for Controlled Release: Putting the Market into Perspective</b> <u>M Bourne</u> Bourne Research LLC, USA
9:45			<b>76 Invited Speaker: Diabetes Research Obstacles and Opportunities</b> <u>J Greenstein</u> Juvenile Diabetes Research Foundation, USA	
10:00	<b>66 Coenzyme Q10-Loaded Liposomes Effectively Protect the Myocardium in Rabbits with Experimental Myocardial Infarction</b> D Verma, W Hartner, <u>T Levchenko</u> , V Torchilin Northeastern University, USA	<b>71 A Single Artificial Insemination in Sows with Semen Controlled Release Capsules</b> A Riccardi, D Toscani, S Villani, M Faustini, V Russo, L Sesso, M Torre, U Conte, <u>M Klinger</u> , D Vigo University of Milan, Italy	<b>77 Invited Speaker: Pharmacodynamic and Engineering Issues with Creating an Artificial Pancreas</b> <u>B Buckingham</u> Stanford Medical Center, USA	<b>82 Mesoporous Silica Nanoparticles with Stimulus-Controlled Drug Uptake and Release</b> Y You, K Kalebaila, S Brock, <u>D Oupicky</u> Wayne State University, USA
10:15	<b>67 A Cationic Liposomal Dosage Form of Methotrexate for Specific Delivery to Inflamed Tissue in RA</b> <u>M Rankl</u> , B Schulze, S Lüdemann, M Eichhorn, U Michaelis, M Funk MediGene AG, Germany	<b>72 Effect of Polyethylene Glycol on Release of Vitamin B12 from Ethylene-vinyl Acetate Copolymer Films</b> X Li, M Razzak, <u>I Tucker</u> University of Otago, New Zealand		<b>83 Biodegradable Planar Osmotic Pump for Long-term and Controlled Delivery of Basic Fibroblast Growth Factor</b> <u>W Ryu</u> , Z Huang, A Palmquist, F Prinz, S Goodman, R Fasching Stanford University, USA
10:30	<b>68 In-vitro Model for the Investigation of Drug Delivery Systems Direct from Nose-to-Brain via Olfactory Epithelium</b> <u>A Mistry</u> , L Illum, S Stolnik University of Nottingham, UK	<b>73 In Vivo Studies with Streptococcus equi Antigens Encapsulated in Polymeric Nanospheres</b> <u>H Florindo</u> , S Pandit, L Gonçalves, H Alpar, A Almeida UCTF, Portugal	<b>78 Invited Speaker: Foreign Body Encapsulation of Implanted Biosensors and the Potential for Modification by Drug Release</b> <u>K Ward</u> Legacy Health System, USA	<b>84 Evaluation of Mesoporous TCPSi, MCM-41, SBA-15 and TUD-1 Materials as Oral Drug Delivery Systems</b> <u>T Heikkilä</u> , J Salonen, J Tuura, N Kumar, T Salmi, D Murzin, M Hamdy, G Mul, L Laitinen, A Kaukonen, J Hirvonen, V Lehto University of Turku, Finland
10:45	<b>69 Particles Delivered via Non-degradative Pathway Spend More Time Near Cell Nucleus</b> <u>K Hida</u> , S Lai, C Chen, J Hanes Johns Hopkins University, USA	<b>74 Rheological and Micro-Structural Characteristics of In-Situ Gelling Systems for Ocular Drug Delivery</b> I Rupenthal, C Green, T Rades, <u>R Alany</u> University of Auckland, New Zealand		<b>85 Drug Eluting Nanostructured Coatings for Controlled Release</b> <u>K Popat</u> , M Eltgroth, T Desai UCSF, USA
11:00	End of Session	End of Session	<b>79 Invited Speaker: A Clinically Relevant Microcapsule for Islet Transplantation</b> S Saffley, H Cui, C Burden, S Cauffiel, B Holbrook, <u>C Weber</u> Emory University, USA	End of Session
11:15				
11:30			<b>80 Invited Speaker: Use of Encapsulated Islets to Treat Diabetes Without Immunosuppression</b> <u>D Scharp</u> Prodo Laboratories, USA	
11:45				
12:00			End of Session	

	Room 203 A/B Nonviral Gene Delivery	Room 103 A/B Oral Delivery	Room 202 Polymer Conjugates	Promenade Ballroom A Industrial Session III
	L Brown	G Russell-Jones, J S Kim	W Hennick	T Broman
9:30	<b>86 Invited Speaker: Systemic Delivery of siRNAs and Antagomirs: From Mice to Monkey, on the Way to Man</b> <u>M Manoharan</u> Alnylam Pharmaceuticals, USA	<b>91 Invited Speaker: Nanostructured heparin derivatives for oral delivery</b> <u>Y Byun</u> , S Kim, D Lee, C Kim, J Nam Seoul National University, South Korea	<b>96 Invited Speaker: Relationship Between the Structure of Polymeric Drugs and Their Accumulation and Intracellular Trafficking: What Do We Know About It?</b> <u>B Rihova</u> , J Strohal, O Hovorka, T Etrych, T Mrkván, D Plocová, J Bouček, P Chytil, V Šubr, R Pola, K Ulbrich Academy of Sciences of the Czech Republic, Czech Republic	
9:45				
10:00	<b>87 Gene Delivery Systems Responding to the Cellular Signals (D-RECS) for c-Src</b> <u>Y Sato</u> , K Terada, D Asai, J Oishi, J Kang, T Mori, T Niidome, Y Katayama Kyushu University, Japan	<b>92 Improving oral delivery through the use of permeation enhancers</b> <u>K Whitehead</u> , S Mitragotri University of California, USA	<b>97 Polymer-Phloridzin Conjugates as an Anti-diabetic Drug that Inhibits Glucose Absorption through the Na<sup>+</sup>/Glucose Cotransporter(SGLT1) in the Small Intestine</b> <u>Y Ikumi</u> , T Kida, S Sakuma, S Yamashita, M Akashi Osaka University, Japan	
10:15	<b>88 Efficient Delivery of Antisense Oligo-Nucleotides In Vitro &amp; In Vivo Using Degradable Polymersomes</b> <u>Y Kim</u> , M Tewari, D Pajerowski, S Sen, W Jason, S Sirsi, G Lutz, D Discher University of Pennsylvania, USA	<b>93 Oleyl Glycerate, a Structural Isomer of Monoolein, Dramatically Alters the Bioavailability of a Poorly Water Soluble Drug from Lipid-Based Liquid Crystalline Formulations in Rats</b> <u>B Boyd</u> , S Khoo, D Whittaker, G Davey, C Porter Monash University, Australia	<b>98 A PEGylated Polymer-Photosensitizer Conjugate Containing Gd (III) for Site-Specific MRI-guided Photodynamic Therapy of Cancer</b> <u>A Vaidya</u> , Y Sun, Y Feng, E Jeong, Z Lu University of Utah, USA	<b>101 Invited Speaker: Design and Selection of Extended Release Dosage Forms—An Industrial Perspective</b> <u>I Hardy</u> Merck Sharp & Dohme, UK
10:30	<b>89 Novel Non-viral Targeted siRNA Delivery System</b> <u>C Yang</u> , Y Lo, C Liu, W Su, M Lu Industrial Technology Research Institute, Taiwan	<b>94 Site-specific Drug Delivery to the Middle Region of the Small Intestine Reduces Food-Drug Interactions That Cause Low Absorption of Drugs Taken After a Meal</b> <u>S Sakuma</u> , F Tanno, Y Masaoka, M Kataoka, T Kozaki, R Kamaguchi, H Kokubo, S Yamashita Setsunan University, Japan	<b>99 Synthesis and biological properties of Folate-PEG-gemcitabine</b> <u>F Canal</u> , G Pasut, F Veronese, O Schiavon University of Padova, Italy	
10:45	<b>90 Prevention and Reversal of Autoimmune Diabetes by PROMAXX Antisense Oligonucleotide Microspheres</b> K Gillis, <u>L Brown</u> , J Machen, K Nylander, J Harnaha, R Lakomy, A Styche, M Gallo, J Knox, K Hogeland, M Trucco, N Giannoukakis Baxter Healthcare Corporation, USA	<b>95 PAMAM Dendrimers: Surface Modification and Potential in Oral Delivery of SN-38</b> <u>R Kolhatkar</u> , H Ghandehari University of Maryland at Baltimore, USA	<b>100 Investigating the Cytotoxicity and Mechanism of Action of Dextrin-Phospholipase A2 Conjugates as Novel Anti-tumour Agents</b> <u>E Ferguson</u> , R Duncan Cardiff University, UK	<b>102 Invited Speaker: Development and Scale-up Considerations for Osmotic Drug Delivery Systems</b> <u>A Thombre</u> Pfizer Global Research and Development, USA
11:00	<b>End of Session</b>	<b>End of Session</b>	<b>End of Session</b>	
11:15				<b>103 Invited Speaker: Quality by Design—Industrial Perspective</b> <u>N Jagota</u> Wyeth, USA
11:30				
11:45				<b>End of Session</b>
12:00				

## Tuesday Afternoon

	Room 103 A/B <b>Biological Responses to Nanomaterials</b> T Desai, A Parker	Room 202 <b>Biomaterials and Biointerfaces</b> S Hossainy, R Gurney	Room 102 <b>Capsugel Special Session</b> D Murachanian, R Mrsny	Promenade Ballroom A <b>Industrial Session IV</b> J Gibson
14:30	<b>104 Invited Speaker: Use of a Hierarchical Oxidative Stress Model to Study NanoBio Interactions and Toxicity</b> <u>A Nel</u> UCLA Medical Center, USA	<b>107 Invited Speaker: Biomimetic Hydrogels for Tissue Engineering and Regenerative Medicine</b> <u>J West</u> Rice University, USA	<b>112 Invited Speaker: Oral drug delivery with polymeric nanoparticles: A mechanistic approach</b> <u>V Preat</u> , A Des Rieux, V Fievez, L Plapied, M Alonso-Sande, Y Schneider Universite Catholique De Louvain, Belgium	<b>119 Invited Speaker: Preclinical Development of a Novel Anti-inflammatory Peptide</b> J Turner, R Mrsny, <u>D Friend</u> Unity Pharmaceuticals, USA
14:45				
15:00	<b>105 Invited Speaker: Mechanism of Oxidative Responsiveness in Polysulfide Nanoparticles</b> <u>N Tirelli</u> , P Carampin, V Khutoryanskiy, G Kilcher University of Manchester, UK	<b>108 Nano-Scaled Layered Inorganic/ Protein Hybrids and Their Characterization in Biological Activity</b> <u>H Chiu</u> National Chung Hsing University, Taiwan	<b>113 Silicon Nanowires for Improved Intestinal Bioadhesion</b> <u>K Fischer</u> , S Tao, A Mendelsohn, R Daniels, V Hardev, T Desai University of California, USA	<b>120 Invited Speaker: Added Product Complexities Demand Thoughtful Packaging: An Examination of What Packaging Can and Must Do for Medical Products</b> <u>L Bix</u> , H Lockhart Michigan State University, USA
15:15		<b>109 BMP2 Immobilisation on Extracellular Matrices to Generate an Interactive Niche for Human Mesenchymal Stem Cells</b> <u>P Seib</u> , M Grimmer, T Lenk, K Salchert, K Mueller, M Bornhaeuser, C Werner Leibniz Institute of Polymer Research and Max Bergmann Centre of Biomaterials, Germany	<b>114 Invited Speaker: <i>In vitro</i> Dissolution/Permeation System for Assessment of Oral Drug Absorption: Effect of Food, Formulation and Dose</b> <u>S Yamashita</u> , M Kataoka Setsunan University, Japan	
15:30	<b>106 Invited Speaker: Behavior of hMSC Cultured on Nanopatterned Surface</b> <u>K Leong</u> Duke University, USA	<b>110 Peritoneal Adhesion Prevention with an <i>In Situ</i> Cross-linkable Hyaluronan Gel Containing Tissue-type Plasminogen Activator in a Rabbit Repeated Injury Model</b> <u>Y Yeo</u> , E Bellas, C Highley, R Langer, D Kohane Massachusetts Institute of Technology, USA		<b>121 Invited Speaker: Development of Inhaled Pulmonary Drug Products</b> <u>J Patton</u> , J Weers Nektar Therapeutics, USA
15:45		<b>111 Coating Adhesion and Cohesion Evaluation of Drug Eluting Stents</b> <u>F Tang</u> , E Wang, E Tang, L Kleiner, S Hossainy, S Hsu, S Ramalingam Abbott Vascular Inc, USA	<b>115 Hydrogel Filled Micro-engineered Particles for Oral Delivery of Chemotherapeutic Agents</b> K Ainslie, <u>S Tao</u> , T Desai University of California San Francisco, USA	
16:00	<b>End of Session</b>	<b>End of Session</b>	<b>116 Invited Speaker: Efficient Oral Delivery of a Protein Pharmaceutical</b> <u>R Mrsny</u> Trinity Biosystems Inc, USA	<b>122 Invited Speaker: Regulatory Issues in Obtaining Approval of Drug-Device Combination Products</b> <u>G Baskinger</u> Vyteris, Inc, USA
16:15				<b>End of Session</b>
16:30			<b>117 Gastrointestinal Gene Delivery in Mice Using Polymeric Nanoparticles-in-Microsphere Oral System</b> <u>M Bhavsar</u> , M Amiji Northeastern University, USA	
16:45			<b>118 Novel Biomaterial-Binding Cyclodextrins for Controlled Drug Delivery in Oral Cavity</b> <u>X Liu</u> , R Reinhardt, H Lee, L Marky, D Wang University of Nebraska Medical Center, USA	
17:00			<b>End of Session</b>	

	Room 203 A/B <b>Innovative Materials and Release Mechanisms</b> R Versic, R Schmid	Room 101 <b>Mini-symposium: Liposomes: Alive &amp; Kicking</b> R Schiffelers, S Sofou	Promenade Ballroom B <b>Pulmonary Delivery</b> D O'Hagan, I Gonda
14:30	<b>123 Invited Speaker: Probiotics: New Formulations and Controlled Release</b> <u>H.Viernstein</u> University of Vienna, Austria	<b>128 Invited Speaker: Dendritic Cell Activation and Antigen Delivery by Cationic Lipids</b> <u>L.Huang</u> , W Yan, W Chen University of North Carolina, USA	<b>132 Invited Speaker: Advances in Pulmonary Drug Delivery</b> <u>P.Byron</u> Virginia Commonwealth University, USA
14:45			
15:00	<b>124 Applications of novel pregelatinized starch as a sustained release matrix carrier</b> <u>M.Endo</u> , K Obae, Y Yoshihito Asahi Kasei Chemicals Corporation, Japan	<b>129 Invited Speaker: Tumor-Targeted Liposomes That Attack Tumor-Associated Inflammation and Angiogenesis</b> M Banciu, M Fens, M Cabaj, J Metselaar, G Storm, <u>R.Schiffelers</u> Utrecht University, The Netherlands	<b>133 In Vivo Potential of Large Porous Particles for the Controlled Delivery of Insulin to the Lungs</b> <u>F.Ungaro</u> , R D'Emmanuele Di Villa Bianca, G De Rosa, A Miro, R Sorrentino, F Quaglia, M La Rotonda University of Napoli Federico II, Italy
15:15	<b>125 Application of EUDRAGIT®NM 30 D—Diclofenac Sodium Matrix Tablet Development</b> <u>H.Han</u> Degussa Co Ltd, China		<b>134 Effects of cell penetrating peptides and pegylation on polyplex size and transfection efficiency in mouse lungs</b> <u>J.Nguyen</u> , X Xie, M Neu, R Dumitrascu, T Schmehl, T Gessler, W Seeger, T Kissel Philipps-Universität, Germany
15:30	<b>126 A New Application of Low-Substituted Hydroxypropyl Cellulose (L-HPC): Aqueous Film Coating For Time-Controlled Released Tablets and Taste Masking</b> <u>N.Maruyama</u> Shin-Etsu Chemical Co, Ltd, Japan	<b>130 Invited Speaker: Engineered liposomes containing tunable model-rafts: basic studies and applications in targeted drug delivery</b> <u>S.Sofou</u> , G Kempegowda, S Karve Polytechnic University, USA	<b>135 Lung deposition and pharmacokinetic of tobramycin dry powder formulations in cystic fibrosis</b> <u>G.Pilcer</u> , J Goole, B Van Gansbeke, D Blocklet, C Knoop, F Vanderbist, K Amighi Université Libre de Bruxelles, Belgium
15:45	<b>127 Microcapsules for Multifunctional Industrial Coatings</b> <u>J.Oxley</u> , B Koene Southwest Research Institute, USA		<b>136 PROMAXX Microspheres for Pulmonary Delivery of Proteins and Peptides. Case Study: Human Growth Hormone</b> <u>J.Rashba-Step</u> , A Lambert, G Mehr, K Hogeland, T Scott Baxter Healthcare Corp, USA
16:00	<b>End of Session</b>	<b>131 Invited Speaker: Design and Performance of Acid-Sensitive Liposomes Using Vinyl Ether Lipids with Tunable Reactivity</b> J Van Den Bossche, J Kim, J Shin, J Grey, <u>D.Thompson</u> Purdue University, USA	<b>End of Session</b>
16:15		<b>End of Session</b>	
16:30			
16:45			
17:00			



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# Daily Schedule

## Wednesday, July 11

Bioactive Materials education is sponsored by



Consumer and Diversified Products (C&DP) education is sponsored by



**07:30 – 14:30 • Promenade Ballroom C**  
Speaker Preparation Room Open

**08:00 – 13:30 • Main Entrance Lobby**  
Attendee Services Desk Open

**08:30 – 09:30 • Grand Ballroom B**  
Plenary Presentation: Organic Delivery Vehicles for Probing and Treating Biological Systems: Adapting Fabrication Processes from the Electronics Industry for Use in Nanomedicine  
Joseph M. DeSimone, University of North Carolina, Chapel Hill/North Carolina State University, U.S.A.

**09:30 – 10:00 • Exhibit Hall A**  
Exhibitor Networking Opportunity at Refreshment Break  
Poster Session II Authors Present

**09:30 – 13:00 • Exhibit Hall A**  
Exhibit Hall Open  
Poster Viewing Available

**09:30 – 12:30 • Exhibit Hall A**  
Web Café Open – *Sponsored by*



**10:00 – 11:30 • Room 102**  
Industrial Advances in Oral Delivery  
*Sponsored by*



*creating essentials*

**10:00 – 11:30 • Promenade Ballroom A**  
Tumor Targeting

**10:00 – 11:30 • Room 202**  
Nanoencapsulation I  
*Sponsored by*



**10:00 – 11:30 • Room 203 A/B**  
Injectable Depot Systems

**10:00 – 11:30 • Room 103 A/B**  
Personal Care

**10:00 – 12:00 • Room 101**  
Stimuli Responsive Nanosystems Mini-symposium

**11:30 – 13:00 • Exhibit Hall A**  
Exhibitor Networking Opportunity and Poster Viewing  
*Lunch on own. Available for purchase in Exhibit Hall.*

**13:00 – 14:00 • Grand Ballroom B**  
Plenary Presentation: The Role of Biomarkers and Biologically Interactive Delivery Systems (receptor mediated transcytosis) in the Future of Chemotherapy  
Patrick Soon-Shiong, AbraxisBioscience, U.S.A.

**14:00 – 14:15 • Promenade Foyer**  
Refreshment Break

**14:15 – 15:45 • Room 102**  
Imaging and Delivery in Clinical Settings

**14:15 – 15:45 • Promenade Ballroom A**  
Advances in Transdermal Delivery

**14:15 – 15:45 • Room 202**  
Nanoencapsulation II  
*Sponsored by*



**14:15 – 15:45 • Room 203 A/B**  
Targeted Delivery

**14:15 – 15:45 • Room 101**  
Advances in Ocular Delivery

**14:15 – 15:45 • Room 103 A/B**  
Controlled Release in Health and Wellness

## Wednesday Morning

	Room 102 <b>Industrial Advances in Oral Delivery</b>  L Illum, N Nyamweya	Room 203 A/B <b>Injectable Depot System</b>  K Popat, D Bingham	Room 101 <b>Mini-symposium: Stimuli Responsive Nanosystems</b>  Y H Bae, N Nishiyama
10:00	<b>137 A Surfactant-based Glass Thermoplastic System (GTS) for Formulating Poorly Water-Soluble Weak Base Drug Candidates</b> R Vandecruys, G Verreck, J Peeters, <u>M Brewster</u> Johnson & Johnson, Belgium	<b>143 Invited Speaker: Drug Delivery for Local Tumor Management: OncoGel® Clinical Experience</b> N Elstad, <u>K Fowers</u> Protherics, USA	<b>151 Invited Speaker: Smart Polymeric Carriers for Biomolecular Therapeutics</b> <u>P Stayton</u> , A Hoffman University of Washington, USA
10:15	<b>138 Extended Release/High Drug Loaded Formulations Produced via Hot Melt Extrusion</b> K Coppens, <u>M Hall</u> , V He, B Koblinski, P Larsen, M Read, U Shrestha The Dow Chemical Company, USA		
10:30	<b>139 Once A Day Therapy With Carvedilol Delivered In An Egalet</b> <u>D Bar-Shalom</u> , C Andersen, C Wilson, N Washington Egalet a/s, Denmark	<b>144 New biodegradable “smart” hydrogels containing poly[(R)-3-hydroxybutyrate] for sustained protein delivery</b> <u>X Loh</u> , S Goh, J Li Institute of Materials Research and Engineering, Singapore	<b>148 Invited Speaker: Tumor pH Responsive Nanosystems</b> <u>Y Bae</u> University of Utah, USA
10:45	<b>140 Evaluation of the impact of digestion on the <i>in vivo</i> performance of two lipid based oral drug delivery systems</b> M Kabakulak, J Cuiné, A Diederich, B Sutter, <u>A Taillardat</u> Novartis Pharma AG, Switzerland	<b>145 Optimizing the formulation of thermoresponsive hydrogels by 1H-NMR relaxometry</b> <u>H Metz</u> Martin-Luther-University of Halle, Germany	
11:00	<b>141 Pharmacokinetic studies with a mucoadhesive multilayer extended-release tablet formulation of levodopa-carbidopa in fed and fasted beagles</b> <u>P Moslemy</u> , B Carter, N Cardoso, J Jacob, A Nangia, D Magiera Spherics Pharmaceuticals Inc, USA	<b>146 Novel Injectable Hydrogel with a pH-Responsive Property Made of Hydrophobically-Modified Chitosan Derivatives</b> <u>Y Chiu</u> National Tsing Hua University, Taiwan, ROC	<b>150 Invited Speaker: Stimuli-Responsive Supramolecular Nanocarriers for Site-Directed Drug Delivery</b> <u>N Nishiyama</u> , K Kataoka University of Tokyo, Japan
11:15	<b>142 XELLEXTM Film Devices for Sublingual Administration of Lipid Lowering Drug Actives</b> <u>U Westedt</u> , K Schneider, K Marsh, M Maegerlein, J Breitenbach SOLIQS – Abbott GmbH & Co KG, Germany	<b>147 Controlled Release of N-Acetylcysteine from Injectable Poly (DL-lactide-co-glycolide) Implants for AIDS-Associated Kaposi’s Sarcoma</b> <u>K Desai</u> , S Mallery, S Schwendeman University of Michigan, USA	
11:30	<b>End of Session</b>	<b>End of Session</b>	<b>149 Invited Speaker: Block Ionomer Complexes for Drug Delivery</b> <u>T Bronich</u> University of Nebraska Medical Center, USA
12:45			
12:00			<b>End of Session</b>

	Room 202 <b>Nanoencapsulation I</b>	Room 103 A/B <b>Personal Care</b>	Promenade Ballroom A <b>Tumor Targeting</b>
	T Rades	N Dayan, C Ortiz	T Bowersock, J Siepmann
10:00	<b>152 Invited Speaker: Lipid nanocapsules: a new tool in cancerology</b> <u>J Benoit</u> INSERM, France	<b>157 Invited Speaker: Controlled Release of Actives in Skin</b> <u>B Michniak</u> Rutgers, USA	<b>162 Invited Speaker: Tumor-Specific Targeting of Drug Delivery Systems for Cancer Therapy and Imaging</b> <u>T Minko</u> Rutgers, USA
10:15			
10:30	<b>153 EPR investigations on dynamics of distribution processes and <i>in vivo</i> fate of polymeric nanocapsules</b> <u>S Klein</u> , A Ruebe, K Maeder Martin-Luther-University of Halle, Germany	<b>158 Effect of hydroxycinnamic acid, magnesium ascorbyl phosphate and hydroquinone on tryptophan levels in human skin</b> <u>N Dayan</u> , T Miller Lipo Chemicals Inc, USA	<b>163 Treatment of Colorectal Cancer Liver Metastases in CBA Mice by SMA-Pirarubicin Micelles and Its Augmentation by Hyperbaric Oxygen</b> <u>A Iyer</u> , J Daruwalla, K Greish, J Fang, C Christophi, H Maeda Sojo University, Japan
10:45	<b>154 Drugs Release from Gold Nanorods Embedded <i>N</i>-isopropylacrylamide Hydrogels</b> <u>A Shiotani</u> , T Mori, T Niidome, Y Niidome, Y Katayama Kyushu University, Japan	<b>159 Encapsulation and Photoprotection of Vitamin E in a Starch-Oil Emulsion System</b> <u>J Wille</u> Bioderm Technologies, Inc, USA	<b>164 Anti-angiogenic Actions of Liposomal Prednisolone Phosphate on Tumor-Associated Inflammatory Cells <i>In Vivo</i></b> <u>M Banciu</u> , R Schiffelers, M Fens, J Metselaar, G Storm Utrecht University, The Netherlands
11:00	<b>155 Lipid Coated Nanoparticles— Physicochemical Characterization, Cellular Adhesion and Cellular Uptake</b> <u>J Sitterberg</u> , J Schaefer, R Kumar, U Bakowsky Philipps-Universitaet Marburg, Germany	<b>160 Lipophilic moisturisers interact with stratum corneum intercellular lipids</b> J Caussin, G Gooris, J Wiechers, <u>J Bouwstra</u> Leiden University, The Netherlands	<b>165 Low-dose TGF-beta inhibitor improves cancer therapy using nanocarriers for intractable solid tumors</b> <u>M Kano</u> , Y Bae, C Iwata, Y Morishita, M Oka, N Nishiyama, K Kataoka, K Miyazono University of Tokyo, Japan
11:15	<b>156 Development and Characterization of Bone-Targeting Nanoparticles</b> <u>S Crumlett</u> , G Rossini, J Trevino, N Vail Southwest Research Institute, USA	<b>161 Topical NO photorelease from a drug delivery system</b> D Silva, R Silva, <u>R Lopez</u> USP-FCFRP, Brazil	<b>166 Microneedle Based Intradermal Delivery of Interleukin-12 in B16F10 Tumor Bearing Mice: Comparison with Subcutaneous and Intraperitoneal Therapy</b> <u>A Harvey</u> , S Kaestner, K Karl, R Pettis BD Technologies, USA
11:30	<b>End of Session</b>	<b>End of Session</b>	<b>End of Session</b>
12:45			
12:00			



## Wednesday Afternoon

	Room 101 <b>Advances in Ocular Delivery</b>  U Kompella, S Tao	Promenade Ballroom A <b>Advances in Transdermal Delivery</b>  G Russell-Jones, O Ozer	Room 103 A/B <b>Controlled Release in Health and Wellness</b>  C Frey, H Hall
14:15	<b>167 Invited Speaker: Drug Transport in Retinal Pigment Epithelium—Key Player in the Blood–Retina Barrier</b> <u>A Urtti</u> University of Helsinki, Finland	<b>172 Invited Speaker: Transdermal Drug Delivery: State of the Art and Future Challenges</b> <u>J Bouwstra</u> Leiden University, The Netherlands	<b>177 Formulation Development Strategies and Preliminary Clinical Results for Diindolylmethane, a Poorly Soluble Nutritional Supplement with Anti-cancer and Anti-viral Activity</b> <u>L Jacobs</u> , J Baumhardt, M Zeligs KV Pharmaceutical Company, USA
14:30			<b>178 Invited Speaker: Microencapsulation as a tool for food fortification</b> <u>Y Blatt</u> Lycored, Israel
14:45	<b>168 Slow-Releasing Tranilast in Polytetrafluoroethylene/Poly(lactide-co-glycolide) Laminate Delays Adjustment After Strabismus Surgery in Rabbit Model</b> S Jin, M Lee, <u>J Kim</u> , J Hwang, C Kim Seoul National University, Korea	<b>173 <i>In vivo</i> and <i>in vitro</i> Transport of Active Ingredients into Murine Skin Using Deformable Nanoparticles</b> <u>J Kim</u> , J Shim, Y Kim, I Chang, K Char AMOREPACIFIC Corporation, Korea	
15:00	<b>169 Analysis of Subconjunctival Drug Delivery in the Eye Using Magnetic Resonance Imaging</b> <u>S Kim</u> , K Csaky, N Wang, R Lutz University of Maryland, USA	<b>174 Hydration Effects on Skin Microstructure and Implications to Enhanced Transcutaneous Delivery of Biomacromolecules</b> G Tan, P Xu, L Lawson, J He, J Clements, <u>V John</u> Tulane University, USA	<b>179 Mucoadhesive Systems of Polyherbal Antimicrobial Formulation for Vaginal Drug Delivery</b> <u>S Chopra</u> , S Motwani, F Ahmad, R Khar Jamia Hamdard, India
15:15	<b>170 Steam Sterilization of Cyclosporine Solid Lipid Nanoparticles: <i>In-vitro</i> Evaluation of Toxicity</b> <u>E Gokce</u> , G Sandri, M Bonferoni, S Rossi, F Ferrari, I Guneri, C Caramella University of Ege, Turkey	<b>175 Impact of skin metabolism and vehicle effect on permeation in skin models</b> S Lombardi Borgia, <u>S Schreiber</u> , P Schlupp, M Schaefer-Korting Freie Universität Berlin, Germany	<b>180 Polymeric Microcapsules Entrapping Mesenchymal Stem Cells: A New Approach For Cell Based Therapy</b> <u>A Goren</u> , M Machluf The Technion - Israel Institute of Technology, Israel
15:30	<b>171 Pharmacokinetic Modeling to Improve the Design of Intravitreal Corticosteroid Implants for Treating Macular Edema</b> <u>S Lee</u> , D D'Argenio, R Moats, J Lin, D Welty, P Hughes, S Whitcup, M Robinson University of Southern California and Saban Research Institute of Children's Hospital Los Angeles, USA	<b>176 Arc-based Skin Ablation for Transdermal Drug Delivery</b> <u>J Lee</u> , J Park, P Gadiraju, M Allen, M Prausnitz Georgia Institute of Technology, USA	<b>181 Development of an Oral Osmotic Release System for Cardiovascular Disorders</b> M Freitas, <u>J Marchetti</u> University of São Paulo, Brazil
15:45	<b>End of Session</b>	<b>End of Session</b>	<b>End of Session</b>

	Room 102 <b>Imaging and Delivery in Clinical Settings</b> V Labhasetwar	Room 202 <b>Nanoencapsulation II</b> H Ghandehari	Room 203 A/B <b>Targeted Delivery</b> G Borchard
14:15	<b>182 Invited Speaker: Clinical studies of SP1049C, a polymer based anthracycline effective against drug resistant tumors: Results of phase II trial and pivotal phase III program in upper gastrointestinal cancer indications</b> <u>V Alakhov</u> Supratek Pharma Inc, Canada	<b>187 Invited Speaker: Oral Drug Nanocrystals: State of Industrial Development, Products and Future Trends</b> <u>R Müller</u> , C Keck Free University Berlin, Germany	<b>192 Invited Speaker: Potent Antibody-Drug Conjugates for Cancer Therapy</b> <u>P Carter</u> Seattle Genetics, Inc, USA
14:30			
14:45	<b>183 Development of a Novel Magnetic Resonance Imaging Contrast Agent for Imaging of Vascular Endothelial Dysfunction</b> <u>K Ikuta</u> , T Mori, T Niidome, H Utsumi, H Shimokawa, Y Katayama Kyushu University, Japan	<b>188 An Injectable Nanosuspension for Itraconazole: Pharmacokinetic Evaluation in the Dog</b> <u>M Brewster</u> , G Verreck, J Monbaliu, P Van Remoortere, J Peeters Johnson & Johnson, Belgium	<b>193 Invited Speaker: Overcoming MDR: Drug Delivery Systems with Monoclonal Antibodies and/or Cell-Penetrating Peptides</b> <u>V Torchilin</u> Northeastern University, USA
15:00	<b>184 Multifunctional Nanospheres for Drug Delivery and Magnetic Resonance Imaging</b> <u>A Fornara</u> Royal Institute of Technology – Stockholm, Sweden	<b>189 Acid-Degradable Poly(N-vinylformamide)/ Polyvinylamine Nanogel Capsules</b> <u>L Shi</u> , <u>C Berkland</u> University of Kansas, USA	
15:15	<b>185 Biodistribution, Clearance, and Biocompatibility of Iron-Oxide Magnetic Nanoparticles in Rats</b> T Jain, M Reddy, M Morales, D Leslie-Pelecky, <u>V Labhasetwar</u> Cleveland Clinic Foundation, USA	<b>190 Co-entrapment of Cyclosporine A and Coenzyme Q10: Assessment of polymeric nanoparticles ability to entrap two high molecular weight lipophilic compounds</b> <u>J Italia</u> , D Ankola, R Singh, R Poduri, R Majeti National Institute of Pharmaceutical Education and Research, India	<b>194 Targeted Delivery of Polymeric SMA-Aclarubicin Micelles for Reversing Anti-Cancer Drug Resistance</b> <u>K Greish</u> , A Iyer, J Fang, H Maeda Sojo University, Japan
15:30	<b>186 Transit of Magnetic Tablets using Magnetic Moment Imaging and Gamma Scintigraphy</b> <u>K Wilson</u> , B O'Mahoney, B Lindsay, J Band, L Hodges, C Wilson, H Stevens University of Strathclyde, UK	<b>191 Controlled Release of Docetaxel from Targeted Nanoparticles for Prostate Cancer Chemotherapy</b> <u>F Gu</u> , N Mann, O Farokhzad, R Langer MIT, USA	<b>195 Targeted Delivery of Immunoliposomal Doxorubicin to B-lymphoid Cells via Anti-CD19 Monoclonal Antibodies and Fragments</b> <u>W Cheng</u> , T Allen University of Alberta, Canada
15:45	<b>End of Session</b>	<b>End of Session</b>	<b>End of Session</b>

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## Sunday, July 8

Opening Reception  
Exhibit Hall A  
18:30 – 19:30

## Monday, July 9

Exhibit Hall Open  
10:00 – 18:00

### Networking Breaks

10:00 – 10:45  
12:15 – 14:00  
15:00 – 16:00

## Tuesday, July 10

Exhibit Hall Open  
09:00 – 17:00

### Networking Breaks

09:00 – 09:30  
11:00 – 13:00  
14:00 – 14:30

## Wednesday, July 11

Exhibit Hall Open  
09:30 – 13:00

### Networking Breaks

09:30 – 10:00  
11:30 – 13:00

## CRS Exhibitor

## Booth

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## 2007 CRS Exhibitors

The following descriptions, supplied by the exhibiting companies, provide product, service, and contact information. Please see the Program Addendum for any additional exhibitor information.

- 205- 207 3M Drug Delivery Systems**, 3M Center, 275-3E-10, St. Paul, MN 55144; Tel: 651-733-7853, Fax: 651-737-5265, Website: [www.3M.Com](http://www.3M.Com). 3M Drug Delivery Systems is a global leader and innovator for inhalation and transdermal drug delivery. Between drug discovery and commercialization, we offer innovative and proven technology, product development services, global regulatory expertise, commercial manufacturing, and a broad range of customizable system components. Our expertise increases your opportunity for success.
- 528 Activaero America, Inc.**, P.O. Box 351, Dublin, OH 43017; Phone: 614-761-3555, Fax: 614-761-3505, Website: [www.activaero.com](http://www.activaero.com). Activaero is a pulmonary drug delivery company specializing in controlled deposition with AKITA technology. With AKITA, drug particles can be targeted to different regions of the lungs while achieving very high (>80%) deposition. We wish to partner with drug companies to give their molecules, large or small, the best chance for efficacy.
- 624 Adhesives Research**, 400 Seaks Run Road, Glen Rock, PA 17327; Tel: 800-445-6240 or 717-235-7979, Fax: 717-235-8320, Website: [www.adhesivesresearch.com](http://www.adhesivesresearch.com). Adhesives Research is a leading developer and manufacturer of custom adhesives, dissolvable films and laminates for the pharmaceutical industry. We offer formulation, process development and analytical support for transdermal, pulmonary, and oral/mucosal delivery systems. We have the ability to manufacture clinical and commercial quantities in our cGMP compliant facilities.
- 426- 428 Alkermes, Inc.**, 88 Sidney Street, Cambridge, MA 02139; Tel: 617-583-6393. Alkermes, Inc. develops innovative medicines with potential to improve health outcomes for patients worldwide. Our products, both proprietary and partnered, leverage our unique drug delivery platforms, targeting diseases where the delivery method itself can impact outcomes. We have two commercially available products and a robust pipeline based on our technologies.

- 105 Allergan Inc.**, 2525 Dupont Drive, Irvine, CA 92612; Tel: 714-246-4500, Website: [www.allergan.com](http://www.allergan.com). Allergan, Inc. is a global specialty pharmaceutical and medical device company that discovers, develops and commercializes innovative products for the ophthalmology, neurosciences, medical dermatology, medical aesthetics and other specialty markets. Headquartered in Irvine, California, Allergan is dedicated to delivering value to its customers, satisfying unmet medical needs and improving people's lives.
- 431 Almac Pharma Services**, 2661 Audubon Road, Audubon, PA 19403; Tel: 610-666-9500, Fax: 610-666-9501, Website: [www.almacgroup.com](http://www.almacgroup.com). Almac Pharma Services is an FDA and EU approved outsourcing partner to the global pharmaceutical and biotechnology industries. We have over 25 years' experience in the development and manufacture of solid, oral dosage products. Our capabilities include formulation and analytical development, clinical and commercial-scale drug product manufacture, primary and secondary packaging and global supply chain management.
- 407 Altea Therapeutics Corporation**, 2056 Weems Road, Tucker, GA 30084; Tel: 678-495-3100, Fax: 678-495-3130, Website: [www.alteatherapeutics.com](http://www.alteatherapeutics.com). Altea Therapeutics new transdermal patch technology, The PassPort™ System, enables continuous delivery through the skin of water-soluble molecules, including drug salts, proteins, carbohydrates and nucleic acids. The Company is in clinical development for a basal insulin patch for diabetes, a fentanyl citrate patch for pain and an apomorphine HCl patch for Parkinson's disease.
- 106 Aptuit, Inc.**, Three Greenwich Office Park, Greenwich, CT 06831; Tel: 816-767-3900 or 203-660-6000, Fax: 816-767-3950, Website: <http://www.aptuit.com>. Aptuit provides a comprehensive suite of drug development services and competencies to biotechnology and pharmaceutical innovators worldwide. We are the first provider to combine drug development consulting expertise, state-of-the-art GMP/GLP facilities, innovative technologies designed to expedite the development process, complete project management capabilities, and regulatory compliance services, all in one package. Our services include: Regulatory and Strategic Consulting, Informatics, Discovery Support, Preclinical Technologies, Clinical Packaging and Logistics, Drug Substance Development, and Drug Product Development.
- 610 Aqualon, A Business Unit of Hercules Incorporated**, 1313 North Market Street, Wilmington, DE 19894; Tel: 302-594-5000, Website: [www.aqualon.com](http://www.aqualon.com). Aqualon, the global leader in controlled release excipients, will be featuring Aquarius coating systems, Klucel hydroxypropylcellulose, and Benecel hypromellose.
- 728 Asahi Kasei Chemicals Corporation**, 535 Madison Avenue, 33rd Floor, New York, NY 10022; Tel: 212-371-9900, Fax: 212-371-9050, Website: [www.ceolus.com](http://www.ceolus.com). Asahi Kasei is a global supplier of microcrystalline cellulose (MCC) and other pharmaceutical excipients, and has been introducing specialty excipients, e.g. high-compactible MCC and MCC spheres, which provide solutions for new drug formulations, to the pharmaceutical industry. It supports the products with technical service.
- 417 Avanti Polar Lipids, Inc.**, 700 Industrial Park Drive, Alabaster, AL 35007; Tel: 205-663-2494 or 800-227-0651, Fax: 205-663-0756, Website: [www.avantilipids.com](http://www.avantilipids.com). Avanti Polar Lipids, with an unparalleled reputation for purity, is clearly established as the world leader in lipid production. Avanti is well known to the pharmaceutical industry with a cGMP production facility that is regulated by the FDA. Recent developments include Glycosylated and Phosphorylated Sphingosines and Ceramides including fluorescent derivatives.
- 316 Azopharma**, 10320 USA Today Way, Miramar, FL 33025; Tel: 954-433-7480, Fax: 954-432-9015, Website: [www.azopharma.com](http://www.azopharma.com).
- 425-524 Banner**, 4125 Premier Drive, High Point, NC 27265, USA; Tel: 336-812-8700, Fax: 336-812-3719, Website: [www.banpharm.com](http://www.banpharm.com). Banner is a global drug delivery and specialty pharmaceutical company committed to researching, developing and producing unique oral dosage forms for the healthcare industry. Through innovative technologies, new product ideas and dedicated employees, Banner seeks to improve the quality of life for the global community.
- 325-424 BASF Corporation**, 100 Campus Drive, Florham Park, NJ 07932; Tel: 973-245-6381, Website: [www.pharma-solutions.basf.com](http://www.pharma-solutions.basf.com). BASF helps pharmaceutical companies to be successful with a broad portfolio of excipients and active ingredients with proven quality and reliability, and the services of an experienced technical staff with industry-specific formulation expertise. BASF also offers custom synthesis and contract manufacturing services to help customers get products to market faster.

- 435-534 Baxter Healthcare Corporation**, 25212 W. IL Route 120, Round Lake, IL 60073; Tel: 800-422-9837 or 847-948-4770, Fax: 847-948-3642, Website: www.baxterbiopharmasolutions.com. Baxter's BioPharma Solutions business offers contract services and technologies for parenteral drugs. Proprietary formulation technologies include: NANOEDGE dispersion technology, PROMAXX protein microsphere technology, and enhanced packaging. State-of-the-art clinical and commercial manufacturing for small molecules, proteins/peptides, cytotoxics, biotech pharmaceuticals, and vaccines; capabilities include form/fill/finish of syringes/vials/cartridges; lyophilization; custom kitting and more.
- 133 Bilcare Inc.**, 300 Kimberton Road, Phoenixville, PA 19460; Tel: 610-935-4300, Fax: 610-935-4321, Website: www.bilcare.com. Bilcare provides a wide array of innovative film- and foil-based packaging solutions to the pharmaceutical industry. Our testing methodology employs a stability evaluation protocol to determine optimal packaging for specific brands, reducing time and cost. In addition, our specialty materials allow clients to extend their brand identities into their packaging.
- 413 Bio-Images Research Ltd.**, Bio-Imaging Centre, Basement Medical Block Within Glasgow Royal Infirmary, 84 Castle Street Glasgow, G4 0SF UK; Tel: +44 141 552 8791, Fax: +44 141 552 7752, Website: www.bio-images.co.uk. Bio-Images Research is a full service CRO which undertakes early phase clinical studies in volunteers and patients. Our expertise is in the use of gamma scintigraphy to investigate the in vivo behaviour of oral, nasal, pulmonary and ophthalmic formulations and drug delivery systems. We also undertake pharmacokinetic-pharmacodynamic studies both alone and combined with scintigraphy.
- 628 Biovail Contract Research**, 460 Comstock Road, Toronto, ON, Canada M1L 4S4; Tel: 416-752-3636, Website: www.biovail-cro.com.
- 219 Boehringer Ingelheim**, 2820 North Normandy Dr., Petersburg, VA 23805; Tel: 800-242-4366 or 804-504-8633, Fax: 804-504-8685, Website: www.RESOMER.com. Boehringer Ingelheim is the premier producer of bioresorbable, biocompatible polymers for medical applications. Our RESOMER® product range includes monomers, polymers, and \*NEW PEG-copolymers designed for medical device and pharmaceutical, controlled release applications. RESOMER® products are produced in accordance with IPEC-GMP guidelines. We provide technical and regulatory support to our customers.
- 129 BRACE GmbH**, Taunusring 50, Alzenau, 63755, Germany, Tel: +49 6023 32316, Fax: +49 6023 4973, Website: http://www.brace.de. BRACE GmbH offers a wide range of microencapsulation services, contract manufacturing and machinery for Microspheres Microcapsule processing from Desktop to production size. Typical applications are in controlled release, pharmaceutical use, inorganic or organic media, metal alloys, encapsulation of living or unliving medias, food and cosmetic industries etc. Auxiliary equipment for drying, sorting, washing, sieving etc. is also available.
- 401-403 Brookwood Pharmaceuticals**, 756 Tom Martin Drive, Birmingham, AL 35211; Tel: 205-917-2200, Fax: 205-917-2205, Website: www.brookwoodpharma.com. Brookwood Pharmaceuticals, a product-focused, drug delivery company, has a wide-range of delivery technologies particularly for long-acting parenterals such as injectable microparticles and injectable solid implants to deliver small molecules, peptides, proteins, and nucleic acids. Partnered programs range from feasibility studies, product development and optimization, process scale up, clinical trial and commercial manufacturing of drug-delivery formulations and biomaterials.
- 711 Buchi Corporation**, 19 Lukens Drive, Suite 400, New Castle, DE 19720; Tel: 302-652-3000 or 877-692-8244, Fax: 302-652-3000, Website: www.mybuchi.com. Buchi has 27 years of spray dryer experience and application knowledge, the B290 is the perfect solution for lab scale drying. Come to booth 711 and see all the available configuration options and accessories that allow you to dry your formulation from virtually any solvent system.
- 429 Capsulation NanoScience AG**, Volmerstrasse 7b, Berlin, 12489, Germany; Tel: +49 30 670 69 19 0, Fax: +49 30 670 69 19 101, Website: www.capsulation.com. Capsulation is a leading nanotechnology company that develops customized drug delivery systems. Our proprietary technologies make use of nanoparticles as smart carriers that enhance the bioavailability of poorly soluble compounds without the need of toxic tensides, significantly increase the stability of biologics and are highly efficient for intracellular release.
- 213-215 (formerly) Cardinal Health**, 14 Schoolhouse Road, Somerset, NJ 08873; Tel: 866-720-3148 (Inside sales number). Come visit the exhibit to see who we've become.



- 310 Carpe Diem, A Wiley Company**, 111 River Street, Hoboken, NJ 07030-5774; Tel: 201-748-6000, Fax: 201-748-6088.
- 317 ChemAgis USA, Inc.**, 115 Route 46 West, Suite D-25, Mountain Lakes, NJ 07046; Tel: 1-973-402-1355, Fax: 1-973-402-1388, Website: www.ChemAgis.com. ChemAgis specializes in development and manufacture of Bulk Active Pharmaceutical Ingredients. Providing tailor-made solutions to meet individual requirements regardless of the complexity, ChemAgis offers technical and regulatory support through a project's lifecycle. Our vision is to combine our technology with client requirements to enable timely filing of a drug application.
- 402 ChemImage Corp.**, 7301 Penn Ave, Pittsburgh, PA 15208; Tel: 412-241-7335, Fax: 412-241-7311, Website: www.chemimage.com. ChemImage's patented high-speed, wide-field imaging solutions enable you to see detailed molecular-level information quickly and clearly allowing you to make better decisions faster. All in a format that is easily understood by both scientists and non-scientists alike.
- 526 CMA/Microdialysis, Inc.**, 73 Princeton Street, North Chelmsford, MA 01863; Tel: 800-440-4980 or 978-251-1940, Fax: 978-251-1950, Website: http://www.microdialysis.com. Microdialysis – a novel technique to sample and study the controlled release of drug and active metabolites in vivo as they become free and available in the target tissue, without removing tissue or liquid from the body. Endogenous target compounds and biomarkers can be simultaneously collected to assess biological effects.
- 113 Coating Place, Inc.**, 200 Paoli Street, Verona, WI 53593; Tel: 817-477-2766 or 608-845-9521, Fax: 817-453-1696, Website: www.coatingplace.com. A drug delivery systems development and manufacturing company specializing in Wurster fluid bed coating. Services include contract formulation development, technology transfer, scale-up and commercial manufacturing with laboratory support. Applications include controlled and sustained release, enteric and taste masked coatings. Facilities process solvent and aqueous formulations. DEA registered. Sustained release liquid suspensions.
- 112-114 Colorcon Inc.**, 415 Moyer Boulevard, West Point, PA 19486; Tel: +1-215-699-7733, Fax: +1-215-661-2605, Website: www.colorcon.com. Colorcon is a global company that develops, markets and supports fully formulated film coatings and specialty excipients for the pharmaceutical industry. Our core business is the design and technical support of advanced pharmaceutical oral solid dosage forms for immediate and modified release applications. Extended/controlled and delayed/enteric release technologies are available for the formulation, development and production of both tablets and multi-particulates.
- 412 CyDex Inc.**, 10513 W. 84th Terrace, Lenexa, KS 66214; Tel: 913-685-8850, Fax: 913-685-8856, Website: www.cydexinc.com. CyDex's Captisol® is a proprietary drug delivery technology, based on substituted beta cyclodextrins. Captisol significantly enhances the solubility, stability, and bioavailability of most drug compounds. CyDex also develops and licenses differentiated Captisol-Enabled drug products, which address unmet needs, and which are subject to patentability. There are currently four commercially marketed drugs utilizing Captisol.
- 201-203 Degussa Pharma Polymers**, 2 Turner Place, Piscataway, NJ 08855; Tel: 732-981-5383, Fax: 732-981-5484, Website: www.pharma-polymers.com. Degussa Pharma Polymers, the global partner for custom tailored oral drug delivery applications, from formulation technologies to individually designed customer products. EUDRAGIT® acrylic polymers, the favorite choice for solid oral dosage forms, have become indispensable in the manufacturing of enteric coatings on solid dosage forms, sustained release formulations, and immediate release applications.
- 806 Depomed, Inc.**, 1360 O'Brien Drive, Menlo Park, CA 94025; Tel: 650-462.5900, Website: www.depomedinc.com. Depomed, Inc., is a specialty pharmaceutical company with two approved products on the market. The company utilizes its proven, proprietary AcuForm™ drug delivery technology to improve existing oral medications, allowing for extended, controlled release of medications to the upper gastrointestinal tract. Additional information may be found on its web site, www.depomedinc.com.
- 135 Distek, Inc.**, 121 North Center Drive, North Brunswick, NJ 08902; Phone: 732-422-7585, Website: www.distekinc.com. Distek, Inc. is a manufacturer of pharmaceutical laboratory test equipment, specializing in Dissolution products and services. Distek also provides solutions for UV Fiber Optics, Media Preparation, Physical Testing, Disintegration, and Validation Services.
- 409 DPT Laboratories**, 4040 Broadway, Suite 401, San Antonio, TX 78209; Tel: 210-476-8100 or 210-396-5008. DPT is a contract development and manufacturing organization (CDMO) specializing in semi-solid and liquid dosage forms. For over 65 years, DPT has provided pharmaceutical, biotechnology, and healthcare companies the best solutions to their development and manufacturing needs. From concept to commercialization, DPT is the source for semi-solid and liquids.

- 306 Dr. Reddy's Laboratories, Inc.**, Custom Pharmaceutical Services, 200 Somerset Corporate Blvd., Bridgewater, NJ 08807; Tel: 908-203 4915 or 908-203 4900, Fax: 908-203-4914, Website: www.drreddys.com. Dr. Reddy's Custom Pharmaceutical Services division provides fully integrated services, from API development and manufacturing to finished product development and manufacturing. Our key strengths are modified release capabilities and exploring new drug delivery approaches for life cycle management. This includes different gastro-retentive, colon specific drug delivery and nanoparticle systems.
- 119 Drug Delivery Technology**, 219 Changebridge Road, Montville, NJ 07045, USA; Tel: 973-299-1200 or 973-299-1200, Website: www.drugdeliverytech.com. *Drug Delivery Technology* publishes scientific articles, special features, and market news covering the science and business of drug delivery including formulation development, product life-cycle management, technology assessment, product development, contracting and licensing. *Drug Delivery Technology* is committed to advancing the science, technology, and business of pharmaceutical and biological delivery systems.
- 719 Duoject Medical Systems Inc.**, 50, chemin de Gaspe, Complex B-5, Bromont, QC J2L2N8, Canada; Tel: 450-534-3666, Fax: 450-534-3700, Website: www.duoject.com. Duoject designs and develops Injectable Drug Transfer and Delivery Devices. Their unique expertise is focused on lyophilized drug reconstitution devices for packaging wide ranges of medications. Innovative and patented methods to safely, precisely and simply transfer and deliver drugs are made available for "exclusive license" to their biotechnology and pharmaceutical clients.
- 730- DURECT Corporation - LACTEL® Absorbable  
732 Polymers**, 2 Results Way, Cupertino, CA 95014; Tel: 408-777-4927, Fax: 408-865-1406, Website: www.absorbables.com. Come talk to a polymer expert about our range of stock and custom biodegradable polymers for the drug delivery and medical device industries. As the oldest commercial source of biodegradable polymers in the U.S., DURECT draws upon decades of experience in polymer chemistry, product development, cGMP manufacturing and more.
- 400 Elan Drug Technologies**, Monksland, Athlone, Co Westmeath 000, Ireland; Tel: 353 90 64 95126, Website: www.elan.com/EDT. Elan provides a broad range of creative drug optimization approaches including formulation development and manufacturing. Our NanoCrystal® Technology offers superior results for poorly water-soluble compounds and has been applied in four products with US\$1B annual sales. Over 37 years in reformulation business, 30 products launched and more than 1,400 patents, Elan has a proven track record of delivering success.
- 331 Elsevier**, 360 Park Ave South, New York, NY 10010; Tel: 212-989-5800, Fax: 212-633-3990, Website: www.elsevier.com. Elsevier is a leading publisher of superior scientific information. Visit us at booth #331 to learn more about our top journals such as the *Journal of Controlled Release*. Order a FREE article of your choice, or learn about Scopus®. Elsevier: Building Insights. Breaking Boundaries.
- 211 ERWEKA GmbH**, Ottostraße 20-22, Heusenstamm 63150, Germany; Tel: +49-6104-69030, Fax: +49-6104-690340, Website: www.erweka.com. ERWEKA is a private owned internationally operating group with more than 100 employees existing for more than 50 years. ERWEKA is one of the leading manufacturers of All Purpose and Pharmaceutical Testing Equipment for solid dosage forms e.g., tablets, capsules, coated tablets etc. and has a distinguished record for high quality products, reliability and excellent customer service.
- 618- FMC Corporation,  
718** 1735 Market Street, Philadelphia, PA 19103; Tel: 215-299-6534, Fax: 215-299-6644, Website: www.fmcbiopolymer.com. FMC BioPolymer provides controlled release technologies for pharmaceutical oral dose forms. We offer aqueous coatings for sustained release and enteric release and also sustained release matrix formers. FMC excipient products are backed by over 50 years of technology and manufacturing experience, superb customer service and market leadership.
- 608 Gaylord Chemical Corporation**, 106 Galeria Blvd., Slidell, LA 70458; Tel: 1-800-426-6620 or +01-985-732-6300, Fax: +01-985-732-5301, Website: www.gaylordchemical.com. Gaylord Chemical Corporation manufactures Procipient, the only high purity, odorless Dimethyl Sulfoxide designed specifically for drug delivery. Procipient is USP and also conforms to the European Pharmacopoeia monograph, is manufactured under API cGMP guidelines, and is supported by a Type II DMF. Visit with us to hear how DMSO can improve your dosage form.
- 223 Genzyme Pharmaceuticals**, 675 West Kendall Street, Cambridge, MA 02142; Tel: 800-868-8208 or 617-374-7248, Fax: 617-768-9765, Website: www.genzyme pharmaceuticals.com. Genzyme Pharmaceuticals provides an integrated resource of custom manufacturing, value-added technologies and strategic relationships focused in the lipid, peptide, amino acid derivative, and drug delivery markets. Visit us at booth 223 to learn more about our drug delivery platforms including LipoBridge®, LipoMask™, Design for Peptide DeliverySM and CerenseSM.

- 602 Glatt Pharmaceutical Services**, 20 Spear Rd., Ramsey, NJ 07446; Tel: 201-818-3778 or 201-825-8700, Fax: 201-818-5582, Website: www.glattpharmaceuticals.com. Glatt Pharmaceutical Services offers formulation and process development, drug delivery technologies, and contract manufacturing services for immediate and modified release solid dosage forms. Our cGMP facility is expanding to include CPS™ technology, additional Wurster systems for aqueous and solvent coating applications, fluid bed and high shear equipment, and a new analytical laboratory.
- 111 Halozyme Therapeutics**, 11588 Sorrento Valley Rd, Suite 17, San Diego, CA 92121; Tel: 858-794-8889, Website: www.halozyme.com. Halozyme Therapeutics is a public development stage biopharmaceutical company dedicated to developing and commercializing recombinant human enzymes for the drug delivery, oncology, and dermatology markets. The company's portfolio of products in development is based on intellectual property covering the family of human enzymes known as hyaluronidases.
- 101-103 Hanson Research**, 9810 Variel Avenue, Chatsworth, CA 91311; Tel: 818-882-7266, Fax: 818-882-9470, Website: http://www.hansonresearch.com. Serving the pharmaceutical, biotech, and life sciences industries for over 50 years, Hanson Research specializes in robust, quality dissolution and transdermal test instrumentation. To better manage data, Hanson introduced Bill (TM), a new Dissolution Data System (DDS) for corporate-wide LIMS interfacing. Developed in an exclusive partnership with Labtronics Inc., Bill creates a seamless digital link between Hanson's dissolution testing instruments and Labtronics' LimsLink. Hanson is a fully accredited ISO 9001:2000 company.
- 313 Hisamitsu Pharmaceutical Co., Inc.**, 3010 Science Park Road, San Diego, CA 92121; Tel: 858-450-9070, Fax: 858-450-9069, Website: www.hisamitsu.co.jp/english/. Hisamitsu Pharmaceutical Co., Inc. is a leading pharmaceutical company focused on developing innovative solutions for transdermal drug delivery. The technical knowledge acquired over ten years has attracted attentions to our drug development. We are pleased to globally contribute to human health care through our transdermal drug delivery systems.
- 131 Hovione**, 40 Lake Drive, East Windsor, NJ 08520; Tel: +1-609-918-2600, Fax: +1-609-918-2615, Website: www.hovione.com.
- 302 ICON Development Solutions**, 6031 University Blvd., Suite 200, Ellicott City, MD 21043; Tel: 410-696-3000, Fax: 410-480-0776, Website: www.icondevsolutions.com. With expertise in CMC, non-clinical/pre-clinical, regulatory affairs, pharmacokinetics, biopharmaceutics, clinical pharmacology and bioanalytical, ICON Development Solutions specializes in the strategy, management and execution of product development and early phase clinical development. Formerly three separate divisions, GloboMax, Medeval and ICON Consulting have come together as ICON's Development Solutions division.
- 710 Inabata America Corporation/Nippon Fine Chemical**, 611 Anton Blvd, Suite 625, Costa Mesa, CA 92626; Tel: 714-242-2200, Fax: 714-242-2222, Website: www.inabataamerica.com. Inabata America is the exclusive US distributor for Nippon Fine Chemicals phospholipids and high purity cholesterol. Nippon Fine Chemical's first class facilities have been audited by a variety of organizations, including the FDA. Inabata and Nippon Fine Chemical also offer a variety of other products, including intermediates and API.
- 307-309-406-408 Informa Healthcare**, 52 Vanderbilt Avenue, New York, NY 10017; Tel: 212-520-2777, Website: www.informaworld.com. Informa Healthcare is a leading provider of medical and pharmaceutical science research featuring titles from Taylor & Francis, CRC Press, Marcel Dekker, Martin Dunitz, and Parthenon.
- 107 Innojet Technologies**, Rummingerstr. 15, D-79539 Lorrach, Germany; Tel. +49 7621 940799-0, Fax +49 7621 940799-15, Website: www.innojet.de.
- 315 Inotech Biosystems International**, 15713 Crabbs Branch Way, Derwood, MD 20855; Tel: 301-670-2850 or 800-635-4070, Fax: 301-670-2859, Website: www.inotechintl.com. Inotech Biosystems International represents these fine Swiss Products in North America: Encapsulator for Cells, Liquids and Particles; Cell Harvester for 96, 48 or 24 well plates; Steriguard "Hot Glass Bead" Instrument Sterilizer; Vacuset Aspirate/Dispense System; Western Membrane Strip Cutter; Programmable "Hesitating" Rocker; Heparin Adsorbant; Quantifold Aspiration Manifold; Incubation trays.
- 707 International Specialty Products (ISP)**, 1361 Alps Road, Wayne, NJ 07470, USA; Tel: +1.973.628.4000, Fax +1.973.628.3311, Website: www.ispcorp.com. ISP Pharma Technologies provides technology development and contract manufacturing services to the clinical and commercial segment of the pharmaceutical industry. By applying our Spray Dried Dispersion Technology platform to poorly water soluble compounds, the drug solubility and bioavailability significantly increase to provide the following benefits: improved therapeutic efficacy, tolerability, safety, patient compliance, life cycle management and lower dosage costs. In addition to



these valuable development services, ISP offers excipients and film coating, including Plasdone® Povidone, Polyplasdone® Crospovidone, and Advantia™ Coating Systems. Scientifically formulated to meet the requirements of your tablet core, Advantia Coating Systems are ready-to-use film coatings for immediate- and enteric-release tablets. ISP provides technical service for Advantia Coating Systems from laboratory to commercial production.

- 123 IOMED, Inc.**, 2441 South 3850 West, Suite A, Salt Lake City, UT 84120, USA; Tel: 801-975-1191, Fax: 801-975-7366, Website: www.iomed.com. IOMED is a leader in the research, development and manufacture of iontophoretic drug delivery systems for transdermal and ophthalmic applications. IOMED's technology combines the benefits of computer controlled infusion therapy with ambulatory, non-invasive drug delivery. IOMED's innovative systems allow systemic or site specific delivery and therapeutic control not possible with other delivery methods.
- 324 Irvine Pharmaceutical Services**, 10 Vanderbilt, Irvine, CA 92618; Tel: 949-951-4425, Fax: 949-951-4909, Website: www.irvinepharma.com. Irvine Pharmaceutical Services is a respected testing facility providing analytical-through-formulation support for many of the nation's leading pharmaceutical, biotechnology and medical device companies. In response to growing needs of our customers, we've expanded our breadth of services and depth of expertise to ensure support through preclinical, clinical, registration and commercialization.
- 703 LCI Corporation**, 4433 Chesapeake Drive, Charlotte, NC 28216; Phone: 704-394-8341, Fax: 704-392-8507, Website: www.lcicorp.com. LCI's GMP laboratory extrusion and spheronization equipment includes the Multi Granulator MG-55, for quick, easy evaluation of three types of low pressure extrusion—dome, radial, and axial; and the Marumerizer Model QJ-230T, which allows researchers and new product developers to easily evaluate the effectiveness of spheronization on their extruded products.
- 110 Lipoid LLC**, The National Newark Building, 744 Broad Street, Suite 1801, Newark, NJ 07102-3802, USA; Tel: +1-973-735-2692, Fax: +1-973-735-2698, Website: www.lipoid.com.
- 500 LTS Lohmann Therapy Systems**, 21 Henderson Drive, West Caldwell, NJ 07006, USA; Tel: 973-244-2026, Fax: 973-575-5174, Website: www.ltslohmann.com. LTS is a world-class developer and the worldwide largest manufacturer of innovative transdermal and film-like oral drug delivery systems since two decades. State-of-the art research and manufacturing facilities are located in Germany and the US. LTS' headcount is about 1,000 employees.
- LTS offers full service from feasibility studies, through clinical supply including manufacturing. Clinical studies – Phase I - III – are performed through its affiliated CROs.
- 632 Malvern Instruments**, 10 Southville Road, Southborough, MA 01772, USA; Tel: 508-480-0200, Fax: 508-460-9692, Website: www.malvern.com. Malvern Instruments is a global company that develops, manufactures and markets advanced analytical systems. These are used in the characterization of a wide variety of materials, from industrial bulk powders to the latest nanomaterials and delicate macromolecules. The resulting systems deliver industrially relevant data enabling our customers to make the connection between micro (such as particle size) and macro (bulk) material properties (rheology) and chemical composition (chemical imaging).
- 127 Microfluidics Corporation**, 30 Ossipee Rd., Newton, MA 02464; Tel: 800-370-5452, Fax: 617-965-1213, Website: www.microfluidicscorp.com. Microfluidics will showcase its M-110EH Microfluidizer® high-shear processor, the M-110EH-30, now incorporates new capabilities and features into the original system architecture. Designed to operate reliably at up to 30,000 psi, the M-110EH-30 easily enables the production of nano-suspensions and nano-emulsions and cell disruption with the least number of passes.
- 512 Molecular Profiles Limited**, 8 Orchard Place, Nottingham Business Park, Nottingham, NG8 6PX, UK; Tel: +44 0115 871 8888, Fax: +44 0115 871 8889, Website: www.molprofiles.com. Molecular Profiles is a world leading analytical research company servicing pharmaceutical and biomedical sectors. Combining state-of-the-art technology with our expertise, we go beyond conventional analysis to provide in-depth understanding of the chemical and physical properties of drug delivery systems. Our service is applied throughout R&D, lifecycle management and patent disputes.
- 506-508 Mylan Technologies Inc.**, 110 Lake Street, St. Albans, VT 05478; Tel: 802-527-7792, Fax: 802-527-8151, Website: www.mylantech.com. Mylan Technologies Inc. (MTI) is the global partner of choice for transdermal pharmaceuticals. Industry-leading science and technology earned MTI four out of the first six generic transdermal approvals from the FDA. MTI maintains advanced R&D and manufacturing capabilities and is the largest manufacturer of transdermal generics in the United States.



- 502 Northern Lipids Inc.**, 8855 Northbrook Court, Burnaby, B.C., Canada; Tel: 888-654-7437 or 604-222-2548, Fax: 604-222-2563, Website: www.northernlipids.com. NLI is a Contract Manufacturing Organization that also specializes in offering services for pre-clinical & clinical development of lipid-based pharmaceutical formulations such as liposomes, emulsions and micelles. We provide LIPEX™ brand of Extruders, customized formulation development, scale up and analytical services from R & D through to commercialization.
- 618-718 NovaMatrix**, Industriveien 33, Sandvika, 1337, Norway; Tel: +47 67815500, Fax: +47 67815510, Website: www.novamatrix.biz. NovaMatrix provides well-characterized, ultrapure alginate, chitosan, and hyaluronate for use in drug delivery, tissue engineering, cell encapsulation, wound healing, and medical device applications, where purity and regulatory documentation are important. NovaMatrix also has several innovative technologies based on these biopolymers that are available to license.
- 606 Noven Pharmaceuticals, Inc.**, 11960 SW 144th St., Miami, FL 33186; Tel: 305-253-5099, Fax: 305-251-1887. Noven Pharmaceuticals, Inc. is a leading developer of advanced transdermal drug delivery technologies and prescription transdermal products. Noven's prescription patches are approved in over 30 countries and include Vivelle-Dot® (the most prescribed estrogen patch in the U.S.) and Daytrana™ (the first and only patch approved for the treatment of ADHD).
- 427 Noveon, Inc.**, 9911 Brecksville Road, Cleveland, OH 44141-3247; Tel: 1-800-379-5389, Website: www.pharma.noveon.com. Noveon, Inc. offers a versatile line of pharmaceutical ingredients that have a long history of successful use in oral solid dosage and topical formulations. Products include Carbopol® rheology modifiers, Pemulen® polymeric emulsifiers and Noveon® polycarbophils. Noveon's pharmaceutical grade polymers are manufactured in ISO 9001 certified and cGMP facilities.
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- 430 SOLIQS**, Abbott GmbH & Co. KG, P.O. Box 210805, Ludwigshafen, 67008, Germany; Tel: +49-621-589-2427 or +49-621-589-2554, Fax: +49-621-589-3092, Website: www.soliqs.com. Soliqs(TM) has developed three cost-competitive drug delivery technologies [Meltrex (TM), NanoMorph(TM) and Xellex(TM)] which can significantly enhance bioavailability, combined with a variety of controlled-release profiles. Collaborative projects are carried out with clients, from early feasibility studies through pilot plant for clinical trial purposes to full scale GMP production.
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- 125 Vector Corporation**, 675 44th Street, Marion, Iowa 52302; Tel: 319-377-8263, Fax: 319-377-5574, Website: [www.vectorcorporation.com](http://www.vectorcorporation.com). Vector Corporation is a manufacturer of solid dosage/form processing equipment for immediate, controlled and sustained release products; fluid bed granulating, coating and drying systems, high shear granulator mixers, roll compaction units and tablet coating systems. Laboratory facilities are available for product testing and development and process development.



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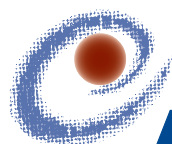
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# POSTERS

34th Annual Meeting & Exposition of the Controlled Release Society



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## Poster Session I (Both poster sessions are available for viewing Sunday – Wednesday.)

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University of Pennsylvania, USA

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TNO, The Netherlands
- 302 Development of a citric acid polyester gel with biodegradability and pH responsive drug release**  
K Uchida, S Sakata, H Ooba, K Sutani, M Fujishima, K Fuji  
Kinki University, Japan
- 303 Development of Polyvinyl alcohol and Sodium alginate Gel Based Clindamycin Wound Dressing by Freeze-thawing Method**  
C Yong, J Young, S Hoon, C Yong, W Lyoo, J Kim, B Yoo, J Rhee, H Choi  
Yeungnam University, Korea
- 304 Development of liposome formulation incorporated with nitrosyl ruthenium complexes for PDT application**  
R De Lima, A Tedesco  
Universidade de São Paulo, Brazil
- 305 Diffusion from silicone elastomer matrices**  
E McBride, J Girkin, C Wilson  
University of Strathclyde, UK
- 306 Diffusion in Poly(lactide-co-glycolide) and Dichloromethane Mixtures**  
W Foss, A Clausi, P Burke  
Amgen, Inc., USA
- 307 Effect of Terbinafine Hydrochloride Incorporated into Chitosan Gels on Candida Albicans: Ex-Vivo Evaluations**  
I Ozcan, O Abaci, B Aksu, A Haliki, S Senel, O Ozer, T Güneri  
Ege University, Turkey
- 308 Engineering of Biocompatible Biodegradable Alginate Foams**  
T Andersen, M Dornish  
FMC BioPolymer/  
NovaMatrix, Norway
- 309 Evaluation of In-Vitro Release Properties of Vancomycin Microspheres Prepared with Polyaspartic Acid**  
I Ozcan, T Guneri  
Ege University, Turkey
- 310 Fabrication and Characterization of Novel Porous CaCO<sub>3</sub> Polyelectrolyte Microcapsules**  
J Travas-Sejdic, J Wen, R Alany, Y Sun  
The University of Auckland, New Zealand
- 311 Fabrication of Drug-loaded Microfibers via Solvent Removal**  
D Decoteau  
Brown University, USA
- 312 Hepatoprotective and antioxidant effects of Cuscuta chinensis and its nanospheres on acetaminophen-induced acute liver injury in rats**  
F Yen  
Kaohsiung Medical University, Taiwan
- 313 Highly Soluble Drug in Microgranules Prepared with Crosslinked Pectin and Embedded in a Mucoadhesive Polymer Matrix**  
M Placzek  
Medical University of Gdansk, Poland
- 314 Hydrogel-like scaffolds for neocartilage formation using rabbit chondrocytes**  
P Ji Sun  
Pochon CHA University, South Korea
- 315 Impact of digestion on pharmaceutical surfactants**  
S Klein, K Maeder  
Martin-Luther-University of Halle, Germany
- 316 Improvement of Chitosan Penetration Enhancement Properties by Ionic Interaction with Ascorbic Acid**  
S Rossi, M Marciello, G Sandri, M Bonferoni, F Ferrari, C Caramella  
University of Pavia, Italy
- 317 Injectable Microdispersions for Drug Delivery**  
A Nathan, M Borgia, P Twaddle, T Matalenas, S Arnold  
Ethicon, Johnson and Johnson, USA
- 318 Liposomal alendronate inhibits systemic innate immunity and reduces size and number of endometriosis implants in rats**  
E Haber, N Koroukhov, G Golomb, M Schachter  
The Hebrew University of Jerusalem, Israel
- 319 Long-Circulating Biodegradable Nanoparticles Prepared with PLA-PEG-COOH or PLGA-PEG-COOH Copolymers for Targeted Delivery**  
T Betancourt, J Byrne, N Sunaryo, S Patel, M Kadapakkam, L Brannon-Peppas  
The University of Texas at Austin, USA
- 320 Mathematical Modelling of Time-Dependent Radial Protein Concentration Profiles in Single Biodegradable PLGA Microspheres**  
M Biondi, F Mollica, P Netti, F Ungaro, F Quaglia, M La Rotonda  
University of Naples Federico II, Italy
- 321 Modified release patterns of PLGA hot-melt extruded implants**  
D Shuwisitskul, R Bodmeier  
Freie University Berlin, Germany
- 322 Modified-Release of IgG from Poly(lactide-co-glycolide) Microparticles for Pulmonary Delivery: Comparison of Uncapped and Capped Polymers**  
R Kaye, T Purewal, O Alpar  
University of London, UK
- 323 Non-invasive characterization of Hydroxyapatite loaded Collagen-Chitosan-scaffolds for bone regeneration by ESR spectroscopy and Benchtop-MRI**  
H Nitzsche, H Metz, A Besheer, D Peschel, J Vogel, T Groth, K Maeder  
Martin-Luther-University of Halle, Germany
- 324 Novel Glycol Chitosan Hydrogels: pH-Sensitive Swelling, Biodegradation, and Drug Release Behavior**  
Y Yun, K Ji Hye, A Lee, S Han, Y Cho  
Hanyang University, Republic of Korea
- 325 Phosphorylation of Starch via Reactive Extrusion for Controlled Release of Drugs**  
S O'Brien, Y Wang  
University of Arkansas, USA

## Biodegradable/Biocompatible Polymers (continued from previous page)

- 326 Poly(ether-anhydride) Nanoparticles for Prolonged Anti-Cancer Drug Delivery**  
L Wang, B Tang, M Yang, J Fu, J Hanes  
Johns Hopkins University, USA
- 327 Polystyrene Microballoons: A Gastro-Retentive Control Release System**  
A Jain, S Seth, S Jain  
Dr. H. S. Gour University, India
- 328 Preparation of N-acylchitosan microspheres for controlled release of 6-mercaptopurine**  
S Yu, F Mi, S Shyu, C Peng  
Vanung University, Taiwan
- 329 Preparation of w/o/w templates for preparation of polysester microparticles by a single step in-line emulsification**  
H Chang  
University of Queensland, Australia
- 330 Prolonged Release of 2-methoxyestradiol from Hydrogels**  
C Brophy, M Dadsetan, M Yaszemski, A Maran  
Mayo Clinic, USA
- 331 Protein Release from Self-Assembled Hydrogels**  
M De Jong, E Bulten, K Van Bommel, A Friggeri  
Biomade Technology Foundation, The Netherlands
- 332 Role of Lipid Rafts in Innate Immunity and Phagocytosis of Polymer Based Particles**  
K Ishii, G Nagao, T Taki, H Terada  
Tokyo University of Science, Japan
- 333 Sequentially Crosslinked Biodegradable Poly (B-amino esters) for Drug Delivery**  
S Hire, M Kulkarni  
National Chemical Laboratory, India
- 334 Statistical Approach in Alginate Membrane Formulation for Cell Encapsulation in a GMP-based cell factory**  
S Villani, M Marazzi, C Lauritano, M Faustini, F Klinger, F Crovato, S Veronese, V Rapisarda, M Klinger, M Torre, D Vigo  
University of Milan, Italy
- 335 Surface Characterization of Poly(lactic acid)/Everolimus and Poly(ethylene vinyl alcohol)/Everolimus Stents**  
M Wu, M Davies, C Roberts, L Kleiner, F Tang, S Hossainy  
University of Nottingham, UK
- 336 The Use of Design of Experiment to Optimise the Drug Loading Process in a Vaginal Hydrogel Formulation**  
A Ross, M Livingstone, J Halliday, L Currie, L Kelly, C Murphy  
Controlled Therapeutics, Scotland
- 337 Transesterification and End Group Chemistry in Acid Terminated Biodegradable Polymers**  
K Branham, R Mukherjee, D Hall, J Gibson  
Durect Corporation, USA
- 338 Use of mucoadhesive Chitosan to enhance the cellular association of Paclitaxel into 4T1 cells delivered in PLGA Nano- or Microparticles**  
S Chakravarthi  
University of Nebraska Medical Center, USA

## Cellular Barrier

- 339 Brain Cancer Therapy in Rats by Combination Use of PLGA Microspheres Containing Anti-cancer Drug and Thermoreversible Gelation Polymer**  
D Kaneko, K Tanaka, K Hashizawa, T Ozeki, H Okada  
Tokyo University of Pharmacy and Life Sciences, Japan
- 340 Cationic beta-cyclodextrins for doxorubicin delivery across the Blood Brain Barrier**  
E Gil  
Penn State University, USA
- 341 Design and Evaluation of Dopamine (DA) Nanoparticles Dispersed within a Scaffold for Intracranial Implantation**  
S Pillay, V Pillay, Y Choonara, M Danckwerts  
University of the Witwatersrand, South Africa
- 342 Encapsulation of Moxifloxacin in Poly(butyl cyanoacrylate) Nanoparticles Enhances Efficacy against Mycobacterium tuberculosis**  
K Kisich, S Gelperina, E Shipulo, E Oganessian, M Higgins, S Wilson, I Lyubimov, S Biketov, L Heifets  
Moscow Medical Academy, Russia
- 343 Endocytosis and Interaction of Poly (Amidoamine) Dendrimers with Caco-2 Cells**  
K Kitchens, A Foraker, R Kolhatkar, P Swaan, H Ghandehari  
University of Maryland-Baltimore, USA
- 344 Hybrid of cell penetrating peptide and drug binding motif traffic the delivery of MDR drug**  
Z Zheng, H Aojula, D Clarke  
University of Manchester, UK
- 345 Nondegradative trafficking of nanoparticles to the nuclear region based solely on size**  
S Lai, K Hida, S Man, C Chen, C Machamer, T Schroer, J Hanes  
Johns Hopkins University, USA
- 346 Novel nanocarriers for patient-specific brain tumor therapy**  
E Karathanasis, A Agarwal, K Mcneeley, F Zhao, V Patel, X Hu, A Annapragada, R Bellamkonda  
Georgia Institute of Technology/Emory University, USA

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<b>Poster Viewing</b>	Sunday, July 8 18:30 – 19:30	Tuesday, July 10 09:00 – 17:00
	Monday, July 9 10:00 – 18:00	Wednesday, July 11 09:30 – 13:00

<b>Authors Present</b>	Monday, July 9 10:00 – 10:45 15:00 – 16:00
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### Cellular Barrier (continued from previous page)

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|---|---|--|--|
| <b>347 Paclitaxel and Ceramide Combination Therapy in Biodegradable Polymeric Nanoparticles to Overcome Multidrug Resistance in Cancer</b><br>H Devalapally, L Van Vlerken, Z Duan, M Seiden, M Amiji<br>Northeastern University, USA | <b>348 Sustained intracellular concentrations of mometasone furoate upon administration in WGA-conjugated PLGA nanoparticles</b><br>N Surti, S Naik, B Dwarkanath, A Misra<br>The M. S. University of Baroda, India | <b>349 Transferrin Coupled PEGylated Nanoparticles for Brain Tumor Targeting</b><br>A Jain, S Jain<br>Dr. H. S. Gour University, India | <b>350 Uptake and Intracellular Fate of Lipid-Based Particles Inside Individual Cells by Raman Micro-Spectroscopy: Studies with Plain and TAT-Modified Liposomes</b><br>C Matthaus, A Kale, T Chernenko, M Diem, V Torchilin<br>Northeastern University, USA |
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### Controlled Release in Food

- |  |   |  |  |
|--|---|--|--|
| <b>351 Comparison of Alginate Matrix Capsules and Gelatin Matrix Capsules: Effect of Matrix Forming Materials on Flavor Release Kinetics</b><br>J Zhang, R Guisinger<br>Givaudan Flavors Corp, USA | <b>353 Importance of Nutraceuticals: An Overview</b><br>R Kumari, R Garg, G Gupta<br>Asbasjism College of Pharmacy, India   | <b>355 Milk Casein Micelles as Potential Natural Carriers for Nutraceuticals: Electron Microscopy and Image Analysis</b><br>M Faustini, A Asti, M Michelis, S Scocca, E Munari, V Russo, T Chlapanidas, M Klinger, M Torre, D Vigo<br>University of Milan, Italy | <b>356 Soft Capsule as Gastrointestinal Reflux Resistant Delivery System: Concept &amp; Delayed Release Profiles of GRAS Dietary Supplements</b><br>N Chidambaram, M Price<br>Banner Pharmacaps Inc, USA |
| <b>352 Flavor Release through Polymer Films using a Dynamic Vapor Gravimetric Apparatus</b><br>D Burnett, D Pearce, F Thielmann<br>Surface Measurement Systems, USA                                | <b>354 Microspheres based on soy, zein protein as oral delivery vehicles. I. Microsphere fabrication, characterization and dissolution properties</b><br>L Chen, M Subirade<br>Université Laval, Canada |  |  |

### Nanotechnology I

- |  |   |  |  |
|--|---|--|--|
| <b>357 A Cremophor-free Formulation for 17-AAG using PEO-b-PDLA Micelles: Characterization and Pharmacokinetics in Rats</b><br>M Xiong, D Hart, N Davies, G Kwon, M Forrest<br>The University of Kansas, USA | <b>359 A new Possibility to Determine Size Distributions of Biodegradable Nanoparticles: Characterizing PLGA Nanospheres by Separation via Flow-FFF and Detection via MALS</b><br>C Augsten, A Hünnerbein, R Neubert, K Mäder<br>University Halle-Wittenberg, Germany | <b>360 A Novel Approach to Surface Functionalization of Nanoparticles: I. PEGylation</b><br>Y Patil<br>Wayne State University, USA   | <b>362 Cell Engineering of Corneal Epithelium by a Bowman's Membrane-mimic Nanofibrous Membrane</b><br>H Tseng, A Chien, M Sheu, Y Ho<br>Taipei Medical University, Taiwan ROC |
| <b>358 A Heparin/Poly (L-lysine) Nanoparticle-Coated Polymeric Microspheres for Stem Cell Therapy</b><br>S Bo-Kyung<br>Pochon CHA University, South Korea  |   | <b>361 Antigen-Conjugated Liposomes Enhanced Hyposensitization Immune Therapy with Extra-Low Doses</b><br>H Miyauchi, K Ichikawa, T Urakami, S Yonezawa, K Shimizu, T Ishida, H Kiwada, T Asai, N Oku<br>University of Shizuoka, Japan | <b>363 Charge-Reversal PAMAM Dendrimer</b><br>P Xu, Y Zhan, E Van Kirk, W Murdoch, Y Shen<br>University of Wyoming, USA  |

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- 364 Comparison of different homogenization technologies to produce Ultrafine Testosterone Nanocrystals**  
R Mauludin, J Möschwitzer, R Mueller  
Free University of Berlin, Germany
- 365 Conformally Coated Nanoparticle-Doxorubicin Therapy for Brain Tumors**  
C Kao, F Lee, A Jain, R Bellamkonda  
Emory University, USA
- 366 Design and Characterization of Poly(lactide-co-glycolide) Nanoparticles Prepared with Polaxamer for Better Delivery of Paclitaxel**  
G Bende, S Kollipara, R Saha  
Birla Institute of Technology and Science, India
- 367 Designing and Characterization of Solid Lipid Nanoparticles Loaded With Terbinafine Hydrochloride**  
A Borade, G Savant, S Poddar  
Prin K.M.Kundnani College of Pharmacy, India
- 368 Development of ascorbyl palmitate nanosuspension for topical drug delivery system**  
V Teeranachaideekul, E Souto, V Junyaprasert, R Mueller  
Mahidol University, Thailand
- 369 Dual Growth Factor Loaded Scaffolds for Cell Effect**  
J Kim, Y Kim, S Lee  
Ewha Womans University, South Korea
- 370 Effect of Cross-Linking Methods on Particle Size Distribution of Chitosan Nanoparticles**  
A Dudhani, S Kosaraju, B Finnin  
Monash University, Australia
- 371 Effect of Particle Size on Solubility Properties of Ibuprofen Powder: Nanocrystallization by Ball-Milling**  
L Peltonen, J Hannukainen, S Mäkeläinen, J Hirvonen  
University of Helsinki, Finland
- 372 Effect of type of organic phase solvents on preparation of poly(D,L-lactide-co-glycolide) nanoparticles and release characteristics *in vivo***  
G Mittal, D Sahana, R Majeti  
National Institute of Pharmaceutical Education and Research (NIPER), India
- 373 Effervescent Powders for Pulmonary Nanoparticle Delivery**  
R Löbenberg, W Finlay, W Roa, S Azarmi  
University of Alberta, Canada
- 374 Electrospinning of collagen type I nanofibers onto an anodic oxidized Titanium surface enhances osteoblast-like cell attachment**  
S Suh, D Lee, S Nam, I Shim, S Heo, S Lee  
Ewha Womans University, South Korea
- 375 Enhancing fibrin clot lysis by tissue plasminogen activator (t-PA) encapsulated PLGA nanoparticles with chitosan (CS) or chitosan-GRGD (CS-RGD) coating**  
T Chung, C Lee, W Tsai  
National Yunlin University of Science and Technology, Taiwan ROC
- 376 Evaluation of Novel Cationic Core-shell Chitosan Nanoparticles for Non-viral DNA Delivery**  
S Surassmo  
Nanotec, Thailand
- 377 Bio-adhesive Vaginal Foam - *in-vitro* and *in-vivo* adhesion profile**  
D Friedman, D Tamarkin, B Kaplan  
Foamix Ltd, Israel
- 378 Formulation of Chemically Crosslinked Albumin-Chitosan Mixed Matrix Microparticulate Systems**  
K Cotta  
Mercer University, USA
- 379 *In vitro* and *in vivo* Occlusion Properties of Nanostructured Lipid Carriers (NLC)**  
J Pardeike, R Müller  
FU-Berlin, Germany
- 380 *In Vitro* and *In Vivo* Pharmacokinetic Characterization of Short Chain C6-Ceramide Liposomes**  
B Zolnik, S McNeil, S Stern  
National Cancer Institute, USA
- 381 Increased Uptake of “Smart” pH-Sensitive TAT Peptide-Bearing Liposomes by Cardiac Cells in Perfused Langendorff Heart Model**  
A Kale, V Torchilin  
Center for Pharmaceutical Biotechnology and Nanomedicine NEU, USA
- 382 Investigation Of Solid Lipid Nanoparticles With Clarithromycin For The Improvement Of Therapeutic Utility**  
M Shahare, S Kale, A Borade, P Kodape  
Prin.K.M.Kundnani College of Pharmacy, India
- 383 Lactose Conjugated PLGA Nanoparticles for Lung Targeting**  
A Jain, L Ra, S Jain  
Dr. H. S. Gour University, India

## New Polymers for Drug Delivery

- 384 Alginate sodium/Eudragit® E PO interpolyelectrolyte complexes for colon drug delivery**  
R Moustafine, A Salachova, E Frolova  
Kazan State Medical University, Russia
- 385 Bile acid conjugated Chitosan oligosaccharide Nanoparticles for Anticancer agent Carrier**  
C Choi, J Park, S Chae, M Jang, J Nah  
National University, Korea
- 386 Bio-inspired Peptide-Poly(Ethylene Oxide) Coated Iron Oxide Nanoparticles applicable for MRI**  
J Maier, M Antonietti, M Niederberger, H Metz, K Mäder  
Max-Planck Institute of Colloids and Interfaces, Germany
- 387 Biodegradable Diclofenac Microcapsules for Sustained Drug Delivery System**  
M Charde  
UDPS, India



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- 388 Biosynthesized Thermosensitive Drug Carriers For The Delivery Of HSP90 (Heat Shock Protein 90) Inhibitor Geldanamycin (Ga) Via Hyperthermal Tumor Targeting**  
Y Bae, R Buresh, D Furgeson  
University of Wisconsin-Madison, USA
- 389 Can Chitosans get Sterilized by Electron Irradiation? Monitoring Chitosan Degradation by Flow Field-Flow Fractionation and Multi-Angle Light Scattering**  
C Augsten, W Knolle, K Mäder  
Institute of Pharmaceutics and Biopharmaceutics, Germany
- 390 Characterization of Acetaminophen Sustained Release Matrix Tablets Made with Eudragit® NM 30 D**  
S Shabana, M Annamalai, D Klimkowsky, N Nyamweya  
Degussa, USA
- 391 Chitosan Nanoparticles based on Polyelectrolyte Complexes of All-Trans Retinoic Acid and methoxy poly (ethylene glycol)-grafted-chitosan**  
D Kim, Y Jeong, M Jang, J Park, H Jang, M Jang, D Seo, J Kwon, M Kim, J Nah  
Suncheon National University, Korea
- 392 Comparative evaluation of Chitosan/Eudragit® L100-55 polycomplex matrix systems**  
E Margulis  
Kazan State Medical University, Russia
- 393 Degradation of PCL-MPEG Diblock Copolymer in Rat Plasma**  
W Lin, K Chang  
National Taiwan University, Taiwan
- 394 Development of Extended Release Gastroretentive Dosages of Ibuprofen**  
S Ali, C Santos, A Quadir  
BASF Corporation, USA
- 395 Development of Reversible Hydrophilic/Hydrophobic Surfaces**  
R Suzuki, N Vail  
Southwest Research Institute, USA
- 396 Dissolution of Ibuprofen from PVP-40 and PEG-8000 Solid Dispersions**  
Z Nacer, B Conway, H Batchelor  
Aston University, UK
- 397 Drug delivery carrier using polymeric micelle with iron oxide nanoparticles**  
H Choi  
Korea Research Institute of Chemical Technology, Korea
- 398 Floating Pulsatile Drug Delivery Using Cavilink™ For Chronotherapy**  
P Sher, G Ingavle, S Ponrathnam, J Benson, N Li, A Pawar  
BVU Poona College of Pharmacy, India
- 399 Formulation optimization of photocrosslinked polyacrylic acid hydrogel as an adhesive for dermatological patches: Evaluation of the reliability of nonlinear optimal formulation using a bootstrap resampling technique in combination with Kohonen's self-organizing map**  
Y Onuki, K Ohyama, C Kaseda, M Morishita, K Takayama  
Hoshi University, Japan
- 400 Heparin-Immobilized Microparticles for Sustained Drug Delivery**  
K Oh, B Kim, S Cho, S Yuk  
Hannam University, Korea
- 401 Improved efficacy of poly(I:C) mediated immunostimulation of dendritic cells via a PLL-g-PEG surface coated microparticle**  
A Hafner, B Corthésy, M Textor, H Merkle  
Institute of Pharmaceutical Sciences, ETH, Switzerland
- 402 In vivo-in vitro Biodegradation and Tissue Compatibility of Novel Biomaterial used as Ciprofloxacin Implant for Drug Delivery System**  
R Chakole  
UDPS, India
- 403 Methacrylated Hyperbranched Polyglycerol Hydrogels: Preparation and Physical Characterization**  
M Oudshoorn, R Rissmann, J Bouwstra, W Hennink  
Utrecht University, The Netherlands
- 404 Molecular Design of Novel Biodegradable pH/Temperature-Sensitive Block Copolymer Hydrogels**  
M Nguyen, D Lee  
SungKyunkwan University, South Korea
- 405 Nanoparticles Preparation by Graft Copolymerisation of 2-Hydroxyethyl methacrylate onto Thiolated Chitosan**  
F Aghaei Moghaddam, F Atyabi  
Tehran University of Medical Sciences, Iran
- 406 New Polymeric Micelle as Drug Carriers for the Photodynamic Therapy**  
C Wang  
Industrial Technology Research Institute, Taiwan ROC
- 407 Novel Degradable Polymer for the Controlled Release of Hydrophobic Drugs as a Drug Eluting Stent Coating**  
L Patrick, S Stucke, S Chudzick  
SurModics, Inc, USA
- 408 Novel Film Forming Polyacid-Polybase Blends For Tailoring Drug Release**  
A Menjoge, M Kulkarni  
National Chemical Laboratory, India
- 409 Novel Poly(hexyl-substituted-lactide) based Drug Delivery Systems: Injectable semi-solid hexPLAs and PEG-hexPLA-Micelles**  
M Möller, K Mondon, T Trimaille, R Gurny  
University of Geneva, Switzerland
- 410 Performance of Degradable Polyester Block Copolymers as Drug-Eluting Stent Coatings**  
N Lockwood, R Steendam, R Hergenrother  
SurModics, Inc, USA
- 411 Polyvinyl Alcohol Grafted Polyethylene Glycol Copolymer for Application in Floating Drug Delivery Systems**  
S Ali, C Santos, A Quadir  
BASF Corporation, USA
- 412 Release Characteristics of Lidocaine from Swellable Local Implant of Polyethyleneimine-Polyvinyl pyrrolidone (PEI-PVP) Hydrogel**  
H Tseng, M Sheu  
Taipei Medical University, Taiwan

**New Polymers for Drug Delivery** (continued from previous page)**413 Semitelechelic b-Cyclodextrin-Poly(4-acryloylmorpholine) Conjugates For Drug Delivery**

M Bencini, P Ferruti, E Ranucci, R Cavalli  
Università degli studi di Milano, Italy

**414 Sustained Release Chitosan Microspheres Prepared By a W/O/W Emulsion-Spray Drying Method**

I Paños, R Harris, N Acosta, A Heras  
Complutense University, Spain

**415 Synthesis of Linear Multifunctional Poly(ethylene glycol) as Novel Drug Delivery Systems**

X Liu, C Hein, D Wang  
University of Nebraska Medical Center, USA

**416 Synthesis of novel liquid crystalline block copolymer for effective encapsulation of drugs**

M Nishihara, Y Murakami, M Yokoyama  
Kanagawa Academy of Science and Technology, Japan

**417 Synthesis, characterization and antibacterial effect of trimethylated 6-NH<sub>2</sub>-6-Deoxy Chitosan**

A M M Sadeghi  
Leiden University, The Netherlands

**418 Vehicle using Low Molecular Water Soluble Chitosan for Target the Specific Tissue**

M Jang, J Nah  
Suncheon National University, Korea

## Poster Session II (Both poster sessions are available for viewing Sunday – Wednesday.)

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				Wednesday, July 11 09:30 – 10:00

### Advances in Colloidal Drug Delivery

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| <p><b>419 Amphotericin B-loaded lipid nanospheres and their <i>in vitro</i> and <i>in vivo</i> characteristics</b><br/><u>S Jung</u><br/>Korea Research Institute, Korea</p> <p><b>420 Comparative Activity of Two Novel Methotrexate-Loaded W/O Microemulsions on Human Breast Cancer Cell Lines</b><br/><u>Y Karasulu</u>, E Göker, T Güneri<br/>Ege University, Turkey</p> <p><b>421 Doxorubicin-conjugated liposomes for intracellular delivery of anti-cancer drug</b><br/><u>B Shin</u>, T Hwang, S Kim, J Lee, A Lee, H Han, C Song, H Seong<br/>Korea Research Institute, South Korea</p> <p><b>422 ESEM: An Alternative Assay for Investigating Liposome Stability</b><br/><u>H Ali</u>, A Mohammed, N Weston, J Smith, Y Perrie<br/>Aston University, UK</p> | <p><b>423 Formulation and Characterisation of Nanoparticulate Systems for Oral Delivery of L-Glutathione</b><br/>J Wen, S Zhou, Y Zhou, <u>R Alany</u><br/>University of Auckland, New Zealand</p> <p><b>424 Intracellular DNA Delivery by Chitosan-coated PLGA Nanoparticles</b><br/>C Guo, <u>R Gemeinhart</u><br/>University of Illinois, USA</p> <p><b>425 Loading to solid lipid nanoparticles (SLN) improves cutaneous uptake of glucocorticoides widely varying in lipophilicity</b><br/><u>P Schlupp</u>, W Mehnert, M Schaefer-Korting<br/>Freie Universität, Germany</p> <p><b>426 MAXITARG-DOX: Hepatic Targeted Drug Delivery System with Reduced Cardiac and Renal Toxicity</b><br/><u>R Patil</u>, R Gaikwad, A Samad, P Devarajan<br/>Institute of Chemical Technology, India</p> | <p><b>427 Nanoparticles for Protein Delivery from Microemulsions containing Lecithin and Decyl Glucoside</b><br/><u>A Graf</u>, E Ablinger, S Peters, A Zimmer, S Hook, T Rades<br/>University of Otago, New Zealand</p> <p><b>428 Phytosterosomes: Polyoxyethylene Phytosterol Vesicles: Their Preparation, Characterization and Transdermal Application</b><br/><u>G Devaraj</u>, S Apte, R Boinpally, R Devraj<br/>University of Otago, New Zealand</p> <p><b>429 Preparation and Characterization of Long Circulating Nanoemulsion for Passive Tumor Targeting</b><br/><u>S Ganta</u>, P Sharma, B Baguley, S Garg<br/>University of Auckland, New Zealand</p> | <p><b>430 Purified, Ubiquinone-loaded and Surfactant-free PLGA Nanoparticles</b><br/>B Nehilla, T Desai<br/>Boston University, USA</p> <p><b>431 Self-associating poly(ethylene oxide)-<i>block</i>-poly(epsilon-caprolactone) copolymers with carboxyl, benzyl carboxylate and doxorubicin side group: Novel micellar nanocontainers and drug conjugates</b><br/><u>A Mahmud</u>, X Xiong, A Lavasanifar<br/>University of Alberta, Canada</p> <p><b>433 Solvent-free Biodegradable Nanoparticles as Carriers for Hydrophobic and Hydrophilic Drugs</b><br/><u>A Loxley</u>, C Eatmon, D Fairhurst, R Shattock, M Arias<br/>Particle Sciences, USA</p> |
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### Advances in Ocular Delivery

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| <p><b>434 Chitosan/PVA Film for Ocular Drug Delivery of Antimicrobial Agents</b><br/><u>B Prajapati</u>, A Patel, M Patel<br/>Ganpat University, India</p> <p><b>435 Development and characterization of a biodegradable intraocular system containing Cyclosporine A for the treatment of posterior uveitis</b><br/>J Saliba, A Faraco, M Yoshida, H Mansur, <u>A Cunha</u><br/>Federal University of Minas Gerais, Brazil</p> | <p><b>436 Effect of Enzymatic Degradation on Cyclosporine Release from Solid Lipid Nanoparticles and Determination of Cellular Uptake by Confocal Microscopy</b><br/>E <u>Gokce</u>, G Sandri, M Bonferoni, S Rossi, F Ferrari, I Guneri, C Caramella<br/>University of Ege, Turkey</p> <p><b>437 <i>In Vitro</i> Evaluation of Sulphacetamide Sodium Microspheres for Ocular Drug Delivery</b><br/>D Sensoy, <u>N Bergisadi</u><br/>Istanbul University, Turkey</p> | <p><b>438 <i>In vitro</i> ocular delivery of fluconazole from two mocoadhesive hydrogels</b><br/><u>T Gratieri</u>, R Vianna Lopez<br/>Universidade de São Paulo, Brazil</p> <p><b>439 Novel Solid Lipid Nanoparticle Formulation for Delivery of Diclofenac Sodium to the Eye</b><br/><u>A Attama</u>, S Reichl, C Mueller-Goymann<br/>University of Nigeria, Nigeria</p> | <p><b>440 Preparation and <i>In Vitro</i> Characterization of Microspheres Containing A Macrolide Drug: Rokitamycin</b><br/>G Rassu, E Gavini, <u>G Sandri</u>, P Giunchedi<br/>University of Pavia, Italy</p> <p><b>442 Water-soluble Chitosan-PAA Nanosuspension for Ophthalmic Delivery of Pilocarpine</b><br/><u>H Lin</u>, S Yu, Y Lin<br/>Southern Taiwan University, Taiwan</p> |
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- 444 An optimized Pin Prick Test for the pharmacodynamic quantification of the cutaneous penetration of local anaesthetics: A pilot study**  
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- 445 Assessment of Barrier Perturbation Caused by Maltose Microneedles**  
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- 446 Controlled Delivery of Ambroxol using the Ethylene-Vinyl Acetate**  
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- 447 Correlation of *In Vitro* Transport to The Integrated PK-PD Profiles Following Transdermal Iontophoresis of Dopamine Agonist 5-OH-DPAT in Rats**  
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- 448 Delivery of pHIS-HIV-hugag into Skin using Solid Lipid Nanoparticles and Chitosan Nanoparticles**  
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- 449 Demonstration of Dose-controlled Delivery by Dissolvable Micro-needle Arrays**  
S Oh, S Kwon  
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- 450 Development of a Liposomal Topical Drug for Acne Treatment**  
A Wang  
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- 451 Development of adhesive PVA/PVP/SA hydrogel containing sod Fusidate for wound dressing**  
S Jin Dong-A  
Pharmaceutics, Korea
- 452 Distribution of FGF-2 within excisional wounds following topical application**  
R Braund, S Hook, N Greenhill, N Medicott  
University of Otago, New Zealand
- 453 Effective Topical Delivery of Peptides and Proteins Following Formulation in a Water-in-Oil Microemulsion**  
G Russell-Jones, M Luke, R Himes  
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- 454 Electrotransport kinetics of metoclopramide across porcine skin *in vitro***  
J Cazares-Delgado, I Ben-Aziza, A Ganem-Rondero, D Quintanar-Guerrero, Y Kalia  
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- 455 Enhanced Transdermal Delivery of Melatonin via Elastic Liposomes Coupled Iontophoresis**  
V Dubey, D Mishra, N Jain  
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- 456 Enhancement of skin penetration of P20 phosphopeptide using a protein transduction domain**  
L Lopes, E Furnish, P Komalavilas, B Seal, A Panitch, M Bentley, C Brophy  
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- 457 Enhancement of the transdermal delivery of capsaicin derivative-sodium nonivamide acetate by microemulsion**  
Y Lin, Y Huang, Y Tsai, P Wu  
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- 458 Enhancement of Transdermal Permeation of Granisetron**  
D Houze, S Bonne, D Kanios, J Mantelle, G Toth  
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- 459 Evaluate Microneedle Array Pretreatment for Transdermal Drug Delivery**  
G Yan, J Zhang, S Sharma, D Paulsen, K Munk, K Warner  
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- 460 Formulation and *in vitro* Evaluation of Membranes for Transdermal Administration**  
A Rodriguez Bayon, A Ariza Osorio  
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- 462 Improving safety of transdermally administered potent opioids by incorporating a rate-controlling membrane**  
C Adams, Y Saeki, S Sanders  
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- 463 *In Vitro* and *In Vivo* Evaluations of Microemulsion Formulations of CZ48, Lactone-Stabilized Camptothecin-C20-Propionate, for Transdermal Delivery**  
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- 464 *In Vitro* Evaluation of Clobetasol 17-propionate Topical Cream Formulations**  
K Wa Kasongo, R Walker  
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- 465 *In Vitro* Modeling of Transdermal PTH Delivery by Dissolving Micro-needle Patch**  
S Kwon, S Oh  
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- 466 *In Vitro* Transdermal Delivery of Human IgG across Hairless Rat Skin**  
G Li, A Badkar, S Nema, A Banga  
Mercer University, USA
- 467 *In-Vitro* Transdermal Permeation Comparison of Cetirizine Base vs. Cetirizine Dihydrochloride**  
S Hantman, S Bonne, D Houze, J Mantelle  
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- 468 Iontophoretic Delivery of Cream and Gel Formulations of Acyclovir**  
S Siddoju, P Friden, A Banga  
Mercer University, USA



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- 470 Non-ionic surfactant based nanovesicular carrier for permeation enhancement of BCS class IV drug**  
A Azeem  
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- 471 Preparation ketoprofen formulations with multi-enhancers**  
Y Huang, R Wang, J Chang, Y Tsai, P Wu  
Kaohsiung Medical University, Taiwan
- 472 Reduction in Obesity in Swiss Mice Following Topical Administration of Insulin**  
G Russell-Jones, S Lee, K McMenigall  
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- 473 Stratum Corneum Microstructure and Implications to Size Dependent Penetration**  
P Xu, G Tan, L Lawson, J He, J Clements, K Papadopoulos, V John  
Tulane University, USA
- 474 Synthesis and Evaluation of Skin Permeation and Accumulation Profiles of Ketorolac Fatty Acid Esters**  
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Yeungnam University, Korea
- 475 Synthesis and transdermal penetration of selected lamivudine derivatives**  
M Gerber, J Breytenbach, J Du Plessis  
North-West University, South Africa
- 476 Synthesis and transdermal penetration of selected stavudine derivatives**  
E Holmes, M Gerber, J Breytenbach, J Du Plessis  
North-West University, South Africa
- 477 The Effect of Temperature on the Copolymerization Of NIPAAm-VP**  
S Aerry  
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- 478 The Novel Permeation Enhancers Dodecyl-2-N, N-dimethylaminopropionate (DDAIP) and HCl Salt: Physicochemical Properties, Preclinical Safety and *In Vitro* Permeation Enhancement**  
W Pfister, D Frank  
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- 479 The Percutaneous Study of the Emulsion and Vesicle containing Pseudo-ceramide**  
M Hosokawa, A Ogura, H Kawada, T Sano  
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- 480 Topical Indomethacin in a Novel Eutectic Colloidal Delivery System: Comparative Study with Oral And Topical NSAIDs**  
J Schwarz, M Weisspapir  
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- 481 Transdermal Delivery of Meloxicam Salts Enhanced by Iontophoresis/ Electroporation and Evaluated *In Vitro***  
R Wang, M Tsai, Y Huang, Y Tsai  
Kaohsiung Medical University, Taiwan
- 482 Transdermal drug delivery enhanced by magainin pore-forming peptide: Modification of electrostatic interactions by changing pH**  
Y Kim, S Late, G Thorsteinson, A Pate, A Banga, P Ludovice, M Prausnitz  
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- 483 Transdermal iontophoretic delivery of granisetron across porcine skin *in vitro***  
J Cazares-Delgadillo, A Ganem-Rondero, D Quintanar-Guerrero, Y Kalia  
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- 484 Transdermal Iontophoretic Delivery of Ketoprofen**  
Y Katori, M Erickson, J Subramony, R Padmanabhan, J Phipps  
Alza Corporation, USA
- 485 Transdermal Permeation of Trimetazidine from Nerodilol-based HPMC Gel Drug Reservoir System Across Rat Epidermis**  
Y Krishnaiah, S Al-Saidan  
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- 487 Mathematical Modeling in Design of Drug-Eluting Stent Coatings**  
S Prabhu, S Hossainy  
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- 488 Micropatterning of RGDC peptide for 2D cell guidance**  
S Kho, T Parker, N Gadegaard, M Alexander  
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- 489 Monitoring of self assembly behavior of chitosan derivatives in aqueous solution by photon correlation spectroscopy**  
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Tehran University, Iran

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- 491 Physicochemical Features of Vernix Caseosa Change within Physiological Temperature Range**  
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- 492 PLGA Microsphere/PVA Hydrogel Composites for Long-Term Localized Inflammation Control**  
U Bhardwaj, R Sura, F Papadimitrakopoulos, D Burgess  
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- 493 Poly(e-caprolactone) nanowire/fiber arrays for drug delivery and control of cellular interactions**  
S Tao, T Desai  
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- 494 Preparation of growth factors-containing chitosan-alginate polyelectrolyte complex scaffold for wound regeneration**  
F Mi, H Sung, S Yu, Wu, S Shyu  
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- 495 Sustained release of fibroblast growth factor from chitosan-heparin composite artificial extracellular matrix**  
S Shyu, F Mi, Yu, C Peng  
Vanung University, Taiwan

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- 497 Development and Evaluation of Gastroretentive Floating Drug Delivery System of Acyclovir**  
G Gupta, R Garg  
Asbasjism College of Pharmacy, India
- 498 Development and Evaluation of Gastroretentive Floating Microspheres of Silymarin**  
G Gupta, R Garg  
Asbasjism College of Pharmacy, India
- 499 Development and Evaluation of Mucoadhesive Patches of Salbutamol Sulphate in the Effective Treatment of Asthma**  
R Garg, S Sharma, G Gupta  
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- 500 Drug-polymer interactions in controlled delivery systems: Interactions of metoprolol tartrate with Eudragit RL in films**  
B Glaessel, F Siepmann, T Rades, J Siepmann  
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- 501 Investigation of the Relationship between Formulation Variables and Drug Release in Aqueous Ethylcellulose Coating**  
K Ong, K Fegely, P Rege, A Rajabi-Siahboomi  
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- 502 Iontophoretic delivery of minoxidil sulfate for topical androgenic alopecia treatment**  
G Gelfuso, C Cuenca, R Lopez  
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- 503 Pharmacokinetics of Domperidone in Rabbits from Bioadhesive Buccal Dosage Form**  
H Sohi, A Ahuja, F Ahmad, R Khar, K Jindal  
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- 504 Stent for Delivery of 1,3-Dipropyl-8-cyclopentyl-xanthine (DPCPX) - A Signaling Pathway Specific Drug**  
E Kang, K Vedantham, X Long, M Dadara, I Kwon, M Sturek, K Park  
Purdue University, USA
- 505 Topical antimicrobial cyanoacrylate formulations**  
B Bordoloi, S Bhende, D Yang, E Vailhe, U Narang  
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- 506 Chemical Stability of Polymer-Based *In Situ* Gelling Intramammary Formulations**  
S Bhattarai, M Rathbone, C Bunt, R G Alany  
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- 507 Evaluation of Polysaccharide Beads as Potential Oral Vaccine Delivery Platforms**  
A Smith, H Batchelor, Y Perrie  
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- 508 LIPOMERS: Optimization of Lipid Concentration For Splenic Targeting**  
R Patil, R Gaikwad, A Samad, P Devarajan  
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- 509 Preparation of Josamycin Loaded Floating Microspheres for Fish Farming**  
P Nepal, M Chun, H Choi  
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H Zou, X Jiang, L Kong, S Gao  
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- 511 Gastro-intestinal Transit of Enteric Coated Mesalazine Products: Imaging by Use of Magnetic Marker Monitoring Technique**  
M Anshütz, H Blume, B Schug, W Weitschies  
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- 512 In vitro Evaluation of a Polymeric Contrast Agent for Monitoring Cancer Targeted Drug Delivery**  
B Zarabi, A Nan, J Zhuo, R Gullapalli, H Ghandehari  
University of Maryland, USA
- 513 In vivo tracking of Mesenchymal stem cells by MR Imaging**  
H Choi  
Korea Research Institute, Korea
- 514 Intravascular delivery and sustained release of ultrasound contrast microbubbles via intraperitoneal administration**  
A Klibanov, M Celebi, C Chin, J Rychak, K Ley  
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- 515 New Technology for Non-Invasive Real-Time Imaging of Liposome by Positron-Emission Tomography**  
T Urakami, S Akai, Y Katayama, N Harada, H Tsukada, N Oku  
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- 516 PEG Based Block Copolymers As MRI Contrast Agent, Their Longitudinal Relaxivity And Micelle Formation**  
K Shiraishi, M Yokoyama  
Kanagawa Academy, Japan
- 517 Pharmacokinetic Analysis of Hyaluronic Acid Derivative As A Drug Carrier Using Quantum Dots**  
J Kim, S Hahn  
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- 518 PLGA Microparticles Containing Gd-DTPA for Imaging**  
A Doiron, K Chu, L Brannon-Peppas  
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J Jo, Y Tabata  
Institute for Frontier Medical Sciences, Japan
- 520 Quantum dots as tool for the long-term imaging of particulate drug delivery systems**  
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- 521 Sulfated polysaccharides enhance the biological activities of transforming growth factor-b3 (TGF-b3) in hydrogel for neocartilage formation**  
D Woo  
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- 522 Terahertz Pulsed Imaging for Non-destructive Analysis of Hydration Dynamics of Functional Coatings and Controlled Release Products**  
Y Shen, L Ho, A Portieri, P Taday  
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- 523 The In-Vivo Behaviour of Erodible Tablets: A Gamma Scintigraphic Study**  
M Ghimire, L Hodges, J Band, B Lindsay, B O'Mahony, A Stanley, F McInnes, A Mullen, H Stevens  
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H Metz  
Martin-Luther-University, Germany
- 525 D-optimal formulation designing of controlled release microparticle based depot injections of aripiprazole**  
T Nahata, T Saini  
SGSITS, India
- 526 Encapsulation and Release of Plasmid DNA from Uniform PLGA Microspheres**  
N Varde, D Pack  
University of Illinois, USA
- 527 Enzyme-Mediated Injectable Hydrogels Composed of Hyaluronic Acid-Green Tea Catechin Conjugates**  
M Kurisawa, J Chung, F Lee, P Thoniyot  
Institute of Bioengineering and Nanotechnology, Singapore
- 528 Essential oil from Zantoxylum tingoassuba loaded into multilamellar liposomes useful as antibiotic and antimicrobial agent**  
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- 529 Influence of poly(lactide-co-glycolide) type and gamma irradiation on the betamethasone acetate release from in situ forming systems**  
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Iran Polymer and Petrochemical Institute, Iran

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| <p><b>531 Leuprolide Acetate Loaded In Situ Gel Forming System: <i>In vitro-in vivo</i> evaluation</b><br/>R Mashayekhi, H Mobedi<br/>Iran Polymer and Petrochemical Institute, Iran</p> | <p><b>533 Polysaccharide/Protein Self-Association for Protein Stability in Poly(lactide-co-glycolide) Microspheres; Lysozyme Release, Stability, <i>in Vivo</i> Behavior and Biocompatibility</b><br/>K Na<br/>Catholic University, Korea</p> | <p><b>535 Silk-Elastinlike Hydrogels for Controlled Adenoviral Gene Delivery</b><br/>R Dandu, K Araki, D Li, B O'Malley, J Cappello, H Ghandehari<br/>University of Maryland, USA</p> |

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| <p><b>540 Biodegradable and biocompatible nanocapsules and particles prepared by the miniemulsion polymerisation</b><br/>R Schmid, H Johnsen<br/>SINTEF, Norway</p>                                      | <p><b>543 Development of co-encapsulated nanoparticles of ellagic acid and coenzyme Q10 (NanoCAPs) and their evaluation in streptozotocin induced diabetic rats</b><br/>V Devdasu, C Godugu, K Sonaje, V Bhoomi, V Bhardwaj, R Poduri, R Majeti<br/>National Institute of Pharmaceutical Education and Research, India</p> | <p><b>546 Encapsulation of the nitric oxide donor trans-[RuCl([15]aneN4)NO]Cl<sub>2</sub> in biodegradable polymer by double emulsion method</b><br/>F Oliveira<br/>Universidade de São Paulo, Brazil</p>    | <p><b>549 Formulation and <i>Ex-vivo</i> Evaluation of Antisense Oligonucleotides to Nf-kB Encapsulated Albumin Microspheres in a Kidney Transplant Model</b><br/>S Gayakwad, N Akhavein, C Oettinger, M D'Souza<br/>Mercer University, USA</p> |
| <p><b>541 Controlled Release of Proteasome Inhibitor from Biodegradable Nanoparticles for Myeloma Therapies</b><br/>G Rossini<br/>Southwest Research Institute, USA</p>                                  | <p><b>544 Docetaxel Loaded Chitosan Nanocapsules for Cancer Therapy</b><br/>V Lozano, D Torrecilla, D Torres, F Domínguez, M Alonso<br/>University of Santiago, Spain</p>  | <p><b>547 Formulation and Characterization of Microencapsulated Catalase</b><br/>R Siwale<br/>Mercer University College, USA</p>   | <p><b>550 Formulation of Drug Loaded Nanoparticles from Low Molecular Weight Poly(L-Lactic Acid) by a Novel Electrospaying Technique</b><br/>H Valo, L Peltonen, M Karjalainen, R Kostianen, J Hirvonen<br/>University of Helsinki, Finland</p> |



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- 577 **Optimization of TAT-peptide (TATp) Quantity on the Liposome Surface for Effective Intracellular Delivery of TATp-Conjugated PEG-Liposomes**  
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- 580 **Physicochemical characterization and antioxidant effects of quercetin nanoparticles**  
T Wu, T Cham  
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- 582 **Physicochemical evaluation of alpha-Lipoic acid encapsulated in Solid Lipid Nanoparticles (SLN)**  
U Sakulkhu  
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- 583 **PLGA Docetaxel Nanoparticles: Preparation and *In Vitro* Evaluation**  
F Esmaili, F Atyabi, R Dinarvand  
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- 586 **Preparation and Characterization of Self-Assembled Polyelectrolyte Nanocomplexes Based on Chitosan and Enoxaparin**  
W Sun, S Mao  
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- 587 **Preparation of an Emulsion Formulation of Clopidogrel for Intravenous Administration**  
R Jain, O Carneiro, N Pandit, J Straub, H Bernstein  
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- 588 **Preparation of calcium phosphate nanostructures using soft chemical route**  
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- 590 **Simultaneous Sizing of Nanoparticles by Individually Visualizing and Separately Tracking their Brownian Motion within a Suspension**  
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- 591 **Stabilization of Chemically labile Actives Using Nanostructured Lipid Carriers (NLC)**  
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- 592 **Stable Colloids of Poorly Soluble Drugs Prepared Using Layer-by-Layer Polymeric Coating of Drug Nanoparticles**  
Y Lvov, A Agarwal, V Torchilin  
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- 594 **The Preparation and *In Vitro* Evaluation of Chitosan Nanoparticles Containing bFGF for Treatment of Neurodegenerative Diseases**  
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- 598 **Akt1 siRNA Delivery for Lung Carcinoma using Poly (ester amine)**  
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Seoul National University, Korea
- 599 **Antisense GFP ODN-Hyaluronic Acid Conjugate/Protamine Nanocomplexes for Intracellular Gene Silencing**  
T Park, H Mok, J Park  
Korea Advanced Institute, South Korea
- 600 **Artificial Virion Nanocapsules for Gene Delivery**  
P Xu, Y Zhan, S Li, E Van Kirk, J Ren, W Murdoch, M Radosz, Y Shen  
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H Moulton  
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- 603 Characterizations and Intracellular Distribution of Tumor Suppressor Gene (p53) Microparticles**  
K Ciftci  
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C Hernandez Prata, S Know, D Luo, T McIntosh, M Grinstaff  
Boston University, USA
- 605 Chitosan coated PLGA nanoparticles as carriers for antisense 2'-O-Methyl-RNA: evaluation of nanoplex stability and uptake into A549 lung cancer cells**  
S Taetz, N Nafee, C Baldes, M Schneider, J Beisner, T Mürdter, U Schaefer, U Klotz, C Lehr  
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- 606 Chitosan-coated PLGA nanoparticles as a flexible and efficient carrier for antisense oligonucleotides**  
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- 607 Chitosan-Mediated siRNA Delivery *in Vitro*: Effect of Polymer Molecular Weight and Salt Forms**  
P Opanasopit  
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- 608 Co-delivery of the endosome-disruptive peptide INF 7 improves gene delivery of poly(N,N-dimethylaminoethyl methacrylate)-graft-polyethylenglycol (pDMAEMA-g-PEG) copolymers**  
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- 609 Effect of Counter Ion on the pH Sensitivity and Gene Transfection of Ortho Ester-Based Lipoplexes**  
X Guo, H Chen, H Zhang  
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A Harada  
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- 611 Encapsulation And Cellular Delivery Of Small-Interfering RNA By Poly (Ethylene Oxide)-Poly (Lactic Acid) Bilayer Polymersomes**  
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L Kong, C Barbe  
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S Choi, N Kim, H Mosberg, K Lee  
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R Arote, S Hwang, T Kim, M Yoo, H Jiang, Y Kim, D Jere, J Nah, M Cho, C Cho  
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- 615 Galactosylated chitosan-graft-polyethylenimine as a gene carrier for hepatocyte targeting**  
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Seoul National University, South Korea
- 616 Gene Carrier for Enhanced Transfection Efficiency using Low Molecular Water Soluble Chitosan**  
J Nah, M Jang  
Suncheon National University, Korea
- 618 Gene Transfer Using Protamine Derivatives**  
L Chang  
National Defense Medical Center, Taiwan
- 619 *In vitro* gene transfer efficiency of urocanic acid-modified non-viral polymeric gene transfer agents**  
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- 620 Introduction of Secondary and Tertiary Amines to Chitosan for Enhanced Delivery of Nucleic Acids**  
B Ghosn, S Kasturi, H Abdul-Razzak, K Roy  
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S McNeil, P Hanson, Y Perrie  
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P Opanasopit, M Petchsangai, T Ngawhirunpat, T Rojanarata, A Apirakaramwong, U Ruktanonchai, W Sajomsang, S Tantayanon  
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- 623 Modified Polyallylamine Nanoparticles For Efficient Gene Delivery**  
A Pathak, A Aggarwal, R Kurupati, S Patnaik, A Swami, Y Singh, P Kumar, S Vyas, K Gupta  
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- 624 PEG-Detachable Polyplex Micelles Responding to Reduced Environment Based on PEG-b-Polyasparatamide Cationers**  
S Takae, K Miyata, T Ishii, M Oba, K Osada, N Nishiyama, Y Yamasaki, K Kataoka  
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Pohang University of Science and Technology, Korea

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J Gvili, M Machluf  
Technion, Israel
- 628 Poly (lactide-co-glycolide)-polymethacrylate nanoparticles for gene delivery**  
A Basarkar, J Singh  
North Dakota State University, USA
- 629 Polyethylenimine-based antisense oligodeoxynucleotide of interleukin-4 complex alleviate the interleukin-4 level in the murine model with allergic asthma**  
J Seong, S Kim, D Park, Y Choi, K Lee, C Kim  
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- 630 Preparation and Investigation of Octa(3-aminopropyl) Silsesquioxane L-Lysine Dendrimers as Nucleic Acid Carriers**  
T Kaneshiro, X Wang, Z Lu  
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S Oliveira, G Storm, R Schiffelers  
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L Zhu, Z Ye, K Cheng, D Miller, R Mahato  
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- 633 Supramolecular Control of Polyplex Decondensation and Cell Transfection: Efficacy of Amine and Threading Cyclodextrin on Biocleavable Polyrotaxanes**  
A Yamashita, D Kanda, R Katoono, N Yui, T Ooya, A Maruyama, H Akita, K Kogure, H Harashima  
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- 634 Synthesis, characterization and transfection of a novel folate-targeted multipolymeric delivery system for gene therapy**  
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- 635 Target-specific Intracellular Delivery of siRNA Using Degradable Hyaluronic Acid Nanogels**  
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- 636 TATp-bearing Immunoliposome for Gene Delivery to Hypoxic Cardiomyocytes *In Vitro***  
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- 637 The Development of p27kip1 Nanoliposome Gene Delivery System and Its Growth Inhibition Effects on Human Lung Cancer Cells**  
H Zhang, X Sun, L Zhang, Z Zhang  
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- 638 The effect of remnant cationic dendrimers on RNA purification**  
J Kuo, Y Lin  
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- 639 Thermo-sensitive nano gene carriers surface-modified with Pluronic**  
J Lee, J Choi, H Yoo  
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- 640 Thiolated chitosan nanoparticles: transfection study in the Caco-2 transwell cell culture**  
R Martien, A Bernkop Schnurch  
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Institute of Endocrinology IEMYR, Ecuador
- 642 A Bioequivalent 120mg Pseudoephedrine HCl Extended-Release Monolithic Tablet**  
S Turner, C Federici, M Hite, A Brunelle  
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- 643 A Multiparticulate Drug Delivery System To Targeted Celecoxib To The Colon**  
M Guzman  
University Alcalá., Spain
- 644 A Novel Preparation Method for Rapidly Dissolving Biorelevant Media for Dissolution Testing – FaSSiF and FeSSiF Instant Powders**  
J Boni  
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- 645 A solid dispersion comprising sibutramine base intended for enhanced solubilization**  
H Chang  
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- 646 Acidified solid dispersions to modify the release rate of weak bases**  
M Vasanthavada, H Xi, V Georgousis, W Tong, A Serajuddin  
Novartis Pharmaceuticals Corporation, USA
- 647 Adjustment of Desired Drug Release Patterns from Pellets Coated with Aqueous Ethylcellulose Dispersions: Importance of the Type of Core and Drug Solubility**  
S Muschert, F Siepmann, B Leclercq, B Carlin, J Siepmann  
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- 650 Application Related Properties of a New Fast Dispersible Excipient**  
K Kolter, M Wichtner, K Meyer-boehm, A Maschke  
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- 651 Assessment of luminal concentration of drugs in GI tract after oral administration**  
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T Nguyen, C Porter, I Larson, B Boyd  
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A Gryczke  
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S Struebing, H Metz, K Maeder  
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S Struebing, H Metz, K Maeder  
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- 658 Chitosan-polycarbophil interpolyelectrolyte complex as an excipient for matrix systems**  
J Hamman, Z Lu, W Chen, J Steenekamp  
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C Lin, C Fu  
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F Thielmann, D Burnett, P Bertensel  
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- 665 Curing procedures for matrix tablets with EUDRAGIT® RS 30 D**  
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- 666 Design of biodegradable nanoparticles of atorvastatin calcium (nano-statin) for oral delivery and their evaluation in high fat diet fed rats for improved efficacy with reduced toxicity**  
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National Institute of Pharmaceutical Education and Research (NIPER), India
- 667 Design and optimization of mefloquine hydrochloride reverse enteric chitosan microparticles (RE-Chi) for bitter taste masking**  
P Shah, R Mashru, Y Rane, M Sankalia  
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- 668 Design of a Monolithic Controlled Release Formulation of Ondansetron HCl for Oral Administration**  
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S Sharma, R Garg, G Gupta, P Naruka  
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- 671 Development And Characterization Of Controlled Release Floating Pellets Of Clarithromycin**  
J Shaji, V Patole, S Lodha  
University Of Mumbai, India
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G Jonathan, V Francis, A Karim  
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- 675 Development of an *In-Vitro* Dissolution Model for Prediction of *In-Vivo* Absorption of Poorly Water Soluble Drugs**  
S Vangani  
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- 676 Development of Clinical Dosage Forms for a Poorly Water-Soluble Drug II: Comparative Evaluation of Solid Dispersion, Solid Microemulsion Preconcentrate and Lipid-based Formulation**  
R Dannenfelser, H He, P Li, M Pudipeddi, Y Joshi, A Serajuddin  
Novartis Pharmaceuticals Corp, USA
- 677 Development of Mathematical Model for Predicting Formulation of Sustained Release Products**  
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- 678 Development of Self-Microemulsifying Drug Delivery Systems (SMEDDS) for Oral Bioavailability Enhancement of Saquinavir**  
D Patel, D Patel  
Baroda College of Pharmacy, India
- 679 Development of sustained release tablets for water soluble compounds**  
R Lo, T Sun, S Wang  
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A Haahr, L Lyhne-Iversen, S Ridderberg, M Nilsson, P Hemmingsen  
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I Arislanov  
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- 683 Effect of Betacyclodextrin Complexation on Diffusion, Permeability and Bioavailability of Carbamazepine**  
S Suresh, H Joshi, V Yadav  
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- 684 Effect of bio-relevant media on the properties of hydroxypropyl methyl cellulose (HPMC)**  
I Hardy, S Fitzpatrick, A Kahn  
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- 685 Effect of drug solubility on the properties of hydroxypropyl methyl cellulose (HPMC)**  
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V Lukacova, G Fraczkiwicz, A Prabhakaran, M Bolger, W Woltosz  
Simulations Plus, Inc., USA
- 687 Effect of Temperature on the *In Vitro* Transbuccal Permeation**  
U Kulkarni, R Mahalingam, I Pather, X Li, B Jasti  
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- 688 Effect of Thermodynamic Activities of the Unionized and Ionized Drug on Flux across Buccal Mucosa**  
A Kokate, P Singh, X Li, B Jasti  
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- 694 Fixed Dose Combination of Simvastatin and Ramipril**  
J Joo  
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- 695 Formulation Development of a Novel Nanoparticle-based Therapeutic System for the Chemoprevention of Colon Cancer**  
S Prabhu, N Kanthamneni  
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C Hsu  
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 Okayama University, Japan
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- 704 Improving the dissolution rate of Carbamazepine using melt extrusion**  
 K Nollenberger  
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