FINAL PROGRAM GUIDE

34th Annual Meeting & Exposition of the Controlled Release Society

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

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

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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.

Randall Mrsny
President

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Masayuki Yokoyama

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 Pardridge 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

JDRF Juvenile Diabetes Research Foundation International
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

Northern Lipids Inc.

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

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.

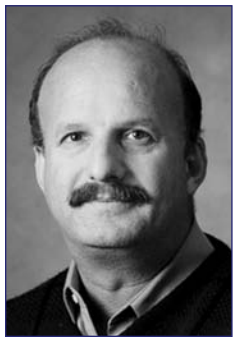
Tirrell returned to Amherst in 1984 and served as Director of the Materials Research Laboratory before moving to Caltech in 1998. He has been a Visiting Professor at the University of Queensland, the Institut Charles Sadron in Strasbourg, the University of Wisconsin, and the Institut Curie in Paris. 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.

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 48th and 49th 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 Nano-medicine

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) 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. ABRAXNE 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

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

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

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

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

Colorcon

Genencor International® Innovative by Nature®

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

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

Exhibit 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

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

POLYMUN SCIENTIFIC

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

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

Wednesday, July 11

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

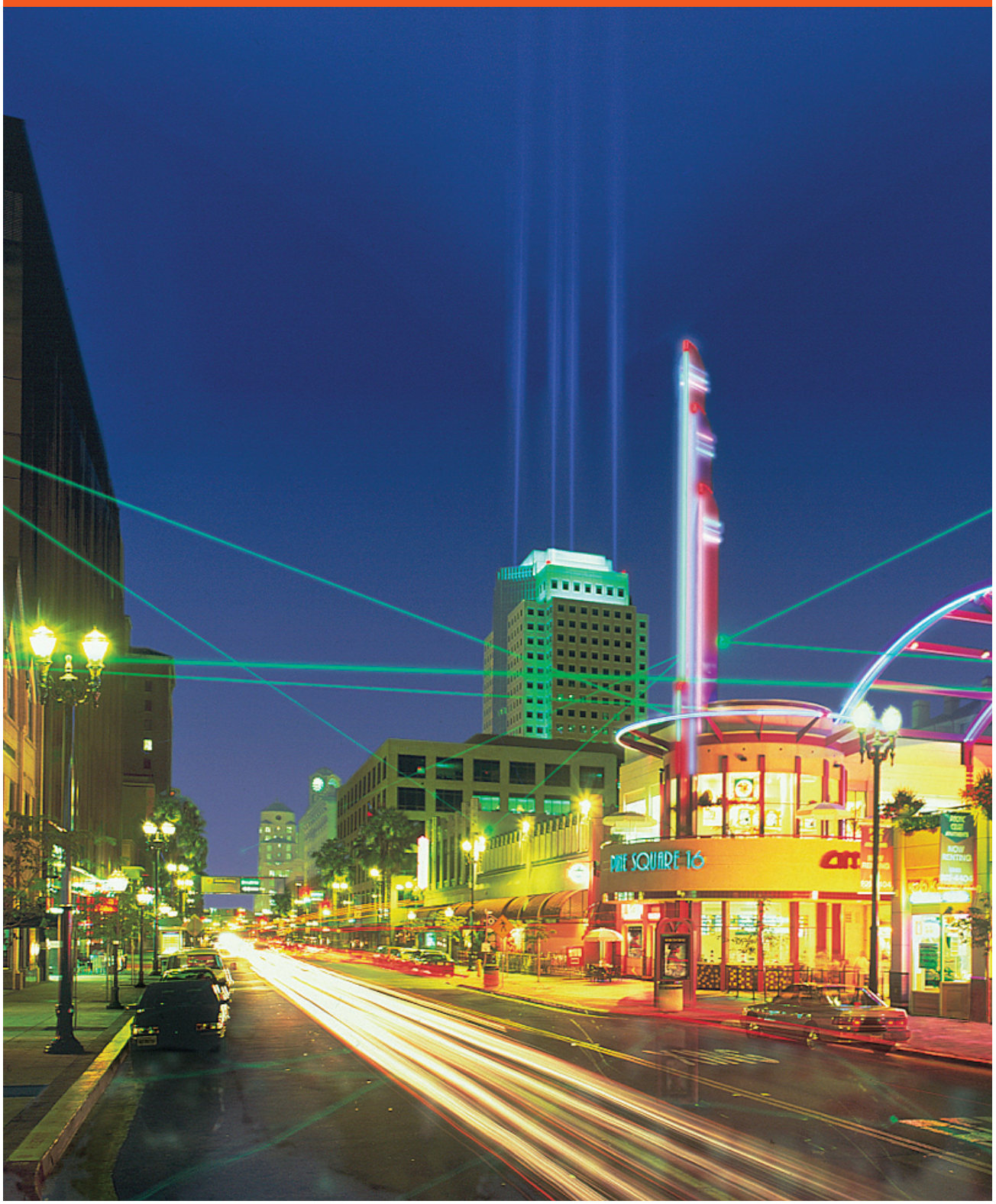
Co-sponsored by intervet EXPECT MORE™

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



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.

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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 **Enhanze 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**
Katsuhiro 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: Nanoparticular Carriers for Enhanced Drug Delivery**
Silvana DiCesare, Capsulution 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 Enscore, 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 1

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, *Balchem Corporation, U.S.A.* and Ronald Versic, *Ronald T. Dodge Company, U.S.A.*
08:45 – 09:30	Atomization Processes Irwin Jacobs, *KV Pharmaceutical Company, U.S.A.*
09:30 – 10:15	Mechanisms and Factors in Controlled Release Robert Sparks, *Particle and Coating Technologies, Inc., U.S.A.*
10:15 – 10:30	Break
10:30 – 11:00	Fluid Bed Processing Michael Valazza, *Cardinal Health, U.S.A.*
11:00 – 11:30	Diffusion Analysis for Microcapsules Robert Wieland, *Givaudan Flavors, U.S.A.*
11:30 – 12:00	Novel Processes and Selection Niraj Vasishtha, *BDS International, U.S.A.*
12:00 – 12:30	Coacervation in Controlled Release Ronald Versic, *Ronald T. Dodge Company, U.S.A.*
12:30 – 14:00	Lunch break on your own
14:00 – 14:30	Extrusion Jet Processes Niraj Vasishtha, *BDS International, U.S.A.*
14:30 – 15:00	Flavor Encapsulation Birgit Schleifenbaum, *Firminich Geneva, Switzerland*
15:00 – 15:30	Application of Lipid Encapsulates Paul Richardson, *Balchem Corporation, U.S.A.*
15:30 – 15:45	Break
15:45 – 16:15	Nano and Microencapsulation for Controlled Release Joerg Kreuter, *J.W. Goethe University, Germany*
16:15 – 16:45	Nanoparticles and Capsules from Emulsions Ruth Schmid, *SINTEF, Norway*
16:45 – 17:00	Conclusion Paul Richardson, *Balchem Corporation, U.S.A.* and Ronald Versic, *Ronald T. Dodge Company, U.S.A.*

Sunday, July 8 • Room 101B

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

Workshop 2

Molecular Imaging and Drug Delivery

Generously Sponsored by

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, *University of Massachusetts Medical School, U.S.A.* and Zheng-Rong Lu, *University of Utah, U.S.A.*
08:05 – 08:50	Perspective: Targeted Delivery and Molecular Imaging Vladimir Torchilin, *Northeastern University, U.S.A.*
08:50 – 09:00	Discussion
09:00 – 09:45	Bioconjugated Nanoparticles for Molecular Imaging and Drug Delivery Shuming Nie, *Emory University and Georgia Tech, U.S.A.*
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, *University of Massachusetts Medical School, U.S.A.*
10:55 – 11:05	Discussion
11:05 – 11: 50	Microbubbles for Targeted Imaging and Drug Delivery Alexander Klibanov, *University of Virginia, U.S.A.*
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, *University of Utah, U.S.A.*
13:45 – 13:55	Discussion
13:55 – 14:40	MicroPET and Bioluminescence Imaging in Small Animals Jung-Joon Min, *Chonnam University, South Korea*
14:40 – 14:50	Discussion
14:50 – 15:05	Break
15:05 – 15:50	Imaging of Apoptosis *In Vivo* Eyk Schellenberger, *Charte-Berlin, Germany*
15:50 – 16:00	Discussion
16:00 – 16:45	Non-invasive Visualization of *In Vivo* Drug Delivery and Evaluation of Therapeutic Efficacy with Contrast Enhanced MRI Zheng-Rong Lu, *University of Utah, U.S.A.*
16:45 – 16:55	Discussion
16:55 – 17:00	Conclusion Alexei Bogdanov, *University of Massachusetts Medical School, U.S.A.* and Zheng-Rong Lu, *University of Utah, U.S.A.*

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, *InterAg, New Zealand*

08:10 – 08:40 Human Parenteral Sustained Release Formulations: Examples and Regulatory Challenges
Mansoor Khan, *FDA/CDER, U.S.A.*

08:40 – 09:10 Veterinary Parenteral Sustained Release Formulations: Examples and Regulatory Challenges
Mai Huynh, *FDA/CVM, U.S.A.*

09:10 – 09:40 Microspheres: Developing *In Vitro* Test Methods and Setting *In Vitro* Release Specifications
Diane Burgess, *University of Connecticut, U.S.A.*

09:40 – 10:10 Subcutaneous Implants: Developing *In Vitro* Test Methods and Setting *In Vitro* Release Specifications
Jeremy Wright, *DURECT Corporation, U.S.A.*

10:10 – 10:30 Break

10:30 – 11:00 Liposomes: Developing *In Vitro* Test Methods and Setting *In Vitro* Release Specifications
Diane Burgess, *University of Connecticut, U.S.A.*

11:00 – 11:30 Lipophilic Solutions and Suspensions: Developing *In Vitro* Test Methods and Setting *In Vitro* Release Specifications
Susan Weng Larsen, *University of Copenhagen, Denmark*

11:30 – 12:00 *In Vitro-In Vivo* Correlations: Human Examples
Jaymin C Shah, *DURECT Corporation, U.S.A.*

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, *University of Otago, New Zealand*

13:30 – 14:00 Factors Influencing *In Vivo* Drug Release: Microspheres, Nanoparticles and Implants
Uday Kompella, *University of Nebraska, U.S.A.*

14:00 – 14:30 Unique *In Vivo* Challenges with Parenteral Liposomal Preparations: Describing Pharmacokinetic Behavior
Daryl C. Drummond, Hermes Biosciences, Inc., *U.S.A.*

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?

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Young Scientist Workshops

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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, *Synthon BV, The Netherlands*
08:30 – 09:00	Diffusion Juergen Siepmann, *University of Lille II, France*
09:00 – 09:30	Solubility Thomas Rades, *Otago University, New Zealand*
09:30 – 10:00	Flow, Rheology, and Viscosity Raid Alany, *University of Auckland, New Zealand*
10:00 – 10:30	Break
10:30 – 11:00	Polymeric Surfactant Chemistry Glen Kwon, *University of Wisconsin, U.S.A.*
11:00 – 11:30	Colloid Chemistry Sven Frokjaer, *Danish University, Denmark*
11:30 – 12:00	Hydrogels: Preparation, Characterization, and Pharmaceutical Applications Wim Hennink, *University of Utrecht, The Netherlands*
12:00 – 13:00	Lunch break on your own
13:00 – 13:30	Controlled Release Tablet and Pellet Technologies—An Overview Rod Walker, *Rhodes University, South Africa*
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, *FMC BioPolymer, U.S.A.*
14:30 – 15:00	Formulation and Processing of Methacrylate Multiparticulate Sustained Release Systems Nasser Nyamweya, *Degussa Pharma Polymers, U.S.A./Canada*
15:00 – 15:30	Break
15:30 – 16:00	Functional Film Coating—Processes, Parameters, Formulations Brigitte Skalsky, *Degussa, Germany*
16:00 – 16:30	Considerations of Solubility and Other Physico-Chemical Characteristics in the Development of Oral CR Dosage Forms Vishal Gupta, *Tyco Healthcare Mallinckrodt, U.S.A.*

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

PODIUM

34th Annual Meeting & Exposition of the Controlled Release Society

Courtesy of the Long Beach CVB.

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
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07:30 – 17:00 • Room 103A
Workshop 3: Sustained Release Parenteral Products: In Vitro and In Vivo Considerations
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08:00 – 16:30 • Room 203
Young Scientist Workshop
Sponsored by

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08:00 – 17:00 • Room 101B
Workshop 1: Micro- and Nanoencapsulation: Formulation, Applications, and Processes
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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
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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
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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

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

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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*

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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 Pfizer

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 EURAND

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

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 Pfizer

18:30 – 19:30 • Room 103C
Vet Get Together
Sponsored by Pfizer Animal Health

Podium

Monday Morning

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

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

Podium

Monday Afternoon

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

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

Daily Schedule

Tuesday, July 10

Bioactive Materials education is sponsored by

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Consumer and Diversified Products (C&DP) 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*

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09:30 – 11:00 • Room 103 A/B
Oral Delivery
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creating essentials

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

NOVARTIS
ANIMAL HEALTH

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

JDRF Juvenile Diabetes Research Foundation International
dedicated to finding a cure

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

molecular profiles
experts in analysis

10:15 – 11:45 • Promenade Ballroom A
Industrial Session III
Sponsored by

Pfizer

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
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ARADIGM
ADVANCING DRUG DELIVERY

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

Northern Lipids Inc.

14:30 – 16:30 • Promenade Ballroom A
Industrial Session IV
Sponsored by

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

Podium

Tuesday Morning

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

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

Podium

Tuesday Afternoon

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

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

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Daily Schedule

Wednesday, July 11

Bioactive Materials education is sponsored by

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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 Nano-medicine
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*

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10:00 – 11:30 • Room 102
Industrial Advances in Oral Delivery
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10:00 – 11:30 • Promenade Ballroom A
Tumor Targeting

10:00 – 11:30 • Room 202
Nanoencapsulation I
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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

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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

Podium

Wednesday Morning

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

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

Podium

Wednesday Afternoon

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

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

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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

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Allergan Inc.	105
Almac Pharma Services	431
Altea Therapeutics Corporation	407
Aptuit, Inc.	106
Aqualon, A Business Unit of Hercules Incorporated	610
Asahi Kasei Chemicals Corporation	728
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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. 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. 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. 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. 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. 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. 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. 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. 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. 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.

425-524 **Banner,** 4125 Premier Drive, High Point, NC 27265, USA; Tel: 336-812-8700, Fax: 336-812-3719, Website: 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. 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 **Capsulution NanoScience AG,** Volmerstrasse 7b, Berlin, 12489, Germany; Tel: +49 30 670 69 19 0, Fax: +49 30 670 69 19 101, Website: www.capsulution.com. Capsulution 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.

730-732 **DURECT Corporation - LACTEL® Absorbable 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.

618-718 **FMC Corporation,** 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.genzymepharmaceuticals.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®, LipoMaskTM, 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.

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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.

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301 **OctoPlus,** 25 First Street, Suite 300, Cambridge, MA 02141; Tel: 617-225-2510, Fax: 617-225-2481, Website: www.octoplus-inc.com. OctoPlus is a product-oriented drug delivery company focused on the development of improved pharmaceutical products with less side effects, increased patient compliance and better efficacy. Furthermore, we are a leading specialized contract pharmaceutical development company, developing high-end formulation solutions for our clients.

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536 Phoqus Pharmaceuticals Limited, 10 Kings Hill Avenue, Kings Hill, West Malling, Kent ME19 4PQ, UK; Tel: +44 (1) 1732 870227, Fax: +44 (1) 1732 870228, Website: www.phoqus.com. Phoqus Pharmaceuticals is an oral drug delivery and product development company. Phoqus has a range of drug delivery systems which is being applied to develop novel formulations that demonstrate increased efficacy, safety or compliance over existing products. Phoqus creates these new therapeutic products both in-house and in collaborative development programmes with companies seeking to access oral drug delivery expertise.

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630 Polymun Scientific Immunbiologische Forschung GmbH, Nussdorfer Laende 11, Vienna, A-1190, Austria; Tel: +43 1 36006 6203, Fax: +43 1 3697615, Website: www.polymun.com. Polymun Scientific GmbH is a private Austrian company offering contract development and production of liposomal formulations as well as development and manufacturing of biopharmaceuticals. Its patented liposome technology allows efficient manufacturing of constantly high quality in small and large scale. Polymun is an EMEA-certified manufacturer conducting several of its own R&D projects.

300 PURAC Biomaterials, 111 Barclay Blvd., Lincolnshire, IL 60069; Tel: 847-634-6330 x236, Fax: 847-634-1992, Website: www.puracbiomaterials.com. PURAC is the world's largest and most experienced producer of natural lactic acid, lactates, lactides and polylactides. Its PURASORB® product line consists

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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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514-516 **Varian Inc.,** 13000 Weston Parkway, Cary, NC 27513; Tel: 919-677-1108, Fax: 919-677-1138, Website: www.varianinc.com.

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

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W Cheng, S Satyanarayanajois, L Lim
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N Wang, P Liu, S Dinh, E Arbit, M Goldberg
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M Kennedy, C Farrier, A Ali-Reynolds
Amgen, Inc., USA

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P Stroud, E Perry, A Chinnah, Y Ni
DelSite Biotechnologies, Inc, USA

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Y Parajo, A Welle, G Michanetzis, Y Missirlis, M Alonso
University of Santiago de Compostela, Spain

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University Utrecht, The Netherlands

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A Graf, E Ablinger, S Peters, A Zimmer, S Hook, T Rades
University of Otago, New Zealand

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B Sarmento, A Ribeiro, F Veiga, R Neufeld, D Ferreira
University of Porto, Portugal

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E Rojas, K Papadopoulos
Tulane University, USA

214 Injectable Hyaluronic Acid and TNF-Related Apoptosis-Inducing Ligand (TRAIL) Formulations
S Na, S Lee, S Chae, K Kim, J Park, I Kwon, S Jeong, K Lee
Kyung Hee University, Korea

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D Lee, D Huynh
SungKyunKwan University, South Korea

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J Steenekamp, A Kotze, D Marais
North-West University, South Africa

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A Bhalla, R Siegel
University of Minnesota, USA

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M Barnes, W Shen
USC, USA

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C Wang, C Yang, Y Tsai, C Chen
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University of Sorocaba, Brazil

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D Christian, D Bowen, D Discher
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C Jin, S Chae, K Lee
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SungKyunKwan University, Korea

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G Sandri, M Bonferoni, P Fabrizi, S Rossi, F Ferrari, C Caramella
University of Pavia, Italy

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C Albayrak
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K Al-Tahami, J Singh
North Dakota State University, USA

238 Transport of a Very Rapid Acting Insulin Formulation, VIAject™, Through Oral Epithelium
B Oliver, R Pohl, Y Zhang-Beniot, S Steiner
Biodel Inc, USA

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240 Antitumor activity of DACHPt-loaded polymeric micelles against a bioluminescent lung metastasis tumor model
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T Ishihara
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243 Development of the Mixed Micelles That Deliver Multiple Drugs Doxorubicin (Dox) And Wortmannin (Wor) Simultaneously For Combination Cancer Chemotherapy
Y Bae, T Diezi, A Zhao, G Kwon
University of Wisconsin-Madison, USA

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Kyung Hee University, Korea

245 Hydrophobic Prodrug Strategy as a Route to Creation of pH Sensitive Micelles
D Sutton, Y Dong, E Bey, E Blanco, R Misico, G Burton, D Boothman, J Gao
University of Texas, USA

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I Skidan, A Degterev, V Torchilin
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T Levchenko, G D'Souza, R Pandey, M Maier, M Manoharan, V Torchilin
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University of Kansas, USA

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P Xu, E Van Kirk, Y Zhan, W Murdoch, M Radosz, Y Shen
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University of Otago, New Zealand

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Technion, Israel

284 Stability evaluation of antigens from Neisseria Meningitides serogroup B adsorbed on anionic PLG microparticles
J Kazzaz, M Ugozzoli, P Malyala, J Chesko, M Singh, D O'Hagan
Novartis, USA

285 Surface Functionalized Microparticles for Combinatorial Delivery of DNA Antigens and Adjuvants
A Singh, B Ghosn, K Thomson, K Roy
University of Texas, USA

286 Surface Modified Biodegradable Microparticles As Delivery System for a Synthetic Carbohydrate Vaccine Candidate
N Csaba, M Griesberger, G Coullerez, X Liu, M Textor, P Seeberger, H Merkle
ETH, Switzerland

287 Targeting Vaccines to Dendritic Cells: Enhanced Uptake of Polymer Particles Facilitated by a Monomeric CD40 Ligand
N Palumbo, L Nagarajan, C Wang
University of Minnesota, USA

288 The Posintro/TransVac™ Adjuvant Delivery System is Efficient and well Tolerable for Transcutaneous Immunization
A Heydenreich
Nordic Vaccine, Denmark

289 TMC-MCC Complex Nanoparticles for Mucosal Immunisation
B Sayin, S Somavarapu, X Li, S Senel, O Alpar
Hacettepe University, Turkey

290 Towards the Development of Controlled Release Cancer Vaccines
S Hook, S Rizwan, S Gordon, A Saupe, T Rades
University of Otago, New Zealand

291 Transcutaneous immunization with antigen-loaded PLA nanospheres
G Mattheolabakis, G Lagoumintzis, Z Panagi, E Papadimitriou, K Avgoustakis
University of Patras, Greece

Biodegradable/Biocompatible Polymers

292 A comparative study of the aerodynamic and drug release properties of a range of polymeric microspheres for controlled protein delivery to the lungs
N Sivadas
Royal College of Surgeons in Ireland, Ireland

293 A PAMAM Gd-DO3A Conjugate with a Degradable Disulfide Spacer for Magnetic Resonance Imaging
R Xu
University of Utah, USA

294 An *in vitro* and *in vivo* study of ProNeuraTM EVA-Lisuride implants for sustained drug release
J McDonough
Southwest Research Institute, USA

295 Assessment of a Herbal Formulation For Wound Healing Activity In Rats Using a Bioadhesive Polymer
S Mengi
SNDT Women's University, India

296 Autologous Fat Transplantation in Severe Burn Scar Outcomes: A New Perspective for Cell Therapy and Tissue Engineering
M Klinger, F Caviggioli, A Chiaratti, M Bucco, M Faustini, F Villani, F Crovato, M Marazzi, V Rapisarda, D Vigo, M Torre
University of Milan, Italy

297 Biocompatibility study of the mucosal formulations
J Yoo, H Youn, K Hong, C Lee
University of Missouri - Kansas City, USA

298 Biodegradable and *In situ* Forming Hydrogel Drug Delivery System Based on Unsaturated Poly(ethylene glycol) Block Copolymers for Tamoxifen Citrate Delivery
A Hashemi Doulabi, S Sharifi, M Imani, H Mirzadeh, M Atai
Amirkabir University of Technology, Iran

299 Chitosan Citrate As Vaginal Penetration Enhancer With Enzymatic Inhibition Properties
M Bonferoni, G Sandri, S Rossi, F Ferrari, S Gibin, C Caramella
University of Pavia, Italy

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300 Chondrogenic differentiation of PLA cells in 3D-HA matix
I Yoon, C Chung, J Kang, S Chung, C Shim, D Kim
Seoul National University, Korea

301 Delivery systems of active ingredients
T Slaghek
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 Deveplopment 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 CaCO3 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 Shuwisitkul, 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-mercaptourine
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 Oganesyan, 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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347 Paclitaxel and Ceramide Combination Therapy in Biodegradable Polymeric Nanoparticles to Overcome Multidrug Resistance in Cancer
H Devalapally, L Van Vlerken, Z Duan, M Seiden, M Amiji
Northeastern University, USA

348 Sustained intracellular concentrations of mometasone furoate upon administration in WGA-conjugated PLGA nanoparticles
N Surti, S Naik, B Dwarkanath, A Misra
The M. S. University of Baroda, India

349 Transferrin Coupled PEGylated Nanoparticles for Brain Tumor Targeting
A Jain, S Jain
Dr. H. S. Gour University, India

350 Uptake and Intracellular Fate of Lipid-Based Particles Inside Individual Cells by Raman Micro-Spectroscopy: Studies with Plain and TAT-Modified Liposomes
C Matthaus, A Kale, T Chernenko, M Diem, V Torchilin
Northeastern University, USA

Controlled Release in Food

351 Comparison of Alginate Matrix Capsules and Gelatin Matrix Capsules: Effect of Matrix Forming Materials on Flavor Release Kinetics
J Zhang, R Guisinger
Givaudan Flavors Corp, USA

352 Flavor Release through Polymer Films using a Dynamic Vapor Gravimetric Apparatus
D Burnett, D Pearse, F Thielmann
Surface Measurement Systems, USA

353 Importance of Nutraceuticals: An Overview
R Kumari, R Garg, G Gupta
Asbasjsm College of Pharmacy, India

354 Microspheres based on soy, zein protein as oral delivery vehicles. I. Microsphere fabrication, characterization and dissolution properties
L Chen, M Subirade
Université Laval, Canada

355 Milk Casein Micelles as Potential Natural Carriers for Nutraceuticals: Electron Microscopy and Image Analysis
M Faustini, A Asti, M Michelis, S Scocca, E Munari, V Russo, T Chlapanidas, M Klinger, M Torre, D Vigo
University of Milan, Italy

356 Soft Capsule as Gastrointestinal Reflux Resistant Delivery System: Concept & Delayed Release Profiles of GRAS Dietary Supplements
N Chidambram, M Price
Banner Pharmacaps Inc, USA

Nanotechnology I

357 A Cremophor-free Formulation for 17-AAG using PEO-b-PDLA Micelles: Characterization and Pharmacokinetics in Rats
M Xiong, D Hart, N Davies, G Kwon, M Forrest
The University of Kansas, USA

358 A Heparin/Poly (l-lysine) Nanoparticle-Coated Polymeric Microspheres for Stem Cell Therapy
S Bo-Kyung
Pochon CHA University, South Korea

359 A new Possibility to Determine Size Distributions of Biodegradable Nanoparticles: Characterizing PLGA Nanospheres by Separation via Flow-FFF and Detection via MALS
C Augsten, A Hünerbein, R Neubert, K Mäder
University Halle-Wittenberg, Germany

360 A Novel Approach to Surface Functionalization of Nanoparticles: I. PEGylation
Y Patil
Wayne State University, USA

361 Antigen-Conjugated Liposomes Enhanced Hyposensitization Immune Therapy with Extra-Low Doses
H Miyauchi, K Ichikawa, T Urakami, S Yonezawa, K Shimizu, T Ishida, H Kiwada, T Asai, N Oku
University of Shizuoka, Japan

362 Cell Engineering of Corneal Epithelium by a Bowman's Membrane-mimic Nanofibrous Membrane
H Tseng, A Chien, M Sheu, Y Ho
Taipei Medical University, Taiwan ROC

363 Charge-Reversal PAMAM Dendrimer
P Xu, Y Zhan, E Van Kirk, W Murdoch, Y Shen
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 Microcapusules 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
Sunchon 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 Gastrorentive 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 Chudzik
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

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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 crystallline 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-NH2-6-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
Sunchon National University, Korea

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Advances in Colloidal Drug Delivery

419 Amphotericin B-loaded lipid nanospheres and their *in vitro* and *in vivo* characteristics
S Jung
Korea Research Institute, Korea

420 Comparative Activity of Two Novel Methotrexate-Loaded W/O Microemulsions on Human Breast Cancer Cell Lines
Y Karasulu, E Göker, T Güneri
Ege University, Turkey

421 Doxorubicin-conjugated liposomes for intracellular delivery of anti-cancer drug
B Shin, T Hwang, S Kim, J Lee, A Lee, H Han, C Song, H Seong
Korea Research Institute, South Korea

422 ESEM: An Alternative Assay for Investigating Liposome Stability
H Ali, A Mohammed, N Weston, J Smith, Y Perrie
Aston University, UK

423 Formulation and Characterisation of Nanoparticulate Systems for Oral Delivery of L-Glutathione
J Wen, S Zhou, Y Zhou, R Alany
University of Auckland, New Zealand

424 Intracellular DNA Delivery by Chitosan-coated PLGA Nanoparticles
C Guo, R Gemeinhart
University of Illinois, USA

425 Loading to solid lipid nanoparticles (SLN) improves cutaneous uptake of glucocorticoides widely varying in lipophilicity
P Schlupp, W Mehnert, M Schaefer-Korting
Freie Universität, Germany

426 MAXITARG-DOX: Hepatic Targeted Drug Delivery System with Reduced Cardiac and Renal Toxicity
R Patil, R Gaikwad, A Samad, P Devarajan
Institute of Chemical Technology, India

427 Nanoparticles for Protein Delivery from Microemulsions containing Lecithin and Decyl Glucoside
A Graf, E Ablinger, S Peters, A Zimmer, S Hook, T Rades
University of Otago, New Zealand

428 Phytosterosomes: Polyoxyethylene Phytosterol Vesicles: Their Preparation, Characterization and Transdermal Application
G Devaraj, S Apte, R Boinpally, R Devraj
University of Otago, New Zealand

429 Preparation and Characterization of Long Circulating Nanoemulsion for Passive Tumor Targeting
S Ganta, P Sharma, B Baguley, S Garg
University of Auckland, New Zealand

430 Purified, Ubiquinone-loaded and Surfactant-free PLGA Nanoparticles
B Nehilla, T Desai
Boston University, USA

431 Self-associating poly(ethylene oxide)-*block*-poly(epsilon-caprolactone) copolymers with carboxyl, benzyl carboxylate and doxorubicin side group: Novel micellar nano-containers and drug conjugates
A Mahmud, X Xiong, A Lavasanifar
University of Alberta, Canada

433 Solvent-free Biodegradable Nanoparticles as Carriers for Hydrophobic and Hydrophilic Drugs
A Loxley, C Eatmon, D Fairhurst, R Shattock, M Arias
Particle Sciences, USA

Advances in Ocular Delivery

434 Chitosan/PVA Film for Ocular Drug Delivery of Antimicrobial Agents
B Prajapati, A Patel, M Patel
Ganpat University, India

435 Development and characterization of a biodegradable intraocular system containing Cyclosporine A for the treatment of posterior uveitis
J Saliba, A Faraco, M Yoshida, H Mansur, A Cunha
Federal University of Minas Gerais, Brazil

436 Effect of Enzymatic Degradation on Cyclosporine Release from Solid Lipid Nanoparticles and Determination of Cellular Uptake by Confocal Microscopy
E Gokce, G Sandri, M Bonferoni, S Rossi, F Ferrari, I Guneri, C Caramella
University of Ege, Turkey

437 *In Vitro* Evaluation of Sulphacetamide Sodium Microspheres for Ocular Drug Delivery
D Sensoy, N Bergisadi
Istanbul University, Turkey

438 *In vitro* ocular delivery of fluconazole from two mocoadhesive hydrogels
T Gratieri, R Vianna Lopez
Universidade de São Paulo, Brazil

439 Novel Solid Lipid Nanoparticle Formulation for Delivery of Diclofenac Sodium to the Eye
A Attama, S Reichl, C Mueller-Goymann
University of Nigeria, Nigeria

440 Preparation and *In Vitro* Characterization of Microspheres Containing A Macrolide Drug: Rokitamycin
G Rassu, E Gavini, G Sandri, P Giunchedi
University of Pavia, Italy

442 Water-soluble Chitosan-PAA Nanosuspension for Ophthalmic Delivery of Pilocarpine
H Lin, S Yu, Y Lin
Southern Taiwan University, Taiwan

Advances in Transdermal Delivery

443 A Novel Approach for the Transdermal Delivery of Macromolecules with Biochemical Enhancers
Y Quan
CosMED Pharmaceutical Co Ltd., Japan

444 An optimized Pin Prick Test for the pharmacodynamic quantification of the cutaneous penetration of local anaesthetics: A pilot study
E Hanusa, C Leopold
University of Hamburg, Germany

445 Assessment of Barrier Perturbation Caused by Maltose Microneedles
C Kolli, A Banga
Mercer University, USA

446 Controlled Delivery of Ambroxol using the Ethylene-Vinyl Acetate
Y Kim, W Jin, H Kim, I Oh, S Shin
Chonnam National University, Republic of Korea

447 Correlation of *In Vitro* Transport to The Integrated PK-PD Profiles Following Transdermal Iontophoresis of Dopamine Agonist 5-OH-DPAT in Rats
A Nugroho, S Romeijn, R Zwier, J De Vries, D Dijkstra, H Wikström, O Della-Pasqua, M Danhof, J Bouwstra
Leiden/Amsterdam Center for Drug Research, The Netherlands

448 Delivery of pHIS-HIV-hugag into Skin using Solid Lipid Nanoparticles and Chitosan Nanoparticles
R Asasutjarit, S Lorenzen, S Sirivichayakul, K Ruxrungtham, U Ruktanonchai, R Guy, G Ritthidej
Chulalongkorn University, Thailand

449 Demonstration of Dose-controlled Delivery by Dissolvable Micro-needle Arrays
S Oh, S Kwon
TheraJect Inc, USA

450 Development of a Liposomal Topical Drug for Acne Treatment
A Wang
Purzer Pharmaceutical Co Inc, Taiwan, ROC

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 Medlicott
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
Apollo Life Sciences, Australia

454 Electrotransport kinetics of metoclopramide across porcine skin *in vitro*
J Cazares-Delgadillo, I Ben-Aziza, A Ganem-Rondero, D Quintanar-Guerrero, Y Kalia
University of Geneva, Switzerland

455 Enhanced Transdermal Delivery of Melatonin via Elastic Liposomes Coupled Iontophoresis
V Dubey, D Mishra, N Jain
Dr H S Gour University, India

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
Center for Metabolic Biology, USA

457 Enhancement of the transdermal delivery of capsaicin derivative-sodium nonivamide acetate by microemulsion
Y Lin, Y Huang, Y Tsai, P Wu
Kaohsiung Medical University, Taiwan

458 Enhancement of Transdermal Permeation of Granisetron
D Houze, S Bonne, D Kanios, J Mantelle, G Toth
Noven Pharmaceuticals Inc, USA

459 Evaluate Microneedle Array Pretreatment for Transdermal Drug Delivery
G Yan, J Zhang, S Sharma, D Paulsen, K Munk, K Warner
ZARS Pharma, USA

460 Formulation and *in vitro* Evaluation of Membranes for Transdermal Administration
A Rodriguez Bayon, A Ariza Osorio
Complutense University, Spain

461 Human Reconstructed Skin Models for Absorption Testing: Comparison of hydrocortisone and testosterone formulations
S Schreiber, S Lombardi Borgia, A Mahmoud, W Mehnert, B Kleuser, M Schaefer-Korting
Freie Universität, Germany

462 Improving safety of transdermally administered potent opioids by incorporating a rate-controlling membrane
C Adams, Y Saeki, S Sanders
Aveva DDS, Inc, USA

463 *In Vitro* and *in Vivo* Evaluations of Microemulsion Formulations of CZ48, Lactone-Stabilized Camptothecin-C20-Propionate, for Transdermal Delivery
Y Rojeab, B Giovanella, D Chow
University of Houston, USA

464 *In Vitro* Evaluation of Clobetasol 17-propionate Topical Cream Formulations
K Wa Kasongo, R Walker
Rhodes University, South Africa

465 *In Vitro* Modeling of Transdermal PTH Delivery by Dissolving Micro-needle Patch
S Kwon, S Oh
TheraJect, USA

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
Noven Pharmaceuticals, Inc, USA

468 Iontophoretic Delivery of Cream and Gel Formulations of Acyclovir
S Siddoju, P Friden, A Banga
Mercer University, USA

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469 Measurement of Equilibrium Drug Concentrations in Polymers: Time-Resolved Fourier-Transform Infrared (FT-IR) Attenuated Total Reflection (ATR) Spectroscopy
K Schultz, N Kane, B Weinstock, H Wang, J Pawlyk, W Pryce Lewis, J Gyory
TransForm Pharmaceuticals, Inc, USA

470 Non-ionic surfactant based nanovesicular carrier for permeation enhancement of BCS class IV drug
A Azeem
Hamdard University, India

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
Apollo Life Sciences, Australia

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
K Bhandari, M Newa, P Balakrishnan, H Jung, J Kim, B Yoo, J Rhee, H Choi, C Yong
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 Co-polymerization Of NIPAAM-VP
S Aerry
University of Delhi, India

478 The Novel Permeation Enhancers Dodecyl-2-N, N-dimethylaminopro-pionate (DDAIP) and HCl Salt: Physiochemical Properties, Preclinical Safety and *In Vitro* Permeation Enhancement
W Pfister, D Frank
NexMed Inc, USA

479 The Percutaneous Study of the Emulsion and Vesicle containing Pseudo-ceramide
M Hosokawa, A Ogura, H Kawada, T Sano
Kao Corporation, Japan

480 Topical Indomethacin in a Novel Eutectic Colloidal Delivery System: Comparative Study with Oral And Topical NSAIDs
J Schwarz, M Weisspapir
AlphaRx, Canada

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
Georgia Institute, USA

483 Transdermal iontophoretic delivery of granisetron across porcine skin *in vitro*
J Cazares-Delgadillo, A Ganem-Rondero, D Quintanar-Guerrero, Y Kalia
University of Geneva, Switzerland

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
Kuwait University, Kuwait

Biomaterials and Biointerfaces

486 Development of a Novel Dissolution Test Method for the Evaluation of *In Vitro* Release from Drug-Eluting Stents
A Neubert, C Gutzeit, K Sternberg, W Weitschies
University of Greifswald, Germany

487 Mathematical Modeling in Design of Drug-Eluting Stent Coatings
S Prabhu, S Hossainy
Abbott Vascular, USA

488 Micropatterning of RGDC peptide for 2D cell guidance
S Kho, T Parker, N Gadegaard, M Alexander
University of Nottingham, UK

489 Monitoring of self assembly behavior of chitosan derivatives in aqueous solution by photon correlation spectroscopy
S Abashzadeh
Tehran University, Iran

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490 Photoinitiator-free Photopolymerization Technique for Hydrogels Synthesis Involving Ampholytic Charge-Transfer Complex
L Ng, G MacDonald, A Viengkhou
University of Western Sydney, Australia

491 Physicochemical Features of Vernix Caseosa Change within Physiological Temperature Range
R Rissmann, W Groenink, M Oudshoorn, W Hennink, M Ponec, J Bouwstra
Leiden University, The Netherlands

492 PLGA Microsphere/PVA Hydrogel Composites for Long-Term Localized Inflammation Control
U Bhardwaj, R Sura, F Papadimitrakopoulos, D Burgess
University of Connecticut, USA

493 Poly(e-caprolactone) nanowire/fiber arrays for drug delivery and control of cellular interactions
S Tao, T Desai
University of California, USA

494 Preparation of growth factors-containing chitosan-alginate polyelectrolyte complex scaffold for wound regeneration
F Mi, H Sung, S Yu, Wu, S Shyu
Vanung University, Taiwan

495 Sustained release of fibroblast growth factor from chitosan-heparin composite artificial extracellular matrix
S Shyu, F Mi, Yu, C Peng
Vanung University, Taiwan

Controlled Releases in Health and Wellness

496 Application of an Aqueous Ethylcellulose Dispersion in Multiple-Unit Pellet Systems
V Dias, K Fegely, A Gothoskar, A Rajabi-Siahboomi
Colorcon Ltd, India

497 Development and Evaluation of Gastroretentive Floating Drug Delivery System of Acyclovir
G Gupta, R Garg
Asbasjsm College of Pharmacy, India

498 Development and Evaluation of Gastroretentive Floating Microspheres of Silymarin
G Gupta, R Garg
Asbasjsm 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
Asbasjsm College of Pharmacy, India

500 Drug-polymer interactions in controlled delivery systems: Interactions of metoprolol tartrate with Eudragit RL in films
B Glaessl, F Siepmann, T Rades, J Siepmann
Univ of Lille, France; Univ of Otago, New Zealand

501 Investigation of the Relationship between Formulation Variables and Drug Release in Aqueous Ethylcellulose Coating
K Ong, K Fegely, P Rege, A Rajabi-Siahboomi
Colorcon Ltd, India

502 Iontophoretic delivery of minoxidil sulfate for topical androgenic alopecia treatment
G Gelfuso, C Cuenca, R Lopez
FCFRP, USP, Brazil

503 Pharmacokinetics of Domperidone in Rabbits from Bioadhesive Buccal Dosage Form
H Sohi, A Ahuja, F Ahmad, R Khar, K Jindal
Jamia Hamdard, India

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
Ethicon, Inc, USA

Emerging Role of Alternative Delivery in Veterinary Medicine

506 Chemical Stability of Polymer-Based *In Situ* Gelling Intramammary Formulations
S Bhattarai, M Rathbone, C Bunt, R G Alany
University of Auckland, New Zealand

507 Evaluation of Polysaccharide Beads as Potential Oral Vaccine Delivery Platforms
A Smith, H Batchelor, Y Perrie
Aston University, UK

508 LIPOMERS: Optimization of Lipid Concentration For Splenic Targeting
R Patil, R Gaikwad, A Samad, P Devarajan
Institute of Chemical Technology, India

509 Preparation of Josamycin Loaded Floating Microspheres for Fish Farming
P Nepal, M Chun, H Choi
Chosun University, Korea

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510 Design and gamma-scintigraphic evaluation of a floating and pulsatile drug delivery system based on an impermeable cylinder
H Zou, X Jiang, L Kong, S Gao
Second Military Medical University, China

511 Gastro-intestinal Transit of Enteric Coated Mesalazine Products: Imaging by Use of Magnetic Marker Monitoring Technique
M Anschütz, H Blume, B Schug, W Weitschies
SocraTec, Germany

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
University of Virginia, USA

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
University of Shizuoka, Japan

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
POSTECH, South Korea

518 PLGA Microparticles Containing Gd-DTPA for Imaging
A Doiron, K Chu, L Brannon-Peppas
University of Texas, USA

519 Preparation of iron oxide nanoparticles with different sizes and surface potentials for cell labeling
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
C Rose, A Hezinger, C Becker, J Tessmar, A Goepferich
University of Regensburg, Germany

521 Sulfated polysaccharides enhance the biological activities of transforming growth factor-b3 (TGF-b3) in hydrogel for neocartilage formation
D Woo
Chabiotech Co., Ltd., Republic of Korea

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
TeraView Limited, UK

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
University of Strathclyde, UK

Injectable Depot Systems

524 Characterization of thermosensitive chitosan-based hydrogels by Electron Paramagnetic Resonance Spectroscopy
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 Zantoxyllum tingoassuiba loaded into multilamellar liposomes useful as antibiotic and antimicrobial agent
E Cabral-Albuquerque, S Hohlenwerger, C Detoni, J Matos, C Sampaio, T Barros, E Velozo
Federal University, Brazil

529 Influence of poly(lactide-co-glycolide) type and gamma irradiation on the betamethasone acetate release from in situ forming systems
M Rafienia, H Mobedi, H Mirzadeh, A Jamshidi
Iran Polymer and Petrochemical Institute, Iran

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530 Injection Depot delivery of Methyl Prednisolone Acetate using aqueous suspension
J Ali, M Alam, A Ahuja, S Baboota, S Gidwani
Jamia Hamdard, India

531 Leuprolide Acetate Loaded In Situ Gel Forming System: *In vitro-in vivo* evaluation
R Mashayekhi, H Mobedi
Iran Polymer and Petrochemical Institute, Iran

532 Mechanism of Oxytocin Release from Pluronic F-127 Gel using USP Apparatus 3
R Walker, F Chaibva
Rhodes University, South Africa

533 Polysaccharide/Protein Self-Association for Protein Stability in Poly(lactide-co-glycolide) Microspheres; Lysozyme Release, Stability, *in Vivo* Behavior and Biocompatibility
K Na
Catholic University, Korea

534 RhGF-loaded Microspheres for the Treatment of Neurodegenerative Disorders
C Song, H Gu
Chinese Academy, China

535 Silk-Elastinlike Hydrogels for Controlled Adenoviral Gene Delivery
R Dandu, K Araki, D Li, B O'Malley, J Cappello, H Ghandehari
University of Maryland, USA

Innovative Materials and Release Mechanisms

536 Coatings for Enzyme Delivery in Animal Feed Applications
B Fryksdale, T Becker, K Clarkson, D Dale, M Gebert
Genencor International, USA

537 Controlled Delivery Mosquito Larvicide Formulations: Testing and Evaluation
R Levy, M Nichols
LCMCD Technology Development Center, USA

538 Mechanically Strong Nanoclay Crosslinked Hydrogels Exhibiting pH and Temperature Sensitivity
S Mujumdar, R Siegel
University of Minnesota, USA

Nanoencapsulation

539 6-Mercaptopurine Microbubbles Drug Delivery: Preparation and *In-vivo* Studies
M Umrethia, J Kalola, P Ghosh, R Majithiya, R Murthy
The GH Patel Pharmacy Building, India

540 Biodegradable and biocompatible nanocapsules and particles prepared by the miniemulsion polymerisation
R Schmid, H Johnsen
SINTEF, Norway

541 Controlled Release of Proteasome Inhibitor from Biodegradable Nanoparticles for Myeloma Therapies
G Rossini
Southwest Research Institute, USA

542 Cytotoxicity of perfluorocarbon-based emulsion oxygen carriers
V Centis, P Vermette
Université de Sherbrooke, Canada

543 Development of co-encapsulated nanoparticles of ellagic acid and coenzyme Q10 (NanoCAPs) and their evaluation in streptozotocin induced diabetic rats
V Devdasu, C Godugu, K Sonaje, V Bhoomi, V Bhardwaj, R Poduri, R Majeti
National Institute of Pharmaceutical Education and Research, India

544 Docetaxel Loaded Chitosan Nanocapsules for Cancer Therapy
V Lozano, D Torrecilla, D Torres, F Domínguez, M Alonso
University of Santiago, Spain

545 Effect of pH on the Encapsulation of Buprenorphine HCl in Polylacide-co-glycolide
R Graves, R Moiseyev, N Praetorius, L Bostanian, T Mandal
Xavier University of Louisiana, USA

546 Encapsulation of the nitric oxide donor trans-[RuCl([15]aneN4)NO]Cl2 in biodegradable polymer by double emulsion method
F Oliveira
Universidade de São Paulo, Brazil

547 Formulation and Characterization of Microencapsulated Catalase
R Siwale
Mercer University College, USA

548 Formulation and Evaluation of Submicroscopic Carrier Systems of Moxifloxacin for Ocular Delivery
S Motwani, S Chopra, F Ahmad, R Khar
Jamia Hamdard, India

549 Formulation and *Ex-vivo* Evaluation of Antisense Oligonucleotides to Nf-kB Encapsulated Albumin Microspheres in a Kidney Transplant Model
S Gayakwad, N Akhavein, C Oettinger, M D'Souza
Mercer University, USA

550 Formulation of Drug Loaded Nanoparticles from Low Molecular Weight Poly(L-Lactic Acid) by a Novel Electrospraying Technique
H Valo, L Peltonen, M Karjalainen, R Kostiainen, J Hirvonen
University of Helsinki, Finland

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551 Loading Capacity of Beclomethasone Dipropionate in EPC Liposome Membranes
F Vasconcellos, F Lima, Í Torriani, M Santana
State University of Campinas, Brazil

552 Lower Critical Solution Temperature Phase Behavior (LCST) Study of Poly(organophosphazenes)
S Ahn, E Monge, S Song
Korea Institute of Science and Technology, Korea

553 Multifunctional Nanoparticles for Combining Ultrasonic Tumor Imaging and Targeted Chemotherapy
Z Gao, H Fain, N Rapoport
University of Utah, USA

554 Nanoparticle encapsulated droplets: a novel delivery system for lipophilic drugs
C Prestidge, S Simovic, A Tan, A Davey, T Rades
University of South Australia, Australia

555 New Concept Applying to Microencapsulation
Y Chung, D Hong, J Kim, H Sah
Ewha Womans University, Korea

556 Novel Laser Abrasion Technology to Generate Stable Nanoparticular Drugs
L Kroehne, V Fehring, J Mayer, S Di Cesare, A Voigt
Capsulation NanoScience, Germany

557 pH-Sensitive Liposome Based on trans-2-Aminocyclohexanols
X Guo, N Zhang, B Brazdova, V Samoshin
University of the Pacific, USA

558 Photochemically crosslinked collagen microspheres for controlled protein release
C Chan, B Chan
University of Hong Kong, Hong Kong

559 Polymer MW determines nanocarrier characteristics to reveal an ideal vehicle for targeted enzyme delivery
E Simone, T Dziubla, F Colon, V Shuvaev, Y Geng, D Discher, V Muzykantov
University of Pennsylvania, USA

560 Positively charged polymeric carriers for Amphotericin B delivery
S Somavarapu, S Amer, D Ruopoli, E Cevher, H Alpar, H Gill, P Kan
University of London, UK

561 Preparation and Characterization of Bioadhesive Poly(methylmetacrylate) Nanoparticles Coated with Thiolated Chitosan
M Seyed Moosavi, S Moghadam, F Atyabi
University of Medical Sciences, Iran

562 Preparation of Chitosan Nanoparticles Encapsulating Bovine Serum Albumin
Y Capan
Hacettepe University, Turkey

563 Preparation of Polylacide-co-glycolide and Chitosan Hybrid Nanoparticles of Amifostine Using Coaxial Ultrasonic Atomizer with Solvent Evaporation
S Pamujula, R Graves, R Moiseyev, L Bostanian, V Kishore, T Mandal
Xavier University of Louisiana, USA

564 Release Characteristics of Novel Bioresorbable *In-Situ* Crosslinkable Self-Assembled Nanoparticles
E Jabbari, X He
University of South Carolina, USA

565 Salt Addition Effects on the Poly(organophosphazenes) Thermothickening
S Ahn, S Ahn, S Song
Korea Institute, Korea

566 Self-Assembled Collagen-Human Mesenchymal Stem Cell (hMSCs) Microspheres—Novel Bio-devices for Cell Delivery
B Chan, C Yeung, C Wong, G Chan, A Cheung, A Leung
University of Hong Kong, Hong Kong

567 Temperature/pH-Induced Structural Variation of Shell Cross-linked Nanogels Using Poly(AAc-co-MEA)/ PNIPAAm/ mPEG Graft Copolymers
H Chiu, W Chiang
National Chung Hsing University, Taiwan

568 Treatment of Female Sexual Dysfunction Using Locally Applied Liposomal Sildenafil Citrate
A Wagner
Polymun Scientific, Austria

569 Utilizing Engineered Shape and Size-specific Nanoparticles for the Delivery of Biological Cargo
G Rothrock, B Hubby, A Galloway, A Murphy, J Desimone
Liquidia Technologies, USA

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570 Liposomes with hyaluronic acid for antitumor drug delivery
M Ferraretto, S Arpicco, B Stella, L Cattel
University of Torino, Italy

571 Masking and Unmasking Targeting Ligands on Nanocarriers with Detachable PEG Coatings
K McNeeley, E Karathanasis, A Agarwal, A Annapragada, R Bellamkonda
Georgia Tech/Emory University, USA

573 Microfabricated components for fully implantable microfluidic drug delivery to the inner ear
E Leary Swan, J Fiering, W Sewell, S Kujawa, M McKenna, J Borenstein, M Mescher
Charles Stark Draper Laboratory, USA

574 N-Carboxymethyl Chitosan Coated Solid lipid Nanoparticles for Oral Delivery of Insulin
R Sistla, V Venishetty, P Diwan
Indian Institute, India

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575 Nano-Thermal Analysis of the Structural Properties of an HPMC/EC Polymer Blend
J Zhang, D Le Roux, C Madden-smith, S Luk, A Parker, N Patel, C Roberts, D Grandy, K Kjoller
Molecular Profiles, UK

577 Optimization of TAT-peptide (TATp) Quantity on the Liposome Surface for Effective Intracellular Delivery of TATp-Conjugated PEG-Liposomes
S Cheng, A Kale, V Torchilin
Northeastern University, USA

578 Physical stability of Nanostructured Lipid Carriers (NLC) in an o/w Urea Cream
J Pardeike, R Müller
FU-Berlin, Germany

579 Physical Stability of Rutin Nanosuspension Produced by High Pressure Homogenization
R Mauludin, R Mueller
Free University, Germany

580 Physicochemical characterization and antioxidant effects of quercetin nanoparticles
T Wu, T Cham
Kaohsiung Medical University, Taiwan

581 Physicochemical characterizations of lyophilized ascorbyl palmitate nanosuspension
V Teeranachaideekul, E Souto, R Mueller, V Junyaprasert
Mahidol University, Thailand

582 Physicochemical evaluation of alpha-Lipoic acid encapsulated in Solid Lipid Nanoparticles (SLN)
U Sakulkhu
National Nanotechnology Center, Thailand

583 PLGA Docetaxel Nanoparticles: Preparation and *In Vitro* Evaluation
F Esmaeili, F Atyabi, R Dinarvand
University of Medical Sciences, Iran

584 Preparation and characterization of N-Diethylmethyl chitosan(DEMC) nanoparticles loaded with insulin using both ionotropic gelation and polyelectrolyte complexation
A M M Sadeghi
Leiden University, The Netherlands

585 Preparation and characterization of PLGA nanoparticles for oral delivery of Epigallocatechin gallate
P Datta, J Italia, D Ankola, R Majeti
National Institute of Pharmaceutical Education and Research, India

586 Preparation and Characterization of Self-Assembled Polyelectrolyte Nanocomplexes Based on Chitosan and Enoxaparin
W Sun, S Mao
Shenyang Pharmaceutical University, China

587 Preparation of an Emulsion Formulation of Clopidogrel for Intravenous Administration
R Jain, O Carneiro, N Pandit, J Straub, H Bernstein
Acusphere, Inc, USA

588 Preparation of calcium phosphate nanostructures using soft chemical route
A Kumar
University of Delhi, India

589 Preparation of Hydrophilic Antioxidant-Loaded Poly(vinyl alcohol) Nanoweb by Electrospinning and Its Wound Healing Effect
W Lyoo
Yeungnam University, Korea

590 Simultaneous Sizing of Nanoparticles by Individually Visualizing and Separately Tracking their Brownian Motion within a Suspension
B Carr
NanoSight Ltd, UK

591 Stabilization of Chemically labile Actives Using Nanostructured Lipid Carriers (NLC)
A Hommoss, M Al-Samman, R Mueller
Free University, Germany

592 Stable Colloids of Poorly Soluble Drugs Prepared Using Layer-by-Layer Polymeric Coating of Drug Nanoparticles
Y Lvov, A Agarwal, V Torchilin
Northeastern University, USA

594 The Preparation and *In Vitro* Evaluation of Chitosan Nanoparticles Containing bFGF for Treatment of Neurodegenerative Diseases
M Cetin, Y Aktas, I Vural, L Dogan, M Duman, T Dalkara, Y Capan
Hacettepe University, Turkey

595 Three-dimensional Nano/Micro Composite Scaffold by Mixing Electrospinning for Bone Tissue Engineering
M Jung, J Kim, I Shim, S Lee
Ewha Womans University, Korea

596 Transdermal Delivery of Cantilever Maltose Microneedle for Drug Customization
Y Tobinaga
Elegaphy, Inc, Japan

Nonviral Gene Delivery

597 A novel multifunctional and polymerizable gene carrier mediated efficient transfection
X Wang, S Ramusovic, Z Lu
University of Utah, USA

598 Akt1 siRNA Delivery for Lung Carcinoma using Poly (ester amine)
D Jere, C Xu, H Moon, M Cho, R Arote, C Cho
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
University of Wyoming, USA

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601 Biochemical Investigation of Intracellular Transport of Polyethylenimine/DNA Polyplexes
D Drake, D Pack
University of Illinois, USA

602 Cell-Penetrating Peptides as Transporters for Morpholino Oligomers: Amino Acid Composition versus Intracellular Delivery
H Moulton
AVI BioPharma, USA

603 Characterizations and Intracellular Distribution of Tumor Suppressor Gene (p53) Microparticles
K Ciftci
ICON Development Solutions, USA

604 Charge Reversal Amphiphiles for DNA and siRNA delivery
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
Saarland University, Germany

606 Chitosan-coated PLGA nanoparticles as a flexible and efficient carrier for antisense oligonucleotides
N Nafee, S Taetz, M Schneider, J Beisner, T Muerdter, U Schaefer, U Klotz, C Lehr
Saarland University, Germany

607 Chitosan-Mediated siRAN Delivery *in Vitro*: Effect of Polymer Molecular Weight and Salt Forms
P Opanasopit
Silpakorn University, Thailand

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
S Uezguen, O Akedemir, C Maucksch, J Lutz, C Rudolph
Ludwig-Maximilians University, Germany

609 Effect of Counter Ion on the pH Sensitivity and Gene Transfection of Ortho Ester-Based Lipoplexes
X Guo, H Chen, H Zhang
University of the Pacific, USA

610 Effect of Molecular Balance of Head-Tail type Polycation Vector to *In Vitro* Transfection Efficiency
A Harada
Osaka Prefecture University, Japan

611 Encapsulation And Cellular Delivery Of Small-Interfering RNA By Poly (Ethylene Oxide)-Poly (Lactic Acid) Bilayer Polymersomes
S Cai, F Ahmed, D Discher
University of Pennsylvania, USA

612 Encapsulation and Controlled Release of DNA from Silica Particles
L Kong, C Barbe
CeramiSphere Pty Ltd, Australia

613 Enhanced Gene Delivery Using Disulfide-Crosslinked Polycations with Listeriolysin O Conjugates
S Choi, N Kim, H Mosberg, K Lee
University of Michigan, USA

614 Folate Conjugated Poly(ester amine) for Lung Cancer Therapy
R Arote, S Hwang, T Kim, M Yoo, H Jiang, Y Kim, D Jere, J Nah, M Cho, C Cho
Seoul National University, Korea

615 Galactosylated chitosan-graft-polyethylenimine as a gene carrier for hepatocyte targeting
Y Kim, H Jiang, C Cho
Seoul National University, South Korea

616 Gene Carrier for Enhanced Transfection Efficiency using Low Molecular Water Soluble Chitosan
J Nah, M Jang
Sunchon 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
M Elfinger, S Uezguen, G Kummerloewe, B Luy, C Rudolph
Ludwig-Maximilians University, Germany

620 Introduction of Secondary and Tertiary Amines to Chitosan for Enhanced Delivery of Nucleic Acids
B Ghosn, S Kasturi, H Abdul-Razzak, K Roy
University of Texas, USA

621 Investigation of *in vitro/in vivo* Correlates for Liposomal DNA Vaccines
S McNeil, P Hanson, Y Perrie
Aston University, UK

622 Methylated N-(4-N,N-dimethylaminobenzyl) Chitosan for a Novel Effective Gene Carrie
P Opanasopit, M Petchsangsai, T Ngawhirunpat, T Rojanarata, A Apirakaramwong, U Ruktanonchai, W Sajomsang, S Tantayanon
Silpakorn University, Thailand

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
Delhi University, India

624 PEG-Detachable Polyplex Micelles Responding to Reduced Environment Based on PEG-b-Polyasparatamide Catiomers
S Takae, K Miyata, T Ishii, M Oba, K Osada, N Nishiyama, Y Yamasaki, K Kataoka
University of Tokyo, Japan

625 PEI/DNA/Alginate Polyplex As An Efficient *In Vivo* Gene Delivery System
G Jiang, J Park, S Hahn
Pohang University of Science and Technology, Korea

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626 Physico-Chemical Characterization of the Plasmid DNA and Nuclear Localization Signal Peptide Packed in Liposomes
L De La Torre, R Rosada, C Nakaie, C Silva, M Santana
State University of Campinas, Brazil

627 PLGA Nanoparticles for Gene Therapy – Waiving Complexity, Increasing Transfectivity
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
Seoul National University, Korea

630 Preparation and Investigation of Octa(3-aminopropyl) Silsesquioxane L-Lysine Dendrimers as Nucleic Acid Carriers
T Kaneshiro, X Wang, Z Lu
University of Utah, USA

631 SiRNA-Mediated Knockdown of EGFR is Improved by Strategies Which Facilitate SiRNA-Endosomal Escape
S Oliveira, G Storm, R Schiffelers
Utrecht University, The Netherlands

632 Site-specific Delivery of Oligonucleotides to Hepatocytes
L Zhu, Z Ye, K Cheng, D Miller, R Mahato
University of Tennessee, USA

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
School of Materials Science, Japan

634 Synthesis, characterization and transfection of a novel folate-targeted multipolymeric delivery system for gene therapy
N Yu
Sichuan University, China

635 Target-specific Intracellular Delivery of siRNA Using Degradable Hyaluronic Acid Nanogels
H Lee, H Mok, T Park
KAIST, Korea

636 TATp-bearing Immunoliposome for Gene Delivery to Hypoxic Cardiomyocytes *In Vitro*
Y Ko, V Torchilin
Northeastern University, USA

637 The Development of p27kip1 Nanoliposome Gene Delivery System and Its Growth Inhibition Effects on Human Lung Caner Cells
H Zhang, X Sun, L Zhang, Z Zhang
University of Nebraska, USA

638 The effect of remnant cationic dendrimers on RNA purification
J Kuo, Y Lin
Chia Nan University, Taiwan

639 Thermo-sensitive nano gene carriers surface-modified with Pluronic
J Lee, J Choi, H Yoo
Kangwon National University, South Korea

640 Thiolated chitosan nanoparticles: transfection study in the Caco-2 transwell cell culture
R Martien, A Bernkop Schnurch
LFU, Austria

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641 6-month Administration of Oral Insulin at Lunchtime in Juvenile Type-1 DM Subjects on Basal Glargine Insulin and Pre-Breakfast and Pre-Dinner Regular Insulin
J Guevara-Aguirre, M Guevara-Aguirre, J Saavedra, G Bernstein
Institute of Endocrinology IEMYR, Ecuador

642 A Bioequivalent 120mg Pseudoephedrine HCl Extended-Release Monolithic Tablet
S Turner, C Federici, M Hite, A Brunelle
SCOLR Pharma, Inc., USA

643 A Multiparticulate Drug Delivery System To Targed 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
Boehringer Ingelheim Pharma GmbH & Co. KG, Germany

645 A solid dispersion comprising sibutramine base intended for enhanced solubilization
H Chang
Daewoong Pharm. Co., Ltd., Korea

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
University of Lille, France

648 Alcohol influence on drug release - concept for rugged formulations
B Skalsky, D Gallardo, H Ravishankar, M Assmus, H Petereit
Degussa, Germany

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649 Anionic metacrylic acid copolymers as release enhancers
H Ravishankar, A Samel, S Bodinge, G Bhat, H Petereit, G Renner
Degussa India Pvt. Ltd, India.

650 Application Related Properties of a New Fast Dispersible Excipient
K Kolter, M Wichtner, K Meyer-boehm, A Maschke
BASF AG, Germany

651 Assessment of luminal concentration of drugs in GI tract after oral administration
T Goto, Y Masaoka, M Kataoka, S Sakuma, S Yamashita
Setsunan University, Japan

652 Assessment of Novel Liquid Crystalline Materials in the Oral Controlled Delivery of Lipophilic Compounds
T Nguyen, C Porter, I Larson, B Boyd
Monash University, Australia

653 Basic butylated methacrylate copolymers (Ph.Eur.) for stabilized Solid Solutions of Ibuprofen
A Gryczke
Degussa, Germany

654 Bioavailability Study of Modified Amoxicillin/ Clavulanate Therapeutic System
J Kerc, J Opara
Lek Pharmaceuticals d.d., Slovenia

655 Carboxymethyl High Amylose Starch-Chitosan Tablets Affording Colon Probiotic Delivery
C Calinescu, M Mateescu
Université du Québec à Montréal, Canada

656 Characterization of floating Kollidon SR matrix tablets
S Struebing, H Metz, K Maeder
Martin Luther University Halle, Germany

657 Characterization of permeation processes of coated dosage forms with novel polymers
S Struebing, H Metz, K Maeder
Martin Luther University Halle, Germany

658 Chitosan-polycarbophil interpolyelectrolyte complex as an excipient for matrix systems
J Hamman, Z Lu, W Chen, J Steenekamp
Northwest University, South Africa

659 Coating of pellets with aqueous dispersions or organic solutions of water-insoluble polymers
M Koerber, M Ciper, R Bodmeier, V Hoffart, M Walther, R Mcrae
Freie Universitaet Berlin, Germany

660 Comparison of *In Vitro* Release Characteristics of Venlafaxine From Tablets Containing Different HPMC Polymers
C Dokak, F Acarturk
Gazi University, Turkey

661 Continuous Wavelet and DerivativeTransforms for the DissolutionTest of Levodopa-Benserazide Tablets
E Dinc, T Doganay, S Kaya, D Baleanu
Gazi University, Turkey

662 Controlled Release Study of 5-fluorouracil Loaded Chitosan/PEG Microparticles
C Lin, C Fu
National Yunlin University of Science and Technology, Taiwan

663 Correlating Dissolution Rates to Surface Properties Measured by Inverse Gas Chromatography
F Thielmann, D Burnett, P Bertensel
Surface Measurement Systems, USA

664 Correlation between *In Vitro* Dissolution Profiles of Drugs from Enteric-coated Dosage Forms and *In Vivo* Drug Absorption
R Ogura, S Sakuma, Y Masaoka, M Kataoka, F Tanno, H Kokubu, S Yamashita
Setsunan University, Japan

665 Curing procedures for matrix tablets with EUDRAGIT® RS 30 D
A Orellana, G Galayo, M Assmus, B Skalsky
Degussa, Germany

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
A Meena, V Devdasu, C Godugu, V Bhoomi, R Poduri, R Majeti
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
The M S University of Baroda, India

668 Design of a Monolithic Controlled Release Formulation of Ondansetron HCl for Oral Administration
C Federici, A Brunelle
SCOLR Pharma, Inc., USA

669 Development and Characterization of a Solid Microemulsion Preconcentrate System for Oral Delivery of Poorly Water-Soluble Drugs
P Li, M Pudipeddi, S Hynes, A Royce, Y Joshi, A Serajuddin
Novartis Pharmaceuticals Corp., USA

670 Development and Characterization of Carvedilol Fast Dissolving Tablet: Using Superdisintigrates and Solid Dispersion Technique.
S Sharma, R Garg, G Gupta, P Naruka
Asbasjsm College of Pharmacy, India

671 Development And Characterization Of Controlled Release Floating Pellets Of Clarithromycin
J Shaji, V Patole, S Lodha
University Of Mumbai, India

672 Development and evaluation of new floating levodopa sustained release minitablets
G Jonathan, V Francis, A Karim
Université Libre de Bruxelles, Belgium

673 Development of a biorelevant physiological dissolution stress test device
G Garbacz, W Weitschies
Ernst-Moritz-Arndt-Universität, Germany

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674 Development of a Novel Floating Pulsatile System for Chronotherapeutic Release of Aceclofenac
J Shaji, V Patole, S Lodha
Prin. KM Kundnani College of Pharmacy, India

675 Development of an *In-Vitro* Dissolution Model for Prediction of *In-Vivo* Absorption of Poorly Water Soluble Drugs
S Vangani
Amgen Inc., USA

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
P P Singh, S Jain, U Soni, K Deshmukh, N Rajadhyaksha, S Shah, P Amin
Institute of Chemical Technology, India

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
Rigel, Inc., USA

680 Drug abuse resistant controlled release using Egalet® dosage units
A Haahr, L Lyhne-Iversen, S Ridderberg, M Nilsson, P Hemmingsen
Egalet a/s, Denmark

681 Drug Permeability Across a Phospholipid Vesicle Based Barrier: Barrier Structure Characterization and Effect of Agitation on Barrier Integrity and Drug Permeability
G Flaten, H Bunjes, K Luthman, M Brandl
University of Tromsø, Norway

682 Drug release properties of Kollidon® VA 64/ Polyacrylic acid interpolymer complexes for oral delivery
I Arislanov
Kazan State Medical University, Russia

683 Effect of Betacyclodextrin Complexation on Diffusion, Permeability and Bioavailability of Carbamazepine
S Suresh, H Joshi, V Yadav
Al-Ameen College of Pharmacy, India

684 Effect of bio-relevant media on the properties of hydroxypropyl methyl cellulose (HPMC)
I Hardy, S Fitzpatrick, A Kahn
Merck Sharp & Dohme, UK

685 Effect of drug solubility on the properties of hydroxypropyl methyl cellulose (HPMC)
I Hardy, N Virani
Merck Sharp & Dohme, UK

686 Effect of Formulation on Adinazolam Pharmacokinetics and Pharmacodynamics
V Lukacova, G Fraczkiewicz, 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
University of the Pacific, USA

688 Effect of Thermodynamic Activities of the Unionized and Ionized Drug on Flux across Buccal Mucosa
A Kokate, P Singh, X Li, B Jasti
University of the Pacific, USA

689 Effervescent Floating Matrix System of DA 6034, a new drug candidate, for gastroretentive sustained release
S Jang
Research Laboratory Donga Pharmaceutical Co. Ltd., South Korea

690 Evaluation of Chemically Modified Starches as Sustained-Release Agents in Monolithic Tablets
F Onofre, Y Wang, A Mauromoustakos
University of Arkansas, USA

691 Evaluation of Ninhydrin Assay for Gabapentin Determination
K Laporte
SCOLR Pharma Inc., USA

692 Evaluation of the Effect of Hydroalcoholic Media on Textural and Rheological Characteristics of Hypromellose Matrices
S Missaghi, K Fegely, A Rajabi-Siahboomi
Colorcon, USA

693 Fast Dissolving Oral Strips Containing Garcinia Mangostana Husk Extract
S Chutimaworapan
Chulalongkorn University, Thailand

694 Fixed Dose Combination of Simvastatin and Ramipril
J Joo
Handok Pharmaceuticals Co., Ltd., South Korea

695 Formulation Development of a Novel Nanoparticle-based Therapeutic System for the Chemoprevention of Colon Cancer
S Prabhu, N Kanthamneni
Western University of Health Sciences, USA

696 Formulation of Peppermint Oil in a Self-Emulsifying Drug Delivery System (SEDDS) for Oral Administration
C Keck, R Müller
Free University Berlin, Germany

697 Formulation optimization for improving *in vitro* dissolution and oral absorption of hydrophobic drugs
C Hsu
INNOPHARMAX, Inc., Taiwan, ROC

699 Glimepiride/L-arginine systems for higher hypoglycemic effects
J Kim, M Kim, H Park, J Lee, S Hwang
Chungnam National University, South Korea

700 Hydrodynamic Robustness of Hypromellose and Hydroxypropyl Cellulose Based Modified Release Matrix Systems
D Tewari, R Lewis, W Harcum, T Durig
Aqualon, a Business Unit of Hercules Incorporated, USA

701 Improved Solubility and Dissolution of Itraconazole by Preparing Gelatin Based Microcapsules
D Li, C Yong, J Huan, W Lyoo, J Kim, B Yoo, J Rhee, H Choi
Yeungnam University, Korea

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702 Improvement of Oral Absorption Behavior of Poorly Water-Soluble Drug Using SMEDDS: Pharmacokinetic Analysis and Prediction Based on GITA Model
T Kimura, Y Fujioka, Y Fujie, Y Metsugi, T Hironaka, M Ochi, K Ogawara, K Higaki
Okayama University, Japan

703 Improving Solubility, Dissolution and Bioavailability of Drugs Having Low Melting Points Using a Simple Technique
M Newa, K Bhandari, O Hun, I Seob, J Kim, B Yoo, J Rhee, H Choi, C Yong
Yeungnam University, Korea

704 Improving the dissolution rate of Carbamazepine using melt extrusion
K Nollenberger
Degussa, Germany

705 *In silico* Prediction of Drug Permeation across Buccal Mucosa
A Kokate, P Singh, X Li, B Jasti
University of the Pacific, USA

706 *In vitro* and *In Vivo* Evaluation of a Patch System Based on Thiolated Polymers
H Hoyer
University of Innsbruck, Austria

707 *In Vitro In Vivo* Study of Micropore-Controlled Release Tablet
W Lin, C Hsu
National Taiwan University, Taiwan

708 *In-Vitro* Characterisation of Radiolabelled Erodible Tablets
M Ghimire, L Hodges, J Band, B Lindsay, B O'Mahony, F McInnes, A Mullen, H Stevens
University of Strathclyde, UK

709 Influence of buffer salts on ammonioalkyl methacrylate copolymers
H Ravishankar, A Samel, S Bodinge, P Patil, H Petereit, G Renner
Degussa India Pvt. Ltd, India.

710 Influence of Ionic Interactions in Controlled Release Formulations of Water-Soluble Drug
V Devabhaktuni, K Soppimath, G Betageri
Western University of Health Sciences, USA

711 Insulin-Coenzyme Q10 coencapsulated PLGA nanoparticles for oral delivery: A better regimen for treatment of diabetes mellitus and its complications
G Sharma, V Ratnam Devadasu, G Mittal, G Chandriah, R Produri, R Majeti
National Institute of Pharmaceutical Education and Research (NIPER), India

712 Interpolyelectrolyte complex Carbomer 940/ Eudragit ® E PO as a new perspective carrier for colon drug delivery
T Kabanova, R Moustafine, G Chairulina, A Bouchovech, S Nasibullin, V Garipova
Kazan State Medical University, Russia

713 Investigation of Changes in a Controlled Release Formulation upon Accelerated Aging
M Perkins, S Ward, C Madden-smith, A Parker, C Roberts, S Luk, N Patel
Molecular Profiles, UK

714 Investigation of Granule Microstructure using Micro-Computed Tomography and Raman Microscopy
M Perkins, B Crean, S Ward, C Madden, S Luk, C Melia, A Parker, N Patel, C Roberts, W Cook
Molecular Profiles, UK

715 Large Polymeric Nanoparticles That Overcome The Mucus Barrier
S Lai, D O'Hanlon, S Harrold, S Man, Y Wang, R Cone, J Hanes
Johns Hopkins University, USA

716 Limitations in the pH-independent extended release of weakly basic drugs from Eudragit RS 30D coated pellets
M Koerber, M Ciper, R Bodmeier, V Hoffart, M Walther, R Mcrae
Freie Universitaet Berlin, Germany

717 Lymphatic transport contribution towards the systemic exposure of orally administered pH-sensitive nanoparticles loaded with a model hydrophilic peptidomimetic drug
R Pereira, T Julianto, K Yuen, A Majeed
Universiti Teknologi MARA, Malaysia

718 Mathematical model for simulation and control of drug release from hydrophilic matrices
S Tiwari, M Levina, H Voung, K Fegely, A Rajabj-Siahboomi
Colorcon Inc., USA

719 Micro-environment adjustment improves the release of verapamil hydrochloride from HPMC based mini-tablets
S Khamanga, C Mandimika, R Walker
Rhodes University, South Africa

720 Nanoparticles for Oral Insulin Delivery
K Sonaje, Y Lin, H Sung
National Tsing Hua University, Taiwan, ROC

721 Nanosuspension of DA 6034, a new drug candidate, by pH dependent solvent diffusion method for enhancing local gastro-protective effect
S Jang
Donga Pharmaceutical Co. Ltd., Seoul Korea

722 NMR Studies of the variation due to formulation in evolving pore structures in millimetre sized pellets
J Collins, L Gladden, I Hardy, M Mantle
Cambridge University, UK

724 Novel Carboxymethyl Starch Excipients for Oral Dosage Forms
P Ispas Szabo, P De Koninck, C Calinescu, M Mateescu
Université du Québec à Montréal, Canada

725 Novel Design of Three Oral Controlled Release Formulations of Phenylephrine HCl
H Zhang, C Federici, A Brunelle, S Turner
SCOLR Pharma, Inc., USA

726 Novel User-Friendly Dosage Forms of Choline
S Jain, K Sawant, P P Singh, S Shah, P Amin
Institute of Chemical Technology, India

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727 Oral bioavailability of solutions vs suspensions in Labrafil® 2125CS and *in vivo in vitro* relation
A Larsen, R Holm, M Pedersen, A Mullertz
University of Copenhagen, Denmark

728 Oral Cyclosporine A formulation for chronic immunosuppression: Implication of nanotechnology in reducing nephrotoxicity
J Italia, V Bhardwaj, D Bhatt, K Tikoo, R Majeti
National Institute of Pharmaceutical Education and Research (NIPER), India

729 Performance of A-PAMPA: A Three Lipid PAMPA System and Comparing PAMPA and Caco-2 Permeability
Z Teksin, J Polli
University of Maryland, USA; Gazi University, Turkey

730 Permeabilities of Polyethylene Glycol across Different Regions of Porcine Oral Mucosa
T Goswami, S Bhattacharya, B Jasti, X Li
University of the Pacific, USA

731 Permeation Barriers to Two Lipophilic Cations in Caco-2 Cell Monolayers
Y Li, H Zhang, J Fawcett, I Tucker
University of Otago, New Zealand

732 Pharmacokinetic and pharmacodynamic aspects of gastro-retentive metformin pellets
J Piao, J Kim, J Lee, K Park, K Weon, D Kim, Y Li
Sookmyung Women's University, Korea

733 Pharmacokinetic evaluation of extended release and immediate release formulations of pramipexole
D Haswani, B Haas, M Kizekai, A Nangia, J Jacob, D Magiera
Spherics Pharmaceuticals Inc., USA

734 Pharmacokinetic studies with a mucoadhesive multilayer extended-release tablet formulation of levodopa-carbidopa in healthy volunteers
P Moslemy, B Carter, N Cardoso, J Jacob, A Nangia, D Magiera
Spherics Pharmaceuticals Inc., USA

735 Pharmacokinetics of Gabapentin After Single and Repeated Dosing of Gabapentin Extended Release Tablets (G-ER) and Instant Release (IR) Tablets in Healthy Male and Female Volunteers
T Gordi, E Hou, B Berner
Depomed Inc., USA

736 Physical Characterization of Oleanolic Acid Nonsolvate and Solvates Prepared by Solvent Recrystallization
H Tong, H Wu, Y Zheng, J Xi, A Chow, C Chan
Macao Polytechnic Institute, China

737 Prandial Oral Insulin (Generex Oral-lyn™) in Adult Type-1 DM Subjects Receiving Basal s.c. Twice Daily Isophane Insulin (NPH)
J Guevara-Aguirre, M Guevara-Aguirre, J Saavedra, G Bernstein
Institute of Endocrinology IEMYR, Ecuador

738 Predictive Models for Drugs Exhibiting Negative Food Effects based on their Biopharmaceutical Characteristics
V Marasanapalle, J Crison, K Devarakonda, X Li, B Jasti
University of the Pacific, USA

739 Preparation and Characterization of Piroxicam/Poloxamer Solid Dispersion Prepared by Melting Method
H Yu, M Chun, H Choi
Chosun University, Korea

740 Preparation and evaluation of self microemulsifying drug delivery system (SMEDDS) of Valdecoxib.
V Joshi, S Lodha, V Patole, J Shaji
Prin. K. M. Kundnani College of Pharmacy, India

741 Preparation and *In Vitro* Modulation of Chitosan Microsphere for Controlled Drug Delivery System
S Lodha, V Patole, J Shaji
Prin. K.M. Kundnani College of Pharmacy, India

742 Preparation and optimization of probucol self-emulsified drug delivery system (PBSEDDS) applying Response Surface Methodology
A Zaghloul, I Khattab, A Nada, S Al-Saidan
Kuwait University, Kuwait

743 Prodrugs of 3-hydroxyphenazepam for oral delivery
I Kravchenko, A Sivko
Odessa National University, Ukraine

744 Proliposomal Formulations of Exemestane for Improved Oral Delivery
P Hiremath, G Betageri
Western University of Health Sciences, USA

745 Prospects of using Honey as a Sustained Release Adjuvant in the Pharmaceutical Formulation of Oral Dosage Forms
M Autamashih, M Ibrahim, O Kunle
University of Jos, Nigeria

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Chungnam National University, South Korea

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The University of Texas at Austin, USA

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C Young, S Vass, K Fegely, A Rajabi-Siahboomi
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K Fegely, V Dias, L Patil, V Ambudkar, A Rajabi-Siahboomi
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S Muschert, F Siepmann, B Leclercq, B Carlin, J Siepmann
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759 Viscometry, a Method for Assessing Rate-Controlling Excipients
K Laporte, A Brunelle
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Free University, Germany

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University of Padua, Italy

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University of Padova, Italy

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NanoCarrier Co, Ltd, Japan

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Institute of Macromolecular Chemistry, Czech Republic

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B Stark, F Andreae, R Prassl
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K Morimoto
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K Chow, K Zhu, R Tan, P Heng
Institute of Chemical and Engineering Sciences, Singapore

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T Nakajima, Y Kawai, M Nishiwaki, K Tomoda, K Makino
Center for Drug Delivery Research, Japan

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University of Sydney, Australia

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A Rawat, F Ahsan
Texas Tech University, USA

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R Ahmed, P Kan, G Awad, N Mortada, A El-Shamy, O Alpar
School of Pharmacy, UK

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University of New Mexico, USA

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University of New Mexico, USA

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A Agarwal, E Karathanasis, K Mcneeley, D Jaye, R Bellamkonda
Georgia Institute, USA

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Y Katanasaka, T Asai, H Naitou, N Ohashi, N Oku
University of Shizuoka, Japan

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K Huang, W Zhang, G Zhang, F Nicol, T Huang, F Shi, S Lahr, L Snyder
ALZA Corp, USA

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M Borgman, R Kolhatkar, H Ghandehari
University of Maryland, USA

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M Diaz De La Rosa, W Pitt
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University of Tennessee, USA

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Case Western Reserve University, USA

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University of California, USA

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A Kale, V Torchilin
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G Putz, J Eckes, H Wieland, K Winkler
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Massachusetts General Hospital & Harvard Medical School, USA

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P Simard, J Leroux
Universite de Montreal, Canada

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Inha University, South Korea

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All India Institute, India

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P Kotamraj, W Russu, B Jasti, X Li
University of the Pacific, USA

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Vanderbilt University, USA

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Z Zhong, J Liu, Y Deng, Z Zhang, Q He
Sichuan University, China

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