

2019



**Controlled Release Society  
Annual Meeting & Exposition  
JULY 21-24, 2019**

Palacio de Congresos de València

VALENCIA, SPAIN

**COLLABORATE • CONNECT • INNOVATE**

#CRS2019



**FINAL PROGRAM**

2019.controlledreleasesociety.org



## Pfanstiehl Celebrates 100 Year Anniversary, Focusing on NEW Products

Please Visit Us at Booth 412 To Learn More

### The Pure Source For cGMP Formulation and Bioprocessing Components Since 1919

- TREHALOSE
- SUCROSE
- MANNOSE
- MALTOSE
- *NEW* ARGININE
- *NEW* GALACTOSE
- *NEW* MANNITOL
- *NEW* SODIUM SUCCINATE
- HIGH PURITY
- MULTICOMPENDIAL
- ICH Q7 COMPLIANCE
- ICH Q3D COMPLIANCE ON SPECIFICATIONS
- ACTIVE DMF PROGRAM
- LOW ENDOTOXIN/LOW METAL
- cGMP PRODUCTION
- USA MANUFACTURING
- GRAM to MT QUANTITIES



[www.pfanstiehl.com](http://www.pfanstiehl.com)

**DELIVERING ON THE PROMISE OF PURITY**





## Dear Attendees,

We welcome you to Valencia, Spain for the 46th Controlled Release Society Annual Meeting & Exposition! Held in the Palacio de Congresos de València from July 21<sup>st</sup>-24<sup>th</sup>, this premier event sports a powerful lineup of presenters including Nobel Laureates, Academic powerhouses and Industry game changers celebrating the progress in the areas of bioengineering, drug delivery, material science, pharmaceuticals, consumer and diversified products, and veterinary science.

The port city of Valencia lies on Spain's southeastern coast, where the Turia River meets the Mediterranean Sea. Known for its City of Arts and Sciences, its beautiful beaches, and its centuries spanning history, the third largest city in Spain offers a perfect balance of what the past has to offer and a taste of the future. I cannot think of a better place to host one of the premier events in the field of controlled release.

CRS is a non-profit organization established to promote experts dedicated to the delivery of activities, including delivery scientists, engineers, clinicians, and technical professionals and the science of controlled release. CRS members are creating the future of delivery science and technology through fundamental delivery research, development, regulatory science, and clinical translation. Research published in CRS journals and presented during the Annual Meeting & Exposition offer a breadth of scientific knowledge.

Your presence at this year's conference is an indication that you are committed to making a positive difference in creating the future of delivery science and technology by sharing scientific knowledge covering new technologies and science in the multi-disciplinary delivery field with colleagues from around the world. Meanwhile, I'm here to help you. If there is anything I can do for you, please do not hesitate to contact me.

**MARÍA JOSÉ ALONSO, Ph.D.**

*2018-2019 President, Controlled Release Society*

## CRS BOARD OF DIRECTORS

### CRS BOARD OF DIRECTORS

#### President

**Maria José Alonso, Ph.D.**

*University of Santiago de Compostela  
Professor Department of Pharmacy &  
Pharmaceutical Technology  
CIMUS Research Institute*

#### Immediate Past-President

**Tamara Minko, Ph.D.**

*Rutgers, The State University of New Jersey  
Distinguished Professor and Chair of the  
Department of Pharmaceuticals*

#### President-Elect

**Justin Hanes, Ph.D.**

*Johns Hopkins University  
Lewis J Ort Professor of Ophthalmology  
Director for the Center for Nanomedicine  
Director of Therapeutics for the Institute for  
NanoBio Technology (INBT)*

#### Secretary

**Yvonne Perrie, Ph.D.**

*Professor in Drug Delivery  
University of Strathclyde, Glasgow, Scotland  
Strathclyde Institute of Pharmacy and  
Biomedical Sciences*

#### Treasurer

**Samir Mitragotri, Ph.D.**

*Harvard University  
Professor, John A. Paulson School of  
Engineering and Applied Sciences*

#### Treasurer-Elect

**David Putnam, Ph.D.**

*Cornell University  
Professor, Biomedical Engineering &  
Chemical and Biomolecular Engineering*

### DIRECTORS-AT-LARGE

**Richard Korsmeyer, Ph.D.**

*Korsmeyer Consulting, LLC*

**Mark Prausnitz, Ph.D.**

*Georgia Institute of Technology  
Regents' Professor, J. Erskine Love Jr. Chair in  
Chemical & Biomolecular Engineering  
Director of the Center for Drug Design,  
Development and Delivery*

**Ilva Rupenthal, Ph.D.**

*The University of Auckland  
Associate Professor in the Department of  
Ophthalmology  
Director of the Buchanan Ocular Therapeutics  
Unit*

**Twan Lammers, D.Sc., Ph.D.**

*RWTH Aachen University  
Professor of Medicine*

**Steven Little, Ph.D.**

*University of Pittsburgh  
William Kepler Whiteford Endowed Professor  
and Chair  
Professor and University Honors Faculty Fellow  
Departments of Bioengineering,  
Pharmaceutical Sciences, Immunology,  
Ophthalmology, and the McGowan Institute of  
Regenerative Medicine  
University of Pittsburgh*

### 2019 ANNUAL MEETING PROGRAM COMMITTEE

#### Chair

**María Jesús Vicent, Ph.D.**

*Centro de Investigación Príncipe Felipe*

#### Member

**Steven Little, Ph.D.**

*University of Pittsburgh*

#### Member

**Fenghua Meng, Ph.D.**

*Soochow University (PRC)*

#### Member

**James Oxley, Ph.D.**

*Southwest Research Institute*

#### Member

**Yvonne Perrie**

*University of Strathclyde, Glasgow, Scotland  
Strathclyde Institute of Pharmacy and  
Biomedical Sciences*

#### Member

**Manuel Sanchez-Felix, Ph.D.**

*Novartis*

#### Board Liaison

**María José Alonso, Ph.D.**

*University of Santiago de Compostela*

## CRS Headquarters Team is Ready to Serve You!

CRS headquarters team values current members and meeting participants and future members and meeting attendees. Our goal is to consistently provide you outstanding service, products, and programs. Use the following quick reference list to reach the appropriate persons in areas in which you may need assistance. Please call the general number for assistance Monday through Friday during the office hours of 8:00 AM - 4:30 PM Eastern Time. Remember, you can leave a voice mail or e-mail message at any time. We look forward to hearing from you!

### General Information:

**Phone:** +1.856.380.6910

**Fax:** +1.856.439.0525

**E-mail:** [info@controlledreleasesociety.org](mailto:info@controlledreleasesociety.org)

### Controlled Release Society

1120 Route 73, Suite 200

Mount Laurel, NJ U.S.A. 08054

#### Michael Gallery, PhD

*Contract Executive Director/CEO*

[mgallery@controlledreleasesociety.org](mailto:mgallery@controlledreleasesociety.org)

+1.856.380.6910 - Option 5

#### Gabrielle Copperwheat,

*Chief Operating Officer*

[gcopperwheat@controlledreleasesociety.org](mailto:gcopperwheat@controlledreleasesociety.org)

+1.856.437.4770

#### Steve Clark, Assistant Executive Director

[sclark@controlledreleasesociety.org](mailto:sclark@controlledreleasesociety.org)

+1.856.316.0927

#### Leah McGonigle, Membership Coordinator &

*Focus Group Liaison*

[lmgonigle@controlledreleasesociety.org](mailto:lmgonigle@controlledreleasesociety.org)

+1.856.380.6899

#### Jessica Hayes, Meeting Manager

[jhayes@controlledreleasesociety.org](mailto:jhayes@controlledreleasesociety.org)

+1.856.642.4438

#### Janine Salabritas, Meeting Coordinator

[jsalabritas@controlledreleasesociety.org](mailto:jsalabritas@controlledreleasesociety.org)

+1.856.437.4717

#### Porter Rice, Manager of Industry Relations

[price@controlledreleasesociety.org](mailto:price@controlledreleasesociety.org)

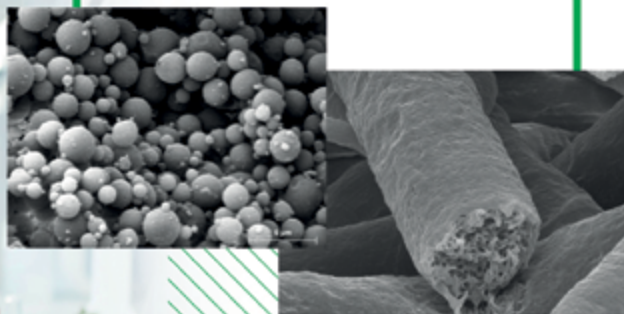
+1.856.437.4750



# Bioinicia

Optimize any drug's performance

Your partner for **innovative solutions** to maximize bioavailability and minimize side effects



Join us at booth #410 to learn how to optimize your drug's performance

[www.bioinicia.com](http://www.bioinicia.com)

# Journals from the American Chemical Society



Cutting-edge forum in conjugation chemistry & biochemistry



The preeminent journal at the interface of drug discovery & development

READ THE LATEST ISSUES AND SUBMIT YOUR RESEARCH AT [pubs.acs.org](http://pubs.acs.org)



ACS Publications  
Most Trusted. Most Cited. Most Read.

# GENERAL MEETING INFORMATION

All events will take place at the *Palacio de Congresos de València* in Valencia, Spain, July 21<sup>st</sup>-24<sup>th</sup>.

## Registration Hours

The registration desk will be open during the following hours: (*Hours are subject to change*)

<b>Saturday, July 20</b>	7:00 AM - 6:00 PM
<b>Sunday, July 21</b>	6:00 AM - 5:00 PM
<b>Monday, July 22</b>	6:00 AM - 6:00 PM
<b>Tuesday, July 23</b>	6:00 AM - 6:00 PM
<b>Wednesday, July 24</b>	6:00 AM - 2:00 PM

## Use of CRS Scientific Program Content

Information presented during the 2019 CRS Annual Meeting & Exposition is the property of CRS and the presenter.

Information may not be recorded, photographed, copied, photocopied, transferred to electronic format, reproduced, or distributed without the written permission of CRS and the presenter. Any use of the program content, which includes, but is not limited to oral presentations, audiovisual materials used by speakers, and program handouts, without the written consent of CRS is prohibited.

## Speaker Ready Room Hours:

<b>Saturday, July 20, 2019</b>	7:00 AM - 7:00 PM
<b>Sunday, July 21, 2019</b>	6:00 AM - 7:00 PM
<b>Monday, July 22, 2019</b>	6:00 AM - 7:00 PM
<b>Tuesday, July 23, 2019</b>	6:00 AM - 7:00 PM
<b>Wednesday, July 24, 2019</b>	6:00 AM - 2:00 PM

The Speaker Preview Centre is located in the **VIP Room A2**. All speakers are requested to check in at least 3 hours prior to their presentation (schedule permitting). Verification of proper performance in the Speakers' Preview Centre is essential, particularly if video and animation is included in the presentation.

## Access the Abstracts

CRS annual meeting abstracts can easily be accessed on the CRS Meeting App. Within the app, click on the Posters icon to begin viewing poster abstracts, and view podium abstracts directly from the schedule. The abstracts will be available on the CRS website after the meeting.

## Electronic Devices

As a courtesy to other meeting attendees, please turn off or silence all electronic devices during all workshops, sessions, and presentations.

## Photography

Photography is not permitted in the session rooms, exhibit hall, or poster sessions.

## Photo Release

By virtue of your attendance, you agree to the Controlled Release Society's use of your likeness in promotional media.

## Children and the CRS Annual Meeting & Exposition

The CRS Annual Meeting & Exposition is a professional, scientific meeting. CRS does not permit anyone under the age of 18 to attend the scientific sessions, poster sessions, exposition, and social events. For safety reasons, only registered exhibitors and poster presenters are permitted in the exposition/poster hall during set-up and take-down hours. Anyone 18+ must register and buy applicable individual tickets if not attending/registering as a student.

## CRS Antitrust Policy

It is the undeviating policy of the Controlled Release Society (CRS) to comply strictly with the letter and spirit of all U.S.A. federal laws, as well as state, and applicable international trade regulations and antitrust laws. Any activities of CRS or related actions of its staff, officers, trustees, or members that violate these laws and regulations are detrimental to the interests of CRS and are unequivocally contrary to CRS' policy.

The implementation of the antitrust compliance policy of CRS shall include, but not be limited to the following:

- a. All the association activities or discussions shall be avoided that might be construed as tending to: (1) raise, lower, or stabilize prices; (2) allocate markets; (3) encourage boycotts, (4) foster unfair trade practices; or (5) in any way violate U.S.A. federal, state, or applicable international trade regulations and antitrust laws.
- b. No officer, director, or member of CRS shall make any representation in public or in private, orally or in writing, that states, or appears to state, an official policy or position of CRS without specific authorization to do so.
- c. CRS members, officers, or directors who participate in conduct that the Board of Directors, by a two-thirds majority vote, determine to be contrary to the CRS.

Antitrust Policy shall be subject to disciplinary measures up to, and including, termination.

## Exhibits

The exhibits are an integral part of the complete education experience and will feature the latest in research products in the field of controlled release. Please make time during the meeting to visit the exhibits during their open hours.

**Sunday** 9:00 AM – 7:30 PM

**Monday** 9:00 AM – 7:30 PM

**Tuesday** 9:00 AM – 4:00 PM

Our Sunday evening opening reception will be held in the Exhibit Hall/Foyer as well as all breaks beginning on Monday.

## Poster Sessions

Posters are located in the Foyer. All posters must be removed during Poster Breakdown or they will be discarded. The poster viewing area will be secured overnight. Photographing posters is not permitted.

The Posters Sessions are an important educational event of this meeting. We hope you support and attend these scientific presentations. Poster board numbers correspond with the poster numbers in CRS Mobile App.

### POSTER SESSION I

#### SUNDAY, JULY 21<sup>ST</sup>

##### Poster Set Up

8:00 AM – 9:30 AM

##### Poster Session

10:00 AM – 7:30 PM

*(Opening Reception: 5:30 PM – 7:30 PM)*

#### MONDAY, JULY 22<sup>ND</sup>

##### Poster Session

10:00 AM – 8:30 PM

*(Poster Pub 1: 5:30 PM – 7:30 PM)*

##### Poster Breakdown

7:30 PM – 8:30 PM

**All posters hanging after 8:30 PM will be discarded.**

### POSTER SESSION II

#### TUESDAY, JULY 23<sup>RD</sup>

##### Poster Set Up

8:00 AM – 9:30 AM

10:00 AM – 8:30 PM

*(Poster Pub 2: 5:30 PM – 7:30 PM)*

#### WEDNESDAY, JULY 24<sup>TH</sup>

##### Poster Session

7:30 AM – 2:30 PM

##### Poster Breakdown

2:30 PM – 2:30 PM

**All posters hanging after 3:30 PM will be discarded.**



# 2019 CRS AWARDS & RECOGNITION

## Congratulations to the 2019 Award Winners!

CRS is honored to continue the tradition of recognizing the excellence of our members. Please be sure to attend the opening ceremony on Sunday, July 21st, 2019 from 11:30 AM - 1:30 PM and the Closing Ceremony on Wednesday, July 24th, 2019, in AUDITORIUM 1 at 12:15 PM and personally congratulate the awardees on their well-earned commendation. Find full biographies of awardees on the CRS website.

### Distinguished Service Award

The Distinguished Service Award is presented to a CRS member who has exhibited exceptional commitment and service to the society and is selected by the Board of Directors.



**Alexander "Sandy" Florence, Ph.D.**  
*University College of London  
School of Pharmacy*

### Founders Award

The society grants this honor to a current CRS member who is internationally recognized for outstanding contributions in the science and technology of controlled release.



**Randall Mrsny, Ph.D.**  
*University of Bath, Department of  
Pharmacy and Pharmacology*

### College of Fellows

The College of Fellows recognizes those members who have made outstanding contributions to the field of delivery science and technology over a minimum of 10 years. Contributions may have been technical, scientific, and/or managerial in one or more fields of research, commercial development, education, and/or leadership within the areas of interest to CRS. Fellowship is the most prestigious level of membership in CRS.



**Patrick Couvreur, Ph.D.**  
*University of Paris Sud*



**Paula Hammond, Ph.D.**  
*Massachusetts Institute of Technology*



**Christine Allen, Ph.D.**  
*University of Toronto*

### CRS T. Nagai Postdoctoral Research Achievement Award

This award recognizes an individual postdoc who has recently completed postdoctoral research in controlled release science and technology and the postdoc's advisor, who played an integral role in the achievements.



**Michael Mitchell, Ph.D. – Post-Doc**  
*Massachusetts Institute of Technology/  
University of Pennsylvania*



**Robert S. Langer, Ph.D. – Sponsor**  
*Massachusetts Institute of Technology*

### Young Investigator Award

This award recognizes a CRS member who has made outstanding contributions in the science of controlled release and is 40 years of age or younger in the year the award is presented.



**Jordan Green, Ph.D.**  
*Johns Hopkins University  
School of Medicine, Chemical &  
Biomedical Engineering*



## Transdermal Delivery Kydonieus Foundation Award



**Joke Bouwstra, Ph.D.**  
University of Leiden  
Division of Biotherapeutics



### Journal Of Controlled Release Best Paper Award

*"Regulatory T cell-targeted hybrid nanoparticles combined with immuno-checkpoint blockage for cancer immunotherapy"* Ou, W, Thapa, R.K., Jiang, L., Soe, Z.C., Gautam, M., Chang, J.H., Jeong, J.H., Ku, S.K., Choi, H.G., **Yong, C.S., Kim J.O.** (2018)



### Translational Research Best Paper Award

*"A novel method for studying airway hyperresponsiveness in allergic guinea pigs in vivo using the Preciselnhale system for delivery of dry powder aerosols"* **Lexmond, J.A.**, Keir, S., Terakosolphan, W., Page, P. C., Forbes, B. (2018).



## CRS BOARD & COMMITTEE MEETINGS

Saturday, July 20	Time	Room
CRS Board of Directors Meeting	8:30 AM – 5:00 PM	Melia Meeting Room 2 & 3
<b>Sunday, July 21</b>		
CRS Board of Directors Meeting	8:30 AM – 12:00 PM	Melia Meeting Room 2 & 3
DDTR Meeting with FG Chairs	2:30 PM – 3:30 PM	Room 5/VIP Room
<b>Monday, July 22</b>		
Focus Groups — YSC Meeting	9:30 AM – 10:00 AM	Room 6 & 7
E-Media Committee Meeting	9:00 AM – 10:00 AM	Room 5/VIP Room
Annual Meeting (AM) Industry Advisory Group Meeting	12:00 PM- 1:30 PM	Room 3 & 4
2020 AMPC	12:00 PM – 1:30 PM	Room 5/VIP Room
Editorial Board Meeting — JCR	12:00 PM- 1:30 PM	Room 8
Leadership Forum	6:30 PM – 8:00 PM	Room 6 & 7
<b>Tuesday, July 23</b>		
College of Fellows	9:00 AM – 10:00 AM	Room 8
Editorial Board Meeting — DDTR	12:00 PM – 1:30 PM	Room 6 & 7
EAC Meeting	2:00 PM – 3:00 PM	Room 6 & 7
<b>Wednesday, July 24</b>		
C&DP Business Meeting	7:00 AM – 8:00 AM	Room 5/VIP Room
Meeting for CRS Presidents	7:00 AM – 8:00 AM	Room 6 & 7
CRS Board of Directors Meeting	2:30 PM – 5:30 PM	Room 6 & 7

# PRE-MEETING WORKSHOPS

**SATURDAY, JULY 20, 2019**

## **Detailed Characterization of Liposomes and other Nanoparticle-Based Therapeutic Delivery Formulations With Field-Flow Fractionation and Light Scattering (FFF-MALS)**

8:00 AM - 12:00 PM | ROOMS 1 & 2

Sponsored by:  **WYATT**  
TECHNOLOGY

One of the primary challenges in developing and commercializing novel nanoparticle-based therapies is detailed characterization of the formulation components. FFF-MALS technology, which couples light scattering and other online detectors to field-flow fractionation, addresses this challenge. The workshop will explore applications of FFF-MALS to characterization of nanoparticle drug and gene delivery formulations to determine high-resolution size distributions, drug loading and release, and particle structure. The relevance of FFF-MALS to meeting FDA requirements for liposome formulations will be discussed. Scientists involved in the analysis and characterization of nanoparticle or lipid-based drug formulations should attend.

8:15AM - 9:15AM

### **Introduction to the Theory of Field-Flow Fractionation and Multi-Angle Light Scattering**

*Dr. Christoph Johann, Wyatt Technology, U.S.A.*

9:30AM - 10:30AM

### **Asymmetrical Flow Field-Flow Fractionation for the Characterization of Colloidal Lipid Based Formulations**

*Judith Kuntsche, University of Southern Denmark, Denmark*

10:45AM - 11:15AM

### **Characterization of Lipid Based and Non-Lipid Based Gene Delivery Formulations**

*Daniel Some, Wyatt Technology, U.S.A.*

11:15AM - 11:30AM

### **Relevance of FFF-MALS for the Requirements of the FDA Guideline for Liposome Drug Products**

*Dr. Christoph Johann, Wyatt Technology, U.S.A.*

11:30AM - 12:00PM

### **Open Discussion Session, Q&A between attendees and speakers**

## **Long Acting Injectables - Linking Formulation and Pharmacokinetics**

8:00 AM - 12:00 PM | ROOMS 3 & 4

Sponsored by:  **Janssen**  
PHARMACEUTICAL DIVISION OF  
JOHNSON & JOHNSON

*This workshop provides the participant with an overview of the development of long acting injectable (LAI) products and the major scientific disciplines approaches to defined if a LAI is feasible for a given compound, what are the clinical benefits, how to define the release rate, what technologies exists and how to interlink all these informations into a development program.*

8:00 AM - 8:15 AM

### **Registration and Coffee**

8:15 AM - 8:20 AM

### **Introduction**

*Rene Holm, Janssen, Belgium*

8:20 AM - 9:00 AM

### **Developing Long-Acting Injectables (LAIs) – The Road Map**

*Peter D’Hoore, Janssen, Belgium*

9:00 AM - 9:30 AM

### **Examples of Pharmaceutical Technologies for LAIs**

*Christopher Rhodes, Drug Delivery Experts, San Diego, U.S.A.*

9:30 AM - 10:30 AM

### **Pharmacokinetic Modeling and IVIVC Supporting LAI Development**

*An Vermeulen, Janssen, Belgium*

10:30 AM - 10:45 AM

### **Break**

10:45 AM - 11:15 AM

### **Pharmacokinetic Modeling and IVIVC Supporting LAI Development – II**

*An Vermeulen, Janssen, Belgium*

11:15 AM - 11:55 AM

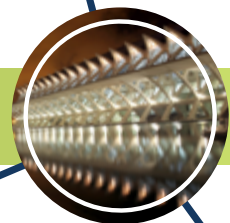
### **Clinical Applications of LAIs and Marketed Examples**

*Rene Holm, Janssen, Belgium*

11:55 AM - 12:00 PM

### **Wrap up and Final Remarks**

*Christopher Rhodes, Drug Delivery Experts, La Jolla, U.S.A.*



## SATURDAY, JULY 20, 2019 (CONT'D.)

### Controlled and Enhanced Drug Delivery into and Through the Skin

8:00 AM - 5:00 PM | AUDITORIUM 3A

Sponsored by: 





The objective is to provide an overview of the state-of-the-art of controlled and enhanced drug delivery into – for the purpose of local therapy – and through the skin to achieve a systemic therapeutic effect. Topics include modern topical formulation design, new therapies and tools in topical drug product development, assessment of local bioavailability and bioequivalence, skin pharmacokinetic modelling, biophysical techniques to monitor drug penetration across skin, current and future applications of passive and facilitated transdermal drug technology, and the potential for macromolecular delivery. The workshop is targeted to pharmaceutical scientists and bioengineers, with interests in the skin-delivery system interface, from industry, academia and government.

8:15 AM - 8:30 AM

#### Introduction

*M.B. Delgado-Charro & R.H. Guy*

8:30 AM - 9:15 AM

#### Modern Topical Formulation Design

*Professor Adrian Davis, UCL and Limeway Pharma Design, U.K.*

9:15 AM - 10:00 AM

#### New Therapies and Tools in Topical Drug Product Development

*Professor Marc Brown, MedPharm, U.K.*

10:00 AM - 10:30 AM

#### Coffee Break

11:00 AM - 11:45 AM

#### Assessment of Local (Skin) Bioavailability and Bioequivalence

*Dr. Wing-Sin Chiu, Pfizer, U.K.*

11:45 AM - 12:30 PM

#### Skin Pharmacokinetic Modelling

*Professor Annette Bunge, Colorado School of Mines, U.S.A.*

12:30 PM - 1:00 PM

#### Round-Table Discussion

*Speakers & Co-Chairs*

1:00 PM - 2:00 PM

#### Lunch

2:00 PM - 2:45 PM

#### Biophysical Techniques to Monitor Drug Penetration Across Skin

*Professor Richard Guy, University of Bath, U.K.*

2:45 PM - 3:30 PM

#### Current and Future Applications of Passive Transdermal Drug Delivery

*Dr. Takaaki Terahara, Himitsu, Japan*

3:30 PM - 4:00 PM

#### Coffee Break

4:00 PM - 4:45 PM

#### Microneedle-Enabled Transdermal Drug Delivery

*Professor Ryan Donnelly, Queen's University, Belfast, U.K.*

4:45 PM - 5:30 PM

#### Macromolecular Drug Delivery Across the Skin

*Professor Samir Mitragotri, Harvard University, U.S.A.*

5:30 PM - 6:00 PM

#### Round-Table and Concluding Remarks

*Speakers and Co-Chairs*

### Basic Concepts of Oral Drug Delivery: What You Need to Know

9:00 AM - 5:00 PM | AUDITORIUM 3B

Sponsored by:    
Controlled Release Alliance

Members of the CRS often comment that the Society has helped them in many ways but first and foremost in exposing them to the collective knowledge of its members. Newcomers usually find the first meetings confusing, in particular, if they are used to "focused" meetings. As an example, a polymer scientist developing a product that might be useful in the CR context might have little or no knowledge about the physiological conditions his/her polymer might encounter after ingestion. Conversely, a clinician with a problem that might be solved with CR might know little or nothing about materials sciences or CR technologies. This workshop attempts to give an oversight covering the "usual (known to us) unknowns"

9:00 AM - 9:15 AM

#### Welcome and Introductions

*Daniel Bar Shalom & Ali Rajabi-Siahboomi*

# PRE-MEETING WORKSHOPS

**SATURDAY, JULY 20, 2019 (CONT'D.)**

9:15 AM - 10:00 AM

## **Understanding the GI Tract for Drug Delivery**

*Clive G Wilson, SIPBS, Glasgow, U.K.*

10:00 AM - 10:40 AM

## **Developability of New Chemical Entities – Role of Excipients**

*Keith Horspool, Boehringer Ingelheim, U.S.A.*

10:40 AM - 11:00 AM

## **Morning Break & Networking**

11:00 AM - 11:40 AM

## **Basic Principles of Difference Drug Release Profiles**

*Ali Rajabi-Siahboomi, Colorcon, U.S.A.*

11:40 AM - 12:20 PM

## **Modifying Drug Delivery: Delayed Release**

*Daniel Bar Shalom, University of Copenhagen, Denmark*

12:20 PM - 1:20 PM

## **Lunch Break**

1:20 PM - 2:00 PM

## **Recent Advances in Achieving Solubility Enhancement**

*Meinolf Brackhagen, Dupont, Germany*

2:00 PM - 2:40 PM

## **Solubility Enhancement Using Hot Melt Extrusion Technology**

*Christian Mühlenfeld, Ashland, U.S.A.*

2:40 PM - 3:20 PM

## **Taste Masking, Keeping Young and Elderly in Mind**

*Manish Rane, Colorcon, U.S.A.*

3:20 PM - 3:40 PM

## **Afternoon Break & Networking**

3:40 PM - 4:20 PM

## **Predicting Bio-Performance and Bioequivalence of MR Formulations Using In-Vitro or In-Silico Methods**

*Sandra Klein, Universitaet Greifswald, Germany*

4:20 PM - 5:00 PM

## **Lipid based drug delivery system**

*Anette Mullertz, University of Copenhagen, Denmark*

5:00 PM

## **Questions & Roundtable Discussion**

*All Speakers*

## **Controlled Release and Increased Bioavailability of Drugs by Means of High Throughput Electrohydrodynamic Micron, Submicron and Nanotechnologies**

1:00 PM - 5:00 PM | ROOMS 1 & 2

Sponsored by:  **Bioinicia**  
innovative materials applications

The electro-hydrodynamic processing, comprising electrospinning and electrospraying processes, is a new technology in the pharma field to produce nanofiber based materials and submicronized particles at room temperature, which is finding an increasing number of applications, especially since it has lately become industrialized and the first GMP and ISO13485 certified facilities began to operate.

The technology of advanced high throughput electrospinning can produce controlled size fiber-based materials within the micron, submicron and nanoscale, to conform products such as patches for the oral mucosa, vagina and transdermal delivery of amorphous APIs and other bioactives. APIs being released from within such self-adhesive patches have the advantage of localised and efficient delivery as well as fast systemic absorption. Similarly, the scaled electrospraying technology allows for the high throughput fabrication of submicronized non-agglomerated amorphous API's within micron size excipients, which lead to strongly enhanced solubility and permeability, when built into tablets.

The workshop will provide a number of highly detailed technical talks, delivered by a number of reputed specialists, introducing the technology and its applications for the controlled delivery of APIs and of other bioactives such as, among others, DHA, EPA, antioxidants, bioactive peptides and probiotics.

1:00 PM - 1:40 PM

## **Controlled Release and Increased Bioavailability of Drugs by Means of High Throughput Electrohydrodynamic Micron, Submicron and Nanotechnologies**

*Prof. Jose M. Lagaron, CSIC, Spain*

1:40 PM - 2:20 PM

## **Electrospinning of Complex Biomolecules**

*Prof. Gareth R. Williams, UCL School of Pharmacy, U.K.*

2:20 PM - 2:50 PM

## **Poly(2-oxazoline)s in Biomedical Applications**

*Dr. An Van Den Bulcke, Ultraxa Polymers, AVROXA BVBA, Belgium*

## SATURDAY, JULY 20, 2019 (CONT'D.)

2:50 PM - 3:20 PM

### Coffee Break

3:20 PM - 4:00 PM

### **Practical Challenges of Establishing Bioequivalence for Modified Release Formulations under Current EMA Regulatory Landscape**

Dr. Volodymyr Stus, POLPHARMA R&D, Poland

4:00 PM - 4:30 PM

### **Microencapsulation of Bioactives by High Throughput Electrospaying**

Dr. Cristina Prieto, CSIC, Valencia, Spain

4:30 PM - 5:00 PM

### Round Table and Wrap-up

## Recent Advances in the Use of Phospholipid Excipients

1:00 PM - 5:00 PM | ROOMS 3 & 4

Sponsored by:  Phospholipid Research Center

Goals and objectives of the workshop are to inform on the basic properties of phospholipid excipients, including production-, physical chemistry-, registration-aspects and their use in pharmaceutical technology. The properties of natural and synthetic phospholipids will be compared. Target audience will be interested pharmacy students or other natural science student and pharmaceutical industrial scientists interested in the use of phospholipid excipients. Further the audience will be informed on the selection and use of phospholipids in obtaining optimal liposomal dosage forms and latest advances on the use of phospholipids in parenteral depot formulations and their use as cochleates, overcoming chemo-resistance and in amorphous solid dispersions for oral administration of lipophilic drugs.

1:00 PM - 1:30 PM

### **An Introduction on the Use and Properties of Phospholipid Excipients**

Dr. Peter van Hoogevest, Phospholipid Research Center Heidelberg, Germany

1:30 PM - 2:00 PM

### **Fine Tuning of Liposome-Phospholipid Composition is a Major Factor in Optimizing Liposome Performance of Liposomal Drugs**

Prof. Dr. Chezy Barenholz, Hebrew University Hadassah Medical School, Israel

2:00 PM - 2:30 PM

### **Lipophilic Drugs in Intravenous Liposomal Formulations – Pros and Cons**

Prof. Dr. Alfred Fahr, Friedrich Schiller University Jena, Germany

2:30 PM - 3:00 PM

### **Insights in the Intravenous Use of Phospholipids for Overcoming Chemoresistance**

Prof. Dr. Giuseppe De Rosa, University Federico II of Naples, Italy

3:00 PM - 3:30 PM

### Coffee Break

3:30 PM - 4:00 PM

### **Recent Advances in the Use of Phospholipids for Injectable Drug Depots**

Prof. Dr. Paola Luciani, University Bern, Switzerland

4:00 PM - 4:30 PM

### **Structural Analysis of Compact Phospholipid Particles (Cochleates)**

Prof. Dr. Judith Kuntsche, University of Southern Denmark, Denmark

4:30 PM - 5:00 PM

### **Use of Monoacyl Lecithin for Oral Amorphous Drug Formulations and Self-Emulsifying Systems**

Prof. Dr. Martin Kuentz, University of Applied Sciences and Arts Northwestern Switzerland, Switzerland

## Young Scientist Scientific Workshop: How to Turn your Research Into a Spin-off

12:00 PM - 2:30 PM | MULTIPURPOSE HALL 1

University spin-off companies have contributed largely in the past years with technology transfer and helped building up the relationship between universities and industry. It has been estimated that in 2018, 63% of the approved drugs were developed by small-sized companies. This CRS-YSC organized scientific workshop aims to help researchers identify specific skills and strategies that scientists should approach to start a spin-off. The workshop will bring together information on how to successfully accomplish the task and discuss a range of topics including:

- Identifying market needs and solutions
- Attracting venture capitalists and begin the operation
- Building up a team
- Challenges and opportunities

# PRE-MEETING WORKSHOPS

SATURDAY, JULY 20, 2019 (CONT'D.)

2:30 PM - 3:00 PM  
**Refreshment Break**

## Local Chapters Workshop

3:00 PM - 7:00 PM | MULTIPURPOSE HALL 1

Sponsored by:  

The Local Chapters YS Pre-Meeting Workshop will allow young stars, selected by the individual chapters, to share their innovative research with the wider CRS community. Two senior scientists, Avi Schroeder and Joao Nuno Moreira, will also be delivering keynotes during this workshop. Attendance is open to everyone, not just young scientists, so please come along to support our young stars, hear about innovative research from all around the world and network with colleagues at the subsequent Local Chapters Meet & Greet.

3:00 PM  
**Opening Remarks**

Prof. Avi Schroeder and Prof. Ilva Rupenthal

3:05 PM  
**Keynote Lecture**

*Elephants, nanoparticles and cancer: basic science and clinical translation*

Prof. Avi Schroeder

3:35 PM  
**141**

*Magnetically-stimulated Transformation In Nanostructure Of Self-assembled Lipid-based Drug Delivery Systems: Effect Of Size, Concentration And Surface Properties Of Iron Oxide Nanoparticles*

Xiaohan Sun

3:45 PM  
**142**

*Studying The Biological And Cellular Interactions Of Nanomedicines For Drug Delivery*

Valentina Francia

3:55 PM  
**143**

*Combination Therapy For High Grade Serous Ovarian Cancer: Folate Targeted Nanoparticles With Doxorubicin And A Parp Inhibitor Loaded At A Synergistic Ratio*

Lucy Wang

4:05 PM  
**144**

*Gelatin Nanoparticles With Low Crosslinking Density For A Potentially Prolonged Circulation Time*

Agnes Weiss

4:15 PM  
**145**

*FDM 3D Printing As A Tool For Rapid Prototyping Of Controlled Release Tablets*

Pankti Ganatra

4:25 PM  
**146**

*Potential And Challenges Of Titanium Nitride Nanoparticles For Glioblastoma Photothermal Therapy*

Chiara Bastiancich

4:35 PM  
**147**

*Preparation And Characterisation Of Gemcitabine And Tocotrienol-rich-fraction Entrapped Niosomes.*

Geetha Maniam

4:45 PM  
**148**

*Conjugation Of Glutathione To Liposomes With Quantified Glutathione Density Via HPLC*

Joy Reginald-Opara

4:55 PM  
**149**

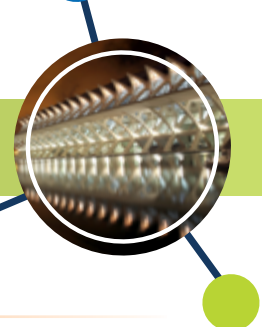
*Scharlab, Enhancing The Excellence Of Your Analytical Results*

Vicent Negre | Sponsor: 

5:05 PM  
**Keynote Lecture**

*Challenging solid tumors with ligand-mediated drug delivery*

Prof. Joao Nuno Moreira



## SATURDAY, JULY 20, 2019 (CONT'D.)

5:35 PM

**150**

*Enhanced Anti-angiogenic Effects Of Bevacizumab In Glioblastoma Treatment Upon Intranasal Administration Of PLGA Nanoparticles*

Flavia Sousa

5:45 PM

**151**

*Dual-responsive Polypeptide Nanoparticles Attenuating Tumor-associated Stromal Desmoplasia through Programming Dissociation*

Tzu-Wei Wang

5:55 PM

**152**

*Formulation Of Anti-inflammatory Methotrexate-entrapped Solid-lipid Nanoparticles For Intra-articular Delivery.*

Hugh Giffney

6:05 PM

**153**

*Permeability screening: Evaluation of the novel Permeapad® Plate*

Ann-Christin Jacobsen

6:15 PM

**154**

*Predicting performance of Oral Lipid-based Drug Delivery Systems through combined intestinal in vitro lipolysis and permeation (LipoPerm)*

Mette Klitgaard

6:25 PM

**155**

*Long-acting adrenaline for cardiopulmonary resuscitation: production and characterization of a liposomal formulation*

Michele Schlich

6:35 PM

**Round Table Discussion with Local Chapter Presidents and CRS Management**

7:00 PM



**Networking Event (Wine and Cheese Provided)**

8:30 PM

**Closing**

## Social Event: Local Chapter Meet and Greet

7:00 PM - 8:30 PM | MULTIPURPOSE HALL 1

Sponsored by:  

The Local Chapters Meet-and-Greet is a networking event aimed at getting to know your colleagues from around the world in an informal manner. This is an opportunity to make new connections and discuss issues that are beyond the science per se, such as finding a new position, grants and funding, mentorship, and becoming part of the CRS community. Besides the Chapter Presidents (or their representatives) we also invite all other chapter members including young scientists to share their thoughts and goals for the CRS. One issue to be discussed will be how young scientists can become more involved in the CRS and what the CRS should focus on relative to young scientist training and promotion.

## SUNDAY, JULY 21, 2019

### Accelerating the Development of Novel Subcutaneous Drug-Delivery Technologies

7:30 AM - 11:30 AM | AUDITORIUM 2

Sponsored by:  **NOVARTIS**

*Subcutaneous delivery has become a critically important drug-delivery method as demand for biotherapeutics requiring complex parenteral drug-delivery has expanded across multiple disease areas. Thus, there is a need for novel subcutaneous delivery technologies that can effectively deliver biotherapeutics. This provides an opportunity for academic and industry stakeholders to jointly focus their efforts towards solving contemporary subcutaneous challenges facing developers. The objective of this workshop is to raise awareness for critical development issues in the subcutaneous industry and collaborate on how to address these hurdles, with a focus on the development of technologies for large-volume and high-dose subcutaneous administration.*

7:30 AM - 7:45 AM

**Welcome and Introductions**

Renee Tannenbaum, Halozyme

7:45 AM - 8:00 AM

**Intro to the SC Consortium**

Renee Tannenbaum, Halozyme

## PRE-MEETING WORKSHOPS

SUNDAY, JULY 21, 2019 (CONT'D.)

8:00 AM - 8:45 AM

### **SC Technology Landscape**

Advait Badkar, Pfizer  
Randall Mrsny, University Bath

8:45 AM - 9:15 AM

### **Problem Statements**

Manuel Sanchez-Felix, Novartis

9:15 AM - 9:30 AM

### **Break**

9:30 AM - 10:45 AM

### **Breakout Sessions**

SC Consortium Members

10:45 AM - 11:30 AM

### **Group Discussion**

SC Consortium Members

*\*Member organizations of the SC Drug Delivery and Development Consortium include: Alexion Pharmaceuticals, Amgen, AstraZeneca, Bristol-Myers Squibb, Eli Lilly, GlaxoSmithKline, Halozyme Therapeutics, Merck, Novartis, Pfizer, Regeneron, Roche, Takeda, Teva Pharmaceutical Industries*

SUNDAY, JULY 21 • MONDAY, JULY 22 • TUESDAY, JULY 23 • WEDNESDAY, JULY 24

## SUNDAY, JULY 21, 2019

### **Young Scientist Professional Development Workshop: Enhancing Your Networking and Communication Skills**

7:30 AM - 10:30 AM | MULTIPURPOSE HALL 1

Have you ever felt you could get more out of your career? Are you close to graduating, about to start a new job, or just thinking about making a change? If so, this workshop is for you! This interactive session will discuss key factors for professional success, including effective communication skills, successful networking strategies, establishing professional collaborations, and improving your leadership skills. In this workshop, you will receive tips on how to boost your career in these areas and be given the opportunity to practice some strategies that will help you pave the way for a bright future, full of achievements.

Sponsored by:  Active RNA people®

### **Technology Forums**

8:00 AM - 11:30 AM

See pages 18-19 for full details

### **Industry Soapbox**

9:00 AM - 11:30 AM | VIP ROOM / ROOM 5

Come to the program where presenters "get up on their soapbox" to give you a quick glimpse of some of the most innovative technologies and products in development today.

### **Young Scientist Meet & Greet with a Luminary**

10:30 AM - 11:30 PM | MULTIPURPOSE HALL 1

Meet fellow young scientists from all over the world at this casual meet and greet event. Make new friends, share your research, find collaborators and listen and learn about how you can get involved with the scientific community by joining the YSC for CRS! Dr. Molly Shoichet will be the luminary joining the event to share her professional experience and to answer any questions the young scientists may have.



## Opening Session & Awards Ceremony

11:30 AM - 1:30 PM | AUDITORIUM 1

### Business Meeting

**President:** Maria José Alonso, PhD, University of Santiago de Compostela

### Distinguished Service Award

Alexander "Sandy" Florence, Ph.D.

### T. Nagai Postdoctoral Research Award

Michael Mitchell, Postdoctoral researcher, Ph.D.  
Robert Langer, Ph.D., *Advisor*

### Kydonieus Foundation Transdermal Delivery Award

Joke Bouwstra, Ph.D.

### Founders Award Lecture

Randall Mrsny, Ph.D.

## Plenary 1 with Molly Shoichet

1:45 PM - 3:15 PM | AUDITORIUM 1

### P-1

### Can We Really Regenerate Brain Tissue with Controlled Protein Delivery?

Molly Shoichet, University of Toronto, Canada

**Moderator:** Maria José Alonso, PhD, University of Santiago de Compostela

Followed by an Interactive Session with Molly Shoichet (2:45 PM - 3:15 PM | AUDITORIUM 1)

**At the end of the lecture, attendees can meet and greet with Molly Shoichet to ask questions related to the scope of the talk, the science discussed, career advice, etc. This will be done in an informal and interactive setting.**



3:15 PM - 3:30 PM

### Refreshment Break

## Concurrent Sessions

3:30 PM - 5:30 PM | See pages 20-21 for full details

## Opening Reception with Exhibitors and Poster Presentations

5:30 PM - 7:30 PM | FOYER & POSTER HALL

Sponsored by: BU blühen BOTANICALS

Kick off CRS 2019 in the Exposition Hall, mixing and mingling among new and old friends, colleagues, and this year's exhibitors. Light food & beverages will be available.

## Young Scientist Networking Event\*

7:00 PM - 9:00 PM | THE BOTANIC GARDEN (OFF-SITE - **SOLD OUT**)

This offsite event is hosted by the Young Scientists Committee.

Come grab a drink and some food and build your network with fellow young scientists and luminaries from academia and industry! Enjoy the unique atmosphere of the Botanic garden, the tasty catering of La Seu and the live music of Mr Sanchez band!!

Ticket purchase is required to attend this event. Food and drinks are included during the dinner and a cash bar will be open afterwards.

\*Ticket purchase required. Tickets can be purchased at registration while supplies last.

# Sunday, July 21

## TECHNOLOGY FORUMS

8:00 AM - 9:00 AM Room 3 & 4	<p>Technology Forum presented by Recro Gainesville</p> <p><i>Strategies for the Formation and Coating of Multiparticulates for Use in Modified Release Products Using the Conical Rotor Processor</i></p> <p><b>Myke Scoggins, Ph.D.</b>, Recro Gainesville, U.S.A.  <b>Ryan Crawford</b>, Freund-Vector Corporation, U.S.A.</p>
8:00 AM - 9:00 AM Room 6 & 7	<p>Technology Forum presented by FUJIFILM</p> <p><i>Solutions by FUJIFILM's Proprietary DDS Technologies</i></p> <p><b>Hiroto Bando, Ph.D., MBA</b>, FUJIFILM Corporation, Japan</p>
8:00 AM - 10:15 AM Room 8	<p>Technology Forum presented by Lubrizol LifeSciences/Corbion</p> <p><i>Implants and Depots – How To meet Challenges in Polymeric Controlled Release with Bioresorbable and Biodurable Materials</i></p> <p><b>Andrew Loxley, PhD</b>, Lubrizol LifeSciences, Country  <b>John Garner</b>, Akina Inc, U.S.A.  <b>Prof. dr. ir. W.E. Hennink</b>, Pharmaceutical Sciences and Pharmaceutics at Utrecht University, The Netherlands</p>
9:00 AM - 9:15 AM Break	
9:15 AM - 10:15 AM Room 3 & 4	<p>Technology Forum presented by Evonik Corp</p> <p><i>Gastro-Intestinal Targeting with EUDRAGIT® Polymers for Advanced Therapies</i></p> <p><b>Dr. Miriam Robota</b>, Evonik Nutrition &amp; Care GmbH, Health Care, Germany</p>
9:15 AM - 10:15 AM Room 6 & 7	<p>Technology Forum presented by Bioinicia</p> <p><i>High Throughput Electro-hydrodynamic Processing as a New Disruptive Technology for the Controlled Release of Drugs</i></p> <p><b>Dr. Thomas Hayes</b>, Product &amp; Technology Specialist, Bioinicia S.L., Spain  <b>Prof. Jose M. Lagaron</b>, Group Leader at CSIC and Founder of Bioinicia, Spain</p>



**10:30 AM - 11:30 AM** Technology Forum presented by Colorcon  
 Room 8  
**Development of Patient Centric Oral Modified Release Drug Delivery Systems**  
 Dr. Jason Teckoe, Technical Director, Colorcon, U.K.  
 Dr. Ali Rajabi-Siahboomi, Colorcon, U.S.A.



**10:30 AM - 11:30 AM** Technology Forum presented by Halozyme  
 Room 6 & 7  
**Enabling and Enhancing Subcutaneous Administration of Monoclonal Antibodies Using ENHANZE® Drug Delivery Technology (Recombinant Human Hyaluronidase, rHuPH20).**  
 David Kang, Halozyme Therapeutics, U.S.A.



**10:30 AM - 11:30 AM** Technology Forum presented by Evonik Corp  
 Room 3 & 4  
**Targeted Delivery in Food Supplements: Why It Matters and How To Apply It**  
 Dr. Miriam Robota, Evonik Nutrition & Care GmbH, Health Care, Germany



SUNDAY, JULY 21

Herbert Medina

Iman Jilani

Adekunle Onadipe

Guoyun Bai

Ricky Fernandes

Sonal Bhatia

Regina McDonald

Charles Cain

Farhan Hameed

Elaine Rivasco

Adekola Alagbe

Kelly Voight

Patrick McCann

Karen Walters

Everything that makes us unique makes us uniquely good at the work we do together.

**WE ARE THE MANY DARING,  
DIFFERENT PEOPLE OF PFIZER  
ALL WORKING TO DELIVER  
BREAKTHROUGHS THAT CHANGE PATIENTS' LIVES.**

Come and discover what we are all about at  
[pfizer.com/diversity](https://pfizer.com/diversity)

Sunday, July 21 | 3:30 PM - 5:30 PM

<b>AUDITORIUM 1</b> <i>Focus on Innovation</i> <b>Moderator:</b> Maria Teresa Peracchia, Sanofi, France	<b>AUDITORIUM 2</b> <b>SCIENTIFIC SESSION</b> <i>Regenerative Medicine: Responsive Biomaterials and Cell Therapies</i> <b>Moderator:</b> Manuel Salmeron-Sanchez, University of Glasgow, U.K. <b>Co-Chair:</b> Luís Bimbo, Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, U.K.	<b>AUDITORIUM 3</b> <b>SCIENTIFIC SESSION</b> <i>Neurological Disorders and Chronic Pain</i> <b>Moderator:</b> Maria Blanco-Prieto, University of Navarra, Spain <b>Co-chair:</b> Inma Conejos, Centro de Investigación Príncipe Felipe, Spain
<p>Why you need to focus on Innovation? Innovation Drives the Global Economy as described by Clay Christensen Innovator's Dilemma a blockbuster book on the field of business development.</p> <p>If we want to move forward in any field, and in particular in Delivery Technology Continuous Innovation should be a must. How Venture Capital and Funding agencies identify the Innovation potential? Success stories will be analyzed in this panel discuss session, waiting for your questions to the panelists coming from different background expertise, industry, business, government, academia... Looking forward to your question!</p> <p>Panel Discussion featuring:</p> <p><b>Keith Horspool</b>, Boehringer Ingelheim  <b>Christine Allen</b>, University of Toronto, Canada  <b>Olivia Estrella</b>, Innovation Agency for the Valencian Region  <b>Damià Tormo</b>, Columbus Venture Partners, Spain</p>	<p><b>3:30 PM</b>  <b>I-1</b> <i>Long-term localized therapeutic protein delivery achieved using plug-and-play nanoscale crystalline devices.</i>  <b>Michael Jones, PhD</b>, Cell Guidance System, U.S.A.</p> <p><b>3:55 PM</b>  <b>I-2</b> <i>Multifunctional Matrix and Carrier Materials</i>  <b>Andreas Lendlein</b>, Helmholtz-Zentrum Geesthacht, Germany</p> <p><b>4:20 PM</b>  <b>1</b> <i>3D Culture Of Dental Pulp Pluripotent-like Stem Cells (DPPSC) Improves Their Pluripotency And Provides A Serum-free Culture Condition For Exosome Production</i>  <b>F. N. Faruqu<sup>1</sup></b>, S. Zhou<sup>1</sup>, N. Sami<sup>1</sup>, F. Gheidari<sup>1</sup>, M. Atari<sup>2</sup>, K. T. Al-Jamal<sup>1</sup>; <sup>1</sup>King's Coll. London, London, U.K., <sup>2</sup>Univ.t Internacional de Catalunya, Barcelona, Spain</p> <p><b>4:30 PM</b>  <b>2</b> <i>Mesenchymal Stem-cells Derived Nano-ghosts With Innate Targeting And Immunomodulatory Capabilities: A New Approach For Cartilage Regeneration</i>  D. D'Atri<sup>1</sup>, J. Garcia<sup>2</sup>, L. Zerrillo<sup>3</sup>, A. Chan<sup>3</sup>, L. B. Creemers<sup>2</sup>, M. Machluf<sup>1</sup>; <sup>1</sup>Technion Israel Inst. of Technology, Haifa, Israel, <sup>2</sup>Utrecht Med. Ctr., Utrecht, Netherlands, <sup>3</sup>Perucros, Leiden, Netherlands</p> <p><b>4:40 PM</b>  <b>3</b> <i>Controlled Delivery Of Therapeutic Small-interfering Rna (sirna) From Collagen-based Scaffolds Using Novel Non-viral Nanoparticles For Cartilage Repair</i>  <b>D. C. Kelly<sup>1</sup></b>, R. M. Raftery<sup>1</sup>, J. E. Dixon<sup>2</sup>, K. M. Shakesheff<sup>2</sup>, H. O. McCarthy<sup>3</sup>, C. Hobbs<sup>4</sup>, C. M. Curtin<sup>1</sup>, C. M. O'Driscoll<sup>5</sup>, F. J. O'Brien<sup>1</sup>; <sup>1</sup>Royal Coll. of Surgeons in Ireland (RCSI), Dublin, Ireland, <sup>2</sup>Univ. of Nottingham, Nottingham, U.K., <sup>3</sup>Queen's Univ. Belfast, Belfast, U.K., <sup>4</sup>Trinity Coll. Dublin, Dublin, Ireland, <sup>5</sup>Univ. Coll. Cork, Cork, Ireland</p> <p><b>4:50 PM</b>  <b>4</b> <i>Controlled Release Of Small Extracellular Vesicles By A Light-triggerable Hydrogel Enhances Diabetic Wound Healing</i>  H. Henriques-Antunes<sup>1</sup>, R. Cardoso<sup>1</sup>, A. Zonari<sup>1</sup>, J. Correia<sup>1</sup>, E. Leal<sup>1</sup>, A. Jimenez-Balsa<sup>1</sup>, <b>M. M. Lino<sup>1</sup></b>, A. Barradas<sup>1</sup>, I. Kostic<sup>1</sup>, C. Gomes<sup>2</sup>, E. Carvalho<sup>1</sup>, L. Ferreira<sup>1</sup>; <sup>1</sup>CNC, Coimbra, Portugal, <sup>2</sup>Faculdade de Med. da Univ.e de Coimbra, Coimbra, Portugal</p> <p><b>5:00 PM</b>  <b>5</b> <i>Click Chemistry Functionalized Extracellular Matrix Acting As A Refillable Drug Depot</i>  <b>M. R. Adams</b>, Y. Brudno; NC State Univ. &amp; UNC, Raleigh, NC</p> <p><b>5:10 PM</b>  Panel Discussion</p>	<p><b>3:30 PM</b>  <b>I-3</b> <i>Nanomedicines For Neurological Disorders: To Pass or Not to Pass Through the Blood Brain Barrier?</i>  <b>Patrick Couvreur</b>, University of Paris Sud, France</p> <p><b>3:55 PM</b>  <i>GDNF and Parkinson's disease: Myths and Realities</i>  <b>Rosario Luquin</b>, IdisNA, Spain</p> <p><b>4:20 PM</b>  <b>6</b> <i>Steerable Micro-invasive Infusion Platform for Localized Delivery to Solid Organs</i>  <b>M. Cotler</b>; Massachusetts Inst. of Technology, Cambridge, MA</p> <p><b>4:30 PM</b>  <b>7</b> <i>Immunomodulatory Properties Of Msc-derived Exosomes Armed With High Affinity Aptamer Toward Mylein As A Platform For Reducing Multiple Sclerosis Clinical Score</i>  <b>P. Ramezani</b>, M. Ramezani, F. Hosseini-Shamili, M. Alibolandi; Mashhad Univ. of Med. Sci., Mashhad, Iran, Islamic Republic of</p> <p><b>4:40 PM</b>  <b>8</b> <i>Gold Nanoclusters Exhibit Neuroprotective Effects By Regulating Microglial Polarization</i>  <b>T. Liu<sup>1</sup></b>, L. Xiao<sup>2</sup>, Y. Zhou<sup>2</sup>, G. Anderson<sup>1</sup>, D. Frazer<sup>1</sup>, Y. Xiao<sup>2</sup>; <sup>1</sup>QIMR Berghofer Med. Res. Inst., Brisbane, Australia, <sup>2</sup>Queensland Univ. of Technology, Brisbane, Australia</p> <p><b>4:50 PM</b>  <b>9</b> <i>Myelin-based Peptide-conjugated Nanodiscs To Promote Immunological Tolerance Against Multiple Sclerosis/ experimental Autoimmune Encephalomyelitis</i>  <b>A. Hassani Najafabadi</b>, D. Hendy, Y. Lee, A. Munie, P. Duncker, N. Wilkinson, A. Schwendeman, B. M. Segal, J. J. Moon; Univ. of Michigan, Ann Arbor, MI</p> <p><b>5:00 PM</b>  <b>10</b> <i>Peptide Nanofibers as Targeted Endocrine Therapies for Breast and Brain Tumours</i>  <b>A. LALATSA</b>; Univ. OF PORTSMOUTH, PORTSMOUTH, U.K.</p> <p><b>5:10 PM</b>  Panel Discussion</p>

## Sunday, July 21 | 3:30 PM - 5:30 PM

**MULTIPURPOSE HALL 1**

Focus Group Scientific Session: Oral Delivery (OrD)

**Moderator:** Katie Whitehead, Carnegie Mellon University, U.S.A.**Co-Chair:** Aaron Anselmo, UNC Chapel Hill, U.S.A.Sponsored by: **Catalent****3:30 PM****I-4** *Modulating Epithelial Delivery through Nanostructured Interfaces***Tejal Desai**, University of California San Francisco, U.S.A.**3:55 PM****I-5** *Translation of Oral Delivery Technologies: Challenges and Understanding Preclinical Species***Manuel Sánchez-Félix**, Novartis, U.S.A.**4:20 PM****11** *Developing An Oral Insulin Delivery System Using GET-Peptide-mediated Transcytosis*S. Rehmani, K. M. Shakesheff, **J. E. Dixon**; Univ. of Nottingham, Nottingham, U.K.**4:40 PM****12** *Impact Of Lipid Composition And Structure Formation On The Absorption Of Dietary Lipids During The Digestion Of Milk***A. C. Pham**<sup>1</sup>, K.-Y. Peng<sup>1</sup>, M. Salim<sup>1</sup>, G. Ramirez<sup>1</sup>, A. Hawley<sup>2</sup>, A. J. Clulow<sup>1</sup>, B. J. Boyd<sup>1</sup>; <sup>1</sup>Monash Inst. of Pharmaceutical Sci., Parkville, Australia, <sup>2</sup>Australian Synchrotron, ANSTO, Clayton, Australia**4:55 PM****13** *Neonatal Fc Receptor-targeted Nanoparticles For Oral Administration Of Anti-diabetic Proteins And Peptides***J. P. Martins**<sup>1</sup>, D. Liu<sup>1</sup>, F. Fontana<sup>1</sup>, M. P. A. Ferreira<sup>1</sup>, R. D'Auria<sup>2</sup>, A. Correia<sup>1</sup>, S. Valentino<sup>3</sup>, M. Kemell<sup>4</sup>, K. Moslova<sup>4</sup>, E. Mäkilä<sup>5</sup>, J. Salonen<sup>5</sup>, J. Hirvonen<sup>1</sup>, B. Sarmiento<sup>6</sup>, H. A. Santos<sup>1</sup>; <sup>1</sup>Drug Res. Program, Div. of Pharmaceutical Chemistry and Technology, Faculty of Pharmacy, Univ. of Helsinki, Helsinki, Finland, <sup>2</sup>Dept. of Biomolecular Sci., Sch. of Pharmacy, Univ. of Urbino, Urbino, Italy, <sup>3</sup>Dept. of Drug Sci., Univ. degli Studi di Pavia, Pavia, Italy, <sup>4</sup>Dept. of Chemistry, Univ. of Helsinki, Helsinki, Finland, <sup>5</sup>Dept. of Physics and Astronomy, Univ. of Turku, Turku, Finland, <sup>6</sup>Inst. de Investigação e Inovação em Saúde/INEB-Inst. de Engenharia Biomédica, Univ. of Porto, Porto, Portugal**5:10 PM****14** *In Vitro Triple Cell Model In A 3D Printed Platform For Assessing Drug Absorption And Metabolism***M. L. Jepsen**, A. Willumsen, L. H. Nielsen, A. Boisen, M. Dufva; Technical Univ. of Denmark - Dept. of Hlth.Technology, Kgs. Lyngby, Denmark**5:20 PM****15** *Development Of Polymer-lipid Hybrid Carriers With Well-defined Nanoarchitectures For Oral Drug Delivery***P. Joyce**<sup>1</sup>, S. Maghrebi<sup>2</sup>, C. A. Prestidge<sup>2</sup>; <sup>1</sup>Chalmers Univ. of Technology, Gothenburg, Sweden, <sup>2</sup>Univ. of South Australia, Adelaide, Australia**ROOM 1 & 2**

Problem Solving

**Moderator:** Cornell Stamoran, Catalent, U.S.A.

Problems are the catalysts that drive all scientists to innovate. However, the challenge scientists often face is to be able to clearly define a need and connect with the right people to explore potential solutions. In this interactive session, industry members will share pre-competitive opportunities from across the industry, showing challenges facing specific cutting-edge drug delivery technologies. The session will be held in such a manner to help kick-start potential collaborations. The idea is to establish three working tables with our industry expert sharing views and discussing with the attendees that would be willing to propose possible problem solutions.

Session featuring:

**Annette Bak**, AstraZeneca, Sweden**Phenil J. Patel**, Eli Lilly and Company, U.S.A.**Luis Brito**, Moderna Therapeutics, U.S.A.**ROOM 3 & 4**

Highlights from CRS Worldwide

**Co-Chairs:** Ilva Rupenthal, Auckland University, New Zealand and Avi Schroeder, Israel Institute of Technology, Israel**3:30 PM****16** *A toolbox to determine bioequivalence in topical products: the key to efficient access to medicines***H. A. Benson**<sup>1</sup>, Y. H. Mohammed<sup>2</sup>, S. Namjoshi<sup>2</sup>, N. Jung<sup>3</sup>, M. Windbergs<sup>3</sup>, J. E. Grice<sup>2</sup>, S. G. Raney<sup>4</sup>, M. S. Roberts<sup>5</sup>; <sup>1</sup>Sch. of Pharmacy and BioMed. Sci., Curtin Hlth.Innovation Res. Inst., Curtin Univ., Perth, Australia, <sup>2</sup>Therapeutics Res. Ctr., Sch. of Med., The Univ. of Queensland, Translational Res. Inst., QLD, Australia, <sup>3</sup>Inst. of Pharmaceutical Technology and Buchmann Inst. for Molecular Life Sci., Goethe Univ., Frankfurt am Main, Germany, <sup>4</sup>Office of Res. and Standards, Office of Generic Drugs, Ctr. for Drug Evaluation and Res., U.S.A. Food and Drug Admin., Silver Spring, MD, <sup>5</sup>Therapeutics Res. Ctr., Sch. of Med., The Univ. of Queensland, Translational Res. Inst., Sch. of Pharmacy and Med. Sci., Univ. of South Australia, Perth, Australia**3:43 PM****17** *Exploiting pH 'nano-buffering' for the affinity purification of monoclonal antibodies***M. A. Gauthier**<sup>1</sup>, P. Anees<sup>1</sup>, Y. Zhao<sup>1</sup>, A. Greschner<sup>1</sup>, T. Congdon<sup>1</sup>, H. de Haan<sup>2</sup>, N. Cottenye<sup>3</sup>; <sup>1</sup>Inst. Natl. de la Recherche Scientifique, Varennes, QC, Canada, <sup>2</sup>UOIT, Oshawa, ON, Canada, <sup>3</sup>BioAstra Technologies, Montreal, QC, Canada**3:56 PM****18** *Erlotinib Liposome Based Dry Powder Inhaler For Pulmonary Hypertension***V. B. Patravale**; Department of Pharmaceutical Sciences and Technology, Institute of Chemical Technology, Mumbai, India**4:09 PM****19** *Nano-ghosts: A Delivery Platform Or A Therapeutic Modulator***M. Machluf**; Technion, Israel Institute of Technology, Israel**4:22 PM****20** *Exploring The Untapped Potential Of Advanced Wound Drug Delivery Research In Malaysia***N. Shioh-Fern**; Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia**4:35 PM****21** *New Zealand Additive Manufacturing Research And Development***G. Walker**; Sch. of Pharmacy, Univ. of Otago, Dunedin, New Zealand**4:48 PM****22** *Peptide-loaded Nanoparticles Targeting The Viral Protease Cleavage Sites As A New Strategy To Develop An HIV Vaccine***J. Crecente-Campo**<sup>1</sup>, T. G. Dacoba<sup>1</sup>, R. W. Omange<sup>2</sup>, H. Li<sup>2</sup>, M. Luo<sup>2</sup>, M. J. Alonso<sup>1</sup>; <sup>1</sup>Ctr. for Res. in Molecular Med. and Chronic Diseases (CIMUS), Univ.e de Santiago de Compostela, Santiago de Compostela, Spain, <sup>2</sup>Dept. of Med. Microbiol. and Infectious Diseases, Univ. of Manitoba, Winnipeg, MB, Canada**5:01 PM****23** *The Potential of Self-assembling Nanopeptide Hydrogel in Tissue Engineering and Regenerative Medicine***T-W. Wang**; Dept. of Materials Sci. and Engineering, Natl. Tsing Hua Univ., Taiwan, Taiwan**5:15 PM****24** *The Power Of Polymer-drug Composites: Polymorphs, Proteins And Release Profiles***G. R. Williams**; Univ. Coll. London, London, U.K.

**MONDAY, JULY 22, 2019**

**Focus Group Membership Meetings**

7:00 AM - 8:00 AM | ROOM VARIES BY MEETING


CRS' 7 Focus Groups are built on the concept of providing you opportunities that were not previously available to you including networking with field leaders, getting exposure for your research program, and becoming (and remaining) a vital part of your research community. All members of CRS who are interested in learning more about a specific Focus Group are invited to attend these Membership Meetings. Additional Focus Group Membership Meetings are scheduled for Tuesday Morning (July 23rd).

**Nanomedicine and Nanoscale Delivery (NND)**  
AUDITORIUM 2

**Bioinspired and Biomimetic Delivery (BBD)**  
AUDITORIUM 3

Sponsored by:  Luye Pharma

**Immuno Delivery (ID)**  
MULTIPURPOSE HALL 1

Sponsored by:  gsk

**Transdermal & Mucosal Delivery (TMD)**  
ROOM 1 & 2

**First Timers: Get Introduced to CRS by the President and Board**

7:00 AM - 8:00 AM | ROOM 3 & 4

Is it your first time at CRS Annual Meeting? DO you want to take the most of it and understand CRS as society and how you would be able to benefit from? Meet with our distinguished president and board members to be able to learn more on CRS and get actively involved in this society.

**YSC: Start with a Luminary**

7:00 AM - 8:00 AM | ROOM 8

Throw back the sheets, gulp down some coffee and head to this early morning event that will provide young scientists an opportunity to get to know and network with luminaries in the CRS community. This session aims to inspire the next generation of young scientists by giving direct access to established

scientists that are internationally recognized for outstanding contributions in the science and technology of controlled release and have promoted the advancement of the field. Questions about their story, how they got to where they are today, what they would do differently and what advice would they give to early career scientists today can all be answered in this informal and relaxed setting. Bring plenty of business cards and plan on starting connections that could last a lifetime.

**2019 Luminaries:**

- Kazunori Kataoka
- Tejal Desai
- Samir Mitragotri
- Luis Brito
- Pep Pamies
- Maria Jesús Vicent

**Plenary 2 with Ralph Weissleder**

8:00 AM - 9:00 AM | AUDITORIUM 1

**P-2  
New Approaches in Imaging and Sensing of Drug Action**

Ralph Weissleder, Harvard Medical School, U.S.A.

**Moderator:** Maria J. Vicent, Centro de Investigación Príncipe Felipe, Spain

*Followed by An Interactive Session with Ralph Weissleder (9:00 AM - 9:30 AM | AUDITORIUM 1)*

***At the end of the lecture, attendees can meet and greet with Ralph Weissleder to ask questions related to the scope of the talk, the science discussed, career advice, etc. This will be done in an informal and interactive setting.***



3:30 PM - 4:30 PM  
**Refreshment Break**

**Concurrent Sessions**

10:00 AM - 12:00 PM | See pages 26-27 for full details

12:00 PM - 1:30 PM  
**Lunch Break (Lunch Served)**

**First Timers Presentations**

12:00 PM - 1:30 PM | ROOM 1 &amp; 2

**Moderated by:** YSC Committee

12:00 PM

**134***Manufacture Of Fully Synthetic Liposomes Using Microfluidics.***G. A. Berrie**, C. Webb, Y. Perrie; Univ. of Strathclyde, Glasgow, U.K.

12:10 PM

**135***Probing The Structural Evolution During The Digestion Of Lipid-based Droplets Using Microfluidic Approaches***L. Hong**<sup>1</sup>, M. Sesen<sup>2</sup>, A. Hawley<sup>3</sup>, A. Neild<sup>2</sup>, B. Boyd<sup>1</sup>;  
<sup>1</sup>Monash Univ., Parkville, Australia, <sup>2</sup>Monash Univ., Clayton, Australia, <sup>3</sup>Australian Synchrotron, Clayton, Australia

12:20 PM

**136***Using Polymer 3D Architecture, Size And Chemistry To Control Nanoparticle Distribution For Doxorubicin Drug Delivery In Vitro And In Vivo***A. K. Pearce**, A. Anane-Adjei, R. Cavanagh, P. Monteiro, T. Bennett, V. Taresco, P. Clarke, A. Ritchie, M. Alexander, A. Grabowska, C. Alexander; Univ. of Nottingham, Nottingham, U.K.

12:30 PM

**137***Inhalation Treatment Of Cystic Fibrosis With Lumacaftor And Ivacaftor Co-delivered By Nanostructured Lipid Carriers***O. Garbuzenko**, N. Kban, N. Pogrebnyak, V. Pozharov, T. Minko; Rutgers State Univ., Piscataway, NJ

12:40 PM

**138***Expandable Gastroretentive Drug Delivery System Based On Shape Memory Poly(vinyl Alcohol) Fabricated By Hot-melt Extrusion And Fused Deposition Modeling: Design And 4D Printing Concept***A. Melocchi**<sup>1</sup>, M. Uboldi<sup>1</sup>, N. Inverardi<sup>2</sup>, F. Baldi<sup>2</sup>, A. Maroni<sup>1</sup>, S. Pandini<sup>2</sup>, F. Briatico-Vangosa<sup>3</sup>, G. Scalet<sup>4</sup>, L. Zema<sup>1</sup>, A. Gazzaniga<sup>1</sup>; <sup>1</sup>Università degli Studi di Milano, Milano, Italy, <sup>2</sup>Università degli Studi di Brescia, Brescia, Italy, <sup>3</sup>Politecnico di Milano, Milano, Italy, <sup>4</sup>Università degli Studi di Pavia, Pavia, Italy

12:50 PM

**139***Hyaluronic Acid-bilirubin Nanomedicine For Modulation Of Dysregulated Intestinal Barrier, Microbiome, And Immune Responses In Colitis.***Y. Lee**<sup>1</sup>, N. Kamada<sup>1</sup>, A. H. Najafabadi<sup>1</sup>, M. Gilliland<sup>1</sup>, S. Jon<sup>2</sup>, J. Moon<sup>1</sup>; <sup>1</sup>Univ. Of Michigan, Ann Arbor, MI, <sup>2</sup>Korea Advanced Inst. of Sci. and Technology, Daejeon, Korea, Republic of

1:00 PM

**140***An Approach Based On Liquid Biopsy For Identification Of Novel Biomarkers For The Development Of Targeted Nanomedicines***M. de la Fuente**<sup>1</sup>, A. Vázquez-Rios<sup>1</sup>, A-N. Marta<sup>1</sup>, G. Bertolini<sup>2</sup>, L. Muinelo<sup>3</sup>, A. Sandra<sup>1</sup>, M. Tortoreto<sup>4</sup>, G. Centone<sup>4</sup>, M. Millone<sup>4</sup>, L. Rafael<sup>5</sup>, L. Roz<sup>2</sup>; <sup>1</sup>Nano-Oncology Unit, Hlth.Res. Inst. of Santiago de Compostela (IDIS), Spain. CIBERONC., Santiago de Compostela, Spain, <sup>2</sup>Tumor Genomics Unit, Dept. of Res., Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy, <sup>3</sup>Liquid Biopsy Unit, Hlth.Res. Inst. of Santiago de Compostela (IDIS), Spain. CIBERONC., Santiago de Compostela, Spain, <sup>4</sup>Molecular Pharmacology Unit, Experimental Oncology and Molecular Med. Dept., Fondazione IRCCS Istituto Nazionale dei Tumori, Milan, Italy, <sup>5</sup>Translational Med. Oncology group, Hlth.Res. Inst. of Santiago de Compostela (IDIS), Spain. CIBERONC., Santiago de Compostela, Spain

1:10 PM

Panel Discussion

**C&DP Luncheon**

12:00 PM - 1:30 PM | ROOM 6 &amp; 7

3:30 PM - 4:30 PM

**Refreshment Break****Concurrent Sessions**

3:30 PM - 5:30 PM | See pages 28-29 for full details

**Stars Collide: BIG vs. NANO-PROGRESS**

4:00 PM - 5:30 PM | AUDITORIUM 2



Has the the field of nanotechnology produced BIG progress? Or nano progress? This session will feature two of the field of Controlled Release's biggest Stars who will debate this issue, Kinam Park (Showalter Distinguished Professor at Purdue University, Editor-in-Chief of the Journal of Controlled Release) and Patrick Couvreur (Professor at University of Paris-Sud, European Inventor Award Winner). You will not want to miss this collision of the stars. You cannot watch it on Pay Per View. You can only watch it LIVE Monday July 22nd 2019 at the CRS Meeting in Valencia. #BeThere

**Moderated by:** Gert Storm, UCL, Netherlands

**Industry Roundtable | Presented by Pfizer**

4:00 PM - 5:30 PM | AUDITORIUM 3

**Development of Breakthroughs that Change Patients' Lives**

**Moderator:** Advait Badkar, Senior Director, Pfizer

The purpose of this year's Industry Focused Discussion is to get the perspectives from a cross-functional group of experts representing biopharma, patient advocacy, innovation partners on approaches and technologies that are making a significant impact on patients – e.g. new therapies, use of devices to provide flexibility for users, decreasing number of hospital visits and increasing adherence. The panel will discuss aspects of innovation, quality as well as the purpose and culture within their own organizations that led to the development of these breakthroughs.

**Session Featuring:**

**Annette Bak**, AstraZeneca, Sweden

**Uri Baruch**, Cambridge Design Partnership, U.K.

**Derek O'Hagan**, GSK, U.S.A.

**Maria-Teresa Peracchia**, Sanofi, France

**Industry Roundtable | Presented by ADARE PHARMACEUTICALS**

4:00 PM - 5:30 PM | ROOM 3 & 4

**The Challenge in Oral Pediatric Administration.**

**Moderator:** Holger Neecke, BD Director Adare Pharmaceuticals

Pediatric dosing is a well known industry problem statement – with many challenges ranging from palatability to swallowability to medication adherence. Any parent or caregiver who has tried to give their child bitter medicines has experienced these challenges first-hand! In this industry roundtable, we will explore different perspectives and approaches on how to develop pediatric dosage forms, from encapsulation to other novel approaches that are available. Please join us for what we expect to be an inspirational, lively and constructive exchange.

**Session Featuring:**

**Liz Sheehan**, Director of Sensory & Consumer Research of SRL Pharma

**Daniel Bar-Shalom**, Associate Professor, Department of Pharmacy, University of Copenhagen

**Dr. Hannah Batchelor BSc**, PhD, School of Pharmacy, Senior Lecturer in Pharmaceutics, Formulation and Drug Delivery



**Letizia Ubiglia**, Principal Scientist, Formulation  
Project Leader at Novartis Pharmaceuticals  
Corporation Technical Research & Development GDD  
Pharmaceutical development Oral

**Luigi Boltri**, Director, Technology Development at  
Adare Pharmaceuticals

**Mr. Ben Van Hove**, Associate Director Drug Product  
Development at Janssen Belgium

### Where to Move next? Academia or Industry? Job Fair Session

4:30 PM - 5:30 PM | MULTIPURPOSE HALL 1

Looking for new insights and opportunities to develop your career? – where better than at the Controlled Release Society Annual Meeting where you are interacting with approximately 1500 researchers working in the field. Within this session you will have opportunities to engage with and receive suggestions and feedback from a range of speakers spanning big Pharma, SME and Academia. You will also have the opportunity to share your skills and expertise with potential employers. The aim of this session is to help you build your career you want and support you to find your next exciting research post.

**Moderator:** Yvonne Perrie, University of Strathclyde, Glasgow, Scotland

**Co-Chair:** Linda Hong, Monash University, Australia

#### Session Featuring:

**Ben Boyd**, Monash University, Australia

**Laura Mason**, Upperton Pharma Solutions, U.K.

**Derek O'Hagan**, GSK Vaccine Research, U.S.A.

### Poster Pub with CV-on-a-Poster

5:30 PM - 7:30 PM | FOYER & POSTER HALL

Sponsored by:  blühen  
BOTANICALS

Join this year's traditional Poster Pub, with a new addition: CV-on-a-Poster. On the hunt for a job and looking to chat with academics or industry people you wouldn't find in a normal job search? Maximize your exposure by presenting your CV (A3 poster) in this event to show off your skills to employers relevant to your field to boost your chances of scoring a new job! This event is free to attend and participate, however, places are limited so previous registration is required.

### Focus Group Social Event (Off-site Event)

8:00 PM - 11:00 PM | SKYBAR ATENEO VALENCIA

Focus Groups are built on the concept of providing opportunities to network with field leaders, exposure for your research program, and to become a vital part of your research community. Take advantage of this opportunity to mix and mingle with colleagues in your field in a social setting.


This social event is free to **focus group members** and complimentary snacks and beverages will be provided.



Delivering a Volume of Benefits  
to Our Valued Partners

ENHANZE® drug delivery technology  
has been globally validated to facilitate  
the subcutaneous administration of a  
number of approved therapeutics in  
over 50 countries.



 Halozyme

Visit Us at CRS Booth #106

© 2019 Halozyme, Inc. All rights reserved. ENHANZE® is a registered trademark of Halozyme, Inc.


Monday July 22 Concurrent Sessions | 10:00 AM - 12:00 PM

<b>AUDITORIUM 1</b> <i>Patient Centered Aspects</i> <b>Chair:</b> Cornell Stamoran, Catalent Pharma Solutions, U.S.A.	<b>AUDITORIUM 2</b> <b>SCIENTIFIC SESSION</b> <i>Global Health and Neglected Diseases</i> <b>Moderator:</b> Carmen Pérez-Casas, Unitaid, Switzerland <b>Co-Chair:</b> Silvia Muro, University of Maryland (U.S.A.) & Catalan Institution for Research and Advanced Studies (Spain)	<b>AUDITORIUM 3</b> <b>FOCUS GROUP SCIENTIFIC SESSION:</b> <i>Transdermal &amp; Mucosal Delivery (TMD)</i> <b>Moderator:</b> Emmanuel Ho, University of Waterloo, Canada <b>Co-Chair:</b> Ana Melero, University of Valencia, Spain
<p>Quoting a recent publication at NEMJ Catalyst- "In patient-centered care, an individual's specific health needs and desired health outcomes are the driving force behind all health care decisions and quality measurements. Patients are partners with their health care providers, and providers treat patients not only from a clinical perspective, but also from an emotional, mental, spiritual, social, and financial perspective."</p> <p>This session is taking this statement alive showing examples and current approaches by Dr Kapitein, Patient Advocate, who's taken patient voice at the adequate level during any clinical process. The proximity to your clinician and how clinician approach patient requirements will be also discussed taking melanoma and the excitement of personalized immunotherapeutic approaches from together and complemented by a patient own experience giving also a point of view on how pharma companies take care of patient demands.</p> <p><b>Featuring:</b>  <b>Peter Kapitein</b>, Patient Advocate Inspire2Live, The Netherlands  <b>Andrew Warrington</b>, Novartis, U.S.A.  <b>Alfonso Berrocal</b>, Hospital General, Spain</p>	<p><b>10:00 AM</b>  <b>I-6 Addressing Global Health Challenges with Innovative Drug Delivery Technologies</b>  <b>Susan Hershenson</b>, Bill and Melinda Gates Foundation, U.S.A.</p> <p><b>10:25 AM</b>  <b>Development, Manufacturing, and Supply of Merck's Ebola Vaccine</b>  <b>Jeffrey T. Blue</b>, Merck Sharp &amp; Dohme Corp.</p> <p><b>10:50 AM</b>  <b>25 δ-tocopherol Effect On Endocytosis And Its Combination With Enzyme Replacement Therapy For Lysosomal Disorders: A New Type Of Drug Interaction?</b>                      R. L. Manthe<sup>1</sup>, J. A. Rappaport<sup>1</sup>, Y. Long<sup>2</sup>, M. Solomon<sup>1</sup>, V. Veluvolu<sup>1</sup>, M. Hildreth<sup>1</sup>, D. Gugutkov<sup>3</sup>, J. Marugan<sup>2</sup>, W. Zheng<sup>2</sup>, <b>S. Muro</b><sup>4</sup>; <sup>1</sup>Univ. of Maryland, College Park, MD, <sup>2</sup>NIH, Bethesda, MD, <sup>3</sup>Inst. for Bioengineering of Catalonia, Barcelona, Spain, <sup>4</sup>Univ. of Maryland - Inst. for Bioengineering of Catalonia, Barcelona, Spain</p> <p><b>11:00 AM</b>  <b>26 Amphotericin B Deformable Lipid Carriers for Topical Treatment of Cutaneous Leishmaniasis</b>                      J. Vieira, J. Marto, S. Simões, <b>M. Carvalheiro</b>; Univ. of Lisbon, Lisbon, Portugal</p> <p><b>11:10 AM</b>  <b>27 Microfabricated Particles as Single-Injection Vaccines</b>                      K. J. McHugh, X. Lu, S. Tomasic, Z. L. Tochka, T. Graf, R. Langer, <b>A. Jaklencic</b>; MIT, Cambridge, MA</p> <p><b>11:20 AM</b>  <b>28 Bioresorbable Synthetic Co-Polymers As Improved 3rd Generation Cardiac Stent Building Materials.</b>  <b>S. McMahon</b><sup>1</sup>, P. Duffy<sup>1</sup>, Z. Azhari<sup>2</sup>, K-A. Kwon<sup>2</sup>, R. E. Cameron<sup>2</sup>, S. Pacharra<sup>3</sup>, J. Salber<sup>3</sup>, I. Quintana<sup>4</sup>, W. Wang<sup>5</sup>, T. Durig<sup>6</sup>; <sup>1</sup>Ashland Specialties Ireland, Dublin, Ireland, <sup>2</sup>Univ. of Cambridge, Cambridge, U.K., <sup>3</sup>Ruhr-Univ. Bochum, Bochum, Germany, <sup>4</sup>IK<sup>4</sup>-Tekniker, Eibar, Spain, <sup>5</sup>Univ. Coll. Dublin, Dublin, Ireland, <sup>6</sup>Ashland Specialty Chemicals, Wilmington, DE</p> <p><b>11:30 AM</b>  <b>29 Milk vs Infant Formula: Optimising The Solubilisation Of Antimalarial Drugs Artefenomel/Ferroquine During Digestion</b>  <b>M. Salim</b><sup>1</sup>, J. Khan<sup>1</sup>, G. Ramirez<sup>1</sup>, M. Murshed<sup>1</sup>, A. J. Clulow<sup>1</sup>, A. Hawley<sup>2</sup>, H. Ramachandruni<sup>3</sup>, S. Beilles<sup>4</sup>, B. J. Boyd<sup>1</sup>; <sup>1</sup>Monash Inst. of Pharmaceutical Sci., Parkville, Australia, <sup>2</sup>SAXS/WAXS beamline, Australian Synchrotron, ANSTO, Clayton, Australia, <sup>3</sup>Med.s for Malaria Venture, Geneva, Switzerland, <sup>4</sup>Sanofi R&amp;D, Montpellier, France</p> <p><b>11:40 AM</b>                      Panel Discussion</p>	<p><b>10:00 AM</b>  <b>I-7 High-dose Microarray Patches: Tackling Global Healthcare Challenges</b>  <b>Ryan Donnelly</b>, Queen's University Belfast, U.K.</p> <p><b>10:25 AM</b>  <b>Functional nanostructures to improve delivery and imaging on mucosal surfaces</b>  <b>Frank Gu</b>, University of Toronto</p> <p><b>10:50 AM</b>  <b>30 Mucus-penetrating Peptides For Improved Transport Across Sputum Of Cystic Fibrosis Patients</b>                      J. Leal, H. D. C. Smyth, <b>D. Ghosh</b>; Univ. of Texas at Austin, Austin, TX</p> <p><b>11:10 AM</b>  <b>31 Non-Invasive Transdermal Lorazepam Delivery Using Combined Strategies of Chemical Modifications and Controllable Iontophoresis: Therapeutic Potential to Rapidly Relieve Paediatric Febrile Seizures</b>  <b>Y. Chen</b>, L. Zhu, Y. Ling, J. Liu; Nantong Univ., Nantong, China</p> <p><b>11:30 AM</b>  <b>32 Engineering a vaginally delivered, mucoinert progesterone nanosuspension for safer and more effective prevention of preterm birth</b>  <b>H. Zierden</b>, T. Hoang, A. Date, J. I. Ortiz, N. Anders, P. He, J. Hanes, M. Mahendroo, L. Ensign; Johns Hopkins Univ., Baltimore, MD</p> <p><b>11:40 AM</b>  <b>33 Novel Dissolving Bi-layer Microarray Patches As A Minimally Invasive, Efficient Intradermal Delivery System For A Long-acting Cabotegravir Nanosuspension</b>  <b>I. A. Tekko</b><sup>1</sup>, L. Vora<sup>1</sup>, M. McCrudden<sup>1</sup>, C. Jarraghan<sup>2</sup>, A. Rein-Weston<sup>2</sup>, D. Zehrunge<sup>2</sup>, P. S. Giffen<sup>3</sup>, H. O. McCarthy<sup>1</sup>, R. F. Donnelly<sup>1</sup>; <sup>1</sup>Queens Univ. Belfast, Belfast, U.K., <sup>2</sup>PATH, Seattle, WA, <sup>3</sup>GlaxoSmithKline, Standon, Hertfordshire, U.K.</p> <p><b>11:50 AM</b>  <b>34 Dermato- And Systemic Pharmacokinetics Of Scopolamine Are Self-consistent Following Transdermal Drug Delivery</b>  <b>A. Pensado</b><sup>1</sup>, J. White<sup>1</sup>, A. L. Bunge<sup>2</sup>, R. H. Guy<sup>1</sup>, B. Delgado-Charro<sup>1</sup>; <sup>1</sup>Univ. of Bath, Bath, U.K., <sup>2</sup>Colorado Sch. of Mines, Golden, CO</p>

## Monday July 22 Concurrent Sessions | 10:00 AM - 12:00 PM

## MULTIPURPOSE HALL 1

## FOCUS GROUP SCIENTIFIC SESSION:

*Immuno Delivery (ID)***Moderator:** Ankur Singh, Cornell University, U.S.A.**Co-Chair:** Ana Sara Cordeiro, School of Pharmacy, Queen's University Belfast, U.K.Sponsored by 

## 10:00 AM

*Formulating potent and Safe Delivery Systems for a Broad range of Vaccines.***Derek O'Hagan**, GSK Vaccine Research, U.S.A.

## 10:25 AM

**I-8** *Engineering Innate Immunity: How Biophysical Properties Of Multi-adjuvant Carriers Effect Integrative Signaling In Antigen-presenting Cells***Krishnendu Roy**, Georgia Institute of Technology, U.S.A.

## 10:50 AM

**35** *Unfolding Nanogels for Local and Systemic Cancer Immunotherapy*J. Stickdorn<sup>1</sup>, J. Halbrock<sup>2</sup>, M. Bros<sup>3</sup>, H. Schild<sup>4</sup>, S. Grabbe<sup>3</sup>, **L. Nuhn<sup>1</sup>**; <sup>1</sup>Max Planck Inst. for Polymer Res., Mainz, Germany, <sup>2</sup>Inst. for Immunology, Univ. Med. Ctr., Mainz, Germany, <sup>3</sup>Dept. of Dermatology, Univ. Med. Ctr., Mainz, Germany, <sup>4</sup>Inst. for Immunology, Univ. Med. Ctr., Mainz, Germany

## 11:10 AM

**36** *Immunotherapeutic Nano Ghosts: Cell Free Nano Vesicles For Off The Shelf Cancer Immunotherapy***L. Levy<sup>1</sup>**, K. K. Kolluri<sup>2</sup>, S. M. Janes<sup>2</sup>, M. Machluf<sup>1</sup>; <sup>1</sup>Technion-Israel Inst. of Technology, Haifa, Israel, <sup>2</sup>Univ. Coll. London, London, U.K.

## 11:25 AM

**37** *Bottlebrush Prodrugs (BPDs): A platform for controlled modulation of the immune system***S. Bhagchandani**; Massachusetts Inst. of Technology, Cambridge, MA

## 11:35 AM

**38** *Generation Of Enhanced Immune Responses By An Aluminum Integrated Nano-MOF***X. Sun**; Sichuan Univ., Chengdu, China

## 11:45 AM

**39** *Toll-like Receptor 2 Targeted Nanovaccine For Immunomodulation In Gut Microbiome-mediated Metabolic Syndrome***A. Singh**, M. Mosquera, S. Kim; Cornell Univ., Ithaca, NY

## ROOM 1 &amp; 2

## SCIENTIFIC SESSION:

*Theranostics and Molecular Imaging***Moderator:** Twan Lammers, Univ Aachen, Germany**Co-Chair:** Khuload Al-Jamal, King's College London, U.K.

## 10:00 AM

**I-9** *Nanoparticles For Advanced Imaging And Therapy***Jan Grimm**, Memorial Sloan Kettering Cancer Center, U.S.A.

## 10:25 AM

**I-10** *Biomaterials to Boost Cancer Immunotherapy***Zhuang Liu**, Soochow University, China

## 10:50 AM

**40** *Elastin-targeted Molecular Imaging Of Kidney Fibrosis: A Valuable Tool To Promote Translational Drug Research***M. Baues<sup>1</sup>**, B. Klinkhammer<sup>2</sup>, Q. Sun<sup>2</sup>, N. Drude<sup>3</sup>, F. Kiessling<sup>1</sup>, P. Boor<sup>2</sup>, T. Lammers<sup>1</sup>; <sup>1</sup>Inst. for Experimental Molecular Imaging, Aachen, Germany, <sup>2</sup>Inst. of Pathology, Aachen, Germany, <sup>3</sup>Dept. for Nuclear Med., Aachen, Germany

## 11:00 AM

**41** *Tumor-activated Photosensitizers For Near-infrared Photodynamic Cancer Therapy*L. Farbiak, H. Xiong, **D. Siegwart**; UT Southwestern Med. Ctr., DALLAS, TX

## 11:10 AM

**42** *Radiolabelling And In Vivo Pet Tracking Of A Liposomal Glucocorticoid For The Potential Prediction Of Treatment Response In Inflammatory Diseases.***P. Gawne<sup>1</sup>**, F. Clarke<sup>1</sup>, K. Turjeman<sup>2</sup>, Y. Barenholz<sup>2</sup>, S. Y. A. Terry<sup>1</sup>, R. T. M. de Rosales<sup>1</sup>; <sup>1</sup>King's Coll. London, London, U.K., <sup>2</sup>The Hebrew Univ.-Hadassah Med. Sch., Jerusalem, Israel

## 11:20 AM

**43** *Nanoparticles For Pretargeted PET Imaging And Radionuclide Therapy: In Vivo Click Chemistry On Polymer Brushes***M. Barz**; Johannes Gutenberg Univ., Mainz, Germany

## 11:30 AM

**44** *Filled And Functionalised Radioactive Nanocapsules Towards Targeted Radiotherapy In Vivo***J-W. Wang<sup>1</sup>**, R. Klippstein<sup>1</sup>, M. Martincic<sup>2</sup>, C. Spinaco<sup>3</sup>, R. Feldman<sup>4</sup>, D. Emfietzoglou<sup>5</sup>, J-C. Saccavini<sup>4</sup>, B. Ballesteros<sup>6</sup>, G. Tobias<sup>2</sup>, K. Al-Jamal<sup>1</sup>; <sup>1</sup>King's Coll. London, London, U.K., <sup>2</sup>Inst. de Ciència de Materials de Barcelona (ICMAB-CSIC), Barcelona, Spain, <sup>3</sup>CNRS, Inst. de Biologie Moléculaire et Cellulaire, Laboratoire d'Immunopathologie et Chimie Thérapeutique, Strasbourg, France, <sup>4</sup>Cis Bio Intl. Ion Beam Applications SA, Gif-sur-Yvette, France, <sup>5</sup>Med. Physics Lab., Univ. of Ioannina Med. Sch., Ioannina, Greece, <sup>6</sup>Catalan Inst. of NanoSci. and Nanotechnology (ICN<sup>2</sup>), CSIC and the Barcelona Inst. of Sci. and Technology, Barcelona, Spain

## 11:40 AM

Panel Discussion


Monday July 22 Concurrent Sessions | 1:30 PM - 3:30 PM

<b>AUDITORIUM 1</b> <b>SCIENTIFIC SESSION:</b> <i>Delivery in Cosmetics and Consumer Products</i> <b>Moderator:</b> Peter Landa, Estee Lauder, U.S.A. <b>Co-Chair:</b> Ken Carson, Southwest Research, U.S.A.	<b>AUDITORIUM 2</b> <b>MINI-SYMPOSIUM:</b> <i>Cancer Immunotherapeutics and RNA-based materials</i> <b>Co-Chairs:</b> Luis Brito, Moderna, U.S.A. and Helena Florindo, University of Lisbon, Portugal	<b>AUDITORIUM 3</b> <b>SCIENTIFIC SESSION:</b> <i>Hot Topics in Topical and Transdermal Delivery</i> <b>Moderator:</b> Samir Mitragotri, Harvard University, U.S.A. <b>Co-Chair:</b> Sandra Simoes, University of Lisbon, Portugal
<p><b>1:30 PM</b>  <b>I-11</b> <i>Spatial Distribution Of Molecular Components In Human Skin Cross Sections</i>  <b>Gustavo S. Luengo</b>, L'Oreal, France</p> <p><b>1:55 PM</b>  <b>I-12</b> <i>Non-permeable Microcapsules To Prevent Premature Release Of Active Ingredients – Challenges And Recent Progress</i>  <b>Zhibing Zhang</b>, University of Birmingham, U.S.A.</p> <p><b>2:20 PM</b>  <b>45</b> <i>Mesoporous Nanosystems To Develop A Novel Anti-aging Strategies</i>  <b>G-A. Marta</b><sup>1</sup>, H-t. Adrian<sup>2</sup>, G-A. Isabel<sup>1</sup>, M-S. Virginia<sup>2</sup>, M-M. Ramon<sup>3</sup>, S. Felix<sup>3</sup>; <sup>1</sup>Univ. Miguel Hernandez, Alicante, Spain, <sup>2</sup>Inst. Interuniversitario de Investigación de Reconocimiento Molecular y Desarrollo Tecnológico (IDM), Univ.t Politècnica de València, Univ.t de València, Spain., valencia, Spain, <sup>3</sup>Inst. Interuniversitario de Investigación de Reconocimiento Molecular y Desarrollo Tecnológico (IDM), Univ.t Politècnica de València, Univ.t de València, Spain., Valencia, Spain</p> <p><b>2:30 PM</b>  <b>46</b> <i>Slow Release Of Semiochemicals For Biological Psyllid Pest Control</i>  <b>L. C. Muskat</b>; Bielefeld Univ. of Applied Sci., Bielefeld, Germany</p> <p><b>2:40 PM</b>  <b>47</b> <i>Quantitative Determination Of Nanoparticle Deposition In A Single Hair Follicle In Human Forearm And Scalp - An In-vivo Study</i>  R. A. Christmann<sup>1</sup>, C. Thomas<sup>2</sup>, A. S. Raber<sup>3</sup>, B. Loretz<sup>1</sup>, U. F. Schaefer<sup>3</sup>, T. Tschernig<sup>2</sup>, T. Vogt<sup>2</sup>, C-M. Lehr<sup>1</sup>; <sup>1</sup>Helmholtz-Inst. for Pharmaceutical Res. Saarland (HIPS), Saarland Univ., Saarbrücken, Germany, <sup>2</sup>Saarland Univ. Hosp., Saarbrücken, Germany, <sup>3</sup>Saarland Univ., Saarbrücken, Germany</p> <p><b>2:50 PM</b>  <b>48</b> <i>Transdermal Delivery Of Systemic Therapeutic Agents For Atopic Dermatitis</i>  <b>J. H. Wan</b>, X. W. Ng, S. S. Venkatraman; Nanyang Technological Univ., Singapore, Singapore</p> <p><b>3:00 PM</b>  <b>49</b> <i>Hydrogel Delivery System Containing Calendulae Flos Lyophilized Extract With Chitosan As A Promising Strategy For Wound Healing Applications</i>  J. Chanaj-Kaczmarek<sup>1</sup>, <b>M. Paczkowska</b><sup>1</sup>, K. Pikosz<sup>1</sup>, D. Szymanowska<sup>2</sup>, J. Kobus-Cisowska<sup>2</sup>, J. Cielecka-Piontek<sup>1</sup>; <sup>1</sup>Poznan Univ. of Med. Sci., Poznan, Poland, <sup>2</sup>Poznan Univ. of Life Sci., Poznan, Poland</p> <p><b>3:10 PM</b>  Panel Discussion</p>	<p><b>1:30 PM</b>  <b>I-13</b> <i>Lipid nanoparticles co-loaded with mRNA and glycolipid adjuvants (GALSOMES) induce antitumor immunity through conventional and natural killer T Cells</i>  <b>Stefaan De Smedt</b>, University of Ghent, Belgium</p> <p><b>1:55 PM</b>  <b>I-14</b> <i>Nano-vaccines re-shape tumor immune microenvironment sensitizing solid tumors to immunotherapy</i>  <b>Helena Florindo</b>, University of Lisbon, Portugal</p> <p><b>2:20 PM</b>  <i>Long-Acting Implant Formulations to Improve Patient Adherence</i>  <b>Luis Brito</b>, Moderna, U.S.A.</p> <p><b>2:45 PM</b>  Presentation by:  <b>Heinrich Haas</b>, BiOntech, Germany</p> <p><b>3:10 PM</b>  Panel Discussion</p>	<p><b>1:30 PM</b>  <b>I-15</b> <i>Targeting Hair Follicles With Nanopharmaceuticals For Non-invasive Vaccination And Treating</i>  <b>Claus-Michael Lehr</b>, Helmholtz Centre for Infection Research, Germany</p> <p><b>1:55 PM</b>  <i>Improving adherence and efficacy of topical drug delivery, an industry perspective</i>  <b>Vincent Jannin</b>, Lonza, France</p> <p><b>2:20 PM</b>  <b>50</b> <i>Intradermal Delivery Of An Immunomodulator For Basal Cell Carcinoma, Using Imaging Mass Spectrometry To Monitor Microneedle-enhanced Drug Permeation In A Label-free Manner.</i>  <b>A. H. Bin Sabri</b><sup>1</sup>, J. Ogilvie<sup>2</sup>, V. Shpadaruk<sup>3</sup>, J. McKenna<sup>3</sup>, J. Segal<sup>1</sup>, D. Scurr<sup>1</sup>, M. Marlow<sup>1</sup>; <sup>1</sup>Univ. of Nottingham, Nottingham, U.K., <sup>2</sup>Walgreens Boots Alliance, Nottingham, U.K., <sup>3</sup>Leicester Royal Infirmary Univ. Hosp. Leicester Dermatology Dept., Leicester, U.K.</p> <p><b>2:30 PM</b>  <b>51</b> <i>A Smart 3D Printed Microneedle-based Microelectromechanical System (MEMS) For Controlled Transdermal Drug Delivery</i>  <b>S. N. Economidou</b>, G. Lall, D. Douroumis; Univ. of Kent, Gillingham, U.K.</p> <p><b>2:40 PM</b>  <b>52</b> <i>Aqbd As A Framework For In Vitro Release Testing Development - A Regulatory Oriented Approach</i>  <b>M. Miranda</b><sup>1</sup>, C. Cardoso<sup>2</sup>, C. Vitorino<sup>3</sup>; <sup>1</sup>Faculty of Pharmacy Univ. of Coimbra, Coimbra, Portugal, <sup>2</sup>Laboratórios Basi, Coimbra, Portugal, <sup>3</sup>Faculty of Pharmacy Univ. of Coimbra; Ctr. for NeuroSci.s and Cell Biology (CNC), Coimbra, Portugal</p> <p><b>2:50 PM</b>  <b>53</b> <i>Targeted Delivery Of Exogenous Pip3 Using Modified Starch As A Carrier To Accelerate Wound Healing</i>  <b>Y. Blitsman</b>, T. Traitel, R. Goldbart, A. Rudich, J. Kost; Ben Gurion Univ. of The Negev, Beer Sheva, Israel</p> <p><b>3:00 PM</b>  <b>54</b> <i>Hyaluronic Acid Nanoparticles for Topical Drug Delivery in Non-melanoma Skin Cancers</i>  <b>V. Krishnan</b><sup>1</sup>, B. Sell<sup>2</sup>, K. Todorova<sup>3</sup>, A. Mandinova<sup>3</sup>, K. Y. Tsai<sup>2</sup>, S. Mitragotri<sup>1</sup>; <sup>1</sup>Harvard Univ., Cambridge, MA, <sup>2</sup>H. Lee Moffitt Cancer Ctr. &amp; Res. Inst., Tampa, FL, <sup>3</sup>Massachusetts Gen. Hosp., Boston, MA</p> <p><b>3:10 PM</b>  Panel Discussion</p>

## Monday July 22 Concurrent Sessions | 1:30 PM - 3:30 PM

## MULTIPURPOSE HALL 1

## FOCUS GROUP SCIENTIFIC SESSION:

*Bioinspired and Biomimetic Delivery (BBD)***Moderator:** Zhen Gu, University of California, Los Angeles**Co-Chair:** Md Nurunnabi, Harvard University, U.S.A.Sponsored by:  Luye Pharma

## 1:30 PM

**I-16** *Biomimetic Hydrogels for Therapeutic Delivery in Cancer and Autoimmune Diseases***Nicholas Peppas**, University of Texas at Austin, U.S.A.

## 2:20 PM

**55** *Nanoworms: Antibodies Fused To Thermo-sensitive Elastin-like Polypeptides Potentiate Cell-surface Receptor Clustering*C. Lee<sup>1</sup>, Z. Yao<sup>1</sup>, A. Kouhi<sup>2</sup>, S. Peddi<sup>1</sup>, H. Cui<sup>3</sup>, A. L. Epstein<sup>2</sup>, **J. A. MacKay<sup>1</sup>**; <sup>1</sup>Univ. of Southern California Sch. of Pharmacy, Los Angeles, CA, <sup>2</sup>Univ. of Southern California Keck Sch. of Med., Los Angeles, CA, <sup>3</sup>Johns Hopkins Univ., Baltimore, MD

## 2:40 PM

**56** *Microgels Encapsulating Glucose-responsive Nanoparticles For Self-regulated Insulin Delivery***L. R. Volpatti**, A. Facklam, R. Langer, D. G. Anderson; Massachusetts Inst. of Technology, Cambridge, MA

## 3:00 PM

**57** *Hyaluronic Acid And Polyarginine Nanocomplexes For Platinum Derivative Encapsulation***G. Lollo<sup>1</sup>**, K. Matha<sup>2</sup>, R. Respaud<sup>3</sup>, I. Marigo<sup>4</sup>, A. Vermeulen<sup>5</sup>, K. Remaut<sup>5</sup>, J-P. Benoit<sup>2</sup>; <sup>1</sup>Univ. of LYON<sup>1</sup>, Lyon, France, <sup>2</sup>Univ. of Angers, Angers, France, <sup>3</sup>INSERM-UMR1100, Tours, France, <sup>4</sup>Intituto Oncologico Veneto, IOV-IRCCS, Padova, Italy, <sup>5</sup>Ghent Univ., Ghent, Belgium

## 3:10 PM

**58** *In Situ Sprayed Gel With For Post-surgical Cancer Immunotherapy***Q. Chen<sup>1</sup>**, Z. Gu<sup>2</sup>; <sup>1</sup>Soochow Univ., Suzhou, China, <sup>2</sup>Univ. of California, Los Angeles, Los Angeles, CA

## 3:20 PM

**59** *Ros-responsive Cxcr4-targeted Dextran Nanoparticles Enhance The Anti-fibrosis Effect Of Sorafenib***X. Luo<sup>1</sup>**, P. Wu<sup>1</sup>, C. Qian<sup>1</sup>, M. Sun<sup>1</sup>, D. Oupicky<sup>2</sup>; <sup>1</sup>China Pharmaceutical Univ., Nanjing, China, <sup>2</sup>Univ. of Nebraska Med. Ctr., Omaha, NE

## ROOM 1 &amp; 2

## SCIENTIFIC SESSION:

*Preclinical Models Of Disease To Foster Clinical Translation***Moderator:** Biana Godin, Houston Methodist Research Institute, U.S.A.**Co-Chair:** Anna Scomparin, University of Turin, Italy

## 1:30 PM

**I-17** *Brain metastases: Deciphering tumor-stroma interactions in three dimensions for the rational design of nanomedicines***Ronit Satchi-Fainaro**, Tel Aviv University, Israel

## 1:55 PM

**I-17** *Phenotypic screening of anti-cancer agents in 3D-cultured human tissues***Bram Herpers**; Ocello BV, Netherlands

## 2:20 PM

**60** *Triple-Negative Breast Cancer Preclinical Models Provide Functional Evidence of Metastatic Progression and Suitability for Nanomedicine Evaluation***A. Armiñán<sup>1</sup>**, J. J. Arroyo-Crespo<sup>1</sup>, D. Charbonnier<sup>1</sup>, P. Montesinos-Boix<sup>1</sup>, M. Palomino-Schätzlein<sup>1</sup>, R. Lamas-Domingo<sup>1</sup>, A. Pineda-Lucena<sup>2</sup>, J. Forteza<sup>3</sup>, M. J. Vicent<sup>1</sup>; <sup>1</sup>CIPF, Valencia, Spain, <sup>2</sup>CIPF / Inst. de Investigación sanitaria la Fe, Valencia, Spain, <sup>3</sup>CIPF /Inst. Valenciano de Patología, Valencia, Spain

## 2:30 PM

**61** *Complete Tumor Regression By Liposomal Bortezomib In A Humanized Mouse Model Of Multiple Myeloma*A. K. Deshantri<sup>1</sup>, M. H. Fens<sup>2</sup>, R. W. Ruiter<sup>3</sup>, J. M. Metselaar<sup>4</sup>, G. Storm<sup>2</sup>, S. N. Mandhane<sup>5</sup>, G. H. Graat<sup>1</sup>, E. G. Lentjes<sup>1</sup>, T. Mutis<sup>3</sup>, A. C. Martens<sup>3</sup>, R. W. Groen<sup>3</sup>, **R. M. Schiffelers<sup>1</sup>**; <sup>1</sup>Univ. Med. Ctr. Utrecht, Utrecht, Netherlands, <sup>2</sup>Utrecht Univ., Utrecht, Netherlands, <sup>3</sup>Amsterdam UMC, Amsterdam, Netherlands, <sup>4</sup>Enceladus Pharmaceuticals, Naarden, Netherlands, <sup>5</sup>Sun Pharma Advanced Res. Company, Vadodara, India

## 2:40 PM

**62** *Clinically Suitable Nanobioconjugate Inhibits Glioblastoma Growth Through Tumor-microenvironment Crosstalk***J. Y. Ljubimova**, T. Sun, R. Patil, A. Galstyan, D. Klymyshyn, H. Ding, E. S. Shatalova, E. Holler, A. V. Ljubimov, K. L. Black; Cedars-Sinai Med. Ctr., Los Angeles, CA

## 2:50 PM

**63** *New Three-dimensional Intestinal Tissue Engineering Model As Multifunctional Platform For Drug And Nanoparticle Absorption Studies***M. H. Macedo**; i<sup>3</sup>s - Inst. de Investigação e Inovação em Saúde, Univ. do Porto, Porto, Portugal

## 3:00 PM

**64** *Clinically-Relevant Desmoplastic Pancreatic Cancer Spheroid Model and Model-Dependent Nanoparticle Transport*M. Durymanov<sup>1</sup>, C. Kroll<sup>2</sup>, A. Permyakova<sup>2</sup>, E. O'Neill<sup>3</sup>, R. Sulaiman<sup>4</sup>, M. Person<sup>5</sup>, **J. Reineke<sup>2</sup>**; <sup>1</sup>Moscow Inst. of Physics and Technology, Moscow, Russian Federation, <sup>2</sup>South Dakota State Univ., Brookings, SD, <sup>3</sup>Avera Med. Group Oncology and Hematology, Sioux Falls, SD, <sup>4</sup>Avera McKennan Hosp., Sioux Falls, SD, <sup>5</sup>Surgical Inst. of South Dakota, Sioux Falls, SD

## 3:10 PM

Panel Discussion

## TUESDAY, JULY 23, 2019

### Focus Group Membership Meetings

7:00 AM - 8:00 AM | ROOM VARIES BY MEETING

Sponsored by:  ELSEVIER

CRS' 7 Focus Groups are built on the concept of providing you opportunities that were not previously available to you including networking with field leaders, getting exposure for your research program, and becoming (and remaining) a vital part of your research community. All members of CRS who are interested in learning more about specific Focus Groups are invited to attend these Membership Meetings. Additional Focus Group Membership Meetings are scheduled for Monday morning (July 22<sup>nd</sup>).


### Oral Delivery (OrD)

AUDITORIUM 2

Sponsored by: 

### Ocular Delivery (Ocd)

AUDITORIUM 3

Award Grants sponsored by: 

### Gene Delivery & Gene Editing (GDGE)

MULTIPURPOSE HALL 1

Sponsored by: 

### Young Scientist Get up Get Educated: Science Communication

7:00 AM - 8:00 AM | ROOM 1 & 2

Looking to bring public interest in your project? Have a great project proposal in your mind but cannot get grant panel or investors to understand you? Feeling like you can't get the meaning of your science across? Then you need to know how to better communicate your science to your audience. Come along to this session to get the tips and tricks on how to express your work effectively with more clarity to achieve your goals.

### Plenary 3 with Ada Yonath

8:00 AM - 9:00 AM | AUDITORIUM 1

P-3

### The Ribosome – a Connection between the Prebiotic Origin of Life and Next Generation Antibiotics

Ada Yonath, Weizmann Institute, Israel

**Moderator:** Elias Fattal, University of Paris Sud, France



*Followed by An Interactive Session with Ada Yonath (9:00 AM - 9:30 AM | AUDITORIUM 1)*

*At the end of the lecture, attendees can meet and greet with Ada Yonath to ask questions related to the scope of the talk, the science discussed, career advice, etc. This will be done in an informal and interactive setting.*

9:30 AM - 10:00 AM

### Refreshment Break

### Concurrent Sessions

10:00 AM - 12:00 PM | See pages 32-34 for full details

12:00 PM - 1:30 PM

### Lunch Break (Lunch Served)

### Interactive Session with Patrick Couvreur

12:00 PM - 1:30 PM | ROOM 1 & 2

Attendees can meet and greet with Patrick Couvreur to ask questions related to the science of controlled release, career advice, etc. in an informal and interactive session.

### Concurrent Sessions

1:30 PM - 3:30 PM | See pages 35-36 for full details

3:30 PM - 4:00 PM

### Refreshment Break

### Industry's Future Delivery Research Needs Panel & Young Scientist Working Session

4:00 PM - 7:00 PM | AUDITORIUM 3

Panelists from product and technology innovators such as Novartis, Boehringer Ingelheim, and others will discuss critical areas where research focus is needed to solve R&D pipeline delivery challenges.

### EU-NCL Session

4:00 PM - 6:00 PM | AUDITORIUM 2

EUNCL, the European Nanomedicine Characterisation Laboratory, fosters innovation in nanomedicine by providing since 2015 access to state of the art full characterisation of nanomaterials intended for medical applications, developed by public labs, spin-offs and innovative SMEs. EUNCL provides for free a comprehensive set of characterisation tests (physical, chemical, in vitro and in vivo biological properties) allowing researchers and SMEs to better understand

or predict the clinical in vivo effects of their medical nanomaterials. The knowledge base developed by EUNCL helps the European Medicines Agency (EMA) or other relevant agencies to adapt the current regulation and approval process to Nanomedicine products. EUNCL also serves as a European knowledge base for researchers and industry ensuring that European knowledge is documented in Europe for the benefit of the European economy, healthcare systems and patients.

To fulfill its mission EUNCL aims to achieve 4 major objectives:

- To qualify a comprehensive portfolio of medical nanoparticles preclinical characterisation assays (more than 40 assays) within an efficient collaborative environment over the first year of EUNCL.
- To provide preclinical characterisation of medical nanoparticles to researchers, developers and inventors from academia and industry developing Med-NPs by opening trans-national access (TNA).
- To constantly refine and upgrade the assay portfolio and processes of EUNCL.
- To disseminate the EUNCL findings to the nanomedicine stakeholders in order to strengthen the innovation potential in that field.

EUNCL panellists will introduce during the session the lessons learned over 4 years of operation with 30+ nanomedicine products, on methods development and standardisation, physical-chemical, in vitro and vivo characterisations.

4:00 PM

**1-33**

*The EU Nanomedicine Characterisation Lab, 4 years of lessons learned and beyond*

**Simon Baconnier**, CEA, France

4:18 PM

**1-34**

*From SOPs to Standards*

**Luigi Calzolari**, European Commission – DG Joint Research Centre

4:36 PM

**1-35**

*Measuring Particle Size Distribution Of Nanoparticle Enabled Medicinal Products: A Step By Step Approach Combining Orthogonal Measurements With Increasing Complexity.*

**Fanny Caputo**, CEA, France

4:54 PM

**1-37**

*Compared Assay For Cell Viability Tests*

**Ruth Schmid**, Sintef, Norway

5:12 PM

**1-36**

*Assay Validation: Irinotecan-based Nanomedicine Study*

**Adriele Prina-Mello**, University of Dublin, Ireland

5:30 PM

Panel Discussion

#### MULTIPURPOSE HALL 1

4:00 PM - 6:00 PM

##### SCIENTIFIC SESSION:

*Crossing Challenging Biological Barriers*

**Moderator:** Julia Y. Ljubimova, Cedars-Sinai Medical Center, U.S.A.

**Co-Chair:** Andrea Joseph, University of Washington, Department of Chemical Engineering, U.S.A.

4:00 PM

**1-38** *Targeting Fast Transcytosis Across the Blood Brain Barrier to Augment Brain Delivery*

**Giuseppe Battaglia**, BIST-IBEC Barcelona, Spain

4:25 PM

*Nanoparticles, Cells, and Exosomes for CNS Therapeutics*

**Alexander Kabanov**, University of North Carolina, U.S.A.

4:50 PM

**107** *Poly-Malic Acid Conjugated To BBB Penetrating Peptides And Tri-Leucine To Deliver A Wide Variety Of Cargo Across The Blood-Brain Barrier.*

**L. L. Israel**, O. Braubach, A. Galstyan, E. S. Shatalova, A. Chiechi, Z. Grodzinski, R. Patil, H. Ding, K. L. Black, J. Y. Ljubimova, E. Holler; Cedars Sinai Med. center, Los Angeles, CA

5:00 PM

**108** *Dendrimer-based Therapeutics For Targeting Mitochondria In Injured Glia*

**A. Sharma**, K. Liaw, R. Sharma, Z. Zhang, S. Kannan, R. M. Kannan; Johns Hopkins - JHMI, Baltimore, MD

5:10 PM

**109** *The Impact Of Multidrug Resistance On Tumor Microenvironment Remodeling And Nanodrug Distribution In Murine Breast Cancer Models*

O. Tezcan, E. Rama, F. Kiessling, T. Lammers; Univ. Hosp. RWTH Aachen, Aachen, Germany

5:20 PM

**110** *Nano-ghosts For Treating Disorders Of The Central Nervous System*

N. Cohen Anavy, M. Machluf; Technion - Israel Inst. of Technology, Haifa, Israel

5:30 PM

**111** *Rationally Designed Polymer Therapeutics for the Topical Treatment of Psoriasis*

**I. Dolz Pérez**<sup>1</sup>, E. Masía<sup>1</sup>, D. Morelló Bolumar<sup>2</sup>, M. Sallam<sup>3</sup>, M. Pérez del Caz<sup>4</sup>, V. Nebot<sup>2</sup>, M. Vicent<sup>1</sup>; <sup>1</sup>Centro de Investigación Príncipe Felipe, Valencia, Spain, <sup>2</sup>Polypeptide Therapeutic Solutions S.L., Valencia, Spain, <sup>3</sup>Faculty of Pharmacy, Alexandria Univ., Alexandria, Egypt, <sup>4</sup>Hosp. Univ.rio y Politécnico La Fe, Valencia, Spain

5:40 PM

Panel Discussion

### Mini Symposium: Issues from Bench to Market with Advanced Therapeutics

4:00 PM - 6:00 PM | ROOM 1 & 2

**Co-Chairs:** Marianne Ashford, AstraZeneca, U.K. and Mano Manoharan, Alnylam, U.S.A.

4:00 PM

*Real world experiences of the development, registration and commercialisation of complex dosage forms*

**Paul Stott**, SEDA Pharmaceutical Development Services, U.S.A.

4:25 PM

*Clinicians contribution to developmental therapeutics*

**Andrés Cervantes**, University of Valencia, Spain

4:50 PM

Presentation by:

**Muthiah Manoharan**, Alnylam Pharmaceuticals, U.S.A.

5:15 PM

Presentation by:

**Anil Patri**, Food & Drug Administration, U.S.A.

5:40 PM

Panel Discussion

### Poster Pub with CV-on-a-Poster

5:30 PM - 7:30 PM | FOYER & POSTER HALL

Sponsored by: 

Join this year's traditional Poster Pub, with a new addition: CV-on-a-Poster. On the hunt for a job and looking to chat with academics or industry people you wouldn't find in a normal job search? Maximise your exposure by presenting your CV (A3 poster) in this event to show off your skills to employers relevant to your field to boost your chances of scoring a new job! This event is free to attend and participate, however, places are limited so previous registration is required.

### Women in Science

6:00 PM - 8:00 PM | ROOM 8

The Women in Science event at the CRS Annual Meeting is a networking and inspiring event especially tailored for female attendees. We are aiming to have the best Women in Science event yet in Valencia! We will open the session with our awardee, Professor Molly Shoichet from the University of Toronto. Molly will give a lecture on her personal and professional journey to become one of



the leading experts in the study of polymers for drug delivery and tissue regeneration, followed by a Q&A.

This year we will also be offering speed mentoring, so please join us to mingle with women CRS past presidents, past Women in Science Award Winners and peers in a collegial atmosphere, enjoying drinks and food!

### CRS Closing Reception (Off-site Event)

8:00 PM - 11:00 PM | CIUDAD DE LAS ARTES Y LAS CIENCIAS

The CRS Closing Reception will be hosted at Ciudad de las Artes y las Ciencias, a short car-ride from the Palacio de Congresos. Celebrate the close of the meeting with fellow CRS attendees while enjoying delicious appetizers and drinks inside this spectacular building designed by Santiago Calatrava that represents the eye of wisdom. This event is open to all CRS Meeting attendees.

### Tuesday, July 23 | 10:00 AM - 12:00 PM

#### AUDITORIUM 1

**SCIENTIFIC SESSION: Micro-/Nano-particle delivery**  
**Moderator:** Paolo Decuzzi, ITT, Italy | **Co-Chair:** Matthias Barz, University of Mainz, Germany

#### 10:00 AM

**65** *Tumors and Their Microenvironment Dual-Targeting Chemotherapy with Local Immune Adjuvant Therapy for Effective Antitumor Immunity against Breast Cancer*  
**C. Deng<sup>1</sup>**, Q. Zhang<sup>2</sup>, X. Sun<sup>1</sup>, T. Gong<sup>1</sup>, Z. Zhang<sup>1</sup>; <sup>1</sup>West China Sch. of Pharmacy, Sichuan Univ., Chengdu, China, <sup>2</sup>Sch. of Pharmacy, Chengdu Med. Coll., Chengdu, China

#### 10:10 AM

**66** *Oxygen Self-enriched and Redox-activatable Photosensitizing Agent For Enhancement of Fluorescence/photoacoustic Imaging Guided Tumor Photodynamic Therapy*  
**D. Hu**, Z. Qian; State Key Lab. of Biotherapy and Cancer Ctr./West China Hosp., Sichuan Univ., Chengdu, China

#### 10:20 AM

**67** *Improving Vaccine Efficacy: Rational Structure-Based Design Of A Nanoparticle System Displaying A Chimeric Antigen*  
**R. Cunliffe<sup>1</sup>**, M. Scarselli<sup>2</sup>, D. Veggi<sup>2</sup>, A. Fantoni<sup>2</sup>, F. Giusti<sup>2</sup>, I. Ferlenghi<sup>2</sup>, Y. Perrie<sup>1</sup>; <sup>1</sup>Univ. of Strathclyde, Glasgow, U.K., <sup>2</sup>GSK Vaccines, Siena, Italy

#### 10:30 AM

**68** *Shape Effect On Active Targeting Of Nanoparticles To Inflamed Cerebral Endothelium Under Static And Flow Conditions*  
**A. Da Silva**; FUNDACION INSTITUTO DE INVESTIGACIÓN SANITARIA DE, Santiago de Compostela, Spain

#### 10:40 AM

**69** *Dual Targeted Nanocarriers For Heart Tissue Regeneration*  
**G. Torriero**; Univ. of Helsinki, Helsinki, Finland

#### 10:50 AM

**70** *Combining Vascular Targeting And The Local First Pass Provides 100-fold Higher Uptake Of Icam-targeted Vs Untargeted Nanocarriers In The Inflamed Brain*  
**O. A. Marcos-Contreras<sup>1</sup>**, J. S. Brenner<sup>1</sup>, R. Y. Kiseleva<sup>1</sup>, V. Zuluaga-Ramirez<sup>2</sup>, C. F. Greineder<sup>1</sup>, C. H. Villa<sup>1</sup>, E. H. Hood<sup>1</sup>, J. W. Myerson<sup>1</sup>, S. Muro<sup>3</sup>, Y. Persidsky<sup>2</sup>, V. R. Muzykantov<sup>1</sup>; <sup>1</sup>Univ. of Pennsylvania, Philadelphia, PA, <sup>2</sup>Temple Univ., Philadelphia, PA, <sup>3</sup>Univ. of Maryland, Maryland, MD



**AUDITORIUM 1 (CONTINUED)**

**11:00 AM**

**71** *A Unique Multidrug Nanomedicine Made Of Squalenoyl-gemcitabine And Alkyl-lysophospholipid Edelfosine*  
**C. Rodríguez-Nogales**<sup>1</sup>, V. Sebastián<sup>2</sup>, S. Irusta<sup>2</sup>, D. Desmaële<sup>3</sup>, P. Couvreur<sup>3</sup>, M. J. Blanco-Prieto<sup>1</sup>; <sup>1</sup>Univ. of Navarra, Pamplona, Spain, <sup>2</sup>Univ. of Zaragoza, Zaragoza, Spain, <sup>3</sup>Univ. of Paris-Sud, Chatenay-Malabry, France

**11:10 AM**

**72** *Delivery Of Human Cardiomyocytes Adhered To Poly(lactic-co-glycolic) Acid-based Biomimetic Microparticles Promotes Cardiac Repair.*  
**L. Saludas**<sup>1</sup>, E. Garbayo<sup>1</sup>, M. Mazo<sup>2</sup>, B. Pelacho<sup>2</sup>, G. Abizanda<sup>2</sup>, O. Iglesias-García<sup>3</sup>, Á. Raya<sup>3</sup>, F. Prósper<sup>2</sup>, M. Blanco-Prieto<sup>1</sup>; <sup>1</sup>Univ. of Navarra, Pamplona, Spain, <sup>2</sup>Ctr. for Applied Med. Res. and Clínica Univ. de Navarra, Pamplona, Spain, <sup>3</sup>Ctr. of Regenerative Med. in Barcelona, Barcelona, Spain

**11:20 AM**

**73** *Nucleolin-mediated Drug Delivery Blocks Growth Of Biphasic Mesothelioma Through Disruption Of Its Molecular Signature*  
**N. A. Fonseca**<sup>1</sup>, V. Moura<sup>2</sup>, F. Colelli<sup>3</sup>, D. Pesce<sup>3</sup>, G. Signorino<sup>3</sup>, L. Focareta<sup>3</sup>, A. Fucci<sup>3</sup>, F. Cardile<sup>3</sup>, C. Pisano<sup>3</sup>, S. Simões<sup>1</sup>, J. N. Moreira<sup>1</sup>; <sup>1</sup>Ctr. for NeuroSci. and Cell Biology, Coimbra, Portugal, <sup>2</sup>TREAT U, SA, Coimbra, Portugal, <sup>3</sup>Biogem, Istituto di Biologia e Genetica Molecolare, Ariano Irpino, Italy

**11:30 AM**

**74** *Combination Immunotherapy with Penetration Promoting Polymeric Micelles*  
**Y. Shi**<sup>1</sup>, Q. Sun<sup>1</sup>, D. Möckel<sup>1</sup>, X. Bai<sup>1</sup>, Z. Ahmed<sup>1</sup>, M. Bartneck<sup>1</sup>, G. Storm<sup>2</sup>, W. Hennink<sup>2</sup>, F. Kiessling<sup>1</sup>, T. Lammers<sup>1</sup>; <sup>1</sup>RWTH Aachen Univ. Clinic, Aachen, Germany, <sup>2</sup>Utrecht Univ., Utrecht, Netherlands

**11:40 AM**

**75** *Bioadhesive SLN Formulations As Gene Delivery Systems For Topical Administration On The Ocular Surface*  
**M. Vicente Pascual**<sup>1</sup>, I. Gómez Aguado<sup>1</sup>, M. Solinís<sup>1</sup>, L. Serpe<sup>2</sup>, A. Rodríguez Gascón<sup>1</sup>, F. Foglietta<sup>2</sup>, E. Muntoni<sup>2</sup>, L. S. Battaglia<sup>2</sup>, A. Del Pozo Rodríguez<sup>1</sup>; <sup>1</sup>Univ. of the Basque Country, Vitoria-Gasteiz, Spain, <sup>2</sup>Univ. of Turin, Turin, Italy

**11:50 PM**

**76** *Self-assembly Enhances The Immunogenicity Of Peptide Epitope Vaccines*  
**E. Mastrobattista**; Utrecht Univ., Utrecht, Netherlands

**AUDITORIUM 2  
SCIENTIFIC SESSION**

*Delivery of Biomacromolecules (Proteins, Peptides and Antibodies)*

**Moderator:** Randall Mrsny, University of Bath, U.S.A.

**Co-Chair:** Elisa Garbayo, Department of Pharmaceutical Technology and Chemistry, School of Pharmacy and Nutrition, University of Navarra, Spain

**10:00 AM**

**I-18** *Improving Antibody Efficacy by Putting Antibodies At The Site Of Action*  
**M. Jack Borrok**, MedImmune, U.S.A.

**10:25 AM**

**I-19** *Exploring the bio-material interface for biomolecule delivery and biosensing*  
**Molly Stevens**, Imperial College London, U.K.

**10:50 AM**

**77** *Microcontainers For Oral Insulin Delivery – In Vitro And Ex Vivo Studies Of Permeability Enhancement*  
**J. R. Jørgensen**<sup>1</sup>, V. Ramakrishnan<sup>1</sup>, F. Yu<sup>1</sup>, L. H. Nielsen<sup>2</sup>, H. M. Nielsen<sup>1</sup>, T. Rades<sup>1</sup>, A. Boisen<sup>2</sup>, A. Müllertz<sup>1</sup>; <sup>1</sup>Dept. of Pharmacy, Univ. of Copenhagen, Copenhagen, Denmark, <sup>2</sup>Dept. of Hlth.Technology, Technical Univ. of Denmark, Kgs. Lyngby, Denmark

**11:00 AM**

**78** *An Oral Insulin Delivery System Improves Glycemic Control via Hepatic Glucose-responsive Insulin Release*  
 W. Fan, A. Wang, **Y. Gan**; Shanghai Inst. of Materia Medica, Shanghai, China

**11:10 AM**

**79** *Association with Carrier Peptides Influences Transepithelial Insulin Permeation*  
**R. G. Diedrichsen**, M. Kristensen, H. M. Nielsen; Univ. of Copenhagen, Copenhagen, Denmark

**11:20 AM**

**80** *Permeable Inhibitor Of Phosphatase (PIP) Peptides Increase The Transport Of Proteins Across Intestinal Epithelia Monolayers In A Charge Dependent Manner*  
**A. Taverner**; Univ. of Bath, Bath, U.K.

**11:30 AM**

**81** *Oral Delivery Of Peptides: Innovation To Preclinical Evaluation*  
**S. K. Patil**<sup>1</sup>, A. Pandit<sup>1</sup>, K. Gupta<sup>1</sup>, S. Gschliesser<sup>2</sup>, B. Desai<sup>2</sup>, P. Dandekar<sup>1</sup>, R. Jain<sup>1</sup>; <sup>1</sup>Inst. of Chemical Technology, Mumbai, India, <sup>2</sup>Anya BioPharm Inc, Taipei, Taiwan

**11:40 AM**

Panel Discussion

**AUDITORIUM 3 | AWARD GRANT SPONSORED BY REGENERON  
FOCUS GROUP SCIENTIFIC SESSION**

*Ocular Delivery (OcD)*

**Moderator:** Morgan Fedorchak, University of Pittsburgh, U.S.A.

**Co-Chair:** Frances Lasowski, McMaster University, Canada

**10:00 AM**

**I-20** *Suprachoroidal Drug Delivery Using Microneedles: From Delivery System Design Through Clinical Trials*  
**Mark Prausnitz**, Georgia Tech, U.S.A.

**10:25 AM**

*Working through the challenges of long acting delivery of biologics to treat back of the eye diseases*  
**Ann Daugherty**, Genetech, U.S.A.

**10:50 AM**

**82** *Single Subconjunctival Nanoparticles For Six-month Long Safe And Efficient Treatment Of Corneal Allograft Rejection*  
**Q. Xu**<sup>1</sup>, M. Chen<sup>2</sup>, B. Wang<sup>2</sup>, W. Stark<sup>2</sup>, J. Hanes<sup>2</sup>; <sup>1</sup>Virginia Commonwealth Univ., Richmond, VA, <sup>2</sup>Johns Hopkins Univ., Baltimore, MD

**11:00 AM**

**83** *Multi Loaded Microspheres With Three Neuroprotective Agents For The Treatment Of Neurodegenerative Ocular Diseases.*  
**D. García-Herranz**<sup>1</sup>, A. Arranz-Romera<sup>1</sup>, B. M. Davis<sup>2</sup>, S. Esteban-Pérez<sup>1</sup>, L. Guo<sup>3</sup>, I. Molina-Martinez<sup>1</sup>, I. Bravo-Osuna<sup>1</sup>, M. Cordeiro<sup>2</sup>, R. Herrero-Vanrell<sup>1</sup>; <sup>1</sup>InnOftal (UCM920415), Dept. of Pharmaceutics and Food Technology, Faculty of Pharmacy, Complutense Univ. of Madrid; Ocular Pathology Natl. Net (OFTARED) of the Inst. of Hlth. Carlos III, Madrid, Spain, <sup>2</sup>Glaucoma and Retinal Neurodegeneration Rearch, UCL Inst. of Ophthalmology; Western Eye Hosp., Imperial Coll. London, London, U.K., <sup>3</sup>Glaucoma and Retinal Neurodegeneration Rearch, UCL Inst. of Ophthalmology, London, U.K.

**11:10 AM**

**84** *Efficient Non-viral Gene Therapy For Stargardt's Disease With Ph-sensitive Multifunctional Lipid Eco Plasmid DNA Nanoparticles*  
 D. Sun, R. Schur, A. Sears, S. Gao, R. Xin, A. Vaidya, X. Liu, A. Maeda, K. Palczewski, **Z-R. Lu**; case western reserve, Cleveland, OH

**11:20 AM**

**85** *RGD-peptide Grafted Lipid Nanocapsules (LNC) For Drug Delivery To The Posterior Eye*  
**M. Bohley**, A. Göpferich; Univ. of Regensburg, Regensburg, Germany

**11:30 AM**

**86** *Impact Of Vitreoretinal Interface On The Retinal Penetration Of Liposomes And Ciliary Neurotrophic Factor*  
**S. Tavakoli**<sup>1</sup>, K. Peynshaert<sup>2</sup>, T. Lajunen<sup>1</sup>, J. Itkonen<sup>1</sup>, J. Devoldere<sup>2</sup>, K. Remaut<sup>2</sup>, A. Urtti<sup>1</sup>; <sup>1</sup>Div. of Pharmaceutical BioSci.s, Faculty of Pharmacy, Univ. of Helsinki, Helsinki, Finland, <sup>2</sup>Lab of Gen. Biochemistry and Physical Pharmacy, Faculty of Pharmacy, Ghent Univ., Ghent, Belgium

**11:40 AM**

Panel Discussion

Tuesday, July 23 | 10:00 AM - 12:00 PM

<p><b>MULTIPURPOSE HALL 1</b>  <b>SCIENTIFIC SESSION:</b>  <i>Importance of a Rational Design: Carrier, Linker, Cargos</i>  <b>Moderator:</b> Alexander Kabanov, University of North Carolina, U.S.A.  <b>Co-Chair:</b> Stefano Salmaso, University of Padova, Italy</p> <p><b>10:00 AM</b>  <b>I-21</b> <i>Self-assembled Supramolecular Nanosystems For Treating Cancer and Brain Disorders</i>  <b>Kazunori Kataoka</b>, iCONM, Japan</p> <p><b>10:25 AM</b>  <b>I-22</b> <i>Long-Acting Implant Formulations to Improve Patient Adherence</i>  <b>Craig McKelvey</b>, Merck, U.S.A.</p> <p><b>10:50 AM</b>  <b>87</b> <i>Reprogramming Tumor Associated Macrophages Using Resiquimod-loaded Polymeric Nanocapsules For The Treatment Of Lung Cancer</i>  <b>C. Anfray</b><sup>1</sup>, C. Fernández Varela<sup>2</sup>, F. Mainini<sup>1</sup>, J. Crecente-Campo<sup>2</sup>, M. José Alonso<sup>2</sup>, P. Allavena<sup>1</sup>, F. Torres Andón<sup>2</sup>; <sup>1</sup>Humanitas Res. Hosp., Milan, Italy, <sup>2</sup>Ctr. for Res. in Molecular Med. and Chronic Diseases (CIMUS), Santiago de Compostela, Spain</p> <p><b>11:00 AM</b>  <b>88</b> <i>Prostate-Specific Membrane Antigen Targeted Gold Nanoparticles for Photodynamic Therapy of Prostate Cancer</i>  <b>D. D. Luo</b>; Case Western Reserve Univ., Cleveland, OH</p> <p><b>11:10 AM</b>  <b>89</b> <i>Size-controlled Formation Of Cubosome Nanoparticles Using Microfluidics</i>  C. J. O. Ferreira<sup>1</sup>, C. M. Botelho<sup>1</sup>, M. E. C. Real Oliveira<sup>2</sup>, <b>B. F. B. Silva</b><sup>1</sup>; <sup>1</sup>INL - Intl. Iberian Nanotechnology Lab., Braga, Portugal, <sup>2</sup>Univ. of Minho, Braga, Portugal</p> <p><b>11:20 AM</b>  <b>90</b> <i>Airway Epithelial Targeting Nanoparticles Loaded with TLR7 agonist Stimulate Innate Immunity and Suppress Viral Replication</i>  <b>S. Kan</b>, N. Bartlett, C. Grainge, K. Nichol, D. Knight, M. Liang; The Univ. of Newcastle, Newcastle, Australia</p> <p><b>11:30 AM</b>  <b>91</b> <i>Intracellular Target Delivery Of Cell-Penetrating Peptide-Conjugated Dodecaborate For Boron Neutron Capture Therapy (BNCT)</i>  <b>I. Nakase</b><sup>1</sup>, M. Katayama<sup>1</sup>, Y. Hattori<sup>2</sup>, M. Ishimura<sup>2</sup>, S. Inaura<sup>1</sup>, D. Fujiwara<sup>1</sup>, I. Fujii<sup>1</sup>, S. Futaki<sup>3</sup>, M. Kirihata<sup>2</sup>; <sup>1</sup>Graduate Sch. of Sci., Osaka Prefecture Univ., Osaka, Japan, <sup>2</sup>Res. Ctr. of BNCT, Osaka Prefecture Univ., Osaka, Japan, <sup>3</sup>Inst. for Chemical Res., Kyoto Univ., Kyoto, Japan</p> <p><b>11:40 AM</b>  Panel Discussion</p>	<p><b>ROOM 1 &amp; 2</b>  <b>SCIENTIFIC SESSION:</b>  <i>Oral Delivery for Food and Nutraceuticals</i>  <b>Moderator:</b> Jamie Oxley, Southwest Research Institute, U.S.A.  <b>Co-Chair:</b> Joseph Carlise, Mondelez International, U.S.A.</p> <p><b>10:00 AM</b>  <b>I-23</b> <i>Heat-Stable Microparticle Platform for Oral Micronutrient Delivery</i>  <b>Ana Jaklenec</b>, MIT, U.S.A.</p> <p><b>10:25 AM</b>  <b>I-24</b> <i>Improved retention of spray dried flavors using ternary phase diagrams for emulsion formulation</i>  <b>Jenny Weißbrodt</b>, Symrise, Germany</p> <p><b>10:50 AM</b>  <b>92</b> <i>Layer-by-layer Coating Of Microcontainers For Delivery Of Probiotics To The Colon</i>  <b>K. Kamguyan</b>, A. M. Torp, P. W. Bondegaard, J. F. Christfort, P. Guerra, M. I. Bahl, K. Zor, L. H. Nielsen, T. R. Licht, A. Boisen; Technical Univ. of Denmark, Copenhagen, Denmark</p> <p><b>11:00 AM</b>  <b>93</b> <i>Improving Polypodium Leuctomos Bioavailability Through Nanotechnology.</i>  <b>M. Oroval</b><sup>1</sup>, G. Hueso<sup>1</sup>, S. Mir<sup>1</sup>, G. Serrano<sup>1</sup>, E. Martí<sup>1</sup>, A. V. Sánchez-Sánchez<sup>2</sup>, J. L. Mullor<sup>2</sup>; <sup>1</sup>Sesderma, Valencia, Spain, <sup>2</sup>Bionos Biotech, Valencia, Spain</p> <p><b>11:10 AM</b>  <b>94</b> <i>Targeted Delivery Of Probiotics To The Colon For Enhanced Viability And Metabolic Activity</i>  <b>I. Forlizzi</b>, A. Engel, P. Niepoth; Evonik Nutrition &amp; Care, Darmstadt, Germany</p> <p><b>11:20 AM</b>  <b>95</b> <i>Oral Delivery Of Highly Monodispersed <math>\beta</math>-lactoglobuline-resveratrol Nanoparticles Improves Colitis In Winnie Mice</i>  N. Pujara<sup>1</sup>, Z. Qu<sup>1</sup>, K. Wong<sup>2</sup>, R. Wang<sup>2</sup>, M. McGuckin<sup>3</sup>, <b>A. Popat</b><sup>1</sup>; <sup>1</sup>Sch. of Pharmacy, The Univ. of Queensland, Brisbane, Australia, <sup>2</sup>Mater Med. Res. Inst., Brisbane, Australia, <sup>3</sup>Univ. of Melbourne, Melbourne, Australia</p> <p><b>11:30 AM</b>  <b>96</b> <i>Rational Selection of Intestinal Permeation Enhancers for Oral Macromolecular Delivery</i>  <b>K. Fein</b>, K. Whitehead; Carnegie Mellon Univ., Pittsburgh, PA</p> <p><b>11:40 AM</b>  Panel Discussion</p>
--	--

Tuesday, July 23 | 1:30 PM - 3:30 PM

<b>AUDITORIUM 1</b> <b>Inspirational Talks</b> <b>Moderator:</b> Justin Hanes, John Hopkins University, U.S.A.	<b>AUDITORIUM 2</b> <b>SCIENTIFIC SESSION:</b> <i>New Approaches on Physico-chemical Characterization, Scale-up and Stability measurements of DDS</i> <b>Moderator:</b> Ruth Schmid, SINTEF, Norway <b>Co-Chair:</b> Katia Maso, Prince Felipe Research Center, Polymer Therapeutics, Spain	<b>AUDITORIUM 3</b> <i>Case Studies: Insights on Successes and Failures</i> <b>Moderator:</b> Mikolaj Milewski, Merck Sharp and Dohme (MSD), U.S.A.
<p>Prof. Edwards, a biomedical engineer and specialist in sensorial design and delivery, will engage all of you with his broad perspective on the world as a writer, inventor, and entrepreneur. He will talk about "How to create things &amp; have them matter," as he teaches his students at Harvard about "ideas, how we imagine them, and especially how we continually reimagine them." He will also show us his view of our surroundings as a public culture lab, bringing different disciplines together to push experimental learning in the arts and sciences.</p> <p>He will also drive a highly inspirational discussion with some of our Plenary Speakers and Distinguished Professors in Drug Delivery. Do not miss such a unique opportunity!</p> <p>Featuring:</p> <p><b>David Edwards</b>, Harvard University, U.S.A.  <b>Molly Shoichet</b>, University of Toronto, Canada  <b>Justin Wright</b>, Novartis, U.S.A.</p>	<p><b>1:30 PM</b>  <b>I-25</b> <i>EUNCL Experience, integrating orthogonal and multidisciplinary approaches for a robust characterisation of nanoparticle enabled medicines</i>  <b>Simon Baconnier</b>, EU-NCL, France</p> <p><b>1:55 PM</b>  <b>I-26</b> <i>CMC development in Polyamino acid based therapeutics</i>  <b>Vicent J. Nebot</b>, Polypeptide Therapeutic Solutions, Spain</p> <p><b>2:20 PM</b>  <b>97</b> <i>Scalable Manufacture Of mRNA Lipid Nanoparticles Using A Novel Microfluidic Mixing Architecture</i>            J. Singh, G. Ryan, A. Zhang, J. Ko, A. Wild, A. Brown, S. Clarke, <b>L. Jeffs</b>; Precision NanoSystems Inc., Vancouver, BC, Canada</p> <p><b>2:30 PM</b>  <b>98</b> <i>A Comprehensive Morphological And Chemical Characterization Of Individual Nanoparticles</i>  <b>R. Gref</b><sup>1</sup>, E. Pancani<sup>1</sup>, J. Mathurin<sup>2</sup>, A. Deniset<sup>2</sup>, A. Dazzi<sup>2</sup>; <sup>1</sup>ISMO, Orsay, France, <sup>2</sup>LCP, Orsay, France</p> <p><b>2:40 PM</b>  <b>99</b> <i>Exploitation Of The Effect Of Ionic Liquids As Cryoprotectants On The Stability Of Protein-loaded Plga Nanoparticles Upon Freeze-drying</i>            A. Júlio, A. Gonçalves, T. Santos de Almeida, <b>P. Fonte</b>; CBIOS, Lusófona Univ., Lisbon, Portugal</p> <p><b>2:50 PM</b>  <b>100</b> <i>Single Step Production Of Clinically Relevant Low-temperature-sensitive Liposomes Using Microfluidics</i>  <b>C. C. L. Cheung</b>, W. Al-Jamal; Queen's Univ. Belfast, Belfast, U.K.</p> <p><b>3:00 PM</b>  <b>101</b> <i>Microencapsulation Of Omega-3 Polyunsaturated Fatty Acids By An Innovative High Throughput Technique Based On Electrospraying</i>            C. Prieto López<sup>1</sup>, J. D. Escobar<sup>2</sup>, M. Pardo<sup>2</sup>, S. Torres-Giner<sup>1</sup>, J. M. Lagarón<sup>3</sup>; <sup>1</sup>Inst. of Agrochemistry and Food Technology - Spanish Council for Scientific Res. (IATA-CSIC), Paterna, Spain, <sup>2</sup>Bioinicia S.L., Paterna, Spain, <sup>3</sup>Inst. of Agrochemistry and Food Technology, Paterna, Spain</p> <p><b>3:10 PM</b>            Panel Discussion</p>	<p>Ever wonder what makes one product succeed and another product fail? Come listen to a panel of industry and academic experts who will share their insights on key technical and strategic decisions that impacted a product's future. The discussion will also provide an opportunity to seek advice from experts on the panel.</p> <p>Session Featuring:</p> <p><b>Craig McKelvey</b>, Merck, U.S.A.  <b>Muthiath Manoharan</b>, Alnylam Pharmaceuticals, U.S.A.  <b>Michael Wanger</b>, Sanofi, Germany</p>

SUNDAY, JULY 21 • MONDAY, JULY 22 • TUESDAY, JULY 23 • WEDNESDAY, JULY 24

## Tuesday, July 23 | 1:30 PM - 3:30 PM

<p><b>MULTIPURPOSE HALL 1</b>  <b>SCIENTIFIC SESSION:</b>  <i>Drug Delivery Against Antimicrobial Resistance</i>  <b>Moderator:</b> Elias Fattal, University of Paris Sud, France  <b>Co-Chair:</b> Giuseppe de la Rosa, University of Naples Federico II, Italy</p> <p><b>1:30 PM</b>  <b>I-27</b> <i>A holistic approach towards improving antibiotic prophylaxis for prevention of rheumatic heart disease</i>  <b>Ben Boyd</b>, Monash University, Australia</p> <p><b>1:55 PM</b>  <b>I-28</b> <i>Targeted Delivery of Antimicrobial Polymers To Increase Selectivity Towards Bacteria</i>  <b>Yiyan Yang</b>, Institute Bioengineering and Nanotechnology, Singapore</p> <p><b>2:20 PM</b>  <b>102</b> <i>Towards an In Vitro Model for Drug Transport Studies Across the Gram-negative Bacterial Cell Envelope</i>  <b>R. Richter</b><sup>1</sup>, M. A. M. Kamal<sup>1</sup>, C. De Rossi<sup>1</sup>, J. Kaspar<sup>2</sup>, M. Junk<sup>2</sup>, M. Vielhaber<sup>2</sup>, N. Schneider-Daum<sup>1</sup>, C-M. Lehr<sup>1</sup>; <sup>1</sup>Helmholtz Inst. for Pharmaceutical Res. Saarland, Saarbrücken, Germany, <sup>2</sup>Saarland Univ., Inst. of Engineering design, Saarbrücken, Germany</p> <p><b>2:30 PM</b>  <b>103</b> <i>Technologies For Delivery Of Antibiotic Agents: Specificity Of Liposomal Antibiotic Delivery Towards Gram-negative Bacteria</i>  <b>R. Catania</b><sup>1</sup>, O. Maguire<sup>1</sup>, G. Mantovani<sup>1</sup>, W. Chan<sup>1</sup>, A. Huett<sup>2</sup>, S. Stolnik<sup>1</sup>; <sup>1</sup>Sch. of Pharmacy, Univ. of Nottingham, Nottingham, U.K., <sup>2</sup>Sch. of Life Sci., Univ. of Nottingham, Nottingham, U.K.</p> <p><b>2:40 PM</b>  <b>104</b> <i>Liposome-encapsulated Nucleic Acid Mimics For The Delivery Of Oligonucleotides Into Bacteria</i>  <b>L. M. A. Moreira</b>, S. Pereira, N. M. Guimarães, R. S. Santos, J. A. Loureiro, M. C. Pereira, N. F. Azevedo; LEPAPE, Dept. of Chemical Engineering, Faculty of Engineering of the Univ. of Porto, Porto, Portugal</p> <p><b>2:50 PM</b>  <b>105</b> <i>Mesoporous Silica Nanoparticles As Efficient Carriers For A Novel Anti-mycobacterial Peptide In Vitro And In Vivo</i>  <b>M. Lindén</b>; Ulm Univ., Ulm, Germany</p> <p><b>3:00 PM</b>  <b>106</b> <i>Circumventing Antibiotic Resistance Using Hydrogel-Forming Microneedle Technology</i>  <b>L. Zhao</b>; Queen's Univ. Belfast, Belfast, U.K.</p> <p><b>3:10 PM</b>  Panel Discussion</p>	<p><b>ROOM 1 &amp; 2</b>  <b>MINI-SYMPOSIUM</b>  <i>Towards Precision Medicine- Omics and eHealth- Biosensors, Biomarkers and Devices</i>  <b>Moderator:</b> Avi Schroeder, Technion University, Israel  <b>Co-Chair:</b> Michail Kastellorizios, University of North Texas Health Science Center, U.S.A.</p> <p><b>1:30 PM</b>  <b>I-29</b> <i>Rational Material Design for Precision Cancer Therapy</i>  <b>Natalie Artzi</b>, Brigham and Women's Hospital, Harvard Medical School, U.S.A.</p> <p><b>1:55 PM</b>  <b>I-30</b> <i>A Photothermal Lateral Flow Test For Visual Point Of Care Detection</i>  <b>Jesus M. de la Fuente</b>, ICMA, CSIC-University of Zaragoza, Spain</p> <p><b>2:20 PM</b>  <b>I-31</b> <i>Nanomedicine and Nanoinformatics to Improve Precision Medicines</i>  <b>Dan Heller</b>, Memorial Sloan Kettering Cancer Center, U.S.A.</p> <p><b>2:45 PM</b>  <b>I-32</b> <i>Advanced gated materials for biomedical applications</i>  <b>Ramón Martínez-Mañez</b>, University Polytechnic Valencia, Spain</p> <p><b>3:10 PM</b>  Panel Discussion</p>
---	--




**Molded and Extruded Dosage Forms**

**Medical Device Combination Products**

- Contract development, clinical trial supply, commercial manufacturing, and packaging under cGMP
- Molding of silicone, EVA, PU, and resorbables with a variety of APIs including hormones and antibiotics
- Applications including subQ implants, women's health, ophthalmology, and drug eluting devices
- FDA registered, ISO 13485 & 17025 certified
- Visit us at booth #307 to discuss your application



**ProMed Pharma, LLC**  
 15600 Medina Road, Plymouth, MN 55447  
 763.331.3800  
[www.promedpharmallc.com](http://www.promedpharmallc.com)

**WEDNESDAY, JULY 24, 2019**

**Get Up Get Educated: Editor Guidance: Towards Highly Cited Publications**

7:00 AM - 8:00 AM | AUDITORIUM 3

Sponsored by:  ELSEVIER

Scientific research is only useful if it's published to a peer-reviewed journal. The process can be time-consuming for both the submitter, editor and reviewer, and may not be successful every time. Attend this session to get the tips from the top-ranked journal editors on how to tailor your submission to give your manuscript the best chance of getting accepted for review! Learn the peer-review process, ethics, and how to effectively promote your work for a higher citation and impact in the scientific field.

**Plenary 4 with Justin Wright**

8:00 AM - 9:00 AM | AUDITORIUM 1

**P-4**

**Harnessing The Digital Exhaust: Incorporating Wellness Into The Pharma Model**

Justin Wright, Novartis, U.S.A.



**Moderator:** Manuel Sánchez-Félix, Novartis, U.S.A.

*Followed by An Interactive Session with Justin Wright (9:00 AM - 9:30 AM | AUDITORIUM 1)*

*At the end of the lecture, attendees can meet and greet with Justin Wright to ask questions related to the scope of the talk, the science discussed, career advice, etc. This will be done in an informal and interactive setting.*

9:30 AM - 10:00 AM

**Refreshment Break**

**Concurrent Sessions**

10:00 AM - 12:00 PM | See pages 38-39 for full details

**Highlights Lectures & Closing Ceremony**

12:00 PM - 2:30 PM | AUDITORIUM 1

12:15 PM - 12:35 PM

**Young Investigator Award Lecture**

Jordan Green, Ph.D.

12:35 PM - 12:55 PM

**T Nagai Postdoctoral Research Award Lecture**

Michael Mitchell, Ph.D. (Adviser - Robert S. Langer, Ph.D.)

12:55 PM - 1:15 PM

**Transdermal Delivery Kydonieus Foundation Award Lecture**

Joke Bouwstra, Ph.D.

1:15 PM - 1:35 PM

**Drug Delivery and Translational Research Best Paper Award Lecture**

A.J. Lexmond, Ph.D.

1:35 PM - 1:55 PM

**Journal of Controlled Release Best Paper Award Lecture**

Chul Soon Yong, Ph.D.

Jong Oh Kim, Ph.D.

Wednesday, July 24 | 10:00 AM - 12:00 PM

<p><b>AUDITORIUM 1</b>  <b>MINI-SYMPOSIUM</b>  <i>Recently Approved Products – Cutting Edge Technologies</i>  <b>Co-Chairs:</b> Mark Prausnitz, Georgia Tech, U.S.A. and Sachin Thakur, Univ Auckland, Australia</p>	<p><b>AUDITORIUM 2</b>  <b>FOCUS GROUP SCIENTIFIC SESSION</b>  <i>Nanomedicine and Nanoscale Delivery (NND)</i>  <b>Moderator:</b> Bruno Sarmento, University of Porto, Portugal  <b>Co-Chair:</b> Hélder Santos, University of Helsinki, Finland</p>	<p><b>AUDITORIUM 3</b>  <b>FOCUS GROUP SCIENTIFIC SESSION</b>  <i>Gene Delivery and Gene Editing (GDGE)</i>  <b>Moderator:</b> Dan Siegwart, UT Southwestern Medical Center, U.S.A.  <b>Co-Chair:</b> Patrick Baumhof, Cure Vac, Germany  <b>Sponsored by:</b> <a href="#">moderna</a></p>
<p><b>10:00 AM</b>  <i>Port Delivery System development and considerations for ophthalmic drug delivery</i>  <b>Signe Erikson</b>, Spiral Therapeutics, U.S.A.</p> <p><b>10:25 AM</b>                      Presentation by:  <b>Justin Hanes</b>, Johns Hopkins University, U.S.A.</p> <p><b>10:50 AM</b>  <b>I-39</b> <i>Latest Trend in Drug Delivery Technologies and Products</i>  <b>Tugrul Kararli</b>, PharmaCircle, U.S.A.</p> <p><b>11:15 AM</b>  <b>I-40</b> <i>Turning Academic Discoveries into Novel Therapeutic Modalities</i>  <b>Dan Peer</b>, SPARK Tel Aviv, Center for Translational Medicine / Chair, Tel Aviv University Cancer Biology Research, Israel</p> <p><b>11:40 AM</b>                      Panel Discussion</p>	<p><b>10:00 AM</b>  <i>Evolution of the Nanoparticle Protein Corona as a Tool for Cancer Biomarker Discovery</i>  <b>Kostas Kostarelos</b>, University of Manchester, U.K.</p> <p><b>10:25 AM</b>  <b>I-41</b> <i>Cripec Platform And Lead Product Cpc634: Principles, Nonclinical Evaluation And Clinical Translation</i>  <b>Cristianne Rijcken</b>, Cristal Therapeutics, The Netherlands</p> <p><b>10:50 AM</b>  <b>112</b> <i>Development Of Nanoformulation Of Edaravone For Amyotrophic Lateral Sclerosis (ALS) Following Intranasal Delivery</i>  <b>J-W. Wang</b>, L. Yuan, K. Al-Jamal; King's Coll. London, London, U.K.</p> <p><b>11:10 AM</b>  <b>113</b> <i>Priming Tumor Blood Vessels And The Microenvironment With Liposomal Dexamethasone To Improve Nanomedicine-based Drug Delivery</i>  <b>T. Ojha</b>; Inst. for Pharmaceutical Sci., Utrecht Univ., Utrecht, Netherlands</p> <p><b>11:30 AM</b>  <b>114</b> <i>Reverting Cancer's Poor Prognosis Using Precision Nanomedicines Based On Molecular Fingerprints Of Long-term Versus Short-term Survivors</i>  <b>R. Satchi-Fainaro</b>; Dept. of Physiology and Pharmacology, Sackler Faculty of Med., TelAviv, Israel</p> <p><b>11:40 AM</b>  <b>115</b> <i>Mussel-inspired DNA Nanostructures For Targeted Delivery</i>  <b>G. Shim</b>, J. Park, Y-K. Oh; Seoul Natl. Univ., Seoul, Korea, Republic of</p> <p><b>11:50 AM</b>  <b>116</b> <i>Inhibition Of Colorectal Cancer Stem Cells By Combinational Drug Loaded Lipid Nanocapsules</i>  <b>N. Tsakiris</b><sup>1</sup>, A. Paquot<sup>1</sup>, G. Muccioli<sup>1</sup>, A. Puisieux<sup>2</sup>, A. Vigneron<sup>2</sup>, V. Pr�at<sup>1</sup>; <sup>1</sup>UCLouvain, Bruxelles, Belgium, <sup>2</sup>Ctr. de Recherche en Canc�erologie de Lyon (CRCL), Lyon, France</p>	<p><b>10:00 AM</b>  <b>I-42</b> <i>mRNA as Medicine</i>  <b>Melissa Moore</b>, Moderna Therapeutics, U.S.A.</p> <p><b>10:25 AM</b>  <b>1-43</b> <i>Design of lipid nanoparticle systems for in vivo delivery of genetic drugs</i>  <b>Pieter Cullis</b>, University British Columbia, Canada</p> <p><b>10:50 AM</b>  <b>117</b> <i>Matrix-targeted Nanoparticles For Mmp-13 Rna Interference Blocks Post-traumatic Osteoarthritis</i>                      S. Bedingfield<sup>1</sup>, F. Yu<sup>1</sup>, H. Cho<sup>2</sup>, K. Hasty<sup>2</sup>, <b>C. Duvall</b><sup>1</sup>; <sup>1</sup>Vanderbilt Univ., Nashville, TN, <sup>2</sup>Dept. of Orthopaedic Surgery and BioMed. Engineering, Memphis, TN</p> <p><b>11:10 AM</b>  <b>118</b> <i>A Highly Versatile Cancer-selective Gene Transfer Strategy For Localized Therapy Of Malignant Solid Tumors.</i>  <b>D. Rao</b><sup>1</sup>, A. Phal<sup>1</sup>, V. Naga<sup>1</sup>, K. Negron<sup>2</sup>, Y. Oh<sup>2</sup>, J. Hanes<sup>2</sup>, J. Suk<sup>2</sup>; <sup>1</sup>Johns Hopkins Univ., Baltimore, MD, <sup>2</sup>Johns Hopkins Univ. Sch. of Med., Baltimore, MD</p> <p><b>11:30 AM</b>  <b>119</b> <i>A Novel Stoplight Reporter System Enables Rapid Detection Of Functional Delivery Of Cas9 And sgRNA on a Single-cell Level</i>                      O. G. de Jong<sup>1</sup>, D. E. Murphy<sup>1</sup>, J. Walther<sup>2</sup>, M. J. Evers<sup>1</sup>, R. M. Schifflers<sup>1</sup>, E. Mastrobattista<sup>2</sup>, M. J. Wood<sup>3</sup>, <b>P. Vader</b><sup>1</sup>; <sup>1</sup>Univ. Med. Ctr. Utrecht, Utrecht, Netherlands, <sup>2</sup>Utrecht Univ., Utrecht, Netherlands, <sup>3</sup>Univ. of Oxford, Oxford, U.K.</p> <p><b>11:40 AM</b>  <b>120</b> <i>mRNA-activated Matrices For Priming Chondrogenic And Myogenic Cell Differentiation</i>  <b>M. Garcia-Fuentes</b>, A. M. Ledo, M. J. Alonso; Univ.e de Santiago de Compostela, Santiago de Compostela, Spain</p> <p><b>11:50 AM</b>  <b>121</b> <i>Treatment Combining Plasminogen Activator Inhibitor-1 Gene Silencing And Chemokine Receptor 4 Antagonism Attenuates Acute Lung Injury And Pulmonary Fibrosis</i>  <b>Y. Wang</b><sup>1</sup>, L. Ding<sup>2</sup>, Z. Li<sup>1</sup>, M. Sun<sup>1</sup>, D. Oupicky<sup>2</sup>; <sup>1</sup>China Pharmaceutical Univ., Nanjing, China, <sup>2</sup>Univ. of Nebraska Med. Ctr., Omaha, NE</p>

## Wednesday, July 24 | 10:00 AM - 12:00 PM

## MULTIPURPOSE HALL 1

## SCIENTIFIC SESSION

*Delivery Technologies in Advanced Preclinical-Clinical Stages*

**Moderator:** Gianfranco Pasut, University of Padova, Italy

**Co-Chair:** Alessio Malfanti, Prince Felipe Research Center, Spain

## 10:00 AM

**122** *MTD201 Q Octreotide – New Generation Treatment For Acromegaly And Carcinoid Syndrome.*

**K. Bamsey**<sup>1</sup>, S. Damment<sup>1</sup>, P. Seaman<sup>1</sup>, C. Cook<sup>1</sup>, A. Dryja<sup>2</sup>; <sup>1</sup>Midatech Pharma (Wales) Ltd, Cardiff, U.K., <sup>2</sup>MTZ Clinical Res., Warsaw, Poland

## 10:10 AM

**123** *How Far Have Regenerative Medicine And 3d Bioprinting Technology Come In Research And Clinical Use?*

**H. Lee**, J. Kim, J. Lee; ROKIT Hlth.care, Seoul, Korea, Republic of

## 10:20 AM

**124** *A Nano-nutraceutical Approach For Psoriasis Treatment With Clinical Appraisal*

**M. Nasr**<sup>1</sup>, R. El-Gogary<sup>1</sup>, M. H. Ragai<sup>2</sup>, N. H. Mofteh<sup>2</sup>, M. Abou-El-Enein<sup>3</sup>; <sup>1</sup>Faculty of Pharmacy, Ain Shams Univ., Cairo, Egypt, <sup>2</sup>Dept. of Dermatology, STD's and Andrology, Faculty of Med., Minia Univ., Al-Minya, Egypt, <sup>3</sup>Berlin-Brandenburg Ctr. for Regenerative Therapies (BCRT), Charité-Univ.smedizin Berlin, Berlin, Germany; Berlin Ctr. for Advanced Therapies (BeCAT), Charité-Univ.smedizin Berlin, Berlin, Germany

## 10:30 AM

**125** *Magnetophoresis Enhanced Transdermal Delivery Of Ibuprofen To The Knee: Clinical Assessment Of Pain And Function In Osteoarthritis*

**H. Benson**<sup>1</sup>, A. Wright<sup>1</sup>, P. Moss<sup>1</sup>, J. Edwards<sup>2</sup>, G. Tsadilas<sup>2</sup>, R. Will<sup>3</sup>; <sup>1</sup>Curtin Univ., Perth, Australia, <sup>2</sup>OBJ Ltd, Perth, Australia, <sup>3</sup>Univ. of Western Australia, Perth, Australia

## 10:40 AM

**126** *Impacting Early Clinical Trials using Sustained Release Capsules using 3D Printing*

**Y. Kapoor**; Merck & Co., Inc., Kenilworth, NJ

## 10:50 AM

**127** *Randomised, 2-arm Study Of The Efficacy And Tolerability Of Solid Microneedle Patches With Hyaluronic Acid Serum*

**R. Bamsey**, J. Burridge; Innoture, Swansea, U.K.

## 11:00 AM

**128** *Nanoscale Lipophilic Prodrug: Novel Approach For The Delivery Of Glucocorticoids Nanoscale Lipophilic Prodrug: Novel Approach For The Delivery Of Glucocorticoids*

**E. Fattal**, M. Lorscheider, L. Pinheiro-Nascimento, F. Reynaud, N. Tsapis; Univ. Paris-Sud, Chatenay-Malabry, France

## 11:10 AM

**129** *Preclinical Structural And In-vivo Evaluation Of Co-surfactant Enveloped Insulin-zn Nanocomplexes*

**M. Duran-Lobato**<sup>1</sup>, J. Cunarro<sup>2</sup>, S. Tovar<sup>2</sup>, C. Diéguez<sup>2</sup>, M. Alonso<sup>1</sup>; <sup>1</sup>Ctr. for Res. in Molecular Med. and Chronic Diseases, IDIS Res. Inst., Sch. of Pharmacy, Univ. of Santiago de Compostela, Santiago de Compostela, Spain, <sup>2</sup>Ctr. for Res. in Molecular Med. and Chronic Diseases, Univ. of Santiago de Compostela, Santiago de Compostela, Spain 11:20 AM

**130** *Dendritic Cell-targeted Nano-vaccines Synergize With Myeloid-Derived Suppressor Cells Inhibitor And Immune Checkpoints Modulators For Melanoma Therapy.*

**A. Scomparin**<sup>1</sup>, J. Conniot<sup>2</sup>, C. Peres<sup>2</sup>, E. Yeini<sup>1</sup>, S. Pozzi<sup>1</sup>, E. Zupancic<sup>2</sup>, S. Jung<sup>3</sup>, H. Florindo<sup>2</sup>, R. Satchi-Fainaro<sup>1</sup>; <sup>1</sup>Tel Aviv Univ., Tel Aviv, Israel, <sup>2</sup>Univ. of Lisbon, Lisbon, Portugal, <sup>3</sup>Weizmann Inst. of Sci., Rehovot, Israel

## 11:30 AM

**131** *Development Of Polymer-based Combination Therapeutics For The Treatment Of Castration-resistant Prostate Cancer*

**S. Vicente-Ruiz**<sup>1</sup>, A. Armiñán<sup>1</sup>, E. Gallon<sup>1</sup>, J. Movellan<sup>1</sup>, K. Maso<sup>1</sup>, D. Charbonnier<sup>1</sup>, F. Rodríguez<sup>1</sup>, J. López<sup>2</sup>, M. Vicent<sup>1</sup>; <sup>1</sup>Centro de Investigación Príncipe Felipe, Valencia, Spain, <sup>2</sup>Fundación Inst. Valenciano de Oncología, Valencia, Spain

## 11:40 AM

**132** *Evaluation of the Effects of Modified Endomorphin-1 Loaded Micelles on Acute and Neuropathic Pain along with the Pharmacokinetic Parameters*

**Z. Sezgin**<sup>1</sup>, C. Kose Ozkan<sup>2</sup>, N. Yuksel<sup>1</sup>, S. Aydin<sup>3</sup>, B. Donertas<sup>3</sup>, K. Erol<sup>3</sup>, A. Savaser<sup>4</sup>, P. Varamini<sup>5</sup>, I. Toth<sup>6</sup>; <sup>1</sup>Ankara Univ., Ankara, Turkey, <sup>2</sup>Univ. of Hlth.Sci., Istanbul, Turkey, <sup>3</sup>Osmangazi Univ., Eskişehir, Turkey, <sup>4</sup>Univ. of Hlth.Sci., Istanbul, Turkey, <sup>5</sup>Univ. of Sydney, Sydney, Australia, <sup>6</sup>Univ. of Queensland, Brisbane, Australia

## 11:50 AM

**133** *Enhanced Delivery And Anti-metastasis Efficacy Through Chemotherapy Priming And Lipid-siRNA Complex In Pancreatic Cancer*

**Q. Yu**, Y. Qiu, X. Chen, Q. He; Sichuan Univ., Chengdu, China

## ROOM 1 &amp; 2

## MINI-SYMPOSIUM

*Discovery Interface. New Modalities Chemistry Space and Future Formulation Needs*

**Moderator:** Manuel Sánchez-Félix, Novartis, U.S.A.

**Co-Chair:** Adriana Avila, Auburn University (Department of Biological Sciences), U.S.A.

Sponsored by:  AstraZeneca

## 10:00 AM

**I-44** *Design for Delivery of New Modalities*

**Annette Bak**, AstraZeneca, Sweden

## 10:25 AM

**I-45** *Experimental and computational advances to predict and better understand potential formulation pathways and formulation performance of beyond rule-of-5 compounds*

**Christel Bergstrom**, Affiliation, Uppsala University, Sweden

## 10:50 AM

**I-46** *Optimizing in vivo delivery modalities for Gene Editing*

**Manmoham Singh**, Beam Therapeutics, U.S.A.

## 11:40 PM

Panel Discussion with all speakers and panelist **Sanya Puri**, AstraZeneca

# Connect @ the EXPO

Here are some of the exhibitors you'll meet this year:

COMPANY	BOOTH	COMPANY	BOOTH
Absorption Systems . . . . .	413	Nisso Chemical Europe . . . . .	203
Adare Pharmaceuticals . . . . .	404	NOF . . . . .	306
Agilent . . . . .	108, 109	Oakwood Labs . . . . .	408
Ashland . . . . .	411	Orbis Biosciences . . . . .	310
Avanti Polar Lipids, Inc. . . . .	205	Pfanstiehl Inc. . . . .	412
BASF . . . . .	409	PharmaCircle . . . . .	406
Bioinicia, S.L . . . . .	410	PHI Biomed . . . . .	107
BUCHI Labortechnik AG . . . . .	111	Polymun Scientific Immunbiologische Forschung GmbH . . . . .	208
Colorcon . . . . .	105	Polypeptide Therapeutic Solutions, S.L. . . . .	402
Corbion Biomaterials . . . . .	103	Precision NanoSystems Inc. . . . .	403
Dolomite Microfluidics . . . . .	211	ProMed Pharma LLC . . . . .	307
DURECT Corporation/ LACTEL® Absorbable Polymers . . . . .	202	Recipharm . . . . .	309
Elsevier . . . . .	110	Recro Gainesville . . . . .	209
Evonik Industries AG . . . . .	210	ROKIT Healthcare . . . . .	401
Foster Delivery Science . . . . .	206	SEQENS . . . . .	414
Gattefossé . . . . .	104	Simulations Plus Inc . . . . .	302
Halozyme . . . . .	106	SOTAX . . . . .	207
Izon Science Europe Ltd . . . . .	113	Southwest Research Institute . . . . .	102
Lubrizol LifeSciences . . . . .	305	Springer Nature . . . . .	201
Malvern Panalytical . . . . .	204	Stable Micro Systems Ltd . . . . .	301
MDPI – Pharmaceutics Journal . . . . .	303	Teledyne Hanson Research . . . . .	101
MeltPrep GmbH . . . . .	405	tesa Labtec GmbH . . . . .	407
Microfluidics International Corporation . . . . .	308	Wyatt Technology . . . . .	304

## EXPOSITION HALL

The CRS Exposition is the place to CONNECT and discover the latest delivery science and technology trends! Meet face-to-face with leading companies from around the world—learn about new products, discuss industry challenges, and build your network. 2019 Exhibitors as of (7/1/2019).

Detailed description of current Exhibitors and the schedule of Exposition hours can be found in the CRS Meeting App.

## EXPOSITION HALL HOURS

### SUNDAY

5:30 PM - 7:30 PM

### MONDAY

9:00 AM - 7:30 PM

### TUESDAY

9:00 AM - 4:00 PM



# SPONSORS of the 2019 CRS ANNUAL MEETING & EXPOSITION

THANK YOU,  
SPONSORS!

CRS Sponsors help bring you the novel science and networking opportunities you expect from your annual meeting.

Please be sure to thank our 2019 Sponsor when you see them. We are so grateful for their continued support of our event – Thank you!



## Adare Pharmaceuticals

### Silver Sponsor

Adare Pharmaceutical Technologies (PT) is a specialty CDMO business. A science-driven provider of dosage form solutions for the healthcare industry, Adare PT is a leading partner to pharmaceutical companies. With over 30 years of proven legacy, Adare PT focuses on oral dosage forms for small molecules. Email us at [BusDevROW@adarepharma.com](mailto:BusDevROW@adarepharma.com).

[www.adarepharma.com](http://www.adarepharma.com)



## Almirall, S.A.

### Supporting

Almirall is a leading skin-health focused global pharmaceutical company that partners with healthcare professionals, applying Science to provide medical solutions to patients. Our R&D strategy is fine-tuned in accordance with our goals to deliver true breakthrough innovation and make a real difference for patients, with a pipeline fully focused on medical dermatology.

[www.almirall.com](http://www.almirall.com)



## Agilent

### Bronze Sponsor

Agilent is a leader in life sciences, diagnostics and applied chemical markets. The company provides laboratories worldwide with instruments, services, consumables, applications and expertise, enabling customers to gain the insights they seek. Agilent's expertise and trusted collaboration give them the highest confidence in our solutions.

[www.agilent.com](http://www.agilent.com)



## AstraZeneca

### Supporting

AstraZeneca is a global, science-led biopharmaceutical company that focuses on the discovery, development and commercialisation of prescription medicines, primarily for the treatment of diseases in three therapy areas – Oncology, Cardiovascular, Renal & Metabolism and Respiratory. AstraZeneca operates in over 100 countries and its innovative medicines are used by millions of patients worldwide.

[www.astrazeneca.com](http://www.astrazeneca.com)

# THANK YOU, SPONSORS!



## Bioinicia

### Bioinicia, S. L.

#### Gold Sponsor

Bioinicia is an innovative CDMO that develops and manufactures delivery solutions for drugs with a focus on increasing bioavailability, controlled release and targeting. Bioinicia uses proprietary processing technology to encapsulate bioactive molecules at mild conditions into ultrathin fibres or submicronized particles. Fibre/particle matrices are selected for optimized release of bioactives in transdermal/transmucosal/oral/ophthalmic/parenteral administration.

[www.bioinicia.com](http://www.bioinicia.com)



### Blühen Botanicals

#### Gold Sponsor

Blühen Botanicals is a hemp biomass processing and extraction company with farming and distribution partners across the globe. Blühen's team of experts produces CGMP grade cannabinoid active ingredients and custom formulations for their own blend of boutique wellness products. Headquartered in Knoxville, Tennessee, U.S.A., Blühen Botanicals is where science meets hemp.

[www.bluehenbotanicals.com](http://www.bluehenbotanicals.com)



### Cantabria Labs

#### Supporting

Cantabria Labs is a leading brand in dermatological prescription in Europe (leader in Spain, Italy and Portugal) with the aim of improving people's health and quality of life. Its presence in over 80 countries and subsidiaries in China, Italy, Morocco, Mexico and Portugal have earned it an excellent international reputation and support.

[www.cantabrialabs.es](http://www.cantabrialabs.es)



### Catalent

#### Supporting

Catalent is the leading global provider of advanced delivery technologies and development solutions for drugs, biologics and consumer health products. With over 80 years serving the industry, Catalent has proven expertise in bringing more customer products to market faster, enhancing product performance and ensuring reliable clinical and commercial product supply.

[www.catalent.com](http://www.catalent.com)

UNIQUE TOGETHER



### Controlled Release Alliance

### Colorcon

#### Silver Sponsor

Colorcon works together with DowDuPont through the Controlled Release Alliance to bring joint resources to accelerate pharmaceutical product development efforts for controlled release and reach markets throughout the world. Colorcon has global sales and distribution rights for DowDuPont products used in controlled release and solubility enhancement pharmaceutical applications.

[www.colorcon.com](http://www.colorcon.com)

# THANK YOU, SPONSORS!



## Corbion Biomaterials

### Supporting

Corbion Biomaterials develops, manufactures and markets resorbable polymers for use in medical and pharmaceutical applications worldwide under the PURASORB® brand name. We support your developments with our products from early stage R&D to commercial manufacturing. Find out how our 40+ years of experience can be of value to your business.

[www.corbion.com](http://www.corbion.com)



## CureVac

### Supporting

CureVac is a leading mRNA-technology company with more than 19 years' expertise in handling and optimizing this versatile molecule for medical purposes. Our proprietary technology is using mRNA as data carrier to instruct the human body to produce its own medicine.

We develop cancer therapies, antibody therapies, rare diseases treatment, and prophylactic vaccines.

[www.curevac.com](http://www.curevac.com)



## dolomite

## Dolomite Microfluidics

### Bronze Sponsor

Dolomite Microfluidics offers a range of microfluidic systems, modules and components, and software for analysis or automation. Modularity, ease of use, innovation and scalability are common to all Dolomite products, which are used across a broad range of applications in biology, drug discovery, chemistry, food, cosmetics and academia.

[www.dolomite-microfluidics.com](http://www.dolomite-microfluidics.com)

## DR·AUGUST·WOLFF



## Dr. Wolff Group

### Supporting

Dr. August Wolff is a German, family-owned pharmaceutical manufacturer with a 113-year history and a focus on dermatology, gynecology and R&D. The major brands are Linola (dry skin) and Vagisan (women's health). Based in Bielefeld/ Germany, Dr. Wolff employs 670 and generates a turnover of 300+ million Euro in 60 markets.

[www.drwolffgroup.com](http://www.drwolffgroup.com)

# THANK YOU, SPONSORS!



## DURECT Corporation/LACTEL® Absorbable Polymers

### Silver Sponsor

Biodegradable polymers optimized for use in sustained release delivery systems, including targeted delivery, nucleic acid administration, and more. We offer an extensive inventory, and substantial expertise in custom synthesis. LACTEL polymers are in numerous marketed pharmaceuticals approved by the FDA and others.

[www.durect.com](http://www.durect.com)



## FUJIFILM Corporation

### Supporting

FUJIFILM Corporation has been focusing on health care business including pharmaceuticals. We are especially developing DDS technologies by using own nanotechnologies. Our core activities are liposome and microneedle developments. We would like to provide our DDS technologies to pharmaceutical and startup companies, and support manufacturing of commercial products in future.

[www.fujifilmhealthcare.com/new-drug-development](http://www.fujifilmhealthcare.com/new-drug-development)



## Evonik Industries AG

### Bronze Sponsor

Evonik, a global leader in specialty chemicals, provides drug delivery technologies, API manufacturing, intermediates & amino acids. Delivery technologies include development services, solubility enhancement, functional excipients, lipid nanoparticles, and GMP manufacturing for oral and parenteral formulations. Advanced delivery technologies provided for small molecules, peptides, proteins, antibodies, and nucleic acids used in parenteral drugs.

[www.corporate.evonik.com](http://www.corporate.evonik.com)



## GlaxoSmithKline (GSK)

### Supporting

GSK is one of the world's leading research-based pharmaceutical and healthcare companies. Our three businesses, pharmaceuticals, vaccines and consumer healthcare have the common aim of improving health. Our vaccines business is involved in vaccine research, development and production and has a broad portfolio and innovative pipeline of vaccines.

[www.gsk.com](http://www.gsk.com)

# THANK YOU, SPONSORS!



## Halozyme

### Bronze Sponsor

Halozyme's proprietary ENHANZE® drug-delivery technology is based on its patented recombinant human hyaluronidase enzyme (rHuPH20). By using rHuPH20, some biologics and compounds that are administered intravenously may instead be delivered subcutaneously. This may result in improved efficiencies to the healthcare system, reduced overall administration time and reduced treatment burden for patients and their caregivers.

[www.halozyme.com](http://www.halozyme.com)



## Inqualab

### Supporting

Inqualab is a company dedicated to the distribution of material and specialised equipment, bioreagents and consumables for laboratories. Inqualab is formed by a multidisciplinary team with extensive experience and in-depth knowledge of the sector, that make us the ideal supplier in the Spanish market.

[www.inqualab.es](http://www.inqualab.es)

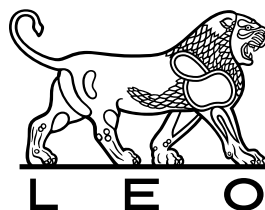


## Janssen

### Bronze Sponsor

Janssen is the Pharmaceutical Companies of Johnson & Johnson and is working tirelessly to create a future where disease is a thing of the past by fighting sickness with science, improving access with ingenuity, and healing hopelessness with heart. Janssen focuses on areas of medicine where it can make the biggest difference: Cardiovascular & Metabolism, Immunology, Infectious Diseases & Vaccines, Neuroscience, Oncology, and Pulmonary Hypertension.

[www.janssen.com](http://www.janssen.com)



## LEO Pharma A/S

### Gold Sponsor

LEO Pharma helps people achieve healthy skin. The company is a leader in medical dermatology with a robust R&D pipeline, a wide range of therapies and a pioneering spirit. Founded in 1908 and owned by the LEO Foundation, LEO Pharma has devoted decades of research and development to advance the science of dermatology, setting new standards of care for people with skin conditions. LEO Pharma is headquartered in Denmark with a global team of 5,500 people, serving 76 million patients in 130 countries. In 2018, the company generated net sales of DKK 10,410 million. For more information, go to:

[www.linkedin.com/company/leo-pharma](http://www.linkedin.com/company/leo-pharma) or  
[www.leo-pharma.com](http://www.leo-pharma.com)

# THANK YOU, SPONSORS!



## LTS Lohmann Therapie-Systeme AG

### Supporting

LTS is a leading technology company that develops and manufactures innovative drug delivery systems such as Transdermal Patches ("TTS") and Oral Thin Films ("OTF") for the pharmaceutical industry. Additional to its core technologies, LTS invests into emerging drug delivery platforms such as Micro Array Patches enabling transdermal delivery of large molecule, vaccines and biological actives.

[www.ltslohmann.de/en](http://www.ltslohmann.de/en)



Lubrizol LifeSciences

## Lubrizol LifeSciences

### Supporting

Lubrizol LifeSciences is a total solutions partner for pharmaceutical manufacturers. LifeSciences specializes in helping customers from concept to commercialization and is a preferred Contract Development and Manufacturing Organization (CDMO) for complex pharmaceuticals providing differentiated polymers and excipients, state-of-the-art design, development and contract manufacturing services including drug-eluting device solutions.

[www.lubrizol.com](http://www.lubrizol.com)



## Luye Boston R&D

### Supporting

Luye's research and development ("R&D") activities are located in China, U.S.A. (Boston and Princeton) and Europe and organized around four platforms – long-acting and extended release technology, liposome and targeted drug delivery, transdermal drug delivery systems and new compounds. The Group has a pipeline of 27 product candidates in the PRC including 9 oncology products, 4 cardiovascular and metabolism products, and 14 CNS products, as well as 6 in the U.S. or Europe in various stages of development.

[www.luye.com](http://www.luye.com)

# moderna®

## Moderna

### Supporting

Moderna is advancing messenger RNA (mRNA) science to create a new class of transformative medicines for patients. mRNA medicines are designed to direct the body's cells to produce intracellular, membrane or secreted proteins that can have a therapeutic or preventive benefit and have the potential to address a broad spectrum of diseases.

[www.modernatx.com](http://www.modernatx.com)

# THANK YOU, SPONSORS!



## Molecular Pharmaceutics (ACS Publications)

### Supporting

Sponsoring Journals from the American Chemical Society

- Molecular Pharmaceutics: The preeminent journal at the interface of drug discovery & development
- Bioconjugate Chemistry: Cutting-edge forum in conjugation chemistry & biochemistry
- Read the Latest Issues & Submit Your Research:  
[pubs.acs.org](http://pubs.acs.org)

[pubs.acs.org/journal/mpohbp](http://pubs.acs.org/journal/mpohbp)



## Novartis

### Bronze Sponsor

Our mission is to discover new ways to improve and extend people's lives. Our vision is to be a trusted leader in changing the practice of medicine. We use science-based innovation to address some of society's most challenging healthcare issues. We discover and develop breakthrough treatments and find new ways to deliver them to as many people as possible.

[www.novartis.com](http://www.novartis.com)



## Pfizer

### Bronze Sponsor

At Pfizer, we strive to set the standard for quality, safety and value in the discovery, development and manufacturing of medicines for people. Every day Pfizer colleagues work across developed and emerging markets to advance wellness, prevention, treatments, and cures that challenge the most feared diseases of our time.

[www.pfizer.com](http://www.pfizer.com)



Polypure is a world leader in advanced Polyethylene Glycol (PEG) chemicals. We specialize in single oligomer PEG derivatives specified over 98% purity (<1% other oligomer). Heterofunctional derivatives of PEGs from MW400 range up to 5KDa can be supplied from gram to multi-kilograms quantities: amines and amino PEG acids (Fmoc, Boc-protected), maleimido PEG, PEG thiol derivatives and conjugation reagents.

# THANK YOU, SPONSORS!



## Phospholipid Research Center

### Bronze Sponsor

The independent Phospholipid Research Center connects scientists from academia and industry all over the world with the aim to discover and utilize the full potential of phospholipids. Phospholipids are already widely used in registered pharmaceutical formulations. However, their use could still be further extended, as they might be able to replace almost all other emulsifiers, solubilizers and surfactants. To build up the knowledge on phospholipids we foster the dialog and exchange between various areas of research by:

- Organising and sponsoring symposia, meetings and workshops
- Sponsoring PhD theses and Postdoc research projects at universities and (non-profit) research institutes
- Providing information and literature.

Please find more information on our homepage [www.phospholipid-institute.com](http://www.phospholipid-institute.com)



## Recro Gainesville

### Bronze Sponsor

Recro is the solid oral dose expert specializing in controlled substance and extended release formulations to your exact standards. No matter the scope of your project, we deliver – streamlining product formulation and manufacturing from concept to clinic to commercial scale.

[www.recrogainesville.com](http://www.recrogainesville.com)



## Scharlab, Inc.

### Supporting

Headquartered in Barcelona (Spain), Scharlab have direct presence in 11 countries and have a worldwide presence through a distribution network covering over 100 countries. Scharlab have own factories of chemicals, glassware and medium for microbiology and distribute all of the items that a laboratory needs. Currently, Scharlab employs over 300 people.

[www.scharlab.com](http://www.scharlab.com)



## Wyatt Technology

### Silver Sponsor

Wyatt Technology® is the recognized leader in instrumentation for determining the absolute molar mass, size, charge and interactions of macromolecules and nanoparticles in solution. These tools include: in-line multi-angle static light scattering, high-throughput dynamic light scattering, differential refractometry, electrophoretic mobility, differential viscosity, field flow fractionation and automated composition gradient.

[www.wyatt.com](http://www.wyatt.com)







# cGMP Manufacturing

## API, Excipient, & Contract Manufacturing.

# More than Lipids

- FDA inspected since 1990; Drug, Animal Drug, and Pre-Approval Inspections; current EIR available upon request.
- Manufacture cGMP quality materials from 50g to 25kg batches
- Maximum annual capacity: 2 MT per shift
- Contract manufacturing of proprietary lipid products available

**cGMP LIPIDS - Solutions for the entire product cycle: Research to Commercialization.**

Product	Part Number
<b>Semi-Synthetic Phosphatidylcholine</b>	
DMPC	730345
DPPC	730355
DSPC	730365
DEPC	730398
DOPC	730375
POPC	770557
<b>Semi-Synthetic Phosphatidylglycerol</b>	
DMPG	730445
DPPG	730455
DSPG	730465
POPG	730257
<b>Semi-Synthetic Phosphatidylethanolamine</b>	
DLPE	770702
DMPE	770745
DPPE	770705
DSPE	770715
DOPE	770725

Product	Part Number
<b>Detergents</b>	
<b>NEW - n-dodecyl-beta-D-maltoside (DDM)</b>	<b>770520</b>
<b>NEW - n-octyl-beta-D-glucoside (OGP)</b>	<b>770511</b>
<b>Synthetic Monophosphoryl Lipid A (MPLA) Adjuvants</b>	
PHAD <sup>®</sup>	770030
3D-PHAD <sup>®</sup>	770040
3D(6-acyl)-PHAD <sup>®</sup>	770050
<b>Miscellaneous</b>	
Tricaprylin	730412
Triolein	770110
DOTAP	770890
Cholesterol, plant	770100
DSPE-PEG(2K)-Mal	770126
DSPE-mPEG(2000)	770120
<b>NEW - DMG-mPEG(2000)</b>	<b>770151</b>

People do  
**amazing**

things with our lipids!

What will **you** do?

# Polymers that Deliver



Learn more about our proven, biodegradable polymers  
for sustained release delivery systems at  
[www.absorbables.com](http://www.absorbables.com)



**LACTEL**<sup>®</sup>  
Absorbable Polymers