



## **COLOTAN Fourth Annual Symposium**

January 10<sup>th</sup> 2024 – School of Pharmacy – University College Cork

# **COLOTAN**

**Boosting advanced doctoral training in innovative  
colon targeting drugs**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 956851

## Welcome Note

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Dear COLOTAN meeting participant,

Welcome to Cork, Ireland for our sixth COLOTAN Network Wide Event and fourth COLOTAN symposium.

As we enter the fourth year of the EU-funded COLOTAN project, we remain committed to our mission of scientific advancement and impactful research.

COLOTAN deals with a topic of growing medical and societal concern: obtaining a sufficiently high drug concentration in the colon to efficiently treat diseases of the large intestine. Oral administration of drugs is the most common delivery route due to its non-invasive character and convenience for the patient. However, issues related to pharmacokinetics (PK) and bioavailability remain a prominent cause of oral drug candidate attrition. Therefore, the European Medicines Agency (EMA) and the US Food and Drug Administration (FDA) call for research into new predictive tools, innovative drug delivery systems and precision medicine approaches.

The main scientific objective of this project is to improve colon targeting of drugs in order to efficiently treat diseases of the large intestine. To reach this goal, the sub-objectives have been defined: (1) developing innovative colon-targeting formulations, (2) acquiring a thorough understanding of drug and formulation behaviour in the colon and (3) improving predictive tools and models of the colon, a major bottleneck in drug development.

The overarching goal of the colon targeting network (COLOTAN) is to provide high-level training to 13 early-stage researchers (ESRs) in drug delivery, drug disposition and gastrointestinal (GI) (patho)physiology to improve targeting of drugs to the colon and to provide them with the transferable and scientific skills necessary for a successful career. This international training program, combining 10 countries, focuses on innovative technological and scientific developments across a range of interdisciplinary fields such as (physical, analytical and organic) chemistry, drug delivery, drug disposition, cell biology, gastroenterology, microbiology and modelling and simulation.

We hope that this event will be a rewarding experience for all those attending the meeting.

*With best regards,*

*COLOTAN Network Wide Event Organising Committee*

## Venue

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All meeting activities will take place in the [School of Pharmacy, UCC](#). The School of Pharmacy is one of six schools within the College of Medicine and Health, University College Cork. The School of Pharmacy was officially opened in 2003 and we are fortunate to be located in the purpose-built Pharmacy Building which boasts state-of-the-art teaching and research facilities for students and staff alike. The School of Pharmacy is located on College Road, close to the main UCC Campus, in the western part of Cork City. The School of Pharmacy is Approximately 1.5km from Cork City Centre.



## Programme for COLOTAN Open Symposium 10<sup>th</sup> January 2024

The theme for the fourth COLOTAN Symposium is *Targeted Drug Delivery in the Gastrointestinal tract; Current status, emerging techniques and blue sky thinking*. There will be three distinct sessions, as outlined below, followed by a round table discussion at the end of each session.

### Session 1: Targeted Drug Delivery in the GIT – Current State of the Art

Chair: Brendan Griffin

| Time       | Speaker                                 | Affiliation                         | Title (provisional – to be confirmed by speaker)                                 |
|------------|---|-------------------------------------|--|
| 8.45-9.00  | <a href="#">Prof Guy van den Mooter</a> | KU Leuven                           | Opening address  |
| 9.00-9.45  | <a href="#">Prof Per Artursson</a>      | Uppsala University                  | Gut feelings 2.0: Navigating Drug Absorption and Delivery in the 3D frontier     |
| 9.45-10.30 | <a href="#">Dr Vincent Jannin</a>       | Lonza Capsules & Health Ingredients | Evaluation of the Enteric Delivery Performance of a Two-layer Functional Capsule |

### Session 2: Emergent platforms in regional drug delivery

Chair: Joey O'Shea

| Time        | Speaker                                     | Affiliation   | Title   |
|-------------|---|---|---|
| 11.00–11:45 | <a href="#">Prof Hanne Mørck Nielsen</a>    | University of Copenhagen  | Oral delivery of peptide drugs - impact of dosage form in preclinical studies                         |
| 11.45-12.30 | <a href="#">Prof. Dr. Georgios Imanidis</a> | FHNW University of Applied Sciences and Arts Northwestern Switzerland | Drug delivery to the large intestine with xyloglucan-based tablets: In vitro, in vivo, in silico      |
| 12:30-13:15 | <i>Lunch Break</i>                          |   |   |
| 13:15-14:00 | <a href="#">Prof Amin Rostami-Hodjegan</a>  | University of Manchester & Certara                                    | Inflamed Gut Feelings: Story of Crohn Disease and Implications for Bioavailability and Bioequivalence |
| 14:00-14:45 | <a href="#">Prof Alexandra Taleki</a>       | Uppsala University  | Engineering functional nanocarriers for diagnosis and treatment of gastrointestinal diseases          |

### Session 3: Novel targets and therapeutics in gastrointestinal disease –

Chair: Caitriona O'Driscoll

| Time        | Speaker                                 | Affiliation                                      | Title  |
|-------------|---|--|--|
| 15:15–16:00 | <a href="#">Prof John Cryan</a>         | University College Cork & APC Microbiome Ireland | Gut Feelings: Targeting the Brain through the Gastrointestinal Tract             |
| 16:00–16:45 | <a href="#">Prof Subrata Ghosh</a>      | University College Cork & APC Microbiome Ireland | Do we really understand the colon for drug delivery? - A gastroenterologist view |
| 16:45–17:00 | <a href="#">Prof Guy van den Mooter</a> | KU Leuven  | Closing Address  |



## About Cork

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Cork, located on Ireland's south coast, is the Republic of Ireland's second largest city. The history of Cork dates back to a monastic settlement, founded by St Finbar in the sixth century however the ancestor of the modern city was founded between 915 and 922, when Viking settlers established a trading community.

Today Cork is a powerhouse of economic, industrial and business development. Cork is recognised internationally as a major European centre for the life science industry with 7 out of the top 10 global pharmaceutical companies are

located in Cork, with over 30 companies are now operating in the sector in Cork, with approximately 15,000 people are employed in Life Sciences in the Cork region. Cork International Airport serves over 50 international destinations.

Cork is a vibrant and cosmopolitan city with a population of over 210,000 people yet it still manages to retain the pleasant charm and friendliness of a country town. The surrounding country is also lush and beautiful. Cork County boasts a magnificent coastline scooped and fretted by the Atlantic into great bays, secret coves, rocky headlands and long golden sands. Cork is the Food Capital of Ireland, home to the birthplace of modern Irish Cuisine at Ballymaloe House, the famed English Market and home to artisan food producers. Don't just take our word for it - as Lonely Planet themselves said 'Everything good about Ireland can be found in County Cork'.





## Getting to Cork

### By Air

Cork Airport is 8 km south of Cork city centre ([Airport to UCC](#)). There are several flights a day from London-Heathrow or Amsterdam (both [Aer Lingus](#)) and London Stanstead or Gatwick ([Ryanair](#)). For other destinations in the UK (e.g. Glasgow, Edinburgh, Manchester) and continental Europe see [Cork Airport](#).

Bus connections to/from the airport are provided by Bus Eireann (route [226](#) to Cork City Centre, Bus Station and Rail station). A taxi journey to UCC will take 10–20 minutes and will cost about €12–18.

Dublin International Airport, which is located north of Dublin City Centre approximately 3 hours from Cork and is served by many destinations across continental Europe. There are express coach services from Dublin Airport and Dublin City Centre to Cork (operated by [Aircoach](#) and [GoBus](#))

## Accommodation



The Kingsley, Victoria Cross, Cork

Approx 1.5km (20 mins walk) from the School of Pharmacy, UCC.

Cost: €165.00 B&B per classic single room per night, €180.00 B&B per classic double/twin room per night

To book email [reservations@thekingsley.ie](mailto:reservations@thekingsley.ie) and quote School of Pharmacy UCC

Google Maps: <https://g.page/TheKingsleyHotel?share>



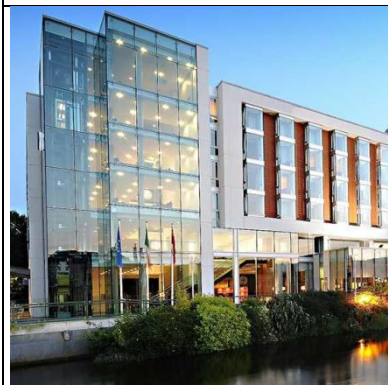
Lancaster Lodge, Western Road, Cork

Approx 1.25km from the School of Pharmacy, UCC

Cost B&B single occupancy: €127 B&B single occupancy or €147 twin/double occupancy B&B per night (Sunday to Thursday nights)

To Book email [info@lancasterlodge.com](mailto:info@lancasterlodge.com) & Quote COLOTAN Conference, UCC School of Pharmacy

Google Maps: <https://g.page/lancaster-lodge?share>



The River Lee Hotel, Western Road, Cork

Approx 1km (15 mins walk) from the School of Pharmacy, UCC.

Cost B&B single occupancy: €200 per room B&B per night

To book email [cork@doylecollection.com](mailto:cork@doylecollection.com)

Google Maps: <https://goo.gl/maps/tjzLy5PVEgYk6VuC9>



## Symposium Speaker Biographies

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### Prof Per Artursson

Department of Pharmacy, Faculty of Pharmacy, Uppsala University, Sweden



Per Artursson is a professor in Dosage Form Design at the Department of Pharmacy, Uppsala University, Sweden, where he heads the Drug Delivery research team. He is also Director of the Uppsala University drug optimization and pharmaceutical profiling platform which is partly located within Science for Life Laboratories. His research aims at understanding drug absorption, distribution, metabolism and elimination (ADME) at the molecular and cellular level in order to deliver drugs more effectively via the oral route. He also investigates the influence of drug transporting proteins, drug metabolizing enzymes and cellular and sub-cellular drug uptake, distribution and elimination. For this purpose, both 2D and 3D cell cultures are used in combination with state-of-the-art omics and bioinformatics. Both small drug molecules and biopharmaceuticals such as peptide and antisense oligonucleotides are investigated. He has published more than 200 research articles and 50 reviews and book chapters, is highly cited and has received several international awards for his research.

### Dr Vincent Jannin

Lonza Capsules & Health Ingredients

Dr. HDR Vincent Jannin is Director R&D and Head of Capsule Application Lab Services, Lonza Capsules & Health Ingredients. He joined Lonza Pharma & Biotech in 2019. Previously, he held diverse positions up to Research Director - Pharmaceuticals at Gattefossé (1998-2018). He was also lecturer at Lyon University (CPE Lyon) from 2003 to 2019 where he taught formulation sciences.

Vincent earned his Pharm.D. (1999) and Ph.D. (2004) from the University of Bourgogne (France) and received his HDR (Habilitation to Supervise Research) from the University of Lyon (2010). Vincent has published 71 publications in peer-reviewed journals (h-index=38), 5 patent families, 5 book chapters, 79 meeting abstracts, and given 70 lectures as speaker on Drug Delivery Systems.



**Prof. Dr. Georgios Imanidis**

Institute of Pharma Technology at the School of Life Sciences, University of Applied Sciences Northwestern Switzerland



Georgios Imanidis is head of the Institute of Pharma Technology at the School of Life Sciences, University of Applied Sciences Northwestern Switzerland and is full Professor at the University of Applied Sciences and titular Professor at the Faculty of Science of the University of Basel. In his current position, he established the Institute and introduced de novo research and teaching in Pharma Technology at the School of Life Sciences covering technical and biopharmaceutical aspects of the field. He developed the study curriculum with emphasis in pharmaceutical technology, established laboratory facilities for teaching and research encompassing

chemical and biological drug entities, recruited six faculty members and built the working group of the Institute currently comprising 35 members. In its brief existence the Institute has established broad expertise and attained national and international recognition as a center of competence for pharmaceutical technology.

Developed and implemented mathematical modeling of physicochemical transport processes for the evaluation and prediction of drug delivery, drug absorption and performance of intestinal drug formulations in biorelevant in vitro models with accompanying media and preclinical in vivo models. This concept was implemented in Caco-2 cell culture-based investigation of cellular pharmacokinetics comprising phase I and phase II metabolism and influx and efflux of drug and metabolite and in preclinical animal model-based investigation for elucidating systemic drug exposure and intestinal targeted delivery, respectively.

Investigated drug formulation and delivery in (trans)dermal administration for treatment and prevention of skin disease and introduced mathematical model-based assessment of biological effect and formulation performance on account of the site-of-action active moiety concentration in cutaneous tissue in in vitro and in vivo model systems providing a mechanistic understanding and predictability of the effect of medicinal product application.

**Prof Amin Rostami-Hodjegan, PhD, FCP, FAAPS, FJSSX, FBPS**

Professor of Systems Pharmacology and Director of Centre for Applied Pharmacokinetic Research (CAPKR), University of Manchester, UK & SVP of R&D, Chief Scientific Officer (CSO), Certara, Princeton, USA

The Institute of Scientific Information (ISI, Clarivate) listed Amin as one of the world's most highly cited researchers (under 'Pharmacology & Toxicology') in 2017. Amin is also at 0.05% top rank of the Highly Cited Researchers List by Elsevier for pharmacology (2021). He has published over 300 peer reviewed highly influential scientific articles (>22,000 citations, h-index = 80).

The work of Professor Rostami covers wide areas of drug development over the last 30 years, ranging from pharmaceuticals (e.g. bioavailability and bioequivalence) to clinical pharmacology (e.g. mixture pharmacology of drug/metabolites), translational and systems pharmacology (e.g. quantitative proteomics of enzymes and transporter for in vitro to in vivo (IVIVE) scaling).

Amin was co-founder of two spin-off companies from the University of Sheffield (Simcyp Limited and Diurnal PLC). As a leader in the field of physiologically-based pharmacokinetics (PBPK) and quantitative systems pharmacology (QSP), he is internationally recognized for his expertise in IVIVE to predict the behavior of drugs in human body and understanding the associated inter-individual variabilities. He was one of the founding editors of Pharmacometrics and System Pharmacology, and serves on the Editorial Boards of several other journals.

As the Senior Vice President of Research & Development (SVP) and Chief Scientific Officer at Certara, he facilitates the incorporation and integration of the latest advances in translational modelling to biosimulation platforms offered by Certara to its clients, with the aim of accelerating the development and regulatory approval of safer drug products and bringing them to the patients.



**Prof Alexandra Teleki**

Department of Pharmacy, Faculty of Pharmacy, Uppsala University, Sweden

Alexandra Teleki is an Associate Professor and SciLifeLab Fellow in Pharmaceutical Nanotechnology and Drug Development at the Department of Pharmacy at Uppsala University, Sweden. She received her MSc in Chemical Engineering from the Royal Institute of Technology (KTH) Stockholm, Sweden and her PhD in Mechanical and Process Engineering from ETH Zurich, Switzerland. Then she joined the Formulation and Application R&D department at DSM Nutritional Products in Basel, Switzerland before she was recruited to Uppsala University and SciLifeLab. Her research has been recognized internationally by several awards including the 2020 ERC Consolidator Grant, 2016 Smoluchowski Award of the European Aerosol Association, the 2016 SABIC Young Professional Award by the Particle Technology Forum (PTF) of the American Institute of Chemical Engineers (AIChE), the 2009 DSM Science and Technology Awards for outstanding PhD work with a clear future impact and the 2008 ETH Medal for Outstanding PhD. She was also recently recognized by the editors of *JPharmSci* as an Outstanding Early Career Scientist. She is co-director of the Swedish Drug Delivery Center and serves as president of the *Controlled Release Society* Nordic Local Chapter since 2023.

**Prof John Cryan**

Department of Anatomy & Neuroscience & VP for Research and Innovation, University College Cork



John F. Cryan is Professor & Chair, Dept. of Anatomy & Neuroscience, University College Cork and was appointed Vice President for Research & Innovation in 2021. He is also a Principal Investigator in the APC Microbiome Ireland Institute. His research is focused on the neurobiology of stress related disorders and the mechanisms underlying microbiome-brain interactions across the lifespan. Prof. Cryan has published over 650 peer-reviewed articles and has a H-index of 157 (Google Scholar). He is a Senior Editor of *Neuropharmacology* and of *Neurobiology of Stress* and is on the editorial board of a further 10 journals. He has co-edited four books and is co-author of the bestselling ***“The Psychobiotic Revolution: Mood, Food,***

***and the New Science of the Gut-Brain Connection”*** (National Geographic Press, 2017). He has received numerous awards including from European College of Neuropsychopharmacology (ECNP), European Behavioural Pharmacology Society, British Association of Pharmacology, Physiological Society, American Gastroenterology Association and Neuroscience Ireland. He received the University of Utrecht Award for Excellence in Pharmaceutical Research in 2013, UCC Research Communicator of the Year 2017, and was awarded an honorary degree from the University of Antwerp, Belgium in 2018. He received the Datta Prize from FASEB in 2022 and has been on the Highly Cited Researcher list in 2014 and from 2017 to the present. He was elected a Member of the Royal Irish Academy in 2017. He was a TEDMED speaker in 2014, TEDx Speaker in 2017 and is a Past-President of the European Behavioural Pharmacology Society. He was a Member of the 2022 Fens Forum Programme Committee and Chairs the Scientific Programme Committee of ECNP for 2022-2024.





**Prof Subrata Ghosh**

Department of Medicine, College of Medicine and Health, University College Cork



Subrata Ghosh is the Chair and Head of Medicine, College of Medicine and Health at University College Cork since March 2021. He is a principal investigator and deputy director at APC Microbiome Ireland. Subrata has recently been awarded the highly prestigious SFI Research Professorship for 60 months. Subrata did his doctoral research on the immunology of inflammatory bowel disease at University of Edinburgh where he was appointed as faculty. His research interests are precision medicine in IBD, innovative clinical trials, immune cell plasticity, targeted immunotherapies in IBD, interaction of nutrients, microbes and immune system, gut inflammation and nutrition, innate immunity and epidemiology and health care in IBD. His research has been published in New England Journal of Medicine, Lancet, Nature Medicine, Gastroenterology, Gut and American Journal of Clinical Nutrition with over 550 manuscripts. He has delivered over 700 international invited lectures including named keynote lectures. Previously he was the inaugural director of the Institute of Translational Medicine, and Professor of Translational Medicine, University of Birmingham between 2016 and 2020. Between 2009 and 2016 he was the Professor and Chairman of Medicine, University of Calgary, and Head of Medicine, Alberta Health Services, Canada. Between 2002 and 2008 he was the Professor and Chair of Gastroenterology at Imperial College London, Hammersmith Hospital. Subrata Ghosh is a Fellow of the Academy of Medical Sciences, UK and the Canadian Academy of Health Sciences, both highest recognition for scientists in medicine and health. He has been the recipient of numerous individual and large team grants from Horizon Europe, CIHR, AIHS, SFI, HRB, MRC, NIHR, Wellcome Trust, CCFA, CCUK and CCC, as well as industry partnered research projects. He has served on numerous committees, councils and grant panels regionally, nationally and internationally, and been chief editor, associate editor and editorial board member of a number of international reputable journals.

