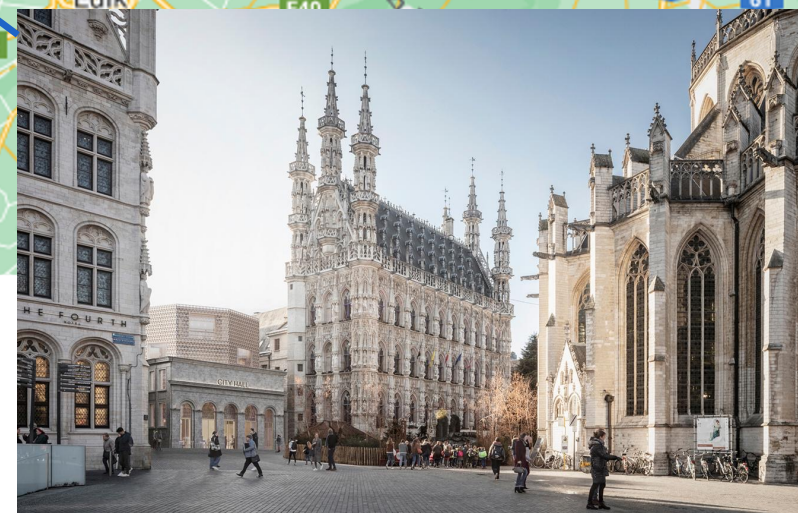
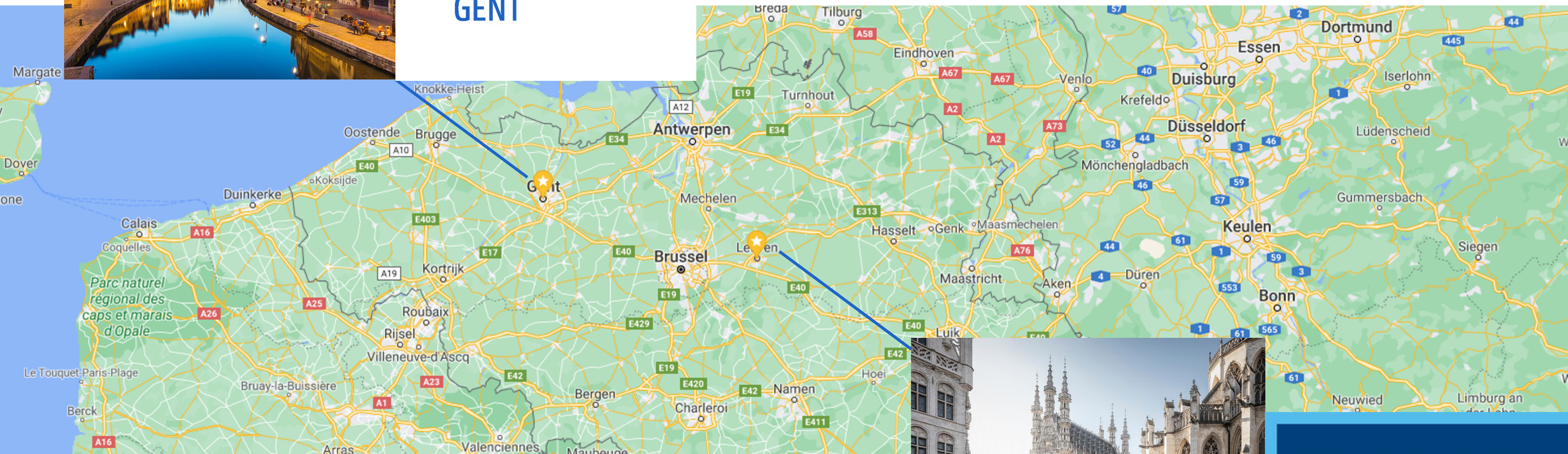


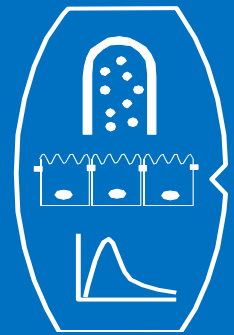
VIRTUAL NATIONAL FUNDING WORKSHOP PSSRC

Prof. Ashish Kumar (on behalf of Prof. Valérie Vanhoorne) – 20/05/2021

INTRODUCTION BELGIUM



KU LEUVEN



DRUG DELIVERY AND DISPOSITION

*Common research question: “How to optimize drug availability (systemic and local)”
Tackled from different but complementary angles*

Prof. G. Van den Mooter
Pharmaceutical Technology
& Physical Pharmacy

Prof. P. Annaert
Pharmacokinetics

Prof. P. Augustijns
Biopharmaceutics

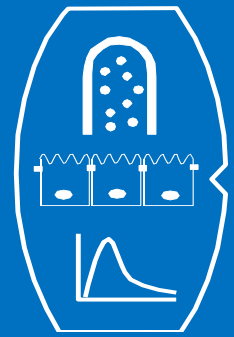
Formulation strategies for poorly soluble drugs

- amorphous solid dispersions (solvent based systems)
- mesoporous carriers with focus on functionalized polysaccharide beads

Colon specific drug delivery: development of biodegradable coatings

- functionalization of polysaccharides
- film formation of biodegradable polymers
- de novo synthesis of biodegradable polymers

INTRODUCTION KU LEUVEN



DRUG DELIVERY AND DISPOSITION

Prof. G. Van den Mooter

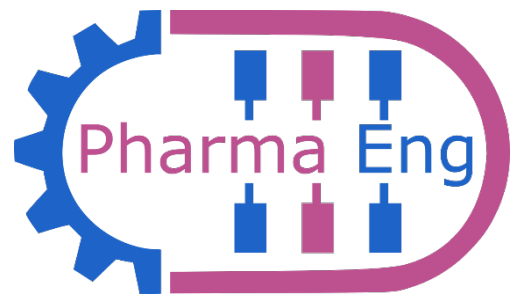
Pharmaceutical Technology & Physical Pharmacy

- **Manufacturing processes** of interest:
 - Spray drying
 - Bead coating (fluid bed)
 - Electrospraying and –spinning
 - Cryomilling
- **Characterization techniques:**
 - mDSC
 - XRPD
 - DMA
 - TGA
 - FTIR
 - HPLC
 - SEM; PLM
 - In vitro dissolution
 - Membrane permeability
 - Viscometry
 - Laser diffraction
 - NMR

INTRODUCTION UGENT



Prof. Thomas De Beer



Prof. Ashish Kumar

LABORATORY OF
PHARMACEUTICAL
TECHNOLOGY

Prof. Chris Vervaet

Prof. Valérie Vanhoorne

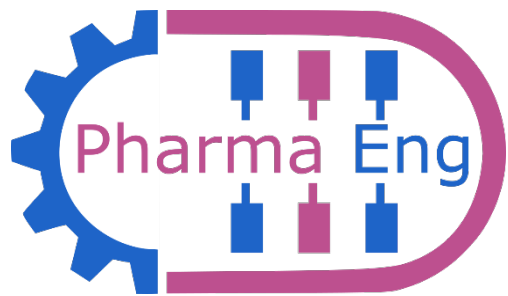
- Close **collaboration** between the laboratories
- Shared **equipment**
- **Cross-disciplinary team** composed of bioengineers, chemical engineers and pharmacists
- **Manufacturing processes** of interest:
 - Freeze-drying
 - (Continuous) wet granulation
 - (Continuous) melt granulation
 - (Continuous) direct compression: feeding, blending, tableting
 - Hot-melt extrusion & injection moulding
 - 3D-printing via FDM
 - Spray drying
- **Characterization techniques:** powder analysis (rheology, density, size, moisture sorption, wettability, electrostatics), in-vitro dissolution, SEM, XRD, DSC, HPLC, PAT

INTRODUCTION UGENT



- Focusing on **implementation of PAT** (NIR, Raman, Particle size) systems in innovative (continuous) pharmaceutical manufacturing processes
- **Chemometric data-analysis**
- Evaluation of recently developed **process analyzers and soft sensors**

Prof. Thomas De Beer



- Focusing on the **model-based design** of pharmaceutical process & equipment for innovative drug products
- Research approach:
 - Application of engineering skills to design, develop and control processes
 - Application of **kinetic and thermodynamics models** in combination with detailed modeling frameworks such as **DEM, FEM and CFD**.

Prof. Ashish Kumar



- Focusing on development of innovative **oral solid drug dosage forms** for human application as well as for veterinary use.
- Strong focus on **formulation and process development** of continuous manufacturing processes and dosage forms enabling personalization

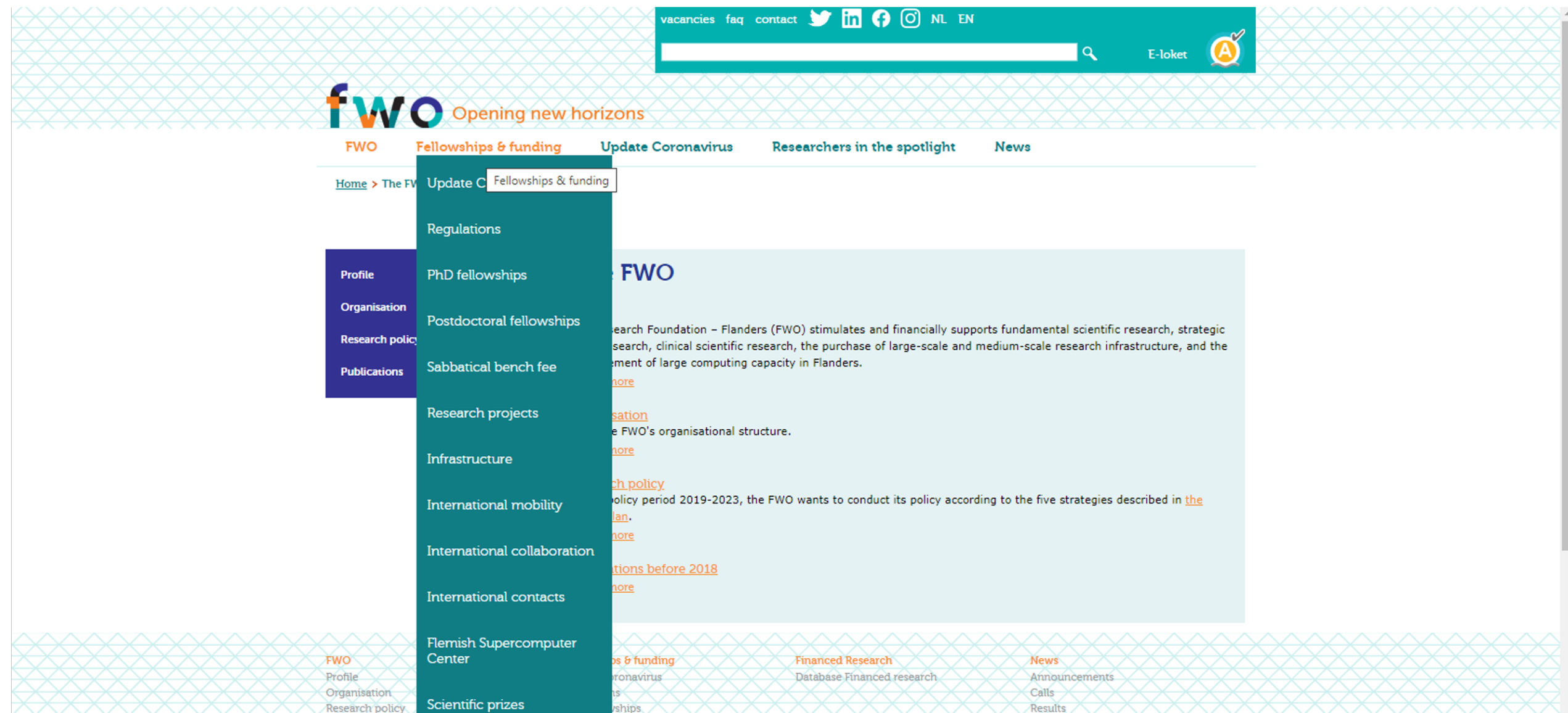
Prof. Chris Vervaet

Prof. Valérie Vanhoorne

PHD/PD SCHOLARSHIPS

FWO: Research Foundation Flanders: fwo.be

- Fundamental Research (FO): challenging and innovative research, curiosity-driven.
- Strategic Basic Research (SB): challenging and innovative research, which, if successful, may lead to innovative applications with economic added value, goal-driven.



PHD/PD SCHOLARSHIPS

FLANDERS
INNOVATION &
ENTREPRENEURSHIP



- **Vlaio:** stimulating and supporting innovation and entrepreneurship: <https://www.vlaio.be/>
 - Baekeland mandates:
 - research in close collaboration with a Flemish company, clear economic objectives and added value to the company involved.
 - Directed towards a PhD diploma and meet the accepted criteria for doctoral research.
 - Research projects:
 - research in close collaboration with a Flemish company, clear economic objectives and added value to the company involved.
 - PhD/PD funding

- **UGent funding:** Special Research Fund (BOF)
 - BOF PhD scholarship with I-SITE ULNE (I-SITE Université Lille Nord-Europe) label:
<https://www.ugent.be/en/research/funding/bof/doc/lille.htm>
 - Ghent University is one of the 14 partners in the excellence programme of Lille University (I-SITE Université Lille Nord-Europe or I-SITE ULNE) through joint doctorates.

COLLABORATIVE RESEARCH

FWO – cooperation with specific countries

- **France:**

- Flemish researchers are encouraged to participate in existing CNRS funding channels targeting international collaboration:
 - International Emerging Actions (IEA)
 - International Research Networks (IRN)
- Tournesol (FWO and the Embassy of France in Brussels): travel grants

FWO - Funding for outgoing mobility: travel expenses + fee/day

- Grant for participation in a conference abroad
- Grant for a short study visit abroad (max 31 days)
- Grant for participation in a workshop or course abroad
- Grant for a long stay abroad (1 – 12 months)

CELSA: possibility for collaboration between **KULeuven** and **univ Lubljana**

COLLABORATIVE RESEARCH



- EU initiative embedded into **Science Europe**
- Funding of **fundamental research projects** with researchers from 2-3 EU countries
- **Lead Agency Principle**
- Currently collaborations possible with:
 - Luxemburg
 - Austria
 - Slovenia
 - Switzerland



<https://www.fwo.be/nl/nieuws/oproepen/weave/>

EU – MSCA PD SCHOLARSHIPS

MSCA masterclasses organised at Ugent: <https://www.ugent.be/en/research/funding/eu-int/msca-pf.htm>

MSCA masterclasses organised at KU Leuven:

<https://www.kuleuven.be/english/research/EU/f/extra/msca/event-internal-open-to-external/210525-msca-masterclass>

- Targeted at:

- Postdoc researchers working at Ghent University / KU Leuven who wish to go abroad for a postdoctoral fellowship funded by MSCA;
- Postdoc researchers from abroad who wish to apply for a postdoctoral fellowship with KULeuven/Ghent University as their Host Institution.

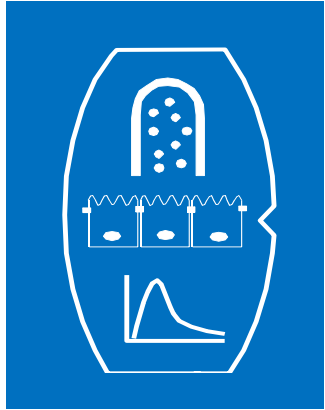
- Programme:

- Various aspects of the proposal template.
- General aspects such as training, Open Access, data management, ethical issues, communication, societal impact, marketing of results, the Ghent University / KULeuven Postdoc Talent Management programme and HR-policy.

UGENT EXCHANGE TESTIMONY



CONTACT DETAILS



Guy.vandenmooter@kuleuven.be

<https://gbiomed.kuleuven.be/english/research/50000715/50000716/index.htm>

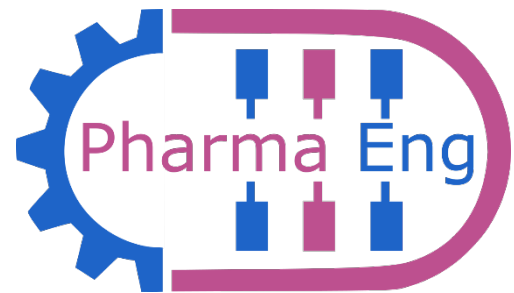
Prof. Guy Van den Mooter



Thomas.DeBeer@UGent.be

<https://www.ugent.be/fw/pharmaceutical-analysis/en/research/pat>

Prof. Thomas De Beer



Ashish.Kumar@UGent.be

www.ugent.be/fw/pharmaceutical-analysis/en/research/pe

Prof. Ashish Kumar

LABORATORY OF
PHARMACEUTICAL
TECHNOLOGY

Chris.Vervaet@UGent.be

Valérie.Vanhoorne@UGent.be

Prof. Chris Vervaet

Prof. Valérie Vanhoorne

<https://www.ugent.be/fw/pharmaceuticals/pharmtech/en/research>