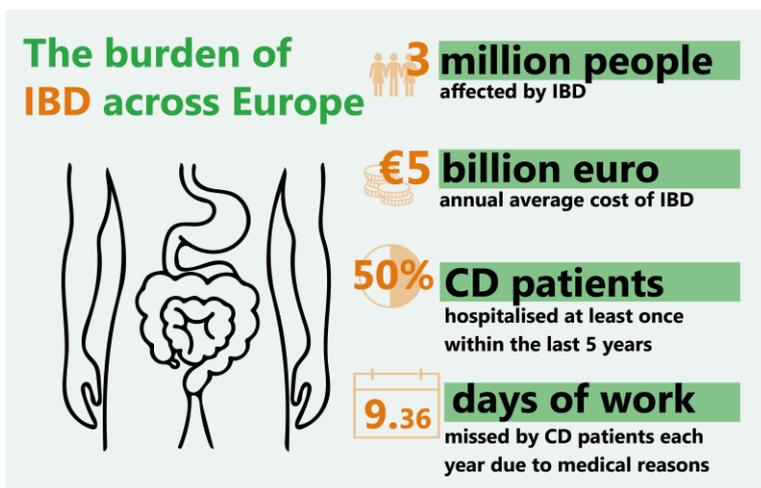


CarboHyde participates in innovative EU-funded research project to change the treatment paradigm for Crohn's Disease patients with new RNA-based therapy

GENEGUT, a research project funded by Horizon Europe, is to develop the first oral RNA-based therapy for ileal Crohn's Disease (CD) – a chronic inflammatory disease of the intestine. The consortium is made up by nine partners from eight European countries, who are all leading experts on their field. CarboHyde will play a crucial role by kick starting the project by developing custom-made cyclodextrin derivatives, which will help to deliver their RNA cargo to the small intestine. The work is set to start on 1st October 2022 and last for four years.

Addressing the major medical need of Crohn's Disease

Crohn's disease (CD), one of the two major disorders under the umbrella term of IBD (Inflammatory Bowel Disease), is a highly prevalent and high-burden chronic inflammatory condition of the gastrointestinal tract (GIT). With up to 3 million people affected in Europe alone, the chronic disease has an accelerating incidence - leading to health costs of over 5 billion euros per yearⁱ. Most significantly, however, there is no satisfactory treatment.



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Role of CarboHyde

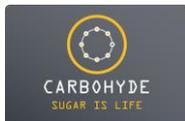
The challenging task of CarboHyde will be to synthesise amphiphilic cyclodextrins, which will be used to formulate nanoparticles, containing the RNA cargo. CarboHyde will synthesise a library of amphiphilic cyclodextrins, including ones with different excipients, like polyethylene glycol or lipids. Chemically different variations of these excipients will be studied to select the best performing ones. Nanoparticle formulations, with the best working amphiphilic cyclodextrins, will be tested to withstand the intestinal environment in different in vivo and in vitro models.

CarboHyde has hired a PhD student, Kristof Felegyi to help the project moving forward.



Funded by the
European Union

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Bringing together a multidisciplinary, European network

The expertise required to achieve this ambitious aim is as diverse as the nine partners from eight European countries that will collaborate in GENEGUT.

The project, coordinated by the School of Pharmacy of University College Cork, brings together the European Federation of Crohn's & Ulcerative Colitis Associations with renowned researchers, expert clinical scientists, SMEs and large pharma companies with expertise and patented technologies in global proteomics, nanotechnologies, cyclodextrin synthesis, multicellular models, drug delivery systems and production as well as innovation management, stakeholder involvement and science communication.

A library of novel biomaterials will be synthesised and used to formulate nanoparticles containing therapeutic RNA (siRNA and mRNA). A quality by design approach will be applied to the development of the nanoparticles for filling into capsules. The resulting nanoparticles will be assessed for safety and efficacy, including the mechanism of action, in a range of advanced *in vitro* and *in vivo* models of intestinal inflammation. The clinician, with expertise in diagnosing and treating CD patients, based in UCC will support and guide the overall project ensuring clinical relevance and providing advice on coherent plans for early clinical trials and regulatory submission thus enabling rapid availability for patients.

Follow the progress of GENEGUT at www.genegut.eu and on Twitter and LinkedIn @GENEGUT_EU to learn about the project's steps towards a better cure for Crohn's Disease.

Network

- **University College Cork, Ireland**
- Bangor University, United Kingdom
- Instituto de Investigação e Inovação em Saúde da Universidade do Porto, Portugal
- Uppsala Universitet, Sweden
- **CarboHyde Zrt, Hungary www.carbohyde.com**
- Janssen Pharmaceutica NV, Belgium
- Lonza Capsules & Health Ingredients – Capsugel France SAS
- European Federation of Crohn's and Ulcerative Colitis Associations, Belgium
- accelopment Schweiz AG, Switzerland

Facts and Figures

- **Funding Programme: HORIZON-HLTH-2021-TOOL**
- **Budget: 5.44 million euro**
- **Duration: 01.10.2022 – 30.09.2026**
- **Partners: 9**

ⁱ Mirabella Zhao, Lóránt Gönczi, Peter L Lakatos, Johan Burisch, The Burden of Inflammatory Bowel Disease in Europe in 2020, *Journal of Crohn's and Colitis*. 2021; <https://doi.org/10.1093/ecco-icc/ijab029>

