

Partners



Project details

Project number: 101178568

Project name: ADvAnced 4D biomAterialS for mucosa and sub-mUcosa treatment in patients affected by intestinal diSeases

Project acronym: DAEDALUS

Project starting date: 1 June 2025

Project duration: 48 months

EU Contrinution: 7 760 778.22 Euro

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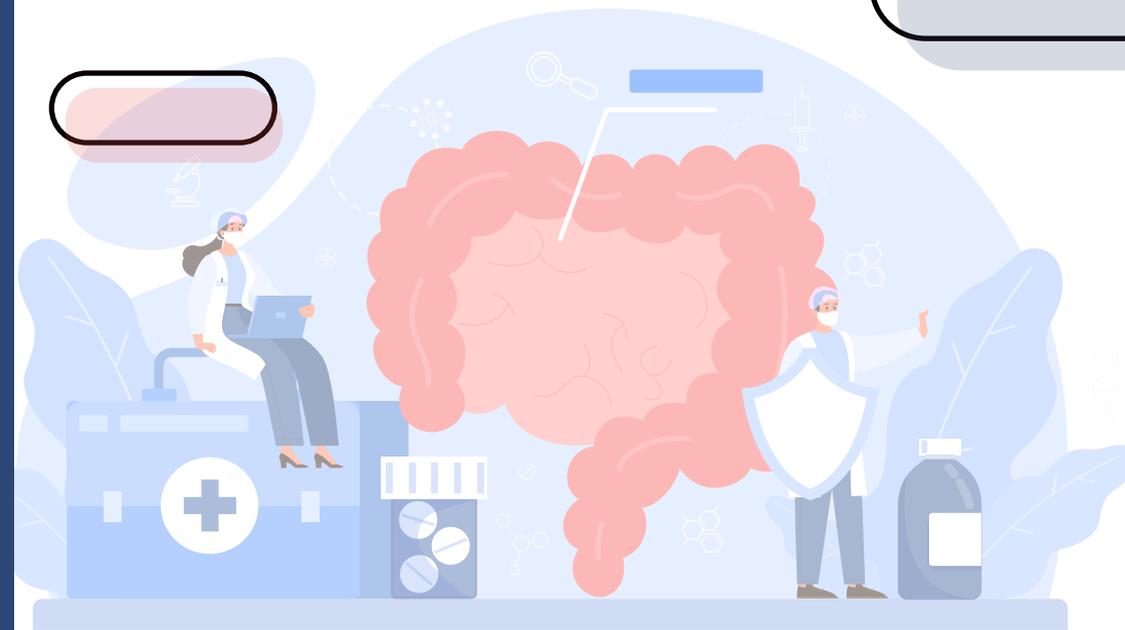
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ADVANCED 4D BIOMATERIALS FOR MUCOSA AND SUB-MUCOSA TREATMENT IN PATIENTS AFFECTED BY INTESTINAL DISEASES

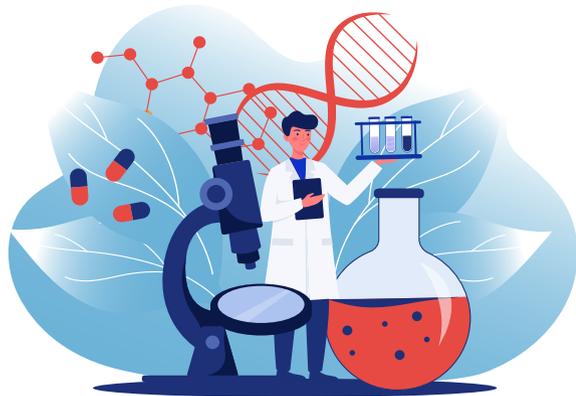
www.daedalusproject.eu



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DAEDALUS is redefining tissue regeneration using 4D biomaterials and smart endoscopic delivery systems



DAEDALUS introduces a breakthrough in the treatment of **colorectal diseases** by replacing invasive surgeries with a minimally invasive, in situ regenerative approach.

The project aims to develop **injectable 4D biomaterials** that reshape within the body, release bioactive molecules, and **restore damaged tissue** using a smart endoscopic toolhead.

This innovative method has

the potential to transform care for patients with ulcerative colitis, familial adenomatous polyposis, and other chronic intestinal diseases.

A newly designed multifunctional **endoscopic tool delivers** the biomaterials directly to the diseased area. Once injected, the biomaterials adapt to tissue geometry, release therapeutic agents like oxygen, glucose, and growth factors, and form a new, living tissue interface.

The approach enables tissue **repair without removing the entire colon**, reducing the need for colostomies, pouchitis risk, or permanent alterations in bowel function.

Pioneering minimally invasive solutions for colorectal diseases.

Impact and Mission

- » A less invasive clinical solution for chronic colorectal diseases;
- » A significant reduction in post-surgical complications;
- » A scalable platform for other mucosal and submucosal applications;
- » A patient-centred innovation path, driven by societal and medical needs.

The mission is clear: to offer a viable, personalised, and sustainable alternative to radical colorectal surgery, improving quality of life across Europe and beyond.

The project combines expertise in:



Materials science (biofabrication, nanoengineering)



Tissue regeneration and immunology



Medical engineering and endoscopy



Computational modelling and in silico design