# BE·LiGHT

Photonics is crucial for maintaining and increasing the competitiveness of EU industry, and light-based instruments are fundamental for non-invasive diagnostics and treatment of diseases. **Artificial intelligence** has demonstrated its capability to classify and identify patterns in data, achieving reliability levels that are comparable to those of experienced physicians.

BE-LIGHT brings together an interdisciplinary consortium of **7 top academic institutions**, **3 internationally recognized hospitals** and an ecosystem of **7 private companies** with complementary know-how in photonics, and artificial intelligence to come up with **major new advances in the current diagnostic and therapeutic techniques** in biomedicine.
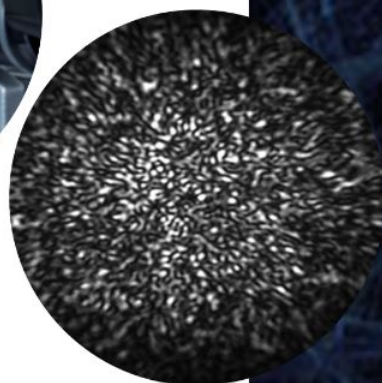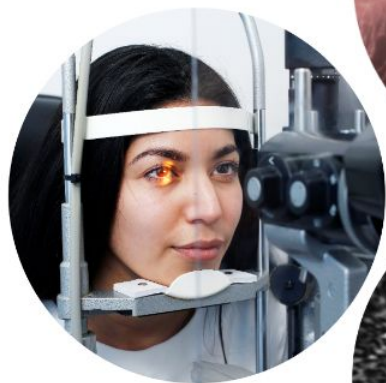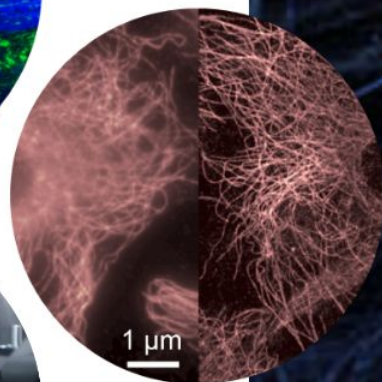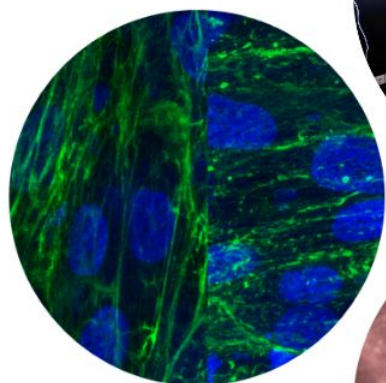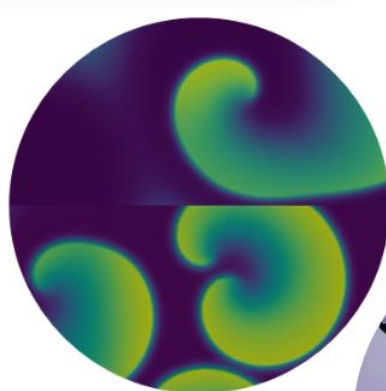
What are the goals?

To improve the current diagnostic and therapeutic techniques of the diseases that pose a major concern in our society.

- We will try to achieve an improvement in the visual capacity of certain conditions (within the topic *Eye diseases and vision*),
- We will try to reduce the rising incidence of cardiovascular diseases (within the topic *Cardiovascular diseases*).
- We will try to identify the presence of molecular components in different conditions like Alzheimer's disease (by improving super resolution microscopy techniques, within the topic *Advanced microscopy for the analysis of cells and tissues involved in the development of diseases*).

Who is involved?

Europe's leading experts in photonic techniques and machine learning algorithms from **7 top academic institutions** and **3 internationally recognized hospitals**:

- Max-Planck-Institut für Dynamik und Selbstorganisation (**MPI**)
- Universitat Zurich (**UZH**)
- Georg-August-Universitat Gottingen Stiftung Offentlichen Rechts (**UGOE**)
- Uniwersytet Mikolaja Kopernika w Toruniu (**NCU**)
- Gdansk University of Technology (**PG**)
- Sorbonne Université (**SU**)
- Universitat Politècnica de Catalunya (**UPC**)
- Instituto de Microcirugía Ocular (**IMO**)
- Universitaetsmedizin Goettingen - Georg-August-Universitaet Goettingen - Stiftung Oeffentlichen Rechts (**UMG**)
- Fundació Sant Joan de Déu (**FSJD**)

Training programme

BE-LIGHT will provide an innovative training programme to **11 researchers** in photonic technologies (**multispectral imaging, eye-tracking, optical coherence tomography, multispectral optoacoustic tomography, super-resolution microscopy** and **optogenetics**) that will be complemented with **artificial intelligence/machine learning**, computational imaging and modelling.

Researchers will get the **multidisciplinary skills** to have a successfull scientific carreer: a broad understanding of **state-of-the-art light-based technologies**, a solid knowledge of **machine learning** and experience on **clinical and commercialization processes**.

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