

Chairman's statement

Now, more than ever, is a time to reach out and establish new, and strengthen existing contacts. Within the Ghent oncology ecosystem, I noticed many fruitful examples. A first one is a path of durable collaboration between the Cancer center of UZ Gent and CRIG. Both complementary partners will further nurture interactions between clinicians, scientists and diverse stakeholders with the aim to bridge individual islands into an archipelago of excellence in oncological research and care. We are absolutely grateful for the support we received from UZ Gent in this context and I look forward in the years ahead to admire the new initiatives sprouting from this partnership. A second example is the drafting of guidelines to help scientists and clinicians to prepare patient-centered project proposals, an initiative crystallized thanks to teamwork between the patient advisory board for scientific research (PAWO) within HIRUZ and CRIG.

Unfortunately, in 2021 we had to say goodbye to Dr. Bernard Majoie (1939-2021), the founder of the Fournier-Majoie foundation who played a crucial role in the fledgling days of CRIG. Together with his son and current chairman of the foundation, Mr. Jérôme Majoie, we will keep his legacy alive and continue our mission to offer cancer patients the best treatments through research and collaboration.

Despite the corona measures, we continued to organize online events such as OncoDot symposia, specialist courses for doctoral students and a public conference on cancer. In early autumn, we organized a fruitful in-person industrial partnering event and observed a boost of valorization projects in oncology. A few weeks before Christmas, we organized a successful fundraising walkathon in the immediate surroundings of the museum of the contemporary yet timeless painter Roger Raveel. Except for a birthday cake, our plans to celebrate CRIG's 5th birthday have been postponed to 2022.

Together with the steering committee, the co-chairs of clinical and fundamental research Prof. Lieve Brochez and Prof. Geert Berx, and the operational team, I value the persistence of our researchers and the support we receive from an increasing number of philantropists who contribute time, expertise, or money to beat cancer. I cannot wait to raise a glass to CRIG's 5th birthday with all of you!

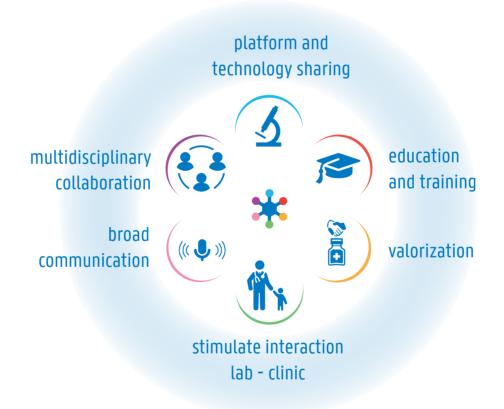


Prof. Olivier De Wever on behalf of the steering committee

CRIG in a nutshell

The Cancer Research Institute Ghent stimulates and accelerates cancer research in Ghent, and comprises over 500 researchers from more than 80 research groups at Ghent University, Ghent University Hospital and VIB-UGent.

CRIG also joins forces with other research institutes, foundations & industrial partners, and reaches out to society. CRIG's mission is to stimulate fundamental, translational and clinical cancer research across expertise domains, towards more effective treatments and better survival of cancer patients.









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Towards a strong oncology hub in Ghent

As complementary partners focusing on cancer research and care, respectively, CRIG and the Ghent University Hospital Cancer center jointly stimulate collaboration between interdisciplinary partners including scientists, clinicians and health care workers to illuminate Ghent as an expertise hub for oncology. A short interview with the chairman of CRIG, Prof. Dr. Olivier De Wever, and medical coordinator of the Cancer center, Prof. Dr. Gwen Sys.

What are our strenghts in Ghent concerning oncology?

- •**Prof. De Wever**: Within UGent, UZ Gent and VIB, there is extensive expertise in fundamental as well as translational and clinical cancer research. For example, we have several unique cancer models, which can be applied in immuno-oncology and precision oncology, two other focus domains in Ghent.
- •Prof. Sys: Our Cancer center offers warm and innovative care to cancer patients, using a multi-disciplinary approach. We are also an expertise center for rare cancers and specialized treatments. Thanks to the expertise in clinical trials within several teams and departments such as HIRUZ and the D.R.U.G. unit, we can offer and test the newest therapies.
 •Prof. De Wever: We see this diversity in expertise as a major advantage in Ghent, since it enables us to translate breakthroughs in research into life-saving new treatments and care for our patients. Therefore, our mission is to support and maximize interdisciplinary collaboration.

How can we catalyze collaboration between the lab and the clinic?

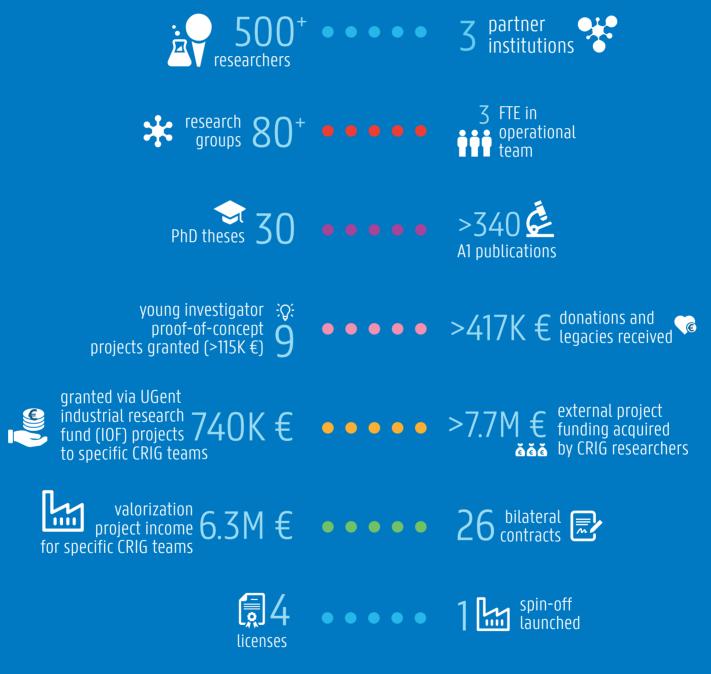
- •**Prof. De Wever**: In 2022, we will launch an inspiring new call for partnership grants, in which fundamental and clinical researchers will team up to start innovative cancer research projects. As such, we aim to create a lever effect for durable and fruitful collaborations between the lab and the clinic.
- •**Prof. Sys**: We envision to set up strategic platforms to support joint research by scientists and health care professionals, such as a prospective collection of liquid biopsies and tumor tissue, that we want to establish together with the HIRUZ biobank, and an extensive patient data registry.

How can the partnership between CRIG and the Cancer center further boost oncology in Ghent and beyond?

- •Prof. Sys: Jointly, we facilitate collaboration within the hospital, as well as between researchers and care professionals from all oncology-related disciplines. Furthermore, we aim to increase visibility and strengthen collaborations with stakeholders such as international institutions, companies and patient organizations.
- •**Prof. De Wever**: Indeed, and by creating a forum on each other's events, we can amplify our message that cancer research and care are connected, and cross-fertilize each other to the benefit of all parties and the patients.
- •**Prof. Sys**: Together, we also plan to initiate educational programs and fund raising events that will allow us to invest in new research projects and platforms.
- •**Prof. De Wever**: Importantly, we are also extremely grateful for the support from UGent, UZ Gent and VIB and their firm belief in our approach to collaborate across the borders of our institutions. This support is crucial to build a strong and sustainable oncology network in Ghent that will benefit cancer patients and society.



CRIG 2021 in numbers



CRIG unites 80+ research groups, 500+ researchers (>7% growth in 2021) from 3 partner institutions (UGent, UZ Gent and VIB-UGent) — 3 full-time equivalents in operational committee — 30 PhD theses defended by CRIG doctoral fellows — >340 A1 publications (co-)authored by CRIG group leaders — 9 young investigator proof-of-concept projects granted by CRIG for a total of >115 K EUR — >417 K EUR donations, fundraisers and legacies received (excluded: 1 fundraiser and 1 legacy that were earmarked by the benefactors for specific research teams) — 17 cancer research projects (personal mandates excluded) — for >7.7 M EUR in total — have been granted to CRIG researchers by 'Kom op tegen Kanker' (9 biomedical research projects, >4.2 M EUR) and Fund for Scientific Research (FWO Vlaanderen: 2 'junior', 5 'senior' and 1 'Kom op tegen Kanker' research projects, ca. 3.5 M EUR) — 6.3 M EUR of valorization project income obtained by specific CRIG teams; 740 K EUR granted by UGent Flemish industrial research fund (10F) to specific CRIG teams for projects aiming to bring new technologies/products further to market; 4 licenses and 26 bilateral contracts with companies realized within UGent, 1 spin-off launched and 7 spin-off projects in the pipeline — >7000 mentions in Altmetrics of CRIG publications in social and other media (of which the majority on Twitter)

Achievements in 2021

Supporting innovative research projects by young investigators

CRIG stimulates and supports innovative cancer research in Ghent by awarding 'young investigator proof-of-concept' (YIPOC) projects to postdoctoral fellows. In 2021, CRIG awarded 9 projects, for more than 115 000 EUR in total. With this funding, the selected researchers are able to generate proof-of-concept results to test their innovative ideas, and to increase the success rate of future external grant applications.



Dr. C.J. Anderson

Identification of death-dependent secreted metabolites from tumor and healthy epithelial cells



Dr. Francisco Avila Cobos

Development and validation of a computational deconvolution workflow for characterization of the immune cell repertoire from peripheral blood mononuclear cells of cancer patients treated with immunotherapy



Dr. Renate De Smedt

Targeting IL4 signaling as a novel therapeutic strategy in the treatment of T-cell acute lymphoblastic leukemia



Dr. Celine Everaert

Changes in chromatin states of the systemic immune cell populations in ICI treated lung cancer patients



Dr. Srinath Govindarajan

Identification and characterization of endogenous NKT ligands induced by endoplasmic reticulum stress in cancer immunotherapy



Dr. Jonathan Maelfait

Does ADAR1 inhibition trigger ZBP1-mediated cancer cell death?



Dr. Gaëlle Vanbutsele

Development of a holistic and integrated evidenced-based psychosocial care program for related stem cell donation



Dr. Sophie Van Welden

Prolyl hydroxylase 1, the missing target enabling immunotherapy in microsatellite stable colorectal cancer?



Dr. Charlotte Verroken
Use of 18F-PSMA PET

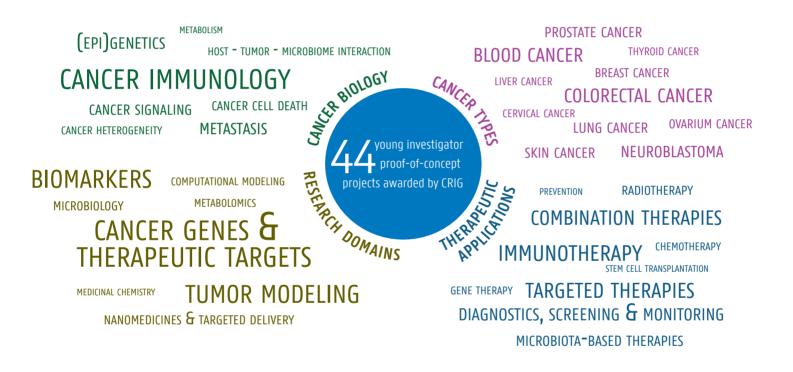
for detection of iodine refractory
thyroid carcinomas

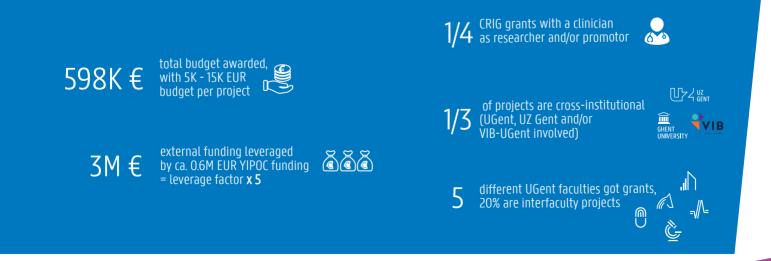


As we believe it is important and transparant to show what type of research we are able to fund thanks to donations and actions for CRIG, we also made short educational movies with the 2021 CRIG grant laureates. More information about this initiative can be found on page 13.

Five years of CRIG proof-of-concept grants

For the period 2017-2021, 44 proof-of-concept projects in total were awarded and funded by CRIG - partly with co-financing by vzw Kinderkankerfonds via a strategic partnership. Analysis of the results from completed projects clearly demonstrates a lever effect and strong output, including new mandates (at least 7; including FWO fellowships, Stichting tegen Kanker postdoc mandates, ERC starting grant, ...), research projects (>10, including grants from FWO, Kom op tegen Kanker, Stichting tegen Kanker, ...), and several (high impact) publications (>15, including papers in Nature Cancer, Nature Immunology, Blood Cancer Discovery, ...) in which data from the CRIG proof-of-concept grants were included. Furthermore, several grants also resulted in new collaborations (within CRIG and abroad) and valorization projects. An overview of the scope of the projects and some other relevant figures are depicted below.





Organizing symposia and providing education for researchers

Through the organization of various symposia and events, CRIG provides opportunities for cancer researchers to present their latest discoveries, to meet fellow researchers and to start collaborations to accelerate research. Also in 2021, the corona pandemic severely impacted our ability to organize educational and research events. However, we succeeded to organize diverse initiatives – both physically and online - to ensure continued education, collaboration and communication within CRIG.

27.01.2021 & 28.04.2021 - OncoPoint goes digital - OncoDot 2 & 3

CRIG's OncoPoint is a yearly forum for cross-fertilization of cancer research at UGent, UZ Gent and VIB-UGent, in which fundamental, translational and clinical cancer researchers present their work, meet each other, discuss and start new collaborations. Since physical OncoPoint meetings were not possible in 2020 and 2021, CRIG launched OncoDot - a series of 3 short, online symposia – as a corona proof alternative. In January and April 2021, two events successfully took place with live streaming of selected abstract presentations from a professional studio and opportunities to interact with almost 100 online attendants per event.

Spring 2021 - Doctoral Schools specialist course on cancer - 4th edition

CRIG's Doctoral Schools specialist course on cancer is targeted to Ghent University doctoral fellows with different educational backgrounds who are active in distinct cancer research disciplines. The educational course, lectured by CRIG experts, covers a broad variety of fundamental, translational and clinical cancer research insights, technologies and applications. The 2021 course was organized in an online format, and was attended by >50 doctoral fellows. As the course is very well-received by the attendants, the fifth edition is organized in the first half of 2022.









22.10.2021 - CRIG's industrial partnering event - 3th edition

CRIG successfully hosted its 3rd industrial partnering event in Ghent, organized in a hybrid format. Similar to previous editions in 2017 and 2019, the partnering event aimed at bringing together innovators from academia and industry, with focus on networking and stimulating fruitful collaborations. Over 65 delegates from the life science industry and 87 CRIG researchers discovered the latest innovative projects, licenses and spin-off trajectories in the oncology field. The successful event featured 3 plenary keynote speakers from industry and 8 pitching sessions, as well as networking and speed dating sessions. Visit our website to see the aftermovie and photos of the event.

26.11.2021 - Connecting Expertise 'Organoids and Organ-on-a-chip'

This thematic network event focused on the expertise on organoid and organ-on-a-chip technologies available at UGent, UZ Gent and VIB-UGent. Since these topics are relevant and booming within several research domains, CRIG partnered with the GATE and CrossHealth platforms in Ghent for the organization of the event. About 40 interested researchers joined this interactive meeting with diverse pitches from various speakers.

Next to organizing symposia and education ourselves, CRIG further stimulates participation of our members and network partners in events that are organized by individual CRIG research groups or partner organizations. Also in 2021, CRIG promoted several symposia, workshops and seminars (many of which in an online format). Finally, the program 'Major in Cancer' within the Master of Sciences in Biomedical Sciences at Ghent University is lectured by various CRIG group leaders and coordinated by CRIG chairman Prof. Olivier De Wever.







Valorizing and partnering with industry

Bringing innovation faster to the cancer patients is the goal of the CRIG business unit, which supports the CRIG investigators in translating their research findings into valorization. Thanks to the support of the Flemish Industrial Research Fund (IOF), platform collaborator Dr. Cristina Pintucci is fully dedicated to support CRIG valorization projects, together with the business developers of the CRIG Business Unit.

Undeterred by the COVID-19 pandemic, 2021 marked a positive outcome for diverse CRIG teams, with over 6.3 million EUR granted for valorization initiatives in oncology. This figure includes 2 million EUR funding by the Flemish Strategic Basic Research program (FWO-SBO) on an innovative therapy to fight leukemia, coordinated by CRIG group leader Prof. Steven Goossens and in collaboration with teams from UZ Gent (Prof. Tessa Kerre), VIB-UGent (Prof. Savvas Savvides), UGent (Prof. Serge Van Calenbergh) and KU-Leuven (Dr. Matthias Versele). The CRIG Business Unit supported the scientific team with framing the project's innovation goals into the current biotech ecosystem, and will act as partner to ensure the uptake of the results by the pharma/biotech market. A remarkable milestone has been the budget approval by UZ Gent for the expansion of its GMP facility for the accreditation of lentiviral vector production (expected in 2022), which will boost gene therapy applications such as CAR-T at U(Z)Gent. This is a collaboration between CRIG group leader Prof. Bart Vandekerckhove and Prof. Linos Vandekerckhove, together with the support of HIRUZ and the IOF platform GATE. Moreover, the CRIG business unit has facilitated the establishment of the radio-oncology chair financed by the European Society Radiation Oncology (ESTRO) and headed by CRIG group leader Prof. Yolande Lievens.

The UGent/CRIG spin-off Trince (based on research from the teams of Prof. Kevin Braeckmans and Prof. Stefaan De Smedt) raised 4 million EUR seed capital and was successfully launched in November 2021. The company develops a novel platform for transfection of cells for research and clinical applications to produce cell therapy faster, safer and cheaper. CRIG business developer Dr. Daisy Flamez has actively supported the team in developing the business case, from incubation phase to incorporation. Next to this, CRIG currently has 7 spin-off projects in its pipeline.

About 740 K EUR funding from the UGent-IOF was obtained to bring CRIG projects further to the market, allowing:

- The phase 2 of the spin-off track SparXells for development of a next-generation cellular immunotherapy for lung cancer (Prof. Karim Vermaelen)
- To obtain in vivo proof-of-concept data on cell environment-modulating compounds for the treatment of cancer and fibrosis (Prof. Christian Stevens)
- The development of an innovative class of ionizable lipids for use in lipid nanoparticle-based therapeutics and vaccines (Prof. Bruno De Geest), in collaboration with the platform GATE
- The investigation of the UGent proprietary BioGelator technology for local cancer immunotherapy (Prof. Annemieke Madder, Prof. Niek Sanders, Prof. Richard Hoogenboom, Prof. Karim Vermaelen).

Janssen chooses Ghent to build its first European production site for CAR-T cell therapy

In collaboration with Legend Biotech, Janssen has announced that the new state-of-the-art facility will focus on the production and supply of CAR-T therapy for cancer treatment. This milestone further strengthens the ongoing partnership between UGent, UZ Gent and Janssen, and paves the way for strong collaborations in the field of immuno-oncology in the Ghent region. Oncology (and CRIG) was recognized as one of the focus domains of the U(Z)Gent-Janssen partnership charter signed in 2018, and the opening of the new CAR-T facility is expected to boost the landscape in immuno-oncology research and treatments in Ghent and beyond.

Moreover, the Flanders Innovation & Entrepreneurship (VLAIO) has granted 2 innovation mandates to CRIG members, focusing on mRNA-based immunotherapy products for cancer indications (Dr. Sandra Van Lint), and lipid chemistry for improvement of mRNA vaccines (Dr. Sabah Kasmi). In collaboration with the GATE platform, a VLAIO innovation mandate has been granted on gel grafting for medical applications including, amongst others, reconstruction after breast cancer surgery (Dr. Lise De Moor).

In the course of 2021, CRIG researchers entered into 26 bilateral collaborations with industrial partners, and engaged in 4 exclusive licenses. The IP portfolio expanded with 4 patent applications in PRIO phase and 4 in PCT stage, and 4 new Invention Disclosure Forms (IDFs) have been submitted for the evaluation of freedom-to-operate and exploring new IP potential.

CRIG research(ers) in the spotlight • • •

Numerous scientific studies on fundamental, translational and clinical cancer research are yearly published by CRIG research teams in peer-reviewed international - and often top ranked - journals. For example, more than 340 A1 articles in the field of oncology were (co-)authored in 2021 by CRIG group leaders (detailed overview on our website).

Also 2021 was a very successful year in terms of research funding that was obtained by CRIG teams, including > 7.7 M EUR granted by 'FWO Vlaanderen' & 'Kom op tegen Kanker' for over 17 cancer research projects. Moreover, many CRIG researchers obtained personal mandates to pursue novel research projects. Amongst others, 5 PhD fellowships and 6 postdoctoral fellowships were awarded by 'FWO Vlaanderen' to CRIG researchers. Two researchers received a postdoctoral mandate fundamental research by 'Stichting tegen Kanker'.

Several CRIG researchers also received personal prices, such as Prof. An Hendrix who received a prestigious award by the International Society for Extracellular Vesicles (ISEV), acknowledging her pioneering contributions to this young research field. Finally, we want to congratulate all CRIG researchers for their valuable contributions to cancer research in 2021, and their continuous efforts in the battle against cancer.

Outreach to the patients and the general public

CRIG engages in providing relevant communication to the broad public and patients about cancer and the latest breakthroughs in cancer research (in Ghent and beyond). In 2021, CRIG took initiatives to do so via a conference and short educational movies. Furthermore, in close collaboration with HIRUZ, CRIG helped in providing guidelines to its researchers to prepare patient-centered research projects. Next to these initiatives, several CRIG researchers also actively engaged in science communication at different events and in the media. In September 2022, we plan our own 'CRIG festival', to celebrate CRIG's 5th anniversary, and to put our research in the spotlight. See you there?

27.11.2021 - online Kankercongres 'Kanker, van onderzoek tot hoop'

Our yearly conference on cancer is a unique concept since it is accessible for everyone. We bring together researchers, doctors & caregivers, students, patients & their relatives, and delegates from foundations, companies & patient organizations. The online 2021 edition attracted about 500 registrants, and was organized by CRIG & Kankercentrum UZ Gent, the foundations 'Beautiful After Breast Cancer' and 'Stop Darmkanker', and the 'Center for Oncological Research' (UAntwerpen).

Experts presented the latest (technological) innovations in cancer research and treatment, and interacted with the participants during meet-the-expert sessions on breast cancer, colon cancer, cancer research and clinical studies, and innovations in patient care. In the final panel debate, ethical aspects concerning innovations in cancer research and treatment were discussed. Contact us if you want to see the full recordings of the event!

Providing guidelines for patient-centered research projects

More and more funding agencies require the submission of two versions of a research project proposal: the classical scientific proposal, and one for evaluation by a patient board. Rightfully so, research proposals have to address the specific needs of patients, and patients are increasingly involved in the evaluation of such proposals. In this context, CRIG joined forces with the patient advisory board for scientific research (PAWO) that was recently founded by the Health, Innovation & Research institute at UZ Gent (HIRUZ). Together, we drafted guidelines to help our researchers prepare patient-centered, competitive and qualitative project proposals for scientific research.









CRIG laureates present their research projects in short educational movies

As described earlier (p6), CRIG awards 'proof-of-concept' projects to support innovative cancer research by young CRIG researchers. Since these projects are financed for a large part by donations and actions for CRIG, we find it important to be transparent and to show where the funding is going. Therefore, we make short educational movies about the research projects of the CRIG laureates. In 2021, we compiled several movies (in Dutch) that are targeted to a broad audience and can be found via our 'CRIG@the movies' page on our website.











CRIG fundraising

As a network of cancer researchers, we have a good understanding of the gaps in research funding, and try to address those with CRIG grants. As such, we support young postdoctoral researchers to start promising new projects (read more on pages 6-7), and we will try to bridge the gap between the lab and the clinic with a new type of 'partnership' grants, which will be launched in 2022. It goes without saying that those initiatives are impossible without funds.

We are extremely grateful for all donations we received in 2021, and all beautiful actions that were organized, like **Schermen voor Liesbet** (benefit weekend with fencing as central sport/theme) and **SportYves tegen Kanker** (sporty fundraising challenge). We also tried to do our bit ourselves, and organized a **SinterCRIG** sale of sweets and **CRIG walk 2021**, a walking day for young and old, organized together with our walking friends from Deinze. Thanks again to everyone who contributed in any way, because it is only by the combination of all actions, donations and volunteering that we can make a difference.

Do you want to make a difference in 2022? Subscribe to our newsletter or follow us on social media to stay up to date about our research and actions, or take a look on the donate page on our website.









CRIG management

CRIG management consists of 3 committees in close contact with each other, to translate CRIG's mission into concrete action points.

CRIG STEERING COMMITTEE

UGent • medicine & health sciences Prof. Olivier De Wever (chairman)

Prof. Wim Ceelen Prof. Katleen De Preter

UGent • sciences Prof. Geert Berx (vice-chair fundamental research)

UGent • pharmaceutical sciences Prof. Katrien Remaut
UGent • veterinary medicine Prof. Evelyne Meyer

UZ Gent delegate Prof. Lieve Brochez (vice-chair clinical research)

VIB delegate Prof. Peter Vandenabeele

CRIG OPERATIONAL COMMITTEE

Coordinator Dr. Pieter Rondou

Project and communication manager Dr. Eva De Smedt

Administrative assistant An Rose

CRIG BUSINESS UNIT

UGent Dr. Cristina Pintucci (dedicated project manager & POC for the business unit)

Dr. Daisy Flamez (IOF consortium Biomarked)

Dr. An Van Den Bulcke (IOF consortium ChemTech Life Sciences)

Dr. Dominic De Groote (IOF consortium DISCOVERE)

+ the business developers of the IOF consortia MedTeg,

Protein Technologies, E-poly & ACT-T

The CRIG business unit is further supported by the business and innovation center of VIB-UGent (dr. Griet Verhaegen), HIRUZ (Health, innovation and research institute - prof. Catherine Van Der Straeten, dr. Lieve Nuytinck) and HoWest (dr. Paco Hulpiau) for collaborations with VIB-UGent, UZ Gent and HoWest, respectively.



The **steering committee**, consisting of 8 elected CRIG group leaders is responsible for the strategic and financial plan, and monitors all CRIG related initiatives.



The **CRIG business unit** supports CRIG researchers and their partners in setting up and managing collaborative innovation projects in oncology, and assists in intellectual property rights management, business development, R&D partnering, licensing & venturing and strategic research funding.



Under the direct supervision of the CRIG steering committee and its chairman, the **operational committee** is responsible for the daily management and the implementation of the strategic plan, such as the coordination and organization of CRIG events, follow up of cancer research activities and initiation of new projects within CRIG, as well as collaboration and communication with different stakeholders.

Financials

INCOME

donations, legacies & actions (1)	417 937 EUR
vzw Kinderkankerfonds	75 000 EUR
(to support young investigator proof-of-concept projects)	
UGent funding for CRIG's International Thematic Network ⁽²⁾	60 000 EUR
company sponsoring for CRIG industrial partnering event	16 880 EUR
registration fees CRIG industrial partnering event	8964 EUR
UGent Doctoral Schools and lecturing fees	4198 EUR

EXPENSES

young investigator proof-of-concept grants	115 689 EUR
personnel	230 443 EUR
organization of meetings, symposia, events,	
education, mobility grants ⁽³⁾	23 605 EUR
website, IT, hardware, office, promo	14 650 EUR

(1) All income from donations and fundraiser actions are integrally used for cancer research, including the support of the young investigator proof-of-concept research projects. Excluded in the numbers are 1 fundraiser and 1 legacy that were earmarked by the benefactors for specific research teams; (2) funding by Ghent University to support 'PrIOMiC', CRIG's International Thematic Network on cancer (60 K EUR/year during 2019-2023; funding is used for CRIG personnel, organizing symposia, mobility & mobility grants, ...); (3) indicated expenses do not include co-financing by individual CRIG teams or partners for specific events or mobility.



