


EU-LIFE charter of independent life science research institutes

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The diverse range of organizations contributing to the global research ecosystem is believed to enhance the overall quality and resilience of its output. Mid-sized autonomous research institutes, distinct from universities, play a crucial role in this landscape. They often lead the way in new research fields and experimental methods, including those in social and organizational domains, which are vital for driving innovation. The EU-LIFE alliance was established with the goal of fostering excellence by developing and disseminating best practices among European biomedical research institutes. As directors of the 15 EU-LIFE institutes, we have spent a decade comparing and refining our processes. Now, we are eager to share the insights we've gained. To this end, we have crafted this Charter, outlining 10 principles we deem essential for research institutes to flourish and achieve ground-breaking discoveries. These principles, detailed in the Charter, encompass excellence, independence, training, internationality and inclusivity, mission focus, technological advancement, administrative innovation, cooperation, societal impact, and public engagement. Our aim is to inspire the establishment of new institutes that adhere to these principles and to raise awareness about their significance. We are convinced that they should be viewed a crucial component of any national and international innovation strategies.

Independent research institutes (IRIs) play a particular role within the modern research ecosystem. They typically exert an exploratory mission that covers both new research areas as well as innovative organizational features. In this, they are complementary to the universities, that perform the heavy lifting in research and innovation and represent historically important places of scientific research in many areas in addition to their fundamental tasks of education and training. Research performed in independent, non-commercial institutes with a high degree of autonomy in governance also complements activities in hospitals, companies, learned societies, patient organization, and other kinds of institutions that carry out research. Some IRIs, such as Bell Laboratories, the Institute for Advanced Studies in Princeton, the Laboratory of Molecular Biology in Cambridge, the Marine Biological Laboratories in Woods Hole and the Basel Institute for Immunology, have left a large and recognizable mark on human culture by pioneering work in specific areas. Yet, despite their importance in the innovation cycle and landscape, research institutes are still not recognized as essential entities by many governing bodies, and are seldom founded for specific strategic reasons. Unlike universities, companies, academies, and other institutions, there is little lobbying activity for IRIs, except for specific examples, such as EU-LIFE.

EU-LIFE is an association of 15 research institutes devoted to establishing best practice across a variety of parameters and functions, which has recently celebrated 10 years of existence. For 10 years, the scientific and administrative leadership has compared the framework and performance indicators of all institutes, across nations, budgets, and individual settings. The hands-on experience acquired is very valuable and needs to be shared (<https://eu-life.eu/newsroom/publications>). The general properties of institutes have been reviewed recently with eloquence [1]. Based on the collective experience of the leaders of 15 European institutes for 10 years, we distilled what we consider the 10 essential principles of Independent Research Institutes and formulated a charter. Not all of these principles apply, at least not yet, to each of our institutes. As signatories of this Charter, we aspire to implement these principles in our own organizations, and we hope they could also inspire other research-performing organizations and their funders/-governing bodies to reflect on their own structure and identify areas for further development. Moreover, we hope that the Charter may inspire the structure, governance, and philosophy of more research institutes in the future, given their role in the knowledge creation ecosystem.

The 10 essential principles of modern IRIs

These are the 10 essential principles (Fig. 1) of modern IRIs in the European Life Science space.

Excellence

Excellence is the first operating principle of IRIs and their main reason for being. Without excellence, several other features become futile. Excellence refers to the high-quality, impactful, and innovative work that advances the frontiers of knowledge in a particular field. Excellence is also a vocation and goes beyond research to all aspects that include the researchers and all staff at a research institution, their interaction among themselves, as well as with society and the planet. Therefore, excellence is also about high-quality standards in how we perform and govern research activity. Excellence is not an absolute status to achieve, but a commitment to an ongoing ambition to strive for a moving target. We argue that excellence is also defined by the efforts undertaken to achieve it. The prioritization of excellence on all possible matters is a huge, daily, challenge. It requires everyone to be critical of their own work, welcome constructive feedback and give constructive feedback to others. It also requires a funding framework in Europe that recognizes and rewards excellence [2,3]. IRIs have international scientific advisory boards recruited among leading scientists in the world-wide community to accompany research efforts and provide feedback on the originality of the strategy and its implementation. As the quest for excellence is continuous, it is essential for IRIs to create and maintain a network of peer institutes from which to learn best practice and to allow fair benchmarking. For an IRI, benchmarking is fundamental to warrant the regular evaluation of performance, as well as for the identification and anticipation of trends. In addition, monitoring and benchmarking must themselves be in constant evolution, and evidence-based testing is required to ensure that institutes continue to strive toward the moving target of excellence.

Independence

Independent research institutes need to take operational decisions that are as free of external interference as possible and as fast as necessary. Decisions need to be focused on the achievement of excellence within the limits that exist. An indispensable element of independence is that the scientific directors of IRIs are

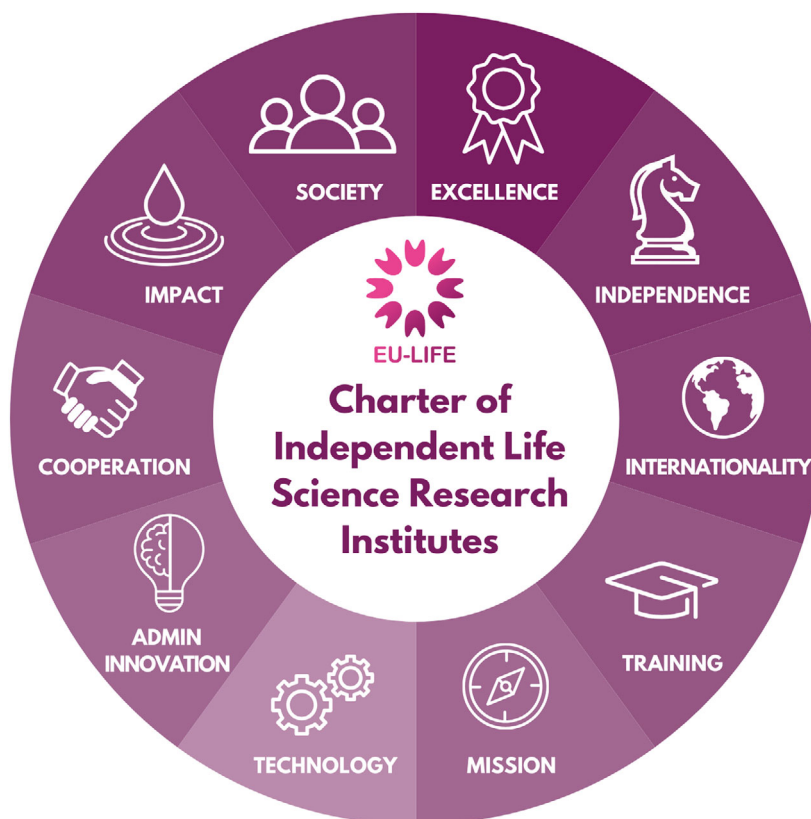


Fig. 1. The 10 principles of the EU-LIFE charter of independent life science research institutes. They encompass excellence, independence, training, internationality and inclusivity, mission focus, technological advancement, administrative innovation, cooperation, societal impact, and public engagement. Figure by the EU-LIFE Office.

appointed through an international search and open advertisement and that members of the institute's scientific advisory board are part of the key committee and watch over quality. The appointment of any administrative leadership function should require approval by the scientific director, as close cooperation of research and administration is key to the ethos of institutes. Safeguarding the excellence and independence of the IRI leadership stands at the origin of most other features. While the directors may also have an affiliation with a university, as that is often an important requisite of academic life (including teaching and training), the director should be mostly independent and receive most of their salary through the organization or foundation that supports the institute and its independence.

Training

A fundamental task of IRIs is training of individuals in a very intensive and inclusive way within a highly dynamic, internationally oriented, and competitive research environment. This is true for directors, group leaders, postdoctoral researchers, PhD students, and technical and research management/administration

personnel. The periods and conditions of engagement in IRIs are less tuned to tenured, long-term activities with a heavy teaching load and are more tuned to a very intensive research period of extraordinary performance, as well as exploring the connection with other stakeholders, such as companies or the public. Thus, the IRIs represent test and playgrounds for young/early career individuals to succeed (or not), to explore avenues, and then potentially move on to university, to industry or to governmental and non-governmental organizations. No matter where they go, they are likely to take with them a special ethos of performing high-quality, impactful, and innovative work. Essential to IRIs are international PhD and postdoc programs, which are almost invariably in mutually beneficial agreements with universities that entrust IRIs with students enrolled in their programs. New group leaders are recruited internationally after international advertising and appointment of a hiring recruiting board that includes individuals external to the organization. Evaluation of researchers and all staff is also a focus of development within IRIs to ensure that diverse talents and achievements are recognized, and the right empowering atmosphere is promoted. IRIs prudently offer tenure possibilities that are reviewed on a rolling

basis and typically establish longer term career models for most PIs in partnership with universities.

Internationality and inclusivity

Independent research institutes can and should afford to be small islands of true internationality, with as little discrimination by citizenship as possible, use of English as “lingua franca”, and the opportunity for individuals from the host country to experience being “abroad” within their own national boundaries. This is the only way to warrant access to the diversity of talents required for an institution with a vocation for excellence to succeed. True internationalization and inclusivity also require supporting structures such as international offices and dedicated HR personnel. IRIs can be a first step for international scientists to adapt to one country, before moving into the university system later on. IRIs thus serve as international attractors and testers of talents for the wider national academic system. IRIs should also actively invite, engage, and support individuals with different backgrounds, orientations, and physical capabilities. An inclusive, diverse scientific community is a fertile breeding ground for novel ideas, knowledge, and innovations. A legal framework supportive of foreign scientists and a welcoming culture in the host countries are extremely important. At IRIs, students, postdocs, and technical personnel value the ability to find easy, informal access to all senior scientists, with whom they are typically on a first name basis. In the competition for ideas and the training of critical thinking, everybody is considered equal and valued. The free flow of ideas in a psychologically safe environment is key for fostering training, excellence, and inclusivity.

Mission

Independent research institutes are typically founded with a specific mission, to explore a new area of research, to fill a gap between disciplines, and/or to spearhead a larger initiative. Therefore, the research theme or focus covers a particular set of technologies, or a certain scientific space. Given the moderate size of IRIs, the cohesion that comes from the mission is absolutely essential. A mission also implies that the lifetime of an IRI may be finite when the mission is fully accomplished. IRIs can thus be regarded as scouts, making laps of reconnaissance and discovering new territories. Only if the scouts report promising perspectives is it worthwhile for the broader academic apparatus to cautiously move into

the territory. Alternatively, institutes may evolve to assume other denominations, affiliations, and/or purposes, or cease to exist. IRIs, with their specific missions and concerted pioneering efforts made by their international staff, are like living organisms. Their creation and termination should be done with care and responsibility. As recently suggested, founding bodies of IRIs should commit to transparent reviewing processes and fair funding cycles at the onset [4]. Decisions on termination of financial commitment to an institute or its definitive end can occur, but should require a process that involves the scientific advisory board and evaluation of alternative scenarios with the major stakeholders. The surprising and abrupt closure of the Basel Institute of Immunology in the year 2000, arguably the best and most successful immunology-focused research institute of the world, caused a long-lasting injury to the biomedicine field and trust in the general stability of IRIs. Expected goals and lifecycle, with financial, cultural, and ecological sustainability plans, should be addressed at the time of foundation. Increasingly, sustainability in all its aspects will become a central principle of planning. When the specific role of the institute is recognized and integrated within the research ecosystem, IRIs can innovate for centuries, like Institute Curie, founded in 1920 and the Netherlands Cancer Institute, founded in 1913.

Technology

Sydney Brenner proposed that “Progress in science depends on new techniques, new discoveries, and new ideas, probably in that order” [5]. Indeed, an unalienable thread in the DNA of IRIs concerns the focus on technology. Scientific discoveries are empowered by the appropriate enabling tools. One only “sees” as much as the resolution of one’s instrument. Being and staying at the forefront of research requires relentless striving toward the development of new technologies, approaches, tools, reagents, and instruments. At the same time, IRIs share the technologies among all institution members, even when the technology is still at an early phase. Easy and equal access to facilities and technology platforms are essential for IRIs, making technologies more accessible, sustainable, and affordable. Because of their governing model, IRIs are very quick to identify breakthrough technologies born within their walls or elsewhere and put it at the use of researchers. Pioneering technologies and offering them to the wider scientific communities, starting from the local universities, is an important part of IRIs’ mission.

Administrative innovation

Key to the ability to safeguard all these principles, thereby ensuring researchers can focus on research, is a nimble administration within IRIs. However, within IRIs, administration is not only conceived as a service to the research endeavors of the institute, but becomes part of the research *Instrumentarium*, contributing to research innovation in a decisive way. In fact, IRIs are fertile incubators of new ways to understand modern research governance as an essential component to achieve the healthy, productive, and transformative status of a world-leading institute. Administrative team leaders are equal to scientific team leaders in their responsibilities, striving for excellence, training schemes, international standards, and benchmarking. Safe, ergonomic laboratories, access to state-of-the-art facilities fostering exchange and well-being, competitive purchasing, creative and effective communication, proper salaries, access to health care etc. are all essential for research. Great attention is paid to inclusive and fair hiring of the best possible personnel. Significant effort goes into the onboarding, training, retaining, and offboarding of all collaborators and the preservation of the physical and mental health of all members of the institute. Many individual solutions are tailored for the well-being of each group and each individual person whenever feasible. Similar attention is dedicated to ensuring access to well-serviced instruments and facilities. Grant-writing is assisted properly and so is the wise deployment of research funds. For these and many more areas of activity, the quality, flexibility, and customer-friendliness of administration is critical. Rules and regulations, within the law and best accounting and safety practices, are established to help research and researchers achieve their goals, and not to curtail their freedom and creativity. The relatively small size of IRIs allows such a purpose-made administration.

Cooperation

Research institutes compete for funds as entire institutions and as mentioned above, do not typically offer tenure to most group leaders. It follows that within an institute, the success of a principal investigator or group leader is more cherished by the others as it increases the reputation of the institute, making it more attractive for funding and recruiting talents. Research depends on shared infrastructures that have dedicated teams. Without an intense collaborative culture across all categories, IRIs do not mount the international competitiveness required for excellence. This

collaborative and non-hierarchically driven mindset, once established and experienced to be an ingredient for success, is brought along by PIs, postdocs, students etc. when they move to university, industry or other places. This high degree of collaboration allows also small groups to be competitive through broadening of their basis of competence. The collaborative spirit makes IRI research highly cost-effective and sustainable.

Impact

Part of the mandate of IRIs is to generate societal impact through various channels. This impact arises from knowledge generation, personnel training, dissemination activities, and more. Crucially, the protection and enhancement of intellectual properties and exclusive expertise serve as key conduits. Within IRIs, there is a concerted effort to educate all members on the significance of the technology transfer process in reinforcing the societal covenant between researchers and external stakeholders. Innovations are either out-licensed directly or utilized to establish spin-offs. This approach fosters a bold, equitable dialog with the pharmaceutical and biotechnology sectors, ensuring IRIs engage in genuine partnerships rather than mere contract research agreements. Such partnerships are designed to augment, rather than exploit, the IRIs' avant-garde research contributions [6]. In specific domains like biomedicine, the keen interest of the industry serves as a critical indicator of an IRI's output quality. Importantly, one of the most significant impacts of IRIs may lie in their novel approach to research, pioneering highly collaborative and interdisciplinary models that often evolve from innovative to influential standards.

Engaging society

Finally, the ambition for excellence of IRIs relies on creating an environment dense with stimuli for creativity and embedment of science in daily culture and praxis. This mostly happens through exchange. IRIs rely on a creative, intensive, and attentive dialog with the community of stakeholders and the citizens in general. For an IRI, engaging people outside the institute and allowing institute members to draw inspiration from interactions with artists, philosophers, writers and the wider society is essential. Art programs trigger self-reflection and irony and fathom other realities and perspectives useful for inspiring scientists. Life and successes in the IRIs are broadcast on social media on a regular, even daily basis, and amplified

and commented on through networks of collaborators and alumni. The involvement of citizens in several steps of scientific endeavor opens new research questions and inspires scientists, while simultaneously tackling mistrust in science, fake news, and ethical dilemmas [7]. Actively engaging with children and school groups is viewed as a vital long-term investment, aiming to cultivate a knowledge-based society that strongly supports IRIs. Looking ahead, societal involvement through participatory programs and demonstrator spaces will play a crucial role in fulfilling the overarching objectives of IRIs.

Conclusion

In summary, IRIs fulfill a particular, important role in the research ecosystem of nations and of Europe. Their responsibility is to explore scientific themes but also explore operating modes that are not yet broadly established, but may turn out to be useful in other types of organizations. By being highly international and linked to other institutes, they act as magnets for talent and factories for technologies. The uncompromising commitment to excellence on all grounds, including “how” to do research, requires autonomy from larger establishments for agility and greater ease of overcoming cultural barriers in smaller communities. This is equally important for models that work as for those that do not, where the smaller size and autonomy of IRIs limits the damage. While a thorough social and economic study on the role of IRIs in the national and European research landscape may not exist yet, the success of IRIs as lighthouses is undisputable. The impact of IRI research outcomes and the percentage of ERC grantees is on average higher than in large organizations, and the number and quality of spin-offs is also proportionally larger. Established examples of IRIs include the FMI in Basel, the IEO in Milan, the IMP in Vienna, and the CRG in Barcelona. In all these cases, the IRI has had a systemic effect on the community through emulation and inspiration.

This Charter of the EU-LIFE Research Institutes in the Life Sciences in Europe was introduced during the symposium marking the 10th anniversary of EU-LIFE in June 2023 in Lisbon. This document is designed to encapsulate the foundational core principles (Fig. 1) of Independent research institutes (IRIs), reflecting on the

insights and experiences gathered over the past decade. However, this Charter is not seen as a final achievement, but rather as a launching point. Our goal moving forward is to enhance the recognition and visibility of IRIs' significant contributions to the European research and innovation ecosystem, within the life sciences and beyond. In Europe's diverse research landscape, numerous institutional types are organized into robust representation and interest groups, such as university associations, biotech associations, and industry associations. EU-LIFE stands out as the sole association specifically representing IRIs. This Charter signifies a critical achievement for a category that plays a pivotal and often overlooked role in generating, disseminating, and leveraging knowledge for societal benefit. We would like to see existing and new institutes embrace the Charter and contribute to its ongoing development.

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