



PUSHING
THE FRONTIERS
OF INNOVATIVE
RESEARCH

ADVICE PAPER
no.29 - February 2023

LERU's view on holistic doctoral supervision

Dr Helke Hillebrand, Dr Claudine Leysinger

LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES

University of Amsterdam • Universitat de Barcelona • University of Cambridge • University of Copenhagen • Trinity College Dublin • University of Edinburgh • University of Freiburg • Université de Genève • Universität Heidelberg • University of Helsinki • Universiteit Leiden • KU Leuven • Imperial College London • University College London • Lund University • University of Milan • Ludwig-Maximilians-Universität München • University of Oxford • Université Paris-Saclay • Sorbonne University • University of Strasbourg • Utrecht University • University of Zurich

Executive Summary

Supervision of doctoral researchers is a central aspect of doctoral education, which is a core activity of universities and contributes to the prosperity of knowledge-based societies. In order for universities to shape through doctoral education the next generation of leaders in academia and beyond, they need to ensure that the right cultural, structural and behavioural conditions are in place. While it is broadly accepted that doctoral researchers need access to skills training that will prepare them for this ambiguous and uncertain world, universities also need to raise their awareness of the complexity of the supervisory task.

This paper addresses principles regarding mutually productive supervision that LERU member universities already have in place or propose for implementation. Key components of mutually productive supervision are a positive institutional culture, beneficial structural conditions, and training opportunities for supervisors as well as those being supervised. For these structural building blocks to come to life, it is essential that supervision is part of the assessment of academic staff and that suitable support services are visible and valued.

To ensure that a trustworthy and supportive research environment is in place, universities should implement specific, tailor-made supervision courses to help those who are supervising doctoral researchers to develop the right skills. In order to lay a sustainable foundation for this cultural change, we recommend to initially tailor the training predominantly to junior group leaders or junior professors. However, a majority of the LERU universities at large report that they would like to see mandatory training workshops for supervisors at every stage of their career. In any case, universities should honour the time and effort dedicated to supervising junior researchers, including a regular, multidimensional evaluation of the quality of the supervision.

Central elements of good practice in supervision are consistent expectation management – the basis for any trusting and respectful relationship – transparent and considerate communication between supervisors and doctoral researchers, as well as embracing a diversity of role models ensuring that a broader range of experts are involved in the process. Finally, LERU universities recognise that different actors play important roles in supporting doctoral researchers. Thus, all the support staff and service units in place at LERU universities help foster an environment that is beneficial to doctoral education, and should be recognised for this important task.

Recommendations:

- LERU member institutions propose a holistic view on supervision of doctoral researchers as future leaders in all sectors of societal relevance.
- Universities are expected to provide supervisors with the necessary skills and resources to support doctoral researchers towards successfully completing their degree and treasuring a long-term formative experience.
- LERU institutions embrace the latest initiatives towards mandatory supervisory training and encourage local adaptation according to the needs of each individual university.
- LERU institutions propose leadership and supervisory skill development opportunities for doctoral researchers.
- The core of best-in-class supervision is an ab initio consistent and realistic expectation management between all stakeholders of the doctoral process.
- LERU universities encourage professional recruitment starting at the doctoral level, fostering a diversity-friendly and inclusive environment in research and teaching.
- Supervision responsibilities need to be properly recognised and to become part of formal performance assessments, alongside teaching, research, knowledge exchange, and grant acquisition.
- Principles of successful supervision include separating the supervision from the evaluation of the thesis, establishing supervisory teams and encouraging meta-disciplinary skills training.
- All stakeholders in the doctoral process should take responsibility for the well-being of doctoral researchers to enable their professional aspirations; they should recognise the importance of support structures as well as providing resources and advertising them accordingly.
- LERU universities propose the nurturing of an improved institutional culture of appreciation characterised by effective communication and reliable expectation management towards a more impactful and consistent supervision process.

Introduction

Pursuing doctoral research is the first, the most formative and the most uniquely intense scholarly research experience towards an original contribution to scientific advancement in any given field. As such, doctoral formation is very different from any other type of educational process and signifies a very individual experience (for both supervisor and supervisee), characterised by full immersion into an original research question while guided by a supervisor or supervisory committee. The award of the doctoral degree to successful doctoral researchers is a recognition of their personal and professional growth as researchers throughout this formative phase and constitutes a sovereign act of research universities worldwide. The global recognition of the doctoral degree reflects the unique and vitally important role of universities in society.

Since the art and the principles of supervising doctoral researchers is key to the success of doctoral research, it plays a pivotal role in forming the next generation of researchers (Wisker, 2012: p. 2), and it is an essential quality indicator in doctoral education (Bogle, von Bülow & Shykoff, 2016). The professional development of doctoral researchers is strongly determined by the guidance and support received from their supervisors (Taylor, Kiley & Holley, 2021: p. xlii). LERU institutions recognise that supervision of doctoral researchers is also highly dependent on institutional culture, regulations, and support structures, as has been pointed out by numerous scholars who have produced handbooks on supervision (Taylor, Kiley & Humphrey, 2018; Lee, 2012). LERU member universities have been focusing on many different aspects that foster a productive environment for committed supervision. This includes more clearly stating the expectations for supervisors, offering them support in acquiring the necessary skill sets, and rewarding this important assignment with more recognition and visibility. While we appreciate that innovative and beneficial approaches to doctoral supervision are constantly evolving at a large number of higher education institutions around the globe, the focus on LERU universities simply reflects the expertise of the working group. The paper's aim is to inspire other higher education institutions with good examples of doctoral supervision in the LERU community, to highlight best-practices among LERU universities, and to lay out basic principles regarding productive supervision endorsed by LERU institutions.

Doctoral supervision is indeed a complex affair; it involves different actors with multiple interdependencies of various intensities. Supervisors may be in a hierarchical relationship vis-à-vis the doctoral researcher and thus the dependence is accentuated. As doctoral researchers may have different roles, like conducting dissertation research as well as working for the supervisor as a research assistant or for the institute as a teaching assistant, supervision meetings address a variety of

issues that are not always closely related. Bengtson describes this hybrid form of teaching and collaboration as a "strange pedagogy" (Bengtson, 2016:pp. 27-28) with a complexity that should be adequately addressed (Bengtson, 2016:pp. 180-182). Institutions need to raise awareness of these complex aspects of doctoral supervision. They must ensure that common problems often arising from miscommunication, false expectations, or insufficient pedagogical knowledge of the actors involved can be addressed faithfully and resolved effectively.

Despite the complexity, supervising talented doctoral researchers and positively impacting their career development is a privilege. Therefore, a culture of appreciation should prevail among all the actors involved. This includes treasuring diversity, assessing both the strengths and shortcomings of the individual for targeted training, and investing in doctoral researchers for the future of societal development. Doctoral researchers are key to advancing research within universities and fulfilling the role of universities for societal progress in a knowledge-based economy. Accordingly, it is not only a privilege but equally a duty to catalyse the careers of doctoral researchers through constructive supervision. Finally, establishing and nurturing an appropriate supervision culture is essential for safeguarding good scientific practice. This paper will address what institutions can do to foster an inviting culture for supervision by focusing on institutional culture, training opportunities, elements of good practice in supervision, principles of evaluation, and structural settings.

LERU member institutions propose a holistic view of supervision aimed at supporting doctoral researchers in becoming future leaders in all sectors of societal relevance, in academia and beyond. Such a holistic approach to supervision requires both talented and well-trained individual supervisors as well as an institutional culture of appreciation for productive supervision.

This postulate triggers several questions:

- (1) What are the characteristics of an institutional culture that foster engagement in impactful supervision?
- (2) What kind of training do institutions offer to those involved in supervision?
- (3) What are the elements of good practice in supervision?
- (4) What are suitable parameters to assess successful supervision?
- (5) What kind of support structures are helpful for a productive supervision environment?

"It takes two to tango," and the propositions discussed below show the importance of reciprocal interdependence between supervisors and supervisees.

(1) What are the characteristics of an institutional culture that foster engagement in impactful supervision?

In order to thrive in the realisation of their goals and ambitions, doctoral researchers should experience a **trustworthy, supportive, and appreciative research environment**. They not only should feel invited to become an integral part of it but should also be encouraged to freely contribute to a stimulating research environment where new ideas and concepts are discussed openly and where researchers are recognised for their individual contributions as well as their individual needs and desires. LERU universities are committed to fostering an environment in which accountability and transparency are key, which in turn lead to trust, respect, and a culture of equity. They are committed to providing the best possible ground for doctoral education. Successful inclusion of doctoral researchers from minority or minoritised groups includes recognising the specific challenges and barriers they may face. LERU universities recognise this duty of care towards all doctoral researchers as a crucial part of fostering diversity, equity, and inclusion within their institutions.

Specific, individualised, and tailor-made concepts need to be established for **continuous supervisory skill development of supervisors**. Any such training modules need to provide a tangible benefit, and they shall be perceived as supporting a supervisor's successful career progression in that they allow for efficient and effective use of their time. They are also key to help meet the expectations established for an assessment of supervisors.

To foster engagement for a positive, impactful supervision culture, institutions need to **honour each individual's investment of time and energy into supervision**. They need to recognise that supervision and developing supervision skills is a time- and energy-consuming activity. Consequently, supervision responsibilities and contributions to a positive supervisory culture need to become part of formal performance assessments, alongside teaching, research, knowledge exchange and grant acquisition, allowing for a multidimensional perspective that focuses on the diversity of requirements to which today's researchers are exposed (Overlaet, 2022). Therefore, adhering to best practices of responsible supervision shall become part of performance indices, enabling fair and transparent appraisal procedures. Possible assessment criteria could be the number and prestige of awards won by doctoral researchers, the percentage of doctoral researchers pursuing ambitious careers in academia and beyond, the number of doctoral researchers launching a spin-off, the percentage of doctoral researchers filing patents, and the like. The connection between the triad of performance

assessment, appraisal procedures, and career progression needs to be made explicit and paid attention to.

Box I: Highlighting best practice in supervision

Incentivising impactful supervision, as well as individual contributions to a positive institutional supervisory culture, are the preferred affirmative ways of strengthening good scientific practice in supervision. This could be achieved by implementing award structures for good supervision, such as establishing local prizes for successful supervisory teams and/or a regional or national supervision award in collaboration with external partners from funding agencies or the publishing sector, with policymakers or those in similar roles and with well-trained junior researchers as core members of the evaluation panel. In any case, supervisors deserve relevant rewarding mechanisms for the effort and time invested in first-class supervision, and their achievements need to be made more visible.

Regular surveys conducted on a national level give French universities such as **Université Paris-Saclay** insight into aspects that doctoral researchers appreciate most about their supervisors. The surveys are conducted by France PhD and are aimed at doctoral researchers and their supervisors with cross-referenced questions on doctoral training and supervision practices.

Utrecht University, meanwhile, hosts a PhD supervisory team of the year event. This can be organised within the graduate schools or by the university. The supervisory team of the year is elected based on the quality (not quantity) of PhD supervision. The team aspect reflects Utrecht University's policy that (at least) two supervisors are assigned to every doctoral researcher.

The **University of Zurich** confers the UZH Mentoring Award bi-annually to three outstanding supervisors of doctoral researchers and postdocs. To receive this award, supervisors need to be nominated by their supervisees and, in a second step, reflect on their supervisory practice. This award highlights good practice in supervision and has quickly become coveted among supervisors.

The UK Council for Graduate Education established the Research Supervision Recognition Programme, which is set up as an evidence-based assessment applying the criteria set forth in the Good Supervisory Practice Framework, which in turn is designed to enhance the visibility of best academic practice in supervision. **University College London** participates actively in this scheme.

Trinity College Dublin has initiated The Award for Excellence in Supervision of Research Students with one award per Faculty annually in each of two categories, one for early-career principal investigators and one for established researchers. To receive the award, supervisors are nominated by their supervisees, must reflect on their own supervision practice, and must submit an evaluation by their Head of School of their contribution to supervision practice within their discipline or school.

Imperial College London recognises outstanding contributions by staff annually, for example with the President's Awards for Excellence in Research Supervision and a separate President's Award for Outstanding Assistant Supervision, which recognises the valuable contribution that postdocs make towards the supervision of doctoral researchers.

Heidelberg University took a bottom-up approach on the reward idea and in 2020 ran a writing contest for doctoral researchers on "Super-Vision – Successful PhD Partnerships and Where to Find Them". The call emphasised contributing original, creative, and inspirational texts portraying positive experiences of – or visions for – prosperous doctoral supervision, in order to foster visibility for the topic across the board and to infuse ongoing discussions with forward-looking contributions. A jury made up of professors from all major research cultures as well as the ombudspersons for doctoral researchers chose the winning contributions.

The quality and quantity of supervision can contribute significantly to doctoral researchers' progress in their dissertation research as well as to their well-being, according to a study on doctoral and supervisory experience from the **University of Helsinki**. Both doctoral researchers and supervisors emphasised **informational and emotional support** as being a key element of high-quality supervision. Frequent (at least once a month) and high-quality supervisory support was associated with satisfaction with studies, research engagement, reduced risk of exhaustion and cynicism, more timely completion, and a lower risk of dropping out of doctoral studies. Similarly, among supervisors a good supervisory relationship was associated with lower levels of stress, exhaustion and cynicism, and increased engagement with work (Pyhältö, Tikkanen & Anttila, 2022). Similar observations

were made by France PhD in a survey based on 11,500 responses from doctoral researchers. The frequency of meetings was strongly associated with the satisfaction of doctoral researchers and the successful progress of their work.

An important building block towards an appreciative and nurturing institutional culture is a **state-of-the-art approach to recruitment**, which needs to be done professionally at all levels. In fact, effective supervision should start at the application process, with students being made aware of the career opportunities they might derive from pursuing doctoral studies, being prepared for the challenges they are likely to face, and having sufficient support in place to mitigate some of the risks they will face. In addition, recruitment is key to ensuring that a diverse pool of doctoral researchers and of senior academic staff are hired. LERU institutions are also committed to ensuring that doctoral researchers from non-traditional backgrounds are well supported and integrated into academic structures. They recognise that role models are very important in advancing diversity in academia; these role models foster a culture of acceptance and support. To guarantee this diversity in hiring, LERU universities are among the signees of the San Francisco Declaration on Research Assessment (DORA) postulating that the evaluation of excellence is based on quality and not quantity. LERU universities also offer recruitment training to ensure state-of-the-art recruitment of doctoral researchers and to focus on new ways of assessing research success. They foster a diversity-friendly and inclusive environment in research, teaching, and studies as well as in the organisation of their academic units.

LERU institutions equally embrace **Open Science** principles, policies and practices. **KU Leuven** has implemented a learning programme tailored to the specific needs of doctoral researchers during different phases of their research careers. This "learning path" enables researchers to first acquire general knowledge on Open Science practices, then to gain more in-depth knowledge according to their own needs, and finally to apply the theory to their dissertation. **Sorbonne University** has developed a MOOC on Open Science and established a charter for open access publication. The **University of Zurich** offers an array of training opportunities in different formats on Open Science principles for doctoral researchers and has implemented an Open Science policy that aims to integrate the practices and values of an open academic culture into the structure of the university and its processes. **Université Paris-Saclay** has made it compulsory for doctoral researchers to follow a training course on Open Science. Respect for the principles of Open Science has also been included in the commitments of doctoral researchers and supervisors in the doctoral charter. **Leiden University** has an active Open Science community, where doctoral researchers are welcome to actively discuss Open Science policy and initiatives. All of these initiatives take into account LERU's own Open Science Roadmap (Ayris, 2018).

(2) What kind of training do institutions offer to those involved in supervision?

Training opportunities for supervisors

Supervision is a demanding leadership task. It requires not only professional experience and relevant expertise but also an elevated level of foresight and generosity at a personal level. The doctoral researchers of today may grow into the decision-makers of tomorrow. Doctoral researchers of today are indeed more aware of their future responsibilities than former generations may have been at that stage of career. Thus, they also have higher expectations about their PhD formation and are more conscious about their entitlement and ownership of the research process. We therefore witness a kind of generational change among doctoral researchers resulting in cohorts of early career researchers with sound demands regarding the academic workspace. Thus, successful supervision is increasingly challenging in this complex environment. But supervisors do not need to be superhuman; they rather need to be well equipped and prepared for the eventual ambiguities of this role. Fostering a culture of excellence in supervision requires specific training opportunities and reflection. Especially for the early stages of supervisory action by early career academics or those new to the supervisor role, we believe it to be worthwhile to have mandatory training workshops. These should be short, modular, time-effective, and tailor-made to beneficially reach their target audiences. They are particularly useful as an opportunity to reflect on and discuss difficult cases and learn from other colleagues in a supportive environment. Regardless of the extent of supervision experience, mistakes are inevitable and can provide invaluable learning opportunities. In a best-case scenario, developing supervision skills needs to be combined with appropriate training modules for the supervisees in order to create and nurture the intended organisational culture bottom-up as much as top-down. Some LERU universities already have mandatory training for supervisors, and some expect supervisors to regularly refresh their training experience throughout their careers as full-time professors. LERU institutions endorse this good practice as part of the life-long learning and continuous professional development that we expect from all professionals in higher education.

Training for doctoral researchers particularly concerning the supervision process

LERU institutions propose skills development opportunities not only for supervisors but especially, and more broadly, for doctoral researchers. Indeed, they offer a broad array of training opportunities in transferable and meta-disciplinary skills, which are important for doctoral researchers to succeed in their careers.

Box II: Examples of guidelines and training opportunities for good supervision

There is a general consensus that the old maxim “learning by doing” may no longer be sufficient in becoming a good supervisor. Thus, many institutions within the LERU universe are now offering courses for supervisors. Supervision training can vary from a self-organised peer-to-peer activity, as at the **University of Barcelona**, to cooperative meetings for supervisors, where they exchange experiences, reflect on their supervision style and optimise their own performance as a supervisor, like at **Utrecht University** and **Leiden University**. At **Heidelberg University**, train-the-trainer opportunities are complemented by activities for supervisees such as to sensitising doctoral researchers to understand what it takes to provide productive supervision and how they could contribute to successful tandem formation between supervisor and supervisee. The “Guidelines for good supervision” at the **University of Freiburg** or the Code of Practice for Supervisors and Research Students at **The University of Edinburgh** are also key in guiding supervisors and supervisees, as the universities confirm their institutional responsibility to offering the best possible conditions for a good supervisory relationship between doctoral researchers and their supervisors.

The **University of Helsinki** Centre for University Teaching and Learning supports supervisors’ professional development with pedagogy courses, such as “Academic Supervision and Supervisor Practice”. The centre is also active in research on doctoral education ensuring the courses and guidelines provided are informed by research. **Sorbonne University**’s Department of Formation offers several pedagogy courses for supervisors to enhance the quality of supervision, the development of doctoral researchers, and the support and the management of doctoral projects. The department also arranges gatherings of supervisors to help nurture their professional development.

Université Paris-Saclay trains supervisors by different means. It offer week-long training courses on doctoral supervision, mainly intended for new supervisors, while a monthly webinar brings together from 100 to 300 supervisors, allowing them to exchange views, answer questions and give testimonials.

Universities can offer a range of training courses, which can be optional or mandatory. Training can be centrally organised for new supervisors or be offered as discipline-specific workshops that happen locally, as is the case at **Trinity College Dublin** and the **University of Cambridge**. For the latter these discipline-specific workshops are supplemented by a comprehensive bank of supporting and guidance materials. The Faculty of Health and Medical Sciences at the **University of Copenhagen** offers three courses on supervision that are mandatory for PhD supervisors, and it has developed a new voluntary PhD supervision course for experienced supervisors. In addition, its graduate school organises four PhD Supervisor Talks per year for all PhD supervisors on relevant topics related to supervision and research management. The course on rules and regulations must be renewed every five years. At **The University of Edinburgh**, training of new supervisors is mandatory, but also current supervisors must renew the training at least every five years. **Imperial College London** requires all new supervisors to complete a mandatory online self-guided course covering supervisors' roles and responsibilities, effective supervisee-supervisor partnerships, the PhD timeline and effective and inclusive research culture. New supervisors are also strongly encouraged to attend a one-day, face-to-face workshop on supervision that builds on the contents of the online course. In addition, every six years, all supervisors are required to attend a "Focus of Best Practice in Supervision" continuing professional development workshop that has been tailored to their department.

Triggered by the pandemic, **The University of Edinburgh** now offers supervisor training as an online programme supplemented with face-to-face sessions, which has turned out to be especially useful for external co-supervisors. **University College London** has had an online training course for new supervisors for some years, and this is supplemented with bespoke workshops on specific topics such as good recruitment practice and dealing with conflicts. The **University of Zurich** offers a skills development course for supervisors as well as a separate training for postdocs, thus laying the foundation for a well-equipped next generation of academics.

At **KU Leuven**, newly appointed supervisors are obliged to follow a masterclass on supervision. Next to fostering a robust supervision ethos, the multi-disciplinary make-up of the cohort of these masterclasses creates new networking opportunities and strengthens the sense of community in the population of newly appointed supervisors. Overall, LERU institutions endorse the idea of implementing mandatory supervision training for all new hires, as is common practice at **Utrecht University**, **Leiden University**, **KU Leuven**, **The University of Edinburgh** and **University College London**.

In general, these opportunities are available in a variety of formats ranging from fully digital to short seminars and training sessions in small groups. Importantly, the supervision process itself involves the use of many personal competences also required for their future careers.

LERU universities focus on the development of doctoral researchers in an all-encompassing way, aiming at nurturing the development of the individual and not just helping to boost their careers. They are aware that a new set of "skills for openness" are necessary to face the volatility, uncertainty, complexity, and ambiguity of today's world (Hoffmann et al., n.d.). Therefore, the set of skills courses offered at LERU institutions cover a broad variety of topics. At **Heidelberg University** and **Leiden University** the portfolio ranges from self-management and communication skills to digital competencies as much as Open Science cognisance, knowledge about transfer and entrepreneurship, research ethics, university teaching, and a comprehensive array of hands-on enabling tools, such as project management, statistics, and leadership skills. **Imperial College London** has an Assistant Supervisor training scheme to formally recognise the valuable contribution that postdoctoral research staff make towards the supervisee-supervisor partnership. **LMU Munich's** Graduate Center or **Heidelberg University's** Graduate Academy place special emphasis on raising the supervisees' awareness of the perspectives, needs and expectations of supervisors to help them constructively contribute to shaping the supervision situation. Ideally, both parts of the supervisor-supervisee partnership are reciprocally aware of their responsibility for success in this relationship. To this end, it is essential to make sure that both sides have shared concepts of communication, relationship building, and expectation management.

Furthermore, LERU institutions are also keen on fostering a new mindset amongst junior researchers they educate that will prepare them for the challenges ahead. Important aspects of this new mindset following Hoffmann et al. are openness, empathy, the joy of experimentation, creativity, self-reflection as well as tolerance of ambiguity (Hoffmann et al., 2021). LERU universities also acknowledge the importance of training doctoral researchers in communicating their research to a broader public. For example, junior researchers at the **University of Zurich** benefit from hands-on science communication training involving public speaking skills, pitching one's project in a minimal amount of time, as well as an introduction on how to engage in Citizen Science practices. **Université Paris-Saclay** offers special training courses dedicated to careers in scientific mediation, scientific journalism and science communication. Many LERU universities support their doctoral researchers to engage in a wide array of science communication competitions, eg. Thesis-in-Three-Minutes, Dance your PhD and the like. The ultimate goal of all these activities is to foster the capability and confidence to share their research activities with a non-specialist audience.

(3) What are the elements of good practice in supervision?

Experience gained at LERU universities has shown that the qualifiers for best-in-class supervision are empathic leadership, availability, responsibility, and consistent and realistic expectation management. All the qualifying elements listed above would feature in an attempt at a descriptive definition of “people skills.” However, holistic people skills are hard to learn in a training, although individual aspects of people skills are methodically accessible in the context of professional capacity building.

The pivotal role of reliable expectation management

Systematic and reliable expectation management is the basis for any trusting and respectful relationship (Brentel, 2018). It is the foundation for improving the well-being and safeguarding of a status of mental health for the supervisee as much as for fostering transparency in the relationship between the supervisor and the supervisee (Christian et al., 2021). The recruitment phase and agreement on a thesis research topic is a vulnerable moment, and a failure of expectation management can be detrimental for both supervisor and supervisee. Any flaws in matching expectations at this early moment in forming a supervisor-supervisee partnership will most likely bounce back throughout the course of the project, particularly at times where tensions occur due to professional, subject-oriented, or personal, style-oriented discord. Therefore, managing expectations systematically starts with matching expectations truthfully and transparently from the very beginning of the supervisory relationship. A charter signed by both parties and revisited throughout the course of the thesis research, as implemented by many LERU universities, can set the stage for this. At many LERU institutions and beyond, good practice guidelines on PhD supervision are designed to complement and foster the aims of the aforementioned charter documents. The “Good Supervisory Practice Framework” by the UK Council for Graduate Education (UKCGE) (Taylor, 2019) and **Leiden University’s** “Golden Rules for PhD Supervision” (Berenger-Currias et al., 2019) are, amongst others, prominent examples for such guidance documents. Notably, the Leiden Golden Rules fully reciprocate the supervisors’ responsibilities with matching rules and expectations for the supervisees, thus clearly illustrating that the successful doctoral supervision process indeed is a shared duty between both partners, even if it is clear that the hierarchical dependency of the supervisee puts a higher level of responsibility on the supervisor.

Furthermore, LERU member universities believe that supervisors should not be allowed to accept more than a given number of supervisees, depending on the discipline and the setup of the group. Guidelines on the maximum number of doctoral researchers per supervisor also mitigate potential pressure on supervisors (from prospective supervisees, peers, or managers) to take on more doctoral researchers. It is also recommended that the number of supervisors per dissertation is limited to avoid having too many supervisors involved in too many projects. It is common practice among a majority of LERU universities to separate the supervision and evaluation of a dissertation and its defence. LERU universities at large believe that the quality of supervision increases significantly when an institution subscribes to the principle that the supervision and evaluation of the dissertation should be separate.

The interplay between respect, role models, and resilience

At an operational level, components of excellence in supervision primarily include authenticity, appreciative communication, respecting and welcoming the diversity of role models, and honouring individual solutions for efficient and effective work-life integration. Authenticity and honesty are the basis for a fruitful supervisory relationship and are strengthened by clear communication as well as by appreciating individuality.

Fostering a culture of appreciation starts with a favourable two-way communication and is a prerequisite for safeguarding well-being among doctoral researchers as well as supervisors. Cultivating a constant flow of exchange and a culture of fair, constructive, open, forward-looking positive and corrective feedback – in both directions! – strengthens trust, respect, and resilience in supervisees and supervisors alike. LERU institutions propose that these ingredients for successful, effective communication should also be aspects of supervision training.

Diversity at work at the level of supervisory committees

Another important element of good practice in supervision is the diversity within committees. Embracing the diversity of role models implies two different yet tightly intertwined attitudes: proactively highlighting (a) the spectrum of choices regarding meaningful and ambitious career paths and (b) the diversity of people at large. LERU universities suggest that opportunities

should be created to experience different styles of favourable leadership alongside a variety of successful working styles within different teams and environments. The first aspect (a) pertains to carefully avoiding bias because of previous personal choices and decisions. Doctoral researchers on the brink of their first professional career choices post PhD should experience an open mindset, especially from their supervisors, towards the many relevant and challenging roles accessible to recent PhDs, including those beyond traditional university careers. Doctoral researchers should have impartial access to robust information about ambitious, fulfilling career opportunities inside and outside of universities and research institutions that best serve their talents and preferences. They should be encouraged to appreciate the many relevant and challenging places that need and gladly hire well-trained people at the PhD level for their unique combination of disciplinary and meta-disciplinary skills all doctoral researchers acquire throughout their research journey.

The second aspect (b) suggests that a broader range of experts, including from industry or cultural institutions where appropriate, could temporarily be involved in the supervisory process, thus adding resources and insights to the thesis committee that otherwise would be missing. Additional support structures in terms of career services and mentoring programmes can be an effective support of that process. At the **University of Strasbourg**, mentors include academics and researchers but also PhD holders coming from public or private institutions or companies. Careful attention needs to be paid to the setup of the thesis committee so that the ultimate responsibility of the PhD supervision process is clearly defined and remains with a single person, either a professor or a qualified non-professional staff member from within the university, within the context of a supervisor team. This first line of responsibility should be reflected by a contract of employment of this person that is expected to extend beyond the period of completion of the PhD. The meta-disciplinary elements of doctoral training, including career development, should be delegated to professional support structures within the university.

Box III: The culture of shared supervision

Supervision is a shared responsibility among supervisor(s), supervisees, the institution, and the institution's service infrastructures. In addition, at most LERU universities supervision is regularly shared by at least two supervisors. At **Sorbonne University**, regulations suggest establishing an additional mentorship that is complementary to supervision. A large number of LERU member institutions established policies holding that every doctoral is supervised by at least two supervisors. At **The University of Edinburgh**, every doctoral researcher has a primary

supervisor appointed before arrival and at least one other supervisor, who may be a co-supervisor or provide more pastoral or independent support.

In the most favourable scenario, the supervisory responsibility of the main thesis supervisor is shared with a supervisory team of colleagues based on a transparent distribution of duties and a clear sharing of competences. PhD supervisory teams, so-called **thesis advisory committees** (or thesis committees), are well established across LERU universities, but the use and scope of PhD supervisory teams varies widely across faculty cultures. Supervisory committees should mirror the richness of resources available for doctoral education. For example, scientists at different stages of their careers – including the early stage – should be allowed to serve on supervisory committees, thus offering opportunities to gain experience while being supported and trained in this new role. The supervisory committees need to be able to provide multi-faceted guidance, preferably also outside of the scientific project. The positive experience with PhD supervisory teams across LERU universities also relates to its intrinsic impact on limiting the dependency of a doctoral on a single supervisor's assessment and guidance and on its leveraging role in avoiding conflicts of interest among colleagues or neighbouring departments. Moreover, PhD supervisory teams offer the advantage of informally foster the sharing of good supervision practice, adding another dimension of training opportunities to less experienced supervisors, especially at early stages of their career.

Thesis advisory committees can help to alleviate the power imbalances often connected to hierarchical structures. Different institutional support structures at LERU member universities also help diffuse the power imbalance. A special role is attributed to graduate tutors at **University College London**. They are senior academics within a department to whom doctoral researchers can turn if they need to seek advice from beyond their immediate supervisory team. If necessary, they can go beyond the departmental graduate tutor to the faculty graduate tutor or to the institutional Doctoral School. Other elements of structured PhD training – such as graduate programmes and graduate schools with ombudspersons and support programmes, including preventive measures and low-threshold access to services – are specifically designed to meet the needs of doctoral researchers. They also serve the different PhD procedures according to the local academic culture, thus further strengthening the position of doctoral researchers. To sum up with a Nigerian saying, "it takes a village to raise a [PhD]".

The COVID-19 impact: online supervision and mental well-being

The pandemic and resulting measures put in place to limit the spread of the coronavirus were also a stress test for supervision. Due to the pandemic existing issues surfaced more readily. However, LERU universities reported that supervisory practices have been surprisingly robust. It should be noted that supervising at a distance was already occasionally undertaken before the pandemic (Wisker, 2012: p. 37). Nevertheless, reports of increased feelings of isolation and mental health issues among doctoral researchers are worrying. At the start of the pandemic, the UK Council for Graduate Education (UKCGE) produced a guide to online supervision (Kumar, Kumar & Taylor, 2020) with a special focus on supervising doctoral researchers and postdocs at a distance in order to explore benefits and potential pitfalls as much as to share insights into successful and forward-looking practices. Guidelines on good supervision and enhanced awareness about the underlying standards apply to all IT solutions and meeting platforms for remote interaction. Thus, the following recommendations are of a more general nature, with key issues including:

- (1) being sensitive to the privacy needs of both supervisor and supervisee,
- (2) being aware of the benefit and the risk of schedules being perceived as more flexible, where online meetings can leak into time that otherwise would be protected for other responsibilities,
- (3) honouring the value of both formal and informal meeting opportunities.

Ideally, with the facility for “drop-in” meetings that have no formal agenda requirements, the practice of having regular “open-door” slots for supervisees to simply drop by without requiring an appointment can be mirrored when supervising remotely. Many LERU universities confirm by experience that these informal slots were absolutely critical in supporting supervisees in staying connected and engaged and that they were very valuable for their overall well-being. Another insight from the pandemic was the importance of “informal” support and mentorship structures for the development of doctoral researchers.

More generally, it is also important for supervisors to remain aware of the relatively high prevalence of mental health problems in the supervisee population and to pay attention to expert surveys conducted by qualified researchers. LERU universities ensure that surveys are conducted on a regular basis and that results from such surveys are communicated to supervisors and other stakeholders.

Box IV: Institutional culture and mental well-being

In support of doctoral researchers’ well-being and personal progress and to prevent the potential onset of mental health issues, a large number of LERU universities are offering a variety of schemes and formats for individual or group and peer mentoring and coaching of doctoral researchers.

In view of the steadily increasing need for such offerings, **KU Leuven** health researchers Lode Godderis, Tinne Vander Elst, Sofie Vandebroek and Anke Boone conducted a cross-sectional study in five Flemish universities on the mental well-being of doctoral researchers. Research was done from October to December 2020, yielding data from 1084 respondents (84% doctoral researchers, 16% postdoctoral researchers). About one-third of the respondents scored high on problematic sleeping behaviour and emotional exhaustion, indicating a risk of burnout. In addition, the preliminary report states that some 7% of respondents considered “leaving their research position at least ‘several times a week’”. The four most reported reasons for leaving their research position were work-related mental health problems (20%), difficult work-life balance (17%), uncertain career prospects, (14%) and a high publication pressure (12%).”

While it is important for supervisors to be alerted to these warning signs regarding mental health problems, it is also essential that they are aware that “respondents gave a high and favourable score for ‘influence at work,’ ‘possibilities for development,’ ‘control over working time’ and ‘meaning in their work.’ Also with regard to work-engagement, respondents had a high average mean score, with 60% of respondents reporting very high work-engagement.” As the report concludes, these “are valuable protective factors against burnout and mental health problems” (Boone et al., 2022).

The importance of work-life integration

Creating a positive work-life balance is another element that helps create favourable circumstances for supervision. As LERU universities, we prefer the term “work-life integration” to illustrate our belief that ambitious careers based on the foundation of solid PhD training will flourish best if given the freedom of choice for lifestyle decisions and day-to-day logistics rather than separating “work” and “life” in a sense that suggests a certain level of incompatibility. Supervisors, supervisees, and their host institutions need to appreciate that taking up the challenge of PhD training and research is a transformative experience that prepares doctoral researchers to take up leadership roles of societal relevance and with enhanced responsibility. Therefore, doctoral researchers on this path and with this ambition should be empowered from early on to take responsibility for their own well-being and their own work-life integration rather than being limited by rigid roles and inflexible infrastructures.

(4) What are suitable parameters to assess beneficial supervision?

Supervision may at times be challenging for the supervisees as much as for the supervisors but must always remain characterised by mutual respect, trust, and appreciation, even if there are disagreements. Furthermore, productive supervision contributes to shaping the attitude of the individuals constituting tomorrow's intellectual workforce in a rapidly changing work environment, particularly outside of the academic tradition. Thus, it is deemed crucial that universities receive a constant flow of feedback and insights from these ever-changing environments. Consequently, measuring the added value of beneficial supervision cannot depend solely on polling the satisfaction of the supervisees during the supervision process. In the most favourable scenario, appreciation of the supervision experience as well as constructive criticism will grow further over time and in retrospect and may also be reflected in ongoing collaborations between supervisors and their former doctoral researchers. Therefore, a measure of added value would involve a series of satisfaction polls throughout early and middle career stages, following the initial phase of in-depth academic research training. This is only one of the aspects for which maintaining and nurturing a broad alumni network would be highly relevant and for which a viable widening of the European data protection regulations is key.

The Erasmus+ consortium Graduate SPIRIT (2017-20) – with LERU members **Heidelberg, Helsinki, Leuven** and **Paris-Saclay** among its partners – set up a series of online Alumni Dialogues in early 2020 with a view to enabling career perspective conversations between doctoral researchers and PhD holders who had transitioned to employment elsewhere. These Alumni Dialogues were designed to serve one of the consortium's principal aims: to enhance inter-sectorial mobility in European doctoral education. The dialogues were highly appreciated by all participants – doctoral researchers and alumni alike. This discursive format can serve as an inspiring example of a low-investment and high-return initiative strengthening the confidence in career perspectives within the doctoral community.

Good supervisors typically encourage or even facilitate informal encounters between their current supervisees and past supervisees who have moved on to the next phase of their career, inside or outside academia. On a more formal level, LERU universities at large have been committed to conducting regular surveys on various PhD-relevant topics for many years. Institutions that have commissioned such surveys are faculties, institutes, and doctoral programmes of various types. Recently, many LERU universities initiated institutional surveys regarding the overall situation of doctoral researchers or postdocs in order to capture their professional and personal situations. The surveys are designed to lead to measures and actions needed for a continuous optimisation of the overall framework conditions during the early stages of career development. Supervision culture is a highly relevant focus of these surveys.

However, satisfaction surveys primarily capture the soft factors of a fruitful supervisor-supervisee relationship. Developing and regularly checking on **key performance indicators of employability, career development, and societal impact** of former doctoral researchers over a significant period of time would help capture robust results of good supervision practice for further analysis and quality management measures. In the UK and in Ireland, national surveys of all doctoral researchers are typically conducted every two years covering all aspects of PhD-life from supervision to well-being. In France, universities prepare an annual report on the evolution of the professional situation of the people to whom the university awarded a doctorate in the previous five years. These surveys are aimed at getting more information on the professional situation of doctoral graduates. **The University of Edinburgh** took an additional initiative with its "pulse surveys", a short check-in every two months to ask about issues and including a couple of themed questions that change in each survey.

(5) What kind of support structures are helpful for a productive supervision environment?

A broad range of research-oriented services

In recognition of the different actors that play pivotal roles in supporting doctoral researchers, LERU universities typically have many units that offer a broad range of research-oriented services, in particular support for doctoral researchers, such as graduate centres, graduate schools, or other doctoral education programmes. The support staff in these units play an important role in doctoral education as they are often the first to be contacted in difficult situations and asked to provide orientation, support, and solutions to problems. It is important that these services and resources are well publicised among junior researchers and are recognised and recommended by supervisors and managers. The contextual integration of PhD research into a broader framework of meta-disciplinary expertise and programmes creates a number of innate positive side effects. These range from the benefits of belonging to a specific group, a programme or a cohort, to dedicated induction activities and fostering opportunities to establish a first network of peers and colleagues to bounce ideas off, to learn from and to rely upon should difficulties arise.

Given the multifaceted roles of the aforementioned research-oriented service programmes and providers, it is important to emphasise the need for including these meta-disciplinary functions also into regular quality management initiatives, such as surveys and/or external evaluations (see also Bogle, von Bülow & Shykoff, 2016).

Nurturing participation in research-oriented services

Supervisors have a particularly important role in endorsing a holistic approach to supervision. Supervisors are key when it comes to integrating all the dimensions of disciplinary and meta-disciplinary career orientation and professional (as well as personal) development support offered by the university as a whole. They also play a crucial role in highlighting wider professional services such as careers advisory centres and the wide array of assistance, and in encouraging doctoral researchers to make use of these services. Supervisors need to be informed about these activities and infrastructures, and they need to proactively connect doctoral researchers with the colleagues running these services. In fact, they have the duty to inform all doctoral researchers about the resources and services available to them, while conversely, these service providers must constantly work on making visible their resources and services.

While LERU universities in general offer career services for doctoral researchers, **University College London** went a step further within the Careers Service by hiring a number of specialists on research careers within and beyond academia, all of whom have been doctoral researchers, giving them real insight into the challenges.

Furthermore, supervisors are invited to make ample use of the expertise residing within the graduate infrastructures and any other relevant support services on campus. They also need to make time and space available for junior researchers to be able to benefit from training and services at their disposal, as was already stipulated in The Salzburg Principles of 2005 (Anon, 2005), readily endorsed by all LERU universities and many more. UK Research and Innovation (UKRI) expects that all postgraduate researchers undertake a minimum of 10 days of professional development and skills activity each year. It is widely understood that the provision of transferable skills forms a fundamental part of doctoral training and continuous professional development, and LERU institutions endorse the importance of transferable skills training as promoted by UKRI.

Involving all relevant stakeholders in the implementation of change

LERU institutions are aware that many of the practices proposed above require a **change in institutional culture**. For this change to succeed, it is important to involve all relevant stakeholders in establishing policies. Institutions need to make sure that all contributors in this change process are respected and supported from the start and are positively aware of their roles and responsibilities. When setting up a new policy, it should be as holistic as possible, **following the maxim of “all under one roof.”** A new policy should allow for some **flexibility, for accommodating local adaptation and for experimentation**, thus ensuring sensitivity to the specificities of a given environment. There is no one-size-fits-all, and perfectionism will most likely work against the proposed changes. **Communication is paramount** for policy changes to succeed. One should avoid the pitfall of selling a new policy, but rather allow everyone to speak their minds, thereby **investing in co-creating new policies**. To emphasise this democratic approach, it is suggested that new policies should not be mandatory in the first instance, but that it is beneficial to have ideas on how to reward those who adhere to the policy and how to address clear infractions. For the successful launching and long-term success of new policies regarding institutional culture as a whole, it is

critical to **provide support and resources**, such as training, services, funding, time allowances, and monitoring instruments, as was laid out in the paper on "Maintaining a Quality Culture in Doctoral Education" (Bogle, von Bülow & Shykoff, 2016).

In order to successfully support the implementation of this change process as well as to safeguard any progress made on this path, **transgressions need to be acted upon**. For example, the neglect or violation of good supervision practice requires suitable repercussions in order to emphasise the seriousness of the undertaking and the value of appropriate behaviour. Possible consequences may entail a (temporary) loss of the right to supervise, intensified mandatory participation in training programmes, or budgetary restrictions. In the long run, it might be worthwhile to consider establishing "single contributor" research careers where talented researchers without sufficient people skills can pursue their research goals without being compelled to supervise junior colleagues.

Conclusions

LERU universities propose the nurturing of an **improved institutional culture of appreciation** that fosters engagement in impactful supervision and is characterised by **effective communication** and **reliable expectation management**. To this end, it is as beneficial as it is indispensable to develop new and to continuously improve existing, **tailor-made training modules for supervisors and supervisees** alike. In parallel, **new dimensions in assessing the quality of research** in a holistic fashion need to be implemented, where research success, teaching effort, investment in doctoral supervision, and successful grant acquisition are considered equally valuable and where **all dimensions contribute with equal weight to decisions on career progression**. Training modules targeting these needs must be time effective and efficient. They must provide a tangible added value to those investing time and resources in such training in terms of being better situated to favourably cope with the multitude of daily challenges of researchers at all levels of their career. LERU universities agree that **training for supervision and leadership skills** needs to be regularly refreshed.

Empathic leadership, availability, responsibility, and consistent and realistic expectation management characterise good practice in supervision. Excellent supervision requires the **elimination of bias**, the exclusion of conflicts of interest in the supervisor-supervisee partnership, and the **availability of an individualised thesis advisory committee** for each doctoral researcher. It furthermore requires the **involvement of higher education professionals** visibly and accessibly embedded in a functional landscape of research-oriented service infrastructures. **The final result for productive and impactful supervision is the success of the doctoral researchers** with regard not only to their first career steps after the PhD but also with respect to their longer term career progression and their impact in a multitude of meaningful and ambitious positions as leaders in society, in the private as well as public sector, in academia and beyond. Cultural change within institutions that play a pivotal role in fostering emerging research talents requires the adaptation of **modern recruitment tools and strategies**. These are especially characterised by state-of-the-art recruitment procedures designed to foster inclusiveness and diversity. In short, **“it takes two to tango”** and **“a village to raise a PhD”** in order to prepare the next generation of scientifically trained leaders for successful careers in yet-to-be defined working environments tackling unknown challenges and tasks.

References

- Anon (2005) *Bologna Seminar on 'Doctoral Programmes for the European Knowledge Society': Conclusions and Recommendations*. <https://eua.eu/downloads/publications/salzburg%20recommendations%202005.pdf>.
- Ayris, P. (2018) *Open Science and its role in universities: A roadmap for cultural change*. <https://www.leru.org/files/LERU-AP24-Open-Science-full-paper.pdf>.
- Bengtson, S.S.E. (2016) *Doctoral Supervision: Organization and Dialogue*. Aarhus, Aarhus University Press.
- Berenger-Currias, N., Boon, N., Bossert, N., Eliel, E., Metz, T., Neekilappillai, M. & van der Weijden, I. (2019) *Golden Rules for PhD Supervision*. Leiden University. <https://www.medewerkers.universiteitleiden.nl/binaries/content/assets/ul2staff/onderzoek/promoveren/golden-rules-phd-supervision>.
- Bogle, D., von Bülow, I. & Shykoff, J. (2016) *Maintaining a Quality Culture in Doctoral Education at Research-Intensive Universities*. <https://www.leru.org/files/Maintaining-a-Quality-Culture-in-Doctoral-Education-Full-paper.pdf>.
- Boone, A., Vander Elst, T., Vandenbroeck, S. & Godderis, L. (2022) *Burnout Profiles Among Young Researchers: A Latent Profile Analysis*. *Frontiers in Psychology*. 13:839728. doi:10.3389/fpsyg.2022.839728.
- Brentel, H. (2018) *Doctoral Supervision: Handbook for Establishing a Productive and Supportive Supervision Culture*. Frankfurt am Main, Helmut Brentel.
- Christian, K.; Johnstone, C.; Larkins, J.O.; Wright, W. & Doran, M.R. (2021) *A survey of early-career researchers in Australia*. *eLife* 10:e60613. doi: <https://doi.org/10.7554/eLife.60613>
- Hoffmann, W., Grill, C., Remmert-Rieper, M., Bänfer, A., Mohr, V. & Höring, F. (2021) *Future Skills for Openness: Ein Framework zur Förderung von Offenheit in Wissenschaft und Wirtschaft*. https://innosci.de/wp-content/uploads/innOsci_Studie_Framework.pdf
- Kumar, S., Kumar, V. & Taylor, S. (2020) *A Guide to Online Supervision: Guide for Supervisors*. <https://supervision.ukcge.ac.uk/cms/wp-content/uploads/A-Guide-to-Online-Supervision-Kumar-Kumar-Taylor-UK-Council-for-Graduate-Education.pdf>.
- Lee, A. (2012) *Successful Research Supervision: Advising Students Doing Research*. London, Routledge.
- Overlaet, B. (2022) *A Pathway towards Multidimensional Academic Careers: A LERU Framework for the Assessment of Researchers*. https://www.leru.org/files/Publications/LERU_PositionPaper_Framework-for-the-Assessment-of-Researchers.pdf.
- Pyhältö, K., Tikkanen, L. & Anttila, H. (2022) *Summary Report on Doctoral and Supervisory Experience at the University of Helsinki*; Reports 95. <https://helda.helsinki.fi/handle/10138/338695>.
- Taylor, S. (2019) *Good Supervisory Practice Framework*. <https://supervision.ukcge.ac.uk/cms/wp-content/uploads/2019/09/Good-Supervisory-Practice-Framework-Stan-Taylor-Research-Supervision-Recognition-Programme-UK-Council-for-Graduate-Education-2.pdf>.
- Taylor, S., Kiley, M. & Holley, K.A. (2021) *The Making of Doctoral Supervisors: International Case Studies of Practice*. 1st edition. London, Routledge.
- Taylor, S., Kiley, M. & Humphrey, R. (2018) *A Handbook for Doctoral Supervisors*. 2nd edition. London, Routledge.
- Wisker, G. (2012) *The Good Supervisor*. 2nd edition. New York, Palgrave Macmillan.

LERU publications

LERU publishes its views on research and higher education in several types of publications, including position papers, advice papers, briefing papers and notes.

Advice papers provide targeted, practical and detailed analyses of research and higher education matters. They anticipate developing or respond to ongoing issues of concern across a broad area of policy matters or research topics. Advice papers usually provide concrete recommendations for action to certain stakeholders at European, national or other levels.

LERU publications are freely available in print and online at www.leru.org.



All LERU publications, unless otherwise stated, are licensed under a Creative Commons Attribution 4.0 International license

Graphic design: Altera
Printed 100% climate-neutral by Van der Poorten

About LERU

The League of European Research Universities (LERU) is an association of twenty-three leading research-intensive universities that share the values of high-quality teaching within an environment of internationally competitive research.

Founded in 2002, LERU advocates:

- education through an awareness of the frontiers of human understanding;
- the creation of new knowledge through basic research, which is the ultimate source of innovation in society;
- and the promotion of research across a broad front in partnership with industry and society at large.

The purpose of the League is to advocate these values, to influence policy in Europe and to develop best practice through mutual exchange of experience.

Facts and figures

- Collectively LERU universities represent more than **750,000 students**
- Each year about **16,000 doctoral degrees** are awarded at LERU universities
- Across the LERU members there are an estimated **1200 start-up and spin-out** companies across Europe
- In 2016 the LERU universities received **1.1 billion euro** in contract and collaborative research income
- LERU universities contribute approximately **1.3 million jobs** and **99.8 billion Gross Value Added** to the European economy
- On average more than **20% of ERC grants** are awarded to researchers at LERU universities
- Over **230 Nobel Prize** and **Field Medal winners** have studied or worked at LERU universities
- **Hundreds of LERU university members** are active in more than **30 LERU groups** to help shape EU research and innovation policies and exchange best practices





EDINBURGH

COPENHAGEN ● ● LUND

HELSINKI ●

CAMBRIDGE ●

AMSTERDAM ●

LEIDEN ●

UTRECHT ●

LEUVEN ●

HEIDELBERG ●

STRASBOURG ●

STRASBOURG ●

FREIBURG ●

ZÜRICH ●

GENÈVE ●

MILANO ●

MÜNCHEN ●



PUSHING
THE FRONTIERS
OF INNOVATIVE
RESEARCH

University of Amsterdam

Universitat de Barcelona

University of Cambridge

University of Copenhagen

Trinity College Dublin

University of Edinburgh

University of Freiburg

Université de Genève

Universität Heidelberg

University of Helsinki

Universiteit Leiden

KU Leuven

Imperial College London

University College London

Lund University

University of Milan

Ludwig-Maximilians-Universität München

University of Oxford

Université Paris-Saclay

Sorbonne University

University of Strasbourg

Utrecht University

University of Zurich

LERU Office

Minderbroedersstraat 8
3000 Leuven, Belgium

info@leru.org

[@LERUnews](https://twitter.com/LERUnews)

www.leru.org