

**Research Assessment 2017-2024**

**Vrije Universiteit Amsterdam  
Faculty of Science**

**Natural & Life Sciences Towards A Sustainable Society**

**Amsterdam Institute For Life And Environment (A-LIFE)  
Chemistry And Pharmaceutical Sciences (CPS)  
Physics And Astronomy (P&A)**

## Executive summary

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This report presents the evaluation of three research units within the Faculty of Science of Vrije Universiteit Amsterdam: the Amsterdam Institute for Life and Environment (A-LIFE), the Department of Chemistry and Pharmaceutical Sciences (CPS), and the Department of Physics and Astronomy (P&A). The evaluation covers the period 2017–2024 for CPS and P&A and 2021–2024 for A-LIFE.

In addition to the assessment of the individual departments, the committee evaluated faculty-wide policies and practices, including academic culture, talent and personnel management, PhD policy and training, and open science. The positioning and functioning of interdisciplinary research institutes were also considered.

The committee assessed research quality, societal relevance, and viability in accordance with the Strategy Evaluation Protocol (SEP 2021–2027). The assessment is based on self-evaluation reports, quantitative data, and interviews conducted during a site visit with leadership, academic staff, PhD candidates, and support staff.

### Faculty of Science

The Faculty of Science provides a coherent framework that supports high-quality research. Faculty-wide policies on academic culture, talent development, PhD training, and open science are well developed and consistently applied. A collegial and collaborative academic environment is evident across the Faculty, supported by transparent governance structures and a clear commitment to research integrity, inclusivity, and staff development.

The Faculty has used national funding instruments effectively to rejuvenate its academic staff and strengthen research capacity. At the same time, the financial context is becoming more uncertain, with increasing dependence on external funding and potential fluctuations in student numbers. While the Faculty has responded in a considered manner, continued attention to long-term personnel planning and financial sustainability will be required.

The committee concludes that the Faculty is well positioned for future development. Sustaining clear career pathways, maintaining attention to PhD completion times, and continuing efforts to improve gender balance across academic ranks will remain important. In addition, further strengthening the positioning of the Amsterdam Institute of Molecular Life Sciences (AIMMS) and the Amsterdam Sustainability Institute (ASI) will be key to enhancing interdisciplinary collaboration and societal engagement.

### Amsterdam Institute for Life and Environment (A-LIFE)

The committee finds that A-LIFE delivers research of high quality and has developed a well-established and internationally visible profile at the interface of life and environmental sciences. Its research

combines disciplinary depth with interdisciplinary collaboration and addresses major societal challenges related to sustainability, environmental change, and health, and is strongly embedded in national and international research networks.

A key strength of A-LIFE is its collaborative academic culture, which supports shared use of expertise, infrastructure, and joint research initiatives. Leadership is experienced as accessible and reflective, and staff benefit from an environment that supports both individual development and collective work. The department has also developed a diversified funding base, contributes to improved gender balance at early career stages, and maintains strong connections with societal partners.

At the same time, several issues require continued attention. PhD completion times remain longer than the intended four-year period, and workload is high. In addition, future financial and demographic developments call for careful long-term planning. Overall, the committee concludes that A-LIFE has a solid basis for further development, provided that continued attention is given to PhD duration, workload sustainability, and career progression.

### **Chemistry and Pharmaceutical Sciences (CPS)**

The committee finds that CPS conducts research of high quality and is internationally competitive across its core areas in chemistry and the molecular life sciences. The department brings together complementary expertise in synthetic, analytical, computational, and medicinal chemistry, providing a strong basis for research at the interface with biology and applications such as drug discovery. The department is also well connected to national and international research networks and offers clear opportunities for societal application and collaboration with external partners.

CPS benefits from a collaborative and supportive research environment, with shared infrastructure and strong technical support. The department has strengthened its research capacity through recent recruitments, contributing to staff renewal and improved gender balance at early career stages.

At the same time, CPS operates in a more demanding financial and organisational context than in previous evaluation periods. The committee notes a decline in contract research and a continued dependence on teaching income and competitive funding, which places considerable demands on staff. Workload is high, partly due to substantial teaching commitments, and the department's external research profile and strategic positioning could be articulated more clearly. Overall, the committee concludes that CPS has a solid foundation for future development, provided that continued attention is given to financial sustainability, strategic focus, the balance between teaching and research, and PhD completion times.

### **Physics and Astronomy (P&A)**

The committee finds that P&A delivers research of excellent quality and holds a leading position in several areas of physics. The department combines fundamental research with advanced

instrumentation and technology development across disciplinary boundaries, resulting in strong performance in competitive funding, high scientific impact, and a notable track record in valorization, including patents and spin-off companies.

P&A benefits from a clear research profile organised around four core themes and supported by a section-based structure that combines scientific autonomy with local cohesion. The department has further strengthened its research capacity through targeted recruitment and has improved gender balance at early career stages. The move to a new research building has provided high-quality infrastructure that supports advanced experimental research and collaboration.

The department is well embedded in national and international collaboration networks, with LaserLaB Amsterdam serving as an important unifying element across research activities and contributing to coherence within the research portfolio.

The committee considers the future viability of P&A to be strong. At the same time, attention is needed for the continued reliance on external funding, the duration of PhD trajectories, and the long-term maintenance of critical mass across research areas. Further strengthening the external articulation of the department's research profile could enhance its already strong position.

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## **Preamble**

## 1. Reader's guide

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This report is structured as follows.

1. A preamble, containing:

- this reader's guide
- an elaboration of the procedures followed

2. Assessment report of the (common policies and regulations of) the Faculty of Science

3. Assessment reports of A-LIFE, CPS and P&A

4. Appendices

Sections 1 and 4 are overarching, and are to be considered as the Introduction and Appendix of each of the separate reports.

The committee strongly advises to first read the Faculty assessment report, before reading any individual department reports, as it provides the necessary context for the individual reports.

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## 2. The review committee and the review procedures

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### 1.1. The System of Quality Assessment of Research in The Netherlands

An external committee of peers (henceforth committee) evaluated the research quality, societal relevance and viability of three research departments of the Faculty of Science of the Vrije Universiteit Amsterdam (VU Amsterdam): the Amsterdam Institute for Life and Environment (A-LIFE), and the departments of Chemistry and Pharmaceutical Sciences (CPS), and of Physics and Astronomy (P&A).

This quality assessment (peer review) is part of the assessment system for all publicly funded Dutch research organizations, as organized by the Association of Universities in the Netherlands (VSNU), the Royal Netherlands Academy of Arts and Sciences (KNAW) and the Netherlands Organisation for Scientific Research (NWO).

In accordance with the Strategy Evaluation Protocol 2021-2027 for Research Assessment in the Netherlands (SEP), the Committee's tasks were to assess the quality of the three departments on the basis of the information provided by the institute and interviews with faculty and departments management; full and associate professors; assistant professors; postdocs; PhD students; and support staff, and to advise on how it might be improved.

### 1.2. The Members of the Peer Review Committee

The committee consisted of:

- Prof. dr. Niek van Hulst (chair), ICFO - Institute of Photonic Sciences, and Catalan Institution for Research and Advanced Studies, Spain;
- Prof. dr. Juliane Hollender, Swiss Federal Institute of Aquatic Science and Technology (EAWAG), Switzerland;
- Dr. Sonja Billerbeck, Bioengineering Department, Imperial College London, UK;
- Prof. dr. Sandra Lavorel, Centre National de la Recherche Scientifique, France;
- Prof. dr. Jürgen Popp, Institute of Physical Chemistry, Friedrich Schiller University of Jena, Germany;
- Prof. dr. Fernando Cossio, University of the Basque Country, Spain;
- Prof. dr. Koen Augustyns, Department of Pharmaceutical Sciences, Faculty of Pharmaceutical, Biomedical and Veterinary Sciences, University of Antwerp, Belgium;
- Janek Betting, Faculty of Science and Technology, Department of Chemical Engineering, University of Twente, The Netherlands

Dr. Jetje De Groof (Belgium), independent higher education quality assurance project manager, was appointed as secretary to the committee.

All members of the committee signed a statement of impartiality to ensure that they would judge without bias, personal preference or personal interest, and that their judgment is made without undue influence from persons or parties committed to the institute or programmes under review, or from other stakeholders.

### 1.3. Scope of the Assessment

The current assessment covers an eight-year period (2017–2024) for CPS and P&A, and a four-year period for A-LIFE (2021–2024), which was established in 2021.

The scope of the assessment was set by the Terms of Reference (ToR). In the ToR, the committee was requested to assess the research conducted by A-LIFE, CPS and P&A in accordance with the SEP 2021–2027 standards. The evaluation includes a backward-looking and a forward-looking component. Specifically, the committee was asked to judge the performance of the three departments on the main assessment criteria and offer its written conclusions as well as recommendations based on considerations and arguments. The main assessment criteria are:

1. Research Quality
2. Societal Relevance
3. Viability

During the evaluation of these criteria, the committee was asked to incorporate four specific aspects. These aspects are as follows:

1. Open Science: availability of research output, reuse of data, involvement of societal stakeholders.
2. PhD Policy and Training: supervision and instruction of PhD candidates.
3. Academic Culture: openness, (social) safety and inclusivity, and research integrity.
4. Human Resources Policy: diversity and talent management.

In addition to these criteria specified in the SEP, the Board of the VU Amsterdam asked the committee to provide specific recommendations on the positioning and development of the Faculty's interdisciplinary research institutes in relation to the scientific departments. These include:

- Amsterdam Institute of Molecular Life Sciences (AIMMS) – a collaboration between A-LIFE, CPS, and the Bioinformatics group in the Computer Science department of the Faculty,
- Amsterdam Sustainability Institute (ASI) – a university-wide platform for interdisciplinary sustainability research, and
- LaserLaB Amsterdam – a collaboration between the department of P&A, CPS, Amsterdam UMC and the University of Amsterdam.

The Board's question regarding this topic was:

1. What is the committee's view on the current positioning of these interdisciplinary research institutes (AIMMS, ASI, LaserLaB), both within and outside the VU, in relation to the scientific departments A-LIFE, CPS, P&A? How can their positioning and visibility be strengthened?

In addition to this question, the Board also provided the following unit-specific questions

A-LIFE:

1. What does the committee see as the current strength in research, training, and impact of A-LIFE, and what is needed for A-LIFE to make a step forward in the future?
2. A-LIFE aims to be a place where both team science blossoms and individual scientific talent can shine. What recommendations can the committee provide to balance these ambitions?

3. According to the committee, how can we innovate and improve the training of our early career researchers as scientific leaders for the future?

#### CPS

1. What does the committee consider the strengths of CPS in terms of research and impact, and what opportunities does the committee see to further reinforce them?
2. What opportunities does the committee see for the department to further strengthen external collaborations whilst maintaining internal coherence?
3. What opportunities does the committee see for the department to capitalize on expertise and infrastructure in collaboration with private partners?

#### P&A

1. According to the committee, what are our main strengths in terms of the research and impact portfolio?
2. How can our department best position itself to identify and adapt to new and upcoming opportunities for scientific research and societal impact?
3. How can the department enhance the visibility of its research and societal impact both within academia and beyond?
4. What strategies can we best deploy to support the attraction, retention, and professional development of (international) talent?

### **1.4. Data provided to the committee**

The committee members received a documentation package well in advance of the site visit. This contained the self-evaluations of the three Departments, with a description of the mission, objectives and results achieved in the reporting period, as well as developments anticipated in the future. The documentation included quantitative data about staff composition, PhDs, publications, and financial resources. It also contained an overview of the shared Faculty-wide regulations and policies that apply to the three departments, addressing academic culture, talent and personnel management, PhD policy and training, and open science initiatives. The committee also received the SEP and TOR for the assessment.

In the period leading up to and during the site visit, the committee received additional information upon request. This included clarification on the scope of the assessment and the interpretation of several tables in the self-evaluation report, further details on teaching load and staff composition (including technical and support staff), comparative information on PhD enrolment and completion data, additional breakdowns of research income by funding channel, and clarification regarding patents, shared PhD supervision, and the roles of technical staff within the departments.

### **1.5. Procedures followed by the committee**

The committee members were asked to read the complete information package and provide their written preliminary appraisal prior to the site visit. The committee had a preparatory online meeting on 24 November 2025, as well as in the afternoon and evening prior to the site visit.

The site visit took place on February 2nd-4th, 2026. Appendix 1 shows the programme of the site visit. Between the interviews, time was available for the committee to discuss its findings. At the end of the site visit, a closed committee session was held so that all members could come to a consensus on the final assessment. At the conclusion of the visit, the committee presented its main preliminary conclusions to the community of the three departments orally.

After the site visit, the evaluation report was prepared, which was then circulated to the committee for comment. A final version, that took these comments into account, was then drawn up and sent to A-LIFE, CPS, P&A and the Faculty of Science for a check on possible factual errors. Finally, the report was delivered to the Executive Board of Vrije Universiteit Amsterdam.

## **Faculty of Science - Common policies and regulations**

## 1. Faculty of Science - overview

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The Faculty of Science at VU Amsterdam employs approximately 1400 staff members across ten academic departments and a faculty office. It hosts around 8000 students enrolled in 39 educational programmes. Its disciplinary scope spans both the life and natural sciences, with contributions extending into interdisciplinary research touching on the social sciences, humanities, and law.

The Faculty's mission is to address the major challenges of our time, including sustainability, climate change, biodiversity, the digital and connected society, data science, medicines and vaccines, medical technology, food and water, and health, through fundamental and application-oriented scientific education and research. To this end, the Faculty combines curiosity-driven research with an experimental and computational approach, and places interdisciplinarity at the heart of its work. This is reflected in active collaboration between departments within the Faculty, with other VU Amsterdam faculties and interdisciplinary research institutes, and with a wide range of external partners, including Amsterdam University Medical Centers (Amsterdam UMC), the University of Amsterdam (UvA), and the Amsterdam University of Applied Sciences (AUAS). Since 2019, the University of Twente (UT) has become an important strategic partner, with the aim of positioning VU Amsterdam as the science and technology campus of north-west Netherlands.

Three of the Faculty's ten research departments are under assessment in this report: the Amsterdam Institute for Life and Environment (A-LIFE), Chemistry and Pharmaceutical Sciences (CPS), and Physics and Astronomy (P&A). Together these departments cover a broad spectrum of research, ranging from life and environmental sciences to chemistry, pharmaceutical sciences, and fundamental and applied physics. The departments and their research profiles are described in more detail in the sections that follow.

In addition to these departments, the Faculty hosts three affiliated research institutes whose activities cut across departmental boundaries and support interdisciplinary collaboration: the Amsterdam Institute of Molecular and Life Sciences (AIMMS), the Amsterdam Sustainability Institute (ASI), and LaserLaB Amsterdam. AIMMS promotes research at the interface of chemistry, biology, and computation; ASI connects researchers working on sustainability-related challenges; and LaserLaB Amsterdam focuses on research on the interaction of light with matter and related technological applications. These institutes provide platforms for collaboration within the Faculty and with external partners. Their roles and activities will be described in more detail later in this report.

## 2. Evaluation of the Faculty of Science

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In this section, the committee evaluates the common policies and practices that apply across the Faculty of Science. These include academic culture, talent and personnel management, PhD policy and training, and open science initiatives. The committee also addresses the current financial context and considers interdisciplinary collaboration, including the question raised in the Terms of Reference concerning the positioning of the interdisciplinary research institutes (AIMMS, ASI, and LaserLaB) in relation to the scientific departments A-LIFE, CPS, and P&A.

The focus here is on policies and practices at the Faculty level. In the subsequent sections on the individual departments, the committee will further consider how these faculty-wide policies and initiatives are implemented and experienced at the departmental level.

### 2.1. Financial context

Over the past decade, national funding programmes such as the Sector Plans, the Starter and Incentive grants, and the Van Meenen funds have played a key role in strengthening the Faculty's research and teaching capacity, notably by enabling the recruitment of assistant professors and the development of new research lines. These instruments have helped rejuvenate the academic staff and expand research activities. Several of these programmes are now being phased out, while rising inflation, energy costs, and salary increases have created additional financial pressure.

Looking ahead, the financial landscape for Dutch universities appears increasingly uncertain. Anticipated reductions in direct government funding, demographic developments affecting student numbers, and strong competition for external grants are likely to intensify pressure on university finances. During the site visit, the committee learned that the Faculty has been proactive in responding to these developments. As part of faculty policy, departments have been asked to review their cost structures and explore ways to strengthen income streams. The committee appreciates this coordinated approach to maintaining the Faculty's financial resilience.

At the same time, greater reliance on external and project-based funding may pose risks for long-term research continuity and staff stability. The committee therefore encourages the Faculty, together with departmental leadership, to continue developing a strategic long-term perspective on personnel and departmental development, taking into account expected developments in funding, student inflow, and staff composition over the coming decade.

### 2.2. Positioning of the interdisciplinary research institutes

#### AIMMS

AIMMS functions as a platform connecting researchers across CPS, A-LIFE, and the Bioinformatics group of the Computer Science department. Combining expertise in computation, chemistry, and biology, the Institute aims to facilitate collaboration across disciplines and to support the translation of research into applications and partnerships with external stakeholders.

During the site visit, the committee initially found it somewhat difficult to clearly identify AIMMS's precise aim and strategic focus. However, across interviews with both representatives of A-LIFE and CPS, researchers consistently indicated that the initiative adds clear value. AIMMS is perceived as a useful vehicle for bringing together research across participating departments and, importantly, for organizing valorization activities in a more structured and professional way than would typically emerge through individual or ad hoc initiatives. Activities such as hackathons, seminars, and the annual AIMMS congress were mentioned repeatedly as effective mechanisms for fostering interaction and visibility.

The committee understands that the Faculty leadership has deliberately repositioned AIMMS in recent years to place greater emphasis on valorization and external engagement. While this direction is widely supported, it also implies the need for a sharper profile towards the outside world. At present, AIMMS presents a very broad range of activities and ambitions, which can make its external positioning somewhat diffuse. The committee therefore encourages AIMMS to further focus its narrative on the areas where it is strongest, in particular its capacity to connect molecular sciences with innovation and societal applications.

The committee also notes that AIMMS currently receives financial support from the participating departments and the Faculty, with this support expected to end after 2026. In this context, the committee encourages the Faculty and AIMMS leadership to explore sustainable funding models, for example by positioning AIMMS as a partner in larger national or European research consortia where its expertise in collaboration, valorization, and stakeholder engagement could play a meaningful role.

### **LaserLaB Amsterdam**

LaserLaB Amsterdam is an interdisciplinary research institute within the Faculty, led by the Physics and Astronomy (P&A) department. It brings together researchers from physics, chemistry, biology, and medicine to investigate interactions between light and matter across a wide range of applications. LaserLaB also includes research groups from the UvA and forms part of the European LaserLAB network.

The committee finds that LaserLaB functions effectively both as a research network and as a recognisable scientific brand. Because much of the research in P&A relies on advanced laser techniques, LaserLaB provides a convincing common denominator across research groups. It functions as a broad umbrella under which researchers identify with a shared methodological and conceptual foundation.

The committee observed that this branding works well in practice. LaserLaB serves as a backbone for the P&A and helps present the department externally as a coherent research entity. The inclusion of groups from the UvA further strengthens this profile. The committee considers this a clear strength worth maintaining.

### **ASI**

With regard to ASI, the committee notes that both A-LIFE and CPS participate in the institute, though neither is in a leading role. ASI's inherently transdisciplinary character connects well with the research profiles of these departments, and aligns naturally with the work of the environmental sciences strand within A-LIFE. While ASI was mentioned less frequently during the site visit interviews than AIMMS or LaserLaB, researchers did refer to it as a valuable vehicle for engaging in and developing transdisciplinary research. The committee considers this role important, both for strengthening societal impact and for building the kinds of

partnerships with public bodies and other societal partners that are increasingly relevant for funding. At the same time, similar to AIMMS, the committee notes that ASI's external visibility and positioning could be further strengthened. A clearer articulation of its focus and added value would help enhance its role as a platform for transdisciplinary collaboration and societal engagement.

## **2.3. Common policies and regulations**

### **2.3.1. Academic culture**

The committee notes that VU Amsterdam and the Faculty of Science have developed a comprehensive framework aimed at fostering a safe, inclusive, and responsible academic environment. All key aspects of academic culture are addressed within this framework, including social safety, physical safety, cybersecurity, knowledge security, scientific integrity, privacy and data protection, and research ethics. The University's values of responsibility, openness, and personal engagement are translated into practical guidelines through the *Code of Conduct* and the *Art of Engagement* principles, which support respectful interaction across the academic community. The committee observes that these topics are not addressed on paper alone. They are supported through dedicated training programmes, including active bystander training and social safety awareness training for managers, as well as through institutional procedures, designated contact persons, and periodic monitoring mechanisms.

Scientific integrity is governed by the *Netherlands Code of Conduct for Research Integrity*, and training on this topic forms part of the compulsory PhD programme across all three departments. Responsible research practices are further supported through faculty structures such as the Research Data Manager coordinator, who assists staff with standards for data storage and reproducibility. Privacy and data protection are overseen by two faculty-level Privacy Champions, who serve as contact points between the departments and the university's legal and privacy teams. Research involving human participants is guided by the Faculty's *Code of Ethics* and reviewed by the Research Ethics Committee (BETHCIE), whose procedures were updated in 2024–2025 to clarify assessment processes and emphasise researcher responsibility. The responsible use of generative AI in research is an emerging topic currently addressed through university-wide guidelines and faculty initiatives providing guidance within the PhD trajectory.

During the site visit, the committee was struck by the open and collegial atmosphere within the Faculty. Staff at all levels, from senior researchers to technicians, were engaged and forthcoming in their discussions with the committee. As will be further described in the department sections, collaboration appears to be a defining feature of the Faculty's culture. Resources, instruments, projects, and PhD supervision are frequently shared across groups, and staff described supporting one another as a matter of course. The committee also observed that the Faculty leadership places clear emphasis on inclusivity and a supportive working environment, and that this commitment appears to be broadly recognised across the Faculty.

### **2.3.2. Talent and Personnel Policy**

VU Amsterdam has committed to the international Recognition and Rewards programme, and the Faculty of Science has developed a career policy aligned with this framework. In 2022, this replaced the former tenure track system, under which new staff had to meet predefined performance targets within five years before receiving a permanent contract. Under the new career track system, staff receive a permanent contract after

18 months and develop a personal career path tailored to their individual talents, their contribution to team objectives, and their profile across research, education, and impact. Personnel planning and career development are further supported through the annual Strategy Personnel Plan, which addresses performance, development, promotion, and staff profiles, as well as through annual consultations focusing on mutual expectations and career development. During the site visit, the committee observed that the Faculty is genuinely committed to implementing the Recognition and Rewards framework. It commends the talent management process developed around it.

The committee notes that in the reporting period, the Faculty has used the Sectorplan Beta en Techniek effectively to recruit a considerable number of assistant professors, bringing fresh research lines and a younger staff profile to all three departments under review. New staff are given genuine ownership of their research from the outset, which the committee found to be an important and telling signal about the Faculty's culture. Mid-career staff described progressing at a reasonable pace, typically reaching the next career stage within four to five years, and spoke of having regular, open conversations with their supervisors about where they stood. Promotion criteria were broadly perceived as clear and consistently applied.

Two issues merit particular attention. First, the committee noted that assistant professors currently do not hold the *ius promovendi*. Given that assistant professors are expected to lead independent research programmes and that PhD supervision is central to academic career development, the committee is of the opinion that *ius promovendi* should be granted to assistant professors once clearly defined criteria have been met. Second, the committee emphasises that when internal candidates are considered during the 18-month period preceding tenure, recruitment procedures should remain fully open and competitive. Candidates should have acquired sufficient independent experience outside the institution to demonstrate their capacity for genuinely independent research.

### **2.3.3. Diversity and inclusion**

The Faculty of Science has an internationally diverse academic staff, with over 30% of staff holding non-Dutch nationalities from more than 70 countries. Overall gender balance is relatively even (54% male, 46% female), but becomes increasingly skewed at higher career levels: women represent 43% of assistant professors, 28% of associate professors, and 25% of full professors. Differences between departments are also considerable. Inclusive recruitment is supported through faculty policy requiring gender diversity on selection committees and attention to open and bias-aware recruitment procedures. The Sectorplan Beta en Techniek enabled the Faculty to apply a female-first recruitment policy in line with national targets, while initiatives such as the WO&MEN@VU staff network support gender equality more broadly.

The committee finds that the Faculty has made genuine and visible efforts to strengthen diversity and inclusion, and that these efforts are beginning to yield results. The overall gender balance among academic staff is approaching parity. International diversity also appears strong, with staff from a wide range of national backgrounds well integrated into departmental life.

At the same time, the underrepresentation of women at associate and full professor level remains a concern. The committee therefore encourages the Faculty to examine potential barriers to advancement and to address these with the same deliberate attention applied to junior recruitment. Differences between

departments also deserve continued attention, as faculty-wide figures may mask situations requiring more targeted action.

#### **2.3.4. PhD Policy and Training**

The committee was pleased to learn that the Faculty of Science has a well-structured framework for PhD training and supervision, coordinated through graduate schools linked to each of the three departments. PhD coordinators manage day-to-day matters, advise candidates and supervisors on policy, and contribute to faculty-level policy development, while progress is tracked through the Hora Finita system. Each PhD candidate has at least two supervisors and follows a training and supervision plan covering 30 EC across scientific integrity, general skills, disciplinary specialisation, and research-related activities. A go/no-go evaluation takes place after approximately eight months, after which successful candidates receive a three-year contract extension. The committee finds this a coherent system that provides appropriate structure and safeguards throughout the trajectory.

Additional support mechanisms are in place to ensure high-quality supervision. Since December 2023, PhD candidate advisers act as independent mentors, meeting regularly with candidates to discuss workload, wellbeing, and matters related to social safety or scientific integrity. PhD councils at departmental, faculty, and university level represent candidates in policy discussions. Supervisors are required to complete a dedicated training course, and guidance materials, including the *Golden Rules for PhD Supervision*, are available. The committee regards this combination of independent advising, mandatory supervisor training, and structured guidance as a clear strength.

At the same time, the duration of PhD trajectories remains a point of concern. The Faculty has introduced a series of measures in recent years to bring completion closer to the intended four-year timeframe, including thesis content guidelines, teaching time guidelines introduced in 2024, and the removal of the possibility to extend first-money-flow contracts beyond four years. The committee welcomes that policies have recently become stricter and more explicit in aiming to ensure timely completion. However, these measures have not yet translated into clearly visible improvements in the results. As will be further discussed in the department sections, systematic efforts are underway to address this issue. Ultimately, a cultural shift will be required: a shared understanding that after four years a candidate produces a thesis and moves on. The committee observed indications that such a shift may be emerging, partly driven by a new generation of assistant professors with more structured approaches to supervision and clearer expectations regarding PhD timelines, but progress will need to be closely monitored. The committee therefore strongly recommends tracking PhD duration annually at both departmental and faculty level and responding swiftly where delays occur.

Finally, the committee notes that if PhD output requirements are adjusted, promotion criteria for assistant professors should be reviewed accordingly, to avoid creating unintended inconsistencies for early career staff.

#### **2.3.5. Open Science**

VU Amsterdam's open science agenda spans the full research cycle and is well aligned with national and European policies. The committee finds that a coherent policy framework and supporting infrastructure are

in place and notes that the Faculty of Science contributes actively to this agenda rather than merely implementing university-wide policy.

Since January 2023, open publishing has been the norm at VU Amsterdam: publications must be registered in PURE and made openly accessible where possible, with authors retaining copyright. When immediate open access is not possible, Dutch law allows the final author version to be shared after six months, which VU Amsterdam facilitates automatically through its *You Share, We Care* policy. Research data and software are managed according to FAIR principles under the university's Research Data and Software Management policy (updated in December 2024), with the Faculty currently aligning its own policy to this framework.

Researchers are supported by data stewards, a policy adviser, and departmental coordinators who assist with data management plans and promote FAIR practices. The Faculty also participates in national Open Science initiatives such as the Research Data Support Network and the Thematic Digital Competence Center for the Natural Sciences and Engineering. VU Amsterdam is a partner of OpenAIRE and a signatory of the Barcelona Declaration on Open Research Information.

Open Science at the Faculty extends beyond publications and data. Citizen science initiatives such as *VeenVitaal* involve researchers, stakeholders, and volunteers in studying peatland ecosystems and biodiversity, while VU Amsterdam coordinates the Amsterdam Citizen Science Hub with academic and civic partners. The committee also notes that Open Science principles are embedded in the Recognition and Rewards framework, aligning academic incentives with openness and transparency.

## 2.4. Viability

The committee concludes that the Faculty of Science is strongly positioned for future viability. It has established a coherent framework to support its academic activities. Personnel policies aligned with the Recognition and Rewards framework, structured PhD training arrangements, and well-developed open science policies provide a clear institutional basis for research and academic development. There is clear attention for academic culture, with established structures for social safety and research integrity and appropriate procedures in place to safeguard these principles. The committee observed a collegial and collaborative academic environment, and a leadership attentive to these issues and actively supporting an open and respectful working environment. Diversity and inclusion are taken seriously and are supported through recruitment policies, institutional initiatives, and monitoring mechanisms.

At the same time, the broader financial context for Dutch universities is becoming more uncertain. While the Faculty has been proactive in its response, greater reliance on external and project-based funding can create risks for long-term research continuity and staff stability. The committee therefore encourages the Faculty, together with departmental leadership, to develop strategic long-term personnel planning that takes expected developments in funding, student inflow, and staff composition into account.

Several issues also deserve continued attention. Retention of talented early-career researchers is important, particularly given the investments made in recruiting assistant professors and supporting their research development. Granting *ius promovendi* to assistant professors once clearly defined criteria are met would strengthen their academic independence and may contribute to retention. The committee also notes that the policy framework for PhD training has been strengthened, but that the cultural shift required to consistently complete PhD trajectories within four years is still ongoing. Finally, the Faculty's interdisciplinary institutes

represent a valuable asset, but in some cases their potential could be more fully realised through clearer positioning and stronger engagement with participating departments.

### 3. Recommendations

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The committee's recommendations are as follows:

**1. Strengthen retention through clear career pathways and inclusive progression.** The committee recommends strengthening retention by ensuring transparent and competitive recruitment and promotion procedures, including in the 18-month period preceding tenure decisions. Clear criteria for career progression, opportunities for external experience, and continued attention to gender balance across academic ranks are essential to maintain an attractive and inclusive working environment and to support long-term staff retention.

**2. Extend *ius promovendi* to assistant professors.** The committee recommends extending promotion rights to assistant professors once clearly defined criteria are met. This would strengthen supervisory capacity, support the development and independence of early-career principal investigators, and contribute to their retention.

**3. Monitor PhD duration annually.** The committee recommends continued attention to supervision practices, feasibility of project planning, and realistic expectations regarding completion within four years. In addition, PhD duration should be formally monitored each year at both departmental and faculty level.

**4. Develop long-term strategic personnel planning.** In light of increasing financial uncertainty, the committee recommends that the Faculty and its departments develop a long-term perspective on personnel development and departmental size, taking anticipated changes in funding streams, student inflow, and staff composition into account.

**5. Develop a sustainable funding model and clearer external profile for AIMMS.** The committee recommends developing a sustainable funding strategy for AIMMS beyond 2026 and sharpening its external positioning. AIMMS should articulate more clearly its strengths and added value for societal and industrial partners and be embedded more structurally in collaborative research proposals.

## **Amsterdam Institute for Life and Environment (A-LIFE)**

## 1. A-LIFE overview

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A-LIFE was established in 2021 through the merger of three smaller departments: Molecular Cell Biology, Ecological Sciences, and Environment and Health. The merger was initiated bottom-up by the departments themselves, driven by complementary research interests and shared teaching commitments. A-LIFE is now the second largest department of the Faculty of Science, with nearly 150 staff members. During the evaluation period, the number of permanent academic staff increased from 39 to 47, with most new appointments made at assistant professor level.

Research in A-LIFE broadly focuses on understanding the interactions between life and its environment. Research activities combine laboratory work, field studies, and theoretical approaches and address topics such as microbial biology, environmental health, chemical pollution, and ecological and evolutionary responses to environmental change. The department is organised into six sections of roughly equal size: Chemistry for Environment and Health, Environmental Health and Toxicology, Ecology and Evolution, Molecular Microbiology, Systems Biology, and Systems Ecology. Together these sections cover research across multiple levels of biological organisation, ranging from molecular and cellular processes to ecosystems and human populations.

A-LIFE is actively involved in collaborations within the Faculty and VU Amsterdam, as well as in national and international research networks, and maintains a wide range of societal connections with public authorities, environmental organisations, and other stakeholders. Academic staff contribute to teaching across several life science programmes, with involvement in six bachelor and five master programmes in the domains of Human Health and Life Sciences and Science for Sustainability.

The department is governed by a Section Board composed of the six section heads and the department head, supported operationally by a management team (MT) consisting of the department head, two section heads, and the departmental manager, together with the departmental support office.

During the reporting period, A-LIFE focused on generating cutting-edge scientific knowledge, strengthening external funding acquisition, and maintaining active participation in national and international scientific networks, alongside investment in talent development, PhD supervision, and an open and inclusive academic culture.

Looking ahead, the department aims to maintain its strong funding record, reduce PhD graduation delays, and improve teaching efficiency. Further interdisciplinary collaboration between sections and continued engagement in transdisciplinary research are priorities, with collaboration with AIMMS seen as particularly important for valorization and societal impact.

## 2. Assessment of A-LIFE

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In this section, the committee evaluates the performance of A-LIFE on the three criteria of research quality, relevance to society, and viability. In line with the requirements of the SEP, the committee also considers how the institute organizes and performs its research with special reference to Open Science, PhD Policy and Training, Academic Culture and Human Resources Policy. In addition, the committee reflects on the additional questions addressed in the ToR (see 1.3.). The committee makes its assessment based on the documents received and the interviews during the site visit.

The section is organised as follows:

- The specific aspects of Academic Culture, PhD Policy and Training and Human Resources Policy will be considered as part of '2.1. Research focus, organization and culture at A-LIFE' as they provide the necessary context for the committee's further assessment of '2.2. Research Quality' and '2.3. 'Relevance to Society'. PhD Policy and Training is discussed as part of 'Talent Development and Personnel Policy'.
- The specific aspect of Open Science will be considered as part of '2.2. Research quality'.
- The considerations of section 2.1. to 2.3. will form the basis to then evaluate the Institute's viability (section 3.4.)

The additional questions raised by the Executive Board will be addressed in the relevant sections of the report. An overview of the committee's recommendations is given in section 3.

### 2.1. Research focus, organization and culture at A-LIFE

#### 2.1.1. Mission and focus

A-LIFE defines its mission as generating and implementing innovative scientific insights on the interplay between life and its environment. The department aims to connect knowledge across multiple levels of biological organization, from molecules and cells to ecosystems and human populations, and to apply this knowledge to support a sustainable future and healthy living.

The committee finds this mission both clear and ambitious. A-LIFE pursues research that integrates questions across scales while maintaining strong disciplinary expertise within its sections. The committee notes a distinctive scientific profile around microbial biology and microbial ecology, combined with advanced analytical expertise as developers, users, and providers of services to external partners. This combination provides a solid basis for addressing questions that bridge fundamental biology and pressing environmental challenges.

Although the department's research scope is broad, the committee considers this breadth a strength rather than a weakness. A-LIFE deliberately combines strong disciplinary cornerstones within the six sections with mechanisms that facilitate collaboration across them, allowing the department to maintain depth in specialized fields while opening up connections across research themes.

### **2.1.2. Structure, governance and leadership**

The committee notes that the governance structure is well organised, combining structured leadership with regular consultation processes involving staff at different levels. The Section Board takes major decisions on strategic issues, equipment, and policy. Day-to-day operations are the responsibility of the MT and the departmental manager, which also prepares policy and strategic matters for discussion in the Section Board. During the site visit, the committee consistently heard positive feedback on A-LIFE's leadership. The MT was described as reflective, accessible and attentive to the Institute's challenges. All head functions rotate on four-year terms with a maximum of two terms. Every three months, the PhD coordinator, PhD council representative, teaching coordinators, data steward, and AIMMS director are invited to Section Board meetings to discuss ongoing and forthcoming issues. Twice a year, a staff convention is held for all staff to discuss recent developments in areas such as teaching, housing, PhD trajectories, and finances. Administrative and secretarial support is provided by the A-LIFE support office and coordinated by the departmental manager.

### **2.1.3. Collaboration**

Since it was founded, A-LIFE has since placed strong emphasis on scientific integration. The committee welcomes that clear criteria for success were formulated from the outset and collaboration across former departmental boundaries is actively stimulated. The Van Meensen positions, for instance, were used to recruit staff capable of connecting different sections and departments, an investment the committee regards as strategically well-considered. Teaching across sections also contributes to interdisciplinary exchange, with staff from different research areas working together in joint educational programmes. The six annual A-LIFE seminars provide regular opportunities for researchers to exchange ideas and strengthen connections across groups, and AIMMS serves as an important catalyst for collaboration both within the department and with external partners. The committee notes that collaboration helps distribute risks and opportunities across principal investigators, for instance in joint research projects and grant applications, which contributes to the resilience of the department as a whole. The committee views this model as innovative and observed during the site visit that it is working in practice. Staff reported high satisfaction with the collaborative environment, and the committee learned of numerous examples of collaboration between sections.

The committee finds that A-LIFE is remarkably well integrated into national and international scientific networks. Within the Faculty and the University, the department maintains close ties with neighbouring departments and research institutes. Collaborative efforts with CPS have been particularly evident, reflecting the natural connections between the biological and chemical analytical expertise present in both departments. Beyond the campus, A-LIFE participates in European research networks. Researchers participate in global initiatives such as international trait databases and biogeochemical modelling networks, and the department has established itself as a recognized national actor in environmental science. Through these collaborations, A-LIFE operates at the interface of cutting-edge fundamental research and societally relevant questions related to sustainability and healthy living.

Collaboration with industry will be discussed in section 2.3. 'Societal Relevance'.

#### **2.1.4. Funding**

The committee notes that A-LIFE has a substantial and diversified research budget. The annual budget varies between approximately 7.9 and 10.3 million euros, of which around 60% is spent on personnel costs. Approximately 55-60% of the research budget comes from external sources, primarily NWO and European funding programmes, and the department has been consistently successful in attracting this funding over the reporting period.

Contract research has become an increasingly important component of the funding portfolio. For example, the Chemistry for Environment and Health section provides specialised laboratory services, generating approximately one million euros in annual turnover. The committee appreciates that the department negotiates publication rights as part of contract research and actively seeks to publish with its contract partners, maintaining a clear connection between contract work and the scientific mission. Principal investigators are also deliberate about ensuring that analytical services remain of genuine research interest, moving towards external structures when activities risk becoming purely routine.

Like the other two departments, A-LIFE faces a more challenging financial environment (see Faculty section, '2.1. Financial Context'). Within this context, the committee appreciates that A-LIFE has developed a clear strategy to remain financially viable through deliberate diversification of its funding portfolio. Where previously the department relied heavily on national grants, it now draws on a wider range of sources. Some researchers focus on competitive personal grants such as ERC awards, while others participate in European collaborative programmes or engage with civil society partners such as municipalities, water boards, and conservation organisations. The committee observed that this diversity is explicitly welcomed by the departmental leadership. The committee values this diversity, as it gives researchers the freedom to pursue their own scientific agenda while remaining responsive to societal needs.

Interviewees also pointed out that resilience is further supported by the department's collaborative academic culture, which will be discussed in 2.1.5.

#### **2.1.5. Academic culture**

During the site visit, the committee observed a strong sense of engagement and collegiality across different levels of the organisation. Researchers, technical staff, and leadership consistently emphasised shared values and a collective commitment to the department's mission.

A notable strength is the department's ability to combine team science with opportunities for individual excellence. The committee learned that A-LIFE consciously avoids positioning these as mutually exclusive. Researchers are encouraged to develop their individual strengths while contributing to collaborative projects, and are supported in taking on roles that align with their personal interests and skills, whether in outreach, teaching, or research leadership. The committee observed that this flexible approach allows both individual initiative and collective achievements to flourish.

As mentioned above, collaboration is deeply embedded in the daily functioning of the department. During the interviews, the committee heard multiple examples of how researchers actively support each other's success. When a principal investigator secures major funding, PhD candidates and research opportunities are

often shared across the group, with the expectation that opportunities will circulate among colleagues over time. Laboratories and research infrastructure are widely shared, allowing researchers to access facilities even when direct funding is not available. Researchers also exchange funding strategies and best practices and support each other in developing grant proposals, while new staff are actively helped to position themselves for competitive funding. Support for European applications is available both through internal resources and through the central VU grant office. Together, these practices strengthen the department's collective capacity and reflect a genuine sense of shared responsibility rather than mere rhetoric.

Early- and mid-career staff reported feeling a high degree of independence in developing their research lines and publication strategies, and described the publication culture as honest and integrity-driven. The committee also learned that these staff members would welcome the possibility of obtaining the *ius promovendi*, consistent with the committee's recommendation at faculty level.

The committee recognises that staff experience substantial work pressure, combining research, teaching, supervision, and outreach responsibilities. It learned that teaching loads are distributed according to a standard 50/50 division, applied transparently across staff with the help of shared planning tools that make allocations visible to all. Newly appointed assistant professors receive a reduced teaching load during their initial years to allow time for grant writing and establishing their research programmes. The committee was pleased to learn that the department approaches workload not merely as something to distribute fairly but as a structural challenge to be managed strategically. Group internships for bachelor students, for instance, have been introduced successfully to reduce supervisory pressure while preserving educational quality, a measure the committee considers a good practice worth highlighting.

Despite the high workload, the committee repeatedly heard that the strong sense of community helps staff cope. Interviewees noted that colleagues look out for each other, and that there is a genuine sense of collective care across the department. Decision-making was described as participatory: although some decisions are necessarily taken at leadership level, staff indicated that they have real opportunities to contribute their views and that concerns are genuinely taken into account. The committee found A-LIFE to stand out as an example of how participatory governance can work effectively when underpinned by shared values at all levels of the organisation.

#### **2.1.6. Talent development and personnel policy**

A-LIFE operates within the faculty-wide framework for talent development and personnel policy described in the Faculty section (2.3.2. 'Talent and personnel policy'). The committee notes that the department has implemented this framework thoughtfully and with genuine attention to the development of individual staff members.

Staff development is supported through annual fleet reviews by the Section Board, in which the entire staff is assessed with respect to growth potential, training needs, and development status. These reviews feed into the annual strategic personnel plan discussed with the Faculty Board. Personal development takes a range of forms, including individual coaching and mentoring, and collective programmes such as female leadership training, intervention for PhD candidates and postdocs, mentorship for talented scientists, and media training.

## **PhD training and supervision**

A-LIFE has affiliated with the national Graduate School Production Ecology and Resource Conservation (PE&RC), coordinated by Wageningen University, which provides a structured framework for PhD training including courses, retreats, and peer interaction, as well as independent advice through PE&RC advisors. During the site visit, the committee learned that both supervisors and PhD candidates value this affiliation for the quality of its training offer and the national network it provides. Where the graduate school does not cover all disciplines, it actively supports candidates in finding alternatives, including financially.

Within A-LIFE, PhD training is supported by additional departmental initiatives. New candidates follow an intake process involving PE&RC and the A-LIFE PhD coordinator, and complete mandatory courses on scientific integrity and research data management. A departmental PhD council representing all six sections organises workshops and social activities and serves as a channel for PhD candidates to communicate concerns and suggestions to the Section Board.

The committee learned that supervision is hands-on, with regular meetings between candidates and supervisors. Thesis requirements are clearly defined and seem to be well known by PhD candidates: at least one published peer-reviewed paper is expected, while the number of chapters may vary. PhD candidates have strong access to technical infrastructure and support staff, with collaboration between technical teams across sections facilitating practical solutions. Teaching commitments are capped at 10% of a candidate's time.

Despite these strengths, graduation delays remain substantial. The department points to contributing factors including administrative lag times, part-time working arrangements, and the impact of the Covid pandemic. The committee encourages A-LIFE to monitor this closely and consistently, in line with the faculty-level recommendations to shorten the duration of the PhD trajectory.

## **Mid-career staff**

A-LIFE places strong emphasis on recruiting researchers who combine scientific excellence with a good fit within the department's collaborative culture and available infrastructure, prioritising both quality and personal fit by selecting candidates for their potential and their expected contribution to the working environment rather than relying solely on formal criteria.

New staff receive mentoring from a senior colleague and develop a plan for their first five years. Staff are actively supported in positioning themselves for competitive funding and teaching loads are adjusted to allow time for proposal preparation. The cohort of recent hires is strongly international, which the committee considers a healthy indicator of A-LIFE's attractiveness as a research environment.

Career progression takes place at the expected pace of four to five years, and mid-career staff described promotion criteria as clear and consistently applied. Interviewees reported regular conversations with supervisors about their development and expressed satisfaction with the degree of independence they experience. The committee emphasises the importance of continued attention to retention of talented early-career staff, particularly given the current financial pressures. Mid-career staff cited collaboration, freedom, and the quality of the network as the important reasons for choosing (and staying) at A-LIFE.

## **Technical staff**

The committee observed a motivated technical staff with a healthy generational mix of experienced and younger colleagues. The committee commends A-LIFE for managing the transfer of knowledge from retiring staff to newer generations. Collaboration between technical teams across sections, including the sharing of equipment and analytical expertise, was mentioned as a practical enabler of cross-sectional research.

## **Training future scientific leaders**

A-LIFE specifically asked the committee how it can improve the training of early career researchers as future scientific leaders. The committee points to PE&RC as an important structural foundation, but considers role models equally important. The department has assembled a strong cohort of internationally recruited assistant professors with postdoctoral and in some cases industry experience, who are close enough in career stage to junior researchers to serve as accessible and credible role models. A structured "buddy" or mentoring system between assistant professors and postdoctoral researchers could be considered. The collaborative nature of A-LIFE's research is itself a model for how science will increasingly need to be conducted.

The committee draws specific attention to postdoctoral researchers, who have distinct needs that differ from those of PhD candidates and whose numbers appear to be declining. If A-LIFE wishes to be a department that nurtures future scientific leaders, actively welcoming postdocs who bring independent funding, for instance through Marie Skłodowska-Curie fellowships, would be a worthwhile strategy. These researchers build their independence, develop international networks, and carry connections with them when they move on. The committee encourages the department to communicate this openness more visibly, for instance on its website.

### **2.1.7. Diversity**

Improving gender balance has been an explicit objective in recent recruitment rounds. Across the department as a whole, A-LIFE shows a relatively balanced gender distribution, with women representing between 40% and 60% of staff across most categories. This places the department in a comparatively favorable position within the Faculty. Nevertheless, women remain underrepresented in senior academic positions, particularly at the level of full professor.

The committee notes that recent hiring rounds have contributed positively to gender balance, with several new appointments helping to strengthen the representation of women at earlier career stages. At the same time, the gender gap at higher academic ranks has not yet been fully addressed.

Overall, the committee finds that A-LIFE is making visible efforts to promote diversity and inclusivity. Continued attention to career progression and representation at senior levels will remain important in order to consolidate these efforts over time.

### **2.1.8. Infrastructure**

The committee had the opportunity to visit A-LIFE's laboratory facilities and was impressed by the quality of the research infrastructure. The department benefits from excellent laboratory facilities and strong technical support, which together provide a solid basis for the experimental research carried out across the sections. The committee also notes that laboratories and equipment are widely shared among principal investigators. This practice not only ensures efficient use of infrastructure but also supports interaction and collaboration across research groups.

## **2.2. Research quality**

The research focus, organisational structure, and culture at A-LIFE, as outlined in section 2.1, provide the foundation for conducting high-quality research. The committee has assessed the quality of the department's research between 2021-2024 in its international, national, and regional context, drawing on the self-evaluation report and interviews with A-LIFE staff.

The committee finds that the research conducted at A-LIFE is of excellent quality and internationally competitive. Across the six sections, research topics are well defined, scientifically relevant, and at the forefront of developments in the biological and environmental sciences. The department combines strong disciplinary expertise with opportunities for interdisciplinary collaboration, particularly at the interfaces between microbial biology, ecology, environmental science, and health. Further key strengths lie in the environment and health domain, in quantitative microbiology, and in microbial biotechnology for food innovation, the latter underpinned by a strong quantitative biology component and a proven track record in public-private partnerships.

During the evaluation period, A-LIFE published between 176 and 210 peer-reviewed articles per year, and a total of 113 PhD theses, appearing in high-quality journals and contributing to the department's strong international visibility. Citation rates are consistently well above the world average, and a substantial proportion of publications belong to the top ten percent most cited papers in their field. Between 91 and 97% of publications appear open access.

Beyond publications, A-LIFE contributes to the international research community through databases, standardised methodologies, and research infrastructure of global relevance. These contributions support broader scientific collaboration and extend the reach of the department's work beyond individual publications.

The quality of A-LIFE's research is further reflected in the recognition received by its researchers, including prestigious personal grants, major national and European awards, and leading roles in international research networks. The department counts several globally recognised scientists among its staff.

The committee also notes that open science practices are strongly embedded within A-LIFE. A large majority of publications (91–97%) are available through open access channels, either via Green or Gold publishing routes. In addition, all PhD theses are made publicly available through the VU Amsterdam research portal PURE.

### **2.3. Societal relevance**

The committee finds that societal relevance is a genuine and deeply embedded feature of A-LIFE's research rather than an add-on to its scientific activities. Much of the department's work can be characterised as operating in Pasteur's Quadrant, combining strong fundamental research with direct relevance to pressing societal challenges in areas such as environmental health, biodiversity, and sustainable food systems.

Researchers communicate their work actively to a broad range of audiences. A-LIFE staff regularly contribute to media discussions, popular science publications, and public lectures. Topics such as PFAS contamination, soil biodiversity, and Antarctic ecosystems have attracted considerable public and policy attention, with researchers providing expert input to media outlets and parliamentary bodies.

Societal engagement is further reflected in a wide range of collaborations with external partners, including government bodies, water boards, provincial authorities, farmer organisations, conservation groups, and municipalities. The department also maintains connections with industry partners and has been successful in attracting third-stream funding. Valorisation activities are supported both through individual initiatives and through institutional structures such as AIMMS, and have led to patents and spin-off companies supported by the VU knowledge transfer office.

A-LIFE researchers also contribute to policy and regulatory processes through advisory roles in organisations such as the European Food Safety Authority, the OECD, the World Health Organization, and the Dutch Health Council. Participation in the National Science Agenda and involvement with the Amsterdam Sustainability Institute further connect the department's research to broader societal challenges.

The committee also notes the strong connection between research and education, with societal challenges related to sustainability, health, and environmental change reflected in the department's educational programmes.

The committee further observes a clear commitment within A-LIFE to transdisciplinary research. Researchers collaborate not only across scientific disciplines but also with societal actors to address complex challenges in areas such as environmental health and sustainability. The committee considers this orientation an important strength of the department's societal engagement.

### **2.4. Viability**

The committee finds that A-LIFE is well positioned to sustain and further develop its research activities in the coming years. The department has established itself as a scientifically ambitious and internationally visible research environment at the interface of the life and environmental sciences. Its research combines strong disciplinary foundations with interdisciplinary collaboration in areas such as microbial biology, environmental health, and quantitative biology, and aligns well with major societal challenges related to sustainability, environmental change, and healthy living.

Several factors support the department's future development. First, the committee observed a strong collaborative academic culture during the site visit. Researchers share infrastructure, expertise, and funding opportunities, creating an environment characterised by openness, mutual support and collective

responsibility. This culture supports collaboration across research groups and contributes to the department's ability to develop new research initiatives.

Second, the committee observed leadership that is reflective, accessible and committed to the department's collective mission. Together with the collaborative culture, this contributes to a stable and supportive research environment in which staff feel encouraged to develop both individually and collectively.

Third, A-LIFE has responded to a more demanding financial environment by diversifying its income across national and European grants, competitive personal awards, contract research and partnerships with societal and industrial partners. The committee considers this response well judged, while noting that continued reflection on the balance between funding streams will remain important to ensure that the growth of contract and service income remains aligned with the department's scientific mission.

At the same time, several factors require continued attention in order to safeguard long-term sustainability. Anticipated changes in student numbers and rising personnel and operational costs will require careful management. The committee therefore encourages A-LIFE to incorporate these developments into long-term personnel planning and to reflect on the optimal size and staffing composition of the department.

In addition, sustaining the momentum created through recent recruitments will require continued attention to transparent and timely career progression and to the retention of talented early-career staff. Measures such as clear promotion criteria and the granting of the *ius promovendi* to assistant professors who meet defined criteria could further support this objective.

Two challenges merit particular attention. First, PhD graduation delays remain an acknowledged weakness, and efforts to address this issue have not yet produced the desired results. The committee therefore urges A-LIFE to treat this as a priority and to monitor progress formally on a yearly basis. Second, workload across the department remains high due to the combination of research, teaching, supervision and outreach responsibilities. The committee acknowledges the steps already taken to manage this, including the introduction of group internships and transparent teaching allocation, and encourages continued attention to this issue.

Finally, the committee considers AIMMS an important structural asset for A-LIFE's valorization strategy and its connections to external partners. The planned ending of institutional funding after 2026 therefore requires timely attention from both the department and the faculty in order to ensure a sustainable continuation of these activities.

Overall, the committee concludes that A-LIFE combines a strong research profile, a collaborative academic culture and a diversified funding base. These elements provide a solid foundation for the continued development of the department. Continued attention to PhD completion times, workload sustainability and long-term planning will nevertheless remain important in the coming years.

### 3. Recommendations

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The committee was impressed by the overall quality of research and the strong collaborative culture at A-LIFE. To support the department's continued development, the committee formulates the following recommendations.

- 1. Share the A-LIFE integration model more broadly.** A-LIFE represents an instructive example of bottom-up departmental integration and collaborative governance. The committee encourages the department to document and share this experience within VU Amsterdam and beyond. A research collaboration with a Science and Technology Studies scholar could give this story additional academic weight and broader reach.
- 2. Continue diversification of funding sources while safeguarding academic focus.** A-LIFE's efforts to diversify its funding portfolio, including through engagement with societal partners and transdisciplinary research programmes, should be continued. The department should ensure that new funding streams remain aligned with its scientific strengths and academic mission. European funding instruments, including Horizon Europe, the European Innovation Council, and ERC Synergy grants, offer relevant opportunities in this regard.
- 3. Maintain strategic anticipation of financial and demographic developments.** A-LIFE has responded well to changing financial conditions. The committee encourages the department to continue building this into long-term planning, taking into account anticipated changes in student numbers, staffing composition, and the growing demand for career-long learning.
- 4. Monitor retention and career development of mid-career researchers.** Recent recruitments have strengthened A-LIFE's research capacity and international profile. To sustain this, the committee recommends active monitoring of staff satisfaction and promotion trajectories, ensuring that career pathways remain transparent and timely. Granting the *ius promovendi* to assistant professors meeting defined criteria would further support academic independence and retention.
- 5. Secure sustainable funding for AIMMS.** AIMMS plays a valuable role connecting A-LIFE, CPS, and Bioinformatics, and as a structured interface with external partners. The committee recommends that all VU-stakeholders involved develop a sustainable funding model for AIMMS beyond 2026, including embedding it as a valorization and outreach partner in European collaborative projects and grant applications.
- 6. Continue efforts to shorten PhD completion times.** The committee recommends continued and actively monitored efforts to bring PhD completion times closer to the four-year standard, with progress tracked annually at departmental level rather than deferred to the next evaluation cycle.

## **Chemistry and Pharmaceutical Sciences (CPS)**

## 1. CPS overview

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CPS conducts research across a broad range of topics in chemistry and the molecular life sciences. The department studies molecules and their interactions across multiple scales, from the nanoscale to complex biological systems. Its activities combine fundamental and applied research aimed at understanding molecular processes and translating this knowledge into applications such as new therapeutics and analytical technologies. Research is organised around four main themes: Theoretical and Computational Chemistry, Synthetic Chemistry and Catalysis, Medicinal Chemistry and Chemical Biology, and BioAnalytical Chemistry. During the reporting period, the department strengthened its academic staff through new appointments at assistant professor level (11.2 to 17.7 FTE) and promotions to associate professor (3.5 to 6.8 FTE).

CPS is engaged in collaborations both within the Faculty and with national and international partners. Project-based collaborations with industrial and societal partners also contribute to research funding and societal engagement. Teaching and research are closely connected within CPS. The department contributes to several bachelor's and master's programmes, including the BSc and MSc Pharmaceutical Sciences, the BSc and MSc Chemistry (joint degrees with the University of Amsterdam), and the BSc and MSc Science, Business and Innovation.

The department describes itself as having a flat organisational structure. Day-to-day management is carried out by a management team consisting of the department head, portfolio holders for education and research, and the department manager. Strategic discussions take place in regular meetings with senior academic staff, while quarterly all-staff meetings provide opportunities for information exchange across the department. In addition, a four-member PhD council has been established to represent doctoral candidates.

During the reporting period, CPS invested in rejuvenating its scientific staff and improving gender balance in line with the Sectorplan. Due to the deteriorating financial situation in the later years of the period, increasing attention was also directed towards financial management and safeguarding the department's long-term sustainability.

Looking ahead, CPS aims to further strengthen its research profile through interdisciplinary collaboration and increased engagement with societal partners. At the same time, the department is developing a long-term research vision, involving its scientific staff, to guide future strategic choices.

## 2. Assessment of CPS

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In this section, the committee evaluates the performance of CPS on the three criteria of research quality, relevance to society, and viability. In line with the requirements of the SEP, the committee also considers how the institute organizes and performs its research with special reference to Open Science, PhD Policy and Training, Academic Culture and Human Resources Policy. In addition, the committee reflects on the additional questions addressed in the ToR (see 1.3.). The committee makes its assessment based on the documents received and the interviews during the site visit.

The section is organised as follows:

- The specific aspects of Academic Culture, PhD Policy and Training and Human Resources Policy will be considered as part of '2.1. Research focus, organization and culture at CPS' as they provide the necessary context for the committee's further assessment of '2.2. Research Quality' and '2.3. 'Relevance to Society'. PhD Policy and Training is discussed as part of 'Talent Development and Personnel Policy'.
- The specific aspect of Open Science will be considered as part of '2.2. Research quality'.
- The considerations of section 2.1. to 2.3. will form the basis to then evaluate the Institute's viability (section 3.4.)

The additional questions raised by the Executive Board will be addressed in the relevant sections of the report. An overview of the committee's recommendations is given in section 3.

### 2.1. Research focus, organization and culture at CPS

#### 2.1.1. Mission and research focus

CPS defines its mission as generating scientific insight across scales, from electrons and chemical bonding to biological systems, and translating this understanding into the synthesis and analysis of molecular structures for applications such as next-generation therapeutics. The department summarizes this ambition in the phrase "*Inspiration by Imagination*," which refers to its activities in research, education, and the valorization of scientific knowledge.

The committee finds this mission clear and ambitious. Following the agreements laid down in the Sectorplan Chemistry, CPS has organized its research around four complementary focus areas: BioAnalytical Chemistry, Theoretical and Computational Chemistry, Medicinal Chemistry and Chemical Biology, and Synthetic Chemistry and Catalysis. The committee considers this a coherent set of themes that collectively address the interface between chemistry and life sciences. Analytical methods, computational approaches, synthetic chemistry, and the study of molecular interactions each contribute distinct but complementary expertise. The Innovation and Valorization Research cluster adds an additional dimension by exploring how scientific discoveries can translate into technological and educational innovation.

At the same time, the committee notes that the department's research identity and distinctive strengths are not yet communicated clearly to external audiences. During the site visit, the committee learned that CPS is aware of this issue. A strategy committee has recently been established to further articulate the

department's profile and to guide future recruitment and research development. The committee welcomes this initiative and encourages CPS to continue this process.

The committee also discussed CPS's plans for a proposed Amsterdam Drug Discovery Center, which illustrate both the opportunities and the challenges associated with the department's positioning. The committee recognizes that CPS possesses relevant expertise across synthetic, medicinal, bioanalytical, and computational chemistry, and that collaboration with the Amsterdam University Medical Center could create a promising basis for early-stage drug discovery. At present, however, the plans remain relatively broad. In a competitive international landscape with well-established drug discovery institutes, greater clarity will be needed regarding therapeutic focus, partnerships, and strategic positioning. The committee also notes that the relationship between this initiative and AIMMS would benefit from clarification, as overlapping valorization initiatives may risk diluting rather than strengthening the department's external profile.

### **2.1.2. Structure, governance and leadership**

CPS has undergone significant organisational changes during the reporting period. The department deliberately moved away from a section-based structure, which had previously led to fragmentation and limited collaboration between groups. The committee values that this was a strategic choice aimed at facilitating more horizontal and collaborative ways of working, and considers this direction appropriate given the department's ambitions. It learned during the site visit that the transition is still ongoing, and the committee notes that developing a fully horizontal working culture will likely take time.

The management structure is clearly defined. The MT provides day-to-day leadership. Research strategy, educational matters, and financial issues are discussed in bimonthly meetings with full and associate professors, while quarterly all-staff meetings serve to inform the wider department and support internal communication. Newly appointed assistant professors operate with a degree of independence while remaining embedded in the departmental structure, and teaching responsibilities are distributed as evenly as possible across staff.

During the site visit, the committee observed that the leadership of CPS demonstrates a clear awareness of the organisational transition and the challenges associated with it. The openness with which the management team reflected on both organisational developments and financial pressures gave the committee confidence that these issues are being addressed in a thoughtful manner.

### **2.1.3. Collaborations**

Collaboration is an important element of CPS's research culture. The committee learned that many principal investigators maintain collaborative links with colleagues within the department, elsewhere in the faculty, and with external partners. These collaborations extend across VU Amsterdam as well as to national and international research networks.

Several mechanisms support and stimulate collaboration within the department. Recent hiring decisions have explicitly aimed to create bridging positions, recruiting researchers who can connect different parts of the department and foster interdisciplinary links. Staff mentioned that AIMMS plays an important facilitating role by creating opportunities for interaction between researchers and external partners and by supporting

valorization activities. Collaboration with LaserLab Amsterdam is also notable, with several CPS principal investigators holding affiliated positions.

Beyond the faculty, CPS maintains partnerships with a number of national and international research organizations, including the Amsterdam University Medical Center, the Holland Research School of Molecular Chemistry, QuSoft, and the Centre for Analytical Sciences Amsterdam. These collaborations contribute to the scientific breadth of the department and provide opportunities for joint research projects and external funding.

#### **2.1.4. Funding**

CPS operates with a substantial research budget that fluctuated during the reporting period, but shows a positive overall development, recovering from a low of 107 FTE in 2020 to 130.6 FTE in 2024. Personnel costs represent the largest share of expenditure, accounting for roughly 77% of the budget in 2024. The committee notes that around 38–39% of the research funding originates from external sources. Within this external funding mix, the committee observes a shift during the reporting period. The proportion of research grants and contract research has declined, with contract research decreasing most strongly, from about 32% in 2017 to around 16% in 2024. At the same time, the share of direct funding has increased.

Despite these developments, CPS researchers have maintained a strong record in obtaining competitive personal grants. During the reporting period, staff members obtained two VENI, two VIDI and three VICI fellowships, as well as an ERC Starting Grant, an ERC Consolidator Grant and an ERC Proof of Concept grant. CPS principal investigators also coordinated five European doctoral networks. In addition, teaching income continues to play an important role in the department's financial model, resulting in a diversified and relatively stable income base. The committee notes, however, that reliance on both teaching income and external research funding places considerable demands on staff and may contribute to the high workload reported during the site visit. Uncertainty regarding future student numbers in several programmes adds an additional element of financial risk.

Also, the committee notes with concern the decline in contract research during the reporting period. While individual principal investigators maintain contacts with industry partners and are occasionally approached by external stakeholders, the committee did not identify a clear departmental strategy for strengthening or rebuilding this funding stream. Given the importance of industry collaboration for both funding diversification and societal impact, the committee sees room to formulate a more explicit and coordinated strategy for engagement with industrial partners.

Like the other departments in the Faculty of Science, CPS operates in a financial context that has become increasingly challenging (see Faculty section, '2.1. Financial Context'). The department has already taken several measures to address these financial pressures. These include reducing costs, for example by not replacing all departing staff, and adjusting expenditure in order to achieve a balanced budget within the coming years. The committee learned during the site visit that the current size of the department is considered viable by the management team, and that earlier investments in infrastructure will limit the need for major investments in the short term. At the same time, anticipated retirements after 2030 may create opportunities for strategic renewal.

### **2.1.5. Academic culture**

CPS operates with a relatively flat organisational structure. In addition to its formal governance arrangements, the department organises quarterly “Talks & Drinks” meetings that bring together the entire staff to discuss important developments. These meetings combine research presentations by staff members with informal interaction and contribute to internal communication and departmental cohesion.

Staff described a culture that is more collaborative than competitive, despite the external pressures currently affecting the university sector. Collaboration among principal investigators is common, and laboratory infrastructure, facilities and technical expertise are widely shared. The committee learned that technical staff play an important role in enabling this collaborative environment and that access to equipment and laboratory space is organised in an open and supportive manner.

Decision-making processes are experienced as transparent and participatory. Mid-career staff indicated that they feel involved in departmental discussions and that concerns can be raised openly. At the same time, early-career researchers indicated that collaboration between principal investigators is not always visible to them. Some expressed a wish for greater insight into activities across the different research sections, particularly regarding available facilities and ongoing projects. Technical staff similarly noted that additional opportunities for interaction across groups could help strengthen awareness of available expertise and instrumentation.

Workload remains a significant concern within the department. CPS contributes to a large number of educational programmes within the faculty, and the committee commends the department for its strong commitment to teaching. At the same time, this broad involvement results in a substantial teaching load. The management team indicated that efforts are made to distribute teaching responsibilities as evenly as possible across staff. Nevertheless, the committee notes that the combination of teaching, research, grant acquisition and outreach activities places considerable demands on staff.

The department is aware of these challenges and has taken several measures to improve working conditions, which the committee values. Additional support staff have been appointed, including a data scientist to assist with research data management. Workshops have been organised to streamline project administration, and internal administrative support has been strengthened, particularly for researchers coordinating EU networks or collaborating with industry partners. Efforts have also been made to reinforce team spirit and shared responsibility for working conditions.

### **2.1.6. Talent development and personnel policy**

CPS operates within the faculty-wide framework for talent development and personnel policy described in the Faculty section (2.3.2. ‘Talent and personnel policy’). The committee finds that the department has implemented this framework thoughtfully and with genuine attention to the development of individual staff members.

## **PhD training and supervision**

During the review period, responsibility for graduate school activities moved from AIMMS back to the department. The committee learned that CPS used this transition as an opportunity to streamline the organisation of doctoral training and support. In line with faculty guidelines, the department contributed to and adopted a document clarifying expectations regarding PhD theses and graduation requirements. Besides traditional publications, alternative formats for thesis chapters are possible, including replication studies, refutations of published work, database creation, software development, or research demonstrating that initially promising ideas proved infeasible.

To support PhD candidates during their trajectory, CPS appointed two PhD candidate advisors who provide an independent and confidential point of contact and meet several times with each candidate during the PhD. In addition, a departmental PhD council was established to represent doctoral candidates and facilitate communication with the faculty.

Improving the duration of PhD trajectories has been an important objective since the previous evaluation. The committee notes that the average duration has improved compared with the previous review period, and PhD candidates interviewed during the site visit expressed confidence in their ability to complete their projects within the standard four-year timeframe. At the same time, a long tail remains, and continued attention to realistic project planning and supervision practices will be important. From discussions with PhD candidates, the committee also learned that expectations regarding thesis requirements are not always fully known among doctoral candidates, despite the availability of faculty and departmental guidelines. The committee therefore encourages the department to ensure that these expectations are communicated clearly and consistently.

## **Mid-career staff**

Like other departments within the Faculty of Science, CPS has appointed a considerable number of new assistant professors during the review period, partly in connection with the Sectorplan initiatives. During the site visit, the committee learned that recently appointed assistant professors experience a considerable degree of independence in developing their research lines. The move away from a section-based structure contributes to this independence, while new staff remain embedded in a collaborative departmental environment. Although starting packages are relatively modest, shared infrastructure and the department's collaborative culture were frequently mentioned as important advantages.

The committee noted that several recently appointed staff members have developed their careers within the department. While this can contribute to continuity, the committee also stresses the importance of maintaining diversity in recruitment and avoiding excessive reliance on internal hiring. International recruitment and mobility remain important factors in sustaining scientific diversity and competitiveness.

Career progression procedures appear to be clear and transparent. The committee learned that staff typically move to the next career stage within a period of four to five years, which is broadly in line with expectations. The possibility of differentiated career trajectories, including profiles with a stronger focus on teaching, is also accommodated within the department.

At the same time, the committee noted that some mid-career female staff members appear to remain at the assistant professor level despite being at a stage where promotion could reasonably be considered. The committee encourages the department to remain attentive to timely promotion decisions, both from an equity perspective and in order to retain talented researchers.

### **Technical staff**

Technical staff plays an important role in the functioning of the department. Researchers consistently emphasised the quality and commitment of the technical support staff, who contribute not only to laboratory management and experimental work but also to supervision of PhD students and, in some cases, to scientific publications. The committee observed that technical staff demonstrate a strong sense of ownership and engagement in the department's research activities.

#### **2.1.7. Diversity**

Improving gender balance has been an explicit objective within CPS during the reporting period. The gender distribution among scientific staff has gradually improved in recent years. Female PhD candidates have outnumbered male candidates since 2022, while the proportion of female assistant professors remains relatively stable at around 40% following several appointments in 2020. At the same time, female representation among postdoctoral researchers remains lower, which the department attributes partly to the time lag between developments at the PhD and postdoctoral levels.

The committee notes that the gender balance among permanent academic staff still shows room for improvement. At the time of the site visit, CPS did not yet have female associate professors, although the department expects that promotions may occur in the coming years as career trajectories progress. The committee therefore encourages continued attention to promotion opportunities and career development for female staff (see also 2.1.6.).

The committee also notes the increasing international diversity within the department. By 2024, the scientific staff represented 24 different nationalities, reflecting the department's international recruitment strategy and its position within international research networks.

#### **2.1.8. Infrastructure**

The committee was impressed by the research infrastructure available to CPS. Laboratory facilities and instrumentation are of a very high standard, and equipment and facilities are widely shared among principal investigators, which supports collaboration and efficient use of resources. The committee also noted the strong technical support available to researchers.

Over the review period, research infrastructure has been maintained and modernised through substantial investments, including approximately €5 million in direct funding and around €2 million obtained through external research grants. Major infrastructure includes NMR, X-ray diffraction, and mass spectrometry facilities that enable in-house structural analysis of molecular and biomolecular systems. Computational work is supported through access to the university's ADA compute cluster and the national supercomputer Snellius.

## 2.2. Research quality

The research focus, organisational structure, and culture at CPS, as outlined in section 2.1, provide the foundation for conducting high-quality research. The committee has assessed the quality of the department's research between 2017–2024 in its international context, drawing on the self-evaluation report and interviews with CPS staff during the site visit.

The committee finds that the research conducted at CPS is of excellent quality and internationally competitive. Across the four research themes, research topics are well defined and scientifically relevant, addressing important questions at the interface of chemistry and the life sciences. The committee observes that the department combines strong disciplinary expertise in synthetic, analytical, theoretical, and medicinal chemistry with opportunities for collaboration across these domains. Key strengths include advanced bioanalytical platforms based on mass spectrometry, theoretical and computational chemistry including electronic structure theory and quantum computing applications, innovations in GPCR-targeted drug discovery and in vitro toxicology models, and the synthesis of complex (bio)molecules and catalytic systems.

During the evaluation period, CPS researchers published approximately 150–200 peer-reviewed articles per year. According to the bibliometric analysis presented in the self-evaluation report, these publications are cited well above the world average for their respective research fields, and a substantial proportion belong to the top ten percent most cited publications. The committee notes that this publication output has remained relatively stable throughout the reporting period.

The quality of the department's research is further reflected in the recognition received by its researchers. During the evaluation period, staff members obtained several prestigious personal grants, including VENI, VIDI and VICI fellowships as well as ERC grants, and CPS principal investigators coordinated five European doctoral networks. Members of the department also hold prominent roles in national and international scientific organisations, including leadership positions within the Royal Netherlands Chemical Society and its divisions, participation in the Dutch Chemistry Council and the TKI Chemistry of Life programme, and editorial responsibilities for leading journals such as *Physical Chemistry Chemical Physics*. In addition, several PhD theses produced within the department received national awards, illustrating the strength of the department's research training environment.

The committee also noted that CPS implements the faculty policies and guidelines regarding open science.

## 2.3. Societal relevance

The committee finds that CPS is well positioned to generate societal impact, particularly in areas related to applied chemistry and pharmaceutical innovation. The combination of fundamental research, translational activities and collaboration with societal partners creates favourable conditions for impact in domains such as drug discovery, analytical technologies and chemical innovation.

Societal engagement is supported by a number of institutional collaborations and platforms. CPS maintains strategic collaborations within VU Amsterdam and with external partners, including the Amsterdam University Medical Center (AUMC), national research infrastructures and research schools, and other research groups within the faculty such as A-LIFE. Initiatives within AIMMS facilitate interaction with industry

and societal partners, for example through matchmaking activities and the AIMMS societal impact challenges, which encourage PhD candidates to consider the broader application and valorization of their research.

Societal relevance is also visible in concrete research outputs and applications. Examples highlighted in the self-evaluation report include software tools developed within the theoretical chemistry group that are used internationally, as well as drug discovery activities that have resulted in patent applications and candidate compounds entering clinical development. These examples illustrate how fundamental chemical research at CPS translates into applications with potential societal and medical relevance.

A distinctive element within CPS is the Innovation and Valorization Research (IVR) cluster, which studies how scientific knowledge is translated into innovation in society and industry. The cluster combines perspectives from natural and social sciences and contributes to research and teaching on science-based entrepreneurship and innovation processes. During the site visit, however, the committee noted that the role and positioning of IVR within the broader CPS research environment was not always clearly articulated. Clarifying how IVR contributes to the department's overall valorization strategy could strengthen CPS's societal profile and valorization potential.

Looking ahead, CPS identifies several opportunities to further strengthen societal engagement. One example is the proposed Amsterdam Drug Discovery Center, which aims to combine molecular drug discovery expertise at CPS with clinical research at AUMC. The committee notes that this initiative has the potential to strengthen CPS's position at the interface of chemistry and medicine, but that its strategic positioning and operational model still require further clarification (see 2.1.1.).

The committee also notes the department's contribution to societal impact through education. CPS trains large numbers of bachelor's and master's students who subsequently take positions in industry, academia and the public sector, thereby contributing to the broader knowledge economy.

## **2.4. Viability**

The committee finds that CPS has a solid basis to sustain its research activities in the coming years. The department combines a broad chemistry profile with a collaborative research culture and a supportive research environment. Its research portfolio, spanning several areas of chemistry with links to the life sciences, provides a foundation for developments in areas such as health, biotechnology and analytical technologies.

Several factors support the department's future development. First, CPS benefits from a research profile that combines complementary expertise across synthetic chemistry, medicinal chemistry, chemical biology and analytical technologies. This breadth enables both disciplinary depth and collaboration across research themes.

Second, the department has strengthened its research capacity during the evaluation period through the recruitment of several assistant and associate professors. These appointments have contributed to rejuvenating the scientific staff, improving gender balance at the assistant professor level, and expanding opportunities for new research directions and collaborations. During the site visit, recently appointed staff

described favourable conditions for developing their research programmes, combining a high degree of independence with a collaborative and supportive environment.

A further strength is the collaborative culture within the department. Researchers described an atmosphere characterised by shared infrastructure, open exchange of ideas and a willingness to collaborate across research groups. Technical staff play an important role in this environment by providing highly valued expertise and support for research activities. The committee considers this collaborative culture an important factor supporting the department's resilience and its capacity to develop new research initiatives.

At the same time, several factors require continued attention in order to safeguard long-term sustainability. CPS currently operates in a more demanding financial environment than in previous evaluation periods. While the overall volume of external funding has recovered in recent years, the committee notes a substantial decline in contract research during the reporting period. Given the department's strong connections to industry and applied research domains, this trend deserves attention. Continued reflection on the balance between teaching income, competitive grants and industry collaboration will therefore remain important.

In addition, CPS contributes substantially to the faculty's educational programmes and teaches large numbers of students. While this represents an important contribution to the faculty and to society, it also places considerable demands on staff time. Maintaining a sustainable balance between teaching responsibilities and research ambitions will therefore remain an important challenge for the department.

Looking ahead, the committee sees opportunities to further strengthen the department's research profile. CPS possesses complementary expertise that could provide a strong basis for initiatives in areas such as drug discovery. In this context, the proposed Amsterdam Drug Discovery Center represents a potentially important strategic initiative. The committee considers CPS well positioned to contribute to such a platform, while noting that the scientific focus, partnerships and strategic positioning of this initiative require further clarification. In addition, stronger interaction between CPS researchers and AIMMS could further support collaboration with societal and industrial partners and increase the visibility and coherence of the department's valorization activities.

Finally, the committee notes that the duration of PhD trajectories continues to require attention. Although improvements have been observed compared with the previous evaluation period, continued monitoring of completion times will remain important to ensure that most PhD candidates complete their projects within the four-year standard.

Overall, the committee concludes that CPS benefits from a broad research profile, a collaborative research culture and a supportive research environment. These elements provide a solid basis for the continued development of the department. At the same time, continued attention to financial sustainability, workload balance and PhD completion times will remain important for maintaining this position in the coming years.

### 3. Recommendations

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The committee was impressed by the quality of research and the collaborative culture at CPS. To support the department's continued development, the committee formulates the following recommendations.

**1. Strengthen and extend the department's drug discovery activities.** CPS has strong expertise in early-stage drug discovery. The committee encourages the department to build on this strength by extending activities further along the drug discovery pipeline, for example towards hit-to-lead optimisation and translational collaboration with biological and clinical research partners. Strong synergistic interactions between computation and experiment can be useful in these developments. A clearer thematic focus within health-related research could further strengthen the department's strategic positioning.

**2. Develop a clear strategic framework for the Amsterdam Drug Discovery Center.** The committee considers CPS well positioned to contribute to the proposed Amsterdam Drug Discovery Center, given the complementary expertise present across its research groups. To realise this potential, the initiative would benefit from a clearly defined thematic focus and stronger integration with molecular biologists and clinical partners. Care should also be taken to align the initiative with existing valorization structures, such as AIMMS, in order to avoid fragmentation and maximise impact.

**3. Maintain strategic attention to financial sustainability.** Given the changing financial environment, the committee encourages CPS to continue strategic reflection on the balance between teaching income, competitive grants and other external funding activities in order to safeguard the long-term sustainability of the department.

**4. Develop a more proactive strategy for collaboration with industry.** The decline in contract research observed during the evaluation period suggests that collaboration with industry could be strengthened. The committee recommends developing a more coordinated strategy to engage with industrial partners, particularly in areas such as medicinal chemistry and drug discovery. Stronger interaction with AIMMS and the Amsterdam Drug Discovery Center could help facilitate these partnerships and support the development of ambitious collaborative projects, including participation in large international research programmes such as those funded by the European Union.

**5. Continue efforts to shorten PhD completion times.** The committee notes improvements in PhD completion times compared to the previous evaluation period, but encourages CPS to continue efforts to ensure that the majority of PhD candidates complete their projects within the four-year standard. Clear communication of expectations regarding project scope and thesis requirements, combined with regular monitoring of progress at departmental level, will be important in achieving this.

**6. Safeguard a sustainable balance between teaching and research.** Given the department's substantial teaching responsibilities, the committee encourages CPS to continue reflecting on how teaching and research activities are organised, ensuring that sufficient capacity remains available for research while fulfilling its important educational role.

**7. Secure sustainable funding for AIMMS.** AIMMS plays a valuable role connecting A-LIFE, CPS, and Bioinformatics, and as a structured interface with external partners. The committee recommends that all VU-

stakeholders involved develop a sustainable funding model for AIMMS beyond 2026, including embedding it as a valorization and outreach partner in European collaborative projects and grant applications.

## **Physics & Astronomy (P&A)**

## 1. P&A overview

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Research in P&A is organised around four main themes: Physics of Life, Physics of Energy and Sustainability, Fundamental Physics, and Physics of Nanolithography. These themes are implemented through seven research sections, each consisting of several principal investigators (PIs) who conduct independent research within a shared thematic framework. Within the scope of the present evaluation, five sections are considered: Biophotonics & Medical Imaging, Physics of Living Systems, Biophysics of Photosynthesis, PhotoConversion Materials, and Quantum Metrology and Laser Applications. Two additional sections, Physics of Nanolithography and (Astro-)Particle Physics, are embedded in national research institutes (ARCNL and Nikhef respectively) and have undergone separate SEP evaluations. Although their research output is therefore not assessed here, these sections remain part of the department's broader organisational structure and strategy.

Research within P&A spans topics ranging from biological and biomedical physics to light-matter interaction, energy conversion processes and precision measurements of atomic and molecular systems. The department combines experimental and theoretical approaches and makes extensive use of advanced instrumentation, including laser systems, spectroscopy and microscopy techniques, as well as precision measurement platforms such as atomic clocks and frequency comb lasers. A central element of the research environment is LaserLaB Amsterdam (the Institute for Lasers, Life and Biophotonics), in which most P&A research groups participate and which forms part of the European research infrastructure network Laserlab Europe.

P&A collaborates with a broad range of partners, including other departments within VU Amsterdam, the University of Amsterdam Faculty of Science, Amsterdam UMC and AMOLF. Research activities are closely connected to the department's educational portfolio. P&A contributes to several bachelor's and master's programmes, including the joint BSc and MSc Physics and Astronomy programmes with the University of Amsterdam, as well as programmes in Medical Natural Sciences, Biomedical Technology, Science, Business and Innovation, and Mechanical Engineering.

During the reporting period, the department focused on consolidating its research themes, strengthening key sections and implementing the move to new laboratories and offices. Efforts were also directed at shortening PhD completion times, reinforcing valorization activities and developing new collaborations. In parallel, the department increased its visibility through outreach to students, academic partners, industry and the wider public.

Looking ahead, P&A aims to further strengthen its technology-oriented research profile and expand its funding base through national and international initiatives aligned with the Dutch National Technology Strategy. Supporting junior principal investigators, further reducing PhD completion times and strengthening collaborations with national and international partners remain key priorities.

## 2. Assessment of P&A

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In this section, the committee evaluates the performance of P&A on the three criteria of research quality, relevance to society, and viability. In line with the requirements of the SEP, the committee also considers how the institute organizes and performs its research with special reference to Open Science, PhD Policy and Training, Academic Culture and Human Resources Policy. In addition, the committee reflects on the additional questions addressed in the ToR (see 1.3.). The committee makes its assessment based on the documents received and the interviews during the site visit.

The section is organised as follows:

- The specific aspects of Academic Culture, PhD Policy and Training and Human Resources Policy will be considered as part of '2.1. Research focus, organization and culture at P&A' as they provide the necessary context for the committee's further assessment of '2.2. Research Quality' and '2.3. 'Relevance to Society'. PhD Policy and Training is discussed as part of 'Talent Development and Personnel Policy'.
- The specific aspect of Open Science will be considered as part of '2.2. Research quality'.
- The considerations of section 2.1. to 2.3. will form the basis to then evaluate the Institute's viability (section 3.4.)

The additional questions raised by the Executive Board will be addressed in the relevant sections of the report. An overview of the committee's recommendations is given in section 3.

### 2.1. Research focus, organization and culture at P&A

#### 2.1.1. Mission and research focus

P&A defines its mission as carrying out excellent and impactful physics research focused on the core themes Physics of Life, Physics of Energy and Sustainability, Fundamental Physics, and Physics of Nanolithography. The department combines this with providing high quality education at the BSc and MSc levels, valorizing research outcomes, and disseminating scientific knowledge to society. It also emphasizes the development of scientists who think critically, act responsibly, and contribute meaningfully to science and society.

The committee finds that this mission reflects the breadth of the department's research activities and provides a framework that accommodates diverse scientific directions. Research within P&A spans topics ranging from biological and biomedical physics to light matter interaction, energy conversion processes, and precision measurements of atomic and molecular systems. During the evaluation period, the Sectorplan Bèta en Techniek enabled the recruitment of several new principal investigators. Their research profiles are well aligned with the department's four core themes and have strengthened the research sections, while also contributing to a significant improvement in gender balance.

The committee observes that P&A deliberately maintains a broad research focus. During the site visit the committee discussed with several groups of interviewees the question of coherence between the various research themes and whether the department aims to position the strength of P&A as more than the sum of

its individual sections. The committee understands that the department is intentionally organised in a federated structure in which scientific coherence is primarily realised at the level of the research sections. Within these sections researchers share scientific questions, infrastructure, and expertise, providing strong local cohesion. The committee considers this organisational model appropriate and effective. Within this structure the department demonstrates strong research performance across its focus areas, and the broad mission allows staff to develop along different scientific trajectories.

The committee further notes that LaserLaB Amsterdam functions as an important common denominator across several research activities. Through shared infrastructure, methodology, and scientific interaction, LaserLaB Amsterdam contributes to intellectual alignment within the department and provides a scientific backbone for a number of research areas.

Overall, the committee concludes that P&A has developed a broad research profile that supports strong scientific performance across multiple areas of physics. This strength is further reflected in the department's combination of internationally leading fundamental research with advanced instrumentation and technology development, as evidenced by its strong performance in competitive funding, high bibliometric impact, and a proven track record in valorization.

While the diversity of research topics does not currently pose a problem, maintaining sufficient critical mass within individual research areas will remain important in the longer term. The committee notes that, if fragmentation were to increase further, there could be a potential long-term risk of certain themes becoming subcritical. At present, however, the committee does not consider this to be an acute issue.

### **2.1.2. Structure, governance and leadership**

P&A is organised into seven research sections, each consisting of four to seven principal investigators at different career stages. Each section is led by a section head and provides the primary organisational unit of the department. Within these sections, individual PIs lead independent research programmes while benefiting from shared infrastructure, technical support, and mentoring structures. Experimental activities across the sections are supported by specialised technical staff.

As mentioned above, the committee finds that this section-based structure provides a clear organisational framework for the department. It combines the independence of individual research groups with collaboration within sections and creates critical mass around shared research topics. In practice, the model appears to function effectively.

Leadership of the department is vested in the head of department, who is supported by the department manager and departmental representatives forming the management team. Strategic decisions on appointments, finances, laboratory space, and personnel matters are taken within this structure in consultation with the department, the Faculty Board, and relevant administrative advisors. In addition, a PhD Council was created in autumn 2025 to represent the PhD community, act as a liaison with the management team, and provide feedback on PhD policies.

The committee finds that this governance structure provides clear lines of responsibility while allowing for consultation within the department. The leadership model appears well aligned with the organisational structure of P&A, supporting both the independence of the research sections and coordination at the departmental level.

### **2.1.3. Collaborations**

P&A maintains a network of scientific collaborations at the local, national, and international levels. A central element in this landscape is LaserLaB Amsterdam, the Institute for Lasers, Life and Biophotonics. LaserLaB Amsterdam provides shared laser-based research infrastructure and brings together researchers from P&A as well as colleagues from VU departments such as A-LIFE and CPS, the University of Amsterdam, and Amsterdam UMC. Through participation in Laserlab Europe, a European network of laser research infrastructures, LaserLaB Amsterdam also facilitates international scientific exchange and joint research activities. The committee notes that LaserLaB Amsterdam provides an important collaborative framework for several research activities within the department.

Beyond this infrastructure, P&A collaborates widely with academic partners. These include departments within VU Amsterdam, the University of Amsterdam Faculty of Science, Amsterdam UMC, and research institutes such as AMOLF, as well as national partners including Dutch universities and TNO. Collaboration also plays a role in the department's educational activities, notably through the joint BSc and MSc programmes in Physics and Astronomy with the University of Amsterdam.

During the site visit the committee learned that the department's staff values its collaboration with the University of Twente in the Mechanical Engineering programme offered on the VU campus. This collaboration has enabled the recruitment of new principal investigators who help connect mechanical engineering and physics and is seen by staff as beneficial for student inflow and for application-oriented research and valorization. With respect to collaboration with the UvA Institute of Physics, the committee understands that following the earlier unsuccessful merger attempt a pragmatic approach has emerged in which collaboration develops where scientific interests align.

Overall, the committee concludes that P&A benefits from a well-established collaboration network that supports its research and education activities. Building on this strong foundation, the department is well positioned to capitalize on emerging opportunities at the interface of physics, enabling technologies, and societal applications.

In this context, a stronger articulation of cross-cutting technological and societal challenges could further support strategic positioning and participation in large-scale national and European initiatives. Collaboration with industry and societal partners will be discussed separately in the section on societal relevance.

### **2.1.4. Funding**

The committee notes that the research activities of P&A are financed through a combination of direct institutional funding and competitive external funding. Direct funding is primarily used to cover part of the salaries of permanent academic and support staff, the annual PI budget, laboratory space, and access to shared technology centres. Most research activities themselves, including the funding of PhD candidates,

postdoctoral researchers, and major equipment, are supported through external funding from national and European competitive grants.

During the evaluation period the department's overall funding increased. Total yearly funding fluctuated around €12 million until 2021 and has risen substantially in recent years, reaching more than €15 million in 2024. This reflects both additional direct funding through the national Sectorplan and continued success in acquiring competitive external grants. The committee commends the department for its strong performance in personal grants. P&A researchers have been particularly successful in obtaining ERC and NWO personal grants, including Veni, Vidi and Vici awards as well as several ERC Starting, Consolidator and Advanced Grants. A substantial share of ERC grants awarded to VU Amsterdam during the evaluation period was obtained by P&A staff. ERC grants represent an important component of this portfolio. The committee moreover welcomes that P&A's financial strategy has become more diversified, with activities towards nanolitho, ASML and extended patent-portfolio.

At the same time, the committee notes that the department relies heavily on external funding for its research activities, and that this dependency has increased in recent years. Limited availability of direct research funding, particularly for equipment and for supporting PhD candidates or postdoctoral researchers from the first money stream, reinforces this reliance on competitive funding. The committee understands that the department is fully aware of this structural feature of its funding model and the risks associated with it.

Despite the challenging funding environment (see Faculty section, '2.1. Financial Context'), the committee finds that the department has managed its financial situation well. A clear strategy has been developed to mitigate the risks associated with external funding dependency. Central elements of this strategy include a strong focus on acquiring competitive personal grants and efforts to diversify funding streams, including through collaboration with industry partners (see also 2.3. 'Societal relevance'). Recruitment of new principal investigators during the evaluation period has played an important role in this approach, as attracting researchers with strong potential for personal grants was a deliberate hiring criterion, and several recent hires have already been successful in securing such funding.

Looking ahead, the department expects that within the Dutch context further expansion of funding may be limited and that the focus will shift towards maintaining financial sustainability. This includes investing in technical support, strengthening junior and mid-career researchers, and rebalancing resources within the department. In this context, growth is expected mainly in PhD and postdoctoral positions rather than at the level of principal investigators.

### **2.1.5 Academic culture**

The committee observed a supportive and team-oriented academic environment within P&A. During the site visit, staff described the internal atmosphere as collaborative rather than competitive, with shared use of research infrastructure and laboratory facilities across groups. According to the committee, this collaborative culture contributes positively to the functioning of the department and helps staff cope with external pressures related to funding and workload.

The section-based structure of the department plays an important role in fostering this culture. Within the sections, researchers share infrastructure, expertise, and mentoring structures, which supports collaboration and the integration of new staff. The committee notes that the department has successfully onboarded a substantial number of new principal investigators during the evaluation period, and that these researchers have become actively involved in research, teaching, and departmental activities.

Opportunities for communication and exchange are provided through a range of formal and informal mechanisms, including department meetings, meetings between section representatives and the management team, annual retreats focused on longer term strategy, and departmental colloquia. According to staff, internal visibility and collaboration have improved since the move to the new Research Building, whose open layout facilitates interaction across groups. At the same time, some early career researchers indicated that they would benefit from greater insight into research activities and available facilities in other sections.

The department has also taken steps to strengthen an inclusive and constructive working environment, for example through the DEI Council and regular surveys among staff and PhD candidates. The committee notes that the department is generally perceived as a safe and productive work environment, although work pressure is experienced as relatively high. During the site visit the committee also heard that the earlier availability of a PhD psychologist had been valued by PhD candidates. The committee therefore recommends actively communicating where and how psychological support can be obtained and how the university facilitates such support.

#### **2.1.6. Talent development and personnel policy**

The committee observes that the permanent academic staff of P&A has undergone substantial renewal during the evaluation period. In total, 21 new principal investigators were appointed while several senior staff members left the department. The influx of new staff has also contributed to a rejuvenation of the academic workforce and a shift in the distribution of staff toward more junior ranks.

#### **PhD training and supervision**

PhD training at P&A is organised through the Physics Graduate School, which provides structured support throughout the PhD trajectory. Within this framework, PhD Candidate Advisors function as independent mentors who monitor progress and support PhD candidates in reaching agreed milestones. PhD candidates indicated that they value this system and generally know where to seek support if difficulties arise with supervision.

Reducing the duration of PhD trajectories has been a longstanding priority for the department. Despite the measures taken, the committee notes that completion times remain consistently above the four-year target. In response, further steps have been introduced, including more systematic monitoring of progress and clearer expectations regarding timelines. These measures, developed in dialogue with the PhD Council and aligned with existing faculty policies, are positively received by the committee.

During the site visit the committee also learned that practical factors sometimes contribute to delays, for example when access to experimental infrastructure limits the pace of research. The committee therefore

encourages the department to continue exploring ways of organising experimental work so that projects can realistically be completed within four years.

This approach has proven effective in attracting and developing early-career researchers. To sustain this, continued attention to early academic independence, clear career progression, and a supportive working environment will remain important in an increasingly competitive international landscape.

### **Mid-career researchers**

The hiring strategy has focused primarily on appointing early-career researchers at the level of assistant professor, in line with faculty policy. New principal investigators receive a modest start-up package consisting of a PhD position and a limited research budget. Although these packages are relatively small, access to shared infrastructure and facilities allows new staff to initiate their research programmes while applying for external funding. Obtaining competitive grants therefore plays an important role in the further development of academic careers within the department. The committee finds that P&A has been successful in attracting promising researchers with strong potential to obtain such funding.

Assistant professors indicated during the site visit that they experience considerable autonomy in developing their research lines. Career progression follows clearly defined criteria and advancement is possible once these criteria are met. The committee considers granting the *ius promovendi* to assistant professors who meet defined criteria an important step in strengthening academic independence and supporting career development.

### **Technical staff**

Technical staff play an important role in the functioning of the department. Researchers consistently emphasised the high quality and commitment of the technical support staff. The committee observed that they demonstrate a strong sense of ownership and engagement in supporting the department's research activities.

#### **2.1.7. Diversity**

The committee notes that the department has made visible progress in improving gender balance during the evaluation period, particularly through recent appointments at the assistant professor level. Nevertheless, gender parity has not yet been reached across all career stages. The committee also observes that the department has a strongly international profile, with a large proportion of staff originating from outside the Netherlands. This international character contributes positively to the scientific environment of the department.

At the same time, the committee notes that recent national policy discussions regarding language use in higher education may create future challenges for internationally recruited staff. Continued attention to diversity and inclusiveness in recruitment and career progression therefore remains important.

### **2.1.8. Infrastructure**

The committee visited the department's laboratories in the new Research Building and was impressed by the quality of the facilities. The modern infrastructure provides a strong environment for experimental research. Laboratory space is somewhat limited, but currently does not appear to constrain research activities.

Facilities and equipment are widely shared among principal investigators, which supports collaboration and efficient use of resources. At the same time, several interviewees indicated that coordination of shared infrastructure could be improved. Clearer overviews of available equipment and facilities would help researchers, particularly PhD candidates and postdoctoral researchers, to access and use the infrastructure more effectively.

## **2.2. Research quality**

The research focus, organisational structure, and culture at P&A, as outlined in section 2.1, provide the foundation for conducting high-quality research. The committee has assessed the quality of the department's research between 2017–2024 in its international context, drawing on the self-evaluation report and interviews with P&A staff during the site visit.

The committee finds that the research quality at P&A is excellent and internationally competitive. The department produces a substantial body of high-quality scientific output, attracts major competitive research funding, and includes several internationally renowned researchers who play leading roles in their respective fields. Across the different research sections the committee observes consistently strong research performance.

Bibliometric indicators confirm this assessment. The citation analysis provided in the self-evaluation report shows that publications from P&A are cited far above the world average. Throughout the evaluation period the relative impact of the department's publications consistently exceeds global benchmarks, and a substantial proportion of publications belong to the top 10% most cited papers worldwide.

The selected publications presented by the different research sections illustrate the depth and breadth of the department's research activities. They include high-impact contributions across areas such as biophotonics and medical imaging, photosynthesis research, photonic materials, physics of living systems, and quantum metrology. These publications appear in leading international journals and demonstrate the scientific strength of the department across its different research themes.

The committee also notes the department's strong performance in securing highly competitive research funding. P&A researchers have been particularly successful in obtaining prestigious personal grants, including ERC Starting, Consolidator, and Advanced Grants. During the evaluation period the department accounted for a notably large share of ERC grants within VU Amsterdam, approximately 26%, underscoring the scientific reputation and competitiveness of its researchers.

Additional indicators further confirm the strong research quality of the department. P&A staff members receive major scientific prizes and awards, are elected members of scientific academies and societies, and

serve in leadership roles within the international research community. These activities reflect the recognition of P&A researchers within their fields.

The committee also notes that open science practices are widely adopted within the department. Preprints are commonly shared through repositories such as arXiv, and several research groups share data and software through public repositories.

### **2.3. Societal relevance**

The committee finds that P&A demonstrates excellent societal relevance, particularly through its long-standing engagement in valorization and technology transfer. Over the past decade the department has successfully expanded its activities beyond fundamental physics research and has become a visible contributor to technology development and innovation within the Faculty and the broader research ecosystem.

Valorization has been a prominent and sustained activity within the department. An important driver of these efforts has been the Demonstrator Lab, originally established within P&A as a low-threshold incubator for start-up companies and now embedded within the university's broader innovation ecosystem. P&A has been particularly successful in translating scientific results into technological applications and entrepreneurial initiatives. This is reflected in the department's strong record of patents and spin-off companies. The number of patent applications filed by P&A researchers is impressive and indicates sustained engagement in knowledge and technology transfer. Societal impact through valorization is particularly visible through several successful spin-offs. Two consolidated companies, Optics11 B.V. and LUMICKS B.V., emerged from the Demonstrator Lab and have grown into established enterprises. In addition, several more recent spin-offs have been created, including Flash Pathology B.V., Rapid Photonics B.V., and Lumeniris B.V.

The department also collaborates with industrial and applied research partners, further strengthening the societal relevance of its research. These collaborations contribute both to technological development and to the broader innovation ecosystem in which the department operates.

Outreach activities have increased significantly during the reporting period. The department has strengthened its communication with broader audiences through a renewed website, active use of LinkedIn, professional videos presenting research activities, and the publication of a departmental newsletter. These initiatives have substantially increased the visibility of the department among prospective students, academic partners, industry, and the wider public.

At the same time, the committee notes that the broad range of valorization and outreach activities may add to the overall workload of academic staff. Continued attention to balancing these activities with the department's core research responsibilities will therefore remain important.

### **2.4. Viability**

The committee considers the future viability of the Physics & Astronomy (P&A) department to be strong. The department benefits from a clearly defined research profile, modern research infrastructure, strong national and international collaborations, and a supportive academic environment. Its research combines

fundamental physics with advanced instrumentation and technology development, positioning the department well within both the academic landscape and relevant technological domains.

Several structural factors bode well for the department's future development. First, the department has developed a strong and internationally visible research profile in areas that combine fundamental physics with advanced instrumentation and technological applications. These activities have resulted in strong performance in competitive funding schemes, including ERC and NWO grants, and have contributed to a track record of patents and spin-off companies.

Second, the department benefits from a strong network of collaborations with academic and industrial partners. These include partnerships with national research institutes and universities as well as collaborations with industry and technology partners. Such networks contribute to scientific development, student inflow and opportunities for valorization.

Third, the department has further strengthened its research capacity during the evaluation period through the recruitment of several new principal investigators, supported in part by the Sectorplan Bèta en Techniek. These appointments have reinforced the department's research sections and contributed to improving gender balance. In addition, the move to the new Research Building has provided excellent laboratory facilities that support advanced experimental research and collaboration across groups.

Finally, the committee observed a collaborative and collegial academic culture within the department. Staff described the working environment as supportive and team-oriented, with shared use of infrastructure and laboratory facilities across research groups. This collaborative culture supports both scientific exchange and the efficient use of infrastructure.

At the same time, several factors require continued attention in order to safeguard long-term sustainability. As is common in the field of physics, research activities depend strongly on external competitive funding. While the department has been highly successful in securing such funding, this dependence limits the availability of internal strategic resources that could support proactive investments in new research directions.

In addition, the committee notes that the department operates in an increasingly competitive academic environment. Competition for research funding, highly qualified researchers and technical expertise is expected to remain strong in the coming years. Maintaining an attractive research environment, clear career perspectives and sustainable workload levels will therefore remain important.

The committee also notes that the duration of PhD trajectories continues to require attention. Several measures have been introduced to address this issue, but progress remains uneven. Continued attention to supervision practices, project planning and monitoring will therefore remain important.

Overall, the committee concludes that P&A combines a strong research profile, modern research infrastructure, active collaborations and a supportive academic culture. These elements provide a solid foundation for the continued development of the department. While external pressures remain, the committee considers the long-term viability of P&A to be strong.

### 3. Recommendations

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The committee offers the following recommendations to support the continued development and long-term viability of the Physics & Astronomy (P&A) department.

**1. Capitalize on and further develop research profile.** The committee encourages P&A to further capitalize on its strong and distinctive research profile by articulating an overarching narrative that highlights LaserLaB Amsterdam as a unifying methodological and conceptual backbone for both scientific excellence and technological impact. While this already functions well internally, the committee sees clear room to strengthen its external visibility and communication.

**2. Continue leveraging the department's strong collaborative culture.** The committee recommends continuing and further leveraging the department's strong collaborative culture, both within sections and with strategic partners such as the University of Amsterdam and the University of Twente. These collaborations demonstrably enhance scientific quality, student inflow, engineering links, and valorization potential.

**3. Maintain a proactive and effective financial and personnel strategy.** The committee commends P&A for its proactive and effective financial and personnel strategy in a challenging funding environment and explicitly recognizes the department's outstanding success in securing ERC grants as a key indicator of international excellence. The committee encourages the department to continue this strategic approach, while further diversifying funding streams and strengthening strategic flexibility in view of increasing competition for external funding.

**4. Continue strengthening academic independence and career development.** The committee recommends building further on the department's successful approach to talent development, including strong support for early- and mid-career researchers and clear career progression criteria. In this context, granting *ius promovendi* to assistant professors who meet defined criteria would further strengthen academic independence.

**5. Maintain the collaborative access model for laboratories and infrastructure.** The committee recognizes the excellent quality of laboratories and shared infrastructure within the department and recommends continuing the current collaborative access model. Further improving the visibility and coordination of available facilities, particularly for PhD candidates and postdoctoral researchers, could enhance collaboration and facilitate access to experimental infrastructure.

**6. Continue efforts to shorten PhD completion times.** The committee recommends continuing the efforts aimed at adjusting the time required to complete the doctorate within four years. Significant measures have already been introduced since the previous evaluation, but the issue appears to persist, and strict annual monitoring of progress is recommended

**7. Sustain excellence while safeguarding long-term viability.** The committee strongly encourages P&A to continue its outstanding trajectory in internationally excellent research and societal impact, further consolidating its leading role in valorization, outreach, and technology transfer, while safeguarding the sustainability of staff workload and long-term viability.

## **Appendices**

## 1. Appendix 1. Programme of the site visit

### Monday, 2 February 2026

Time	Session	Description
14:00–16:00	Start meeting	Review content for the site visit, sharpen impressions and identify gaps
16:30–17:30	Faculty session	Welcome by the Dean and dialogue with department heads (Open Science, PhD policy, academic culture, HR)
17:30–18:30	Committee meeting	Internal reflection and preparation for the site visit

### Tuesday, 3 February 2026

Time	Session	Description
08:30–09:30	P&A management	Meeting with management team, LaserLaB director and section heads
09:30–10:20	Mid-career staff (P&A)	Meeting with assistant and associate professors
10:20–10:35	Break	Coffee and tea break
10:35–11:25	Junior staff (P&A)	Meeting with PhD candidates and postdocs
11:25–12:15	Lab tour (P&A)	Lab visit including meeting with technicians

12:15–13:20	Lunch	
13:20–14:20	CPS management	Meeting with management team and section heads
14:20–15:10	Mid-career staff (CPS)	Meeting with assistant and associate professors
15:10–15:25	Break	Coffee and tea break
15:25–16:15	Junior staff (CPS)	Meeting with PhD candidates and postdocs
16:15–17:05	Lab tour (CPS)	Lab visit including meeting with technicians
17:05–18:05	Committee meeting	Internal discussion and review of the day

### Wednesday, 4 February 2026

Time	Session	Description
08:30–09:30	A-LIFE management	Meeting with management team and section heads
09:30–10:20	Mid-career staff (A-LIFE)	Meeting with assistant and associate professors
10:20–10:35	Break	Coffee and tea break
10:35–11:25	Junior staff (A-LIFE)	Meeting with PhD candidates and postdocs

11:25–12:15	Lab tour (A-LIFE)	Lab visit including meeting with technicians
12:15–13:45	Lunch / Committee meeting	Lunch combined with internal committee discussion
13:45–14:35	Valorisation (P&A)	Meeting focused on valorisation and impact
14:35–14:50	Break	Coffee and tea break
14:50–15:50	Valorisation (CPS & A-LIFE)	Meeting on valorisation and impact
15:50–18:00	Committee meeting	Internal discussion and synthesis of findings
18:00–18:30	Presentation	Presentation of preliminary findings and closing remarks
18:00–21:00	Closing dinner	Drinks and informal closing

## 2. Appendix 2: Quantitative data on composition and funding

### 2.1. A-LIFE

#### 2.1.1. Staff

Scientific staff (1)	2021	2022	2023	2024
	# / FTE	# / FTE	# / FTE	# / FTE
Full professor	14 / 6,5	13 / 5,4	13 / 5,1	12 / 4,8
Associate Professor	8 / 3,9	8 / 3,9	9 / 3,9	9 / 4,5
Assistant Professor	17 / 7,7	21 / 9,5	27 / 12,3	26 / 12,3
Postdoc (2)	17 / 13,5	20 / 14,9	19 / 15,5	19 / 15,9
PhD (3)	64 / 49,5	75 / 56,3	77 / 58,8	90 / 69,7
<b>Total research staff</b>	<b>110 / 81,1</b>	<b>127 / 90</b>	<b>134 / 95,6</b>	<b>146 / 107,2</b>

*Note 1: Comparable with WOPI categories HGL, UHD and UD; tenured and non-tenured staff*

*Note 2: Comparable with WOPI category Onderzoeker*

*Note 3: Standard PhD (employed) and Contract PhDs (externally or internally funded but not employed)*

## 2.1.2. Funding and expenditure

	2021	2022	2023	2024
	FTE / %	FTE / %	FTE / %	FTE / %
Direct Funding (1)	37,4 / 46%	34,9 / 39%	37,8 / 40%	44,7 / 42%
Research grants (2)	24,9 / 31%	23,7 / 26%	28,3 / 30%	34,4 / 32%
Contract research (3)	18,8 / 23%	31,4 / 35%	29,5 / 30%	28,1 / 26%
<b>Total Funding</b>	<b>81,1 / 100%</b>	<b>90,0 / 100%</b>	<b>95,6 / 100%</b>	<b>107,2 / 100%</b>

Expenditure (k euro):	2021	2022	2023	2024
	€ / %	€ / %	€ / %	€ / %
Personnel costs	4.672 / 59%	4.981 / 60%	5.801 / 62%	6.344 / 61%
Other costs	3.252 / 41%	3.253 / 40%	3.563 / 38%	3.981 / 39%
<b>Total Expenditure</b>	<b>7.924 / 100%</b>	<b>8.234 / 100%</b>	<b>9.364 / 100%</b>	<b>10.325 / 100%</b>

*Note 1: Direct funding (direct from university/ lump-sum budget)*

*Note 2: Research grants obtained in national scientific competition (e.g. grants from NWO and the Royal Academy)*

*Note 3: Research contracts obtained from external organizations, such as industry, government, European organizations, and charitable organizations*

### 2.1.3. PhD candidates

Starting year	Enrollment Male/female)	Total (M+F)	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Not yet finished	Discontinued	Theses Submitted	PhD defended	0,8 fte PhD's
2017	6 / 10	16	4 / 25%	5 / 31%	6 / 38%	6 / 38%	4 / 25%	6 / 38%	8 / 50%	6 / 38%	1 / 0,8%
2018	8 / 5	13	1 / 8%	4 / 31%	8 / 62%	11 / 85%	1 / 8%	1 / 8%	12 / 92%	11 / 85%	3 / 2,7%
2019	4 / 6	10	1 / 10%	3 / 30%	6 / 60%	6 / 60%	4 / 40%	0 / 0%	7 / 70%	6 / 60%	3 / 2,7%
2020	6 / 5	11	0 / 0%	2 / 18%	2 / 18%	2 / 18%	9 / 82%	0 / 0%	3 / 27%	2 / 18%	2 / 1,8%
2021	6 / 8	14	0 / 0%	0 / 0%	0 / 0%	0 / 0%	14 / 100%	0 / 0%	1 / 7%	0 / 0%	2 / 1,8%
2022	10 / 10	20	2 / 10%	2 / 10%	2 / 10%	2 / 10%	18 / 90%	0 / 0%	2 / 10%	2 / 10%	4 / 3,5%
2023	1 / 11	12	0 / 0%	0 / 0%	0 / 0%	0 / 0%	12 / 100%	0 / 0%	0 / 0%	0 / 0%	0 / 0%
2024	10 / 7	17	0 / 0%	0 / 0%	0 / 0%	0 / 0%	17 / 100%	0 / 0%	0 / 0%	0 / 0%	0 / 0%
<b>Total</b>	<b>51 / 62</b>	<b>113</b>	<b>8 / 7%</b>	<b>16 / 14%</b>	<b>24 / 21%</b>	<b>27 / 24%</b>	<b>79 / 70%</b>	<b>7 / 6%</b>	<b>29 / 3%</b>	<b>27 / 3%</b>	<b>15 / 13,3%</b>

*Note 1: All PhD candidates conducting research with the primary aim/obligation of graduating, based on a 0.8-1.0 FTE contract. This includes PhD candidates with employee status (AiO/promovendi) and contract PhD candidates without employee status, receiving external funding or a university scholarship, who are conducting research under the authority of the research unit with the primary aim of graduating (beurspromovendus).*



## 2.2. CPS

### 2.2.1. Staff

	2017		2018		2019		2020		2021		2022		2023		2024	
	#*	FTE	#*	FTE	***	FTE	***	FTE	***	FTE	***	FTE	***	FTE	***	FTE
Full Professor (1)	14	13,1	13	12,7	14	12,2	14	11,9	14	12,1	13	12,7	13	12,7	13	12,8
Associate Professor (1)	4	3,5	3	5,2	6	5,6	6	5,7	3	3,7	3	3	7	4,4	7	6,8
Assistant Professor (1)	12	11,2	12	10,7	11	10,7	12	11,7	16	14,9	19	16,4	18	19,5	17	17,7
Postdocs (2)	26	26,7	20	20,3	19	18	19	18	22	18,3	19	21,4	17	15,7	22	16,2
PhD candidates (3)	53	52,8	48	53,36	42	45,6	41	40,6	51	43,8	41	41,6	57	47,8	50	50,6
Lecturer (WOPI docent)	10	10,1	4	6,6	8	7,4	8	7,4	10	10,1	13	11,3	10	8,2	12	6,5
<b>Total research staff</b>	<b>119</b>	<b>117,5</b>	<b>100</b>	<b>108,8</b>	<b>100</b>	<b>99,5</b>	<b>100</b>	<b>95,3</b>	<b>116</b>	<b>103,0</b>	<b>108</b>	<b>106,4</b>	<b>122</b>	<b>108,4</b>	<b>120</b>	<b>110,5</b>
Support staff (4)****	14	7,9	15	10,5	13	10,7	12	11,6	34	9,8	38	10,1	41	18	31	20,1
<b>Total staff</b>	<b>133</b>	<b>125,5</b>	<b>115</b>	<b>119,4</b>	<b>113</b>	<b>110,2</b>	<b>112</b>	<b>107,0</b>	<b>150</b>	<b>112,7</b>	<b>146</b>	<b>116,5</b>	<b>163</b>	<b>126,3</b>	<b>151</b>	<b>130,6</b>

(1): Comparable with scientific teaching personnel information, or Wetenschappelijk Onderwijs Personeel Informatie (WOPI) categories HGL, UHD and UD; tenured and non-tenured staff, Research percentage of time for university personnel follows the Kengetallen Universitair personeel Onderzoek (KUOZ) For the three categories Professors (HGL), Associated Profs, (UHD) and Assistant Profs (UD) this value is 50%, meaning 50% funding contributes to Research and 50% for Education. N.B. Guest professors are not included in this table.

(2): Postdoc is comparable with WOPI category Onderzoeker. The KUOZ % for Research of a postdoc is 90%.

(3): Standard PhD (employed) and Contract PhDs (externally or internally funded but not employed). Their KUOZ % for Research is 80%, 20% is dedicated to Education.

\* Head count numbers for 2017 and 2018 were taken from the Strategic Personnel Plan (SPP) of the department using data from months April 2017 and Feb. 2018, resp.

\*\* Head count numbers for 2019 and 2020 are based on interpolation, as SPPs did not contain Head count numbers.

\*\*\* Head count numbers from 2021-2024 were taken in December of each year.

\*\*\*\* Support staff includes Teaching & Research technicians (Onderwijs-/en Onderzoekspersoneel) and Student Assistants (17, 15, 17 and 8 resp. In 2021, 2022, 2023, and 2024.

## 2.2.2. Funding and expenditure

CPS	2017	2018	2019	2020	2021	2022	2023	2024
	FTE / %	FTE / %	FTE / %	FTE / %	FTE / %	FTE / %	FTE / %	FTE / %
Direct Funding (1)	46.4 / 36.9%	50.5 / 42.3%	51.3 / 46.5%	55.7 / 52.1%	67.4 / 59.8%	70.6 / 60.6%	78.9 / 62.4%	80.0 / 61.2%
Research grants (2)	38.5 / 30.7%	35.4 / 29.7%	28.2 / 25.6%	23.5 / 22.0%	28.8 / 25.5%	27.4 / 23.5%	26.5 / 20.9%	29.7 / 22.7%
Contract research (3)	40.6 / 32.4%	33.5 / 28.0%	30.8 / 27.9%	27.8 / 25.9%	16.6 / 14.7%	18.5 / 15.9%	21.0 / 16.6%	20.9 / 16.0%
<b>Total Funding</b>	<b>125.5 / 100%</b>	<b>119.4 / 100%</b>	<b>110.2 / 100%</b>	<b>107.0 / 100%</b>	<b>112.7 / 100%</b>	<b>116.5 / 100%</b>	<b>126.3 / 100%</b>	<b>130.6 / 100%</b>

Expenditure (k euro):								
Personnel costs	-€ 8,333	-€ 7,817	-€ 7,839	-€ 8,016	-€ 8,598	-€ 8,950	-€ 10,118	-€ 11,278
Other costs	-€ 4,162	-€ 4,180	-€ 2,872	-€ 3,235	-€ 2,649	-€ 3,942	-€ 4,070	-€ 3,328
<b>Total Expenditure</b>	<b>-€ 12,495</b>	<b>-€ 11,997</b>	<b>-€ 10,711</b>	<b>-€ 11,251</b>	<b>-€ 11,246</b>	<b>-€ 12,892</b>	<b>-€ 14,188</b>	<b>-€ 14,606</b>

*FTE year average is used; Using December as reference date would yield fluctuating data due to end-of-year administrative corrections.*

*Expenditure includes costs on Direct Funding (1), Research grants (2) and Contract Research (3).*

*(1): Direct funding (direct from university/ lump-sum budget). Direct funding includes educational as well as research costs. KUOZ percentages for Professors, Associate - and Assistant Profs (UHDs and UDs) are 50%, meaning funded for Education and Research, for Postdocs (90%) and PhD candidates (80% on research).*

*(2): Research grants obtained in national scientific competition (e.g. grants from NWO and the Royal Academy).*

*(3): Research contracts for specific research projects obtained from external organizations, such as industry, government ministries, European organizations and charitable organizations.*

### 2.2.3. PhD candidates

	Starting year	Enrollment Male / Female	Total (M+F)	Graduated in year 4 or earlier	Graduated in year 5 or earlier	Graduated in year 6 or earlier	Graduated in year 7 or earlier	Not yet finished	Theses submitted	PhD defended	Comment	Discontinued
T-10	2014	16 / 7	23	6 / 26%	10 / 43%	14 / 61%	16 / 70%	1 / 4%	17 / 74%	17 / 74%	1 PhD defended > 8 years	5 / 22%
T-9	2015	19 / 10	29	13 / 45%	17 / 59%	19 / 66%	20 / 69%	3 / 10%	22 / 76%	22 / 76%	2 PhDs defended > 8 years	4 / 14%
T-8	2016	9 / 13	22	10 / 45%	10 / 45%	11 / 50%	12 / 55%	5 / 23%	14 / 64%	14 / 64%	2 PhDs defended > 8 years	3 / 14%
T-7	2017	13 / 3	16	12 / 75%	13 / 81%	13 / 81%	13 / 81%	1 / 6%	15 / 94%	13 / 81%	2 PhDs have a defense date in 2025 (>7 years)	-
T-6	2018	11 / 7	18	6 / 33%	8 / 44%	10 / 56%	11 / 61%	8 / 44%	11 / 61%	10 / 56%	1 PhD has a defense date in 2025, just > year 6	-
T-5	2019	8 / 4	12	7 / 58%	9 / 75%	10 / 83%	-	2 / 17%	10 / 83%	10 / 83%		-
T-4	2020	7 / 17	24	11 / 46%	11 / 46%	-	-	13 / 54%	13 / 54%	11 / 46%	2 PhDs have a defense date in 2025	-
<b>Total</b>	<b>2017-2020</b>	<b>39 / 31</b>	<b>70</b>	<b>36 / 51%</b>	<b>41 / 59%</b>	<b>44 / 63%</b>	<b>47 / 67%</b>	<b>24 / 34%</b>	<b>46 / 66%</b>	<b>46 / 66%</b>		<b>-</b>
<b>Total</b>	2014-2020	83 / 61	144	65 / 44%	68 / 46%	89 / 60%	96 / 64%	34 / 23%	102 / 68%	102 / 68%		12 / 8%

Note 1: All PhD candidates conducting research with the primary aim/obligation of graduating, based on a 0.8-1.0 FTE contract. This includes PhD candidates with employee status (promovendus) and contract PhD candidates without employee status, receiving external funding or a university scholarship, who are conducting research under the authority of the research unit with the primary aim of graduating (beurspromovendus).

\* 2 PhDs have a defense date in 2025 (<7 years)

\*\* 1 PhD has a defense date in 2025, just > year 6.

\*\*\* 2 PhDs have a defense date in 2025



## 2.3. P&A

### 2.3.1. Staff

Research staff	2017		2018		2019		2020		2021		2022		2023		2024	
	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE	#	FTE
Assistant Professor	7	5,2	7	5,6	5	3,7	7	4,8	10	7,5	13	9,1	15	10,8	14	10,7
Associate Professor	8	5,7	7	4,9	8	5,7	10	7,1	11	7,7	11	7,9	11	7,4	12	8,5
Full Professor	12	9,1	13	9,1	13	9,1	12	8,3	11	8,1	12	8,1	11	7,4	11	7,3
Postdocs	23	23	25	24,3	25	24,7	27	26,4	23	22,6	33	32,7	26	25,4	25	24,6
PhD candidates	36	37,7	45	44,7	43	42,1	36	35,3	45	44,3	47	46,2	50	49,7	59	58,9
Support staff	10	9,4	9	9	9	8,2	8	7,6	10	9,5	9	8,5	10	9,7	11	10,4
<b>total permanent scientific staff</b>	<b>27</b>	<b>19,9</b>	<b>27</b>	<b>19,6</b>	<b>26</b>	<b>18,5</b>	<b>29</b>	<b>20,2</b>	<b>32</b>	<b>23,2</b>	<b>36</b>	<b>25,1</b>	<b>37</b>	<b>25,6</b>	<b>37</b>	<b>26,5</b>
<b>total temporary scientific staff</b>	<b>79</b>	<b>69,0</b>	<b>89</b>	<b>80,0</b>	<b>88</b>	<b>77,2</b>	<b>82</b>	<b>71,5</b>	<b>89</b>	<b>78,6</b>	<b>100</b>	<b>89,7</b>	<b>96</b>	<b>86,8</b>	<b>105</b>	<b>96,0</b>
<b>Total scientific staff</b>	<b>106</b>	<b>89,0</b>	<b>116</b>	<b>99,6</b>	<b>114</b>	<b>95,7</b>	<b>111</b>	<b>91,7</b>	<b>121</b>	<b>101,8</b>	<b>136</b>	<b>114,8</b>	<b>133</b>	<b>112,4</b>	<b>142</b>	<b>122,4</b>

Note:

FTEs include those FTEs employed by VU P&A but seconded to Nikhef and ARCNL

1. Assistant prof / Associate prof / full prof: 70% research time
2. Postdoctoral researchers: 100% research time
3. PhD candidates: 100% research time
4. Support staff: technician; 100% research time

\* Source: SAP S/4HANA, based on annual average

## 2.3.2. Funding and expenditure

	2017		2018		2019		2020		2021		2022		2023		2024	
FTEs	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%	FTE	%
Direct Funding*	31	35,6	34,6	35,5	32,1	34,3	37	41,3	53,1	53,3	58,8	52,3	50,5	45,8	52,3	43,4
Research Grants**	15,2	17,4	24,9	25,5	24,7	26,4	26,9	30,1	29	29,2	29,4	26,1	31	28,1	39,8	33
Contract Research***	40,8	46,9	38,1	39	36,7	39,3	25,6	28,6	17,4	17,5	24,3	21,6	28,8	26,1	28,4	23,6
<b>Total</b>	<b>87</b>	<b>100</b>	<b>97,6</b>	<b>100</b>	<b>93,5</b>	<b>100</b>	<b>89,5</b>	<b>100</b>	<b>99,6</b>	<b>100</b>	<b>112,6</b>	<b>100</b>	<b>110,4</b>	<b>100</b>	<b>120,4</b>	<b>100</b>

  

Expenditure	2017	2018	2019	2020	2021	2022	2023	2024
Personnel costs	€ 6.658.230	€ 6.700.502	€ 6.659.688	€ 6.578.774	€ 7.776.837	€ 8.360.284	€ 8.435.572	€ 9.567.187
Material costs	€ 2.727.170	€ 2.537.343	€ 2.463.085	€ 2.301.954	€ 2.080.223	€ 2.201.038	€ 3.052.674	€ 3.443.469
Other costs	€ 1.430.568	€ 1.526.805	€ 737.732	€ 781.910	€ 215.546	€ 757.019	€ 629.026	€ 792.110
<b>Total</b>	<b>€ 10.815.969</b>	<b>€ 10.764.651</b>	<b>€ 9.860.506</b>	<b>€ 9.662.638</b>	<b>€ 10.072.606</b>	<b>€ 11.318.341</b>	<b>€ 12.117.272</b>	<b>€ 13.802.767</b>

Note:

FTEs include those FTEs employed by VU P&A but seconded to Nikhef and ARCNL

\* 1st Money Stream Funding

\*\* 2nd Money Stream Funding

\*\*\* 3rd Money Stream Funding

\* Source: SAP S/4HANA

### 2.3.3. PhD candidates

Enrolment				Success rate													
				≤4		≤5		≤6		≤7		>7		Not yet finished		Discontinued	
	#M	#F	Total	#	%	#	%	#	%	#	%	#	%	#	%	#	%
2017	10	8	18	3	17%	5	28%	7	39%	11	61%	3	17%	4	22%	0	0%
2018	14	9	23	0	0%	6	26%	13	57%	14	61%	0	0%	8	35%	1	4%
2019	8	2	10	0	0%	4	40%	4	40%	4	40%	0	0%	6	60%	0	0%
2020	16	4	20	0	0%	1	5%	1	5%	1	5%	0	0%	18	90%	1	5%
<b>Total</b>	<b>48</b>	<b>23</b>	<b>71</b>	<b>3</b>	<b>4%</b>	<b>16</b>	<b>23%</b>	<b>25</b>	<b>35%</b>	<b>30</b>	<b>42%</b>	<b>3</b>	<b>4%</b>	<b>36</b>	<b>51%</b>	<b>2</b>	<b>3%</b>

*Note:*  
Includes PhDs graduated at VU P&A but working for the APP (Nikhef) and PNL (ARCNL) sections of our department

\*Source: Hora Finita