Report of the Topical Review Panel for the Area of Neuroscience at ISTA, 2024

PART I: Executive Summary

A panel of seven reviewers consisting of Arnold Kriegstein (UCSF, USA) Chair; Hannah Monyer (U Heidelberg and DKFZ, Germany) who is also an ISTA Scientific Board member; Kathryn Hess Bellwald (EPFL, Lausanne, Switzerland) who is also an ISTA Scientific Board member; Claude Desplan (NYU, USA); Magdalena Götz (Helmholtz, Munich, Germany); Nicolas Brunel (Bocconi University, Italy) (Duke University, USA); and Frank Polleux (Columbia University, USA) evaluated the area of neuroscience at IST on December 4th and 5th 2024. The two-day visit gave the reviewers ample opportunity to discuss ongoing researchscience in neuroscience at ISTA, as well as a variety of related topics including organization, administration, infrastructure, collaboration, training, funding etc. The expertise of the reviewers overlapped the research areas represented at ISTA.

The panel was asked to evaluate 12 faculty members in the Neuroscience Cluster. Prior to the meeting, the panel members received a report providing information on ISTA, the scientific profile of the individual scientists, information pertaining to graduate student training, outreach and information pertaining to infrastructure and administration.

The Neuroscience cluster at ISTA has grown impressively since its founding 14 years ago and has reached world leading status. The faculty have performed extremely well and represent a diverse but well-integrated representation of important research areas in basic neuroscience addressing issues of neurodevelopment, neuroplasticity, behavior, visuo-motor control, theoretical and computational neuroscience quantitative neurobiology, and disease. Many of the faculty are world-leading in their fields, and the younger, more recent recruits have the potential to reach this status in the near future. It is a very good predictor of future success that nearly all of the new hires have now acquired competitive ERC grants. The committee was also particularly impressed by the successful science outreach initiatives such as the Vista science outreach program and the related new facility under construction designed to support community outreach. This is a wonderful and apparently successful program that stands as a model for other institutions to emulate. This effort is particularly salient in the current climate of science skepticism and has been singled out for commendation by the committee. Martin Hetzer has also skillfully guided the growth of the neuroscience cluster by strategic hiring as well as the provision of resources including through the SSUs providing infrastructural and technological support for scientific discovery and promoting the collaborative culture of ISTA.

Despite the general success, the committee identified several areas for potential improvement. Perhaps the chief concern relates to the tenure of postdoctoral fellows, which is currently limited to 5+1 years. For several reasons including the increasingly complex and interdisciplinary nature of modern neuroscience research and the increasing time required to satisfy reviewers at high impact journals, postdocs are now often taking 6-7 years to complete their training and finalize their project to publication. Additional factors include consideration for maternal/paternal leave and at least one current postdoc noted he/she was unable to apply for their own funding (which would benefit both the postdoc and the PI) because they would not have the required postdoc time to complete the proposed project. We would like to emphasize that extending the timetable should not be exploitative. This could be guaranteed a number of ways, for example by a committee not including the advisor that could grant appropriately documented extensions, or possibly by promoting the postdoctoral scientist at year 6 to a senior research scientist status in order to provide more time to complete projects and secure a position.

The SSUs clearly have made a positive impact as a critical resource for many PIs, but given how quickly cutting-edge technologies are emerging and evolving, for example in imaging and genomics, there is a need

to make the process of adding technology more rapidly responsive. This concern applies to staff scientists as well as IT specialists who are also perceived to be rate-limiting and whose numbers could be increased. Possibly the latter could be appointed without the time-consuming process of an open search. Retention of the best staff appears to be a problem as well, and perhaps empowering them, for example by allowing more freedom to innovate, could help with retention.

The Neuro Data Track talks, which are widely appreciated, could be improved by the inclusion of PI talks as well. Though the generally low attendance would need to be addressed. Requiring at least yearly presentations by the faculty as well as by trainees is strongly recommended. Another suggestion is a Neuro Cluster retreat where all labs would be required to present. Such activities would enhance the sense of community identity. We realize the unique strengths of the broad scope of basic sciences at ISTA but feel that a sense of belonging to both the neuroscience community and the greater ISTA would strengthen both.

The international status of ISTA and the neuroscience cluster, in particular, is poised for greater visibility. Boosting the international reputation of ISTA should be an increasing area of focus as the quality and size of the institute continue to grow over the next few years. Investment in public relations targeted to the scientific community as well as to the public is encouraged, for example by hiring staff with expertise in the use of social media to publicize accomplishments and discoveries. One efficient way to enhance visibility of the Neuroscience community at ISTA inside and outside of Europe could be to organize a yearly symposium including 5-10 high-profile international scientists. It may also be worth considering the creation of a monthly digital newsletter. Enhancing the profile of ISTA will help ensure that ISTA continues to recruit the best students, postdoctoral applicants, and new principal investigators.

In summary, the reviewers were very impressed by the progress of the Neuroscience Cluster within ISTA and its trajectory toward the goal of becoming a world leading institution. Specifically, we applaud the quality and achievements of the new PIs recently recruited and the collaborative relationships that have been created among the faculty. If the size of the cluster increases over the next decade as planned, and if the administration is responsive to the issues outlined in this review, we are confident that the Neuroscience Cluster can become a peerless internationally leading neuroscience center.

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PART II: General Comments

The Neuroscience Cluster is world leading and has grown impressively in terms of scientific scope and excellence with the addition of several very gifted junior faculty. Not only are the PIs pushing boundaries in their own work, they are also forming productive collaborations with other members of the Neuroscience Cluster, SSU scientific staff, and scientists in other clusters of ISTA. The PIs have won significant awards but perhaps more importantly, have competed at an international level to secure prestigious ERC grants, German and Austrian research foundation awards, and private foundation awards including from the Kavli Foundation, Simons Foundation, and the Chan-Zuckerberg Initiative. A notable recent achievement has been the award of an Austrian Cluster of Excellence Grant, a successful effort that was co-led by Co-led by Peter Jonas and Gaia Novarino and involved most cluster members.

While there are challenges attracting outstanding postdocs, a problem felt world-wide since the pandemic, we expect this will improve as the reputation of the faculty spreads more globally. The review committee was very impressed by the enthusiasm, breadth of knowledge, and maturity of the PhD students we met during the poster session. The curriculum for students has been evolving and appears to be very comprehensive with the newly added advanced courses being importantly responsive to the changing needs of the neuroscience community.

The overall assessment was of an excellent, world- leading program that is doing extremely well and is poised to become a premier internationally recognized neuroscience cluster. The comments below are meant to highlight areas which could be improved to help the Neuroscience Cluster achieve its full potential.

Future Recruitment. With regard to new hires, the committee felt that recruitment of faculty to increase the strength in theoretical neuroscience would fit particularly well in the research portfolio of the neuroscience cluster as well as ISTA more broadly. However, we were told that at the neuroscience cluster faculty level there will probably not be more recruitments in the next few years. We also heard concern from some of the PIs about the amount of time spent on recruitment activity. Possibly, as the size of the faculty increases it would be possible to relieve the burden by rotating the recruitment responsibilities among the faculty.

Mentoring for junior faculty could be improved by pairing with more senior faculty and mandating yearly meetings with at least two mentors. The tenure process, an area of stress for junior faculty, could be made less worrying if conducted in a faster and more transparent fashion, a comment we heard from several of the junior faculty who were uncertain about how their promotions were progressing.

Students. The course offerings, both required track core courses and advanced optional ones appear comprehensive and well designed to equip the students with a broad understanding of science prior to beginning their thesis work. The committee was very happy with the quality of the PhD students we met during the poster session. However, there is a troubling anxiety among trainees about their future career prospects. Though not specific to ISTA, there has been a generational shift in the career outlook for scientists. Science is less attractive to young trainees, and particularly since the pandemic, demands for work-life balance make it harder to recruit postdocs. In addition, competition for first-tier academic positions has become very intense, proving very discouraging for young trainees. ISTA could consider bolstering the mentoring of trainees for career development, including confidence-building programs that teach them to write grants, run a lab, prepare a CV, give a chalk talk, and negotiate a startup package. Enabling them to attend national and international meetings to elevate their profiles would also help.

Postdoctoral Trainees. Perhaps the chief concern relates to the tenure of postdoctoral fellows, which is currently limited to 5+1 years. For several reasons including the increasingly complex and interdisciplinary nature of modern neuroscience research and the increasing time required to satisfy reviewers at high impact journals, postdocs are now often taking 6-7 years to complete their training. Additional factors include consideration for maternal/paternal leave and at least one current postdoc noted he/she was unable to apply for their own funding (which would benefit both the postdoc and the PI) because they would not have the required postdoc time to complete the proposed project. We would emphasize that extending the timetable should not be exploitative. This could be guaranteed a number of ways, for example by a committee not including the advisor that could grant appropriately documented extensions, or possibly by making available a shift to an alternate track, such as a specialist that would allow further time to complete projects and secure a position.

Scientific Service Units The SSUs clearly have made a positive impact as a critical resource for many PIs, but given how quickly cutting-edge technologies are emerging and evolving, for example in imaging and genomics, there is a need to make the process of adding technology more rapidly responsive. This concern also applies to staff scientists as well as IT specialists who are also perceived to be rate-limiting and whose numbers could be increased. Possibly the latter could be appointed without the time-consuming process of an open search. Retention of the best staff appears to be a problem as well, and perhaps empowering them, for example by allowing more freedom to innovate could help with retention.

Computing facilities: could be improved. Scientific computing is well staffed but has trouble with retention – no support for conducting research, attending conferences, etc. No service mindset, possibly due to understaffing. A new head is being recruited who will hopefully be able to address these concerns.

Salaries/Budgets Salaries do increase over time but are not truly indexed to inflation. We heard many complaints of a lack of keeping up with the rising costs of living. This is even more of a problem for research budgets. The grant office was highly rated as helping PIs to apply for funding, but possibly internal funding could be provided on a competitive basis to augment critical funding needs. We also heard that the costs of SSU's are too high. Inflation has created an increasing imbalance between research budgets and salary levels and rising expenses. The administration is urged, if possible, to find a way to reduce SSU costs and supplement salaries and research budgets.

Conferences We recommend more support to organize a robust conference schedule to attract outside speakers. We also note that the Neuro Data Track talks, which are widely appreciated, would be improved by the inclusion of PI speakers. In fact, we heard from several trainees that they heard about the research of some PIs for the first time during the Topical Review presentations! Requiring at least yearly presentations by the faculty as well as by trainees is strongly recommended. Committee members also recommended that student talks should be mentored by a faculty member other than the trainee's PI who would also be required to attend.

Lackluster attendance was highlighted as a concern, and we suggest consideration of measures that could encourage wider participation. Providing refreshments following the talks in an informal area with adequate space to accommodate attendees might be one such measure. We note that the Think and Drink seminars are alleged to be followed by a social get-together, but we heard from students and postdocs that the space is too small and not well configured to encourage social activities. Requiring attendance by 1st year students might also help. Another suggestion would be a Neuro Cluster retreat where all labs would be required to present. Such activities would help create a culture of inclusion, provide a setting for networking and collaboration, and enhance the sense of community identity that could combat the sense of isolation felt by some trainees. We realize the unique strengths of the broad scope of basic sciences represented by the ISTA

but feel that a sense of belonging to both the neuroscience community as well as the greater ISTA would strengthen both.

VISTA The committee was particularly struck by the priority given to public outreach and education at ISTA. Gaia Novarino, the Vice President for Science Education, was particularly enthusiastic about these efforts, and should be commended for her activities related to education and outreach as well as her supervision of the Science Education Team. The reviewers were particularly impressed by the commitment to public outreach represented by the construction of a purpose-built educational facility on the ISTA grounds. This is a wonderful and apparently successful program that stands as a model for other institutions to emulate. This effort is particularly salient in the current climate of science skepticism and has been singled out for commendation by the committee.

Final Thoughts: The reviewers find that the Neuroscience Cluster has grown very nicely in stature and size since the previous evaluation. We congratulate the administration on the quality and achievements of the new PIs recently recruited and the collaborative relationships that have been created among the faculty. The development of a culture of public engagement and specifically the construction of a purpose-built educational facility is highly commended. However, some issues that were of concern in the past remain. There is a need to address the issue of postdoc term limits. The administration is urged to modify the prohibition against extending the time period postdoctoral fellows can remain at ISTA. In addition, enhancing the core facilities by making them more nimble and responsive to PI needs, coupled with the recruitment of more staff scientists (who are free to innovate and teach) would help ensure continued success. Inflation has created an increasing imbalance between research budgets and salary levels and rising expenses. The administration is urged to find a way to supplement salaries and research budgets if possible.

It is notable that many of the concerns raised by the faculty and trainees in 2024 were similar or identical to ones raised in the 2015 Topical Review. Given the consistency of the issues over time, we urge the ISTA to do their best to address them.