A.3.6. Societal impact

The RC addresses major chronic diseases, and therefore has potential for major societal impact. However, the RC is still small and in its infancy. Thus, it is rather difficult to foresee the societal impact at this time. When the RC grows, diversifies the PI community (more PhD basic science researchers) and forms links with other RCs, it will begin to have a greater impact.

A.3.7. International competitiveness or international comparability

Some aspects of the RC(e.g. cohorts) are of excellent quality, but as a whole, the research prolife needs to be more clear. The Finnish research project DIPP (including Dr. Veijola) has been collecting samples since the 1990's and is the largest biobank and databank in the world of children with increased HLA-conferred risk for T1D. Dr. Veijola is very involved at the international level having an NIH funded grant with Dr. Jeffrey Krischer. In the area of T1D, this laboratory plays a role internationally. The food allergy group is recently established and does not (yet) have an international reputation. For the other diseases, there are a few laboratories internationally that are cited as having similar interests.

A.3.8. Overall assessment: Main strengths and areas of development of the RC project, further remarks and recommendations

The panel sees OCCI as an important RC with a clinically oriented focus. Among its strengths is the unique specimen collection (primarily for T1D) and expertize in flow cytometry, which is dispersed as a core service also for other RCs. The research and administrative record of the PI, Dr. Veijola, is excellent as is her funding. The panel felt that tackling with relevant and focused research questions could lead to new discoveries. Biobank is an excellent source of specimens both for internal and external collaborative research. The RC was established a year ago and has just begun to interact. It is laudable and reasonable that when the related topics are being put together into a research community, eventually new knowledge should be applicable to all.

OCCI has only 4 members and therefore the critical mass for achieving long term research objectives may be inadequate. The composition of the RC is biased towards clinical diagnostics, which is highly valuable, but needs a research arm in order to achieve an international status. As the approaches of each RC group are similar, it is not clear if the tests planned to be performed together will relate to all of the diseases. Also, as the groups are similar in interests, new information will have to come from the outside and a clear plan to get new information and keep up with the advances in immune disease international are lacking.

The panel feels that OCCI would benefit from recruiting new PIs with expertise in animal models of T1D and other autoimmune disorders, on which to build strength in genetics, molecular biology and cell biochemistry. A possibility is that this RC joins with another RC which has additional core support in cell biology and molecular biochemistry. The students in OCCI would benefit from access to more, and differently skilled, PIs. At an appropriate time, the OCCI can then establish independence.

A.3.9. Final rating (1 – 6): 3,0 (good)

A.4. RC Phototransduction – Phototransduction Mechanisms in Mammalian Brain; RC Head Markku Timonen

A.4.1. Scientific quality and innovativeness of the research plan

This is an interesting and large, still quite unexplored field of research which is especially pertinent for a site in a Northern country like Finland. The submission outlines a very specific research project rather than the broad, collective research of a community of scientists. Furthermore, it is unclear if the project represents more than a part of the ongoing research of the named PIs.

It appears that the research project challenges a generally accepted paradigm, and, thus, is both intrinsically innovative but also risky. Present results are promising although often very preliminary. Recent work from members of the RC is mentioned but not referenced which makes assessment of the data and conclusions somewhat difficult. The question of its quality may be judged only in regard to the validity of the preliminary findings, which are mentioned but not presented. The findings that outside light can reach the brain seem to be quite old and should have been confirmed in the meanwhile supported by a reference. At least, some of the data from clinical examinations are supporting this effect. Since the project has not yet been funded, based on

expert peer-review, and the RC director does not report any currently active external funding relevant to the project, its quality cannot be considered favourably at this time.

The chances of success can only be properly judged after the project has been evaluated by expert peer-review for an appropriate funding agency. The project addresses a novel paradigm but besides a preliminary test of the hypothesis, it seems to be largely descriptive and to lack development. Its outcome with regard to wide clinical application is uncertain with respect to the present still early stage of research. This is, however, not an argument against performing this type of research at a place like Oulu with its Northern location.

The formation of an RC will strengthen this unique field but this research while being needed, might also be performed in a smaller research environment. The project as set out clearly requires expertise from different scientific disciplines.

A.4.2. Feasibility of the research plan

No timetable is given and the methods are sketched out in insufficient detail to be able to judge how far they are appropriate. The above point regarding peer-review is reiterated. Ethical permission for a study on human subjects is mentioned, but how this study addresses the main hypothesis of opsin involvement is not clear. No alternative approaches are considered, and the possibility of the main hypothesis being false has not been taken into account.

The qualification of the individual researchers appears good to very good. However, at this time, the project does not have any obvious source of granted funding, although the main infrastructure for the work appears to be in place. The submission refers to a number of PhD students who will be recruited, but the set of experiments as proposed here does not obviously constitute material for more than one high-impact publication, let alone the 8-10 envisaged ones.

The RC includes the necessary fields but still may need inclusion of trialists and statisticians. The management structure of the project is not very clear. It is stated to form the subject of an ERC consolidator grant application, but the identity of the applicant is unstated.

No Materials management plan is presented: however, its relevance isn't obvious. Ethical approval for a study in human subjects has been obtained. However, the type of study is not detailed.

A.4.3. Competence of the RC and research teams

The leader of the RC has a creditable track record in clinical research, mainly addressing physiological correlates of depression and diabetes. His publications are mostly in well-respected clinical or healthcare journals, with one review article in BMJ. Apart from reviewer and editorial tasks, he holds only one international position of trust (relevant to teaching rather than research). Since he has held an independent academic post for 10 years, most of this time spent at professorial level, but has published only one significant, original paper relevant to the application (in a specialised physiology journal, plus a hypothesis paper), it is debatable whether “Veni” status is appropriate. Despite evidence of success in academic leadership and documented management skills, it is also unclear whether Prof Timonen has sufficient experience of experimental neuroscience such as would be required to steer a project of the type proposed.

Two other PIs also do not fit clearly into the category 'Veni', although the project is clearly a new departure for them. Dr. Saarela has held an academic post for 35 years, and has been head of department for over a decade. He holds substantial research funding for an apparently unrelated project, but none of his selected publications is more recent than 2005, and most of them are from the 1980s. They are mainly in solid physiology and zoology journals, in the field of thermoregulation, rather than photobiology. Dr. Räsänen has been Professor of Psychiatry in Oulu for over 12 years. However, she does not list any publications after 2003, although prior to that had published in leading clinical journals. Pubmed searches do reveal, however, that she continues to publish writings in specialised clinical, psychiatric and health science journals. However, few of her papers seem to be thematically related to the project outlined here. Dr. Kiviniemi is a younger investigator, holding an independent position since 2007, with significant external funding and senior author publications in good journals of his field (radiology), with a middle authorship on a PNAS paper having >60 authors.

The listed publications of RC Phototransduction are again mostly from prior to 2005, and few are in any obvious way relevant to the project outlined. Taken as a whole, the listed publications of the RC do not identify it as a dynamic and coherent scientific community on the verge of a significant breakthrough in neurobiology.

The envisaged collaboration in an RC attempts to bring together different expertise. The four PIs come from completely different fields (radiology, animal physiology, psychiatry and clinical epidemiology), but there is no clear explanation of how each will be involved. The proposal to profile effects of visible light on opsin expression in the brain and on brain electrical activity (as visualised radiologically), should use the expertise of Saarela and Kiviniemi, respectively. The roles of the other PIs are less clear. To stand a good chance of success, the project should ideally involve also molecular cell biologists, experts in transgenic animals and behavioural geneticists.

A.4.4. Research environment and collaboration

The project itself is inter-disciplinary in nature. However, any integration of activity beyond the specific scientific project is not outlined in the submission. The host institution prioritises inter-disciplinary research; this project fits the description well.

The research topic has a unique position within the country and as such stands alone. This may explain that no such collaborations are described in the submission. International collaboration with researchers in Magdeburg, Germany, is indicated, but exactly how this contributes to the project is unclear. An international network is also referred to, regarding doctoral education, although no details are given. In this topic area, they might reach an internationally leading position if their research resulted in major findings which based on the present proposal does not seem very probable.

A.4.5. Significance of the RC for the researcher training and promotion of professional careers in research

The doctoral training to be received under the project will be guided by the university's graduate school, to whose principles it adheres. The importance of international training is also emphasised. No involvement of the long established structures in place in the Biocenter Oulu doctoral programme is mentioned, however. One concern is the absence of postdocs in the research teams, who would normally take a major role in PhD student training. Nor is it clear who the primary supervisor of the PhD students will be.

Researchers from Magdeburg will be hosted in the RC, as indicated above, although a more systematic aspiration to promotion of postdoctoral careers and mobility is missing.

A.4.6. Societal impact

The project addresses a topic of societal concern. The research team is already involved with the manufacturer of a device for bright light therapy of seasonal depression. If successful in the longer term, the project could have a positive impact on the health of the local community in northern Finland. Thus, any positive results of this research might have an important societal impact.

A.4.7. International competitiveness or international comparability

The RC claims to represent a unique constellation of researchers. In the neurosciences community more widely, it is less obvious that these scientists have a high standing. With positive results, they would reach an important position, internationally. Yet, the opposite will happen, should their underlying hypothesis remain unconfirmed.

A.4.8. Overall assessment: Main strengths and areas of development of the RC project, further remarks and recommendations

An interesting but also challenging field of research which may give the RC an excellent position internationally and may have an important influence on the management of seasonal depression in the country.

The RC is very small and proposes to work on a highly focused, inter-disciplinary, high-risk project. Due to the relatively narrow focus of this RC, the work could also be done separately in a small research network, provided that adequate funding would be available from other sources. The results may help to obtain a better understanding of the mechanisms and the potential of bright light therapy.

Whilst this may produce a significant advance in knowledge, the other research of the groups of the RC is not documented here, making it hard to judge the overall status of the research environment. Before the present project can be considered a viable activity of the RC, it needs to be properly validated and funded, based on expert peer-review, which is clearly beyond the scope of the RAE. Preferably, the RC should present a wider portfolio of activities, commensurate with the real career stage of its members.

A.4.9. Final rating (1 – 6): 2,0 (unsatisfactory)