

international evaluation

The screenshot shows the website for the Nucleo Milenio in Immunology and Immunotherapy (NMMi). The header includes the NMMi logo and navigation links: DIFUSION, AGENDA, ARCHIVO, info@nmml.cl, and Inicio. The 'FINANCIAMIENTO' section lists the Pontificia Universidad Católica de Chile, Universidad de Chile, Gobierno de Chile (Ministerio de Planificación), and Iniciativa Milenio ICMO. The main content area features a grid of images related to immunology and immunotherapy. A red arrow points down from the 'Inicio' link to the text 'Evaluation of the Nucleus on Immunology and Immunotherapy'. A red arrow points up from this text to the text 'Evaluation in English from Page 5'.

nmml
NUCLEO MILENIO
INMUNOLOGIA INMUNOTERAPIA

FINANCIAMIENTO

GOBIERNO DE CHILE
MINISTERIO DE PLANIFICACION

INICIATIVA MILENIO
ICM•O

DIFUSION AGENDA ARCHIVO info@nmml.cl Inicio

PONTIFICIA UNIVERSIDAD
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Evaluation of the Nucleus on Immunology
and Immunotherapy

Evaluation in English from Page 5

Resultados de la evaluación de las Memorias Anuales 2007 de Institutos y Núcleos Científicos de la Iniciativa Científica Milenio

ANTECEDENTES

El presente documento ha sido elaborado con el objetivo exponer los resultados del proceso de evaluación externa de las Memorias Anuales 2007 (en adelante Memorias 2007) de Institutos y Núcleos de la ICM, instaurado a raíz de una recomendación emanada de la evaluación al Programa ICM hecha por la Dirección de Presupuestos del Ministerio de Hacienda el año 2005.

La evaluación externa de las Memorias Anuales 2007 de los Centros ICM estuvo direccionada a monitorear y evaluar el desempeño y el desarrollo de los centros en base a los cuatro componentes fundamentales del Programa: Investigación Científica y Tecnológica de Avanzada, Formación de Jóvenes, Redes de Colaboración Nacional e Internacional y Proyección al Medio Externo.

Los resultados de las evaluaciones se darán a conocer a las autoridades directivas y científicas del Programa Iniciativa Científica Milenio (ICM) representadas por su Consejo Directivo, Comité de Programa y Secretaría Ejecutiva, así como a los Investigadores Responsables de los Centros, esperando con ello contribuir a ajustar y mejorar su desempeño siguiendo los comentarios de los evaluadores.

PROCEDIMIENTO UTILIZADO PARA LA EVALUACION EXTERNA DE LAS MEMORIAS ANUALES 2007

La Memoria Anual de un centro ICM es un documento público que consigna información relativa a productividad científica y tecnológica y actividades realizadas por todos los investigadores del Instituto / Núcleo Científico dentro del período de un año. Debido a lo anterior, se convierte en una de las principales fuentes de información para las evaluaciones de los centros, evaluaciones del Programa ICM y estudios de productividad e impacto. La información requerida en la Memoria tiene relación con los 4 componentes principales que se desarrollan en los centros, los cuales son la Investigación Científica, la Formación de Jóvenes, la Proyección Externa y las Redes de Colaboración, de tal forma de poder evaluar o auditar cada uno de ellos en las diferentes instancias que se contemplan en el Programa.

En diciembre de 2007, la Secretaría Ejecutiva de la ICM solicitó a 16 Centros ICM vigentes durante el año 2007, la entrega de la Memoria Anual escrita en inglés y respetando un formato preestablecido, conteniendo la descripción narrativa y datos de respaldo de las actividades desarrolladas entre el 1 de enero y 31 de diciembre de 2007. El plazo para recibir las Memorias 2007 finalizó el 31 de marzo de 2008. Al momento de solicitar la Memoria, se notificó a los centros que éstas serían evaluadas externamente, de acuerdo al procedimiento que se detalla en este informe.

Oportunamente, la Secretaría Ejecutiva desarrolló una pauta para la evaluación de las Memorias Anuales de Institutos y Núcleos, que permitiera evaluar los componentes y conceptos específicos solicitados informar en las Memorias 2007, según el detalle indicado a continuación:

Componente 1: Investigación científica-tecnológica de avanzada.

1. Coherencia de los objetivos centrales, con la orientación, acciones y metodologías desarrolladas.
2. Avances en cada proyecto o línea de investigación, y del Instituto/Núcleo Científico como centro (logros, impactos, investigación de frontera, otros).
3. Trabajo colaborativo e interdisciplinario entre científicos, a niveles de líneas de investigación y del centro
4. Nivel de productividad del centro, tomando especialmente en cuenta los siguientes conceptos informados en la memoria:
 - Publicaciones (nivel y cantidad alcanzados de acuerdo al tema tratado y sus posibles impactos; publicaciones ISI o estándar equivalente, SCIELO o estándar equivalente, dependiendo de la disciplina y otras publicaciones).
 - Presentaciones a Congresos/Seminarios y otros (nivel, cantidad, participación).
 - Innovación y patentamiento de resultados de investigaciones.
 - Investigadores participando en comités editoriales de revistas ISI o equivalentes en el período.
 - Apalancamiento de recursos del sector privado
 - Otros
5. Comentario general y sugerencias sobre el componente Investigación científica-tecnológica de avanzada

Componente 2: Formación de Jóvenes

1. - Cantidad y nivel de formación de estudiantes (pregrado, MSc, PhD) y de postdoctorados con tutores dentro del equipo de investigadores y trabajando en investigaciones del centro.
- Número de jóvenes que obtuvieron grado en el período
2. Publicaciones de los investigadores asociados, jóvenes o senior, coautoreadas por los estudiantes en formación.
3. Grado de participación del centro como institución, o de los investigadores del centro, en programas formales de formación de jóvenes a distintos niveles.
4. Comentario general y sugerencias sobre el componente formación de jóvenes

Componente 3: Redes de colaboración nacional e internacional

1. Participación de los grupos de investigadores del centro en redes nacionales y/o internacionales de carácter formal o en vías de formalización. Cantidad y calidad.
2. Relevancia, proyección y logros de las redes creadas o en formación
3. Participación del centro en otras actividades de colaboración. Cantidad, calidad, logros.
4. Comentario general y sugerencias sobre el componente Redes y otras actividades de colaboración nacional e internacional

Componente 4: Proyección al medio externo

1. Actividades, proyecciones, resultados y logros en el ámbito productivo y social. Cantidad, calidad, relevancia, profundidad e impacto de las actividades.
2. Trabajos desarrollados con los sectores productivos y de servicios (tanto privados como públicos), con el sector educacional y con la ciudadanía en general.
3. Comentario general y sugerencias sobre el componente proyección al medio externo.

Componente 5: (preparado por la Secretaría Ejecutiva de la ICM)

Organización, gestión y operación del Centro (gestión gerencial, administración, manejo de finanzas, usos de fondos, otros)

Además de la evaluación cualitativa, el proceso consideraba que cada componente fuera calificado a través de una nota, de 1 (mínimo) a 10 (máximo), complementando con comentarios, sugerencias o recomendaciones para los diversos conceptos, más un comentario general sobre el Centro.

Las calificaciones fueron ponderadas de acuerdo a la siguiente pauta, para obtener la nota final para cada Centro.

WEIGHTING FACTORS	
CONCEPT	FACTOR
Research	35
Training/Education	25
Networking	20
Outreach	15
Management and Operation	5

La identidad de los expertos a cargo de las evaluaciones será mantenida en reserva por la Secretaría Ejecutiva de la ICM.

RESULTADOS DEL PROCESO DE EVALUACION

Una vez recibidas las Memorias, se inició el proceso de comunicación con científicos extranjeros expertos en las áreas o disciplinas científicas abordadas por los distintos centros en su trabajo de investigación (en adelante evaluadores pares), consultándoseles sobre conflictos de interés con el centro y su disposición a evaluar las Memorias 2007, hasta completar dos (2) evaluadores pares por Memoria. En primer lugar se contactó a evaluadores pares que hubieran participado anteriormente en la evaluación de los proyectos para establecer o renovar los centros ICM. Si ellos no respondían o no podían participar, se recurrió a otros expertos recomendados por el Comité de Programa, o de reconocida experiencia en el área específica del Núcleo o Instituto para el cual se requería expresar su opinión.

La Memoria Anual de cada centro fue enviada vía correo electrónico a los evaluadores pares. Se les consultó en ese momento si deseaban participar en el proceso de evaluación. Al mismo tiempo, se envió la pauta de evaluación descrita previamente para que la completaran y devolvieran vía correo electrónico en un período no inferior a un mes, considerado un lapso de tiempo adecuado para que pudieran cumplir la tarea solicitada. A quienes lo pidieron, se les envió también la copia impresa de la memoria Anual con sus anexos vía correo rápido. Los resultados del proceso de consulta se muestran en la Tabla 1.

Tabla 1: Estadísticas derivadas del proceso de evaluación de las Memorias Anuales de los Centros ICM.

Número y porcentaje total de evaluadores pares contactados (N/%)	72 / 100
Número y porcentaje de evaluadores que respondieron positivamente (N/%)	35 / 48,6
Número y porcentaje de evaluadores que respondieron negativamente (N/%)	14 / 19,4
Número y porcentaje de evaluadores que no respondieron (N/%)	23 / 31,9
Número y porcentaje final de evaluadores a los cuales se les solicitó evaluar (N/%)	33* / 45,8

* Dos evaluadores respondieron tardíamente, cuando se había establecido contacto con otros evaluadores que aceptaron la tarea rápidamente.

Los 33 evaluadores pares finales debían evaluar a un total de 16 Memorias Anuales de centros ICM, desglosados en 5 Institutos y 11 Núcleos Científicos (Tabla 2).

Tabla 2

Número de Memorias de Centros ICM a evaluar	Número de evaluadores pares por Memoria de Centro
1 Instituto	4 evaluadores (4)
4 Institutos	2 evaluadores c/u (8)
10 Núcleos	2 evaluadores c/u (20)
1 Núcleo	1 evaluador (1)
16 Centros ICM	33 evaluadores

Las primeras evaluaciones fueron recibidas a mediados de abril, en tanto las últimas fueron recibidas a fines de junio. Cuando un evaluador no hacía llegar su evaluación en la fecha comprometida, se le recordaba vía correo electrónico en otras 2 ocasiones. Si luego de estos recordatorios no respondía, se dejaba de insistir. Siguiendo este

procedimiento, recibimos un total de 30 evaluaciones, es decir, 3 evaluadores que habían comprometido su participación finalmente no hicieron llegar sus resultados. Como resultado del proceso de evaluación se obtuvo 4 evaluaciones de la Memoria de un Instituto (debido a su trabajo en áreas científicas muy diferentes, se recurrió a evaluadores pares por área, no por Memoria), 2 evaluaciones para 3 Memorias de Institutos y una para el restante Instituto. En cuanto a los Núcleos, se obtuvo 2 evaluaciones para 8 Memorias de Núcleos y sólo una evaluación para las Memorias de los 3 Núcleos restantes, lo que significó tener al menos una evaluación por cada una de las Memorias de los 16 centros (Tabla 3).

Tabla 3

Número de Memorias de Centros ICM evaluadas	Número de evaluadores pares por Memoria de Centro que enviaron su informe
1 Instituto	4 evaluadores (4)
3 Institutos	2 evaluadores c/u (6)
1 Instituto	1 evaluador (1)
8 Núcleos	2 evaluadores c/u (16)
3 Núcleos	1 evaluador c/u (3)
16 Centros ICM	30 evaluaciones

La identidad de los expertos a cargo de las evaluaciones será mantenida en reserva por la Secretaría Ejecutiva de la ICM.

A continuación, hacemos llegar a usted los resultados de la evaluación de la Memoria 2007 de su centro. En su caso, tuvimos respuesta de dos evaluadores para los primeros 4 componentes (páginas 5 y 11). La evaluación de la SE sobre el Componente 5 se entrega al final, junto a la calificación general de su centro.

MILLENNIUM NUCLEUS ON IMMUNOLOGY AND IMMUNOTHERAPY: Evaluador 1

Component 1: Advanced Scientific/technological research

Grade component 1	10
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1. Coherence of the central objectives with the orientation, actions and methodologies developed.

Investigators of this Nucleus have made a very coherent progress during the achievement of the specific aims contained in the original proposal. Their main activities have led to a solid and sustained increase on the quantity and quality of the group scientific productivity. Collaborations have clearly arisen from the interactions between the members of the Nucleus, which have crystallized in joint publications in high profile journals. In addition, this Nucleus has recruited a large number of young investigators at all levels: undergraduate, graduate and postdoctoral. It is remarkable that some of these young investigators have become independent and obtained their own grants to support their research lines. The cohesion of the group is supported by the monthly meetings that seem to promote the discussion of research produced by the Nucleus. Investigators of this Nucleus have been very successful at obtaining additional funding for specific projects and have created tight bonds with the industry (that also supports their research). The association with clinicians has clearly permitted the translation of basic research into clinical applications (drugs and vaccines). Further, they have contributed to the education on immunology by means of frequent efforts on outreach oriented to high school students and teachers, as well as to clinicians and industry personnel.

2. Advances in each research line, and of the Nucleus as a whole (achievements, impacts, front edge research, others).

The research of the Nucleus has progressed in all the specific aims proposed originally and results obtained by the group have contributed with fundamental, cutting edge knowledge, which has led to excellent publications. Each member of this Nucleus has made significant progress in his/her individual research line, as demonstrated by the publications by each laboratory. In fact, every member of the Nucleus has published at least two papers, both during the period. This productivity is exceptional, considering that several members of the Nucleus are relatively young scientists. It is pretty obvious that the support obtained from the Nucleus has enhanced the productivity of each individual member. Two members, Kalergis and Salazar, in addition to publishing papers, have also submitted patent requests, which is favorable for the Nucleus. It is possible to quantify a large production of ISI papers (over 30) in the period (although distribution is not homogeneous). It seems that about 40 to 50 % of these papers have been generated as a result of collaborations between members of the Nucleus. Several of these papers were published in high profile journals, including PNAS, Journal of Immunology, The Lancet, etc. Interactions between most members of the Nucleus can be easily appreciated by the shared publications and the exchange of trainees.

3. Collaborative and interdisciplinary work among scientists, within research lines and at the Nucleus.

It is impressive that several publications from the Nucleus derive from collaborations and interactions established during the period by investigators of the Nucleus. It is easy to appreciate that the investigators have synergized their research lines through interactions aimed to evaluate novel immunological questions. Collaborations show a consistent trend, relative to the interactions between dendritic cells and T cells (the central theme of the Nucleus). They have focused on the three main areas initially proposed: tumor immunity, pathogen immunity and autoimmunity. Each of these areas has shown progress both at the individual and group basis. Collaborations can be seen at several levels: **1. publications:** several papers on these areas show clear collaborations between members of the Nucleus. For example, Kalergis, and Salazar have published on tumor immunity and pathogen immunity. Similarly, Kalergis, Aguillón and Salazar have published together on autoimmunity. Furthermore, they have published together on the intercellular communications between dendritic cells and T cells. It is noteworthy that young investigators recruited to the Nucleus have contributed significantly to the publications of the group. **2. Basic-clinical-biotechnology research:** most of the key investigators of the Nucleus have established collaborations with clinicians and initiated clinical trials that have derived directly from their basic research (in all areas, tumor immunity, pathogen immunity and autoimmunity). This process has been successful thanks

to the recruitment of several young and skillful clinicians to the center. It is remarkable that the investigators of the Nucleus have associated to apply and obtain grants that provide additional support to specific projects for development of new therapies and vaccines. They have also created interactions with industries that contribute to most of the applied projects of the Nucleus. **3. Training of young scientists:** it is important to mention that the group seems to be growing considerably. They have provided evidence for an active process of students and trainees exchange between the laboratories affiliated to the Nucleus, which has shown to be productive (meeting communications and publications). **4. Collaborative efforts** have also been documented for outreach activities aimed to educate high school students and teachers, as well as for the establishment of a scientific network with several laboratories around the world.

4. Productivity level of the Nucleus, especially taking into account the following concepts informed in the report:

- Publications (level and quantity reached according to the subject and its possible impacts; ISI publications or equivalent standard, SCIELO or equivalent standard, depending on the discipline, and other publications).
- Presentations to Congresses/Seminars and others (level, quantity, participation).
- Innovation and patenting resulting from the research.
- Researchers participating in ISI journals' editorial committees or equivalent.
- Resources obtained from the private sector
- Others

Publications: during the period, the Nucleus has produced over 30 ISI papers, several (about 40-50 %) of these papers derive from collaborations between members of the Nucleus. This is an excellent productivity, considering that some of these papers were published in high profile journals with the corresponding authorship based at the Nucleus and with a predominant participation of trainees from the Nucleus. The quality of some of their publications are equivalent of centers in Europe and USA, published in journals that are highly selective and hard to publish, such as PNAS, Nature Review Microbiology, The Journal of Immunology, etc.

Presentations to Congresses: during the period, the Nucleus produced over 200 meeting communications, including at nationals and international meetings. Several of these abstracts demonstrate the interactions occurring between several groups of the Nucleus.

Innovation and patenting: during the period, two researchers (Kalergis and Salazar) have submitted patent applications, for a RSV vaccine and a melanoma vaccine, respectively. In addition, another investigator (Aguillón) is producing new monoclonal antibodies, whose patents are in the process of writing. The capacity of these investigators to protect the intellectual property of discoveries made by the Nucleus is a very important feature of these researchers.

ISI Journal committees: the report provided by the Nucleus indicates that most of the associated researchers participate in editorial committees and as associate reviewers of several journals. This point clearly validates the quality of the research performed by the Nucleus.

Private Sector: this Nucleus has been extremely successful at getting support from the private (industrial) sector. In their report, researchers demonstrate that several companies have provided funding to the research performed at the Nucleus. This is a very positive characteristic of this center, which further demonstrated the applicability of their research, which drives the interest of private investors. Large grants, such as Consortiums from Chile and Europe, are some of the private funding that has been obtained from the researchers of the Nucleus. It is also important to point out that some of the researchers of this Nucleus have established their own companies. These companies have promoted the translational research of the discoveries made at the center.

5. General comments and suggestions about this component

This component has been developed with significant success by the Nucleus. The recommendation is to continue working at the same pace, because they have already shown that can work very productively together. The Director of the center clearly has defined specific objectives for the group and provided the tools and activities (meetings, organization, administration, etc) required to successfully fulfilling those objectives. The group has worked tightly together, with enough focus and diversity to promote productive and novel research. Based on the center's report, I think that the continuity of this center would even further increase their scientific productivity and capacity to collaborate.

Component 2: Training of young researchers

Grade component 2

10

1. a. Quantity and level of students (undergraduate, MSc, PhD) and of postdocs with tutors from the Nucleus.
b. Number of young people graduated during the period.

The Nucleus has worked as an attractive center for the training of young scientists and has recruited many students at the undergraduate, post-graduate and postdoctoral level. Most of the students associated to the Nucleus have co-authored several publications in scientific journals, which is very positive for their careers. Several PhD and undergraduate students have already obtained their degree by working at the laboratories affiliated to the Nucleus. While some of them have been hired at research centers and hospitals in Chile, other have apparently decided to continue training at the Nucleus. The continuous training of students and young scientists, which contribute with their work to the publications of the group, is a very positive achievement of the Nucleus. Their efforts clearly are oriented to improve, not only the quality of the research on immunology, but also to the training of new human resources and increase the capacity of the nucleus. It is worth mentioning that the students of the center have had the chance to be part of academic exchanges at laboratories that are part of the collaborative network established by the Nucleus, consisting of highly competitive international centers. This is a very beneficial activity for the maturity of students, which provides them with experience and the opportunity to improve the research included in their theses. Also the Nucleus has recruited several young researchers that are initiating their independent research lines and have remained affiliated to the Nucleus.

2. Publications of the associated, junior or senior researchers, coauthored by students.

Most of the publications by the investigators of the Nucleus are coauthored by students (graduate and undergraduate) and postdocs associated to the nucleus.

3. Participation of the Nucleus, or of the center's researchers, in formal programs of young scientists training at different levels.

Based on the report, the biological and medical sciences undergraduate and PhD programs of The Universidad Católica de Chile and Universidad de Chile have benefited from the Nucleus. Most of the undergraduate and PhD students that have trained in the Nucleus have obtained their degrees from those two universities. The report also indicates that members of the Nucleus contribute to the lecturing and teaching at their universities, which is valuable for the education on immunology. The Nucleus also trains students from programs (undergraduate and graduate) that are based at other Universities of the country; therefore the Nucleus seems to have worked as an important center for the training of young scientists.

4. General comments and suggestions about this component.

It seems important that the center could establish a PhD program specific for immunology. They have a lot advance, because the Nucleus has become an attractive and productive place for basic and applied research on Immunology. It would seem that this center has become one of the main centers in Chile where young scientists are trained in the immunology field. The Nucleus has demonstrated an outstanding capacity to train young scientists, since many PhD and undergraduate student have been graduated and have been hired at jobs on the public and private research centers.

Component 3: Networking

Grade component 3

10

1. Participation of the Nucleus' teams of researchers in formal networks, national and/or international, already established or in process to be established. Quantity and quality.

The information provided in the report allows concluding that the members of the Nucleus have successfully established strong links with clinicians and scientists in Chile and abroad. It is worth mentioning that several new interactions with clinicians have arisen during the period included in the report, especially with oncologists, microbiologists and rheumatologists. In addition, all members of the Nucleus are working in collaboration with outstanding scientists located at well known universities and scientific centers abroad. They have focused these research networks in areas of immunology that are related to the main subject of the Nucleus: dendritic cells, tumor immunology, anti-pathogen immunity, autoimmune diseases and intercellular communications. Also, members of the Nucleus have been awarded with international grants to establish several formal collaborative networks with Scientist in USA and in the European Community, as INCO and INSERM grants. It is also noteworthy that strong collaborative projects between members of the Nucleus have been consolidated, as demonstrated by several publications authored by more than one member of the Nucleus and collaborators abroad.

2. Relevance, projection and achievements of these networks.

The collaborative networks established and consolidated by this Nucleus seem to be very relevant to accomplish the main goals of the center. It is very valuable that so many scientists from around the world have visited the center during the reported period. I would strongly suggest to continue promoting this activity, which is highly beneficial. As they have indicated in the report, collaborations with clinicians are fundamental to translate the scientific findings generated at the laboratories to clinical applications. According to the information provided, it is likely that members of the Nucleus have established strong links with clinicians and their new technologies are being used on clinical trials for diseases such as cancer. In addition, current collaborative projects with scientists from abroad are very positive, because both researchers and students have the chance to benefit from technologies and equipments that are unavailable in Latin America. Members of the Nucleus have consolidated their international collaborative network with scientists who are working in outstanding centers in USA and Europe and have initiated new collaborative projects, which reflects on the publications in collaboration with these international scientific groups.

3. Participation of the Nucleus in other collaborative activities. Quantity, quality, achievements.

Other collaborative activities performed by the Nucleus have been scientific activities as PhD thesis, collaborative research with clinicians and Student exchange in international scientific centers. These activities have been translated in scientific publications and meeting communications. The Nucleus also reports outreach activities in collaboration with scientists from USA, whom have visited Chile and interacted with students at universities and school.

They have also created tight links with funding agencies in Europe by means of consortiums that further increase their capacity of networking. It seems likely that this Nucleus will further increase their collaborative activities with other institutions (i.e. government) to disseminate the discipline of immunology in Chile.

4. General comments and suggestions about this component.

The Nucleus has successfully consolidated their collaborations with clinicians and scientists in Chile and abroad. They have also initiated new collaborative projects and academic activities. They are seen as an attractive pole of research by their international peers, who come to visit them frequently. Therefore, they have successfully accomplished a solid network of domestic and international collaborations, with clinicians, scientist and the industry. It is important for the Nucleus to encourage their young scientists and students to be part of these exciting new collaborative activities, which can lead to discovering new areas of interaction.

Component 4: Outreach

Grade component 4	10
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1. Outreach activities carried out by the Nucleus. Quantity and quality. Relevance, projection, and achievements of outreach activities.

According to the report, the Nucleus has been prolific with regards to outreach activities. These activities include, courses for high school students and professors residing in Santiago and in rural areas organized by members of the Nucleus. Based on their report, it seems that these activities were very positive for high school students as well as for researchers. In addition, school students were awarded by the Nucleus to attend to their laboratories. These are very relevant and valuable activities performed by the Nucleus because, as stated by them, teaching of immunology in Chile needs improvement. It is noteworthy that PI scientists, graduate and undergraduate students from the Nucleus were involved in these activities.

2. Connections with productive and services sectors (public and private), education sector, and with the community in general: joint ventures, development projects, others. Quantity and quality. Relevance, projection, and achievements of these connections.

Members of the Nucleus have demonstrated to be very active at making connections with companies, industry and the public sector. Most members of the Nucleus have been awarded with funds from public and private sector to develop biotechnology projects, such as Kalergis on vaccine development, Aguillón on development of autoimmune therapies and Salazar with tumor vaccines. They describe in the report that researchers of the Nucleus were awarded with a large Consortium grant for the translation of basic research into the development of diagnostic tools and vaccines for several diseases, which is supported by Chilean pharmaceutical companies and the government. They plan to develop vaccines and diagnosis tool for viral infections. Furthermore, the group of Aguillón has developed a chimerical, anti-human TNF monoclonal antibody for the treatment of rheumatoid arthritis and the group of Salazar has signed agreements with Chilean Companies to evaluate the potential therapeutical application of new adjuvant molecules, that will be included for the production of dendritic cells aimed to vaccinate against bladder cancer. These scientists have patented their invention and some of their products are or soon will be used to treat or prevent several diseases in Chile. It is extremely positive that scientists of the Nucleus have created these connections with different sectors to obtain support for the development of products that could eventually be translated into new therapies.

3. General comment and suggestions about this component.

This Nucleus has successfully performed outreach activities during the period. It is evident that the Nucleus is doing an important contribution to disseminate the discipline of Immunology. Also this group has made significant efforts to increase the numbers and quality of young scientists working on Immunology in Chile. This group seems to fit to the spirit of the MSI, because their invest time and efforts on communicating science to the society. I would suggest that the Nucleus continues working on these outreach activities. It is also noteworthy that the members of the Nucleus are active at obtaining funds from public and private sources and they communicate these achievements to the non-scientific community (general public, industry and clinicians).

General Comments:

General appreciation, suggestions and recommendations about the MSI Nucleus.

In general, this group of young immunologists has been able to establish a solid center for basic and applied research on immunology. The information provided in the report indicates without doubts that they can successfully carry out collaborations leading to publications in high profile journals and to highly relevant patents for new vaccines and therapies. They have recruited a large number of students and trainees, which suggest that this discipline is very attractive for young scientists. They have also been able to obtain significant and generous support for private companies, indicating that their discoveries have potential economical value.

My appreciation is that the original goals proposed by the Millennium Nucleus on Immunology and Immunotherapy are being successfully fulfilled. Regarding the scientific aspect, the Nucleus has achieved an impressive standard of scientific productivity, as revealed by the number of research lines and investigators, students and young researches associated to the Nucleus, as well as the amount of papers published on ISI journals. Several of these publications have been co-authored by two or more members of the Nucleus. Also, the constitution of this Nucleus has clearly enhanced the interaction between scientist working in complementary areas of immunology, which has been translated in several new and promising collaborative research lines.

It is noteworthy that investigations performed by the Nucleus are being translated into biotechnological products and clinical applications, which have been applied to clinical trials under the appropriate supervision of Chilean clinicians. In this direction and with the support of the Chilean government, members of the Nucleus (Kalergis, Salazar and Aguillón) are actively seeking interactions with companies, which are interested in their research. For this reason, I feel that this Nucleus has become an immunology reference center in Chile, in which students, clinicians, biotechnologists and young scientist are currently trained. It is worth mentioning that this center has been extremely successful at increasing the number and quality of researchers working on immunology. Also, they are committed to improve the amount of immunology taught in high schools in Chile, by means of outreach activities.

I would strongly suggest that the central core of immunologists that compose this Nucleus keep on working in their original objectives to continue consolidating the discipline of immunology in Chile. They have emphasized in the report their efforts on inflammatory diseases, which clearly they have tackled down successfully. Particularly interesting are their findings on the involvement of the inflammatory-immune response in cardiovascular diseases, they should definitely pursue this project, in which they have already published in collaboration. This area has an enormous potential, considering that cardiovascular diseases are the main cause of death worldwide. It is also recommended that members of this Nucleus keep the same pace at performing collaborative research and recruiting young researchers that will contribute with new research areas. They should also maintain an equivalent pace on outreach and try to further capitalize their inventions into technological business with the support of the Nucleus. They are protecting the intellectual properties of their inventions, which shows that they are committed to approach these issues in a professional manner.

MILLENNIUM NUCLEUS ON IMMUNOLOGY AND IMMUNOTHERAPY: Evaluador 2

Component 1: Advanced Scientific/technological research

Grade component 1	9
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6. Coherence of the central objectives with the orientation, actions and methodologies developed.

This Annual Report shows that the involved researchers work together pursuing clear-cut, well-defined and highly interesting objectives in the field of Immunology, Immunotherapy and Immunoregulation. Each research line contributed to the overall goal of this Nucleus, and the results achieved seem to have contributed to the improvement of the human health in Chile by addressing novel aspects of tumor immunity (research line 1), immunity against pathogens of epidemiological relevance in Chile (research line 2), and autoimmunity and inflammatory disorders (research line 3). The key role of the dendritic cells (DCs) in the immune response makes the performed research a central issue.

The orientations imposed to the research lines are appropriate to elucidate the proposed specific questions, and such orientation is in line with the actions taken and the methodologies applied. The different researchers of this Nucleus developed infrastructure and expertise to perform valuable *in vitro* and *in vivo* experiments with wild type, knock-out and transgenic mice bred and maintained in animal facilities in Chile. This a very interesting point since the lack of facilities to handle such animals is a weak point in other regions in Latin America.

Other methodologies (explained along the different manuscripts published during this period), are also modern and appropriate to pursue the planned objectives.

7. Advances in each research line, and of the Nucleus as a whole (achievements, impacts, front edge research, others).

The nature of the papers published during this period shows productivity of each research line.

Advances and main achievements:

Tumor immunity (research line 1): novel knowledge in the field of DC–T lymphocyte cross-talk was provided and used to set up a clinical trial to promote tumor immunity, especially in melanoma and prostate cancer patients. It is reported that 2 clinical trials based on the use of DCs have ended with promising results. Therefore, it is reported that a phase III clinical trial will start soon, and that the trials will be “exported” to Australia.

Immunity against pathogens (research line 2): advances in the area of the immune response against *S. typhimurium* and RSV were made, opening the possibility of the development of novel vaccines to improve human health in Chile. The advances comprise a better understanding of the role of the DCs and the activation of the T lymphocytes during the infection with these pathogens. In particular, the studies about the Fc γ Rs in the *S. typhimurium* model and the recombinant antigens in the RSV model for the development of novel vaccines are very interesting and constitute a true progress in the field. In addition, there are also research sub-lines in other infectious agents such as HIV, HCV, Dengue Virus and Hantavirus.

Autoimmunity and inflammatory disorders (research line 3): in different autoimmune diseases, knowledge generated by this research line contributed to the understanding of the role of tolerogenic DCs during such ailments and the possibility of using such tolerogenic DCs to restore immune homeostasis.

Advances and main achievements of the Nucleus as a whole: according to the report and the published papers, significant advances in the area of the immunobiology of the DCs were made during this period, and knowledge

generated in one research lines is useful for the others, showing that each research line contributes to the overall progress of the Nucleus. In addition, in some cases, the results obtained led to the presentation of patents and the establishment of collaborations with biotech companies which most likely will expand the translation from bench to bedside, resulting in the improvement of the human health.

8. Collaborative and interdisciplinary work among scientists, within research lines and at the Nucleus.

Collaborations have been established with clinicians and researchers, from Chile or from other countries, which indicates that interdisciplinary work is in progress. For example, clinical trials have been tested in human beings with the help of physicians from Chile. This exemplifies that this Nucleus is nurturing translational research. As well, collaborations with biotech companies suggest that this Nucleus is also fostering the translation from this side (interaction between basic researchers and the biotech industry). Co-authorship of papers by different researchers belonging to different research areas also indicates a strong intention of working as a multidisciplinary team in this Nucleus.

9. Productivity level of the Nucleus, especially taking into account the following concepts informed in the report:
- Publications (level and quantity reached according to the subject and its possible impacts; ISI publications or equivalent standard, SCIELO or equivalent standard, depending on the discipline, and other publications).
 - Presentations to Congresses/Seminars and others (level, quantity, participation).
 - Innovation and patenting resulting from the research.
 - Researchers participating in ISI journals' editorial committees or equivalent.
 - Resources obtained from the private sector
 - Others

Papers
Considering the level and quality of the papers based on the impact factor (IF) of the journals, this reviewer draws the following conclusions:
Publications of research line 1: Total: 4 (3 papers + 1 review). IF: 11.55 (review) + 3.77 + 6.30 + 1.77. Average IF: 5.85. Average IF (original manuscripts/papers only): 3.95. IF of papers with participation of non-ICM Chilean personnel: 3.77 and 1.77. IF of papers with participation of non-ICM non-Chilean personnel: 3.77 and 6.30.
Publications of research line 2: Total: 6 (3 papers + 2 reviews + 1 letter/commentary). IF: 25.8 (letter/commentary) + 11.55 (review) + 3.67 + 2.35 + 9.64 + 15.85 (review). Average IF: 11.48. Average IF (original manuscripts/papers only): 5.22. IF of papers with participation of non-ICM Chilean personnel: 2.35. IF of papers with participation of non-ICM non-Chilean personnel: 3.67 and 2.35.
Publications of research line 3 (autoimmunity): Total: 3 (3 papers). IF: 5.77 + 1.22 + 1.22. Average IF: 2.40. IF of papers with participation of non-ICM Chilean personnel: 5.77, 1.22, and 1.22. IF of papers with participation of non-ICM non-Chilean personnel: 5.77.
Publications of research line 3 (inflammation): Total: 9 (9 papers). IF: 7.45 + 1.71 + 2.11 + 9.64 + 3.64 + 4.02 + 3.12 + 3.12 + 1.81. Average IF: 4.07. IF of papers with participation of non-ICM Chilean personnel: 4.02, 3.12, 3.12, and 1.81. IF of papers with participation of non-ICM non-Chilean personnel: 7.45, 1.77, 2.11,

9.64, and 3.64.

Overall, this is a good production for this period

Presentations to Congresses/Seminars

All research lines generated results presented at multiple meetings, symposia and congresses, a fact that complemented the scientific production published in the form of papers and reviews.

Innovation and patenting

It is reported that 2 patents were presented and other 2 are in preparation, all of which comprise results and developments made during the progress of the project by researchers of this Nucleus.

Researchers participating in ISI journals' editorial committees or equivalent.

Some researchers participated as editorial members of international ISI journals.

Resources obtained from the private sector

Private companies (mainly local companies) provided financial assistance in the form of awards and collaborations.

10. General comments and suggestions about this component

It seems that this Nucleus is actively producing new scientific knowledge that is not only published in international peer-reviewed journals, but that is also used for translational research through collaborations with physicians, clinicians and private biotech companies. These facts remark the objective of this Nucleus to produce a favorable impact in the improvement of the human health in Chile.

Component 2: Training of young researchers

Grade component 2	10
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5. a. Quantity and level of students (undergraduate, MSc, PhD) and of postdocs with tutors from the Nucleus.
b. Number of young people graduated during the period.

It is reported that 12 students obtained their degree during this period, and that currently the Nucleus has 8 postdocs, 23 PhD students, 4 MSc students and 16 undergraduate students, all of which work under the tight supervision of expert researchers in the different research lines mentioned above.
Some students were awarded by different institutions, which highlight the relevance and quality of the findings of this Nucleus when compared to other research labs, centers and institutes in Chile.
Some students had the chance to get a specialized training abroad in the form of short stays, which allowed the implementation of novel methodologies in Chile when they returned, and the consolidation of international collaborations.

6. Publications of the associated, junior or senior researchers, coauthored by students.

Every paper published is coauthored by undergraduate, graduate and postdoc students, together with at least one researcher of the Nucleus. This exemplifies that one of the strongest working force that allow the daily progress of the experiments is the one provided by young people, some of which will probably be good scientists in the future.

7. Participation of the Nucleus, or of the center's researchers, in formal programs of young scientists training at different levels.

This Nucleus actively promotes the education and training of highly qualified students in the form of journal clubs, seminars, grand rounds and lectures. In some cases, these lectures were given by invited speakers from abroad. Students present their experimental progress in the journal clubs and seminars, which promotes the exchange of new ideas and criticisms. Such program of continuing education supervised by expert researchers creates an atmosphere of discussion in an environment that promotes the enrichment and of all participants.

8. General comments and suggestions about this component.

The continuing education program seems to contribute to the development of a strong human resource task that makes significant contributions to the progress of the projects.

Component 3: Networking

Grade component 3	10
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5. Participation of the Nucleus' teams of researchers in formal networks, national and/or international, already established or in process to be established. Quantity and quality.

National: different investigators established fruitful collaborations with Chilean physicians, clinicians and researchers, which were crucial for the implementation of the clinical trials with DCs. In other cases, these collaborations were fundamental for obtaining human samples for different research lines.

International: international collaborations were also established or fostered during this period. Countries involved comprise France, Sweden, USA, Germany, Denmark, UK, Switzerland, Spain, and Argentina. In some cases, students that perform their research in this Nucleus spent some time in the labs of these countries.

It is worth to mention that most of these collaborations (already established) resulted in co-authorships in different original papers and presentations to congresses, meetings and workshops.

6. Relevance, projection and achievements of these networks.

According to the results obtained to this point, it is expected that the collaborations will continue and result in more and better publications, making this aspect of the networking very appealing projection of the whole research plan. As mentioned above, collaborations that constitute a true networking were established to improve the human health in the aspects outlined by the different research lines.

7. Participation of the Nucleus in other collaborative activities. Quantity, quality, achievements.

In connection to what has already been explained, researchers of this Nucleus generated a highly collaborative environment that, through association with experts in different fields led to the development of some clinical trials (phase I and II) for the treatment of, for example, prostate cancer. Also, collaborative activities are headed towards the possibility of starting a phase III trial in the near future if everything keeps going on tracks. As well, joint ventures with government institutions and private companies, which also involve patenting of the developed products/reagents/strategies to produce novel vaccines against different pathogens of epidemiological relevance in Chile, are underway.

Other collaborations of researchers of this Nucleus are aimed at improving the diagnostic methods for prevalent autoimmune diseases such as lupus and rheumatoid arthritis.

International collaborations, as explained earlier, resulted in many publications in peer reviewed journals and exchange of students and scientists from the US, Europe and Australia.

8. General comments and suggestions about this component.

It will be beneficial for this Nucleus if the established collaborations endure over time and lead to high quality publications in terms of the novelty and possibility of translation of the findings described.

Component 4: Outreach

Grade component 4	10
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4. Outreach activities carried out by the Nucleus. Quantity and quality. Relevance, projection, and achievements of outreach activities.

Although outreach activities are time-consuming, researchers of this Nucleus took this aspect seriously too and set up a series of courses to promote and divulge immunology in Chile, especially in places that are far away from Santiago such as Ancud, or in Chacabuco. These activities were not limited to teaching immunology but they also allowed some students to visit the Nucleus in Santiago and to have a bench work experience. Such kind of activities will probably spread the enthusiasm in immunology research, which in turn may stimulate young people to join the Nucleus in the future.

5. Connections with productive and services sectors (public and private), education sector, and with the community in general: joint ventures, development projects, others. Quantity and quality. Relevance, projection, and achievements of these connections.

As explained in previous paragraphs, some researchers established close collaborations with pharmaceutical companies to translate basic research into clinical applications (development of vaccines). This also involved a patenting process. In other cases, joint ventures with private companies involved that development of novel diagnostic kits and biological reagents for the treatment of human diseases.

6. General comment and suggestions about this component.

I have no particular comments or suggestions about this point besides the indication that the researchers of this Nucleus should continue the outreach activities as they are currently doing.

General Comments:

General appreciation, suggestions and recommendations about the MSI Nucleus.

The Annual Report here analyzed shows that the Nucleus of Immunology and Immunotherapy has made significant progresses in the understanding of the role of the immune system (in particular, the dendritic cells) in diseases of epidemiological relevance in Chile such as some types of cancer, infections with RSV, Salmonella or other bacteria, and autoimmune diseases such as lupus, rheumatoid arthritis and others.

The 4 components evaluated by this reviewer seem to be reasonably balanced to produce important progresses in each component. This lets me think that there is a strong human resource task that collaborates within the Nucleus to materialize these progresses.

I would highly recommend to sustain (and, if necessary, to increase) the financial support to this Nucleus since, as clearly explained in the report, significant progresses for the human health in Chile were made during this period.

PREPARADO POR LA SECRETARÍA EJECUTIVA DE LA ICM

Componente 5: Organización, gestión y operación del centro (gestión gerencial, administración, manejo de finanzas, usos de fondos, otros)_____

Nota componente 5	6,5
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Delegación de funciones y tareas administrativas por parte de científicos, es adecuada y no se evidencian dificultades.

Sin embargo al interior del equipo administrativo no se aprecia una adecuada gestión y organización. La presentación de rendiciones es incompleta y constantemente deben solicitarse aclaraciones. Hay incumplimiento en los plazos de presentación y de respuesta a observaciones. No hay justificación oportuna de los atrasos. Deben mejorarse todos los aspectos relacionados con las rendiciones del Núcleo

Planes de Adquisiciones y Honorarios, y gestión de convenios y pólizas requeridas, no presentan problemas.

NOTA GENERAL: Conforme a la siguiente pauta de ponderación, la nota del centro asciende a 9,7.

FACTORES DE PONDERACIÓN	
CONCEPTO	FACTOR (%)
Investigación	35
Formación de jóvenes	25
Proyección al medio externo	20
Redes de colaboración	15
Gestión y Operación	5