SWEDISH FOUNDATION FOR STRATEGIC RESEARCH

Ingvar Carlsson Award -ICA-

SSF's grant program for postdocs returning to Sweden

An evaluation of calls ICA 1-3 (issued in 2005, 2006, 2008)

September 2015

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Contents

1 Executive Summary

The Ingvar Carlsson Award (ICA) program was launched in 2005, with the explicit aim to "to identify and support young, well-qualified postdocs who intend to start independent, lasting and creative research careers on their return to Sweden. The research to be conducted should have a potential to strengthen Sweden's future competitiveness". This report is an evaluation of the first three ICA calls (issued in 2005, 2006 and 2008), put together by a specially appointed Evaluation Committee with help from the SSF administration.

The report reviews the development of the ICA 1-3 calls in terms of procedures and program content. It presents aggregate data on the ICA awardees concerning their performance and careers after receiving the ICA grant, and results from a questionnaire that was sent out to the awardees. Interviews with a small group of awardees, as well as with a few persons that have been centrally involved in the selection of awardees and in running the ICA program have provided additional background material.

As a group, the ICA awardees have been very successful in terms of establishing independent research groups, attracting external funding, publishing at an internationally competitive level and being appointed to tenured academic positions. As an example, no less than 11 of the 33 awardees that work in academia have obtained individual grants from the European Research Council (ERC), a clear mark of distinction.

The Evaluation Committee was impressed by the degree of utilization results. Nevertheless, what is meant by utilization and to what degree it should have priority in an ongoing ICA project appeared to be unclear to the awardees. SSF should seek to clarify the importance of utilization as it pertains to the ICA program, and to define what SSF means by utilization in the context of the ICA calls.

The Evaluation Committee notes some weaknesses in the outcome of the ICA program. The level of mobility among returning postdocs has been rather low, with only 20% now established at a different university than where they did their PhD. A rather large fraction of the ICA awardees did not feel welcomed or did not feel they received significant support from their host university. Female awardees generally felt less welcomed at, and were less satisfied with the support they received from, their host universities than men. Female awardees, while seemingly not discriminated against in the selection process, have been less successful in acquiring tenured positions than men. Although these weaknesses reflect mainly on the universities, these are issues that SSF could bring up when discussing with host departments or address within the leadership training program

Overall, the Evaluation Committee finds that SSF has been very successful in selecting highly qualified ICA award recipients. Reciprocally, the ICA awardees see the ICA program, including the mandatory Leadership Training program, as having been important for their success. The Evaluation Committee strongly recommends that the ICA program be continued at the current volume, i.e., ~12 awards per call, each of ~4 MSEK. To help future postdocs plan ahead, it is recommended that upcoming ICA calls are made according to a pre-announced regular schedule (e.g., biannually).

Part I

2 Introduction: Evaluation Issues and Implementation

In the fall of 2014, ten years had passed since the Swedish Foundation for Strategic Research initiated a three-year repatriation grant program called the *Ingvar Carlsson Award*, ICA. Its aim has been to stimulate young researchers that have done a postdoc period abroad to return to Sweden to set up independent research of their own. Over the years since then, six calls have been issued, the first ones in 2005 and 2006 and then biannually every even year onwards.

In the spring of 2014, the CEO and the Programs Manager of SSF commissioned an evaluation of what was initially meant to be the first two calls. After preparatory work during 2014 - when the scope was enlarged to include also the third call - and spring of 2015, an Evaluation Committee was appointed by SSF, to evaluate the ICA initiative at the *program level*. Thus this report does not evaluate individual ICA projects, but attempts to cover overall activities associated with the first three calls, ICA-1, ICA-2, and ICA-3. The total number of projects granted in these three calls is 35 (12-11-12) out of 193 applications in all (103-38-52).

As the program has continued to run with another three calls issued after ICA-3 in 2008 (ICA 4-6, 2010-2012-2014), some monitoring has also been done as to what has happened later, again at the program level. This was in order to give updated information on (selected) aspects in the management of the program that may have changed over time.

The lifecycle of an ICA call is designed to also include a fourth year, to be financed by the host university. Depending on the time taken to "get up to speed" at the outset, parental leaves, etc, the actual grant period was extended for many of the projects. The most recent group to submit final reports to SSF, ICA-3, did so in 2013 and 2014. (See Appendix 6 for entire lifecycle.)

As two of the recipients had been granted deferment of submission of their final reports, the number of final reports from ICA 1-3 existing at the start of the evaluation was 33. Therefore, the material commissioned and collected by the evaluation committee is based on those 33 reports. However, in the overall SSF statistics referred to below, all 35 are included.

2.1 Evaluation issues

Following a preparatory phase when extensive documentation and statistics of the ICA calls were collected in-house, an Evaluation Committee with four members was set up in mid-April 2015:

- Gunnar von Heijne, Stockholm University (Chair)
- Patrick Doherty, Linköping University
- Åsa Fex Svenningsen, University of Southern Denmark, Odense
- Charlotta Turner, Lund University.

Lena-Kajsa Sidén, SSF, provided both administrative assistance and fact finding support for the evaluation. (Biopics in Appendix 1a).

It was stated from the outset that the work should be concluded in time for a presentation of the committee's findings to be delivered to the Board of SSF by mid-September 2015.

The objectives of the evaluation were derived from the goals of the program, here expressed in the wording of the third call while also representing the two earlier calls (and indeed the later calls as well):

- "The aim of the program is to identify and support young, well-qualified postdocs who intend to start independent, lasting and creative research careers on their return to Sweden.
- The research to be conducted should have a potential to strengthen Sweden's future competitiveness."

With inspiration from this wording, potential target criteria for the evaluation were discussed with the committee. In view of the limited time available, an initial, more elaborate set of examples of evaluation criteria was condensed into the following elements. The first part of this report mainly relates to SSF functions and activities:

- The Call and Selection processes
- The processes taking place after SSF's funding decision
- The Leadership Training Program.

Furthermore, the committee decided to study four specific issues that it had identified as important to probe, perceiving them to also be of importance to the SSF Foundation at large. These are treated in the second part of the report.

- Independence and autonomy of recipients
- Utilization and strategic value
- Mobility within academia and between academia and society in general
- Collaboration and national and international networks.

In the third part of the report, the committee presents its deliberations and conclusions:

- To what extent has SSF succeeded in reaching the goals of the program as formulated above?
- Have the selection processes been appropriate and effective?
- Has the leadership training been appropriately organized and conducted?

and lessons learned and recommendations to SSF:

- Could the Foundation improve on its processes from design of the ICA calls, and of the program at large, and through to the final selection of awardees?
- What would merit special attention in the selection process or during the full cycle of a future call?
- How might the leadership program be improved?
- How can the program encourage utilization?

2.2 Activities of the evaluation committee

24 April 2015 Telemeeting to introduce the evaluation task at large.
18 May Meeting at SSF to draft contents of a recipient survey, questions and candidates for interviews with actors in the overall processes, distribution of responsibilities for different report sections within the committee, etc.
May-June Committee members study underlying SSF material
2 - 30 June ICA recipient survey
10+16 June Interviews with ICA recipients, former selection committee members etc, and former and present members of the SSF administration in charge
July Results of recipient survey compiled in tables and graphics for Committee members to use in their independent drafting of report segments
24-25 August Meeting to review and merge contributions to Part 1 and 2 of the report and discuss drafting of conclusions and recommendations.
A website for the evaluation report was created on Google Docs by the ICT member of the evaluation committee, enabling the members to work on a joint collaborative platform.
1-6 September Completing contributions to the report deliberated by email within the committee until 6 September, when a telephone meeting was held to review the draft report, discuss summary, conclusions and recommendations and resolve remaining questions.
On 15 September the Chairman will make a brief presentation of the committee's findings and recommendations to the Board of SSF. Editing etc will take place after the Board meeting in order to produce a public version of the report. Until then the contents in the present version are to be viewed as an internal SSF document.
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Throughout the report, it should be kept in mind that where reference is made to survey results, we here only deal with a little over 30 persons in the form of ICA awardees in ICA 1-3, and with no "control group" to compare with, whether from SSF or elsewhere. One reply to many of the questions illustrated below thus makes up 3 % of the respondent group. There are no (truly) ranked proposals among the declined ICA applications, other than a few reserves in a few decisions of the various selection committees over time. Therefore it is not possible to emulate what was done in an early evaluation of the Future Research Leaders' program 2006 (see Appendix 8, item 3), namely to compare the development of the actually awarded FFL group (of 20) with the next 20 (i.e. No. 21-40, for simplicity) of those who were *interviewed* prior to SSF's final decision.

3 Ideas behind the program's creation and its initial design

The idea behind ICA was introduced to the Board of SSF in late 2004 by Professor Staffan Normark, then Executive Director of the Foundation. The program is named in honor of former Prime Minister Ingvar Carlsson, Chairman of the Board of SSF during 1997-2002, who turned 70 at the time.

The aim was to implement a program to attract young outstanding scientists who are about to finish (or who recently finished) a postdoc period abroad, to return to Sweden and to enable them to build up an independent and creative scientific activity of their own at a Swedish university or university college. The required minimum continuous period abroad has been 12 months, with one exception in the call ICA-2 (see below).

In this way, Sweden would benefit from the knowledge and experiences that the most qualified younger researchers would have made during their period abroad. As the resources available to support this early stage of a researcher's career were (and still are) scant, it was considered a priority that the most qualified ones were encouraged to return and could find means to continue to develop in Sweden. Otherwise there was (and still is) a risk that this group would remain abroad, or that they would come back only to join their former lab or group – with no or little chance to develop their own research.

In the early-mid 00's, around 2000 doctoral students per year received a PhD in Sweden in the fields supported by SSF – natural science, engineering and medicine. Approximately 20 percent of these PhDs were estimated to go abroad to acquire postdoctoral training. From a national point of view it was (and is) considered very important that well qualified postdoc researchers return to Sweden to share their new experiences and knowledge and have the possibility to start their independent research career. The provision of initial financing was therefore, and still is considered to be, an important prerequisite to attract the most promising researchers to come back to set up their own research in Sweden.

3.1 Goals of the program - virtually intact

A comparative analysis of the different ICA Calls 1-6 reveals that the "Aim" section in the call texts became successively shorter from ICA-1 in 2005 to ICA-3 in 2008. Parts of the original wording under *Aim* were then successively moved further down in the text. However, the *core* has been kept constant from the first call. From the third call, ICA-3, and all the way through to the most recent call ICA-6 in 2014 (the recipients of which were announced in late March 2015), the wording under the heading "*Aim*" has been the same, as stated above.

With smaller changes from ICA-1 to ICA-3-4, also the core elements of the heading "S*election criteria"* in the call text have been retained (numbered only here, for reference below):

1. Scientific quality and potential, reflected in previous research as well as in proposed research
2. Originality and innovativeness of /the individual as well as of/ the proposed research
3. Applicant's international experience and network

4. Vision [*Description]* of how the proposed research can [*will*] be implemented in Sweden as well as its strategic relevance and importance for Sweden's future competitiveness.

The contents within /.../ in bullet No 2 above denotes the original writing in ICA 1-2, not repeated in ICA 3-4.

In the ICA-1 call the aspect regarding *strategic relevance* and *competitiveness* was not included under *Aim,* as it was from ICA-2 onwards, but identified both under *Eligibility* (alluding to the mandate of SSF at large) and *Evaluation criteria*. Under *Evaluation criteria* in ICA-2 the text had the softer first-indicated wording in bullet No 4 above, i.e. '*Vision, can*'. In the call to ICA-3, the Board of SSF strengthened that wording to '*Description*, *will*', which was also kept in ICA-4.

For comparison, the corresponding wording of bullet 4 in calls ICA 5 and 6 was "Strategic relevance of the proposed research to Swedish industry and/or society and potential for utilization of the results of the proposed research". In these latter calls, bullets 1-3 had been merged to two, the first focusing on the individual's qualifications (incl. international and network aspects) and the second one on the qualities of the research plan.

3.2 Size of grants etc – development from ICA-1 to ICA-6

Within the frame of each ICA award, a small amount was included in the form of a *personal scholarship* outside the grant paid out to the host university. The recipients could use *at their own discretion* to cover, e.g., re-localization costs when returning to Sweden, etc. The sizes of the award and the included personal scholarship have been somewhat modified over time as illustrated below.

Fig 1: Evolution of grant size from ICA-1 to ICA-6 (all economic figures in SEK)

Call	**No of grants** acc. to SSF Board	**Budget set aside by SSF** [1)]	**Award amount** acc. to call [2)]	**Grant part** (to host univ)	**Personal scholarship**
ICA-1	in call: 6-8, later modif. to 8-12	at first 20 M, finally 36 M	2-4 M each	2.9 M	100 k
ICA-2+3	8-12	36 M	ditto	2.95 M	50 k
ICA-4+5	max 12	ditto	3 M	ditto	ditto
ICA-6	ditto	48 M	4 M	3.94 M	60 k

1) Excluding SEK 600 k set aside for each group's Leadership training program

2) Each of the 12 awards were on, or very close to, SEK 3 M

The first three calls comprise 35 grants in total, together representing a grant volume of a little over SEK 103 million. This includes the personal scholarships but excludes the costs of the respective ICA *Leadership training programs*, for which the Board of SSF set aside SEK 600.000 per call. Final reports to date (August 2015) are 33; one awardee from ICA-2 and one from ICA-3 having been granted deferment until a later date.

Contribution to funding from host university expected by SSF

As SSF considered the ICA program to be the Foundation’s contribution to funding of the first three years of a (minimum) four-year effort of "post-postdoc qualification" (corresponding to *Forskarassistent,* according to the writing in ICA 1-2*,* or *Biträdande lektor /Lektor*; Research associate, in ICA 3-4), the Foundation from the outset in the call texts has articulated its expectation that the host university guarantee the potential recipient's funding of the fourth year. From ICA-2 this was formulated also in the *grant contracts* between SSF, the ICA recipients and their host universities. The actual wording (and placing) of these items in the calls has been somewhat modified over the years, apparently in response to comments as to what SSF can, and cannot, "expect" from a host university in the form of co-funding and potential positions).

4 Calls ICA 1-3: Management of calls; selection processes; changes

In the following sections we describe the main features of the calls from ICA-1 to ICA-3 and the changes in their management. (Details were provided to the Evaluation committee in numerous formal documents and compilations from the secretary, see list in Appendix 7.)

Fig 2: Timing and lead times in the processing of each call (ICA 4-6 added for comparison)

	Call year	Max time after PhD[1] (in effect), months	Call date	Deadline for submission of application	Selection committee (SC) First meeting	SC meeting[2] to recommend recipients	SSF Board decision	Applicant: From Call to deadline, months	Processing: From deadline to decision, months	SSF total: From Call to decision, months
ICA-1	2005	48	2005-02-25	2005-06-09	*(only one held)*	2005-11-09	2005-12-14	3,4	6,2	<10
ICA-2	2006	36	2006-05-24	2006-09-28	*(only one held)*	2007-02-08	2007-04-17	4,1	6,7	<11
ICA-3	2008	37	2008-11-05	2009-02-02	2009-04-07	2009-06-17	2009-09-10	2,9	7,3	>10
ICA-4	2010	49	2010-10-28	2011-02-03	2011-03-30	2011-09-27	2011-12-08	3,2	10,3	>13
ICA-5	2012	56	2012-04-20	2012-09-05	2012-11-20	2013-03-21	2013-04-18	4,5	7,5	=12
ICA-6	2014	57	2014-06-16	2014-09-25	2014-11-12	2015-03-02	2015-03-30	3,3	6	<10

1) Each call also defines the period in which the applicant must resume research activity in Sweden (in ICA 1-6, 24-27 months long), and the earliest date for resuming research activity in Sweden (8-10 months before deadline for submission).
2) In ICA-1 and ICA-2 only one SC meeting was held as all (ICA-1) or part (ICA-2) of proposals had already been externally assessed. See text.

Fig 3: The "selection process pipeline" incl. No. of selection committee members and external experts used (ICA 4-6 added for comparison)

		N_1	N_2	N_2/N_1 %	N_3	N_3/N_1 %		
	Call year	Applicants total	To external assessment *	Share externally assessed	Approved	Share Approved /Applicants tot	No. of SC members	No. External experts *)
ICA-1	2005	103	1) 103	100 %	12	12%	5	81
ICA-2	2006	2) 38	3) n.a.	3) n.a.	11	29%	11	9
ICA-3	2008 4)	52	37	71%	12	23%	13	53
ICA-4	2010	70	28	40%	14	20%	13	29
ICA-5	2012	54	30	56%	12	22%	11	36
ICA-6	2014	63	29	46%	12	19%	11	25
ICA 1-6 total		***380***	*not comp.*	*not comp.*	***73***	***19%***		

SC = Selection Committee
1) Each proposal was sent directly to external review by 3 individually identified external experts (mostly Swedish, many younger).
2) Number of applicants not comparable to the other calls. This time scope focused on new technologies and engineering, leaving SSF area *Life science* outside the scope.
3) Due to the low number of applicants the selection was made by the 11 SC members using their collective expertise reinforced by that of 9 external experts to enable the customary 3 assessments per proposal for 11 of the 38 applicants.
4) From ICA-3 on, the full SSF area spectrum incl. Life science is addressed in the calls. Also from ICA-3 onwards, there are two formal SC meetings, the first to filter out non-competitive proposals and to identify which ones to send for external review. The second is to recommend recipients to SSF based on the reviews and own internal deliberations.

4.1 ICA-1 Call 2005

To keep the number of proposals for the then new ICA grants at a manageable level, relatively strict conditions were set up concerning the formal eligibility and timing windows for application. They included (e.g.) maximum time from PhD; minimum length of continuous postdoc period abroad; earliest and latest date for taking up research in Sweden, etc. Parental leave and AT/ST service for MD-PhD's were allowed for. An upper age limit was applied in ICA-1 (36 years of age), but after that age limitation was removed.

For the selection process, a simplified scheme was proposed compared to the procedures in SSF's "flagship" individual grant program, *Future Research Leaders* (FFL, initiated in 2000 under an earlier acronym). ICA-1 had a small, only five-member Selection Committee (SC) with then Executive Director Staffan Normark as Chairman. Just over 100 proposals were submitted, which was unexpectedly many. Without any pre-screening all were sent for review by external experts in *Sweden*, with three experts assessing each proposal. Many of the latter were purposely rather junior, including FFL recipients. Some 80 individual experts were recruited upon recommendations from SC members as well as from the SSF secretariat at large.

This external assessment step resulted in the identification of 40 applicants that received the highest review grading among the 103 applicants. Before the SC meeting took place, detailed guidelines and other instructions about the handling of the proposals, conflict of interest rules, drafting feedback to the applicants, etc, were distributed to the members by SSF's scientific secretary in charge of ICA.

Each proposal in the top-40 group had been given *three readers in the SC*, one of whom was appointed main reader. The latter were responsible for drafting a short justification to communicate to those among the 40 applicants that would be declined by SSF, and a fuller presentation of those that the SC eventually would recommend for funding. After a detailed examination of the 40 proposals, the SC identified a group of 12 candidates that were recommended for approval without ranking. Another five candidates were ranked individually as reserves. The latter was to enable an ordered substitution procedure, should that need arise. In Call 1, the SC itself acknowledged that two of the recommended 12 candidates did not meet all eligibility requirements for the grant. The two were therefore rejected by the Board of SSF leading to the promotion of the first two reserves to grant holders.

4.2 ICA-2 Call 2006

The second ICA call was modified, primarily in regard to *scope* in order to "*achieve a more even distribution of the proposals between different SSF fields*". This was prompted by the fact that the share of applications to ICA-1 within the *Life sciences* was larger than that of all other areas together (>60 %). It was therefore proposed to focus ICA-2 on new technologies and engineering and to invite research projects that could be anticipated to have applications in all "other" SSF priority areas as they were defined in the call: *Information and Communication Technology, Materials Science and Engineering, Bioengineering*[1], and *Process and Production Systems Engineering.*

[1] Although not noted in the call text, successful outcomes of projects within the *Bioengineering* category would presumably imply benefits for research in the Life sciences as well. Several of the proposals classified as *Bioengineering* in fact were submitted by applicants who themselves might be viewed as Life science researchers.

One interpretation of the comparatively low share of engineering-oriented proposals in ICA-1 was that fewer young doctors in these fields choose to do a postdoc due to the availability of attractive jobs in industry. It was also assumed that the postdoc periods abroad that *do* take place in engineering and related areas tended to be shorter than the 12 months that SSF at first required. For ICA-2 the minimum length of an uninterrupted stay abroad was therefore lowered to 8 months. The minimum period in all calls was to be fulfilled *before deadline* for submission of application.

A simultaneous change in ICA-2 was due to the large number of proposals in ICA-1. Thus the "time window" from the applicants' receiving their PhD to SSF's deadline for submission was reduced from 48 months to 36 months. The age limit that had been used for ICA 1 was *removed* by the Board in ICA-2. The combined effect of these three changes was that the number of applications decreased to 38. This may be compared to the number of “non-Life science” applicants in ICA-1, which was 40.

For ICA-2 a Selection Committee with 10 external members was appointed, again with Staffan Normark as Chairman. In view of the low number of proposals submitted, only nine external experts were needed to complement the SC members in their assessment process. As before there were three reviewers per proposal although the latter here were a mix of SC members and external experts. The (only) SC meeting was held after this procedure. In total the SC recommended 11 proposals for funding to SSF, based on presentations/justification provided by the first readers. No reserves were named; instead, the SC suggested that SSF save the amount until next call, should anyone decline the grant.

From ICA-2 onwards, *all* declined applicants now directly receive individual letters justifying the decision not to recommend them for funding.

ICA-2 was the first SSF call to be processed in SSF's *new electronic application portal* called *Tekla* 2006-2007. This change facilitated the management of proposals, and indeed the entire "lifecycle" of a project submitted to SSF: from entry at deadline until (if approved) its "exit" at the end of the support period, and in between also economic and scientific reporting, monitoring, approval and rejection letters, contract forms, overall statistics, etc, as needed.)

4.3 ICA-3 Call 2008

This call returned to the original scope, i.e. the entire area of SSF-sponsored research. The call also reverted to the original minimum 12 months postdoc abroad. From ICA-3 and onwards the call text has clearly stated under "*Aim*" that “research to be conducted should have a potential to strengthen Sweden’s future competitiveness". As noted above, the wording under the header *Selection criteria*, "*Vision* of how the proposed research *can* be implemented", in ICA-3 was sharpened to read "*Description* of how the proposed research *will* be implemented".

ICA 3 also introduced a limit on the share of the grant that project leaders could use for their own salary. The reason was that two projects in ICA-2 had used 55-65 % of the grant to finance the PI's own salary. In order not to hamper the *building of an independent group* – a major aim of the program, an upper limit for the PI’s own salary was set at one-third of the grant (i.e. for ICA-3 through to ICA-5, SEK 1 million out of the 3 million award, in ICA-6 presently up to 1.33 million of the now SEK 4 million award).

Although a leadership-training program was "part of the package" of the ICA initiative and arranged from ICA-1 onwards, this fact was not mentioned in the call text until ICA-3. From the fourth call it was added that participation in the leadership training was *mandatory*. (See separate section about the leadership-training program below.)

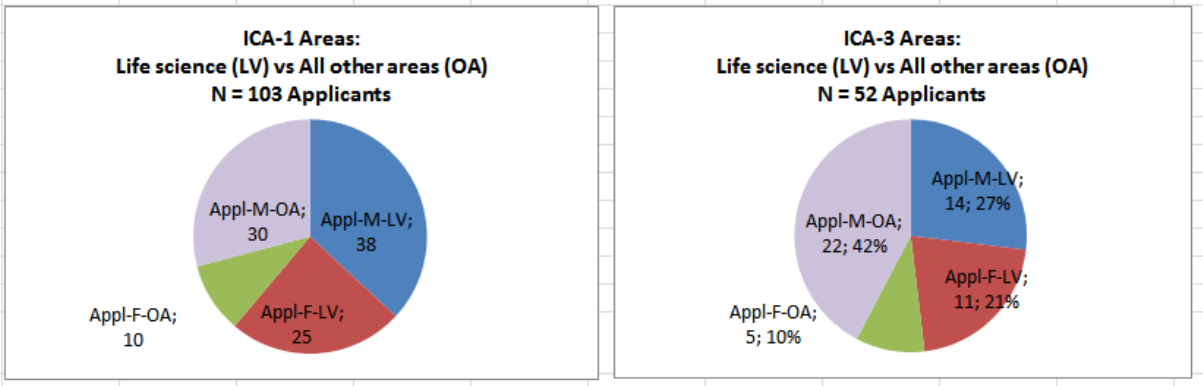
In contrast to ICA 1 and 2, and inspired by other SSF selection processes, ICA-3 and successive ICA calls were managed in a formal *two-stage* selection process. This time, an *external* selection committee chairman was invited. Professor Olle Stendahl, former Main Secretary of the Medical Research Council, ex-member of the SSF Board, etc. was appointed by the Board of SSF to head the committee, which eventually would count 13 members in all. As before all proposals had one primary and two “secondary” readers in the SC.

At its *first* meeting, the SC made a coarse screening of the proposals against the criteria for the call. Among the 52 submitted proposals, 37 were selected for external (distance) assessment, again mainly to experts in Sweden. All members were asked to propose experts in Sweden (and/or the *Nordic* countries) that would be suitable as external reviewers. SC members who were first readers of the 25 proposals that *did not* pass this first step were asked to produce texts to the rejection letter.

A second SC meeting was held to deliberate on the results of the external reviews, resulting in 12 applicants being recommended for approval by the Board of SSF. Three individually ranked reserves were also named. The two first reserves were later offered, and accepted, the grant in lieu of two grantees-to-be that chose to decline the award. (At least one of the two stayed on in the "postdoc country".)

As stated under ICA-2 above, the Life sciences were left out of the scope of ICA-2. Below the share of life science versus all other areas is shown in ICA-1 to the left and ICA-3, i.e. after "restoring" the scope to all SSF areas, to the right. The figures also indicate the distribution of gender Female/Male. Corresponding statistics for ICA with all SSF areas (and for recipients as well) have been compiled.

Fig 4: Share of Life science (LV) and Non-life science (OA) applications and gender, respectively, in Calls ICA-1 (Fig 4a) and ICA-3 (Fig 4b). In Call ICA-2 (N = 38 applicants) Life science was left outside scope.



4.4 The external review stage -- generic aspects

The selection procedure *from ICA-3 onwards* as described above might be thought of as a "hamburger": The SC is the bottom half of the "bread" (the first meeting - filtering). On top of this comes the "meat" in the shape of the external reviewers (the distance review), and then the SC comes back as the top half of the "bread" (the second meeting - recommendations regarding funding). See "process flow" picture in Fig 5 below.

To take a closer look at the "meat", the main headings (tabs) provided in the application portal for the external assessment step, in effect, have been the following from ICA-2 onwards:

1. Qualification of the applicant
2. Scientific quality of the research plan
3. Strategic relevance
4. Overall assessment - Conclusion and further comments + Assessment mark.

The external experts also had to indicate their own degree of expertise in relation to each proposal and to *rank* each proposal in priority order out of the total No "X" proposals that each external expert reviewed.

4.5 How does ICA differ from other programs for returning postdocs?

The ICA program differs in several ways from the program "Anställning som forskarassistent" that the Swedish Research Council (VR) ran at the time of ICA 1-3:

1. Funding: ICA provides for funding for 3 years with the expectation that the receiving university should fund (at least) the fourth year. VR provided funding for 4 years.
2. Position: ICA did not necessarily result in a position at the host university, while VR did (employment as a "forskarassistent")
3. Resettlement grant: Provided by ICA (SSF) but not by VR.
4. Grant: The ICA grants were substantially larger than what a grantee of a VR *forskarassistent* received.
5. Leadership: ICA provided a leadership program and meetings with other ICA grantees that could provide not just new skills, but also a network. VR provided no corresponding opportunity.

4.6 The selection process – Comments by the committee based on interviews and survey responses

The overall characteristics of the three selection committees are described above.

Eligibility criteria

The former chairman of ICA-3 in one of the interviews commented that the age limit that was applied in ICA-1 but removed from ICA-2 and onwards, made the ICA applicants diverge more. This was particularly evident in ICA-3, where some recipients were almost competent enough to become professors, while others were just getting their first PhD student. If this has had an impact on the program itself cannot be evaluated at this point in time, but should be noted.

Selection criteria

The selection criteria from the call texts have been presented and compared in 2.1 above.
The selection committee chairmen and members interviewed (2+2) stated that the selection could be rather difficult, since the applicants are young and inexperienced with a short CV and few publications. There was an overall agreement that the idea and feasibility of the research proposal was particularly important, further that the proposal should be original, lead to new knowledge and that the applicant had been a postdoc in a good lab abroad, and also that the applicant had published without the PhD supervisor and had some leader abilities. This last factor was particularly difficult to discern. The two participating SC chairmen were not in favor of using h-index as a selection criterion since this is difficult at this period in a young scientist's life.

List of hands-on review criteria /from interviews with chairmen and members:

- Network
- Innovation/innovative proposal
- Applicant has learned a new innovative method abroad and uses it in the application
- Publications without supervisor
- Choice of host research group
- Can this person become independent?
- Project leadership experience

There was agreement between the interviewees that the part of the application form where the applicant is requested to describe what she/he has done during their career was particularly useful to evaluate (potential) independency and leadership capabilities. Some committee members suggested that interviews with the applicants could strengthen the process even more, although this may be difficult and take time.

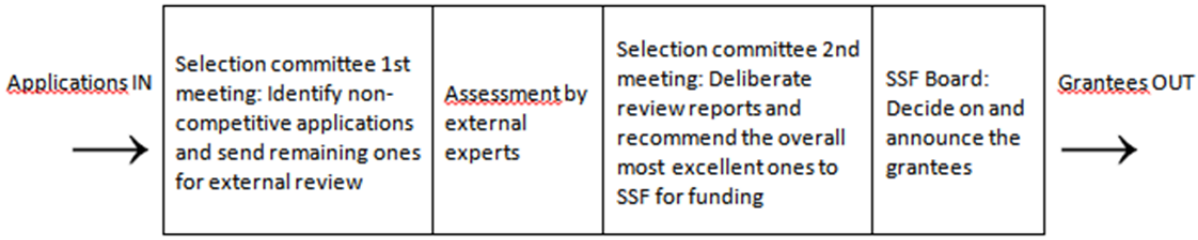
“Junior” Scientists as reviewers

The fact that several younger scientists (Future Research Leaders and similar) were used as reviewers is appreciated by the committee as it is a valuable educational experience for more junior scientists since this group is not generally given the opportunity to review for other Swedish funding agencies. Using junior scientists in the review process is not commonplace in Sweden and the rest of Europe, but a common practice at the large American funding agencies National Science foundation (NSF) and National Institute of health (NIH), where it is also considered an important part of a science education.

The use of younger scientists in the external review process was also good for the review process itself according to one of the chairmen. The younger, more inexperienced members were very thorough in their evaluations and added to the discussions.

According to the interviewed committee members, the selection process used by SSF is unique not only in the sense that young scientists are allowed to participate, but that a multi-step sorting process is used. This process minimizes bias and facilitates a good choice of candidates. Interestingly, both seniors and juniors were reportedly in agreement in the choice of candidates most of the time.

Fig. 5: The "pipeline" from application to decision about grantees as applied from ICA-3 onwards



The ICA 1-3 recipient survey mentioned in section 1.2 above included, among many other questions, a set of statements collected under the overall theme, "Opinions and reflections based on your ICA experience" (see Appendix 9, Q-16, and Appendix 10). Numbered from "a" to "r" the questions were to be ranked on a scale from "Strongly agree" and "Agree" via Neither/nor (below sometimes called "Neutral") to "Disagree" and "Strongly disagree"**.** In the following, some examples from the survey are presented with short comments. The committee is well aware of the fact that the numbers are small; thus conclusions drawn only on the basis of the survey should be interpreted with care, as comparisons or "baselines" are lacking. The reader is also reminded that these sections only build on the committee's own activities related to the calls, processes, recipients and other actors related to ICA 1-3, i.e. not necessarily to ICA at large. With that said, it may be noted that several items related to the call process that the committee comments on, also have been put forward (more or less explicitly) in various strategy discussions with young researchers that among others also included some ICA grantees.

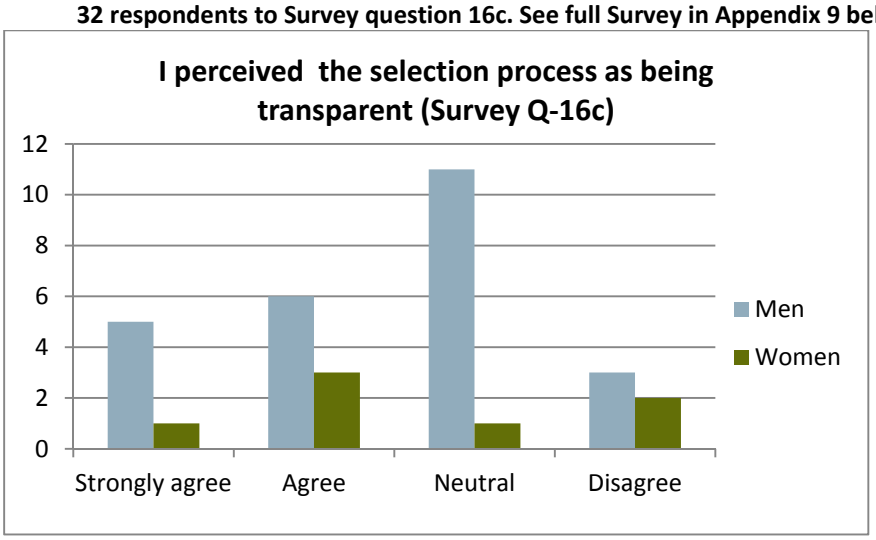
Was the selection process transparent?

The calls contain a short text about the evaluation and selection process. Example from ICA 3:

> "The application process takes place in one step; full proposals only are accepted. Applications will be reviewed by a Selection Committee consisting of 10 to 15 members, primarily Swedish scientific experts in academia.
>
> The Selection Committee will perform a first selection in which applications will be assessed with respect to the extent to which they conform to the announcement as well as to the scientific quality and strategic relevance of their proposals. The remaining applications will each be reviewed by at least three external scientific evaluators. Based on these assessments and the Committee's own deliberations, the latter will present a final recommendation to the Governing Board of the Foundation, which will make the final decision with regard to the grants."

As illustrated in Fig 6 below, most ICA grantees responding to the survey found the selection process rather transparent, although a small number did not. The reason for not finding the process transparent was not commented by these grantees.

Fig 6: "I perceived the selection process as being transparent" (as expressed by the 32 respondents to Survey question 16c. See full Survey in Appendix 9 below)



Applicants that were not selected received a letter that clearly stated the positive aspects of their application and factors justifying why an award could not be granted. This was done with a view to giving the young scientist an opportunity to improve on their future applications to other funding agencies.

Gender aspects

In ICA 1-3 as in all ICA programs so far, women have been a minority among the applicants as well as among the grantees. In the different calls, 34% of the applicants to ICA-1 were women, 29% in ICA-2 and 28% in ICA-3. In the final selection of grantees 24% women were selected as grantees to ICA-1, 37 % in ICA-2 and 33% in ICA-3. According to the SC chairmen interviewed, the best applications were identified without any direct regard to gender. However, the gender distribution of the grantees follows that of the applicants well, except for ICA-3 (and 4), where there were a lower percentage of female grantees than the percentage of female applicants. In ICA-1 33% of the grantees were women, while in ICA-2 the share was 27%. Only 17% of the grantees in ICA-3 were women. As shown in the figure below, there are still fewer women that apply for ICA, but the percentage of female grantees has increased in ICA-5 and 6. (It should be kept in mind that each individual in a group of 12 grantees represents 8 %.)

Fig 7: Applicants (7a) and grantees (7b) from ICA1-6 distributed by gender

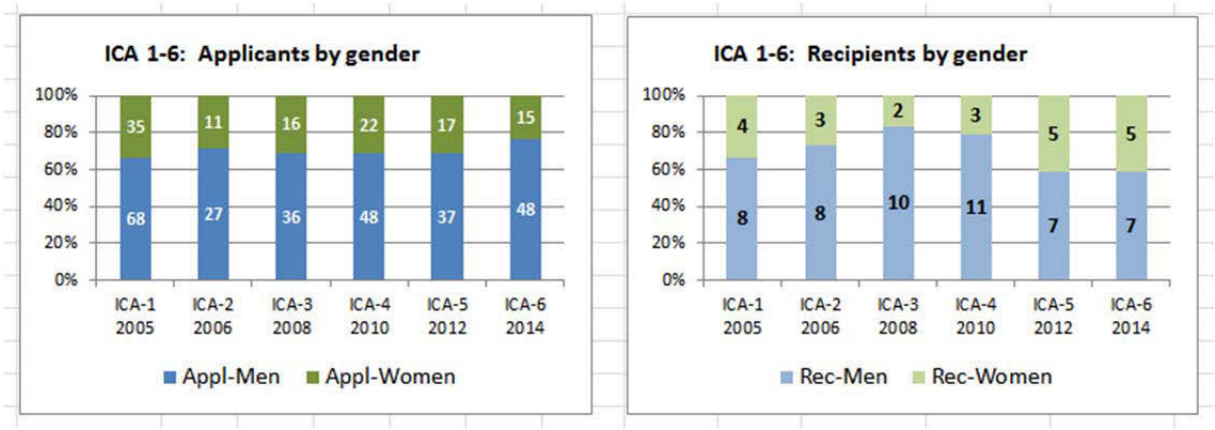
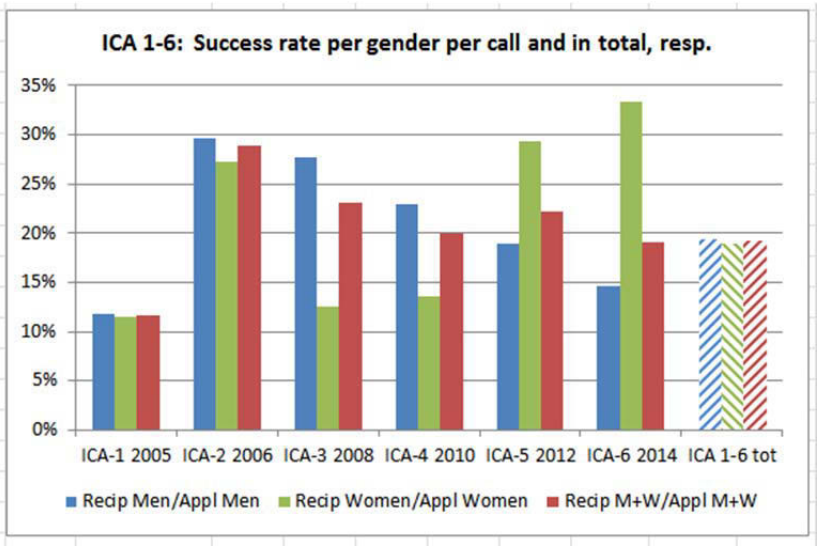


Fig 7c: Gender-based success rates per call ICA 1-6 and in total



This figure may be seen as a complement to the two above although they are based on the same background data. In ICA 1-2, the Men (blue) and Women (green) bars are similar, showing the "internal" gender and total (red bars) success rate (M/M, W/W, T/T), respectively. In ICA 3-4 Women "took a dive", after which their success rate "jumped" in ICA 5-6. Over the six calls, the internal gender success rate has finally evened out to 19% for all three categories each (striped bars far right).

What criteria do ICA awardees think should be important in the selection process?

Even though not directly asked (in the questionnaire and final report), many of the ICA awardees had ideas about how to improve the evaluation process. Interestingly, these suggestions are well in line with the ideas of the chairmen interviewed, although some are new and could perhaps be considered in connection with future calls. Several ICA awardees suggest that the ICA awards are announced according to a regular schedule (annually), so that it is possible to plan ahead when going on a postdoc or thinking of returning home. This should be considered in order to increase the number of recipients, since the Swedish academic system loses a lot of competent people after their postdoc due to the uncertainty in the early stages of an academic career.

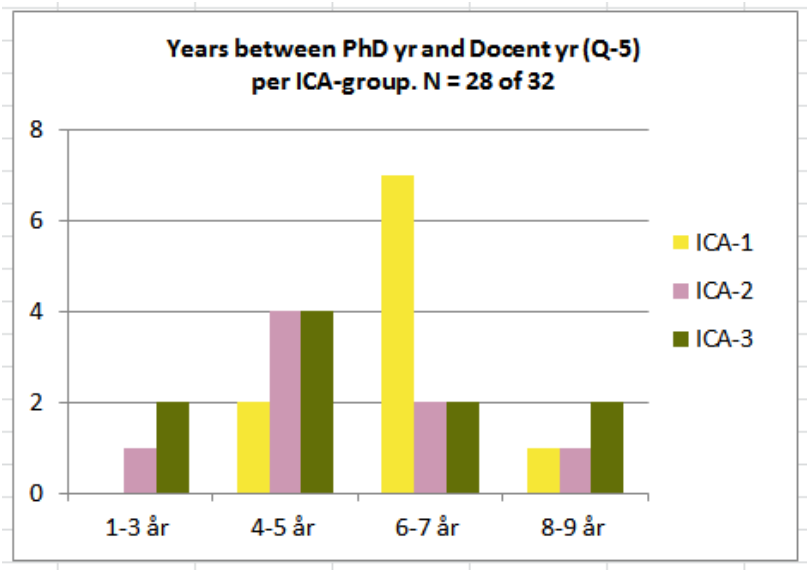
It is also clear that some of the interviewed ICA recipients, as well as some that answered the questionnaire, have the opinion that h-index should not be used at this early stage. It is also suggested that publications without PhD supervisor as co-author are an important measure of independence that should be considered, as well as a shift in research focus away from the thesis work and the ex-supervisors work. Teaching experience can also be a good measure of leadership skills. Previously received grants should also be taken into account. Several also think that universities should be required to support the recipients, and that this needs to be dealt with beforehand.

4.7 Career development during and after the ICA period

To make a career in science is both challenging and difficult. A good career path in academia encompasses positions ranging from PhD student, to postdoc -- preferably abroad --, associate professor and a tenured position as lecturer or professor. However, the Swedish career system is difficult to understand and the tenured positions are few. It is therefore pleasing to see that so many of the ICA awardees have been so successful at obtaining a docent in the academic system.

It is difficult to evaluate the 3 ICA programs in regard to career development since the recipients started at such different time points. However, the number of years from PhD to docent[2] was investigated for ICA 1-3 (counting only *calendar* years, not dates).

Fig 8: The median age to obtain a docent degree for the ICA awardees is 6.5 years



[2] See e.g. https://en.wikipedia.org/wiki/Docent#Sweden

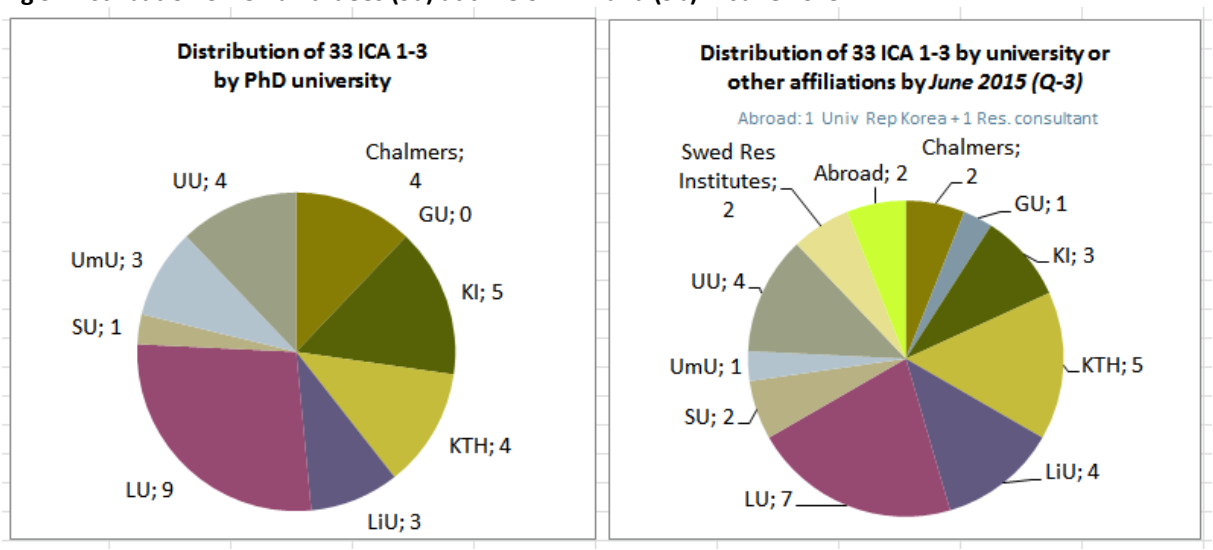
5 Processes after funding decisions

5.1 Process associated with ICA award recipients

Choice of university after receiving the ICA grant

Most awardees, 70%, to judge from the survey, chose to go back to -- or were already back at -- their Alma mater, the university where they received their PhD, upon receiving their ICA grant. Only 30% chose to change university. Whether or not the awardees chose to go back to the same *department* as where they got their PhD has not been analyzed although data has been collected. Subsequently some other relocations have taken place. The following diagrams (Fig 9a and 9b) show the PhD affiliation and the *present* affiliation (May 2015) of the 33 ICA 1-3 who submitted final reports. Of these 29 have stayed in academia, while a few have left to lead research activities in institutes (2) or a consulting firm (1). As some relocations have taken place intermittently, the figures below show "net" changes over time between application to ICA and the present.

Fig 9: Distribution of ICA awardees (9a) at time of PhD and (9b) in June 2015.

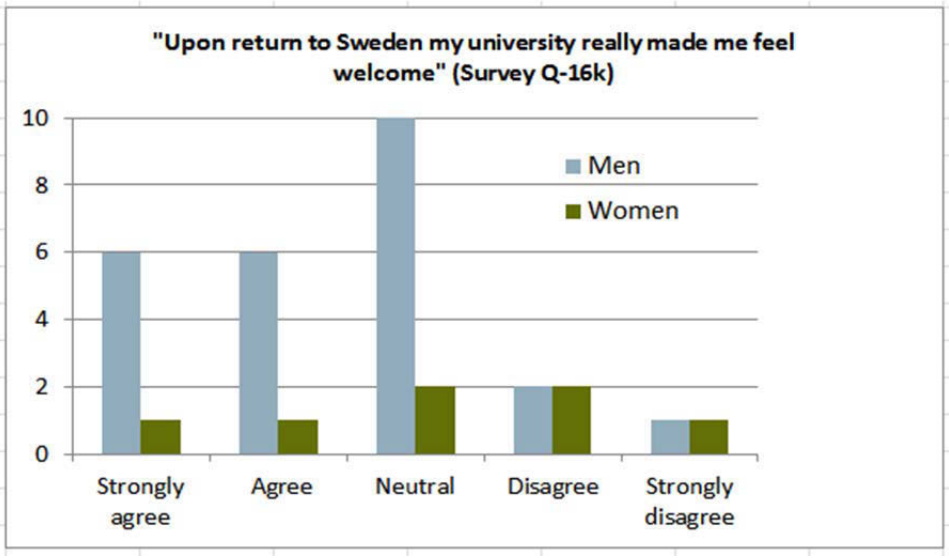


Do host universities make the ICA recipients feel welcome?

Based on the interviews with selected grantees, final reports to the SSF and the questionnaire, it was clear that many women and men did not feel particularly welcomed back to their university. In the questionnaire, 50% of the men (12) and 28% of the women (2) strongly agreed about feeling welcomed back by their university. At the same time 3 out of 7 women (42%) disagreed with this, as did 3 out of 25 men (12%). Most ICA recipients (but not all) were happy with their selected host institution and only very few moved[3] during their ICA program. According to the questionnaire and interviews, the move in these cases depended on the new host universities being more generous concerning financial support particularly during their fourth year, infrastructure available, and on the family situation and network.

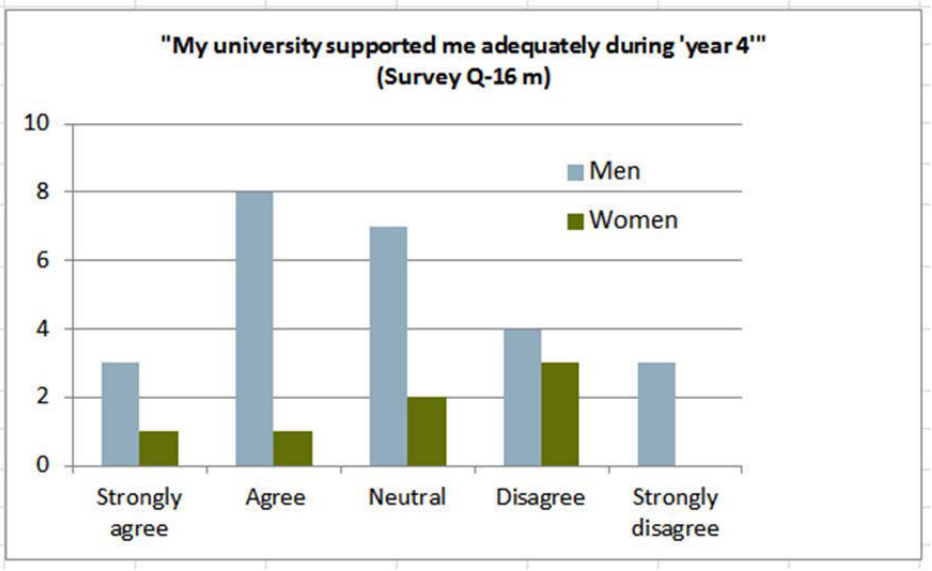
[3] The right to transfer an ICA grant between different HEI (Higher Education Institutions) is an important element in the ICA-program, empowering the awardee.

Fig 9: Upon return to Sweden my university really made me feel welcome



As explained above, SSF expects the host university to guarantee funding for ICA recipients during the fourth year. This is stated in the call texts as well as in the contracts with ICA grantees and their host entities. (The actual wording has been somewhat "modified" over the years in response to comments as to what SSF can, and cannot, "expect" from a host university.) When asked whether the host university adequately supported the grantee during the 4th year, the majority of the respondents agreed or were neutral. However, 3 out of 7 women disagreed (42%) and 7 out of 25 men (28%) disagreed. Only one man but no women strongly disagreed.

Fig 10: My university supported me adequately during "year 4"?



5.2 Process after decision on the part of SSF

Fig 17: Steps in the lifecycle of ICA from board decision to "leadership training exam"

Call	Year	SSF Board decision	Information to and acceptance by grantees §)	Press release	Contract writing with grantee and host university	Diploma ceremony + "ICA Intro" seminar	Leadership training "exam"
ICA-1	2005	2005-12-14		2005-12-19		2006-03-15	2009-03-05
ICA-2	2006	2007-04-17		n.a.		2007-10-30	2011-03-31
ICA-3	2008	2009-09-10		2009-09-15		2009-10-28	2012-10-24 (During study trip)
ICA-4	2010	2011-12-08		2012-01-18		2012-01-19	2015-01-29
ICA-5	2012	2013-04-18--19		2013-05-06		2013-09-24	Not yet concluded
ICA-6	2014	2015-03-30--31		2015-03-31		2015-06-09	Just started

§) Also, letters with individual justification to non-grantees (ICA-1: to declined "top-40", from ICA-2 on: to *all* declined).

As soon as an SSF board decision is made, all ICA applicants are informed of the outcome of the selection process, for those approved as well as those declined. Press releases are distributed to SSF contacts in the press, universities, academies, etc, by SSF's Communications manager to selected contacts in SSF's media network. As a first exercise in *media training*, the Diploma ceremony for a new group of ICA awardees starts with a luncheon with specially invited representatives of the media. Each awardee gives a professional but *plain language* presentation of her or his project and is then interviewed by a popular profiled journalist/moderator who has a qualified interest in young researchers.

Hosted by the Chief Executive Officer of the Foundation, the diploma ceremony is arranged with the honorary guest, former Prime Minister Ingvar Carlsson to whom the program owes its name, who hands out diplomas to each awardee. For the ICA-6 ceremony in June 2015, around 200 persons were invited including colleagues and family of the awardees (each one may bring up to 5 or 6 guests), host university communicators, media, members of Parliament who were members of RIFO, science-related organizations, venture capitalists, and industry people. The same journalist from the lunch press meeting serves as moderator at the ceremony as well.

An important part of the invitees are the *chairs of the departments* of the grantees. These receive a personal invitation letter from the CEO drafted by the scientific secretary in charge of ICA. According to the latter, closer interaction between SSF and department chairs would be advantageous for making the grantees feel more "at home" at their host universities, in particular those who are resettling at a university *other than* their Alma mater, and those who have *just returned* to Sweden.

The day before the Diploma ceremony takes place, an introductory seminar is arranged with the objective to kick-start the ICA group on the theme, *Recruiting of collaborators*. This topic has been targeted in the Leadership training program mainly from ICA-3 onwards, but it is only recently that (as a result of comments received on earlier schedules) it has also been made a topic of the *very first* get-together among the grantees. A full day is set aside for the introduction, where the agenda includes ICA and SSF routines such as annual reporting and other formalities about everyday aspects of the program (ICA secretary) as well as an introduction about the upcoming Leadership training program (SSF Leadership secretary). Apart from a thorough presentation of all individuals, social activities also include a dinner, all in order to make the grantees feel comfortable and to create a positive spirit in anticipation of coming activities.

The Leadership training program for ICA is presented and commented on in the next chapter of the report.

5.3 Committee's analysis and commentary of the above processes

Welcoming of the ICA recipient

Since a surprisingly large fraction of the awardees expressed dissatisfaction with the way they were received by their host departments, SSF could probably do more to "sell" the ICA awardees to their respective universities at the time that they start their ICA grants. In particular, the department chair needs to be made aware of the very competitive nature of the ICA award and the overall high quality of the awardees.

6 The leadership program

The leadership training program (LTP) of ICA is perhaps what makes SSFs funding strategy of young researchers absolutely unique in Sweden, in comparison to other research funding agencies supporting young scientists returning from their postdoc positions abroad. In addition to giving significant funding in the ICA program, the returning postdocs will in the LTP learn how to build and manage a successful research group.

From the inception of the ICA program, an amount of SEK 600.000 per ICA call has been set aside for a LTP for each crop of ICA grantees. It was introduced as a condensed and somewhat simplified version of the corresponding activity within the already existing Future Research Leaders (FFL) program. An initial thought was to recycle parts of the themes and contents for workshops and seminars that had been developed for FFL. This called for some adaptation, as ICA participants represented a younger and less experienced group.

The leadership program for the forerunner FFL was distributed over five years and took place in the form of two semi-annual events for each crop, lasting two full days. The LTP for participants in ICA 1-3 was organized in the form of lunch-to-lunch or one-full-day workshops or seminars over three years, also semi-annual, thus six training events. To reinforce the fact that the program was not to be seen as merely a source of funding, it was made explicit in SSF's contract with the PI and the host university from ICA-2 and on, that participation in the LTP is a mandatory part of the parcel.

The content of ICA 1-3 was based on a few main themes as shown in the figure below (the years showing the duration of the LTP, not the granting period). Some more detail is given in Appendix 5.

Fig 18: Main themes for the leadership training programs in ICA 1-3

The content has slightly changed from ICA-1 to ICA-2 and even more so in ICA-3. The course content was decided by the chairperson of each ICA group with room for dialogue with the participants. In general, the LTP concept for ICA-1 to ICA-3 was based on giving the ICA grantees practical tools on how to build a research group in an academic setting, including recruitment, how to manage a research group and attract more funding as well as how to deal with media, research ethics and

gender aspects. Many of the “how to” questions were discussed in seminar form with more experienced researchers that have already built their own research groups.

Comparing ICA-3 with ICA-1 and 2, the content has been expanded to include supervision of individuals and leading a team, gender aspects, as well as a study visit to Geneva that included a visit to CERN, University of Geneva and École Polytechnique Fédérale De Lausanne (EPFL). The LTP of ICA-3 was also internally evaluated at the end of the program. Also in ICA-2 a study visit was done abroad, to China (Beijing University; Institute of Theoretical Physics (ITP); Ericsson; Shenzhen University; Beijing Genomics Institute; Shanghai Institute of Ceramics; Fudan University; and Shanghai Jiaotong University).

6.1 Organization of the ICA leadership program activities

Although the overall schedule and content of the training programs for ICA 1-3 were determined largely by the respective ICA chairperson, an overall program committee was appointed by SSF in June 2007 to support and contribute to coordination and methodological development of leadership activities in both FFL and ICA. This program committee comprised the respective chairpersons for the LTP of each "crop" of ICA and FFL, reinforced with professors specializing in leadership and management issues.

In spring 2011 a new research secretary was recruited to SSF to further develop SSF's leadership activities for young researchers. A status report on the leadership program was presented to the Board of SSF. Certain overarching issues of importance to the long-term development of the training programs were identified. A main wish was a well-structured "curriculum" for the training activities that would define what topics should be part of the course program as well as indicate directions for the pedagogical approach.

In April 2010 the overall program committee was replaced with a new leadership program committee. With this committee, a new policy for the leadership program was put in place. The new committee was composed of five independent persons with different types of experience and expertise in leadership – two human resource professionals, one professor in psychology, and two top leaders in research-intensive sectors of Swedish industry and society. There are no ICA or FFL representatives in the committee; instead, the chairpersons of the on-going ICA and FFL programs would be invited to meetings with the leadership program committee to report on developments within the individual leadership course programs. The aim of the new leadership program committee was to:

- Evaluate completed and on-going leadership training programs
- Work out overarching plans for the training programs for ICA and FFL, determine which elements should be compulsory, and propose others that the participants may choose from
- Monitor the development of on-going and prospective programs
- Report to the Board of SSF the observations, conclusions, and measures taken.

6.2 Interim evaluation of the leadership training program in 2010

As a consequence of the reorganization of the leadership programs at SSF in 2009, the LTPs of FFL calls 1-3 and ICA 1-2 were evaluated by a firm, CMA Research AB in 2010. CMA carried out a survey during six months from May to October 2010, consisting of a web-based questionnaire on the one hand and a set of telephone interviews on the other. The main questions addressed in the evaluation were:

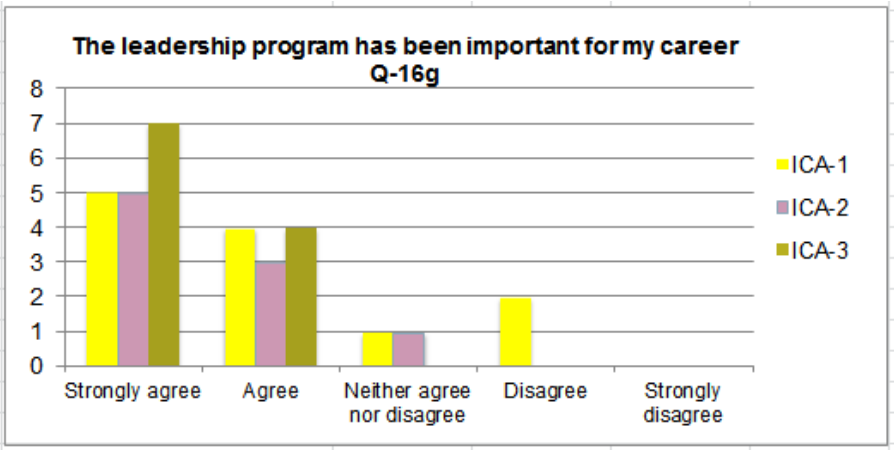
1. Target group analysis: which elements do the participants of FFL and ICA think should be included in a LTP?
2. For participants of ICA and FFL who have already finished their programs: Which elements do they consider were most useful for them?
3. SSF would like to know which pedagogic concept that worked best for FFL considering the three tested ones.

Results from the evaluation made by CMA are reported in (Appendix 8, item 5), showing in brief that the ICA participants considered several elements important to be included in LTP, including networking, building a research group, discuss leadership experiences and group psychology. Of less interest for ICA participants were for instance funding opportunities, personnel administration and media training. For the question about elements that were useful for the participants when looking back, interestingly, all of the elements included in the LTP were useful.

6.3 Results from the current evaluation

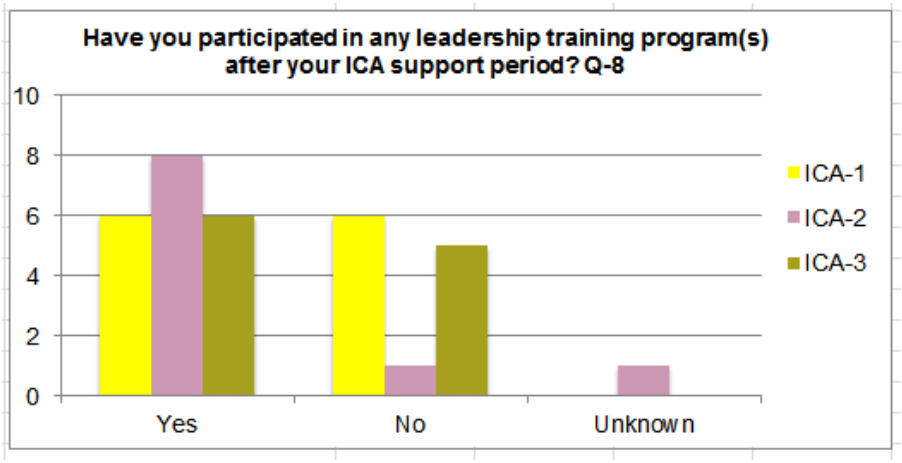
From the final reports, and the emailed questionnaires, several observations can be made of importance to the LTP of ICA 1-3. First of all, almost all survey participants considered the LTP important for their career (28 out of 32 answers, 88%), see figure below. It also appears that the ICA-3 participants agree the most on the importance of the ICA LTP, as compared to ICA-1 and 2. Perhaps this reflects the somewhat re-worked program for ICA-3, including more soft skills in supervision and a study visit to Geneva.

Fig 19: Importance of leadership program according to the current survey



Furthermore, the questionnaire results also tell us that 20 out of 33 (61%) have participated in additional leadership courses after the ICA support period, see figure below. This could be taken as an indication that the grantees consider a continued learning in leadership important. Another reason could be that it is mandatory to take such courses to be eligible for promotion to docent or professorship. The fact that so many of the grantees continue with other leadership training programs is very positive and strategic for future research leadership. The answers also tell us that a majority of those who take more leadership courses have done so for several weeks of duration (12 out of 33), and it is often the own university courses that have been taken (11 out of 33). Some of the grantees have also received the SSF grant FFL (7 out of 33), and leadership training plays an even more important role there.

Fig 20: Participation in leadership training after ICA period



It is also of interest if the grantees have been successful as leaders, both in terms of leading their own groups, but also in terms of receiving trusted leadership positions at the own workplace. The current average size (median value) of research group is 7, 8 and 6 for ICA-1, 2 and 3 respectively. From the CVs submitted with the questionnaires, it can be concluded that at least half of the grantees have or have had leadership positions beyond leading the own group (17 out of 33). A relatively common leadership activity among these is to act as a research coordinator in larger research centers or as a director of a research core facility.

In conclusion, it appears that the grantees were satisfied with the LTP, and that many of them are using leadership in their work also in situations outside the own group activities. The positive answers from the questionnaire are confirmed in an interview with four of the grantees. Some comments in the questionnaire about the LTP of ICA are:

- "I learned everything there; I think all new group leaders should go through such a program, in particular, meeting other young group leaders important for me."
- "The leadership training has been very influential in my everyday work. It was very useful to meet and discuss research and administrative matters with the other ICA awardees. Recruiting issues should be the dealt with at the first leadership gathering. Recruiting is very important."
- "I think one of the largest benefits with the program is to get to spend time with other researchers at approximately the same point in their careers. This is a perfect platform for sharing experiences about anything related to science and academia and how to build your career. The leadership program was good but maybe a bit scattered. I would have preferred to have one or two persons that followed us through the whole process. "

6.4 Perspectives from SSF representatives and the leadership program committee

In an interview with chair of the leadership program committee, it was pointed out that with ICA grantees, the biggest challenge is to actually get them interested in leadership questions. Naturally, at first, most of the grantees would like to learn more about recruitment, how to build up their research group. The focus is on practical tools. The challenge for the leader of the LTP is to get them interested and motivated to learn more about leadership. It is therefore of importance that the chair of the LTP of the ICA has extensive personal experience in leadership. It is furthermore important to get a good start in the LTP of ICA, since the grantees is a challenging and very critical group of individuals. Hence, the grantees need to recognize the structure of the program. Certainly, it is also important to create a trusting and comfortable environment for the group in order for discussion to be open and honest.

The chair of the ICA-3 leadership program further comments on the importance of learning about leadership rather than being a “chief” or authority. It is also important to learn about communication, how to communicate science. The whole career in terms of getting funding and discussion science with stakeholders and others depend on effective communication skills.

Finally, it was discussed whether leadership potential of the applicants could be used in the selection process at SSF. The opinion was that it is too early on in the career to use leadership as selection criteria. Most of the applicants have not had the chance to apply leadership in their postdoc positions. This opinion was shared by other SSF representatives as well as the interviewed recipients.

6.5 A new policy for the leadership program for ICA-4 and onwards

Although ICA-4 and later calls are not subject to the present evaluation, it is still relevant to note that a new kind of curriculum for SSF's LTP was developed following the internal SSF discussions in 2009-2010, and as a result of the appointment of a leadership program committee. The new training curriculum for ICA participants was completed in January 2012, shortly after the ICA-4 grantees had been named in December 2011. In the new LTP regime, a mentoring program was included, as well as items regarding societal impact and commercialization of research. Overall, the objective of the new LTP of ICA is to give each participant:

- Insight into one's actions as an individual and how one is perceived as a leader
- Opportunity to develop a leadership philosophy of one's own
- Tools to exercise one's leadership in practice[4].

This new LTP is completely in line with modern leadership programs developed by the Swedish Defense University (UGL, Understanding Group and Leader) and others, and it is certainly of high value for the ICA awardees to be served such training early on in their career.

[4] Informal translation above. The original read as follows: "Insikt i hur man som individ agerar och hur man uppfattas som ledare; Möjlighet att skapa sin egen ledarskapsfilosofi; Verktyg att utöva sitt ledarskap."

Part II: Specific Issues and Questions

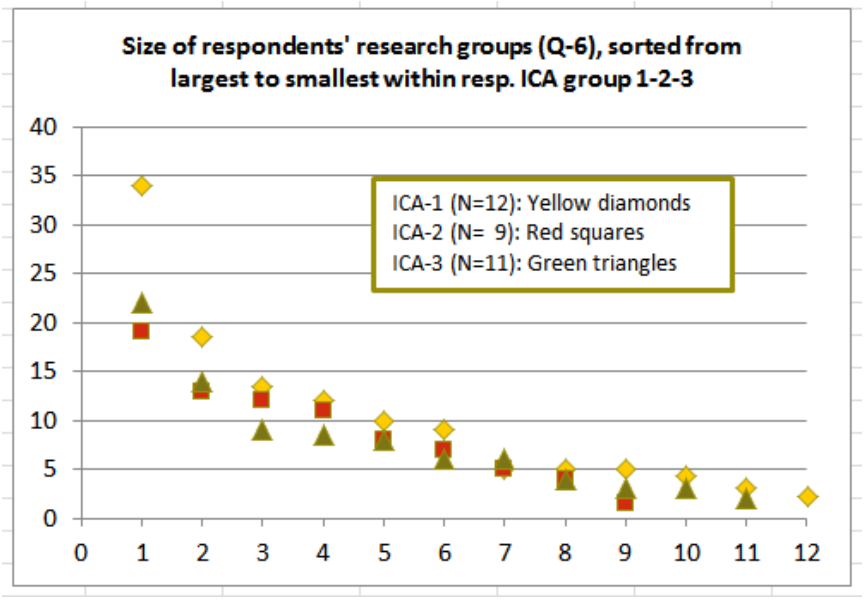
7 Independence and Autonomy of Recipients

The main aim of the ICA program is to "identify and support young, well-qualified postdocs who intend to start independent, lasting and creative research careers on their return to Sweden". For the purposes of this report, we take "independence" to mean scientific independence from former supervisors or other senior researchers demonstrated by publications and grants, "lasting" to mean having been promoted to a permanent position within the academic system or in industry, and "creative" to mean an excellent publication record and success in attracting competitive funding. Ideally, these measures should be compared between the 32 scientists that received an ICA award in the ICA 1-3 announcements and the remaining applicants that did not receive an ICA award, but such an undertaking was beyond the resources available to the evaluation committee. Hence, we limit our discussion to presenting data only for the 32 ICA awardees and making some general assessments based on our own experiences from the Swedish academic system.

7.1 Have the ICA awardees demonstrated scientific independence?

The current group sizes of the 32 ICA awardees that are still in academia and that responded to the questionnaire are shown below. Four awardees (all men) have groups of ~20 people or more. The median group size is 7.5 (8.0 for men, 5.0 for women). Nine awardees (8 men, 1 woman) have received European Research Council (ERC) Starting Grants, the most competitive and prestigious EU grants available for young scientists. Almost all of the awardees are well funded from various funding agencies, and all but two report at least some independent funding.

Fig 21: Current group size. The data for this graph includes all 32 survey respondents, i.e. also the three that have left the university sector, sorted from the largest to the smallest numbers in own research group.



The total number of publications varies a lot between awardees, from 15 to 202. All of the awardees have published at least a few papers as independent PIs, and typically about one-half of the papers are not with supervisors as co-authors. Citation statistics and h-index have both been reported by about 75 % of the awardees (given the problems inherent to evaluating citation counts and h-index, this was a voluntary piece of information); the total citation counts range from 300 to 21,000 and the h-index from 9 to 46. Given that the awardees work in very different fields, it is difficult to draw strong conclusions from this data without an in-depth bibliographic analysis. It nevertheless appears that all awardees can be regarded as having demonstrated scientific independence in terms of their publication records.

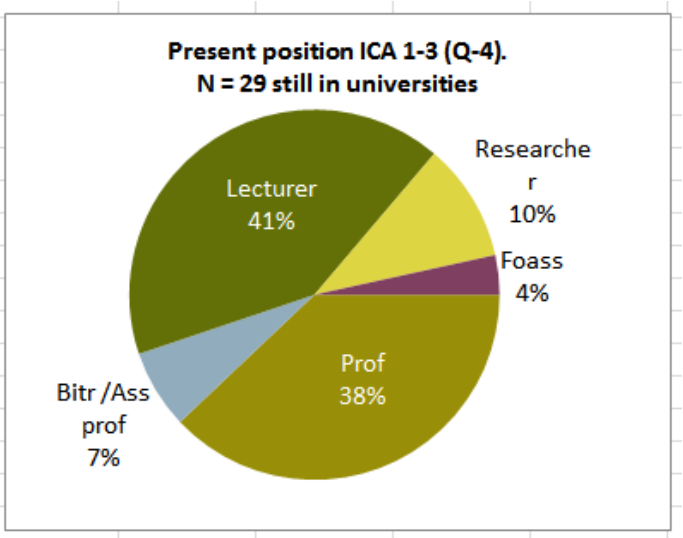
The amount of funding available to the awardees also varies a lot, from 1 MSEK to 30 MSEK per year (for 2014). The median amount of funding for 2014 was 3.8 MSEK (3.9 MSEK for men, 3.4 MSEK for women).

7.2 Have the ICA awardees been able to position themselves for lasting research careers?

Out of 29 ICA awardees (24 men, 5 women) that are currently employed at a university (of which one recently left Sweden for a university in Asia), 23 (79%) are employed as either full professor or lecturer, i.e., they hold permanent positions. Three awardees (2 women, 1 man) have left the university system for other jobs (all 3 have had successfully entered science-related careers outside of academia). The remaining 6 awardees are employed as either “forskarassistent (1)”, “forskare (3)”, or “biträdande lektor (2)”, i.e., in non-permanent positions of which only “biträdande lektor” is in a formal tenure track system. In total, 25 of the 29 ICA awardees that remain in the academic system (86%) thus either have been or are very likely to be promoted to a permanent position. For a cohort of people returning from a postdoc, this is no doubt a high percentage. The ICA program thus appears to have fulfilled its aim to promote the lasting careers of young scientists.

One notable fact is that, out of the 29 awardees still employed at a university, 2 out of 5 women but 23 out of 24 men, hold permanent positions (“professor” or “lektor”).

Fig 22: Present position of the 29 of the 32 survey respondents who are still in universities



7.3 Have the ICA awardees been able to demonstrate an ability to carry our creative research?

While it is impossible to give a quantitative definition of "creative research", it is nevertheless clear that many of Sweden's top young scientists are among the ICA awardees. As one measure, according to the ERC statistics, Swedish scientists have submitted 1201 Starting Grant applications in the areas Life Science and Physics & Engineering since 2007, 78 of which have been funded (6.5% success rate). Comparing this to 9 out of in total 35 ICA 1-3 awardees having received ERC Starting Grants (26%; if only the 32 still in universities are counted the share would be 28%), it is clear that the ICA program has succeeded in identifying and supporting young scientist that later have established top-notch research groups in Sweden. In addition, 4 of the 32 latter have received an ERC Consolidator grant, including 2 of the 9 that landed Starting grants and another 2 that did not. Finally 2 of the Starting grant (StG) recipients also received ERC Proof-of-Concept grants. In total thus 11 unique ICA 1-3 recipients have received 15 ERC grants among them. Of the 11 individual ERC grantees, 5 were in the ICA-1 group, 4 in ICA-2, and 2 in ICA-3.

As a comparison, among the 158 applicants in ICA 1-3 that were not awarded a grant, three have received ERC Starting Grants (2.5 %) and two a Consolidator grant.

7.4 Gender issues

Considerably fewer women than men applied for and received ICA 1-3 awards. However, there was no apparent gender bias in the selection process. Sadly, the female ICA grantees appear to have felt less welcomed by their host university and to have received less support from their university for the fourth year. Not so surprisingly, the women also had substantially more parental leave than the men. The female ICA grantees have been less successful at getting tenured.

The percentages given in the first two items below refer to the survey alternative Strongly agree + Agree (= "satisfied" for the purpose) and Disagree + Strongly disagree, respectively.

- Only 29 % of the women reported feeling welcomed when they came to their host university upon return to Sweden (which preceded the ICA grant in some cases), 42 % of the women did not. Of the men, 48% felt welcome while 12% did not.
- Only 29% of the female ICA awardees were satisfied with the support they got from their university for the 4th year. 42% of the women disagreed when asked whether their university's support was adequate during the 4th year. Of the men, 44% were satisfied while 28% were not.
- The median parental leave time after receiving the ICA award were 18 months for women, and 5 months for men (only counting people that have had children after receiving the ICA award).
- While there has been no apparent gender bias in the selection process, female awardees have been less successful in obtaining tenured positions than male awardees.

8 Utilization and Strategic Value

SSF's purpose is to support research within natural science, engineering and medicine. It also seeks to promote the development of strong research environments of the highest international class with importance for Sweden's future competitiveness. Consequently, utilization and strategic value of research are at the heart of SSF's aims and these requirements pervade each of SSF's programs, including the Ingvar Carlsson Awards program. In each of the ICA calls evaluated in this report, both the aims of the program and the selection criteria mention strategic relevance of the research and its importance for Sweden's competitiveness.

On the other hand, the major aim of the ICA programs is to support highly qualified postdocs upon their return to Sweden in the development of strong research environments and to initiate independent and innovative research activities. At this critical point in the careers of the recipients, the overriding ambitions of the vast majority of the recipients is the establishment of their academic credentials and a focus on basic foundational research. This view is supported by the summaries from the recipients in their final ICA project reports, selected interviews with recipients and administrators in the ICA programs, and in the survey distributed to the recipients that have all been used as a basis for the analysis in this report.

Other than the stated aims in the ICA calls and one criterion related to utilization and strategic relevance in the selection process, the recipients – in practice – are more or less on their own to determine how much or little effort will be placed on utilization.

Quantifying the degree of utilization achieved in the ICA programs is no easy task since one has few distinct quantitative metrics in the data provided through the interviews, questionnaires, and final reports. Additionally, the analysis must go beyond just what is reported in the final ICA project reports since much of the utilization occurs after the end of the projects, sometimes several years afterwards. The correlations are indirect rather than direct in this regard.

The quantitative metrics used in the analysis of degree of utilization associated with the individual ICA projects are the following:

- Number of startup companies formed by the recipients both during and after the conclusion of the ICA project.
- Number of patents and patents pending acquired by the recipients both before and after the conclusion of the ICA project.
- Number of Open Source Software packages accessible to the public, and software copyrights.

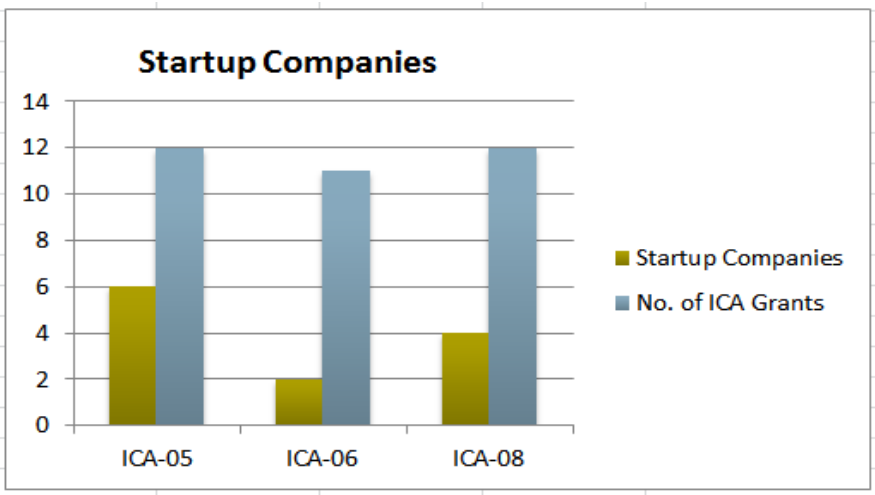
There are other metrics that can be used in the evaluation of degree of utilization, but these were the only metrics sufficiently visible in the data provided through final project reports and the surveys returned by the recipients. Additionally, networks and collaboration which is an important part of utilization is considered in a later section.

The data analysis is provided at the ICA call level for the three calls analyzed in this report, ICA-1, ICA-2, and ICA-3. This is reasonable since one would expect higher degrees of utilization for the earlier

calls and less for the more recent calls. One factor not analyzed in this section is utilization through collaboration of the recipient with external companies other than their own. This data, although related, will be provided in a later section analyzing collaboration and networks.

8.1 Startup Companies

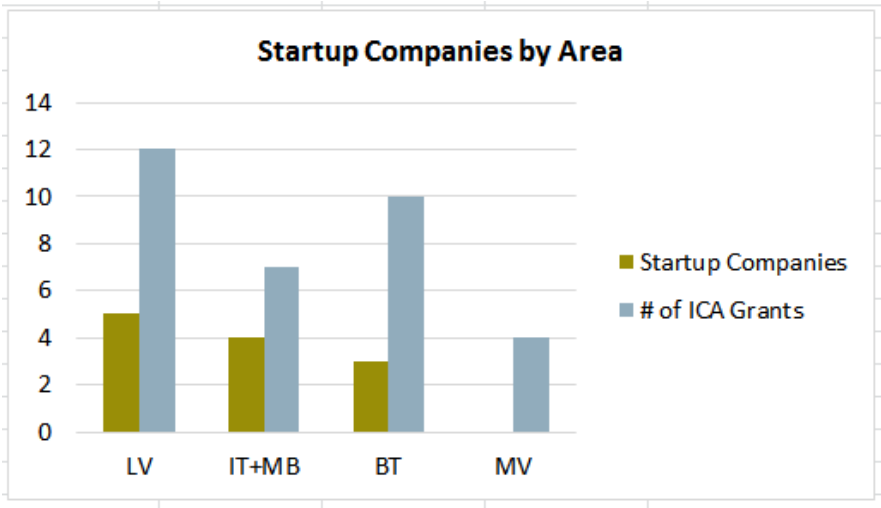
Fig 23



The table above provides data for the number of companies formed by the recipients during or after the ICA project's conclusion. Some recipients formed more than one company, so the data does not provide a one-one mapping between company and recipient. The following results provide that information. Roughly 42% of the recipients in ICA-1 have started companies. 20% of the recipients in ICA-2 have started companies, while roughly 27% of the recipients in ICA-3 have started companies. The total number of new companies generated that can be associated with the recipients in ICA1-3 are 12.

The following graph shows the number of startup companies generated per SSF research area (for abbreviations see Appendix 1d):

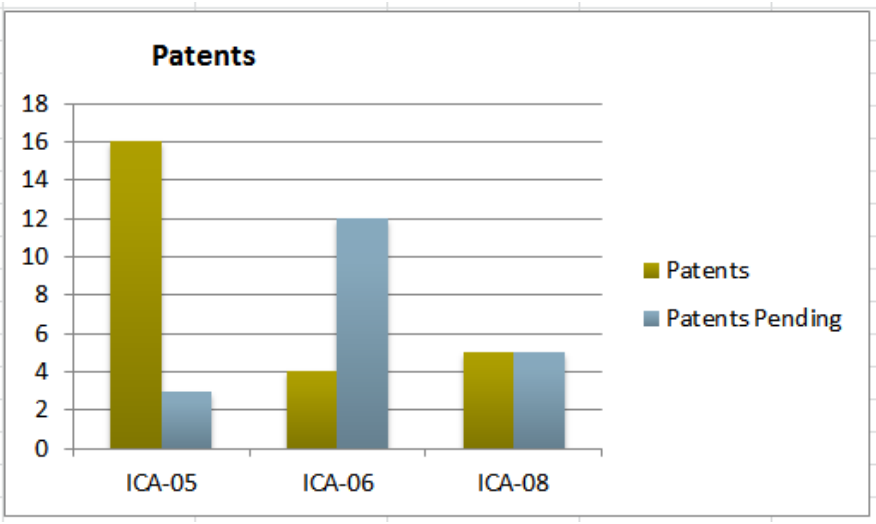
Fig 24



Of the 12 companies created in total, roughly, 42%, 33%, 25%, and 0% of these companies have been created in the areas LV, IT+MB, BT, and MV, respectively. Taking the number of grants into account per area, the number of companies to grant ratio per area is roughly 0.42, 0.57, 0.30, and 0 for LV, IT+MB, BT, and MV, respectively.

8.2 Patents and Patents Pending

Fig 25



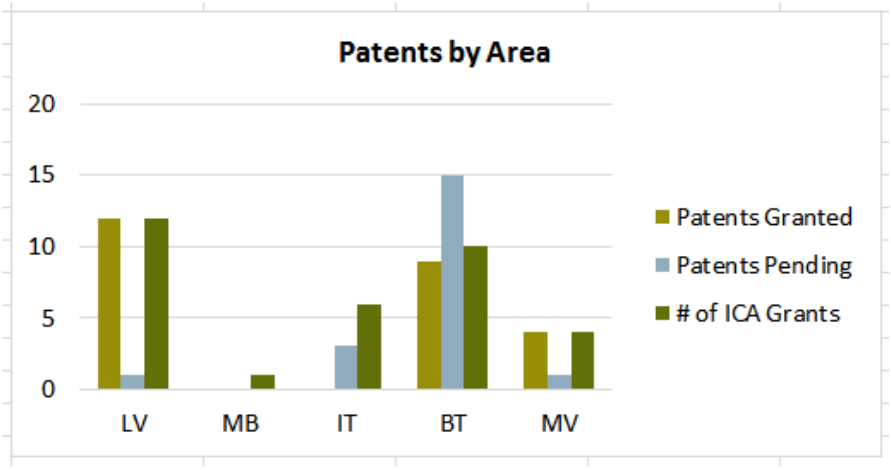
The graph above provides data for the number of patents and patents pending acquired by the recipients during or after the ICA project's conclusion. As for startup companies, some recipients had more than one patent or patent pending. For instance, one recipient in ICA-1 has 8 patents pending. Excluding these duplicate factors, the following results provide percentages of number of recipients with patents and patents pending.

Of a total of 25 patents granted, 64%, 16% and 20% were generated from ICA-1, ICA-2, and ICA-3 recipients, respectively. Roughly, 42%, 30%, and 36% of recipients in ICA-1, ICA-2, and ICA-3 have generated these patents, respectively.

Of a total of 20 patents pending, 15%, 60%, and 25% were generated from ICA-1, ICA-2, and ICA-3, respectively. Roughly, 17%, 30%, and 27% of recipients in ICA-1, ICA-2, and ICA-3 have generated these pending patents.

The following graph shows the number of patents and patents pending generated per research area.

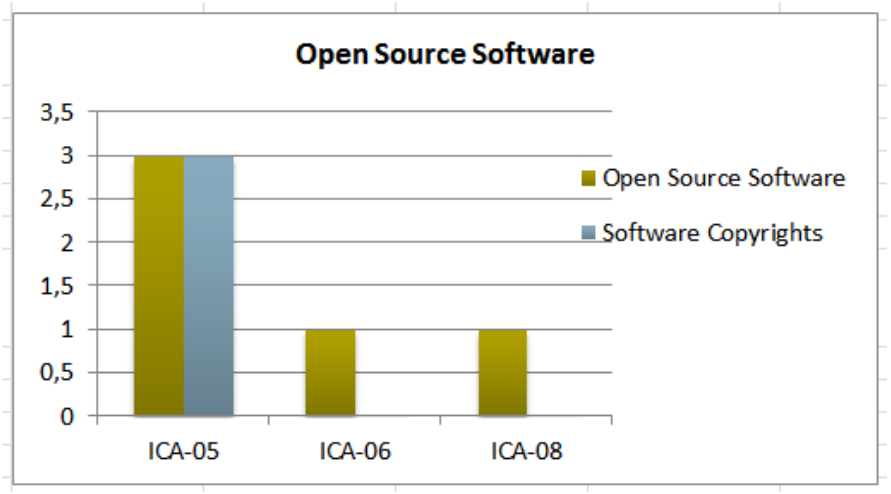
Fig 26



Of the 25 patents generated in total, 48%, 0%, 36%, and 16% of that total have been generated in the areas LV, IT+MB, BT, and MV, respectively. Of the 20 patents pending generated in total, 5%, 15%, 75%, and 5% of that total have been generated in the areas LV, IT+MB, BT, and MV, respectively.

8.3 Open Source Software and Copyrights

Fig 27

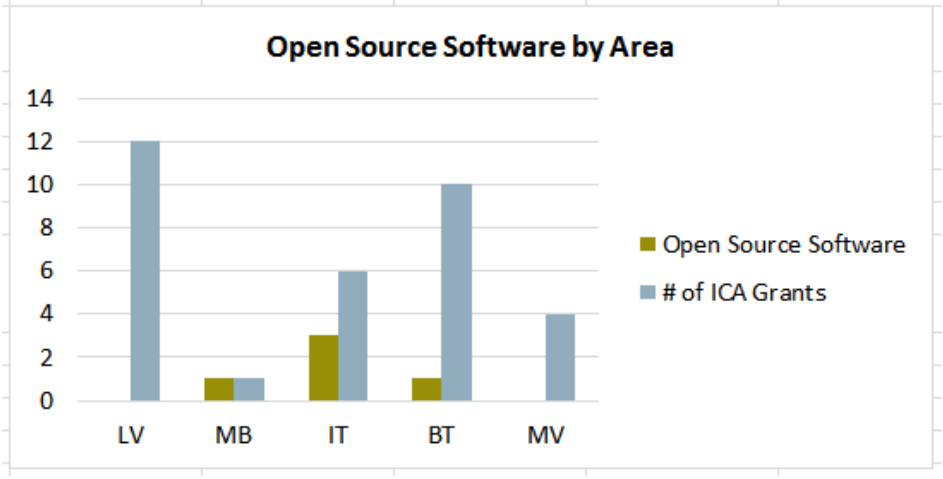


The table above provides data related to software utilization associated with the research done in the ICA projects. Generation of Open Source software projects associated with research is a substantial utilization of research results due to the potentially widespread use and influence of such software both within industry and academia. For example, one of the ICA-1 recipient's Open Software package put online has over 50,000 downloads per year!

Of a total of 5 Open Source software packages generated, 60%, 20%, and 20% of these have been generated from ICA-1, ICA-2, and ICA-3, respectively. 100% of the software copyrights have been generated solely from ICA-1. Roughly, 25%, 10%, and 9% of recipients in ICA-1, ICA-2, and ICA-3,

respectively, have generated these software packages. Roughly 8% of recipients (1 recipient) in ICA-1 have generated software copyrights.

Fig 28



Of the 5 software packages generated in total, 0%, 80%, 20%, and 0% of that total have been generated in the areas LV, IT+MB, BT, and MV, respectively.

8.4 Committee´s comments on utilization efforts

Given that SSF does not provide strong incentives for utilization during the project and does not follow-up this activity at the end of the projects in any concrete manner, the results of this analysis of utilization are encouraging. Of course, there is no reference system to compare to. For example, it would be useful to take a pool of researchers in similar areas that have not received SSF ICA funding and do a comparative analysis. Without a deeper methodological study, one can only conclude that there appears to be a successful correlation between these ICA grants and substantial utilization of the research generated by these grants.

Qualitative measures regarding utilization and strategic relevance can be summarized through the use of follow-up questions related to these issues in the final reports for each of the recipients ICA projects and the recent survey in which a number of related questions were asked. Question Q16 (f) in the survey asks if “Strategic added values were fulfilled”. The majority of recipients in all three calls agree that this was the case. Question Q16 (j) asks if the “ICA project has led to patents, projects or services”. The majority of recipients in all three calls chose the survey alternative “neither agreed nor disagreed”.

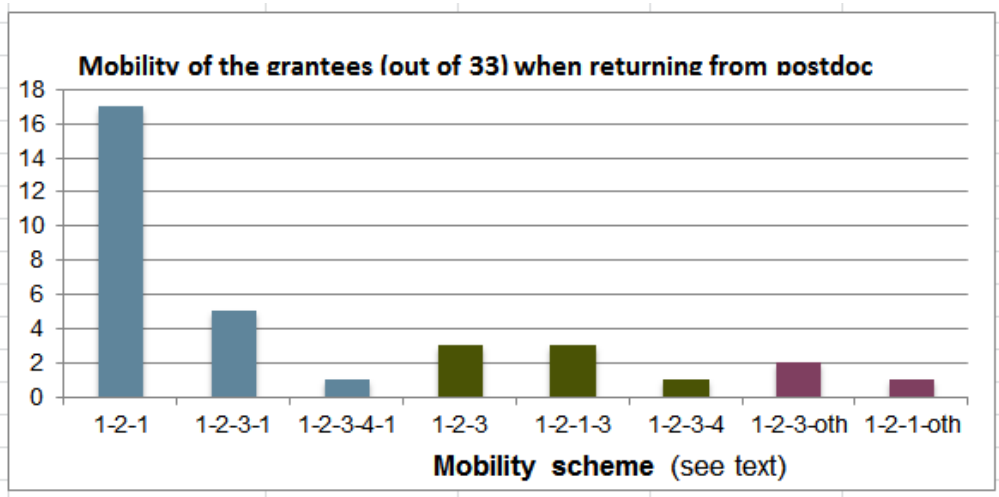
These answers seem to fit reasonably well with the data. The majority of recipients view the ICA funding as intended to establish academic credentials and the research produced is perceived as having strategic relevance in general. A minority of the recipients has generated patents, projects, or services and companies. Even though it is a minority, the quantitative results are still impressive.

9 Mobility within Academia and between academia and society in general

Mobility is generally very positive for young scientists, since this facilitates independency and breaking former bonds to PhD and postdoc supervisors. Mobility from one university to another, or from university to industry, could potentially boost the career for an individual. There is of course "involuntary" mobility that is not necessarily positive for the individual. For an aspiring young university scientist to have to move from academia to industry due to lack of research funding or in general less than adequate support from the university, can (but may not necessarily) be a stressful situation. (Postdocs positively oriented towards industrial careers is an interesting topic that the Evaluation Committee, however, has not had the opportunity to discuss.)

Awardees of ICA-1 to ICA-3 have been assessed in terms of mobility, and the result shows that many choose to move back to their *Alma mater* PhD university after the postdoc period. The figure below shows that a clear majority, 23 (70 %) of the grantees have moved back to the same university where they took their PhD degree (three left blue columns). As many as 17 (51%) followed the scheme 1-2-1, meaning that only the postdoc period was conducted at a different university. Only 7 (21%) is currently employed by a different university than the *Alma mater* PhD university (three mid green columns). Three persons (9%) have moved out of the academia to industry or other institution (labeled "oth" as in "other", right two red columns).

Fig 29 Mobility between affiliations



From a strategic point of view, considering Sweden´s competitiveness in research and innovation, it would be desired that the 1-2-1 column would be a smaller fraction. It is valuable for a university to recruit young researchers who did not take their PhD at the same university. This would inherently lead to more creativity and new ideas/point-of-views brought into the academic setting. However, for an individual, it might be more strategic to actually move back to the home university. Implicit reasons for this, in the opinion of the evaluation committee, could be the degree of support from former supervisors, colleagues or head of department/dean, access to rare equipment needed for the research, family reasons (partner's career, schools and daycare facilities), etc.

10 Collaboration and National and International Networks

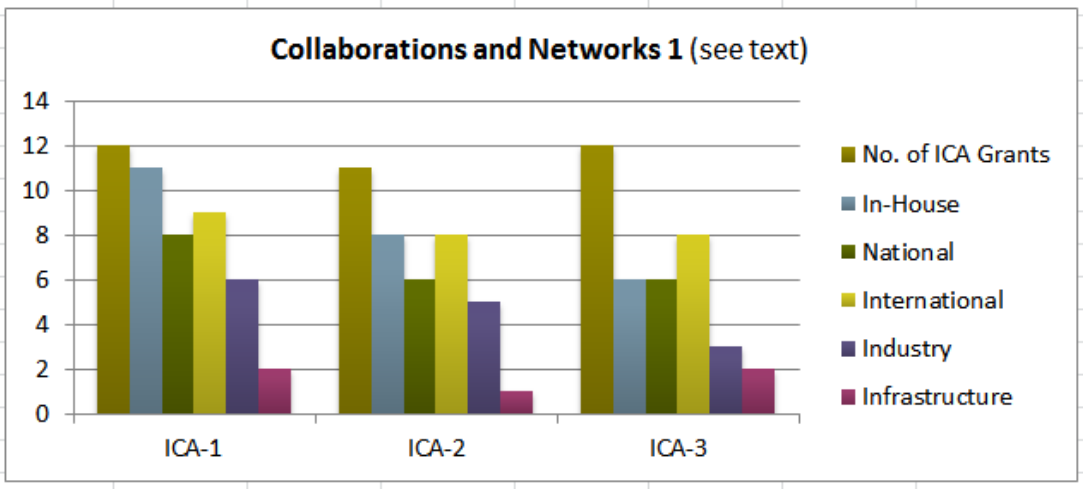
One of the major aims of the ICA program is that ICA recipients establish their own research groups and labs in Sweden and vitalize the Swedish research environment with new impulses and engineering techniques acquired as postdocs during their abroad stays. An essential component in any dynamic research lab is the ability to network and collaborate both within Sweden, abroad, and in some cases directly with industry. Such networks built from these collaborations are extremely important and have become more so as the complexity of research has reached new levels.

The ICA recipients analyzed in this report were asked questions about collaboration and networks both in their final reports and also in the recent survey constructed for this analysis. The data provided by the ICA recipients was not always complete and distinctions between when the collaborations were initiated and to what extent they were directly a result of the ICA grants is difficult to determine. Consequently, one can only provide a qualitative estimate for the number and quality of collaborations that vary widely from recipient to recipient.

A number of recipients have generated excellent collaboration and networks leading to substantial collaborations in the form of jointly authored papers, longer visits to research groups, invited researchers, and extensive collaboration with industrial partners. Other recipients have simply listed that they have collaborations. Even with such variations in detail of description of the collaborations, one can observe a number of clear qualitative trends.

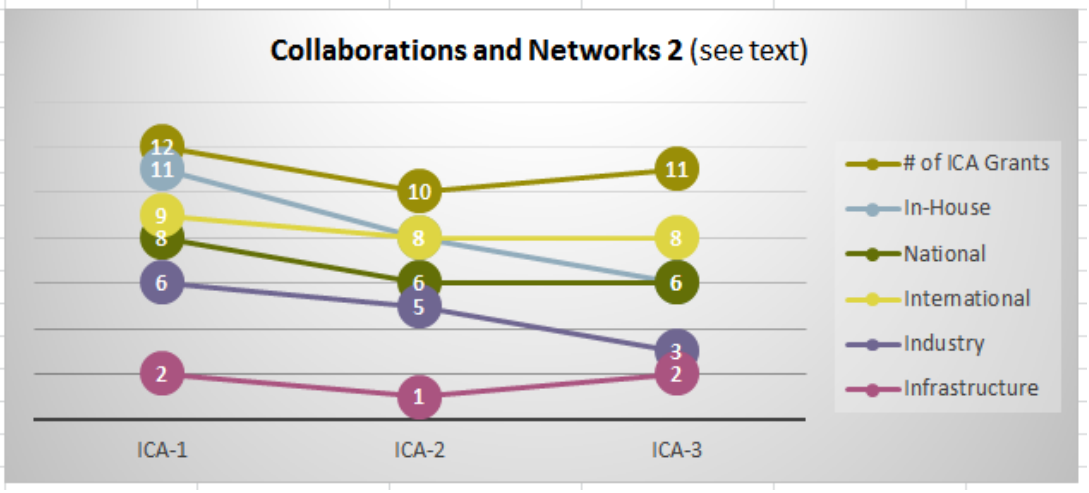
The table below provides a qualitative depiction of collaboration by the recipients for each ICA call. The vertical axis shows the number of recipients that stated they had various forms of collaboration. Collaboration data was gathered both from the final project reports for each project and the surveys. As two recipients have not yet submitted their final reports, the reference number of ICA grants in figures 30-31 below is 33 (12-10-11).

Fig 30: Collaboration and Networks 1 (based on current survey as well as final reports)



The next diagram depicts trends from the first ICA call, ICA-1, to the 3rd ICA call, ICA-3.

Fig 31: Collaboration and Networks 2 (based on survey as well as final reports)



It is clear from the data that there has been a drop in collaborations in general from the first ICA-1 and a leveling off in ICA-2 and ICA-03. But even with this drop, the levels for ICA-3 are still respectable with national and international collaboration at 6 out of 11 and 8 out of 11 recipients, respectively. In general, taking all three calls together, the degree of collaboration and networking is respectable.

One interesting observation is the degree of in-house collaboration the recipients have initiated. These are postdocs that have been outside Sweden for some time. It appears that in general, they have been quite successful in building up in-house collaboration and networks. This could of course be explained by the fact that they already had these collaborations previously before going on their postdocs if they have returned to their host universities. In any event, this is a good sign that they are not isolated upon their return, and remain outreaching.

The survey provided to the recipients had some questions regarding their opinions about collaboration. Question Q16 (h) asks whether the program has led to " lasting collaboration with international groups". The weighted answers tend toward a "neither agree nor disagree" for all three ICA calls with a tendency towards "agree" for the two later calls. Question Q16 (is) asks whether the program has led to a "fruitful collaboration with one or more companies". The weighted answers for all three ICA calls tend toward a "neither agree nor disagree".

As in the case of the utilization analysis, there is no external reference group of non-ICA recipients to compare the ICA-recipients too. So one cannot draw any conclusions whether the ICA grants enhance collaboration and networking at the early stages of a researcher's career or that this is a natural part of research group building whether one has received these grants or not.

Part III:

11 Conclusions and Recommendations

11.1 Conclusions

The intent of this section is to summarize the results of the evaluation committee's deliberations and conclusions derived from an analysis of raw data collected, final project reports from recipients, surveys completed by recipients, and interviews completed with selected representatives of different aspects of the ICA Program.

Concerning the volume of the program, ICA-1, ICA-2, and ICA-3 selected 12, 11, and 12 recipients, respectively. The committee concludes that based on the current criteria for selection and the number of applicants, that a volume in the vicinity of 12 recipients (i.e., around a 20% success rate) is appropriate. It was observed by several participants in the selection process for various ICA calls, that there is a qualitative gap in applications around this number distinguishing those applications that are successful from those that are not. Fewer women than men have applied for ICA in the three calls analyzed, but one also observed an increase in women successfully receiving grants in the ICA 5-6 calls. The actual ration of women to men in postdoc periods abroad is not known.

The committee deliberated on whether the amount of the grant per recipient was adequate for the stated goals of the ICA program. There were different points of view concerning this topic. The majority of the recipients thought that the grant was important and essential for their research and research group building, but few solely depended on this grant. There were many successful additional applications for grants that also contributed to expansion of their research groups. One option proposed during the interviews was to decrease the number of recipients and increase the budget for ICA, or simply increase the budget for ICA without increasing the number of recipients. The committee's conclusions are that ICA rewards should be viewed as an important building block in kick-starting careers for postdocs returning to Sweden but should not be viewed as a complete package. In fact, this is the common recipient perception of the ICA program. Consequently, the current volume of the ICA awards, both in terms of recipients and grant amount is reasonable.

One of the primary points of interest in the evaluation was to determine if the selection process used for the various ICA's has been appropriate and effective. The selection process has evolved smoothly from the first call which was somewhat overwhelming with over 100 applicants. Based on this experience, criteria for future calls was adjusted and the selection process was refined appropriately. Individuals interviewed in the evaluation that were part of various ICA call selection committees were extremely positive about the process and believe it is fair, and does choose the most deserving recipients. Internally in the committees, the selection process is transparent, with several members evaluating each application in detail, including the use of external scientific evaluations, and presenting the result to the full selection committee for discussion. The net result is a selection of highly qualified ICA award recipients.

The makeup of the committees is quite broad and includes representatives from the different scientific areas and also including some members from industrial research. Additionally, the overall

process incl. external evaluation includes younger scientists which add another dimension to the evaluation process. This was considered to be very positive. Some of the selection committee members, interviewed ICA recipients and recipients answering the survey suggested that the review process should contain interviews with the applicants, although they also thought this could be difficult to do in practice. The evaluation committee concludes that this is a good idea and should be considered in future calls if it can be done efficiently and feasibly. Another point made by several ICA recipients was that the call should be made yearly, to better accommodate the planning and logistics problem for returning post-docs.

The overall conclusions of the evaluation committee is that the selection process is appropriate, efficient, and of the very highest quality, resulting in a choice of highly suitable recipients for the ICA awards. Additionally, the degree of transparency associated with the selection process is high, both from the perspective of the members of the selection process and also the recipients themselves, although a small minority of recipients did show some skepticism regarding degree of transparency.

One of the goals of the ICA program is to establish and support the careers of returning post-docs in addition to stimulating new research, innovation, and creativity in Sweden. The committee was quite interested in career development issues and whether the ICA program contributes to this in a positive way. Issues of interest are where they establish themselves on return, the degree of autonomy and independence they develop during the course of the project, degree of mobility, and how the recipients perceive their own career development potential.

Roughly 70% of the ICA recipients chose to go back to their alma mater to establish themselves and their research groups after their postdoc periods abroad. 7 out of 33 recipients (21%) are now employed by a different university than the university in which they received their PhD's. Only a few (3 persons out of all 35 in the ICA 1-3 in total) have left academia, of whom two are now in research institutes and the third in a (US) research-related consulting firm.

This data can be interpreted in several different ways, both positively and negatively. The fact that 70% of the ICA recipients chose to go back to their alma maters is quite high when taken in an international context, such as the United States. In the USA, there is strong encouragement to leave the PhD venue and establish oneself elsewhere. This is considered important both from the perspective of the individual to establish independence, but also from the university perspective in establishing new stimuli. The fact that only 7 out of 33 recipients are currently established and employed by a different university than the university in which they received their PhD's adds to this concern.

From a national perspective, in which it has been natural to continue one's career at the same university as one has received a PhD, the facts tells us that 30% of recipients have chosen to establish themselves at a new university after returning from their post-doc periods and 21% are now established and employed at new universities. Given the Swedish cultural context, perhaps this is encouraging and a step forward. The conclusion of the committee is that this is an issue that requires further discussion within SSF and that perhaps targets should be set as to what is a feasible and desirable level of mobility among ICA recipients. Once these targets are set, this may influence the nature of future ICA calls.

An additional topic of interest for the committee was how well received the recipients felt upon their return to Sweden and whether there was reasonable support from their host universities. According to the survey which included 32 recipients, 44% felt welcomed (agreed or strongly agreed) by their host university as ICA recipients, 37% were neutral, and 19% felt unwelcomed (disagreed or strongly disagreed) . According to the same survey, 41% of recipients were satisfied (agreed/strongly agreed) with the support they got from their universities, 28% were neutral as to support, and 31% were not satisfied (disagreed/strongly disagreed) with the support.

These results are surprising to say the least. Both the perceived degree of being welcomed and the perceived degree of support received from the host universities during the 4th year, should be considered low based on the results of the associated survey questions. Unfortunately, the data is sparse concerning explicit reasons why such a large number of recipients feel this way. The reasons for this dissatisfaction could be due to the nature of Swedish academia in general, and less so with the fact that these individuals were ICA recipients.

The natural question arises as to whether SSF can do anything to improve this situation for future ICA recipients. The committee concludes that better information and communication between SSF and Swedish universities as regards the ICA program, the nature of the recipients, and the program's goals is desirable. In particular, providing information at the head of department/institute level for host departments/institutes is considered to be a potential means of improving the situation.

The ICA leadership program is considered to be a unique and positive part of the ICA program. This is supported by the recipients and also from the experience of the ICA chairs. A majority (88%) of the grantees considered the leadership training important for their career. 20 out of 33 (61%) have participated in additional leadership courses after the ICA support period. 17 out of 33 (52%) of the grantees have (or have had) leadership positions beyond leading their own group. The leadership training program has developed from being mainly hands-on (how to build a research group, funding opportunities, media training, commercialization etc.) to being more of a classical leadership course about leadership and supervision of individuals and teams. The committee evaluates this aspect of the ICA program as essential, well-received by the recipients and well-run by the leadership committee. SSF is encouraged to expand this program rather than diminish it in any way.

Another important topic the committee evaluated was how successful the recipients actually were in establishing themselves and advancing their careers successfully. A number of factors were evaluated in this respect such as degrees of independence and autonomy, success in receiving additional grants, recruitment in establishing groups, utilization of research results and steps toward commercialization, in addition to number and quality of networks and collaborations developed as the research groups expanded.

All ICA awardees have demonstrated scientific independence in terms of publications and external grants. The median amount of external grants received during 2014 was 3.8 MSEK. 9 of the 32 awardees in ICA 1-3 total that are still in academia (31%) have received ERC Starting Grants. Among the 158 unsuccessful ICA applicants, only 4 (2.5%) have received ERC Starting Grants. While there has been no apparent gender bias in the selection process and male and female awardees have been

more or less equally successful in attracting external funding after receiving the ICA award, female awardees appear to have been less successful in obtaining tenured positions than male awardees.

Collaborations and networks formed provides a good estimate of the robustness and dynamics of a research group. The trend in science today is to develop national and international collaborations and networks to share resources and competences in solving difficult multi-disciplinary problems. In the three ICA calls evaluated, collaboration between in-house, national and international partners reached a reasonable level for the majority, although given the scarcity of the data, it is somewhat difficult to quantify quality of collaboration. Given that these recipients have returned after being away from Sweden for some years, the in-house collaboration is quite strong. Industrial collaboration was weaker, but where it occurred, quality appears to be impressive leading in some cases to products and co-authored scientific publications.

Utilization of research and its strategic relevance to Sweden are important components in the SSF charter and ones that are naturally reflected as criteria in the ICA calls. Utilization of research is interpreted by SSF in a broad manner and encompasses more than simply commercialization of research. Given the scarcity of data acquired in the evaluation in regard to utilization, all aspects of utilization were not analyzed. Quantitative data used in the evaluation measured start-up companies, patents and patents pending, in addition to open source software endeavors. Collaboration and network building were also considered part of utilization and have already been discussed. A reasonably robust qualitative feel for the degree of utilization in the ICA calls emerged from the evaluation.

Utilization of research was less prioritized for the majority of recipients than the need to generate basic research competences and internationally recognized scientific results. In fact, this prioritization was also recognized with the selection committees during project evaluation. It is also reasonable to distinguish between the promise of strategic relevance (solid basic research) and strategic relevance exhibited via utilization. The former has been of more concern to the majority of recipients.

Although a minority of recipients have results regarding utilization in terms of number, those that do, have done well in terms of either starting up companies, generating patents or patents pending, or generating successful open source software packages. At least one of these companies has been very successful and one of the open source software packages is in widespread use.

The committee was impressed by the degree of utilization results associated with the first three ICA calls. Nevertheless, one conclusion reached, underlined in discussions among young researchers in a different SSF context, was that what is meant by utilization and to what degree it should have priority in an ongoing ICA project was unclear to recipients. Although utilization and strategic relevance are criteria for evaluation in ICA calls, there is generally no follow-up on this during the progression of the project, nor afterwards, other than asking questions about it in the final report template each recipient uses in writing their final project report. Some topics related to various aspects of utilization and commercialization of research have been covered tangentially in various lectures associated with the leadership program, but apparently not in a principled and well defined manner that can be

explicitly derived from the leadership program descriptions, at least not for the programs pertaining to ICA 1-3.

The committee concludes that some effort should be made by SSF to clarify the importance of utilization as it pertains to the ICA program, and in fact, to define what SSF means by utilization in the context of the ICA calls. The committee suggests that utilization and commercialization should be introduced more extensively and principally in the leadership program associated with ICA.

Fewer women applied for and received ICA1-3 grants than men. The ICA selection process has been evaluated by the committee as bias free, so reasons outside the ICA processes may have contributed to this but they are not the focus of this report. Quantitative comparisons between ICA recipients in terms of gender would be inadequate, due to the low numbers of recipients involved. That being said, there are a number of qualitative trends identified through the interviews given and data analyzed. Female recipients generally felt less welcomed at their host universities than men. Additionally, female recipients were less satisfied with the support they received from their host universities for the fourth year of their grants. Female recipients have also been less successful in acquiring tenured positions.

The general conclusions of the evaluation committee are that there are currently no fundamental problems or major flaws in the ICA program that SSF can directly control. The ICA program has evolved in a robust and positive manner, but there is always some room for improvement and the recommendations summarized in the next section hopefully provide some constructive ideas. Problems that have arisen in the ICA programs evolution have been dealt with in a timely manner and different aspects of the program such as the leadership program have matured nicely. It is the hope of this evaluation committee that this first evaluation of the ICA program will contribute in ensuring the continued excellence of the program, the continued generation of internationally renowned researchers and research of the highest strategic relevance to Sweden.

11.2 Recommendations to SSF

Based on the material provided and its internal deliberations, the Evaluation Committee has formulated the following recommendations to possibly improve an already excellent program:

- Given the criteria for selection and the number of applicants, the current volume of around 12 ICA awardees per call (i.e., around a 20% success rate), each receiving around 4 MSEK, is appropriate.
- The current selection process is fair and transparent, and has succeeded in selecting highly suitable ICA awardees. The use of young scientists (e.g., FFL awardees) as reviewers should be continued. If possible, the top tier of applicants should be interviewed before the final decision is taken.
- Final reports should have a specific request to list co-authored refereed papers where at least one of the authors is outside the group. The character of the outside authors should also be specified (PhD supervisor, industry, external-Sweden, external, etc.).

- The ICA calls should be made at a pre-announced, regular interval (e.g., biannually) to make it possible for postdocs to plan ahead.
- The level of mobility among returning postdocs is rather low, with only 20% now established at a different university than where they did their PhD. SSF should discuss means to more actively encourage mobility among returning postdocs.
- A rather large fraction of the ICA awardees did not feel welcomed or did not receive significant support from their university. Better communication between SSF and Swedish universities as regards the ICA program, the nature of the recipients, and the program's goals is desirable. In particular, providing information at the head of department/institute level for host departments/institutes is considered to be a potential means of improving the situation.
- The ICA leadership training program is a unique and positive part of the ICA program, and should be maintained or even expanded.
- The committee was impressed by the degree of utilization results. Nevertheless, what is meant by utilization and to what degree it should have priority in an ongoing ICA project appeared to be unclear to the recipients. SSF should seek to clarify the importance of utilization as it pertains to the ICA program, and to define what SSF means by utilization in the context of the ICA calls. Utilization and commercialization should be discussed more extensively in the leadership program. SSF might arrange a get-together between the ICA recipients and the so-called Industrial Research Group sponsored by the Royal Swedish Academy of Engineering Sciences.
- One broader recommendation that was proposed, not only for the ICA program specifically, but for SSF calls in general, was to create a database of patents and start-up companies associated with the results of specific calls. The committee realizes this would involve substantial effort, but wanted to include the idea as a recommendation for the future.
- While there is no apparent gender bias in the selection of ICA awardees, female recipients generally felt less welcomed at, and were less satisfied with the support they received from, their host universities than men. Female awardees have been less successful in acquiring tenured positions than men. Although these biases seem to reflect mainly on the universities, it is an issue that SSF could bring up when discussing with host departments or address within the leadership training program.

Finally, the Evaluation Committee wishes to convey its warm thanks to all who have participated in the activities described above. To all *interviewed persons* and *ICA recipients* with whom the committee has been in touch -- thanks for sharing your reflections, thoughts and ideas with us in May-June. In hindsight, the committee realizes that it has taken more time to complete the recipient survey than estimated. A special thanks therefore goes to the *survey respondents*, who loyally took their time to provide the committee with so many interesting (and to quite some extent enthusiastic) replies to all its questions, and within the requested period just before summer holidays, at that!

Appendices

Appendix 1: Persons who have contributed to the evaluation

Appendix 1a: Evaluation committee

Gunnar von Heijne, Chairman of the ICA 1-3 Evaluation committee

Professor of Theoretical Chemistry at Stockholm University. He was member of the SSF expert group on General Bioscience 1994-1996, and member/chairman of the SSF Bioscience Group 1996-1999. He was chairman of the Review Board for the Wallenberg Fellows program 2012-2014. He has directed two SSF centers: Stockholm Bioinformatics Center and the Center for Biomembrane Research.

Charlotta Turner

Professor in Analytical Chemistry at Lund University. She is the chair of the Analytical Chemistry Division of the Swedish Chemical Society. Her research group, the Green Technology Group, is doing research on supercritical fluid technology. Turner received the Ingvar Carlsson Award from SSF in 2006, and she is the principal investigator of the SSF framework project SuperSurface. She has also received a commercialization grant from SSF concerning a plant-based moose repellent. Charlotta Turner has been an evaluator of FFL grants as well as active blogger for SSF.

Patrick Doherty

Professor of Computer Science at Linköping University. His research group, Artificial Intelligence and Integrated Computer Systems, does research on autonomous systems with a focus on unmanned aircraft systems. He is co-editor in chief of the Artificial Intelligence Journal. He currently leads an SSF financed project dealing with collaborative robotics in the software intensive systems call. He also served on the selection committee for the SSF 2012 Ingvar Carlsson Awards.

Åsa Fex Svenningsen

Associate Professor at University of Southern Denmark in Odense Denmark. Her research group works with neuro-glial communication in health and disease. Fex Svenningsen was a member of SSF's Strategy panel for Interdisciplinary research 2007 and a member of Area panel for the Call Future Research Leaders 2009. Fex Svenningsen initiated and led Junior Faculty MedFarm Uppsala and was an active part in making this organization into the university wide organization it is today.

Lena-Kajsa Sidén, Administrative assistance and fact finding support to the Committee

Scientific secretary and analyst at SSF. Earlier tasks include SSF's Process Industry Centers, Biomedical engineering and other interdisciplinary programmes, Research collaboration between academia and high-tech SME's; some of which run jointly by SSF and VINNOVA and/or VR. She has acted as reviewer and evaluator for the European Commission.

Appendix 1b: Interviewed persons

(For acronyms, see Appendix 1 e-f below)

ICA recipients - Interview 16 June 2015 at SSF

- Johan Hoffman, ICA-1, Professor, KTH, SSF area (today) MB
- Per Johnsson, ICA-3, Senior lecturer, LU, area MV
- Annette Granéli, ICA-2, today Group leader, SP Borås, area BT
- Pål Stenmark, ICA-3, Assoc. professor, SU, area LV

Selection committee (SC) members - first two at SSF 16 June + last two at LiU 10 June 2015

- Jan-Otto Carlsson, Professor, UU, member of SC for ICA-3 and later chairman of SC for ICA 4+5
- Susanne Nilsson, PhD, now researcher at KTH, earlier St Jude Medical AB and then member of SC ICA-3
- Nahid Shahmehri, Professor, LiU, member of SC for ICA-6 (call issued 2014)
- Olle Stendahl, Professor, LiU, chairman of SC for ICA-3 and later chairman of ICA-3's Leadership training program (separate functions)

Leadership programme committee member - Interview 16 June 2015 at SSF

- Margareta Neld, Neld International Consulting AB, member of SSF's Program committee for Leadership training

SSF persons in relevant functions - Interview 16 June 2015 at SSF

- Staffan Normark, Executive Director of SSF 1999 - 2004, initiator of ICA programme and chairman of the selection committees for ICA-1+2 (at time of interview Permanent Secretary of the Royal Swedish Academy of Sciences, KVA)
- Mattias Blomberg, joined SSF in 2011, Scientific secretary in charge of SSF's overall Leadership training activities
- Henryk Wos, Scientific secretary and "Permanent secretary" of all ICA calls from 1 to 6

Appendix 1c: ICA survey participants

Please see Appendix 2 below, a list of the 33 recipients of ICA 1-3 who had submitted their final reports by fall 2014. Of these 33, 32 participated in the written survey (see Appendix 9). Contacts were made also with the one person who eventually did not respond to the survey.

Appendix 1d: Acronyms SSF Priority areas ("area codes")

The priority areas of SSF, according to its strategy plan, are listed below. The corresponding abbreviations are from the SSF portal and have been used in lists and graphs. Not all of the priority areas have existed (or had identical names) during the full duration of ICA 1-3, but where needed any older "area codes" denoting the grantees as per the time of their original ICA application have been translated into the current ones. In the underlying statistics, the area below abbreviated MB, added only in 2012 (check), sometimes has been counted together with IT to simplify graphs that contain not only ICA 1-3 but also ICA 4-6.

- LV - Life Sciences
- IT - Information, Communication and Systems Technology
- MB - Computational Sciences and Applied Mathematics
- BT - Bioengineering, Biotechnology and Medical Technology
- MV - Materials Science and Technology

Appendix 1e: Acronyms of Swedish universities

(as relevant to the text of the report, not exhaustive)

Chalmers	Chalmers University of Technology, Göteborg
GU	Göteborg University
KI	Karolinska Institutet, Stockholm
KTH	Royal Institute of Technology
LiU	Linköping University
LU	Lund University
SLU	Swedish Agricultural University
UmU	Umeå University
UU	Uppsala University

Other abbreviations

ERC	European Research Council
VR	Swedish Research Council

Appendix 2: The 33 projects in ICA 1-3 for which Final reports have been submitted

ICA Call 1-2005, 2-2006, 3-2008	PhD Univ at time of application	Affiliation May-June 2015	ICA Awardee		Gender	Year of PhD	Year of birth	ICA Project title	Project's SSF Area code (updated)	Host univ at time of SSF's ICA decision	SSF Dnr
ICA-1	LU	LU	David	Bryder	M	2003	1971	Consequences of stem cell aging in hematopoiesis	LV	LU	A3 05: 207a
ICA-1	KI	GU	Fredrik	Bäckhed	M	2002	1973	Metabolic syndrome and the gut microbiota	LV	GU	A3 05: 207c
ICA-1	KI	KI	Henrik	Ehrsson	M	2001	1972	Neural mechanisms of body ownership	LV	KI	A3 05: 207d
ICA-1	Chalmers	KTH	Johan	Hoffman	M	2002	1974	Adaptive Computation of Turbulent Flow	MB	KTH	A3 05: 207e
ICA-1	LU	FOI	Malek	Khan	M	2002	1970	Distributed simulations of macromolecules	IT	UU	A3 05: 207f
ICA-1	UU	UU	Johan	Kreuger	M	2001	1972	Mechanisms of lymph-and blood vessel formation	LV	UU	A3 05: 207g
ICA-1	KTH	SU	Erik	Lindahl	M	2001	1972	Modeling, Refinement, and Simulation of Membrane Proteins	BT	SU	A3 05: 207h
ICA-1	LU	LU	Karin	Lindkvist	F	2003	1974	Structural studies of sugar transporters	LV	GU	A3 05: 207i
ICA-1	KI	KI	Maria	Lindskog	F	2001	1972	Memory Modulation by Endogenous Reward System	LV	KI	A3 05: 207j
ICA-1	KI	USA	Silvia	Paddock (née Buervenich)	F	2002	1974	Genetic Studies in Bipolar Affective Disorder	LV	KI	A3 05: 207b
ICA-1	LU	LU	Daniel	Topgaard	M	2003	1976	Molecular mobility in microheterogeneous media	BT	LU	A3 05: 207k
ICA-1	LU	LU	Charlotta	Turner	F	2001	1970	Eco-Efficient Upgrading of Biomass Waste-High Impact Extraction and Nanoparticle Formulation	BT	UU	A3 05: 207m
ICA-2	Chalmers	Chalmers	Ulf	Assarsson	M	2003	1972	Increased realiSMfor computer graphics	IT	Chalmers	I06-0238
ICA-2	UU	UU	Johan	Elf	M	2004	1975	New single molecule methods for studying kinetics in vivo	BT	UU	I06-0227
ICA-2	Chalmers	SP Borås	Annette	Granéli	F	2003	1973	Dynamic behavior of protein-DNA interactions	BT	GU	I06-0240
ICA-2	UmU		Petter	Holme	M	2004	1973	Dynamics of technological and biological networks	IT	UmU	I06-0251
ICA-2	KTH	KTH	Magnus	Johnson	M	2005	1974	Vibrational Sum Frequency Spectroscopy from 2D to 3D	BT	KTH	I06-0261
ICA-2	LiU	LiU	Peter	Nilsson	M	2005	1970	Fluorescent Probes for Amyloidosis, Prion disease and Cancer	BT	LiU	I06-0231
ICA-2	UU	UU	Annika	Pohl	F	2004	1972	Magnetic nano-composites	MV	UU	I06-0270
ICA-2	LiU/RWTH	LiU	Johanna	Rosén	F	2004	1975	Novel Arc-Deposition for Designing Multifunctional Films	MV	LiU	I06-0233
ICA-2	LU	KTH	Henrik	Sandberg	M	2004	1976	Modeling in Information-Rich Environments	IT	KTH	I06-0266
ICA-2	KI	KI	Rickard	Sandberg	M	2004	1977	An integrated view of mammalian embryonic differentiation	BT	KI	I06-0248
ICA-3	KTH	KTH	Henrik	Aspeborg	M	2005	1970	Cell wall modifying enzymes for fiber engineering	BT	KTH	ICA08-0061
ICA-3	LiU	LiU	Per	Eklund	M	2007	1977	Nanostructured oxide thin films as novel ionic conductors	MV	LiU	ICA08-0009
ICA-3	UmU	LiU	Urban	Friberg	M	2006	1972	A genomic map to sex-specific variation in lifespan	LV	UU	ICA08-0005
ICA-3	UmU	UmU	Caroline	Grabbe	F	2007	1978	Investigating ubiquitin-like modifiers in Drosophila	LV	UmU	ICA08-0035
ICA-3	UU	UU	Erik	Ingelsson	M	2005	1975	The genetic architecture of cardiovascular disease	LV	KI	ICA08-0047
ICA-3	KTH	KTH	Joakim	Jaldén	M	2007	1976	Complexity in future wireless systems	IT	KTH	ICA08-0046
ICA-3	LU	LU	Per	Johnsson	M	2006	1978	Time-resolved studies of ultrafast molecular dynamics	MV	LU	ICA08-0049
ICA-3	LU	LU	Thomas	Magesacher	M	2006	1974	Stochastic programming for receiver design	IT	LU	ICA08-0022
ICA-3	LU	LU	Björn	Nilsson	M	2007	1972	Systems biology of malignant blood disorders	LV	LU	ICA08-0057
ICA-3	SU	SU	Pål	Stenmark	M	2005	1976	The Botulinum Neurotoxin, a Deadly Toxin that also Heals	LV	SU	ICA08-0001
ICA-3	Chalmers	Chalmers	Fredrik	Westerlund	M	2006	1978	Single Molecule Biophysics of DNA and DNA-ligand interaction	BT	GU	ICA08-0012

Note 1: The 33 awardees above (12 ICA-1, 10 ICA-2 and 11 ICA-3) have all submitted Final reports to SSF. Another two awardees (one in ICA-2 and one in ICA-3) have been granted deferment. The latter projects are not included in the evaluation. *Note 2:* For full name of universities and explanation of SSF priority area codes, see Appendix 1e.

Appendix 3: Members of the Selection Committees for ICA 1-3

ICA Selection Committees per Call ICA-1-2-3. Ch = Chairman, M = Member, S = Secretary	**ICA-1** 2005	**ICA-2** 2006	**ICA-3** 2008	Year of Birth §
Liljas, Anders (Prof)	M			1939
Lindroth, Eva (Prof)	M			1960
Masucci, Maria (Prof)	M			1953
Normark, Staffan (Prof.)	**Ch**			1945
Rask, Lars (Prof)	M			1946
Bergström, Sven (Prof.)		M		1950
Fåk, Viiveke (Ass. Prof.)		M		1948
Jonsson, Bengt (Prof.)		M		1957
Liedberg, Bo (Prof.)		M		1954
Normark, Staffan (Prof.)		**Ch**		1945
Reimann, Stephanie M. (Prof.)		M		1968
Sauer Eriksson, Elisabeth (Prof.)		M		1959
Smedh, Maria (PhD)		M		1968
Sparr, Gunnar (Prof.)		M		1942
Tjernberg, Oscar (Prof.)		M		1967
Westermark, Bengt (Prof)		M		1945
Andersson, Leif (Prof.)			M	1954
Carlsson, Jan-Otto (Prof.)			M	1943
Glad, Cristina			M	1952
Gustavsson, Rune (Prof.)			M	1943
Le Blanc, Katarina (Prof.)			M	1963
Nilsson, Susanne			M	1966
Norin, Torbjörn (Prof.)			M	1933
Olivecrona, Thomas (Prof.)			M	1936
Stendahl, Olle (Prof.)			**Ch**	1946
Svensson, Arne (Prof.)			M	1955
Söderlind, Gustaf (Prof.)			M	1952
Wahnström, Göran (Prof.)			M	1955
Ågren, Hans (Prof.)			M	1950
Wos, Henryk, SSF	S	S	S	

In total, 28 unique persons participated in the selection committees for ICA 1-3 + Secretary.
§) Year of birth according to SSF's portal (or in a few cases from www.ratsit.se)

Appendix 4: External Experts for ICA 1-3 (p. 1 of 3)

ICA-1	ICA-2	ICA-3	Year of Birth	External experts	Affiliation §)
		ICA08	1965	Abrikosov, Igor	LiU
		ICA08	1957	Adlercreutz, Patrick	LU
			1965	Ericson, Johan	KI
ICA05			1967	Agace, William	LU
		ICA08	1953	Ahlén, Anders	UU
		ICA08	1972	Alenius, Mattias	LiU
ICA05			1954	Anderson, Leif	GU
		ICA08	1974	Andersson Svahn, Helene	KTH
		ICA08	1941	Andersson, Malte	GU
ICA05			1962	Arenas, Ernest	KI
ICA05			na	Bankvall, Claes	Then SP
ICA05			1948	Barregård, Lars	GU
ICA05			1974	Belova, Lyuba	KTH
		ICA08	1943	Berg, Sören	UU
ICA05			1968	Berggren, Magnus	LiU
			1963	Käll, Mikael	Chalmers
ICA05			1950	Bergström, Sven	UmU
ICA05			1945	Björklund, Anders	LU
ICA05			na	Blomberg, Margareta	SU
ICA05			na	Brenner, Richard	UU-x
ICA05			na	Brodin, Lennart	KI-x
ICA05			1961	Brundin, Patrik	LU
	ICA06		1972	Bäckström, Magnus	LTU
ICA05			1960	Campbell, Eleanor	GU then, now Skottland
ICA05			1949	Chattopadhyaya, Jyoti	UU
ICA05			na	Chen, Deliang	GU
	ICA06		1962	Christensen, Henrik	Georgia Tech
		ICA08	1938	Claeson, Tord	Chalmers
			1960	Nyström, Thomas	GU
ICA05			1956	Claesson (-Welsh), Lena	UU
		ICA08	1970	Cordova, Armando	SU
ICA05			1951	Dahlquist, Erik	ABB then, now MdH
		ICA08	1960	Edlund, Helena	UmU
		ICA08	1940	Eklund, Hans	SLU
ICA05			1937	Elmroth, Arne	LU
ICA05	ICA06		1965	Ericson, Johan	KI
ICA05			na	Eriksson, Lars-Erik	Chalmers
ICA05			1960	Eriksson, Olle	UU-x
ICA05			1959-	Eriksson, Peter	GU, deceased 2007
ICA05			1974	Esmaeilzadeh, Saeid	SU-x
ICA05			1940	Fenyö, Eva Mari	LU
		ICA08	1954	Fleury, Bernard Henri	AAU, DK
		ICA08	1964	Forsell, Martti	VTT, FI
		ICA08	1961	Forsgren, Anders	KTH
ICA05			1943	Fredholm, Bertil	KI-x
		ICA08	1949	Fuchs, Laszlo	KTH
		ICA08	1943	Gillbro, Tomas	UmU-x
		ICA08	1945	Gräslund, Astrid	SU
ICA05			1949	Gustafsson, Torbjörn	GU

App 4: External experts, cont'd (p. 2 of 3)

ICA-1	ICA-2	ICA-3	Year of Birth	External experts	Affiliation §)
ICA05			1954	Gyllensten, Ulf	UU
ICA05			1958	Hagentoft, Carl-Eric	Chalmers-x
		ICA08	1964	Hagfeldt, Anders	UU
ICA05			na	Hagström, Åke	Kalmar
		ICA08	1962	Hallböök, Finn	UU
ICA05			na	Hallmann, Rupert	LU
		ICA08	na	Hamelryck, Thomas Wim	KU, DK
ICA05			1964	Hammarström, Leif	UU
ICA05		ICA08	1972	Hammarström, Per	LiU
ICA05			na	Hanson, Mats	KTH-x
		ICA08	1953	Haridi, Seif	SICS
ICA05			1945	Harms-Ringdahl, Karin	KI
ICA05			1952	Heldin, Carl Henrik	UU Ludwig
ICA05			1955	Hertz, Hans	KTH
	ICA06		1952	Hogland, William	HiK then, now LinneausU
		ICA08	1956	Hohmann, Stefan	DTU, DK
ICA05			na	Holmgren, Arne	KI-x
ICA05			na	Holmgren, Lars	KI
ICA05			1955	Ingvar, Martin	KI
		ICA08	1956	Jacobsen, Karsten Wedel	DTU, DK
	ICA06		1961	Jacobsen, Sten Eirik W	LU then, now Oxford U
ICA05			1946	Janlert, Urban	UmU
ICA05			1967	Johansson, Karl Henrik	KTH
ICA05			na	Johnson, Claes	KTH
		ICA08	1959	Jolkkonen, Jukka	UKU, FI
		ICA08	1947	Jones, Alwyn	UU
ICA05			na	Jönsson, Bo	LU
		ICA08	1947	Kanerva, Liisa	UTU, FI
		ICA08	1961	Kloo, Lars	KTH
			1972	Hammarström, Per	LiU
		ICA08	1966	Kullander, Klas	UU
ICA05	ICA06		1963	Käll, Mikael	Chalmers
		ICA08	1956	Kämpe, Olle	UU
ICA05			1945	Larsson, Christer	LU
ICA05			1959	Larsson, Nils G	KI
ICA05			1961	Lidin, Sven	LU
ICA05			1939	Liljas, Anders	LU then
		ICA08	1970	Lindblad-Toh, Kerstin	UU
ICA05			1940	Lindgren, Georg	LU
ICA05			1956	Lindgren, Lars-Erik	LTU
ICA05			1948	Lindström, Tom	KTH
		ICA08	1946	Lindvall, Olle	LU
		ICA08	1952	Lingas, Andrzej	LU
		ICA08	1962	Linse, Sara	LU
ICA05			1961	Ljunggren, Hans G,	KI
ICA05			1951	Ljusberg, Helena	LU
ICA05			na	Lundberg, Angela	LTU
		ICA08	1954	Luthman, Holger	LU
		ICA08	1955	Löfstedt, Christer	LU
		ICA08	1964	Malmsten, Martin	UU
		ICA08	1947	Moberg, Christina	KTH

App 4: External experts, cont'd (p. 3 of 3)

ICA-1	ICA-2	ICA-3	Year of Birth	External experts	Affiliation §)
ICA05			1966	Molisch, Andreas	LU
ICA05			1969	Neutze, Richard	Chalmers then, now GU
ICA05			1954	Nilsson, Dan-E	LU
		ICA08	1942	Nilsson, Kenneth	UU
ICA05			1964	Nilsson, Ove	UmU
		ICA08	na	Nurmi, Jari	TUT, FI
ICA05	ICA06		1960	Nyström, Thomas	GU
	ICA06		1945	Odenbrand, Ingemar	LU
ICA05			na	Ohlsson, Kristina	LU
		ICA08	1965	Oien, Geir	NTNU, NO
ICA05			1952	Olsson, Tommy	UmU
ICA05			1949	Palmgren, Juni	SU, KI
ICA05			1963	Ramström, Olof	GU
ICA05			1968	Reimann, Stephanie	LU
ICA05			1959	Rorsman, Patrik	LU
		ICA08	1956	Rubensson, Jan-Erik	UU
ICA05			1954	Rudling, Mats	KI-x
		ICA08	na	Runesson, Kenneth	Chalmers
ICA05			na	Rönnqvist, Camilla	UU then
ICA05			1965	Sands, David	Chalmers
ICA05			1953?	Schneider, Gunter	KI MBB
		ICA08	1959	Semb, Henrik	LU
		ICA08	na	Skålhegg, Björn Steen	UiO, NO
ICA05			1965	Stensson (Trigell), Annika	KTH
ICA05			1970	Strömme, Maria	UU
		ICA08	1947	Sundman, Bo	KTH
	ICA06		1948	Svensson, Bertil	HH
		ICA08	1968	Taipale, Jussi	Then Helsinki, FI, now KI
		ICA08	1964	Thor, Stefan	LiU
ICA05			1945	Tiselius, Hans-Göran	KI
		ICA08	1946	Troye Blomberg, Marita	SU
		ICA08	1961	Tveito, Aslak	Simula, NO
ICA05			1967	Wahren-Herlenius, Marie	KI
ICA05			na	Wesslén, Bengt	LU
ICA05			1963	Wick, Mary	GU
ICA05			1943	Winblad, Bengt	KI
		ICA08	na	Winther, Ragnar	UiO, NO
		ICA08	1968	Wittung Stafshede, Pernilla	UmU
ICA05			1951	von Heijne, Gunnar	SU
ICA05			na	Wulff, Fredrik	SU
ICA05			1963	Ynnerman, Anders	LiU
		ICA08	1970	Yuan, Di	LiU
ICA05			1950	Ågren, Hans	KTH

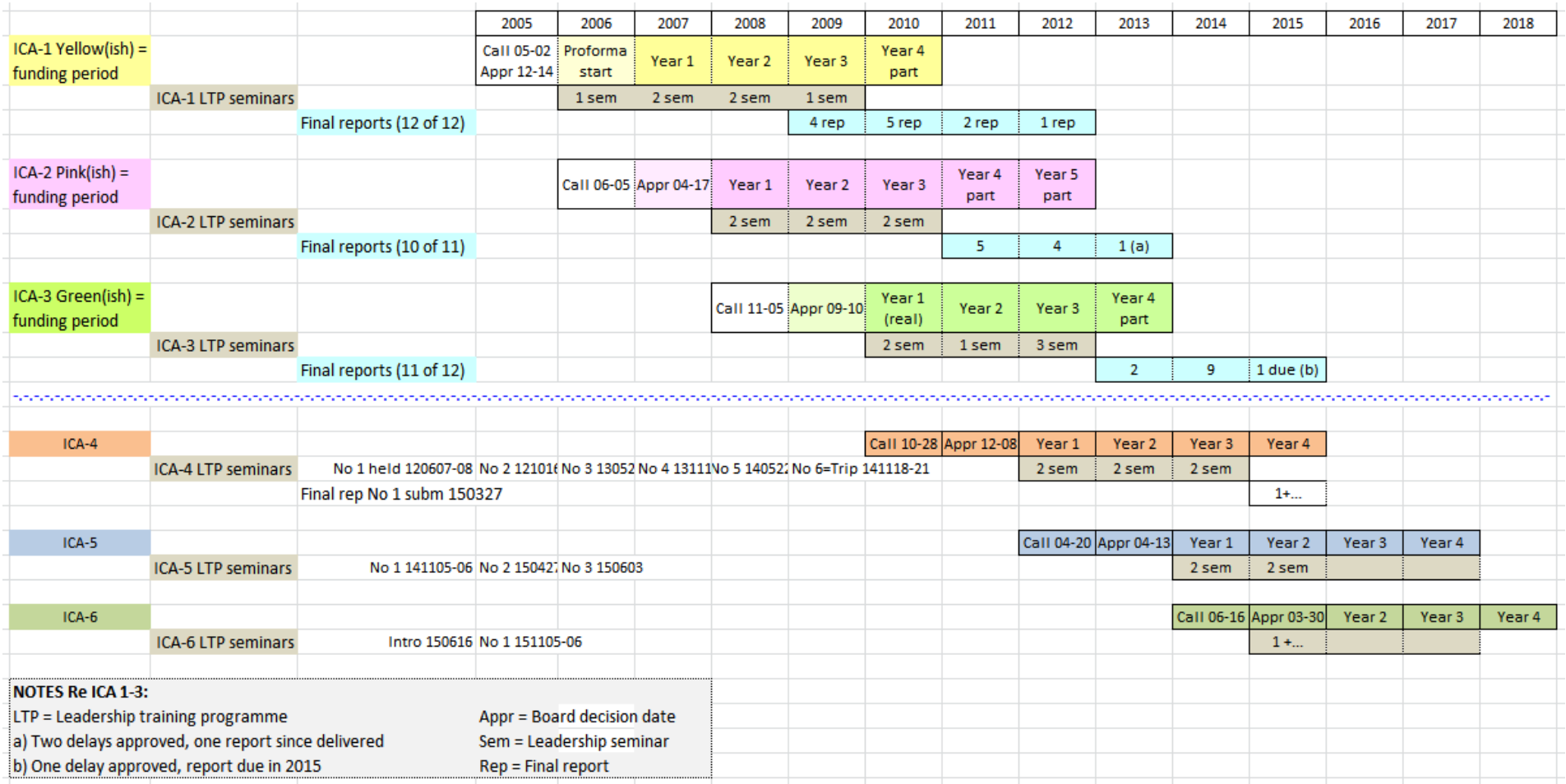
In total 143 entries, of which 8 particated twice (6 in ICA1+2 & 2 in ICA1+3), i.e. 135 unique individuals
§) Affiliation: From the time in question or updated in SSF's portal; a few (-x) imputed

Appendix 5: ICA 1-3 Leadership Training Programme (LTP)

Sem No.	**ICA-1** LTP period: 2006-2008 LTP Chair: Ingemar Lundström	**ICA-2** LTP period: 2007-2010 LTP Chair: Maria Anvret	**ICA-3** LTP period: 2010-2013 LTP Chair: Olle Stendahl
1	September 2006 Project planning What can HEI do for young scientists? Commercialization Champs	February 2008 Project planning What can HEI do for young scientists? Competition Champs	May 2010 Project planning Research funding
2	March 2007 Presentations of research projects Experiences from building up a research activity of one's own	September 2008 Presentations of research projects Experiences from building up a research activity of one's own	November 2010 Supervision • of individuals • of groups
3	September 2007 Ethics and accountability in connection with research results	May 2009 Ethics and accountability in connection with research results	May 2011 Recruiting, to build a research group
4	April 2008 Media training	November 2009 ICA-2 + (partly) FFL-3 Media training Exchange of experiences	January 2012 Leadership and gender
5	October 2008 Research funding	May 2010 Research funding Experiences from establishing your own research activity	May 2012 Ethics and inappropriate conduct in research
6	March 2009 Presentations by ICA-1 awardees (Final LTP seminar)	Fall 2010 Study trip to China incl. Final LTP seminar	October 2012 Study trip to Switzerland incl. Final LTP seminar

Appendix 6: Overall Timeline from ICA Call to Awardees' Final Reports

(LTP = Leadership Training Programme)



Appendix 7: Supporting Background Documents

Files were initially provided on USB memory sticks for the Evaluation Committee (EC). All applicants, i.e. also non-awardees, were included in the basic documentation for the committee. (The time available to did not allow any actual contact with non-awarded ICA applicants, however.)

- ICA 1-3 All SSF Board Memorandums (full texts, 2004-2009)
- ICA 1-6 Compiled excerpts from SSF Board Minutes all items re ICA overall (2004-2015)
- ICA 1-6 All Calls for Proposals all 6 rounds (2005-2012)
- ICA 1-6 Comparative compilation of Call texts (2005-2014)
- ICA 1-3 Application forms (with any changes marked 2005-2008)
- ICA 1-3 Selection committee documents (2005-2009)
- ICA 1-3 All applications (2005-2009)
- ICA 1-3 Leadership training program (LTP) documents, later complemented with ICA 4-6
- ICA 1-3 Contacts w applicants after board decision (examples)
- ICA 1-3 Final reports (2009-2014)

Initially provided background data in tables included the following:

- Compiled data on applicants from SSF:s portal (for ICA-1 – before portal existed – also Diary and internal sources) followed up with current addresses for all awardees
- List of Final reports with distribution of responsibility within EC
- Compiled data on all participants in the selection processes
- Tables and diagrams on distribution of areas and gender in all ICA 1-6 calls
- Timelines, e.g. from call to final reports, etc

As the committee work progressed, more documents were distributed successively, mainly in connection with the respondent survey that was constructed and distributed, and with the analysis that followed.

Also, a selection of references to scientific and other publications on themes relating to grant programs, career development and nurturing of young(er) researchers; evaluations and other studies, statistics from domestic sources were provided as background information.

Appendix 8: References to earlier evaluations, etc

1. Melin, G & Danell, R. The top eight percent: development of approved and rejected applicants for a prestigious grant in Sweden. Science & Public Policy (SPP). Dec 2006, Vol. 33 Issue 10, p702-712. 11p. http://spp.oxfordjournals.org/content/33/10/702.short. (This article is based on the evaluation reported in item 4 below.)
2. Melin, G: Postdoc abroad: Inherited scientific contacts or establishment of new networks? *Research Evaluation* (2004) 13 (2): 95-102.
3. SSF Utvärdering av *Framtidens forskningsledare* (Evaluation of "Future Research Leaders"). Anders Liljas, Karin Caldwell, Ulf J Johansson and Göran Melin, October 2005. (In Swedish.) http://www.stratresearch.se/Documents/broschyrer/INGVARIutv.pdf
4. Utvärdering av SSF:s satsning /Evaluation of SSF's programme *Junior Individual Grants*. Högberg, A & Melin, G. Stockholm: Institutet för studier av utbildning och forskning (Institute for Studies of Higher Education and Research, SISTER), Work report 2006:48. http://www.sister.nu/pdf/wp_48.pdf
5. Utvärdering av Stiftelsen för Strategisk Forsknings ledarskapsprogram ICA och FFl. Arbetsrapport. Djupintervjuer. CMA Research oktober 2010. (A summary in Swedish of 14 pages is public.)

A) For all: Basic data about ICA awardee

1 Name*

Your name, please, as the evaluation calls for the possibility to connect biographical /career data to response patterns.

- Kindly note that each member of the Evaluation Committee has signed a commitment of confidentiality. No individual responses will be recorded or cited. In the compilation of results no replies or comments will be traceable back to an individual respondent.
- If you perceive any single comment (or two) to be of a sensitive nature, please first finalise your response to all other questions in the survey and submit it. Then send your additional comments on that (or those few) particular aspect(s) directly to the Evaluation Chairman at the address provided in the accompanying email.*

1 Name

2 Web address to your research group or, if no group page, to your own homepage*

2 Web

3 Present and immediate past employer incl. department and starting year as indicated*

	Starting year (YYYY)	University/Organisation	Department (corresp.)
Present employer			
Immed. past employer			

4 For all: Staff position*

What staff position do you have today or, if you left university employment, did you have most recently before leaving? Please choose most appropriate position box below.

Terms from "UKÄ Årsrapport 2014" & "Higher education in Sweden 2014 Status report" (with some editing)*.
Tick/Click at least one box (straight on top of it!)

- ☐ Professor
- ☐ Senior lecturer (Lektor)
- ☐ Fixed term career dev't post a: Bitr lektor (BUL)
- ☐ Fixed term career dev't post b: Forskarassistent
- ☐ Fixed term career dev't post c: Postdoc
- ☐ Other research & teaching staff a: Researcher
- ☐ Other research & teaching staff b: Research engineer
- ☐ Other research & teaching staff c: Research assistant
- ☐ Yet other, please specify in box below

Yet other position:

5 Have you been appointed Docent? If Yes, please indicate year and university.

☐ Yes	Year (YYYY)	University acronym

6 Size of your research group*

Indicate number of persons –yourself included – in each of the following categories in your group as appropriate. (If you left university, reply with corresponding figures where relevant, otherwise enter 0.)*

	Number
a) Senior researchers excl. postdocs	
b) Postdocs	
c) PhD students	
d) BSc/MSc students	
e) Technical and administrative staff	
f) Visiting scientists	
g) Others	

7 Supervisory experience*

In your supervisory capacity, how many PhD students have you led through to a complete PhD as Main supervisor and Co- or Assistant supervisor, respectively?*

	Number
a) Number of PhD's as Main supervisor	
b) Number of PhD's as Co- or Asst supervisor	

8 Further leadership training*

Have you participated in any leadership training programme(s) after your ICA support period?
If so, please indicate year (YYYY), duration, organizer(s); otherwise enter "No".* (Add lines if relevant)

☐ No	Year (YYYY)	Duration	Organizer
☐ Yes			

9 Children

How many children do you have / do you care for? Also, counting from the time of the ICA decision, please indicate (approx.) total duration of parental leave corresp. to months full-time. (Decision time: ICA-1 December 2005, ICA-2 April 2007, ICA-3 September 2009)

	Number
a) Born before ICA Award decision	
b) Born after ICA Award decision	
c) After ICA decision: Parental leave in approx. months full-time	
Any comment:	

Expand box as appropriate

B) Publications & CV – also for those who left the university sector

10 Number of publications *

- In case of unpublished manuscripts, only those accepted for publication may be included in the numbers. This applies to the List of publications as well.
- Please indicate total number within each of the following categories (the same as used in SSF's Electronic application portal although F1 and F2 are here separated):*

	Number
A1) Original articles in refereed scientific journals	
B) Original contributions to refereed scientific conferences	
C) Review articles book chapters etc	
D) Other scientific contributions	
E) Patents and other IPR (such as trade marks)	
F1) Demos software copyrights	
F2) Popular science contributions etc.	

11 Number of citations; h-index (WoS) = Optional

As explained in SSF's Application portal, the Foundation is well aware of the disadvantages of these indicators. They are optional here as well as there, merely representing a few factors out of many that may be informative to SSF evaluators. *Use Web of Science citations here* (also see Q 12 below).

	Number
G) No of citations	
H) h-index	

12 Comment if WoS does not give fair picture = Optional

If Web of Science is not perceived to be as representative for citations in your overall research area as Scopus or Google Scholar may be, please comment here:

Expand box as appropriate

13 List of publications* incl. accepted manuscripts with name of journal, etc, specified

Is there a site from which a complete list of your publications may be downloaded as a normal pdf?

- Either give web address or please attach a full list as a further enclosure to the email by which you respond to this Evaluation. Kindly address it to Lena-Kajsa Sidén at LKS@stratresearch.se, where relevant also adding a recent CV and/or recent Financial situation (see Questions 14 and 15 below) *

☐ No Web site, I am instead enclosing a List of publications with the same email
My list of publications may be found at the following web address:

14 Curriculum vitae* for representative further information about ICA Awardees

Is there a site from which your CV may be downloaded as a normal pdf (or Word) file?

- Either give web address or please attach a CV as a further enclosure to the email by which you respond to this Evaluation. Kindly address it to Lena-Kajsa Sidén at LKS@stratresearch.se, where relevant also adding a List of Publications and/or record of present Financial situation (see Questions 13 above and 15 below) *

You may use an existing CV (e.g. of "VR model") but make sure to include any information pertaining to "SSF topics" such as any networks in industry and entrepreneurial activities (cf. http://www.ssf.3ddata.se/Info_CV.htm). Like VR, also SSF is interested in any mobility /exchange periods spent in outside organisations, abroad or in Sweden.

☐ No Web site, I am instead enclosing a CVwith the same email
My CV may be found at the following web address:

C) For University respondents: Funding information

15 Present funding situation* Requested from university respondents

If this kind of data is not already included in your CV (cf. Question 14 above), please give a picture of your present funding situation by indicating *grants of in total SEK 1 million or more* that you have at your disposal.

If you have an existing list, please email it as an attachment to LKS@stratresearch.se (cf Questions 13-14 above), or indicate that funding information is already included in your CV.
Otherwise please register funding with as many details as your time allows in a table *similar to the one* below, adding any other sources as well. As some of you may also have more than one grant from the same funder, add new lines as appropriate.

Funder	Grant name/type	Grant in tSEK	Period YYYY-YYYY	Main applicant /Project leader
VR Vetenskapsrådet				
FORMAS				
Forte				
VINNOVA				
European Union				
SSF				
KVA/WAF Wallenberg Academy Fellows				
Own University				
Own Faculty				
Any other grants 1				
Any other grants 2…				

Rough estimate of total amount of grant money spent in year 2014 by your group (incl. yourself): *
SEK thousand

D) For all: Opinions and reflections based on your ICA experience

16 Your opinions on the programme and your participation in it *

Please tick the most appropriate boxes in the matrix below. Next section gives room for qualitative comments.*

Please mark your opinions with a capital X!	Strongly agree	Agree	Neither agree nor dis-agree	Disagree	Strongly disagree
a) The ICA programme adequately addresses career development issues					
b) The criteria for the call were well chosen					
c) I perceived the selection process as being transparent					
d) The scientific goals (as described in my proposal) were fulfilled					
e) The research in my department was strengthened by the project					
f) The strategic added values (as described in the proposal) were fulfilled					
g) The leadership programme has been important for my career					
h) The programme has led to lasting collaboration with international groups					
i) The programme has led to fruitful collaboration with one or more companies					
j) My project has led to patents/ products/ services (comment below)					
k) Upon return to Sweden my university really made me feel welcome					
l) The ICA grant made up an important part of my funding "years 1-3"					
m) My university supported me adequately during "year 4" (as implicit in the Call)					
n) I can influence the balance research – teaching in a good way					
o) Experiences from the programme have changed the way I plan my future career					
p) My research career development has proved compatible with family life					
q) Relations with SSF have worked well throughout the entire ICA cycle					
r) The Ingvar Carlsson Award programme should continue					

E) Collaboration, Leadership, Overall outcome, Concluding remarks and recommendations to SSF (for all to contribute)

17 Collaboration, "Nyttiggörande" *

a) Indicate any collaborations, stemming from your ICA period, with potential users of your research such as clinics, companies or other outside partners.
b) Has ICA led to any spinoff company being started as a direct result of the research conducted in your project? If so, name the company.
c) Other contributions to what SSF calls "nyttiggörande"? Any lessons to draw upon for ICA at large?*
(Some *generic* examples, not related to ICA *per se*, are identified on the link, http://www.stratresearch.se/sv/ssf/Nyheter/2014/Mer-fokus-pa-nyttiggorande/.)

Expand box as appropriate

18 Leadership training*

In the accompanying email message, SSF has enclosed the Leadership training programme for your own ICA group at the time. Please indicate how the ICA period has contributed to your practice of leadership today. What were the most important parts, what would you have had more of, what may have appeared superfluous?*

Expand box as appropriate

19 Overall outcome*

Overall outcome of the programme: In your opinion, what high-impact effects have you achieved - from academic, societal, industrial perspectives - as a result of your participation in the ICA programme?*

Expand box as appropriate

20 Your recommendations to SSF*

a) If you did not find the criteria used in the call adequate, please provide alternative or additional criteria.
b) If you were a member of a similar ICA evaluation committee today, what indicators would you propose to use to determine the degree of independence of a young(er) researcher?
c) Do you see ways to increase the demand for ICA grants from researchers in engineering and technology at large, where postdoc traditions are not as strong as in other areas?
d) Any other idea or suggestion towards improving the Ingvar Carlsson Award programme?*

Expand box as appropriate

Finished – unless you wish to add something more!

Warm thanks on behalf of the Evaluation Committee and the Foundation

Please name your filled-out form by adding your initials and ICA year (05/06/08) to the already existing file name SSF ICA Evaluation…

and email it soonest, or no later than 24 June 2015 to:

Lena-Kajsa Sidén (Secretary of the Evaluation Committee)
Stiftelsen för Strategisk Forskning
LKS@stratresearch.se
08-50 58 16 73, 0733-58 16 73

Appendix 10: Opinions and reflections on the part of survey respondents