

## **Guidelines for Submitting a Preliminary Proposal for the I-CORE Program**

**Stage Two, 2012-2013**

**These guidelines include the following:**

- 1) General Information**
- 2) Basic Rules**
- 3) Instruction for Submitting the Application**
- 4) The Application's Sections**
- 5) Printing the Application**

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## 1. General Information

### 1.1 Introduction

The program is executed following a Government decision dated March 14<sup>th</sup>, 2010 (the decision's full version can be found at: <http://che.org.il>), and according to the call for proposals published by the memorandum file of the Committee for Planning and Budgeting dated September 13<sup>th</sup>, 2011 (it can be downloaded at the Foundation's site:

[http://www.isf.org.il/news\\_in.asp?message\\_id=191](http://www.isf.org.il/news_in.asp?message_id=191), or from the website of the Council for Higher Education and at the website of the Committee for Planning and Budgeting:

<http://www.che.org.il/template/default.aspx?PageId=534&Preview=1>)

### 1.2 The Program's Objectives

- 1.2.1 Strengthening the scientific research in Israel and establishing its status as a worldwide leading factor;
- 1.2.2 "Brain Return": returning excellent researchers to Israel, as a central means of fortifying the research capabilities and the academic staffs of the institutions of higher education;
- 1.2.3 Creating a critical mass and intensifying the relative advantages in select fields in the different institutions;
- 1.2.4 Improving and upgrading the research infrastructure in the universities;
- 1.2.5 Encouraging academic innovation, including integration between different fields of knowledge (multi-disciplinarity);
- 1.2.6 Maintaining and promoting advanced programs of instruction and training in select fields;
- 1.2.7 Encouraging research collaboration between institutions of higher education, both universities and colleges;
- 1.2.8 Strengthening the scientific research in Israel in disciplines of system-wide and national importance
- 1.2.9 Promoting collaboration with leading researchers and research institutions worldwide.

1.3 For this phase were chosen **18 subjects in various research domains** (humanities and art, social science, education, law and business management, exact sciences and engineering, life sciences and medicine), as published in the call out and shall be detailed in Annexes A and B of the present document.

One has to point out that the defined subjects are wide and include several sub-subjects. The purpose is that a group of scientists shall submit proposals to research institutions in focused directions under those broad

subjects, while founding themselves on the points of strength and capacities already existing in the group. Specifically, there is no need to cover all the specified sub-subjects, but to construct a research proposal for the Center that will enable coherence and a real synergy in the research undertaken by the Center's members.

## **2. Basic Rules:**

### **The Researchers Members in the Center**

2.1 The researches who will be active in the Excellence Center, shall come from the staff and research members in institutions of higher education, in hospitals and research institutions (hereinafter: existing researchers), who will be joined by new outstanding researchers during the Center's first three years of activity – they who will join one of the institutions. New researchers joining the institutions of higher education will be nominated to the academic staff there, under the regular standards of the permanent academic course. The number of senior and new researchers is limited and subject to the specific field:

- In a research center of an experimental nature will participate about 10 to maximum 12 existing researchers.
- In a research center of theoretical nature will participate about 8 to maximum 10 existing researchers. Any logical and reasonable deviation from these ranges has to be subject to the consideration of the steering committee.

2.2 Different researchers from a given institution are permitted to take part in competing applications for the same Center of Excellence.

2.3 A new researcher is one who has been absorbed in his institution, after the date for submitting the preliminary applications, namely, after December 1<sup>st</sup>, 2011.

2.4 A researcher – senior or new, may in principle take part in applications for Excellence Centers in various subjects. A senior researcher cannot participate in a preliminary or a complete applications competing for the same subject. A new researcher, who has not yet received a new nomination in one of the institutions, can participate in competing preliminary applications for the same subject, but at the complete application grade, he will be asked to participate in one application only of the same subject.

- 2.5 New researchers who are accepted in the academic system, can be members in more than one Center of Excellence (an existing one or one that will be set up in the future), but will be able to receive financing under the framework of those centers only if their activities are different and justified. Of course, no double-budgeting can be done for the same activity.
- 2.6 The new researchers shall constitute at least, a quarter of the total Center's members (senior and new researchers - that is to say, their number will constitute at least a third of the total number of the existing researchers. In the first year of activity, at least one new researcher will be absorbed.
- 2.7 The grant is given to participating researchers who are indicated in the application via the applying institutions, and this requires the participation of those researchers during the entire financed period. Therefore, the researchers' status cannot be changed in the grant, freeze the grant, or transfer it to another researcher for any reason whatsoever (sabbatical or an unpaid leave for more than half the grant's period, leaving the institution willingly or unwillingly, retirement, suspension, death etc.), but only by a preliminary authorization in writing from the Foundation.
- 2.8 The Center's participating researchers will undertake to receive all required authorizations for conducting the research, and present them to the Foundation at any moment upon its request.

### **The Center's Management**

- 2.9 Each Center will be managed by a scientific management of 3 to 5 members (subject to the Center's size), whose members shall be leading researchers in the Center, and it shall be headed by the scientific director, who will also function as the Center's director. The Center's director will be a staff member at a research university that will be the "**Coordinating University**".
- 2.10 Besides the scientific part, the Center's scientific management is also responsible for the planning of setting up the equipment centers, their operation, maintenance and securing the equipment's accessibility for the relevant researchers' community in general, and for the Center's researchers in particular.
- 2.11 The management of the Excellence Center shall be under the responsibility of the Coordinating University, and there will be concentrated the majority of the common research infrastructures.

### **The Institutions' Participation**

- 2.12 Submitting the application for setting up the Excellence Center, will be done by the Research Authority of the Coordinating University.
- 2.13 The Coordinating University and the other institutions from where the researchers are coming, members of the Center shall be "Partner Institutions" and will carry jointly the financing a third out of the Center's budget.
- 2.14 The partner institutions have to join to the application, a written authorization certifying their participation in the Excellence Center, and their commitment as such, to carry their obligations.
- 2.15 An institution that has not at the beginning been a partner institution, and turned into a partner institution by accepting a new outstanding researcher, will carry all the obligations as a regular partner institution, from the moment of his joining the institution.
- 2.16 The grant is given for a research conducted in Israel (by institutions entitled to participate in the application), and in coordination with the research authorities and the institutions where the researchers are employed.
- 2.17 The application will be submitted in two phases - a preliminary application and a complete application.
- 2.18 For the purpose of registration and submitting of the preliminary application, a registration website will be opened at the beginning of October 2011.
- 2.19 The Centers will be set up for a period of at least 5 years.

### **The Centers' Budgets**

- 2.20 The overall Center's budget may include the following sections:
- Annual research grants for a 5 years' period;
  - A personal one-time equipment grant for setting-up a laboratory for a researcher (if necessary);
  - Salary;
  - Supplements for research B.
- 2.20.2 **Common Research Infrastructures for a Center:** Such infrastructures will be acquired for the research universities that are members at the Center only. The majority of the common research infrastructures will be

set up under the framework of the coordinating university. This section contains procurement, operation and maintenance of equipment and tools that serve all the Center's members.

#### 2.20.3 **Continuous Activity of the Center:**

- Executing and promoting international collaborations (workshops and conventions, visits etc.)
- Activity of the existing researchers at the Center
  - **Scholarships to research students and research fellows for doctorate**
  - Use of equipments and materials
  - Technical manpower
- Advanced teaching programs
- Experimental projects under the Center's framework
- Administrative manpower supplying services to the Center

#### 2.20.4 **Overheads (information regarding types of overhead expenses will be given later).**

The overall budget for each of the above sections will be higher than zero.

2.21 The average sums for a program: The average budget of a Center, will be 45,000,000 NIS for 5 years.

2.22 The detailed specified budget frame per Center in each of the subjects will be determined and published towards the phase of submitting the complete applications. This framework will include a budget for the overall activity years, and a budget distribution between the various sections.

The budget of a research Center of experimental nature will be around 50 to 70 million NIS for the activity period, dependent on the number of senior and new staff members, the required infrastructures etc.

The budget of a theoretical Research Center will be around 20-35 million NIS for the activity period, dependent on the number of senior and new staff members, the required infrastructures etc.

There may be deviations from these ranges, e.g. in cases where the required infrastructures exist already, or a need exists for special infrastructures.

## **The Centers' Financing**

- 2.23 All the salary components and research supplements of a new academic staff, an administrative and technical staff under the framework of the Center, will be financed by the common institutions.
- 2.24 If necessary, the common institutions will finance additional sections for the Center's activity, in such way that all in all, they will participate by a third in the overall Center's budget.
- 2.25 The funding of the PBC for the Center will be 15,000 NIS for five years on average, and in any case will not be higher than 25,000,000 for 5 years. The Committee for Planning and Budgeting seeks and acts towards reaching an accord with external foundations that will join in as strategic partners, and will contribute to finance the program.
- 2.26 The planned governmental budget for the program that will be allocated through the Committee for Planning and Budgeting , and the budget that added to it from strategic partners, will serve for the financing of two thirds (2/3) of the overall Center's budget. This sum is for the purpose of:
- Grants for absorbing the new researchers (research grants for 2 years and one time personal equipment grants for setting up a laboratory for a researcher). The total sum allocated for this section, can be realized only against the absorbing of new researchers, and it cannot be transferred in full or partially, for any other purposes. The rules for activating these grants are the accepted rules of the Israel Science Foundation.
  - Research infrastructures in the research universities;
  - The ongoing activity of the Center (except for the salary components for the managerial or technical staff that are included within the research grants of the new researchers);
  - Overheads (according to the rules specified in the following).
- 2.27 The institutions participating in submitting the application will attach their written commitment to participate with additional sums - in a total value equal to the allocation of the Committee for Planning and Budgeting (as part of the institution's confirmation of its acceptance to be part of the this Center's activity (see section 2.14)).
- 2.28 It is hereby made clear that each equipment part, including computers and other computer equipment acquired by the grant's money, is not the researcher's private possession.

### **3. The Assessment Process of the Preliminary Applications:**

- 3.1 The assessment and judgment process is under the responsibility of the Israel Foundation of Science.
- 3.2 The assessment and judgment processes will be conducted in two phases – first, the preliminary applications out of which will be chosen the leading ones; these will be required to submit complete applications. Based on the assessment of the complete applications, about ten groups will be chosen and invited to set up the new excellence centers.
- 3.3 The criteria for assessing the preliminary applications are:
  - 3.3.1 The suitability of the proposed Center to the program of Excellence Centers in general:
    - 3.3.1.1 The proven capacity of the partner institutions to recruit within the Center's high level new staff members, and the ability to identify potential candidates that can be recruited, those who have expressed the readiness to join the Center in the future;
    - 3.3.1.2 Maintaining contacts and collaborations with other institutions in Israel;
    - 3.3.1.3 The ability to create and promote international relations in the Center's field of research;
    - 3.3.1.4 The anticipated contributions of the Center to the teaching and training programs for advanced titles, in cases where the subject is relevant;
    - 3.3.1.5 The scope of interfaces with other research fields;
    - 3.3.1.6 The contribution to the Israeli society and to the sustainable growth of the State of Israel, including the maintaining and development of collaboration with the industry - in cases where the subject is relevant.
  - 3.3.2 The suitability of the proposed Center to the relevant field of research, as determined by the steering committee.
  - 3.3.2 Primal assessment of the work program of the proposed Center and the suitability of the infrastructures in the partner institutions to conduct the research:
    - 3.3.3.1 The centrality of the research subjects on which the proposed Center will focus, and the scientific quality of the research - including the degree of innovation included in it, and its potential for being of significant breakthrough;

3.3.3.2 The existing capacities in the partner institutions in the said research field, their existing infrastructures and the achievements already reached in them in the past;

3.3.3.3 Examining the partner institutions readiness to support the Center's activity subsequently to the first 5 years, and their ability to raise resources and continue to maintain the Center's activity.

#### **4. Instructions for Submitting the Application:**

4.1 The submitting language: The application has to be submitted in English.

##### **4.2 Time and Submission Form**

4.2.1 **Registration Form**, via the internet online system.

4.2.2 **Preliminary Application** – will be submitted via the internet system, not later than December 1<sup>st</sup>, 2011. In addition, one has to submit to the Foundation through the Research Authority, **4 printed copies** of the preliminary application.

4.2.3. **Complete Applications** – They will be submitted by the online internet system by researchers through the institutions that received a note saying that they had passed successfully the preliminary application phase, and with the authorization of the coordinating universities. The complete application has to be submitted to the Foundation, no later than **March 1<sup>st</sup>, 2012 (unless a note will be sent out stating another date)**.

##### **4.3 Making an Online Application**

4.3.1 **The system's requirements from the applicant's computer.** The online internet system of the Foundation – ISFonline, is supported by the following platforms:

**PC Users** - The operating system of: WIN7, WIN XP, the Explorer Browser and Version 7 and above. In order to get a proper operation of the system, the users are required to add the Foundation's website to their list of e Trusted Sites, and enable the opening of Pop-ups on the Foundation's website. An explanation for these actions can be found in the User's Manual.

**Mac Users** - Operating systems of: MAC OS X and Mozilla Firefox browser / version 3, and above (free download: (<http://www.mozilla.com/firefox/>)). The system is adjusted for a screen resolution of 768 X 1024 and above. ISF online, will probably function correctly also on other platforms, but the Foundation does not guarantee propriety along the whole process, and cannot support fully other platforms than those indicated in the above. Using them is under the exclusive responsibility of those choosing to work with them.

4.3.2 With the confirmation of the registration form (see in the following Section 4.2), on the screen will be indicated (as well as in the Email sent to the Center's director), the serial number allotted to the application (this number has to be indicated at each time when addressing the Foundation in reference to the application), as well as the user name and password, in order to fill out the preliminary application.

4.3.3 The complete application form – specifications regarding the application's form, will be published later.

4.3.4 Working in the Foundation's online system:

- With the **same user number and same password**, few researchers and position holders (authorized by the Center's director), will be able to enter and fill out (with his authorization), different part on that form.
- Part of the information in the preliminary and complete application form, is retrieved for the Registration Form, and **one can change and** update the information (except for changing the name of the Center's director).
- Save Function – Each screen of the form is saved by using one of the following buttons: "SAVE", "FORWARD" or "BACK" (at the bottom of the screen), and one can enter and exit it several times, up to the phase of pressing on the confirmation button – "SUBMIT".
- The passage between the chapters/ pages, has to be done only by using the buttons keys "FORWARD" or "BACK" (at the bottom of the screen), or by using the screen menu on the right side, or by the internet browser's buttons on the upper toolbar.
- One has to pay attention to fill out all the fields. By clicking the Check Before Submission button, one can check at each phase of filling out the application, which obligatory details are missing. Upon the submission of the application (pressing the SUBMIT button), the system will present an alert, which fields have not been filled out yet, or have been filled out not according to the instructions.
- One cannot make corrections in files that have been uploaded. Each correction has to be done in the original files, and one has to upload the corrected files anew (the operation overrides the existing files and leaves the last ones, those that had been uploaded).
- Since certain parts of the files enable the free typing of text, by using the cut & paste functions, or the uploading of files, it is recommended to check – prior to printing the material, that no part of the files has been left out, and make a meticulous proofreading of the entire text (formulation and spelling). In order to avoid disruption, one should avoid including special signs in the text boxes.

4.3.5 **Prior to clicking the "SUBMIT" button, one has to print the application in order to check it. It is also recommended to keep a copy of the application on the personal computer.**

4.3.6 Clicking on the "SUBMIT" button, transfers the application to the confirmation of the Coordinating University Research Authority; the Research Authority may return the application for further correction or disqualify it due to institutional considerations. Only after receiving the Authority's confirmation, the application will be passed on to treatment by the Foundation. The system will send by Email a note to the Center's director, informing him that the Research Authority has accepted the application and transferred it to the treatment of the Foundation.

## 5. The Application Parts:

### 5.1 Before starting the registration process, the applicants are requested to state that:

- They have read the instructions;
- They agree to the judgment of the application according to the process;
- They are aware of reporting form regarding an active grant.

### 5.2 The Registration Form:

- One cannot fill out this form by phases; exiting the form without sending it, does not save the information, and obliges you to start the registration process from the beginning.

5.2.1 The Coordinating University – one has to choose out of the list the university through which the application will be submitted.

5.2.2 The Center's Subject – one has to choose one of the subjects that have been set for the term.

5.2.3 The Title/ Center's Name in Hebrew and in English – up to 2 text lines. In order to avoid any disruption in the application's subject, **one should not use special symbols**, but include the full name – e.g. alpha, beta etc.

5.2.4 Details of the Researcher – the Center's Director – identifying the researcher - the Center's director has to be done by using the full number of digits of his identity card (9 digits). The system recognizes automatically the researcher – the Center's Director, and checks his eligibility for application; in case of a problem – a note will appear on the screen. **A new researcher or a researcher, who is not recognized by the online system, has to address the research authority of his institution in order to update his details in the Foundation's system.**

The details of the researcher – the Center's director, will appear as they appear in the Foundation's data base. One has to update and complete all the details. **A researcher, who belongs to an institution that includes several campuses, has to check and update the appropriate campus. One has to choose the institution to which belongs the researcher and to which will be sent the correspondence with him.** The details of the rest of the partner researchers and the institutions in the Center will be filled out in the preliminary application.

5.2.5 After sending the registration form, a registration confirmation will appear on the screen as well as the application's number, the user's name and the password. An Email note will be sent to the Center's researcher – the Center's director, of the application with a copy to the Research Authority of the Coordinating University.

### **5.3 The Preliminary Application:**

5.3.1 The preliminary application will be submitted through the Foundation's online system, by putting in the user name and the password at the field specified for it on the Foundation's homepage.

5.3.2 The preliminary application will be submitted in English and will include:

#### 5.3.2.1 A general Information Screen (**Information about the Center**):

- The Coordinating University – as filled out in the registration form and this cannot be changed.
- Name of the main researcher - the Center's director, as filled out in the registration form and this cannot be changed.
- The Center's subject - as filled out in the registration form and this cannot be changed.
- The Center's title/ name in Hebrew and in English, as filled out in the registration form, and this cannot be changed.
- Key words.

5.3.2.2 Researchers and Institutions' Screen (information about the researchers-members and the participating institutions.

- After choosing each institution, the confirmation letter of the institution for participating in this Center, has to be uploaded (see section 2.14).
- The institutions' order will appear according to the order of their addition. If the applicant wishes to change this order, one can choose the preferred order by changing the field "Display Order".
- Adding a Researcher – each researcher added to the system, this will be done by one of the partner institutions. The researcher's identification will be executed by using his full I.D. number (see section 5.2.4).
- For each added researcher, one has to mark if he is a member of the Center's Scientific Administration.
- Removing an Institution - an institution, which had been chosen as a partner in the Center, can be removed. In such case, the confirmation letter of the institution has to be erased, and likely all the researchers that had been ascribed to it.

5.3.2.3 New Faculty Members' Screen - The details concerning the new researchers will be absorbed in the future through the Center (see Sections 2.1, 2.3-2.6) in its first activity year – In this screen one has to fill out the data concerning all the new researchers (researcher's name, the institution which he intends to join, and the anticipated absorption date). For each researcher will be uploaded an abstract of the research program – a file in Word or PDF format up to one page. At the top of the abstract one has to add the word ABSTRACT and the researcher's name. In the preliminary application, one has to include at least the name of one new researcher.

The complete application requires obligations and authorizations of the absorbing institution, as well as of the future absorbed researchers.

#### 5.3.2.4 Attached Files' Screen

5.3.2.4.1 Scientific Abstract – A file up to one page in a Word or PDF format only. At the abstract head one has to add the title: **Scientific Abstract**, and write the application number, its subject, and the name of the proposed Center. One has to include in brief the following information:

- Scientific background.
- The expected significance of the conducted research and its uniqueness.

5.3.2.4.2 The Principals of the Center's work Program (I-CORE Program) – One file (up to 5 pages) in WORD or PDF format only, which includes the Center's work program. The following information has to be included in the file:

- Scientific background.
- The Center's main objectives.
- Principles of the operational plan, while indicating researchers' names, those who will be involved in the various aspects, and while underlining the role of the new researchers who will be absorbed in the Center.
- The expected scientific contribution of the Center's activity.
- Eventual directions for application of the Center's accumulated knowledge.
- A program for collaborations between the Center's members and additional researchers who work in the field that are not partners in the Center.

For the other researchers who are not partners at the Center, one has to upload letters of collaboration, in the place intended for it on the screen.

- Collaboration programs.

No additional material can be attached, e.g. : graphs, tables, recommendation letters.

5.3.2.4.3 Collaboration Letters – When the Center's program includes collaborations with researchers, institutions or industry factors that are not partners at the Center, letters of recommendation have to be uploaded accordingly.

5.3.2.4.4 Major Equipment Description – A file has to be uploaded that includes a table of principles for the required equipment. One has to include the items for the Center's general infrastructure, as well as the major required equipment specifications that are intended for the new researchers, those who will be absorbed through the Center during its first year.

5.3.2.4.5 International Workshops and/ or Teaching and Training Programs under the framework of special courses - one file that includes in short (half a page) the future programs of the Center, which relates to the conducting of international workshops and teaching programs.

## **6. Printing the Application and Submitting it.**

6.1 When ending the filling out of the application, the application has to be locked. At this stage the system will check if all the obligatory data was filled out, and only if this check-up will be successful, the application will be locked and no changes can anymore made in it.

6.2 After the application had been locked, a button will appear enabling the creation of a PDF file, for each of the various application parts in order to print it. The file consists of all the application parts, the forms and the files that had been uploaded (except for the confirmations of the institutions referring to their participation in the Center). This process may last for 2 to 4 minutes. At the end of this process, an email will be sent to the first main researcher's address, and a copy to an alternate email that had been put into the appropriate screen. Creating this file will enable the researchers to see or print the file, also after pressing on the "Submit" function.

6.3 When ending the file's creation, the researchers shall have three proposed options:

- Seeing the created file – it is recommended to print one copy of the application, **to check all the application's parts and make a meticulous proofreading of the text; there will be no possibility to make any change in the application after the last date for its submission. In addition, we recommend saving the file.**

- Opening the "locked application" in order to make changes in it. Opening the application for changes requires the repetition of the actions specified in the above sections 5.1-5.3.
- Clicking the SUBMIT button – Clicking this button will transfer the application to the treatment of the Research Authority. After clicking this button, it is recommended to enter again and check that the application has indeed been submitted. Only after the confirmation by the Research Authority, the application will be transferred to the Foundation's treatment.

6.4 One has to ensure the transfer of 4 hard copies of the last file created at the Foundation, through the Research Authority. The hard copies of the applications, have to be stapled on the left side (the copies should not be bounded), and attach to them the institutions' confirmations regarding their participation in the Center (but they should not be stapled to the application's copies).

**Support by the Foundation on the submission dates as well as on the last submission date, will be given during ordinary working hours only.**

**The submitting institutions and the participating researchers are requested to ensure the filling out of the application meticulously, and this by following exactly the instructions. A research proposal that will be submitted not according to the instructions or in a negligent way will be rejected outright.**

## **Annex A: List of Subjects Chosen for the Second Phase**

### Humanities and the arts, Social Sciences, Education, Law and Business Administration

1. **Center for the Study of Modern Jewish Culture**
2. **Jews, Christians, Muslims: Social and Cultural Encounters of the Abrahamic Religions.**
3. **Language, Language Acquisition, and Discourse in a Multilingual Society**
4. **Center for the Interdisciplinary Study of the Holocaust and Genocide**
5. **Education and the New Information Society**
6. **Empirical Legal Studies**
7. **Child Development and Welfare**
8. **Mass Trauma Research Center**

### Exact Sciences and Engineering, Life Sciences and Medicine

9. **Basic Laws of Nature and the Structure of the Universe:** probing the smallest and largest length scales.
10. **Information Systems Security**
11. **Light and Matter** – Applications and Development of Novel Light Sources in a Broad Range of the Electromagnetic Spectrum for Basic and Technological Research
12. **Advanced Materials** - from atomic and molecular building blocks to multi molecular systems
13. **Chromatin and RNA** – from epigenetics to post-transcriptional regulation
14. **Mechanisms of Action and Novel Treatment Approaches for Infectious Diseases**
15. **Plant Adaptation to a Changing Environment:** a multidisciplinary molecular approach
16. **Disease Model Systems** – from development to multi-disciplinary applications
17. **Bio-physics and Medical Technologies** - from principles to applications
18. **Ecology and Sustainability Research in Land and Sea**

## **Annex B: Details of research fields proposed to the Centers for the second phase**

### **1. Center for the Study of Modern Jewish Culture**

#### Abstract

The center will be dedicated to the interdisciplinary study of the entire modern Jewish culture in all its facets. Scholars from the fields of Jewish history, philosophy and literature (in Jewish languages and other languages) will join together in order to draw and investigate the cultural map of Jewish culture in the last three hundred years and to study in depth the dilemmas and conflicts through which it was formed. The encounter of the Jews with the challenges of the modern world had a significant impact on the almost every aspect of Jewish life. It provided new opportunities and inspired new modes of thinking, but it also caused problems and ignited internal conflicts. The entire meaning of Judaism was put into question while new configurations of community, literature, culture and identity were created.

Special attention will be given to the changing contexts (West and East, Enlightenment, Emancipation, Immigration, Nationalism, Socialism, Zionism etc.), and to the tension between religious and secular culture. The center will foster masterly knowledge of the various aspects of Jewish Studies, combined with close adherence to universal disciplines of research in culture, religion and spirituality, thus maintaining Israel's role in the vanguard of Jewish Studies.

### **2. Center of Excellence in the field of: Jews, Christians, Muslims: Social and Cultural Encounters of the Abrahamic Religions.**

#### Abstract

Religious values played an essential role in all civilizations. With the weakening of secular ideologies, understanding the weight of religion in shaping relations between societies and nations gained great importance. Interdisciplinary study of the social and cultural encounters between members of the three monotheistic religions – their constructive dialogues & unfriendly encounters – are the core of the Center, which will encompass diverse geographic areas & historical periods.

The Center will concentrate on the understanding regarding transmitting knowledge from one community to the other. It will explore the complex ways in which the religious "other" is portrayed and treated within the three monotheistic religions.

### **3. The research Center for Language, Language Acquisition, and Discourse in a Multilingual Society.**

#### Abstract

Close contact between languages in multilingual societies allows for comparative descriptions and analyses as well as investigations of the consequences for children (language acquisition, impairments and development) and adults (language learning, attrition, pathology). In addition to research on the individual level, the complexities of language use in society will be studied as social, legal and political constructs, with multilingual societies taking a broader view of language needs. The Center will focus on the impact of bi/multilingualism on innate and acquired language impairments and will study the environmental factors that support or preclude acquisition of the societal language.

#### **4. The Center for the Interdisciplinary Study of the Holocaust and Genocide**

##### Abstract

The Center for Holocaust and Genocide Studies will lead multidisciplinary research – uncovering, categorizing and analyzing the historical, political and cultural dynamics responsible for the perpetration of genocide and of the Holocaust in particular. Applying the questions and methodologies of Holocaust Studies to other cases of genocide, it will elucidate the potentials and problems in the field and illuminate new paths of comparative inquiry.

The Center will explore linkages between several phenomena: discrimination, deportations, sexual violence, mass murder, cultural genocide, and denial. It will foster comparative and multidisciplinary scholarship on various stages of mass violence, contributing to genocide prevention models.

#### **5. The Center for Excellence in the Field of Education and the New Information Society**

##### Abstract

The new information society offers unique opportunities and raises profound challenges for education. Much of the work in this field is driven by technology rather by its implications for education and society. The proposed center should be led by the use of information and communication technologies (ICTs) in education, and their implications for a rapidly changing society.

The proposed center should be multi-disciplinary, combining specialists in learning and teaching methodologies (such as interactive teaching and learning, and distance learning) and in educational psychology, with specialists in the relevant ICTs (e.g., man-machine interfaces, network analysis) and with social scientists studying how these new technologies function within society and how they are changing it, viewed from a variety of perspectives. These which might include, for example: virtual communities; the effect of ICTs on political structures; the economic implications of ICT technologies for universities and more generally the dissemination of knowledge; and legal dimensions of education in the new information society (intellectual property, privacy).

Israel has excellent people in many of these fields. An interdisciplinary center on education and the new information society center drawing on these strengths and attracting first-class researchers from abroad should have the potential to establish Israel as an important academic center in this field. It should help improve education in Israel and contribute to Israel's society and economy; addressing a topic of wide global interest, it should also be a source of commercially valuable innovative activity.

#### **6. The Center for Excellence in the Field of Empirical Legal Studies**

##### Abstract

Empirical legal studies are a field of legal scholarship and research that is becoming more central in the world, reflecting a new understanding of how laws are made and adjudicated. It combines formidable intellectual challenges with the prospect of a better understanding of how society functions facilitating the improved shaping of actual legal arrangements.

The proposed research center should be a multi-disciplinary center, combining researchers from diverse perspectives in such areas as behavioral analysis of the law, law and public opinion, legislation, compliance and enforcement, and more generally on the relation between law and ethics, political science, social theories and economic principles.

Empirical legal studies are still at an early enough stage of their development at which a strategic investment can make a difference. The proposed center, resting on the proven excellence of Israeli researchers and attracting the best scholars from abroad, should be an intellectual center with the potential to make Israel a major player in this field.

## **7. The Center for Excellence in the Field of Child Development and Welfare**

### Abstract

Children are our future, and their well-being is a matter of our constant concern. Yet childhood is a relatively recent construction, not much more than a century old. Though it has attracted much research it lacks a panoramic perspective connecting the various viewpoints from which it is studied.

The proposed center on child development and welfare will be a cross-disciplinary enterprise with the potential for forging such a panoramic view from the diverse perspectives on child development and welfare generated in psychology, education, sociology, philosophy, culture, gender studies, politics, economics, law, biology, genetics, and neuroscience.

Israel has first-class scientists in each of these fields. The proposed center, resting on their proven excellence, and promoting a panoramic approach to understanding child development and welfare, should draw the best new talent from abroad and create a focal point for research of international importance. It would not only reinforce Israel's strong academic position in these fields but also serve the fundamental interests of society in Israel and in the world at large.

## **8. The Center for Excellence in the Field of Mass Trauma**

### Abstract

Israel is unfortunately among the central locations of mass trauma in the world, and Israeli researchers are recognized the world over for their academic and practical contribution in this field.

The study of mass trauma is a broad area that spans its social and communal aspects, its medical and psychological dimensions over the lifespan, its effect on the family, and the organizational, political and economic aspects of addressing mass trauma.

The proposed center should be multi-disciplinary in nature, combining relevant expertise from social work, psychology, public health, mental health, public administration, emergency services, and conflict management and resolution, possibly with additional disciplinary perspectives in economics, sociology, communications and law.

Israel already has an international standing in the study of mass trauma and a center of excellence in this area should further leverage its position and attract leading scholars from abroad. It should combine academic excellence, substantial contribution to an issue of key national importance and the prospect of exporting this knowledge abroad.

## **9. The Center for Excellence in the Field of Basic Laws of Nature and the Structure of the Universe: probing the physics of the smallest and largest length scales**

Subtopics: Fundamental Laws of Physics; Unified Theory; Elementary Particle Physics; Cosmology; Quantum Gravity; Physics of Black Holes; Astrophysics and Astronomy; Formation of Galaxies and Cluster of Galaxies; Planetary Science; Dark Energy; Dark Matter.

### Abstract

This center aims to enhance our understanding of the basic laws of nature and their manifestation in the structure of the universe. It should bring together established leaders and prominent young researchers, who will focus synergistically and coherently on some of the fundamental frontiers issues of basic physics at both very small and very large length scales.

At one extreme, stands the physics of very short length scales and very high energies. These are quantum in nature and deal with the fundamental laws and the fundamental degrees of freedom (elementary particles), and other, related, basic issues of quantum physics. At the other extreme, stands the Physics of very large length scales, associated with astronomical and astrophysical phenomena, and eventually, with the structure of the whole universe and its formation. Here gravity plays a fundamental role. The two subjects combine in the deepest way in addressing such questions as the creation of the universe ("Big Bang") and the physics at the core of black holes. The center should develop a coherent scientific research program which will address topics such as: understanding of the history and structure of the universe, cosmology, formation of galaxies and clusters of galaxies, formation and discovery of planets, the nature of dark energy (cosmological constant) and dark matter, the (quantum) physics of black holes and quantum gravity, the fundamental forces and degrees of freedom (particles, string, etc.) and possible unifications, and the basic nature of space time.

## **10. The Center for Excellence in the Field of Information Systems Security**

### Abstract

This center aims to enhance our understanding of the cyber security landscape and to develop new tools for achieving resilient information systems. It should bring together established leading researchers and prominent young researchers which will address in a synergetic and coherent way some of the following issues such as: cryptography and security aspects of computer operating systems, databases, integrity and security of underlying data and its distribution, networking, distributed algorithms, cloud computing, hardware architecture, and programming languages. Cyber security spans a large range of issues the center may address from the defense against intended (criminal) attacks to the defense against unintended design errors. We expect the center to address both algorithmic as well as hardware and system approaches pertaining to a range of situations ranging from the operation of critical national infrastructures via economic activities and up to communication, consumption of media and plain entertainment, not to mention remotely accessed and controlled life supporting medical systems. The center should cooperate with researchers outside the academia and with leading Israeli Industries.

## **11. The Center for Excellence in the Field of Light and Matter – Applications and Development of Novel Light Sources in a Broad Range of the Electromagnetic Spectrum for Basic and Technological Research**

Subtopics: Generation of Novel Sources of Light (High Powered Lasers; Ultrashort Pulses; Terahertz Sources; X-ray Sources); Light Matter Interaction: (Ultrafast Spectroscopy Attosecond and Femtosecond Studies); Localization of Pulses in Space and Time; Frequency Comb; Filamentation; Coherent Control; Nonlinear Optics; Solitons; Imaging and Structural Determination in Different Length Scales; Photonic Materials and Photonic Engineering.

#### Abstract

This center aims to develop new sources and novel applications of light (in its broadest definition) both at the basic science level and for important applications. It should bring together established leading researchers and prominent young researchers that will address in a synergetic and coherent way the development of new coherent sources of light spanning the frequency range of terahertz to X-ray and from high resolution, and high power, CW lasers to attosecond pulse sources, and beyond. Other possible developments include, but are not restricted to, high power fiber lasers, single photon sources, use of frequency combs for metrology, and other applications. Applications may include such topics as novel spectro-microscopy methods, coherence control, laser cooling, nonlinear effects such as solitons, filamentation, photonic materials, and photonics engineering. Development of novel methods of imaging and of structure and texture determinations over a broad length scale may also be an important goal for this center. The center should cooperate with researchers outside the academia and with leading Israeli Industries.

### **12. The Center for Excellence in the Field of Advanced Materials - from atomic and molecular building blocks to multi molecular systems**

Subtopics: Preparation and structure of advanced materials (from molecular building-blocks to many-molecule systems); Self Assembly; Supramolecular Structures; Meta-materials; Study and Characterization of Chemical and Physical Properties; Applications of Advanced Materials and Interfaces; Biomimetics; Molecular Electronics and Mechanics.

#### Abstract

This center aims to characterize, develop and apply advanced materials from molecular building-blocks to many-molecule systems. These tailored materials are intended to generate novel applications both of fundamental and of applied importance. The center should bring together established leading researchers and prominent young researchers that will develop cutting edge ideas in synthesis, characterization and application of such materials and supra-molecular constructs. An integration of the chemical and physical properties is sought. The topics include, but are not restricted to, the study of self-assembly and other aggregate formation methods, heterogeneous and homogeneous catalysis and nucleation phenomena, interface and surface-specific constructs and effects, biomimetics, and molecular electronics. Novel materials like meta-materials, ionic liquids, liquid crystals, gels, and application-tailored polymers are additional examples of possible areas of research within this center. The center should cooperate with researchers outside the academia and establish ties with leading Israeli Industries.

### **13. The Center for Excellence in the Field of advanced Materials - from atomic and molecular building blocks to multi molecular systems**

#### Abstract

The revolution in molecular tools including next generation sequencing, bioinformatics and mass-spectrometry of proteins revealed that the basis of gene regulation is not in the number of genes but rather in the diverse mechanisms of gene activation. The chromatin

that binds to DNA affects transcription, but also downstream events such as splicing. Non-coding RNAs from microRNAs to long and short RNAs turned out to be master regulators of gene silencing at all levels of gene expression. An I-core is proposed for studying chromatin and RNA modifications in diseases and during development in human model cells and organisms, as well as in the development of computational tools to study the interplay between chromatin modification, transcription and post-transcription events such as splicing and editing, the machinery and mechanism of RNA splicing and alternative splicing, RNA processing and modifications, RNA bioinformatics, role of non-coding RNAs in regulating transcription, processing and translation and gene silencing, development of bioinformatics tools to study non-coding RNAs, alternative and RNA editing in human diseases, microRNA biology in development and disease.

The I-CORE initiative in this field seeks multidisciplinary proposals and request for state of the art infrastructure in the related topics such as but not exclusive:

- MicroRNA-mediated mechanisms
- Chromatin modifications
- Computational epigenomics
- Non-coding RNAs
- RNA processing

Examples of Infrastructure needs at such a center but not exclusive:

1. Deep-sequencing of DNA and RNA
2. Live imaging in its advanced forms to study changes in manipulated cells and organisms. Advanced proteomics.

#### **14. The Center for Excellence in the Field of Mechanisms of Action and Novel Treatment Approaches for Infectious Diseases**

##### Abstract

Infectious diseases caused by the invasion and subsequent multiplication of pathogenic microorganisms (bacteria, viruses and parasites) can be spread, directly or indirectly, from one host to another. New emerging infectious diseases such as Ebola, Swine flu, enteropathogenic E. coli, and bioterrorism created additional major global threats. The causative agents rapidly change to allow their escape from the immune response, and the wide-spread use of current therapies contributed to the emergence of drug-resistant strains. Furthermore, viral and parasitic diseases represent a hard challenge since these pathogens depend on host functions, and it is difficult to spot molecular functions which are unique to the pathogen without harming the host. The globalization and changes in social, environmental and climate conditions are additional factors contributing to the growing threat from infectious diseases. Thus, there is an urgent need for innovative, non-conventional approaches to allow discovery of novel drug targets and small molecules that can eradicate such pathogens.

The emerging world-wide threat of incurable infectious diseases spans basic life sciences and clinical studies in the fields of Virology, Parasitology and Microbiology.

The I-CORE initiative in this field seeks multidisciplinary proposals in the related topics such as but not exclusive:

- Bacteriology
- Virology
- Parasitology
- Biodefense
- Epidemiology

## **15. The Center for Excellence in the Field of Plant Adaptation to a Changing Environment: a multidisciplinary molecular approach**

### Abstract

Rising temperature, deteriorating quality of water and increasing resiliency of plant pests together with the need to produce more and better quality of food are examples of challenges in current plant science. Plants as sessile organisms have developed complex genetic regulatory networks and also offer a richer and more diverse source of secondary compounds compared to animals. Application of cutting-edge plant-specific genomic, proteomic and metabolomics technologies is a limiting factor in the development of tomorrow's 'smart-seed technologies' and plant biotechnologies. I-Core will encourage multidisciplinary application of these technologies to map molecular, biochemical and physiological bottlenecks in plant productivity in relation to the effect of climate variance including drought, salinity and disease. Proposals should elucidate genetic systems, also at the transcriptome and metabolome level that regulate plant functioning.

Processes to be studied include development, growth, nutrient utilization, senescence and ultimate productivity. Focus will be put on reactions to biotic and abiotic stress that include crop response to pest, soil and water quality in both model systems and with translational biology to crop systems. Proposals should facilitate access of the plant community to high-cost plant-specific genomic, proteomic and metabolomics technologies.

The I-CORE initiative in this field seeks multidisciplinary proposals in the related topics such as but not exclusive:

- Genomics and molecular physiology
- Plant metabolomics and proteomics
- Novel plant biotechnologies
- Plant reactions to extreme conditions

Examples of Infrastructure needs at such a center but not exclusive:

- Climate control chambers for simulation of abiotic and biotic challenges
- High-through-put technologies and plant-specific tool kits for elaborating the range and kinetics of selected gene expression responses.
- Metabolomic center set-up for quantitative analysis of plant specific hormonal, developmental and defense responses.

## **16. Disease Model Systems – from development to multi-disciplinary applications**

### Abstract

Development of cures and understanding of human diseases require model organisms including mice, rats, fishes, frogs, flies, worms, plants, fungi, protists, yeast and bacteria. The biomedical, biotech, pharmaceutical and high-throughput technologies all depend on model organisms to generate and shift scientific paradigms that are essential for humankind. Correspondingly, research in life and medical sciences is solidly based on breakthroughs obtained using diverse organisms that teach us about humans and the molecular and cellular processes underlying major diseases. In addition model organisms exemplify very interesting biology. Examples of this include the elucidation of apoptosis as a mechanism of neurodegeneration in *C. elegans*, the importance of hedgehog signaling in human embryonic defects first discovered in *Drosophila* and zebrafish, and the mechanism of mismatch repair genes in syndromes of familial cancer based on work in *E. coli* and *S. cerevisiae*. Frontier research using model organisms requires a critical mass of well-trained scientists, large powerful databases, sharing knowhow and methodologies, reagents and infrastructure.

The I-CORE initiative in this field seeks multidisciplinary proposals in the related topics such as but not exclusive:

- Mouse
- Rat
- Gallus (chicken)
- Xenopus (frog)
- D. rerio (zebrafish)
- D. melanogaster (fruit fly)
- C. elegans (round worm)
- Arabidopsis
- Aplysia
- Sea urchin
- D. discoideum (social amoebae)
- Neurospora (filamentous fungus)
- Tetrahymena
- Chlamydomonas
- S. pombe (fission yeast)
- S. cerevisiae (budding yeast)
- E. coli

## **17. Bio-physics and Medical Technologies - from principles to applications**

### Abstract

The rapid developments of advanced physical and chemical technologies, enable probing (e.g using x-ray imaging, Synchrotron radiation, fluorescence imaging, confocal microscopy, two photon microscopy and dual polarization interferometry) and manipulation (e.g using optical tweezers and atomic force microscopy) of the structure and function of biomolecules and molecular complexes with unprecedented precision.

These developments pave the way to more detailed and quantitative investigations of fundamental biological processes such as protein folding, the interactions between DNA, RNA and protein biosynthesis as well as to inventions of new medical devices. It is expected that the merging of the quantitative physicochemical methodology with biological systems will lead to novel diagnostics methods and disease treatments thereby promoting new technologies and leading to improved healthcare.

The I-CORE initiative in this field seeks multidisciplinary proposals in the related topics such as but not exclusive:

- Membrane biophysics
- Biomolecular hybrids and nano-sensors
- Biophysics and biochemistry of structural cell biology
- Advanced optics and smart optical chips
- Protein folding
- Competitive and cooperative effects in molecular biology
- Molecular transport
- Signal transduction from stimuli to cell response
- The molecular basis of cell motility
- Novel approaches for development of medical devices

## **18. Ecology and Sustainability Research in Land and Sea**

### Abstract

Recent acceleration in the rate of destruction of natural habitats and the number of species that have become extinct or endangered, and the major global effects of expanding human populations on the environment call for in-depth studies. Examples include Lake Kinneret, the Negev desert, the Dead Sea, the Red Sea coral reefs and phenomena such as bird migration, sharp spatial gradients and diversified oceanography conditions. Inter-disciplinary teams should best study the Biodiversity and community, functional, evolution and ecosystem ecology and biogeochemistry. This will enable to meet the emerging needs in research, conservation, and sustainable exploitation of natural resources for the provision of services supporting ecosystem needs, agriculture, biotechnology, and environmental health.

The I-CORE initiative in this field seeks multidisciplinary proposals in the related topics such as but not exclusive:

- The economic, social, life quality and political aspects of ecology
- Sustainable exploitation of ecosystems natural resources
- Biodiversity and community ecology
- Functions and evolution ecology and biogeochemistry