

Report of the faculty committee on international collaboration

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Executive summary

Caltech as an institution of higher learning is committed to a policy of openness regarding international collaborations. Recently, the occurrence of several incidents associated with international collaborations at a variety of research and educational institutions has led to concerns of unfair advantage, potential conflict of commitment, and, more rarely, scientific misconduct or practices contrary to funding agency reporting requirements. In some instances, U.S. government agencies have sought to impose restrictions on free sharing of information (e.g., the use controlled unclassified information (CUI) and on the participation of non-U.S. personnel. In response, Provost David Tirrell established an administrative Committee on International Collaboration (CIC) for the purpose of advising the Institute on issues of policy and procedure related to issues of international collaborations at Caltech. The committee held several meetings to discuss the relevant issues, and consulted broadly with Institute administration and faculty as well as documents from various national organizations and peer institutions.

The committee finds that Caltech derives significant benefits from foreign collaborations and such collaborations are in keeping with the Institute's mission. While concerns have been raised regarding such engagements, the consistent application of standards of openness, transparency and integrity will make it possible to participate in such engagements while deriving the associated mutual benefits. International collaborations should be guided by policies of transparency, reciprocity, and research integrity. The Institute should ensure that these aspects are properly accounted for before agreeing to engage in proposed international collaborations. The committee recommends all proposed international engagements that involve

personnel, funding or funding application, appointments at other institutions, or significant time commitments be examined against a checklist of requirements.

The committee believes that the main approach to ensuring proper transparency is through disclosure. Foreign collaborations entail obligations that may lead to conflicts of interest (COI) and commitment (COC) not previously listed in Caltech's traditional COI and COC disclosure forms. COI and COC are best managed if all potential conflicts are disclosed to all interested parties. When there is a question about a possible COI or COC, a decision to err on the side of disclosure will protect both the investigator and the Institute. The Institute should develop clear universal requirements for disclosure and provide the resources to help faculty comply.

Caltech's policies are clear as regards the maintenance of free flow of information and for this reason enjoin the performance of classified work or work involving controlled unclassified information on campus. Should it prove in the future to be in the interest of the Institute to accept sponsored research involving information that is restricted owing to national security concerns, a careful discussion should take place to ensure that such work does not diminish in any way Caltech's pursuit of free and open fundamental research. The Committee notes, however, that the Institute's policies do allow for exceptions. We also recommend a careful deliberative mechanism involving a standing faculty committee to consider such exceptions.

Finally, as regards nationality restrictions, the Committee endorses the Institute's position that, as a matter of policy, Caltech allows full access to research activities for graduate students, postdocs, and staff of all nationalities. The Committee notes, however, that the Institute's policies do allow the possibility of exceptions. The granting of such exceptions and the decision to engage in work with additional nationality restriction must involve a thorough review with input from the faculty and administration via a standing faculty committee. While Caltech fully supports the efforts of the United States government to ensure our national security, Caltech firmly holds to the principle that extraordinary talent in fundamental research is not restricted to particular national boundaries; the Committee endorses this position.

Committee purpose and charge

Caltech as an institution of higher learning is committed to a policy of openness regarding international collaborations. Recently, the occurrence of several incidents associated with international collaborations at a variety of research and educational institutions has led to concerns of unfair advantage, potential conflict of commitment, and, more rarely, scientific misconduct or practices contrary to funding agency reporting requirements. In response, Provost David Tirrell established an administrative Committee on International Collaboration (CIC) for the purpose of advising the Institute on issues of policy and procedure related to international collaborations at Caltech. The charge to the committee was to

- summarize the issues that have arisen from recent governmental guidance and regulation as well as public statements from governmental officials as regards international collaborations involving Caltech faculty;
- develop and recommend criteria that the Institute should adopt regarding sponsored research and philanthropic support from international sponsors and donors;
- assess nationality restrictions and reporting requirements that government agencies may impose on particular contracts;
- recommend processes the Institute should follow to respond to such restrictions and processes;
- observe what our peers are doing in this area and integrate any lessons learned into the Institute's policies, if appropriate;
- assess the balance between Caltech's identity as a research institution and emerging changes to U.S. laws affecting U.S. research institutions as communicated by the U.S. government, our largest sponsor;
- advise on possible resolutions should such legal conflicts emerge so as to remain fully compliant while continuing to pursue international collaborations as appropriate;
- assess the extent of conflict between the need to fund fundamental research as opposed to potential reputational risk that may be associated with the funding source;
- advise on potential resolution should such reputational conflicts emerge;
- determine a set of criteria for identifying proposals and programs that should be subject to additional review and a review process for such proposals and programs;

- assess Caltech's current processes and requirements for disclosure of relationships between members of the Caltech community and organizations outside Caltech;
- recommend changes to improve these processes and requirements with consideration being given to protecting both the Institute as well as individual members of the community.

Summary of findings and recommendations

While concerns have been raised regarding research integrity in foreign collaborations, the Committee feels that it is important for Caltech to assert the importance of such collaborations in fulfilling its mission. Indeed, on July 11, 2019, President Rosenbaum and Provost Tirrell in a letter to the Caltech Community made clear the importance of international scholars to Caltech's mission and the value of foreign engagements. It is important, therefore, to set the right tone while emphasizing the importance of research integrity.

The Committee's main findings and recommendations are the following:

- Finding 1: Caltech derives significant benefits from foreign collaborations and such collaborations are in keeping with the Institute's mission. While concerns have been raised regarding such engagements, the consistent application of standards of openness, transparency and integrity will make it possible to participate in such engagements while deriving the associated mutual benefits.
- Recommendation 1: International collaborations should be guided by policies of transparency, reciprocity, and research integrity. The Institute should ensure that all of these aspects are properly accounted for before agreeing to engage in proposed international collaborations.
- Recommendation 2: The Institute should develop a checklist of requirements for all proposed international engagements that involve personnel, funding or funding application, appointments at other institutions, or significant time commitments. Such engagements should not proceed until all relevant criteria of the checklist are examined and satisfied. The checklist should identify to the extent possible the attendant risks of the engagement including issues of national security, reputational risk, export control, disposition of intellectual property, transparency, etc. The checklist should be a key component of the deliberations associated with a proposed international engagement.

The main approach to insuring proper transparency is through Caltech's disclosure policies. The committee's findings and recommendations regarding disclosure are as follows:

- Finding 2: Foreign collaborations entail obligations that may lead to conflicts of interest (COI) and commitment (COC) not previously listed in Caltech’s traditional COI and COC disclosure forms.
- Recommendation 3: The Institute should add examples of such potential conflicts to the annual COI/COC questionnaire and ask that they be disclosed.
- Finding 3: COI and COC are best managed if all potential conflicts are disclosed to all interested parties. When there is a question about a possible COI or COC, a decision to err on the side of disclosure will protect both the investigator and the Institute.
- Finding 4: A universal requirement to report a specified minimum level of financial interest is appropriate, providing it applies only to financial interests associated with a faculty member’s institutional duties.
- Recommendation 4: The Institute should clarify the requirements for reporting of financial interests so that disclosure is only required for investments that could reasonably be associated with the investigator’s institutional duties.
- Finding 5: The current COI/COC surveys do not currently provide sufficient resources that aid faculty in understanding which financial assets or commitments are reportable.
- Recommendation 5: Some consideration should also be given to enhancing the current training resources used in educating Caltech researchers about COI and COC. Possible enhancements might include mandatory web-based training of the type currently used to educate researchers at Caltech on issues such as sexual harassment. It would also be advisable to replace the word “conflict” in materials on Conflict of Interest and Conflict of Commitment with the word “disclosure” so as to emphasize the focus on disclosure as opposed to conflict.¹
- Recommendation 6: A list of frequently asked questions with numerous examples should be provided to aid faculty in deciding which financial assets, gifts, etc. are reportable. In addition, tools providing a “decision tree” that guides the respondent regarding what is or is not required for disclosure should be provided.
- Recommendation 7: The Committee recommends review of the procedures for identification of potential conflicts of interest and/or commitment by those individuals

¹ The Institute has renamed its “Conflict of Interest Annual Disclosure” the “Disclosure of Financial Interests and Commitments starting 2020.”

who are not currently required to disclose such conflicts and to modify these procedures accordingly should this prove necessary.

- Finding 6: The Institute has a variety of mechanisms by which foreign visitors are appointed to the Institute including visiting associate, visitor, affiliate, and volunteer. While such mechanisms are necessary to maintain fundamental research engagements, there do not appear to be uniform criteria or practices to ascertain the participation of such visitors in foreign talent recruitment and other such programs.
- Recommendation 8: The Institute should develop a uniform set of criteria and practices that lead to disclosure on the part of foreign visitors of their financial interests and commitments.

As regards issues of classification and limitations on participation of foreign nationals in sponsored research, our findings and recommendations are as follows:

- Finding 7: It is not desirable to control research beyond those criteria documented in NSDD-189² that delineate a distinction between research that is fundamental and research that requires classification. The attempt by the federal government to circumscribe various broad areas of unclassified research as more sensitive (or proprietary) than others is in general not in accord with Caltech's commitment to the open flow of ideas.
- Finding 8: Caltech has mechanisms to control protected information such as that subject to export control, FERPA, etc. Further restrictions by the federal government on dissemination of fundamental research via labelling as various forms of CUI are not in the interest of the free flow of open research.
- Recommendation 9: Caltech should actively engage with other institutions of higher education and university associations to champion appropriate government policies to safeguard national security while enabling the free flow of fundamental research data.
- Recommendation 10: Barring national security imperatives, the Institute should not engage in agreements that exclude the participation of foreign nationals in sponsored

² On September 21, 1985 then President Ronald Reagan issued National Security Decision Directive 189 with the aim of the establishment of a "national policy for controlling the flow of science, technology, and engineering information produced in federally funded research at colleges, universities and laboratories."

research. Should exceptions be required, the administration should establish and engage a standing committee of 3-4 faculty members. When a situation requiring an exception arises, the Vice Provost for Research, the General Counsel, the Associate Vice-President for Research Administration, and the Chief Research Policy Officer will consult with this committee.

Committee deliberations

To date, the committee has held several meetings to discuss the relevant issues. In particular, the Committee met with the recently formed Foreign Influence Working Group (FIWG), an administrative group assembled by the Office of General Counsel and charged with advising on and proposing policies and procedures responding to the issues raised in potential foreign collaborations. The committee also met with Dexter Bailey, the head of Advancement and Alumni Relations to discuss the management of philanthropic foreign gifts. Jennifer Lum of the Office of General Counsel served as a member of the committee and provided important background on legal aspects. Important input regarding sponsored research was provided by Associate VP for Research Administration and committee member Dick Seligman. In addition, the Provost and the Office of General Counsel with support from the Vice Provost for Research Kaushik Bhattacharya and the chair of the CIC participated in informational presentations given to all Divisions at Caltech to brief the faculty on some of the emerging issues and the current disclosure requirements of the different sponsoring agencies. Finally, the chair of the committee presented preliminary findings and recommendations from the committee's deliberations to the Faculty Board and solicited further input from the assembled faculty.

Background

Over the past few years, concerns have been voiced about unfair competition as well as threats to economic and national security originating from possible theft of intellectual property in foreign collaborations of U.S. universities with various countries, notably China.

In August of 2018, the NIH, following an investigation of foreign influence on NIH grantees, issued a statement regarding recent threats to the integrity of biomedical research supported by NIH. In particular, three areas of concern were highlighted:

1. diversion of intellectual property from federally funded research programs,
2. interference with the peer review process through attempts to influence funding and/or sharing of proposal information, and
3. failure to disclose funding from foreign governments in grant applications.

In response NIH indicated it would

- develop methods to improve reporting of all sources of research support, financial interests as well as relevant affiliations;
- continue to support international collaborations while mitigating the risk to the security of intellectual property;
- increase efforts to protect the integrity of peer review.

In July 2019, NSF issued a Dear Colleague letter on research protection. The letter highlighted the concern that other governments do not in some cases uphold the tenets of openness, transparency, and reciprocity in international research collaborations, tenets that are viewed as essential to the scientific endeavor. Of particular concern were various foreign government talent recruitment programs that sometimes impose obligations on U.S. researchers that in turn create risks for research integrity. In response, to protect the proposal review process, NSF issued a requirement that its rotators must be U.S. citizens or be in the process of obtaining citizenship, and that all NSF staff make timely financial disclosures, particularly the receipt of gifts from foreign governments. NSF also indicated that it would reemphasize its longstanding requirements that senior project personnel submitting proposals must disclose all sources of support, be they foreign or domestic. NSF has also updated their Proposal and Awards Policies and Procedures Guide to clarify further requirements to report current and pending support as well any professional appointments. To further standardize the process, NSF indicated they would develop an electronic format for disclosure of current and pending support. Finally, NSF commissioned JASON, an independent group of scientific advisors, to conduct a study to assess the various risks to research security and also to recommend practices for NSF and its awardees to insure there exists a balance between openness in research while preserving basic security and insuring research integrity. We discuss the results of the JASON study briefly below and in particular its implication for Caltech.

The JASON report as a foundation for Caltech policies

JASON studied issues of concern to NSF, consulting both classified and unclassified sources, and concluded there were indeed examples of unfair competition arising through practices of offering rewards such as membership in foreign talent recruitment programs and foreign

graduate fellowships; deceptive practices such as withholding affiliations in applications to universities and U.S. funding agencies; coercion by foreign intelligence agencies; and finally outright theft of intellectual property. The true extent of the problem, however, is not yet clear, and more work is required to determine its scope and impact. While there is clearly an attempt by some countries, notably China, to achieve scientific advantage by both fair and in some cases illicit means, JASON determined that many of the concerns associated with foreign influence constitute violations of core values of research integrity.

In its report “Fundamental Research Security,” JASON concluded that responding to these concerns by restricting the number of foreign students will most likely result in impediments to advancing knowledge and to U.S. competitiveness, given the important contributions to the U.S. research enterprise made by foreign students. At the same time, there is a need to secure the research enterprise through rigorous disclosure of affiliations and commitments, both foreign and domestic; development of project assessment tools that make clear the nature of agreements with foreign entities and that facilitate the assessment of the risk in engaging in such agreements; and wide publication of policies so as to make clear that foreign interactions are welcome but that they must be conducted with transparency and adherence to widely agreed-upon norms of research integrity.

Caltech’s internal disclosure processes

The JASON report recommends that disclosure criteria be expanded to include all affiliations that may constitute conflict of commitment (COC) in addition to financial conflicts of interest (COI). The Institute established some years ago an annual process whereby faculty are asked about potential conflicts of interest and/or commitment. The overall intent of the policy is summarized in the following definition from Caltech’s official policy statement:

“An individual conflict of interest is a situation that may compromise an individual’s professional judgment in carrying out Institute business due to an external relationship that directly or indirectly affects the interest of the individual or an immediate family member. Each situation that presents a potential for conflict of interest must be fully disclosed to Caltech and managed or eliminated before moving forward. Conflicts of

interest also include conflicts of commitment which are situations in which external activities, either paid or unpaid, interfere with an employee's primary obligation and commitment to Caltech. Caltech faculty, staff and postdoctoral scholars are required to complete Caltech's Conflict of Interest Disclosure form on an annual basis and to submit changes or additions within 30 days of a new interest, activity, or change."

Although the Committee is not primarily charged with administering the conflict of interest and/or commitment process, the Committee has endorsed the following guidance regarding the annual disclosure process. The criteria for potential conflicts of interest or commitment should be uniform for all faculty. In particular, there should be a uniform definition of what constitutes a significant financial interest (SFI). At present, what constitutes SFI differs depending on the agency providing research support to a faculty member. Instead, the Committee proposes that the Institute define what constitutes an SFI from the point of view of the Institute itself rather than the origins of research support, and, importantly, that such financial interests be reasonably related only to a faculty member's institutional duties such as research, teaching, administration, mentorship, etc. The dollar value of such interests should only be reportable if it exceeds \$5,000 in value. The Committee believes that this dollar threshold represents a reasonable starting point and is broadly in keeping with the requirements of U.S. agencies sponsoring academic research.

The benefit of a uniform requirement is that it makes clear that faculty are disclosing their financial interests to the Institute and that it is part of every faculty member's responsibility to the Institute to ensure the absence of any potential interests which, in principle, may interfere or appear to interfere with the obligations of the faculty as expressed in Caltech's Faculty Handbook. On the one hand, the Committee feels it is important for the Institute to be aware of outside financial sources that are being used to support institutional duties as a matter of due diligence. On the other hand, it is important that faculty not be required to disclose financial interests that are not connected to their institutional duties.

Similar considerations apply to conflict of commitment, although, unlike conflict of interest, conflict of commitment can be unrelated to Institutional duties. As a matter of due diligence, it is also important for the Institute to be aware of potential conflicts that may arise for example from consulting obligations or membership in foreign talent programs. At the same time, it is

important to clarify to faculty and other researchers what types of obligations constitute a significant time commitment that may require disclosure as a potential conflict of commitment. There should be awareness that activities like routine exchange of information with foreign or domestic colleagues for the purpose of joint collaboration would certainly not be considered significant whereas membership in foreign talent program certainly would merit disclosure.

Finally, it should be emphasized that the reporting of financial interests and affiliations is simply disclosure. The existence of such sources of income, support, or appointments in outside organizations may not constitute any sort of conflict. Ultimately, it is the responsibility of the faculty member's division chair, in consultation with the Provost's office, to determine whether a disclosure constitutes a conflict. It is the Committee's view that such disclosure policies protect both the Institute and the disclosing faculty member.

Postdoctoral scholars, volunteers, and visitors are an essential component of the vibrant intellectual environment at Caltech. As participants in Caltech's research they too have an obligation to disclose potential conflicts of interest and/or commitment. Disclosure of potential conflicts of interest and/or commitment is important for ensuring that all scholars appointed by the Institute understand that such potential conflicts are at variance with Caltech's goals of openness and transparency. The Committee recommends that the procedures for identification of potential conflicts for postdoctoral scholars be re-examined and modified, if necessary. In addition, to the Committee's knowledge, there are presently no such procedures for volunteers and visiting scholars. Some consideration of COC/COI vulnerabilities for those not covered by current disclosure procedures may be warranted. The Committee recommends review of the procedures for identification of potential conflicts by those individuals who are not currently required to disclose potential conflicts of interest and/or commitment and to modify these procedures accordingly should this prove necessary.

Part of the Committee's charge was to examine some of the policies and procedures used by our peer institutions in managing COC/COI. We confine our discussion here to three institutions, MIT, Stanford, and Harvard. These peer institutions have developed online tools to aid faculty and staff in deciding whether various financial interests or commitments require disclosure. MIT, for example, has a website (coi.mit.edu) specifically devoted to these issues. It defines carefully COI and COC and provides a detailed glossary to explain the various terms, such as

SFI. MIT has also extended the definition of SFI to include investments in foreign entities. Their site offers considerable training resources. To further aid faculty in determining those affiliations or investments requiring disclosure, MIT has developed a decision tree application that guides faculty and attempts to make clear to the respondent those financial interests subject to disclosure. Special training via online courses is also available for those receiving support from NIH for which additional disclosure is required. Finally, MIT appears to use an enterprise-wide electronic system originally developed at MIT but now sold commercially called Coeus. Coeus facilitates creation, internal approval processing, and submission of electronic proposals to sponsoring agencies. Relevant to the interests of the Committee, it features a module that allows faculty to report potential conflicts of interest. The records are then available in a database so that they can be examined at the time of proposal submission.

MIT is a far larger institution than Caltech and so a future investment in such software may be viewed as unnecessary, but some consideration might be given to automating the workflow associated with identification of conflict of interest or commitment. Some consideration should also be given to enhancing the current training resources used in educating Caltech researchers about COI and COC. Possible enhancements might include mandatory web-based training of the type currently used to educate researchers at Caltech on issues such as sexual harassment.

Stanford appears to define SFI in ways very similar to Caltech. Such SFIs must be disclosed when the interest appears to be related to institutional responsibilities. The definition of SFI includes ownership interests in privately held entities, ownership interests of \$5k or more in publicly traded entities (except mutual funds managed by third party entities), and income at or exceeding \$5k per year per company. Stanford provides guidance on whether the income relates to institutional duties. Examples include sponsorship of a faculty member's research, financial interests that could have a potential influence on the faculty member's research, research that could impact a company's interests, manufacture by a company of a product that is researched by the faculty member, provision by a company of gifts that directly support the research or teaching of the faculty member, and so forth. The policies do not seem to be guided by the disclosure policies of any research sponsor like NIH or NSF and are intrinsic to Stanford. The additional policies of government sponsors such as NIH and NSF are also detailed. Researchers are encouraged to disclose collaborations with foreign or domestic entities in compliance with

sponsor requirements. Faculty are also asked to disclose to Stanford all work or financial interests in foreign institutions (educational or governmental).

Harvard communicates on these issues through its Vice Provost of Research. A website has been created to guide researchers in addressing faculty disclosure. A list of frequently asked questions elaborates on the various disclosure requirements. The issues discussed include

- integrity of peer review;
- transparency and disclosure of information;
- compliance with regulatory requirement;
- protection of intellectual property.

A frequently asked questions list (FAQ) is also provided on the website and appears quite comprehensive. Users of the FAQ are given links to appropriate offices at Harvard should further information be required.

Policies regarding classification and information control

On September 21, 1985, then President Ronald Reagan issued National Security Decision Directive 189. NSDD 189 had as its aim the establishment of a “national policy for controlling the flow of science, technology, and engineering information produced in federally funded research at colleges, universities, and laboratories.” The overriding concern at that time was the safeguarding of science and technology work deemed of importance to national security from illicit acquisition by Eastern Bloc countries. However, the policy recognized that a strength of American science was the maintenance of research environments conducive to the free exchange of information. In the case of fundamental research, NSDD-189 established a default position of openness and defined such research as follows:

“Fundamental research” means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons.”

Most importantly NSDD-189 established the following policy:

“It is the policy of this Administration that, to the maximum extent possible, the products of fundamental research remain unrestricted. It is also the policy of this Administration that, where the national security requires control, the mechanism for control of information generated during federally funded fundamental research in science, technology and engineering at colleges, universities, and laboratories is classification. ... No restrictions may be placed upon the conduct or reporting of federally-funded fundamental research that has not received national security classification, except as provided in applicable U.S. Statutes.”

This directive is still operative and was reaffirmed in 2001 during the Bush administration and then again in 2010 by then Secretary of Defense Ashton Carter who opined that

“NSDD-189 makes clear that the products of fundamental research are to remain unrestricted to the maximum extent possible. When control is necessary for national security reasons, classification is the only appropriate mechanism.”

The policies expressed in NSDD-189 make clear that information associated with fundamental research should be open, and, where national security considerations come into play, the recommended recourse is classification where rules indicating access and storage restrictions are clear. The JASON report to NSF also emphasized the clear distinction between unclassified and classified research.

Caltech’s policies are also clear as regards the maintenance of free flow of information and for this reason enjoin the performance of any classified work on campus. The Caltech Faculty Handbook states that

“The Institute’s policy is that no government contracts or grants are accepted if they require classified research to be carried out on campus. The Institute firmly intends to continue this policy. However, in the past the Institute has undertaken classified studies at urgent government request in times of national emergency or critical need and would

consider doing so if such circumstances arise in the future. On several occasions, and on urgent government request, some campus facilities have been made available for limited periods for classified work by an off-campus group. This has been done when the facilities have not been available elsewhere, and the work could be done in a few days or at most a few weeks, and it was judged by the President of the Institute to be an emergency warranting an exception. Such work should be undertaken only after approval by the President upon recommendation of the responsible Division Chair for the specific instance.”

In 2004, the Bush administration through the Department of Homeland Security responded to concerns that the Federal government creates and stores a great deal of information that, while not technically classified, requires some protection from unlimited access and release. Agencies possessing such “sensitive but unclassified” information used a variety of means to protect it, for example requiring some minimal level of protection for storage of such information or mandating the use of encryption if such information were to be transmitted. At that time, no uniform policy on the protection of such information had been developed. In response, Executive Order 13556 established the category of Controlled Unclassified Information (CUI) and directed the National Archives and Records Administration (NARA) to develop and oversee a framework for CUI. A key component of this effort was to organize the various categories of information that fall under CUI. Today CUI comprises 125 different types of information. It includes for example obscure categories such as Pesticide Producer Survey. Several of the categories are relevant to academic institutions such as Personally Identifiable Information (PII), student records (FERPA), and medical records (HIPPA) that are also currently protected under other statutes.

There is no CUI classification associated with academic research output, and it was never the intent to apply CUI requirements to fundamental research. But it should be pointed out that Export Control and Export Controlled Research are at present two categories included under CUI. The difficulty is that there is no guidance on what aspects of export-controlled activities should be designated CUI. This is especially relevant to Caltech as the Institute has agreed to take on work that is subject to export control restrictions.

While there are no clear definitions of what constitutes CUI, for example, as regards export-controlled information, there are guidelines for securing such information. For example, NIST Publication 800-171 lists the following requirements for compliance with CUI restrictions:

- access to CUI information must be limited to authorized users;
- computer systems storing CUI must limit system access to only authorized users;
- CUI awareness and training procedures must be developed and enforced;
- audit procedures must be in place;
- configuration management is required for systems storing CUI;
- media containing CUI must be marked and stored using encryption;
- individuals requiring CUI access must be prescreened.

In short, while CUI information is nominally unclassified, the required protections are not so different from those used to protect classified information. In any case, such procedures as applied to research data are not in keeping with Caltech's mission to promote the free exchange of ideas and are viewed by the Committee as antithetical to the free flow of what is nominally unclassified information.

To date, it is fair to say that the definition and administration of CUI is in a state of flux. The main issue with the CUI system, however, is that federal agencies are obliged to apply uniformly CUI requirements as a way of harmonizing the differing categories of information. As a result, several agencies that sponsor academic research have attempted to flow down these guidelines in contracts for sponsored research. Caltech has taken a strong position on CUI. In a memo sent to faculty by Vice Provost Bhattacharya on Oct. 5, 2018, the Institute adopted the following policy:

“The Institute’s policy is that no government contracts, grants, or subawards are accepted if they require either receiving or producing Controlled Unclassified Information (CUI) in order to carry out the project. Exceptions to this policy can be granted by the Provost’s Office in limited circumstances if so doing is in the best interests of the Institute.”

This policy has now been published in the Faculty Handbook. The Committee endorses the Institute's policy on CUI as well as its interpretation that fundamental research data are not appropriately categorized as CUI.

Under current Federal regulations, when a Federal agency includes CUI language in a contract, grant, or cooperative agreement, the agency is supposed to specify the information that is designated CUI and also provide the reason that the agency has made this determination. In practice, however, Caltech's Office of Sponsored Research (OSR) finds that agencies do not do either of these things. When Caltech receives an award that contains CUI language, OSR verifies with the Caltech Principal Investigator and also with the sponsor that there is no CUI information required for the performance of the project and requests that the sponsor inform Caltech prior to providing any CUI so that the Institute can assert its right not to receive such information. The Institute then determines if the project can be continued.

Should it prove to be in the future interest of the Institute to accept sponsored research involving CUI, special protections and perhaps also special facilities will be required in order to comply with the requirements described above. One possibility is to investigate whether JPL could house such activities although it is the Committee's understanding that JPL has a similar policy towards CUI. More importantly, a careful discussion should take place to ensure that such work does not diminish in any way Caltech's pursuit of free and open fundamental research.

Policies regarding nationality restrictions

Caltech, as a matter of policy, allows full access to research activities for graduate students, postdocs, and staff of all nationalities. Caltech's Faculty Handbook states that as regards sponsored research:

“Arrangements with the sponsor shall not impose restrictions on the Institute that are in conflict with its established policies and practices, and should permit performance of the research in the same manner as research financed with the Institute's own funds.”

There have arisen situations where modifications to this policy have been necessary. For example, sponsored research programs associated with the Department of Energy and the Department of Defense have restricted funding of graduate students to U.S. citizens only. NIH training grants are also similarly restricted, as are NSF graduate fellowships. But it is important to acknowledge the difference between the citizenship requirements for training grants and fellowships and the access restrictions on grants or cooperative agreements that are based on

“security considerations.” NIH, NSF, and DoD have applied limited eligibility to training grants and fellowships for as long as these types of awards have existed. The rationale for this policy is that the primary purpose of the training grants and fellowships funded in this way is to provide training opportunity for U.S. citizens.

Other programs have established restrictions on research support for citizens of various countries deemed “sensitive.” In none of these cases have the sponsoring agencies expressly forbidden non-U.S. citizens from performing research under such grants. Caltech has in response used other non-governmental funds to support such researchers. Nationality restrictions are also in place for activities that fall under export control laws. To date, the Institute has managed these issues by either obtaining the relevant export control licenses or demonstrating that the work is fundamental research.

Recently, however, the Institute has been asked on a small number of occasions to list the nationality and citizenship of personnel to be supported under a sponsored research agreement. In all cases to date, the Institute has not shared such information and in principle would refuse to accept research support that comes with restrictions on research participation or reporting requirements based on nationality. It is the Committee’s view that the Institute should maintain its current stance. Note that the Institute’s policies do allow the possibility of exemptions as also stated in the Faculty Handbook:

“Any deviation from the policies set forth ... requires specific approval of the committee(s) concerned, the President, and if deemed by the President to be desirable, the Board of Trustees. In particular, with suitable approval, awards for work falling outside the Institute’s normal program may be undertaken for the government in times of emergency, or if it in other ways qualified as a unique service to the community or the nation’s security or well-being.”

The granting of such exceptions and the decision to engage in work with additional nationality restriction must involve a thorough review with input from the faculty and administration. We propose the following process:

1. The creation by the administration of a standing committee of 3-4 faculty members. When a situation requiring an exception arises, the Vice Provost for Research, the General Counsel, the Associate Vice-President for Research Administration, and the Chief Research Policy Officer will consult with this committee.³
2. Based on this consultation, the Vice Provost for Research, the General Counsel, the Associate Vice-President for Research Administration, and the Chief Research Policy Officer will make a recommendation to the Provost.
3. The Provost may consult with the Institute Academic Council (IACC) and the steering committee of the Faculty Board and make a recommendation to the President.

Consideration should also be given to recent visa policies that restrict foreign students and postdoctoral scholars from travel to and from the United States. While Caltech fully supports the efforts of the United States government to ensure our national security, Caltech firmly holds to the principle that extraordinary talent in fundamental research is not restricted to particular national boundaries. The Committee endorses this position.

Criteria for philanthropic support

The Committee was briefed by Dexter Bailey, Vice President for Advancement and Alumni Relations, on controls in place for acceptance of philanthropic gifts, both foreign and domestic. Caltech has a number of such protections in place. First, Caltech's policies for acceptance of such gifts are published. For gifts of \$100k or more, a gift agreement is required providing detailed specifics that are subject to review by the Office of General Counsel and the Provost. Templates for agreements associated with more common philanthropic objectives like financial aid have been developed and can be used as starting points for agreements. In addition, significant research is performed by the Office of Advancement on a proposed donation to mitigate reputational risk. One strength of this overall approach is that it is centralized. Unlike some universities where the advancement effort is distributed among various schools and other organizations, all potential gifts must undergo a similar review. Overall, the Committee was impressed with the care with which proposed philanthropic support is examined and considered. In addition, with respect to reporting requirements to the government, Section 117 of the Higher

³ We note the Institute at one time did have such a committee for sponsored research. The committee under consideration here would have a broader mandate in terms of the activities it would consider.

Education Act of 1965 requires that Caltech report contracts with or gifts from a foreign source that, alone or combined, have a value of \$250,000 or more for a calendar year.

Criteria for identifying gifts and non-governmental sponsored research subject to additional review

At present, the centralized nature of Caltech's internal review processes has been successful in properly vetting international and domestic non-governmental support opportunities. But given the increasing complexities and reputational risks associated with such engagements, it would be of value to adopt a more formal approach.

One example of a university that has adopted such an approach is MIT. MIT has instituted a three-step procedure for what they term "elevated risk" proposals submitted either through their office of sponsored research or development. For example, foreign engagements with countries such as China, Russia, and Saudi Arabia must undergo review at the highest levels. Further examples of such elevated risk proposals include potential collaborations with Chinese telecommunications companies like Huawei and ZTE which were ultimately not pursued, presumably owing to both reputational and national security concerns.

The idea is to pay attention to issues of export control, national security, data security, reputational security, and alignment with core values, for those proposals viewed as having elevated risk. The first phase of the three-level process at MIT is a compliance review by their International Coordinating Committee. This committee consists of staff in sponsored research and other relevant offices. It is similar in many ways to Caltech's present FIWG. If needed, the next phase is an academic review by the MIT International Advisory Committee (IAC) consisting of faculty to ensure the proposal advances MIT's academic mission. MIT asks that PIs for proposals involving international engagements respond to a checklist that identifies potential risks.

Here at Caltech, AAR, OTTCP, and ORA staff can perform preliminary reviews of proposals that involve funding from outside the U.S. or from foundations/companies/agencies with strong ties to non-U.S. entities (e.g. subsidiaries). In this context, the Institute may consider broadening the question on export compliance to include programs with foreign funding in the Division Approval Form (DAF). For example, the following questions could be added to the DAF:

- Does this project involve international collaboration?
- Does this project include a foreign component?

If this preliminary review raises any concerns, additional information about the project should be gathered. Borrowing freely from MIT's model, this may include the following questions:

- What types of activities are covered by the project?
- Are there any special considerations that may be at variance with Caltech's policies on publication?
- Is there a procedure in place to regularly confirm that the proposed activity is being pursued in accord with Caltech's policies and principles?
- Are there any issues associated with management of intellectual property?
- Are there any considerations of national security?
- What are the reputational risks to Caltech (if any)?
- Who are the external stakeholders?
- What financial and legal issues need to be considered?
- Will project personnel spend time abroad?
- Are there any issues associated with conflicts of interest or commitment?
- Will the project bring visitors to Caltech?
- Is the project affected by export control?
- What are the potential health and safety concerns?

The project would then be considered by the Vice Provost for Research, the General Counsel, the Associate Vice-President for Research Administration, and the Chief Research Policy Officer. If they determine that there is elevated risk, then the process outlined earlier in the section on nationality restrictions may be considered. The result of this deliberation would be that the project may require a risk management plan or a decision that the risk is such that the project should not proceed. The most important thing here is that there be an auditable formal process that examines all aspects of risk and engages the relevant stakeholders.

Anticipating future international collaborations

In the past, the predominant funding source for research activities on campus has been research sponsored by agencies of the U.S. government. While for Caltech this is still the case, support from international sponsors and private sponsors has been increasing. International foundations and corporations pursuing philanthropy and partnerships will continue to engage Caltech as a partner. As other U.S. universities set up international campuses and as there is growing research capacity in regions of the world beyond the historical centers in Europe and southeast and southern Asia, collaborations with institutions around the globe will increase in number and geographic dispersion. Concomitantly, Caltech should also anticipate similar continuing expansion for foreign applicants for student and postdoctoral programs. We may anticipate that with this growing footprint of collaboration, questions of differences in normative standards for research practice and government concerns of national security will not go away. To best position itself for opportunities of the coming decades, Caltech should implement policies that facilitate openness and transparency in collaboration and continue to update and align policies with U.S. law and agency requirements, while simultaneously working with other higher educational institutions to proactively advocate disclosure, information control, and visa/immigration policies conducive to fundamental research.