Patents at Colleges and Universities

THE AREA OF PATENT LAW and its practice is one of the most complex of legal specialties, generally requiring both a technical and legal background in addition to a proficiency in patent law. Nevertheless, a level of understanding sufficient to handle patentable discoveries in the proper manner can readily be established at any institution, regardless of size. The possession of this understanding can allow the dissemination of important and valuable research findings by publication, by patenting, or by both, in a manner that is likely to produce the greatest benefit for the institution, the discoverer, and the public.

Institutions establish patent policies for a variety of reasons, usually to achieve one or more of the following objectives:

1. To facilitate the transfer of technology and the utilization of findings of scientific research in order to provide maximum benefit to the public therefrom.

2. To encourage research, scholarship, and a spirit of inquiry, thereby generating new knowledge.

3. To provide machinery by which the significance of discoveries may be determined so that the commercially meritorious may be brought to the point of public utilization.

4. To assist in an equitable disposition of interests in inventions among the inventor, the institution, and, when applicable, a sponsor.

5. To provide individual incentives to inventors in the form of personal development, professional recognition, and financial compensation.

6. To assist in the fulfillment of the terms of research grants and contracts.

7. To safeguard the intellectual property represented by worthwhile inventions so that it may receive adequate patent protection.

8. To facilitate the development of institutional patent agreements with the federal government.

DEALING WITH PATENTABLE DISCOVERIES

In order to deal with discoveries that may have patentable significance, the following should be present in an institution: first, a documented patent policy approved by the governing board, which defines the rights and obligations of the institution, the inventor, and, when applicable, a sponsor. Second, an institution requires a focal point of adequate patent understanding that will serve as collection point and conduit for discovered information on its way to the Patent Office and to becoming a development activity.

The third requirement is the capability to carry forward the development of a discovery until it results in a usable commodity for which the institution can obtain a financial return. This may be accomplished by an in-house patent management group, by an institution-affiliated foundation, or by arrangements with invention management agencies. None of these three requirements need be costly to set up or expensive to maintain.

Need for Patent Knowledge

Since the early sixties there has been an increasing emphasis on applied research output, a demand that educational institutions be "more relevant to society." Where discoveries in the scientific and technological areas are concerned, this raises the question, "How can your discoveries be used?" The federal government, by its funding policies, has reinforced the need for the educational community to examine the "relevancy" of its research. Research proposals directed at investigating topics

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with implicit use in the solving of immediate problems are more likely to be funded than those aimed at basic research generating information that is not presently usable. Technical discoveries from such "relevant" research are more often found to be patentable than are discoveries from basic research. Thus, if an institution accepts federal research support, it is likely to be involved with decisions relating to patents.

The President's Patent Policy Statement of August 23, 1971, the liberalization of some government patent waiver policies, and the use by several agencies of institutional patent agreements indicate that the educational community may become more and more involved in patent determinations. Thus, provisions of the institutional patent policy should be developed to recognize, as far as possible, any current federal requirements or guidelines on the subject. A sound policy can facilitate the release of title rights by the government and be the basis for implementing an institutional patent agreement with federal agencies.

The guidelines in this document are intended to assist administrators in determining the level of activity best suited to the invention and patent needs of their institutions. Inventions as assets may not represent a readily available source of funds that can be applied to solve acute financial problems. However, each institution should, without excessive cost, acquire the capability of bringing to public use any commercially valuable discovery made in its laboratories.

Nature and Scope of Patents

A patent is a property right granted by a sovereign nation, which gives the holder the exclusive right to control the manufacture, use, and sale of an invention for a period of years. As property it may be sold or assigned, pledged, mortgaged, leased (licensed), willed or donated, and be the subject of contracts and agreements. Control may be accomplished by exercising the exclusive rights referred to above or by permitting others to exercise such rights under the terms of a license. The United States patent system is implicitly authorized by the Constitution in the provision that, "Congress shall have the power . . . to promote the progress of science and the useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Legislation implementing the Constitutional provision is found in Title 35 of the U.S. Code.

Each country has its own requirements on patenting, including standards for what is patentable, formalities for establishing a patent, the effective date and duration of the patent grant, requirements relating to the use of a patent, and annual taxes to maintain it in force. Under United States standards of patentability, all patent applications are examined for *novelty, utility* and *nonobviousness,* and it is the applicant's responsibility to establish these elements to the satisfaction of the Patent Office before the patent is allowed to issue.

Patentable *novelty* and commercial novelty are not necessarily synonymous. A device may lack novelty as far as the Patent Office is concerned and yet be received by the public as a "new" item. The requirement for *utility* appears self-explanatory. In regard to the third requirement, the invention must be *nonobvious* at the time of invention to a person having ordinary skill in the art to which it pertains.

The duration of all U.S. patents is 17 years from the date of issue and they are not renewable. In contrast to the practice in most foreign countries, there is currently no annual tax levied by the United States government to maintain a patent in force, nor are there any current legislative requirements that the teachings of a patent be a commercial reality within a given period of time, under penalty of compulsory licensing or forfeiture.

It is the responsibility of a patent holder (the patentee) rather than the government (the patentor) to police the use of the patent and either to bring infringing parties under a license or to prosecute them for infringement. If the patentee intends to keep the patent in force, he or she is obliged to defend the validity of the patent if it is attacked. The patent granted by the U.S. Patent Office is only prima facie evidence of the exclusive right it purports to establish. The presumption of validity that attaches to a patent may be

subsequently rebutted and invalidated in a federal court proceeding by third parties formally charged with infringement if they present satisfactory proof that the patent should not have been issued.

The 1952 Patent Act sets forth those classes of patent matter that are eligible for patenting. That statute provides that any inventor who "invents or discovers a new or useful *process, machine, manufacture,* or *composition-of-matter,* or any *new and useful improvement thereof,* may obtain a patent therefor, subject to the conditions and requirements of the law." The law also allows the patenting of new varieties of *asexually produced plants* other than tuber-propagated plants or plants found in an uncultivated state. These six categories plus patents for designs compose a complete list of subjects that the law deems to be patentable. Design patents, which relate to the ornamental appearance of useful articles, are seldom encountered in an educational setting.

Some subjects that cannot be patented because they are outside the scope of patents are:

1. Theories.
2. Ideas.
3. Plans of action.
4. Results.
5. Methods of doing business.
6. Discoveries of laws of nature or scientific principles.
7. Things immoral or injurious to health and the good of society.
8. Works eligible for protection under the copyright laws.

Patents and Publication

Patents and publication are closely related. A patent is a form of publication, which describes an invention to the world at large in return for a limited period during which others can be excluded from using the invention. However, care must be taken in disclosing an invention, such as by publication in a scientific or technical journal, in order to avoid placing the invention in the public domain and thus losing the right to obtain a patent.

In the United States a patent may be obtained if a patent application is filed within one year after the invention is disclosed through publication or commercial use. In many foreign countries a patent cannot be obtained if there has been any disclosure of the invention to the public prior to the filing of a patent application. However, under an international convention, a patent application in the United States generally will preserve for one year the right to file patent applications abroad even though there has been publication of the invention subsequent to the U.S. patent application but before foreign patent application is filed.

Elements of an Institutional Patent Policy

An institution seeking to establish or clarify its position regarding rights to and disposition of patentable inventions should develop a statement of patent policy. The statement should be broad enough to encompass all foreseeable patent situations, yet specific enough to allow administration of the policy without frequent recourse to policy deliberations by an advisory committee. The statement should briefly define the administrative structure for processing a patentable discovery and it should be directly and succinctly presented for clear understanding by lay persons in the field. The basic purpose of a patent policy is to define the rights and obligations of both the inventor and the institution as regards patent matters. To the extent that policies on consulting deal with patents, it is advisable to take them into account when formulating a patent policy.

Some institutional patent policies are incorporated into patent manuals that provide the reader with a brief orientation on patent matters. These publications can be helpful to neophyte inventors, but they should be prepared such that the institutional policy is clearly distinguishable from general instructional materials.

The following topics typically are found in institutional patent policies:

1. Preamble.
2. Applicability of the policy.
3. Establishment of the inventor commitment.
4. Rights of the parties.
5. Income-sharing arrangement.
6. Administrative arrangements.

Preamble. Although optional, this section is recommended. It should relate the basic purposes of the institution, its obligations to the public, and the scholarly aims of its faculty to the institution's interest in patents and ways in which patents serve these ends. The preamble should be kept short and to the point and establish a sound foundation for what is to follow.

Applicability of the Policy. This section defines research situations, sources of funds, all categories of persons who may invent (that is, faculty, staff, and student), activities in which such persons are engaged, and any combinations of these elements that would bring an inventor into the scope of, or exempt him or her from, provisions of the policy. Educational institutions do not usually lay claim to all inventive concepts generated by their employees or students. Rather, they limit themselves to those that arise as a result of employment relationships or use by the researcher of institution resources, facilities, or information.

Establishment of the Inventor Commitment. Once an institution determines the criteria for applying the policy to individuals, its personnel may be required to dispose of inventions as determined by the institution in one of several ways (listed in generally decreasing order of enforceability):

1. By a formal inventor agreement—a legally enforceable contractual commitment by a person to dispose of inventions as determined by the institution. The agreement becomes a standard form for the institution and should be drafted by an attorney to insure its enforceability. It is best executed by the individual when he or she assumes employment.

2. By a state statute which stipulates that inventions made in state institutions or by state employees be disposed of in a predetermined manner.

3. By a person giving his or her written assent to the stated patent policies of the institution, which policies pronounce an obligation by the individual with respect to inventions.

4. By a stated patent policy containing a patent commitment which is established by the governing board and brought to the attention of individuals, but to which such persons are not required to give their personal formal assent.

5. By the presence of a policy allowing the individual to dispose of inventions as determined by the institution or to retain title, at his or her option.

To allow an institution conducting sponsored research to fulfill its contractual obligations, it is essential to have for every person engaged in such research a valid, binding commitment to assign inventions.

Rights of the Parties. The policy should specify the rights that the institution, the inventor, and sometimes outside sponsors have in the invention. The *institution* usually receives a valid, binding assignment of title to the patent application together with a commitment by the inventor to cooperate in executing legal documents, reviewing patent prosecution papers, and in some cases, assisting in the development or marketing of the patent. The *inventor* is entitled to receive from the institution a clear statement of his or her rights and share of income, and the institution's plans for bringing the invention into public use, including a contingency for reassignment to the inventor. *Sponsors'* interests in these situations are usually represented by the institution based on the terms of the research agreement. Sponsor equities in patents must be scrupulously observed by the institution to permit it to perform and maintain its contractual obligations.

Income-Sharing Arrangement. Educational institutions that accept assignment of patents from inventors customarily share royalty income with them. The inventor's share generally ranges from 15% to 50% of net income, although there are a few policies that authorize income outside these limits. Some institutions use sliding scales of income-sharing between these limits with a greater percentage going to the inventor from the early receipts and the rate of sharing declining as the amount of royalties increases.

Most royalty-sharing arrangements are predetermined, that is, the inventor cannot negotiate a higher rate of sharing than stipulated in the institutional policy. Predetermined sharing rates have the advantage that it is unnecessary to pass judgment on the relative worth of each invention. They are easier to administer and usually reward the inventor equitably because a valuable invention's true merit is reflected in the greater total royalty revenues it generates, a portion of which inures to the benefit of the inventor. Where several individuals collaborate on a patentable invention the inventor's income share is divided among them in portions agreeable among themselves (including co-developers who may not legally be inventors).

Administrative Arrangements Defined by Policy. Patent policies usually specify that patent activities be placed under the administrative cognizance of an institutional patent committee appointed by the governing board, the president, or the faculty senate with a majority of the individuals on the committee representing scientific or technical disciplines. It is not uncommon for a dean, a vice president, or even the president to serve as chairman. This committee often has the responsibility for recommending or establishing patent policy, adjudicating disputes, determining which inventions shall be the subject of patent applications, and overseeing the administration of patent matters within the institution.

Administration and Development of Inventions

The provisions of the institutional patent policy usually determine the make-up of the administrative organization for patents. Typically found at the top of the structure is the patent committee described above. The size of the administrative organization below this committee will vary, depending in part on the amount of research resulting in patents at the institution and on whether or not the institution assumes its own patent development and marketing responsibilities or delegates them to another organization.

Serving the committee as its operating arm on a part- or full-time basis is the institution's "focal point" on patents, an administrator usually drawn from the office of research administration, the legal department, or the business office. This administrator need not be a patent or general attorney but must have a thorough understanding of institutional patent policy and enough background in patent procedures and patent law to handle procedural and policy problems arising in the management of patents.

In a large operation, the patent administrator and any assistants may be a part of the institution's administrative group and often will work full time on patent-related matters. In a modest institutional patent operation, this individual may come from one of the basic science departments and spend only a few hours per month on duties related to patents. Regardless of the size of the patent operation, there should be at least one person who understands the essential requirements for handling patentable information (which is also perishable). This should insure that valuable property rights are not lost to the institution by premature disclosure, publication, or public use prior to filing a patent application or to releasing the invention to an affiliated patent development group.

Development and Marketing

The development and marketing of inventions typically occurs in one of three ways: in-house, by an institution-affiliated foundation, or by a patent management organization.

In-house. In this case, the institution controls and performs the invention evaluation that precedes the decision to patent, the filing of patent applications, the demonstration of the invention's feasibility, and the licensing (not necessarily in this order). This option is initially more costly, because it requires an early outlay for patent application costs and the overhead costs of patent administrative services. However, if sizable royalties are earned, this approach may be the most advantageous overall.

Institution-affiliated foundation. This option can have the advantages of better availability of funds to carry on the development of inventions (a speculative activity) and greater freedom to employ commercial methods to develop and promote the uses of the inventions. Assuming equal capabilities to develop inventions, the presence of a foundation may result in less income for the institution because of the foundation's expectation of sharing income. Both the in-house management and the institution-affiliated foundation management of patents allow the inventor to work closely with the unit that is promoting the invention. The inventor's ready assistance and background often are crucial to getting the invention covered by a

patent and "off the ground" as a commercial success.

A patent management organization. Patent development and marketing by one of these organizations has some distinct advantages: it permits an institution to be active in patents with a minimum financial outlay and it allows considerable legal, marketing, and patent management expertise to be tapped at no immediate cost to the institution. The chief disadvantage in this arrangement is, of course, that a substantial portion of any royalties earned is shared with the patent management group as compensation for services. Also, because of the large number of inventions handled by organizations of this type and the geographical limitations involved, it is possible that this arrangement will diminish the valuable personal input of the inventor in development and marketing efforts.

These three routes of invention development need not be mutually exclusive for an entire patent program. Many institutions utilize more than one, depending on the type of invention reported and the location of the various capabilities needed to develop it.

It is advisable for an institution involved with patents to have available the services of a patent attorney to answer questions, interpret the law, prepare, file and prosecute patent applications as the need arises, and serve as a representative during patent-related negotiations. Because of the diversity of complex patent subject matter generated in colleges and universities, it is desirable that the attorney be affiliated with a firm that includes individuals with a wide variety of technical backgrounds. The American Patent Law Association can be of assistance in making a selection.

Patents in Sponsored Research

The patent policy of the institution may be an important consideration at the time a research proposal is submitted to a sponsoring agency. It is important for the faculty performing research to be aware of any agency patent policies that may conflict with the institution's patent policy. If this information is known in advance, the faculty member will be able to determine the institution's position with regard to the submission of proposals that are likely to produce patent policy conflicts. When there is a conflict it may be possible to negotiate the differences, thereby assuring the availability of research funds. If the faculty is made fully aware of the situation, the chances are improved that they will support the administration's efforts to negotiate acceptable arrangements.

When the funding agency has an institutionally acceptable patent policy, there is normally no problem in accepting funding because the usual terms and conditions of the granting document will have been approved in advance. However, due to changes that take place in government regulations, contracts, and granting documents, knowledgeable people in the office of research administration should monitor the incoming grants and contracts to insure that no changes have been made in the patent (as well as other) requirements. If there are changes, the office responsible for patent matters should be alerted to interpret these alterations with regard to the institution's own policy and, if necessary, assist research administrators in preparing the necessary arguments to the funding agency to effect a modification of the terms of the contract.

Federal grants and contracts usually contain a provision on invention reporting. These requirements stipulate that the contractor make periodic reports of inventions made by researchers, including the timely submission of invention disclosures and a final report at the termination of the contract. Where it is determined that an invention has occurred as a result of or during the course of sponsored research, it is the duty of the office responsible for patents to obtain a complete and properly prepared disclosure from the investigator and to insure that it is properly filed with the contracting officer in order that the grant or contract can be closed without undue delay.

Institutional Patent Agreements

DHEW and NSF regulations provide for the negotiation of Institutional Patent Agreements (IPAs) which provide the grantee a first option to retain principal rights in and to administer inventions made in the course of or under research grants and awards from these agencies. The grantee has the right under the IPA to elect to file patent applications in the United States and in foreign countries on any subject invention and to administer such invention pursuant to the provisions of the agreement.

In early 1978 the Federal Procurement Regulations were amended by the General Services Administration to provide for use of IPAs in contracts with educational institutions. Federal agencies are encouraged to use an IPA when negotiating contracts with universities. The agreement prescribed for use in the February 2, 1978 *Federal Register* provides flexibility and permits changes as required by applicable agency statute or by special administrative needs (see references).

Patent Licensing

A license is the legal right to use the patented invention of another. It may be established by contract or implied from the conduct or legal position of the parties. This document is concerned only with those licenses established by contract. Licensing is the primary method by which a patented invention developed in an educational institution is put into public use (see references). Some important points concerning licensing are:

1. The degree of the licensee's motivation to employ the invention in a commercially successful way and the licensee's capabilities for development, manufacture, and marketing are of primary importance.

2. A license agreement must be a valid and legally enforceable document which precisely defines the rights being transferred and the obligations assumed.

3. To protect the public interest, exclusive licenses should generally be for a limited term. However, they should be of sufficient duration to enable a licensee to recoup unusual development and market penetration costs plus a sufficient additional return to bring forth the licensee's risk capital.

4. Royalty rates can be assessed on a variety of bases and can vary widely. In general, they are reasonably consistent for the same class of products.

5. Exclusive licenses should provide for cancellation in the event the licensee does not make adequate progress in development and marketing.

6. Licenses should provide that the licensee cannot use the name of the inventor or of the institution for sales or promotional purposes without prior approval.

7. In some cases an outright assignment of a patent for a consideration, lump sum or deferred, will be an attractive alternative to licensing.

Transfer of Technology Outside the Patenting Process

It is not uncommon for educational institutions to provide considerable public utilization of their scientific findings without the benefit of patents. Typically, this is accomplished by the publication in appropriate journals of small amounts of information which in themselves are not patentable but which in the aggregate are important contributions to the advancement of numerous technologies.

More complete concepts are often produced that may or may not be patentable and about which an institution is unsure of the commercial prospects. Institutions have a responsibility to the public, to themselves, and to individual developers to move these discoveries into public use. Some discoveries lend themselves to nonexclusive release, while others demand limited-term exclusive arrangements to bring forth the incentive of commercial organizations to commit their resources.

Where some exclusivity to unpatented technology is necessary, disclosure agreements may be employed by an institution and recipient organization to define the terms and conditions under which the information is released and under which the recipient evaluates the concept. Such agreements usually provide for the ultimate protection of the institutional patent position, if any, and for follow-on licenses or other contracts that specify conditions such as those under which the recipient organization may commercialize the discovery. Also provided for is the degree to which the recipient organization may be compensated therefor, the title to any patent that may be available, and other items. Institutions that are highly motivated to technology transfer or that have limited funding available for patent applications should consider this alternative.

The decision of whether to seek a patent application or use a disclosure agreement usually is

made when the invention is reviewed by the patent committee. Disclosure agreements are binding contracts between the two organizations. They must be carefully drawn and must precisely define the idea disclosed. Therefore, their preparation calls for expert assistance.

Invention Disclosures

An invention disclosure in this context is a complete description of an invention written by the inventor to report an invention to the institution or a sponsor. Along with the original laboratory notebooks and records it is one of the most important documents in an institutional patent program. The invention disclosure is based on the information contained in laboratory notebooks. (See Appendix B, "Guidelines for Keeping Laboratory Records.")

It is customary for the office responsible for patents to provide a disclosure form or set of guidelines for preparing disclosures. Whichever is used, completeness is more important than format. The invention disclosure should be couched in good technical language rather than in legalistic style. If the invention becomes the basis for a patent application, a patent attorney can put it in language that is acceptable to the Patent Office.

The invention disclosure is valuable in several ways. Writing the disclosure helps the inventor to mentally clarify the inventive concept and, if the concept has not yet been reduced to practice, to better organize his or her thoughts concerning it. A good disclosure is essential for the technical evaluation of the invention, for an accurate assessment of its commercial feasibility, and for a determination of its patentability. In the latter case, the disclosure is often used as the descriptive information supplied to the Patent Office for making the novelty search. Its clarity and completeness strongly affect the quality of the patent search.

The invention disclosure may later be used as the basis for the preparation of the patent application. Well-prepared disclosures readily transmit the patentable idea to the patent attorney and assist in preparing an application that precisely describes the invention. The less attorney time required for this, the lower the cost to the institution. Finally, when witnessed laboratory records bearing earlier dates are not available, the invention disclosure can serve as proof of the date of conception, or at least of the earliest recording of the invention. It thus may be an important document in any controversy over which of two parties first made the invention.

Disclosures of inventions are required under the terms of federal research agreements and must be sufficiently complete and of a quality that will allow the supporting agency to evaluate and prepare a patent application in the event that the contract terms entitle it to do so. A complete and accurate invention disclosure is extremely important to patent management organizations because they are usually not located in close proximity to the inventor. These organizations must, therefore, rely heavily on the inventor's written description to assess the worth of the invention and to determine any interest in accepting it and in carrying it forward to patenting and commercial development. (A typical set of instructions for preparing invention disclosures appears as Appendix C.)

Administrative Service supplements document principles, policies, practices and procedures in the field of college and university management. They provide additional information about subject fields or offer specific guidance in regard to generally accepted principles and policies. Supplements are the result of a comprehensive review process modeled after that used for the basic chapters of the Service.

APPENDIX A: PATENTS AND COPYRIGHTS—A COMPARISON

	Patents	Copyrights
Coverage	Processes, machines, products of manufacturing, compositions of matter, plants, and improvements on the above, and designs.	Books, periodicals, lectures, dramatic or dramatico-musical compositions, musical compositions, maps, works of art, drawings or plastic works of a scientific or technical character, computer programs, photographs, pictorial illustrations, labels, motion pictures and video tapes, audio recording.
Essential criteria	Must be novel, have utility, and be nonobvious.	Need not be novel, only the original product of the creator.
When statutory rights established	Patent Office (usually about 19 months after application date). When patent is granted by the	The material mentioned above under "Coverage" is copyrighted from its creation. However, the copyright should be registered within three months following publication.
How statutory rights established	By filing a formal disclosure of the invention (with allowable appended claims) in the Patent Office together with the prescribed fee.	Rights are established by the creation of the work. Registration occurs when the prescribed number of copies are deposited in the Copyright Office, together with the prescribed fee and the appropriate application form.
Examination	Examined for essential criteria (see above).	Examined for essential criteria (see above).
Outside professional services	The services of a registered patent attorney should be obtained for filing and prosecution.	No outside services required. Registration may be accomplished by the author.
Cost	Patent Office fees ($235 average) plus attorney's fees may result in $1,000 to $2,000.	$10 plus cost of deposit copies.

	Patents	Copyrights
Term and Renewability	17 years, not renewable.	28 years for works copyrighted before January 1, 1978, renewable for a second period of 47 years. For works copyrighted on or after January 1, 1978, author's life plus 50 years. For works made for hire (such as for associations or institutions), for anonymous and for pseudonymous works, 75 years from publication or 100 years from creation, whichever is shorter.
Marking	Failure to place patent number on patented article does not invalidate the patent.	Failure to employ copyright notice on the original publication or an improper notice on the original publication may be corrected within a period of five years. If the correction is not made by then, the work falls into the public domain.
Who May Apply	Except in unusual circumstances, the inventor's signature must appear on the patent application.	Only the author or those deriving their rights through the author may copyright the work.

APPENDIX B: GUIDELINES FOR KEEPING LABORATORY RECORDS

1. Legibly enter in ink concurrent with your daily work a complete and accurate record of your research activities and sign and date each page.

2. Whenever possible, preface each series of pages with a brief heading of the most generic *nature* of the work performed (that is, statement of problem) rather than what you expect or hope will be the *results* achieved. Avoid gratuitous conclusions.

3. Similarly, when an experiment or run is completed and it represents the reduction to practice of only one or more species, include a paragraph setting forth still other species and parameters of variables stating the reasons you expect them to be effective in order to later provide a valid basis for a generic claim. This is conveniently included under a "Modifications and Extensions" heading and need not include complete data at that time.

4. Faithfully have your work corroborated by having your notebooks witnessed by dated signature of an associate (*not* a co-worker or one who collaborates in your research area and who could be or is a joint inventor). Notation of witness should appear after the last line of your experiment and not necessarily only at the bottom of every page. If necessary or desirable, explain in detail the work performed.

5. Prior to destroying any samples, run sheets, or records of any kind, check with the director to make certain they are of *no* value to any project member.

6. Clear *all* proposed publications (including abstracts) with the director in order to most fully protect and preserve property rights in research.

7. Record your observation of physical results even if not fully appreciated or understood at that time.

8. Utilize the last four to five pages for an index, as desired.

9. Start a new page for each new experiment and draw a continuous diagonal line through unused portions of pages remaining at the close of an experiment.

10. Avoid erasures but where necessary cross out with a single line.

APPENDIX C: GUIDELINES FOR PREPARING AN INVENTION DISCLOSURE

The following guidelines illustrate the preferred layout and content for invention disclosures. Completeness is very important in preparing the disclosure in order that it can serve as a basis for a worthwhile patent search and for preparing the patent application. To be complete, the disclosure should include all the pertinent experimental data available, both pro and con, which has a bearing on the inventive concept. (The data, if voluminous, may be attached as an appendix.) It is also important that the inventor have considered the various alternative ways of constructing (in the case of apparatus) or performing (in the case of a process) the invention. This is something a potential infringer would do, and having the alternative embodiments on hand permits the preparation of a patent application which is broad in scope. The inventor should, however, specify which embodiment is preferred.

The Disclosure

The disclosure should contain the following elements:

A. *A Title.* The ideal title is brief but comprehensive, technically accurate and descriptive.

B. *An Abstract of the Invention to Be Disclosed* (of about 100 words).

C. *Statement of the Background of the Invention.* The disclosure should state the field of art to which the invention pertains. The basis for this requirement is that an accurate description will permit a future patent application to be properly classified in the Patent Office, and therefore it is helpful if the inventor can accurately categorize the invention within the field of his or her endeavor.

D. *Description of the Prior Art.* A statement of the prior art known to the applicant should be set forth. This will include a description of the various

existing devices or processes and their shortcomings that are remedied by the present invention. If published material such as scientific papers, patents, or commercial literature relating to or describing the prior art is known to exist, it should be cited (or supplied, if available).

E. *Summary of the Invention.* In this section describe in detail:

1. How the invention is designed. Where alternative designs are available, describe these and select the preferred embodiment. To clarify, attach and refer to descriptive drawings, flow charts, circuit diagrams, etc.

2. Ranges of operating conditions, such as time, temperature, or pressure, where these are relevant to the invention. Preferably these should be in terms of broad ranges of conditions and narrower optimum or preferred ranges. Where materials may be varied, sufficient specific materials should be enumerated to illustrate the range of usable materials. A sufficient number of specific working examples should be set forth to illustrate the variations in conditions and materials.

3. How the invention operates to produce a result or results not achieved in the prior art.

4. The new concept that has been invented: describe succinctly.

5. All advantages such as efficiencies, cost benefits, etc. produced by these new results.

F. *Utility of the invention.* Indicate briefly and in general terms, particularly for chemical cases. Where the utility is evident from the earlier sections, this section may be omitted.

G. *Publication of the Invention.* List (and append, if possible) all publications in which the invention was described or occasions on which it was described orally to others; for example, at symposiums.

H. *All budget numbers used to defray any research costs that are invention-related.*

I. *Signatures, Witnesses, and Dating.* Each inventor should sign the disclosure before a witness who understands the invention. The witness should also sign. Each set of signatures (inventor and witness) should be dated.

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