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PATENT BRANCH, OGC
DHEW

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The Honorable Robert Dole
United States Senate
Washington, DC 20510

Dear Senator Dole:

I very much appreciate receiving your letter of August 14 on your activities in the area of patent legislation and technology transfer. The amendment you introduced to Senator Kennedy's Health Research Bill is timely and should slow down further erosion of the patent situation. We are most interested in the follow-up bill which you plan to introduce with Senator Bayh; I have contacted Ms. Levenson for a copy.

In the balance of this letter, I explain why Penn State encourages invention by faculty researchers, I cite examples of effective technology transfer, and I examine the value of institutional patent agreements to this University. Perhaps some of this material will be helpful to you and your staff.

This Institution follows a clearly stated patent policy, which is described in a booklet distributed to faculty and sponsors. (We have had a formal patent policy since the 1920's.) Inventions and patents in a university setting are justified primarily for two reasons:

(1) The award of a patent is a recognition of innovation and creativity that complements the more usual recognition of faculty through their publications in scholarly journals. A patent policy provides encouragement and reward for faculty inventiveness.

(2) The patent system in the United States properly employed is a low cost and effective means of promoting technology transfer, i.e., moving a good idea from the "bench" to the market, to benefit society. Without the protection of at least limited-term exclusivity, most companies are unwilling to risk large investments to bring unproven new ideas through the research and development, manufacturing, tooling, advertising, and marketing phases. Patent royalty is a relatively small factor in the overall cost of bringing a new product to market. But patent protection is crucially important.

The University and the faculty need a clearly-stated patent policy to avoid misunderstandings and abuses. Our policy prevents abuses such as the bottling up or restraint of valuable patents, unreasonable licensing fees, and excessive earnings from royalties by inventors. Our policy has evolved over the years, and changes in handling patent matters by federal agency sponsors have, of course, influenced our decisions. In particular, we follow the HEW guidelines closely, e.g., the ceiling on the inventor's share of royalties is taken directly from HEW policy.

In summary, inventions and patents are handled under a clearly stated policy which protects the University, faculty, sponsoring agencies, and the public.

University patent policy requires that royalty income be used for the support of research at Penn State. Competitive proposals are invited annually from faculty members, and based on the funds available grants ranging in size from $3,000 to $10,000 are provided to faculty in support of their proposed investigations. During the past five years this research support has averaged $24,000 annually.

Examples of Technology Transfer

Three examples of invention and technology transfer are as follows:

(1) A series of patents has been issued to Penn State inventors covering hermetically sealed cardiac pacemakers. One version is rechargeable with a 3-year life between charges and a 20-year total life. On a limited-term exclusive basis, three of the series of patents have been licensed to Intermedics Corporation, a large U.S. manufacturer of cardiac pacemakers. Built-in telemetry is a feature of these pacemakers which is a significant contribution to medical science. Telemetry provides detailed information on the condition of the battery and the pacing circuitry. It also permits re-programming in situ, for example an adjustment in pacing rate. It is expected that "recalls" which in the past have required reoperation on the patient will be drastically reduced because the new pacemakers can be thoroughly and rapidly checked out by telemetry with minimum inconvenience to the patient.

(2) The second example is a new ammonia fertilization technique. The process converts gaseous ammonia into a stable liquid-gas mixture which is injected into the soil and trapped, using plows, knives, or discs. The process reduces loss of ammonia to the atmosphere and eliminates a tilling process, thus saving energy, time, and machinery maintenance. The invention has been licensed to U.S. Steel's Agri-Chemicals Division and is being marketed under the name "Cold-Flow."

(3) A patent on a new slow-release mushroom nutrient has been licensed to Spawnmate, Inc., San Jose, CA. The patent covers a denatured protein-vegetable oil compound that feeds mushrooms and only mushrooms throughout their growth cycle. Spawnmate invested approximately $500,000 in final R&D work and plant equipment for production. It is now marketed widely in the United States. Tests show a 40% greater yield from the same bed area as a result of the timed release of nutrient. Pennsylvania is the largest mushroom-producing state in the U.S. and this invention is thus of particular importance locally. Competition from Taiwan, Korea, and other low-labor cost areas has been putting tremendous pressure on the processed-mushroom part of the industry in this country. The new fertilizer is expected to be of significant value in strengthening U.S. producers.

In all three of these cases, tangible advances capable of saving energy, jobs, and lives would not have happened without a patent system which provides an incentive and recognition of inventiveness. Having a good idea is not enough by any means; a policy and reward structure are needed to encourage "going to market." Until a new device or process is commercialized and sold, it cannot benefit the public.

Institutional Patent Agreements

At the present time, Penn State has one IPA, with the DHEW. The value of this arrangement is that it promotes technology transfer and at the same time saves a great deal of paperwork and administrative costs. We know from the beginning of each DHEW grant that if a useful invention occurs - and this is a big "if" since inventions are the by-product and not the object of our research - that Research Corporation representing Penn State can proceed with patenting and marketing. (Research Corporation is a not-for-profit patent service company.) In contrast to this simple arrangement, inventions that occur in the course of say a DOE-sponsored project must be taken back to the agency on a case-by-case petition basis. The documentation accompanying this petition for approval to patent and market is lengthy and expensive because it ties up skilled manpower.

An important by-product of working with IPA's is the encouragement of the institution to develop rational policies that are fair and protective to all of the parties involved, i.e., the inventor(s), the licensee, the university, the agency, and the public. In short, IPAs push the institution and agencies in the direction of well-planned and intelligent patent policies designed to bring out the best and eliminate abuses. An IPA is by no means a giveaway; there are positive benefits to the funding agency, to the university and the inventors, and most of all, to the public.

The idea that patents and/or the exclusive licensing of patents to a commercial firm is somehow evil or deprives the public, apparently stems from a lack of understanding of the risk-taking and investment of resources required

to take even relatively simple inventions from the concept stage to the marketplace. Most inventions require additional research and development, plant equipment, market surveys, advertising and marketing costs. Industries will not invest millions of dollars while leaving themselves wide open to johnny-come-lately competitors who can move in at the eleventh hour with a copy of the new device, and market it at lower cost having avoided the risk-taking and development costs incurred by the originator.

Government Ownership of Patents

At the present time, the Federal government owns thousands of patents freely available to everyone but which are not being applied. That very availability discourages needed R&D and capital investment, and thus it has a negative effect on technology transfer. The public is the loser because good ideas, improvements, ways to save money or do things better for the same money, remain "on the shelf." To move still further in the direction of government sequestering of patents is illogical. It would reduce the effectiveness of university patent systems. I emphasize this point because of the low priority which patents have among most faculty researchers. Their greatest rewards and measures of success in career development are in terms of papers published in refereed journals. Not infrequently, there is a conflict between early publication and filing for patents - although both can be accommodated in most cases. If the message is received on campus that patent rights are no longer possible and that the possibility of royalty income has been taken away, faculty and hence their institutions will very rapidly give up on inventions and patenting.

Conclusion

I have reviewed the positive reasons for our encouragement of the invention process, based on a clear-cut policy. Effective technology transfer has been illustrated with three current examples at Penn State.

I believe that our DHEW Institutional Patent Agreement (IPA) is effective and advantageous for the University and for the public through commercialization of good ideas. It follows that the IPA is also advantageous to the sponsoring agencies (and the taxpayer) because it results in effective technology transfer at no additional cost and virtually no paperwork.

Finally, the IPA provides adequate safeguards for the public interest and the funding agency in applying this means of promoting technology transfer. Improper royalty income distributions or "bottling up" of competitive new ideas by industry and other abuses are prevented.

I apologize for the length of this letter, but it is indicative of our interest in maintaining and improving our patent program. I hope that you will be successful in expanding this forward-looking IPA means of handling patents to include all federal funding agencies. Thank you again for writing.

Sincerely yours,

Richard G. Cunningham
Vice President for Research
and Graduate Studies
Professor of Mechanical Engineering

RGC:cah

cc: Senator Richard S. Schweiker
Senator H. John Heinz, III