

## Scientific Basis for the support of biomedical Science

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The impetus for this article began in 1966 with a government funded operation known as project "Hindsight." This project involved a team of scientists and engineers that retrospectively analyzed how 20 important military weapons came to be developed. They found that the contributions from universities were minimal compared to private industry, progress occurred faster if the project had a specific goal at the start, and that the lag between initial discovery and final application was shortest when the scientist worked in areas targeted by the financial sponsor.

After this study came out, many scientists began voicing concerns that it was too narrow of a study and that you cannot compare military progress to biomedical progress. Most there arguments focused on people like Wilhelm Roentgen who was funded for the study of basic physics and "discovered" the x-ray, now a mainstay of clinical medicine.

The essential question is: "Would the federal government get more for its biomedical research dollars if it funded clinically-oriented research or non-clinically oriented research? The goal being to help society as a whole rather than gaining esoteric knowledge. The authors performed a study trying to answer this question of which types of projects would yield the highest return for society. They began by analyzing the life-saving advances involved in cardiovascular and pulmonary diseases. The advances that were studied were open-heart surgery, vascular surgery, treatment of hypertension, management of coronary artery disease, poliomyelitis prevention, treatment of tuberculosis and acute rheumatic fever, cardiac resuscitation, cardiac pacemakers, diuretics, ICUs, and new diagnostic methods. 4000 scientific articles were published in these fields and a panel of 140 experts from all these fields were asked to determine what they articles were that lead to innovations in each of these fields. 529 articles were picked. This final result showed that 41% of all work judged essential for later clinical advance was not clinically oriented at the time it was done. Furthermore of these 529 articles 61.7% were in the basic sciences.

The conclusion drawn by the authors was that a generous portion of the nation's money should be given to bright scientists for projects without regard to the project's relation to specific human disease. Furthermore, basic research pays off almost twice as handsomely as all other types of research combined.