

Found in Translation: Tracking and Tagging Translational Research

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Abstract

The NIH Roadmap includes an initiative to encourage the translation of basic science into clinical applications¹. Billions of dollars are being spent on this effort to improve healthcare, and the question of how long it takes for NIH research to lead to new therapies needs to be answered. This project looks at identifying and tracking translational research papers at the NIH with the goal of eventually shortening the time it takes for science to move from bench to bedside.

Methods

A list of 6,800 term combinations (of 2 or 3 components, e.g. “potential therapeutic target”) was created using vocabulary from known translational articles and a thesaurus. These term combinations were used to search PubMed using E-Utilities, limited by date of publication (before 12/31/2008) and NIH affiliation. The term combination, PubMed ID (PMID), PubMed Central ID (PMC ID, if available), and year of publication were collected for each retrieved citation.

42 citations from the full retrieved set were chosen at random. After removing 4 false positives and 13 reviews, 25 basic science citations remained. These 25 citations were searched in Web of Science and Scopus, large citation and abstracts databases that track where original articles are cited. The articles that cite the 25 are being coded by type (clinical trial, research, reviews, etc.) and broken up into 5-year “generations” to track if, how and when NIH basic research was translated into clinical applications.

A Medical Subject Heading (MeSH) suggestion was submitted to the NLM’s MeSH Unit to determine the feasibility of establishing an indexing term to “tag” future translational research (TR). Additionally, a database of translational papers to facilitate discovery is in development.

Results

Preliminary results include finding that the 25 sample articles have been cited 1488 times in the two databases. Moreover, the chosen term combinations returned TR citations with only a few false positives identified. Of the 6,800 queries, 127 returned PMIDs for a total of 955 unique citations (136 are also in PMC). The data indicate that the number of TR article citations in both PubMed and PMC are

steadily growing since the first retrieved citation published in 1988 (Figure 1).

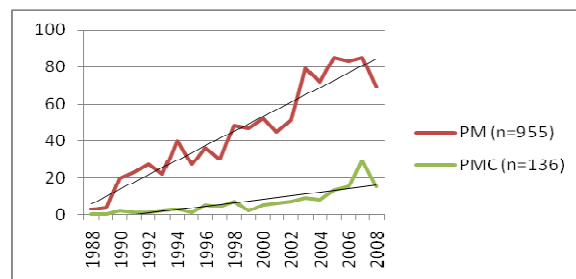


Figure 1. Retrieved PubMed & PubMed Central TR citations by year

In addition, the MeSH suggestion has resulted in the inclusion of the term “Translational Research” for 2010’s vocabulary (going live November 1, 2009), to be assigned to articles that describe the field of TR and/or its progress.

Discussion and Conclusions

The retrieved PubMed citations indicate that TR articles can be positively identified with the terms combinations developed. These identified citations show that the the number of TR articles is steadily rising, possibly corresponding with the recent attention from NIH. The growth trend also underscores the importance of determining whether NIH research leads to clinical applications. Presently, the 1488 citations of the sample set show that NIH research is being translated into additional work of some type.

The proposed coding terminology will show whether clinical applications are an end result: if they are, perhaps the time between the initial discovery and application can be shortened by making translational articles more findable (the goal of the developing TR database). The MeSH term will not routinely describe specific studies containing translatable research, but it will aid in the discovery of articles on the field, supporting its progress and leading to new solutions.

References

1. NIH roadmap for medical research [Internet]. Bethesda (MD): National Institutes of Health [reviewed 2009 Jul 16]. Translational Research; [reviewed 2009 May 6, cited 2009 Jul 16]; [about 3 screens]. Available from: <http://nihroadmap.nih.gov/clinicalresearch/overview-translational.asp>