

**Abstract Title:** Development and Validation of a Semiautomated Process to Retrieve Publications by Faculty Members in Academic Medical Departments

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**Introduction:** Identifying peer-reviewed, indexed publications to assess academic productivity<sup>1</sup> can be challenging for departments that rely on their faculty self-reporting. Some departments manually search for such citations, which is time-consuming and often not systematic, but is needed for reporting to the Accreditation Council for Graduate Medical Education or for verifying publications as part of an incentive pay structure. We developed and validated a simple, scalable algorithm in Excel (Microsoft) using formulas and Visual Basic for Applications that identified faculty publications.

**Methods:** Input to the algorithm includes the last name and first initial of the faculty, alternative versions of the anesthesia department's name, and alternative versions of the institution's name. Also, a list of publications where anesthesia faculty typically publish is included to allow potential matches where the department's name was mis-specified or absent. Complex query strings that can be copied into the advanced search field in PubMed and Scopus are generated. The csv output files from the 2 sources are then processed to match the coauthor names to departmental faculty. The workbook collates all the identified references by faculty and sends an email to each for confirmation. The performance of the algorithm was evaluated at two large academic institutions where validated lists of faculty publications were available.

**Results:** More than 94% of the validated references were identified with less than 6% of references missed. The true positive rates were > 93% and the false positive rate <7%. The typical cause of false positives was where at least one coauthor was from the institution, but not from the department of anesthesiology, and the identified author was from a different institution and matched the last name and first initial of a department member. The most common causes of missed references was because the name of the department was missing and the publication was not in the list of target journals, or the institution was not identified. The workbook to perform the retrieval process is available upon request of the senior author.

**Table . Validation of Algorithm to Identify Department References with a PubMed Identifier (PMID)**

	Institution 1	Institution 2
Year Published	2020-2021	2019-2021
Validated References (Actual)	143	760
Identified by the queries	137 (95.8)	717 (94.3%)
Missed by the queries	6 (4.2%)	43 (5.7%)
Total Matches from Queries	153	633
True Positive	143 (93.5%)	609 (96.2%)
False Positive	10 (6.5%)	24 (3.8%)

**Conclusions:** The method we developed has sufficient accuracy to be useful for departments wishing to complete the initial screening of their faculty's publications. Manual checking is still required, but since the workbook returns the link to the digital object identifier (DOI) for each publication where a DOI is supplied (e.g., all PubMed references), this step could easily be performed by an administrative assistant within the department. Furthermore, there are no automated retrieval process which are sufficiently accurate as to not require validation. A limitation is that many references without a PMID will not be found, which would become the responsibility of the faculty to add to their list when confirming the identified references.

<sup>1</sup> Schimanski LA, Alperin JP. The evaluation of scholarship in academic promotion and tenure processes: Past, present, and future. *F1000Res*. 2018 Oct 5;7:1605. doi: 10.12688/f1000research.16493.1