Title: Advancing Systematic Review Practices beyond the Health Sciences: Training Librarians to Support Evidence Synthesis in Emerging Contexts

The University of Minnesota Libraries requests $234,314 in the area of "Lifelong Learning" for a three-year project that supports the recruitment and training of up to 120 librarians in systematic review processes and practices. A systematic review is a research method in which a team formulates a research question, searches, selects, and appraises the literature in order for researchers, practitioners, and policy-makers to make evidence-based decisions. Use of systematic reviews and related methods are growing rapidly in the life sciences and social sciences. Librarians working in these disciplines lack training in providing support for this type of research. To fill this gap in training, University of Minnesota - Twin Cities (UMTC) along with our partners at Cornell University and Carnegie Mellon University (CMU) aims to deliver six institutes over three years, which will equip academic and special librarians with a background in evidence synthesis methods and search strategy skills, enabling them to comply with established standards and meet researcher needs.

Statement of Broad Need Systematic reviews, meta-analyses, and other forms of evidence synthesis have been common practice in the health sciences for decades, and systematic review authors are advised to "work with a librarian or other information specialist trained in performing evidence synthesis to plan the search strategy" (Eden et al, 2011). As a result, health sciences librarians receive resources and training to support this research. Examples include courses at the University of Michigan and the University of Pittsburgh, both of which have provided trainings biannually for many years.

Disciplines outside the health sciences have seen a sharp increase in systematic reviews indexed in agricultural, biological, and social science databases (Riegelman & Kocher, 2018). For example, a title search for "systematic review*" OR "meta-analys*" in the agriculture database CAB Abstracts shows a 61% increase between 2014 and 2018. PsycINFO results for this same search show a 48% increase over the same period.

Demonstrated Expertise: At present, no training exists for librarians supporting systematic reviews outside the health sciences even as the need for support is rising. Systematic reviews require a thorough and reproducible search performed across a variety of resources on a well-defined research question. Research shows librarian involvement in systematic reviews enhances the quality of database searches, a critical component of these methods (Rethlefsen et al, 2015). Academic research and liaison librarians must be trained in systematic review methods so they can support and participate in the research taking place at their institutions. Cornell University and UMTC are leaders in this area, having been the first academic libraries to establish systematic review services explicitly for researchers outside the health sciences. Librarians from these two institutions as well as CMU have published literature on systematic reviews and are published systematic review authors. They have also been invited to provide systematic review training for librarians in the U.S. and abroad, and the systematic review teams from these three libraries have worked collaboratively to develop the materials used in these trainings. Currently, while the workshops are popular and reach capacity every time they are offered, there is no structure or funding in place to offer them regularly to meet the expanding needs of academic librarians.

Project Design Our goal is to train 120 librarians in systematic review design and search methodology so they will be able to participate on systematic review teams with researchers at their institutions. We will conduct two 2.5-day workshops per year for three years for a total of six with up to 20 participants per session. Travel, lodging, supplies, breakfast, and lunch costs

will be covered by the grant. To cover a broad range of geographic areas, workshops will be held at each of the partner institutions (UMTC, Cornell, CMU) as well as locations to be determined. The curriculum will be based on a pilot conducted in May 2019 at the UMTC in which feedback included high praise specifically acknowledging the training materials that could be easily implemented into their own practice. The curriculum will cover an overview of systematic reviews and similar methodologies, current guidelines and standards, search strategy development, software tools, study quality assessment, and setting up a systematic review service in a library. Active learning including hands-on search practice and small group work will be incorporated. Participants will have access to an open toolkit of resources to use after the training. Librarians who work outside the health sciences will be invited to apply, and we will screen applications based on need, applicable uses, and diversity in order to achieve the broadest possible representation of participants. Evaluations will be conducted after each workshop and the curriculum will be adjusted based on feedback and new developments in the field. Additionally, participants will be asked to report back on key indicators of success such as participation in systematic reviews and campus instruction. The curriculum developed for the pilot workshop covered a two-day training. Funding of this project will enable us to expand the curriculum to 2.5 days and develop the open online toolkit. This will help us to reach a broader audience and provide more resources to use as participants implement the skills they learned and share with colleagues.

Broad Impact The core areas addressed in our curriculum intend to expand knowledge, skills, and abilities of librarians from academic and special libraries of various sizes, disciplines, and complexities. There is great potential for this training to transform practice as participants bring what they have learned back to their own institutions and regional library communities. Due to our open toolkit, attendees will be able to refer back to lecture materials as well as learning objects to train staff at their own institutions. The training materials will be accessible and adaptable by other groups. This will lead to systemic change within the profession enduring far beyond the three-year funding period. This grant will allow us to improve the curriculum we have already developed and offer this training to a diverse, wide-ranging audience. After the grant period ends, we will have the structure in place to sustainably continue offering the training at cost to participants.

Diversity Plan We will invite applications from librarians representing diverse organizations, backgrounds, and experiences using the communication channels of REFORMA, the American Indian Library Association, the Black Caucus of ALA, and other library organizations that have memberships focusing on librarians of color and a variety of ethnic groups. We will also contact past attendees of programs such as the Tribal College Librarians Professional Development Institute. In addition, we have tentative plans for a workshop at the National Agricultural Library (NAL) and will specifically invite staff at the libraries of the 1890 Land Grant institutions which are historically black colleges and universities to apply. NAL hosted a systematic review workshop for USDA staff in 2018, conducted jointly by librarians from UMTC and Cornell. Paul Wester, NAL Director, will work with us and the Association of 1890 Land-Grant Library Deans/Directors to make this workshop a reality.

Budget Summary We are requesting a total of $234,314 for six workshops over three years with up to 20 participants and four instructors per workshop. The requested funds will cover travel ($93,824); lodging ($64,733); breakfast/lunch each day ($15,424); supplies ($184); and indirect costs ($60,149). Instructor time for preparation and participation in workshops will be contributed.