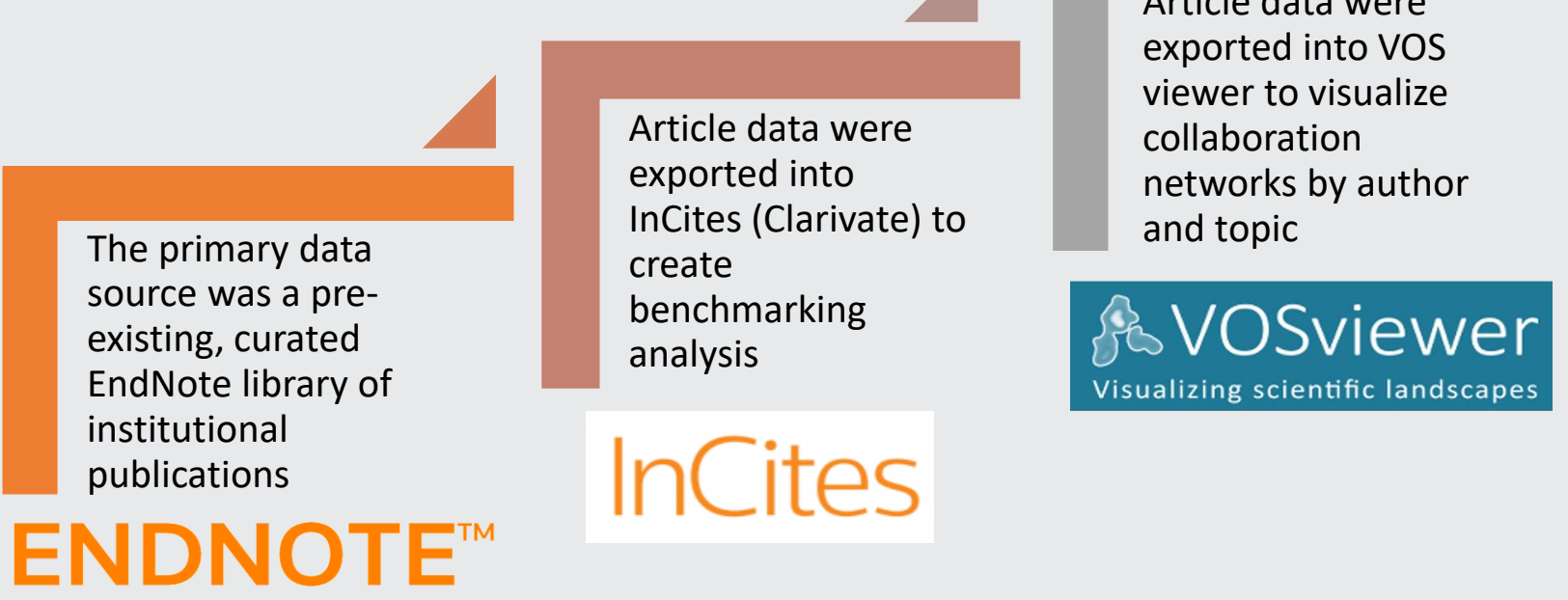# Using Bibliometric Analysis and Visualization to Identify Current and Potential Collaborators

Jordan Wrigley, MA; Virginia Carden, MLIS, AHIP; Megan von Isenburg, MSLS, AHIP

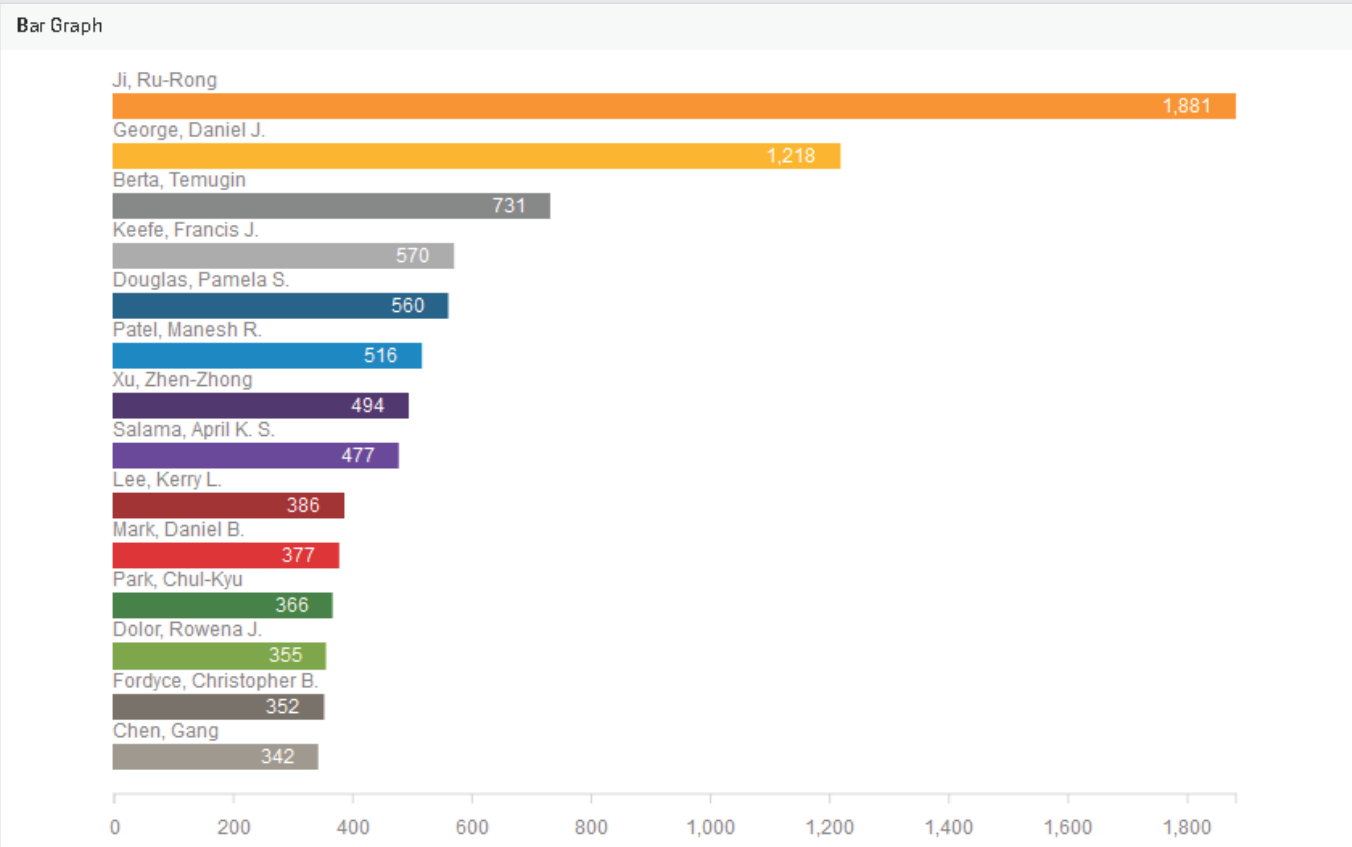**Duke Medical Center Library & Archives**

Background

Methods to detect and analyze current and potential collaborative research communities have been developed to facilitate enhanced collaboration and team science. This project characterized current research and collaboration patterns in research on pain at Duke University School of Medicine after researchers approached the library to better understand current institutional research and publishing on the topic as part of a grant application. To address this project, library staff developed a multi-tool process for bibliometric analysis and network visualization.

Data Sources and Tools

The primary data source was a pre-existing, curated EndNote library of institutional publications

ENDNOTE™

Article data were exported into InCites (Clarivate) to create benchmarking analysis

InCites

Article data were exported into VOS viewer to visualize collaboration networks by author and topic
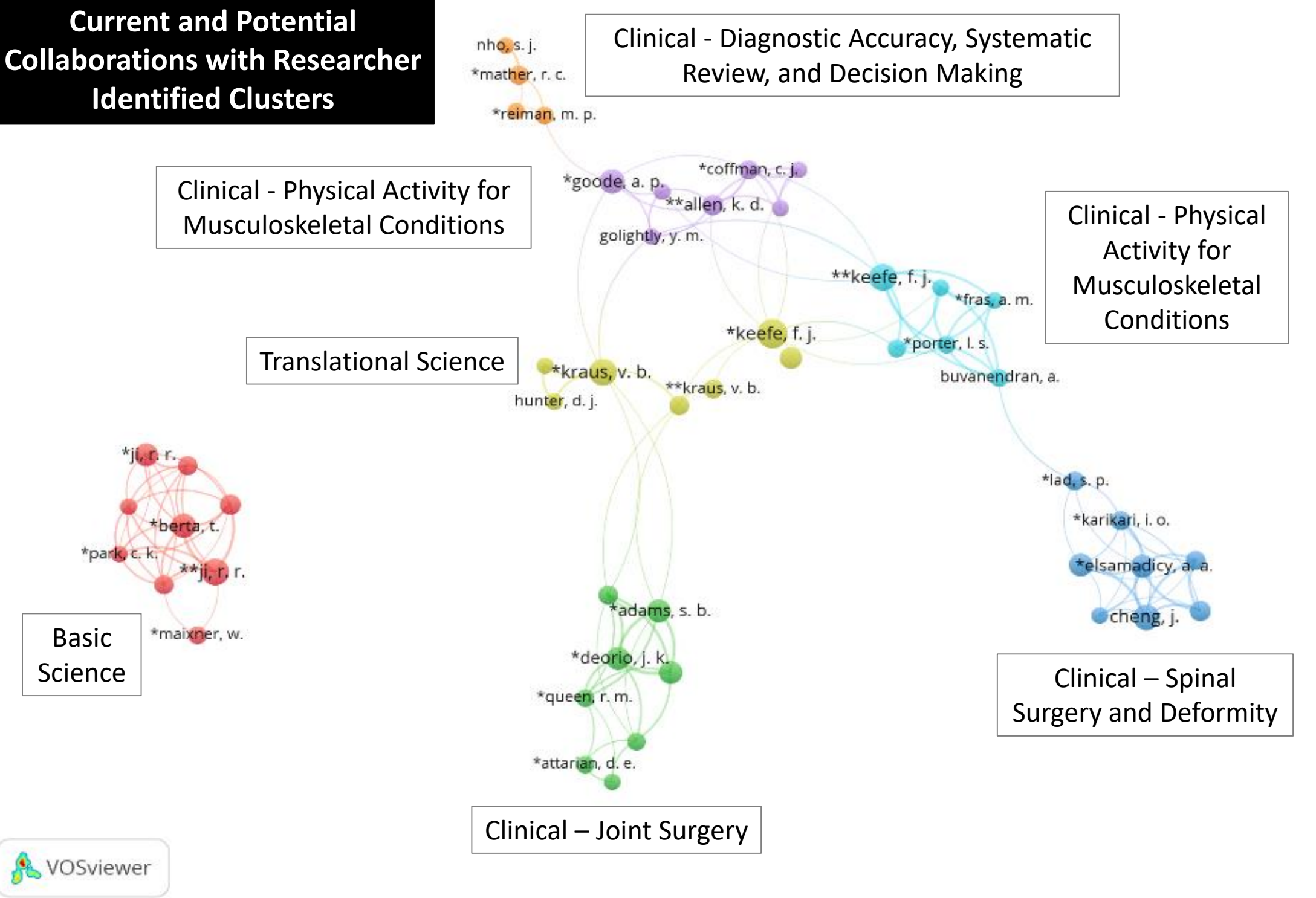
VOSviewer Visualizing scientific landscapes

Bibliometrics

Benchmarking analysis was explored via InCites (Clarivate). This provided metrics such as identification of inter-institutional co-authorship and citation count (below). The initial network analysis explored topic relationships among Duke pain researchers (to the right). This indicated where key topics may lie for translational opportunities including linkages between content areas.
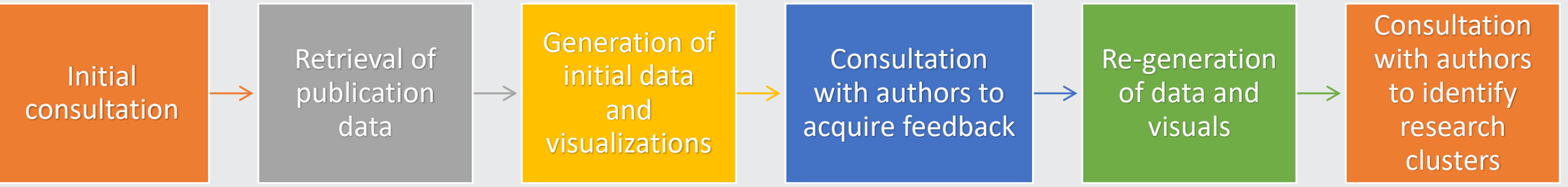

Bar Graph

Ji, Ru-Rong	1,881
George, Daniel J.	1,218
Berta, Temugin	731
Keefe, Francis J.	570
Douglas, Pamela S.	560
Patel, Manesh R.	516
Xu, Zhen-Zhong	494
Salama, April K. S.	477
Lee, Kerry L.	386
Mark, Daniel B.	377
Park, Chul-Kyu	366
Dolor, Rowena J.	355
Fordyce, Christopher B.	352
Chen, Gang	342

Indicators: Times Cited. Affiliated Organization: Duke University. Dataset: Pain from ENL.
InCites dataset updated Oct 31, 2018. Includes Web of Science content indexed through Aug 30, 2018. Export Date: Nov 19, 2018.

Current and Potential Collaborations with Researcher Identified Clusters

Clinical - Diagnostic Accuracy, Systematic Review, and Decision Making

Clinical - Physical Activity for Musculoskeletal Conditions

Clinical - Physical Activity for Musculoskeletal Conditions

Translational Science

Basic Science

Clinical – Spinal Surgery and Deformity

Clinical – Joint Surgery

VOSviewer

Process

Process was team-driven and required multiple skillsets and tools. Iterative consultations with researchers identified co-author and concept clusters based on domain knowledge.

Initial consultation → Retrieval of publication data → Generation of initial data and visualizations → Consultation with authors to acquire feedback → Re-generation of data and visuals → Consultation with authors to identify research clusters

Conclusions

Data visualization is an invaluable tool in detecting and analyzing current and potential collaborative research. The project successfully generated a number of useful visualizations characterizing current and potential pain research at Duke Medical Center. The analysis was included in a grant proposal for funding a center for pain research and for catalyzing further collaborative research.

Next Steps

The Library continues to use a team-based approach to bibliometric service requests as expertise is spread across multiple staff in separate units. Based on the project goals, the team selects the best data source and analytic tool for the project. Staff expertise and capacity are increasing based on this approach.