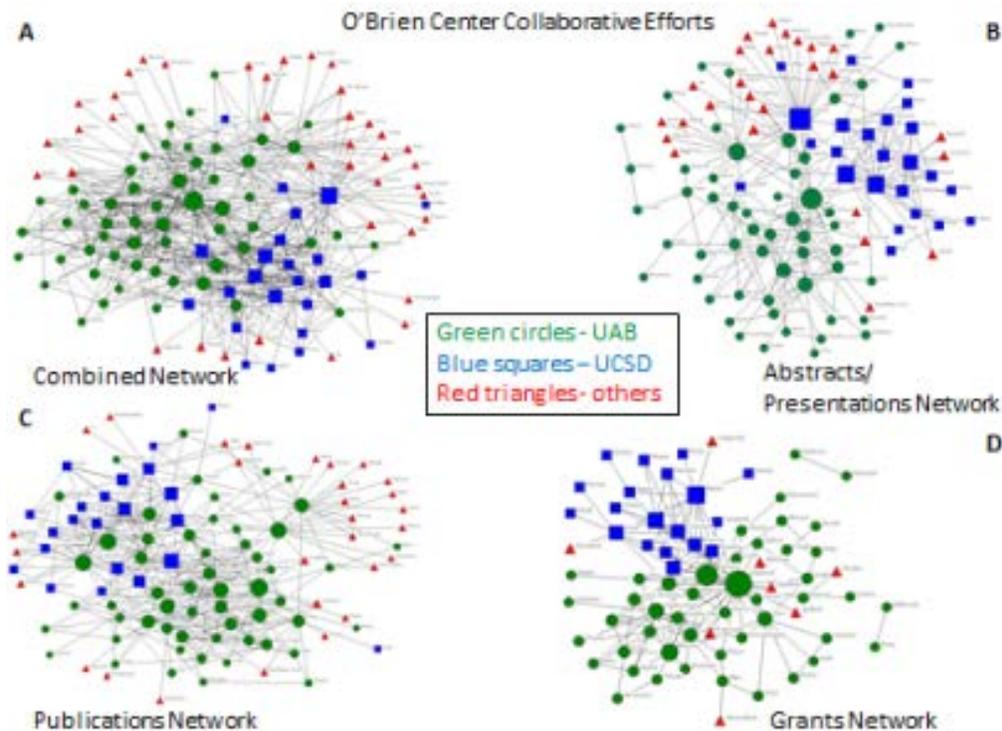


Social Network Analysis in Training Grants

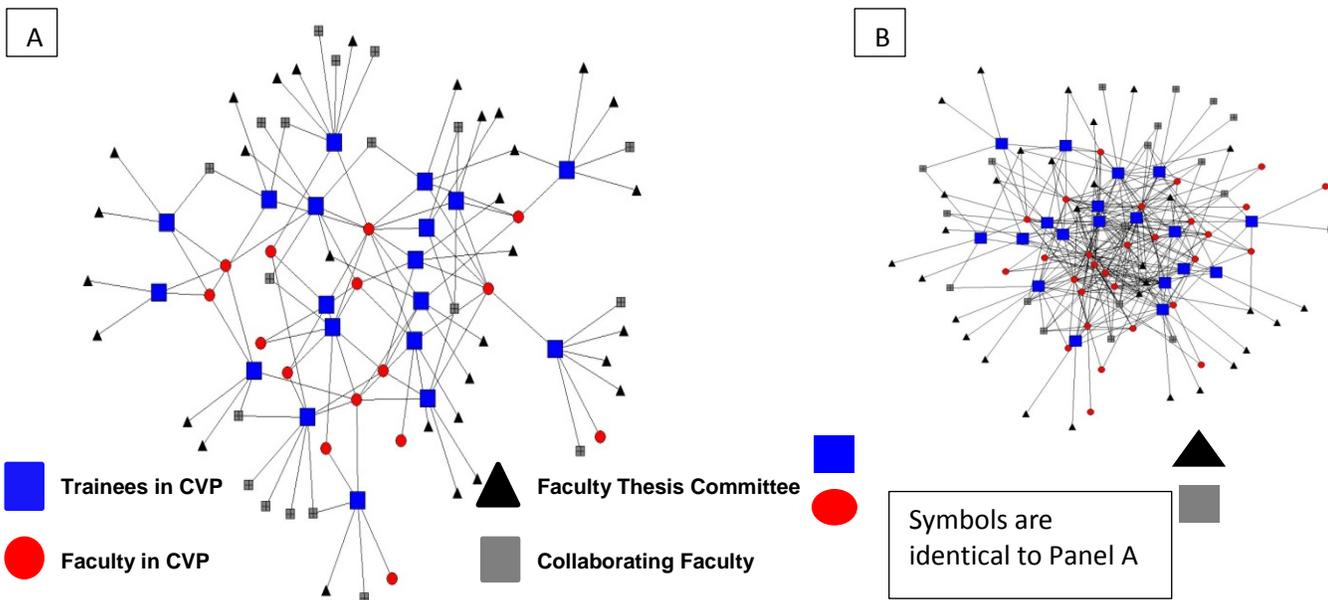
Our participation in training grants has been primarily Drs. Molly Wasko and Susan Lyons working with the PI of the grant application process to establish the interactive/successful networks of research by the faculty and trainees in a program. Social Network Analysis (SNA) can be used to demonstrate how different centers are collaborating within or across institutional boundaries and, more importantly, how successful faculty and trainees are at collaborating and fostering an environment of scientific success. SNA can be very effective at providing the strength and degree of interactions with quantitative data, as well as providing a powerful and effective visualization of these interactions. We primarily look for successful scientific interactions as defined by: collaborations with others at the level of funded grants, publications, presentations or posters at meetings, and informal scientific dialog.

The process to establish the network of training faculty and trainees in an program applying for a training grant is to obtain the training faculty's and trainees' names and email addresses from the past 10 years. A simple survey is sent to all asking only four basic questions. 1. With whom have you received funding for a **grant**? 2. With whom have you co-authored a **publication**? 3. With whom have you collaborated on a **presentation or poster**? 4. With whom have you had **scientific discussions** with concerning unfunded grants, potential projects, etc.? Each person marks only the interactions that he/she has had with all the names on the list. All trainees and faculty are expected to participate, requiring only 5-10 minutes of their time. The data is then organized and formatted before importing into the Software program, UCINET, for Social Network Analysis.

For example, in a center grant (P30) Dr. Anapum Agarwal wanted to demonstrate that the O'Brien Center was able to effectively collaborate with researchers at UC- San Diego- at all four levels of scientific engagement, as well as to show that the trainees were interactive in this network. The diagram below demonstrates in panel A, the total number of interaction across the two centers, including outside collaborators. Panels B, C and D illustrate the collaborations of the two centers, the faculty and students in their presentations, publications and funded grants respectively. This illustrates the high level of collaborations at this point in time and provides a baseline to illustrate continued or increased collaborations over time, if repeated.



Another SNA example shown here is for a T32 training grant application for Dr. Victor Darley-Usmar's graduate students in the SOM Cardiovascular department. Following the same process mentioned above in collection of the interactions between Faculty, Collaboration Faculty, Thesis Committee faculty and the Trainees, the data indicated that each graduate student was highly connected through scientific deliverables with their individual mentors, the training faculty named in the grant and collaborating faculty, as well as their faculty thesis committee members. The placement of the trainees (Blue Squares in Panel A) shows that they are centrally located among the faculty, indicating a favorable environment for scientific interactions. Panel B shows the close interactions between the training faculty and students using grant, publication and presentation interactions. Additional value can be derived from these SNA graphs by studying the relationships of the individual members. For example, if any one of the blue squares or red circles is outside the area of centrality (indicating many interactions), that placement may indicate a paucity of interactions. This may be expected or explained depending on the individual situation, but it might raise awareness to build a better research relationship.



We are currently using SNA to demonstrate the research collaborations for a T32 training grant for post-docs, following the same protocol. Each training grant is slightly different and may want to illustrate other aspects of collaborations. These can all be integrated into the SNA project. These analyses are time consuming and adequate time is required to set up and process the data, so sufficient lead time is needed.

Developed 3/15/13

Contact the CCTS Research Commons with questions: ccts@uab.edu