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## Building Social and Scientific Networks to Grow Our Global Skin Biology Community

**Alice Pentland**

University of Rochester, Department of Dermatology, Rochester, NY USA

Alice Pentland: [alice\\_pentland@urmc.rochester.edu](mailto:alice_pentland@urmc.rochester.edu)

The field of skin biology is beautifully dynamic and growing rapidly. This expanding wave of new knowledge is transforming the clinical practice of Dermatology on a constant basis. Key to translating the new knowledge being acquired about skin disease is the conduit of skills and knowledge that can reliably move such discoveries through the maze of activities needed to bring change to clinical practice. There are many links in this chain. We must maintain a diverse physician scientist workforce that can conduct basic and clinical research and serve as teaching faculty in departments of Dermatology. Researchers with broad expertise in basic, translational and clinical research are also needed for the field to thrive. To achieve success in moving knowledge from the bench to the bedside, individuals are needed both in departments of dermatology and other university departments, as well as in private enterprise conducting skin-related research and product development.

Since 2001, the Society for Investigative Dermatology (SID) has used a structured approach to increase the likelihood that dermatology trainees will pursue an academic career, to build research capability in skin research. The Retreat was developed to engage young dermatology trainees in academic careers by bringing them together and giving them information needed to make career decisions before they were recruited as partners by dermatologists in private practice. They would also get the opportunity to see the camaraderie and intellectual environment of academic life, get answers to their questions about how to pursue an academic career, and have the opportunity to tap into a network of mentors while creating their own peer network with the same interests. The first Dermatology Resident Retreat for Future Academicians took place at Airlie Center in Warrenton Virginia, bringing together residents interested in academic careers with faculty from institutions around the country who were ready to mentor them (Figure 1). The Retreat has been consistently supported by an NIH conference grant, an indication of how important our community believes it is to build the careers of young investigators. Results from this ongoing effort have been tracked by the SID office over time. Results from the first 5 years of the Resident Retreat indicated that it was quite successful in increasing the percentage of individuals who choose such career paths (Hill et al, 2010), and was highly valued by its participants.

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For overall success in translating research discoveries into practice, the SID believes it is important to provide activities that build connectivity for all the groups that must work together. In 2012, just prior to the 75<sup>th</sup> anniversary of the SID, the NIH conference grant that helps support the retreat was coming up for renewal, and it was my job to write it. I strongly believe that the best way to get young people to appreciate the quality of an activity is to experience it. Today's science is team science. Investigators must work with teams from several disciplines to write grants and conduct research. I have been asked many, many times by young people about a course to teach grantsmanship. I decided to make the brainstorming process that leads to grant writing a novel part of the retreat experience. In this new activity, called the "Multidisciplinary Team Exercise", participants in the retreat with aligned (but not identical) interests meet in small groups to plan a research project. Mentors in the same field are selected to shepherd the process, and the group is charged with generating specific aims. It is an opportunity to get into the details required for joint project planning, and also a way to work side by side with those of similar interests and more senior researchers in closely related fields. Attendees also experience some of the intellectual strategies used for research, and learn that different fields have different vocabularies. Afterward, attendees share their "Aha!" moments from the activity. In addition to putting people together with synergistic interests, the exercise imparts another important skill – it is not the person who talks the most or is the smartest whose group plans the best project. Behavioral research teaches that social sensitivity and equality of time spent communicating yields the most effective results when teams work on tasks together (Williams et al, 2010). So, a short formal introduction to effective team communication is given at the beginning of the exercise. Examination of the communication patterns illustrated in Figure 2 shows the difference between a poor communication pattern and a healthy one. The thickness of the lines linking each figure in the team illustrate the amount of information exchanged between them, while the diameter of the circle overlying each figure in the team represents the amount of the whole conversation linked to that figure's contributions. A large circle represents an individual who is doing much more talking than one whose circle is small. In Panel A, participants are not likely to make the best use of the whole group's knowledge, while in panel B, an idealized pattern of communication between team members is shown. In Raleigh during the SID's 75<sup>th</sup> anniversary meeting, we conducted the first multidisciplinary exercise. The attendees were very happy with the results, with some saying to me, "We're going to keep working on this project together!"

When something is working well, it doesn't take long before other groups begin to ask how to achieve the same happy results for themselves. At the 75<sup>th</sup> anniversary meeting in Raleigh, the SID also inaugurated a new PhD retreat with an approach similar to the resident retreat. We brought together the PhD retreat attendees and Resident Retreat attendees for the Multidisciplinary Team Exercise, to lay groundwork for future careers moving basic PhD efforts to the bedside. Skin biology emerges from a broad range of research areas funded by multiple NIH Institutes. The SID meeting is one of very few venues for developing appreciation of the multidisciplinary nature of the field. These SID retreats provide specific nurture of this aspect of skin research. By including both MD and PhD trainees at the retreat, we instill appreciation for the breadth of scientific activity that occurs to support the field.

The retreat functions as an incubator to build a larger cadre of individuals in industry, academic and clinical life that participate, understand and build the specialty.

These social networks foster collegiality, collaborations, an appreciation for the creative, multidisciplinary nature of science and other productive interactions. For example, residents may meet PhD trainees who are working to improve skin imaging, or high throughput molecular detection and can share their understanding of clinical problems on which this science would be suitably focused. Sustained exposure to the entire spectrum of dermatologic research will influence the trainees as they make their career decisions, build their enthusiasm for this area of science, as well as help them visualize how to move an idea out of the lab and into practice.

At the International Investigative Dermatology (IID) 2013 meeting in Edinburgh, we had an opportunity to expand the horizon of the retreat so it circled the globe! The challenge was bringing the Future Leader's Symposium, a joint effort of the European Society for Dermatologic Research and Japanese Society for Investigative Dermatology, which is planned and executed by scientists at the beginning of their independent career, together with the SID resident and PhD retreat. Many rounds of discussion with our ESDR and JSID colleagues beginning nearly a year ahead of the meeting helped to convene this novel international event. Senior leadership from all 3 societies found common ground to produce the IID Retreat. Building on the pieces that were successful in each society's stand alone meeting, the IID retreat shared information about training around the world, the need for mentorship, advice on publishing a manuscript, work life balance and career paths. The multidisciplinary exercise featured tables with young investigators from Asia, Europe and the Americas at the table with mentors from several continents. Attendees surveyed afterward said "It was definitely an invaluable opportunity to interact with dermatologists that had same vision from a different continent." and

"Overall, it was a fantastic opportunity for me. Thanks to the IID retreat, I got to know the names and faces of young investigators from all over the world." A recent editorial in Nature looked at the quality of science produced by international collaboration, and found that papers with at least one author from another country are cited more often than those which are authored entirely by scientists from a single country (Adams, 2013). This IID Retreat consciously lays the groundwork for such scientific opportunity.

It seems very likely the IID retreat and SID, ESDR and JSID retreats of the future will be key to building the links needed to form a strong base for our specialty. We are poised on the edge of great opportunities to change the lives of patients, and our professional societies have made the commitment to help their members be ready for this bright future.

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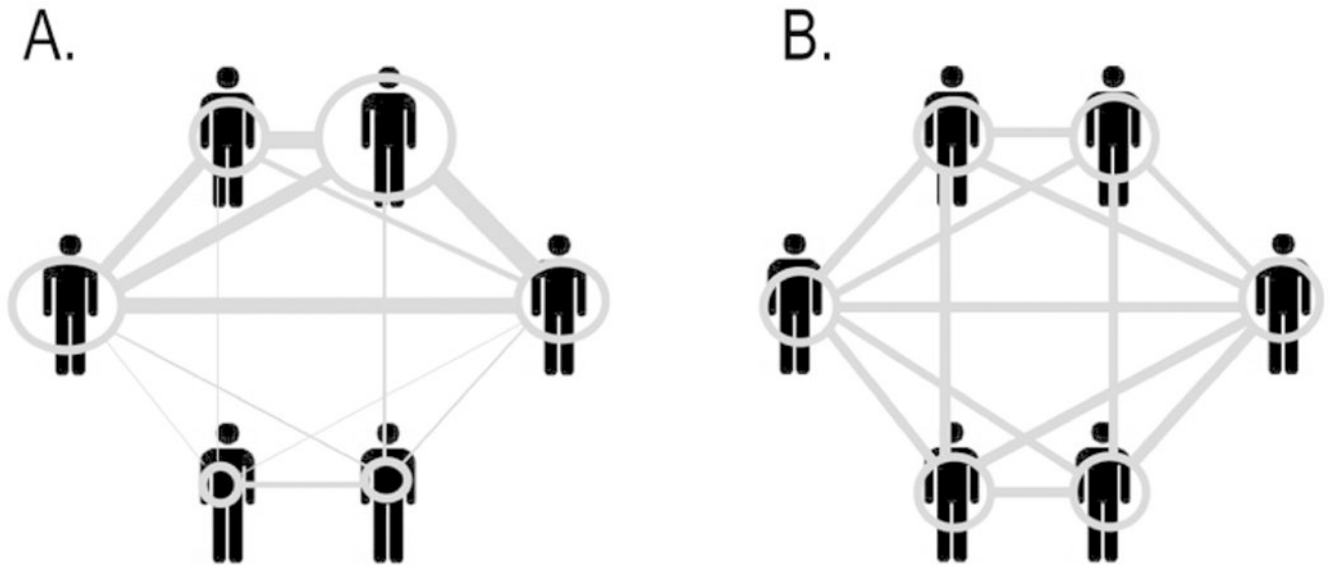
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**Figure 1.**  
Participants and faculty of the first Dermatology Resident Retreat for Future Academicians.



**Figure 2.**  
Poor communication pattern (left); vs healthy communication pattern (right).

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