The ALR11 Data are a set of interview transcripts documenting the life histories of adults in science-related careers. Adults between 30-64 years old were interviewed about science influences throughout their lives. The interview procedure included the use of a Life History Calendar to improve memory accuracy and enhance validity. Transcripts were sent to participants for member checking. The data collection methods of the ALR11 are described more fully elsewhere.

Over 4,000 pages of interview transcripts from a sample of 69 participants were analyzed. Each transcript was read thoroughly five times and coded systematically. The first time through the data, a four-dimension coding scheme was used to code the data according to the original hypothesis of activation. The original four dimensions were: scientific sense making, fascination, values science and maintains focus. As we became more familiar with the data we realized (1) there was emerging, (2) sub-dimensions were clearly evident, and (3) the original names of the dimensions did not adequately describe these data.

Our evolving understanding of the data led us to create a customized coding scheme grounded in the data. The final coding scheme included 5 primary activation dimensions and 15 sub-dimensions. Four of the primary dimensions are similar to the original four dimensions but are re-named to better reflect these data (see next panel). We rigorously applied the revised coding scheme to the data, un-coding the first round of work we had completed. Stories and comments about experiences and people who influenced participants’ science engagement were coded to the primary dimensions using NVivo qualitative software. Then each passage that was coded to a primary dimension was more finely coded to one or more activation sub-dimensions as appropriate. This level of detailed coding required two additional complete reads of all transcripts. Inter-rater reliability was calculated at the idea level for the sub-dimensions of 10% of the sample and yielded levels of agreement ranging from 65% to 99%. The data were read and coded again for time period. Finally, 45 queries of the data were performed with NVivo and the results were read and further organized. Each experience of activation a participant relayed was tallied by hand and proportions of occurrences of dimensions by time periods were calculated for the whole sample and by sex and career outcome.

**Research Questions**

1. What are the dimensions of science activation?  
2. How does science activation change over time?

**Analysis Procedure**

**Data Distribution**

The ALR11 Data show evidence of five activation dimensions that appear early, decrease in middle school and recover in high school.

**Activation over Time Similar for Women and Men and by Career Category**

**Conclusions**

Dimensions of Science Activation. The ALR11 Data show evidence of five primary dimensions of science activation. The emergence of a fifth dimension of scientific sense of self shows that science-related recognition, identity and knowing oneself as capable in science are part of the activation story for participants interviewed in the ALR11 Data. The evidence of the other dimensions sheds light on how adult scientists and engineers understand their science experiences over the life course. The most common sub-dimensions of doing, thinking and talking science were being a tinkerer (taking things apart, putting them together), a naturalist (observing the natural world), and an experimenter (following directions to conduct experiments). Science interest and curiosity were of interest in a particular way (e.g., the sky, rocks, animals). Scientific sense of self was usually experienced as a combination of science-related recognition, identity and knowing oneself as capable in science. Valuing science was most often expressed as an intrinsic sense of passion related to science which provided momentum to pursue science. Science facilitators were most often a combination of school-related opportunities and encouragement.

Science Activation Change Over Time. The ALR11 Data show clear evidence of early activation that decreases in middle school and recovers in high school. Science interest and curiosity and doing, talking and thinking science are the most common types of science engagement in childhood, middle school and high school. The activation dimensions of scientific sense of self and science facilitators become important for many people during high school. The decrease in activation in middle school may be the result of developmental changes. The decrease may also be due to participants’ first school-based science experiences (or lack thereof) and limited opportunities in that context to pursue the science topic or process most interesting to them.

Emergent Findings and Future Analyses. The overall pattern of science activation is similar when examined by sex and career category. However, emergent findings of specific dimensions to be explored further include:

- The role of science facilitators by sex over time: notice how different the pattern is for women compared to men.
- The role of scientific sense of self and science facilitators by career category over time: notice how different the patterns are for professors compared to non-professors and communicators.

While the ALR11 Data are an important source of science activation stories, they are also a source of science de-activation stories. Even though all participants were successfully working in science-related careers, many discussed roadblocks and barriers along their pathways. De-activating experiences occurred at all time periods and with varying degrees of influence, but are not included in this analysis. The ALR11 Data also include information about later time periods to participants’ lives, namely college and early adulthood through age 34. Future analyses will examine these later time periods as well as the quality and consequences of science de-activators.