Core Obstacles: Barriers to Success

To identify the core obstacles to advancing the careers of women in science, especially to the most senior levels, working groups listed the major factors that currently interfere with the achievement of their shared vision of an ideal scientific community.   To be selected, each key impediment had to meet one or more of the following criteria:

_   It has high impact (major detrimental effects).

_   It is pervasive.

_   It is systemic (underlying other obstacles).

_   It is actionable (something can be done about it).

Once participants listed these obstacles to realizing their ideal outcome for women in science, they either (1) grouped the obstacles (if there were similarities), or (2) left them as they were (if each obstacle was unique). For the purposes of this report, obstacles from all working groups were combined and synthesized, then reviewed for common themes.

There was considerable overlap among the seven working groups concerning the core obstacles to advancing women's contributions to science through professional societies. A review of the raw data, presented in its entirety in Table 2, revealed five highly interrelated themes that may prove to be helpful in thinking about and addressing identified problems. These thematic core obstacles are briefly defined below.

They are listed in order, from the most mentioned to the least mentioned, with a slight adjustment for the number of groups mentioning them.

Core Obstacle 1: Entrenched gender bias and cultural expectations

The widespread and long-standing attitudes, beliefs, and values about the role of women in society, held within the culture-at-large, transcend women in science and focus on the "social status quo" and the devaluation of women in general. Because obstacles falling into this theme exist on such a broad scale, addressing them (and achieving many of the conditions described in the shared vision) will require concerted efforts to change cultural perceptions and attitudes regarding women scientists, including their roles and contributions, their professions, and their families.

Core Obstacle 2: Male model of career success in science
This theme echoes the previous one on a more focused, albeit no less pervasive, scale. It highlights gender-bias within the context of the institutions, industries, and organizations that employ scientists, and emphasizes the effects of such gender-bias on women's careers in science. Specific obstacles include male-dominated and institutionalized structures and systems for professional advancement that place women at a disadvantage.

Core Obstacle 3: Societies underutilized in promoting women's careers in science

In this theme, the focus turns to the opportunity for scientific societies to use their power and influence to advance women's careers in science. Included here are (1) the general lack of awareness regarding the significance and scope of the problem, often due to insufficient information, and (2) the dearth of mechanisms and incentives for changing the status quo, once the problems are recognized.

Core Obstacle 4: Inadequate professional preparation and career support

Obstacles related to women's inability to find the support they require to move forward in their careers include the small number of women role models, the unmet need for both men and women mentors, and the often-unpublicized "rules of the game."

Core Obstacle 5: Women's self-perception

Women in science often feel isolated, which likely results from (and exacerbates) other obstacles. Whether such isolation comes from their attempts to balance careers and families, or from their being left out of the loop of traditional, male-dominated circles of influence, it affects women's perceptions of their own value. It may even increase their fears about moving ahead in their careers.

TABLE 2: Core Obstacles for Five Issue (Raw Data)

Issue	Core Obstacles
Mentoring and Networking	**Isolation (due to leaving field and coming back or wrong career decisions or no professional contacts to help you)** **Stereotyping, role models, self image** **Communication styles** **Knowing rules of game** **Socio-cultural expectations/family responsibility** **Social status quo – maintenance of male dominant hierarchy** **Institutional attitudes – current criteria for success, personal choices (women's choices around children and family, etc. are not honored and supported by the institution)** **Gender attitudes – women not supporting women, men and women attitudes** **Professional preparation**
. Career Development	**Senior decision-making by 'old boys'** **Success-oriented training - women's aspirations, visibility, sensitivity to criticism** **Information - about women in the field, to women in the field** **Number of women - mentoring, role models, pool** **Career facilitation and strategies** **Institutional Incentives - money, recognition** **Narrow view of scholarship** **Resource allocation to men** **Data/education to change attitudes** **Lack of support mechanisms - lack of mentoring** **Internal/external perceptions of one's value** **Personal psychology**

We don't have good data on the effectiveness of the programs we do have. Our data collection is not good science.

-Jong-on Hahm/Participant

TABLE 2: Core Obstacles for Five Issue (Raw Data)

Issue	Core Obstacles
Representation in Societies	*Lack of data* *Lack of dissemination of information* *Lack of collaboration among/between women* *Lack of mechanisms for organized action across societies* *Recognition of problem, especially middle career and up (to recognize the problem of lack of women representation in societies)* *Lack of self confidence* *Fear, reticence, and lack of risk taking* *Stereotypes (about women roles)* *Tracking (related to data collection, subconsciously track in a particular less powerful past)* *Invisibility, intentional and unintentional* *Leadership's failure to understand importance to science of advancing women* *Lack of recognition* *Devaluation of women and women's role in society* *Lack of understanding in the professional societies of the value added of women* *Lack of motivation to change status quo* *Disciplines "eat their young" (competition among societies for their members)* *Entrenched power structure in societies & disciplines* *Changes standard of success (male model)* *Negative image* *Lack of women on appointment committees*
Sharing Model Systems	*Tradition based on male culture* *Academic structure* *Multiple demands on time* *Recognition of extent of family vs. work issues* *Disparity between behavior and culture (i.e. women are too nice, too naïve, not "slimy" or political enough)* *Economic funding / resources* *Barriers to career development* *Discrimination exists in appointment and promotion* *People promote and participate with "like people"*
Outreach and Collaboration	*Awareness to action (Lack of advocacy from leadership, due to lack of awareness)* *Network is gender-biased* *Number of women in power* *(Lack of) resources, money, power (within societies)* *Under-valuation of contribution of women* *Women's self-image/lack of history*