The relative lack of women and underrepresented minorities in many medical specialties and in leadership positions across specialties in academic medicine has been identified as an area of concern by the Association of Academic Medical Centers, the National Institutes of Health, the American College of Physicians, and the Committee on Graduate Medical Education among others. While women make up a small proportion of leaders in academic medicine, underrepresented minorities are almost completely absent. There is growing evidence that the existing lack of diversity among practitioners, teachers, and researchers in medicine has a negative impact on the overall health of the United States population.

In order to diversify academic medicine, it is imperative that we have a more diverse group of leaders in the top levels of administration across academic medical centers, which are currently an almost monolithic leadership of white men. For example, of the 125 academic medical centers in the United States, there are only eight women deans. At the University of Wisconsin-Madison, of the 25 departments in the medical school, there are no women tenured faculty chairs and no minority faculty chairs or division heads. One minority faculty member is an associate dean. Many barriers have been identified to the successful academic career development of both women and underrepresented minorities. While some variation occurs, the traditional pathway to a successful career in academic medicine occurs along the following sequential course:

- college (4 years),
- medical school (4 years),
- fellowship and postdoctoral training including intensive research experience and mentorship (3-6 years),
- assistant professor (6 years to tenure),
- associate professor (6 years),
- professor.

Once at the full professor level, faculty members have the opportunity to advance to further leadership positions including section or division head (e.g. cardiology, endocrinology, geriatrics) or director of a research center, and from these administrative leadership positions to be a department chair and then dean. It should be emphasized that clinical pathways, while valuable for providing patient care and teaching students and graduate medical trainees, rarely enable a faculty member to conduct research, which is the only means to move through a tenure-track pathway into senior leadership in academic medicine. Such a linear pathway for developing academic leaders may not be optimal for the needs of women and many underrepresented minority trainees who are more likely to have fewer financial resources and more likely to have concurrent family caregiving obligations.

The NIH National Research Service Award Program has been in place since 1974. Despite a stated purpose of helping to "ensure that a diverse and highly trained workforce is available to assume leadership roles related to the nation's biomedical and behavioral research agenda," the current system is not producing the desired effect.

Women, who have comprised over 40% of medical students since the early 1990s, are more likely to enter clinical pathways in academic medical centers. There are a number of reasons for this including the ability to work part-time, the growing need for clinical billings to support med-
clinical schools, and the lower stature given to clinical positions compared to research faculty within an academic environment. While a clinical position may be expedient during early childbearing years, a number of women may wish to return to or embark on a research career when their children are older. Most, however, find little financial or career support for such a mid-career transition. For example, eligibility for Mentored Clinical Scientist Development Awards from the National Institutes of Health is limited to several years beyond completion of fellowship. A frequent misconception is that the absence of women in leadership levels is simply a "pipeline" problem that will eventually solve itself given the number of women in medical schools. Such is clearly not the case. Specialties such as pediatrics and psychiatry have had 40% to 50% women since the mid 1980s but continue to have relatively few women chairs. Furthermore, there is evidence that women may be losing ground. The Association of American Medical Colleges reported that whereas 15% of tenure-track faculty in academic medical centers at all ranks were women in 1995, in 2001 this fell to 14% and the percent of women who are tenured dropped from 14% to 12%.

One of the goals of the Center for Women's Health Research at the University of Wisconsin-Madison, one of 13 National Centers of Excellence in Women's Health recognized by the US Department of Health and Human Services, is to investigate ways to increase the diversity of academic medicine. As one attempt to address this goal, the Center for Women's Health Research has embarked on the Alternative Tracks to Leadership in Academic Sciences (ATLAS) initiative. The impetus for this program came from the following observations:

- Efforts to achieve faculty status and tenure through achievements in a research domain coincide with childbearing years so that a linear career path in academic medicine does not accommodate a women's reproductive biology.
- Individuals from disadvantaged backgrounds may not have the financial means to undertake a full-time course of academic training in their early years.
- The current stipends available for pre-doctoral trainees are insufficient to support older or re-entering students who may have more substantial financial obligations than younger students.

This program began in September 2002 and has two separate models (Figure 1). The first identifies clinical faculty who wish to transition from a clinical-based to a research-based career in academic medicine using the theme of women's health research, which attracts predominantly women trainees. The second identifies proven leaders in underrepresented minority communities who desire a career in academic medicine and offers support and mentorship through graduate training and research career development in women's health. Both differ from other training grants in that they incorporate principles of adult learning and provide a larger stipend to make them a tenable option for adults with established careers who may be supporting families. Both pathways provide support for up to five years.

With funds from the National Institute on Aging and the Center for Women's Health Research, we are piloting the ATLAS initiative. This program is done in collaboration with the Clinical Investigator Preparatory Program (CIPP) at the University of Wisconsin-Madison, also funded through the National Institutes of Health. The CIPP is a competency-based curriculum that enables development of a customized learning plan for each trainee. The goal of each learning plan is to ensure that the trainee achieve competency in the five core areas needed to be a successful clinical investigator in their own research, (2) perform research in a responsible and ethical manner; (3) demonstrate leadership skills in managing a research program, (4) write for a scientific audience, and (5) present and teach one's research to a variety of learners.

The outcomes of this program will be evaluated in several ways.

- Can we recruit into these pathways? At the present time, we have one trainee in each pathway and have several additional individuals interested in being considered, so the answer to this question appears to be yes.

![Figure 1. The Traditional Linear Career Path to Leadership in Academic Medicine (right side) and the two Non-Traditional Paths in the ATLAS Program (double-arrows from left to right)](image-url)
Will these individuals achieve the academic benchmarks of success and demonstrate competencies as outlined in the CIPP curriculum? The ATLAS objective is that within five years trainees will be well on their way to establishing an independent research program and positioned for tenure-track faculty positions at a US medical school.

We will also use participatory evaluation of the ATLAS program. That is, as trainees move through the program, they will be enlisted to reflect on the success of its various aspects. If the ATLAS initiative is successful, we will have demonstrated an effective intervention to help achieve gender equity and diversity in academic medicine, and this model can be replicated at other institutions committed to improving the health and health care of all people in our country.

References
The mission of the Wisconsin Medical Journal is to provide a vehicle for professional communication and continuing education of Wisconsin physicians.

The WMJ (ISSN 1098-1861) is the official publication of the Wisconsin Medical Society and is devoted to the interests of the medical profession and health care in Wisconsin. The managing editor is responsible for overseeing the production, business operation and contents of WMJ. The editorial board, chaired by the medical editor, solicits and peer reviews all scientific articles; it does not screen public health, socioeconomic or organizational articles. Although letters to the editor are reviewed by the medical editor, all signed expressions of opinion belong to the author(s) for which neither the WMJ nor the Society take responsibility. The WMJ is indexed in Index Medicus, Hospital Literature Index and Cambridge Scientific Abstracts.

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