ADVANCE addresses the most serious problem facing women in science and engineering, at NJIT and across the country: isolation. Although women are the majority of the U.S. population and nearly half of the U.S. workforce, at top research universities barely three percent of full professors in engineering, computer science and physical science are women. Because their numbers are so small, women science and technology faculty often find themselves positioned on departmental islands, disconnected from each other and from the mainland of academic life. And because they are isolated, it is much harder for them to accumulate social capital, the “who-you-know” connections through which information flows and upon which advancement often depends. In consequence, they are more likely to drop out, seeking the greater flexibility and collegiality available to them in other careers. This attrition is bad news — not only for women, but for the U.S. economy as well. Fifty percent of the current U.S. science and engineering workforce is approaching retirement. America has slipped to fifth, behind China, Japan, Russia and South Korea, in the number of new engineering PhDs it produces. Without dramatically increased participation by women in the domestic science and technology workforce, the U.S. is in danger of losing its historic edge in technological creativity and innovation.

A desire to support such increased technological creativity and innovation is at the heart of the NJIT ADVANCE project. To achieve this goal, ADVANCE jump-starts collaborative matchmaking in a number of different ways. For example, the project sponsors interdisciplinary colloquia that bring leading women science and technology researchers from across the country to the NJIT campus for lectures and small group discussions with faculty. (The 2006–2007 series focused on environmental issues, including global climate change.) These events — the intellectual equivalent of college “mixers” — give female and male faculty from various departments a chance to meet each other and discover shared research interests.

ADVANCE further encourages faculty interconnection by offering an annual seed money grant to the best interdisciplinary research proposal from a woman-led NJIT faculty team. The 2007 award went to assistant professors Camelia Prodan and Edgardo Farinas for their proposal “Noninvasive Bio-Sensors for Drug Discovery, Bio-Defense and Protein Engineering” — a richly interdisciplinary project in which a physicist has teamed with a chemist to do research on the frontiers of biology.

ADVANCE supports cross-sector synergies by linking women researchers in academia with women in New Jersey industry and state government. This initiative, called the Open Partnership, builds on the strategic concept of “open innovation” used in modern industry, the practice of embracing ideas that come from outside as well as from inside a given organization. The Partnership aims to create new collaborative opportunities for women as a means of creating new opportunities for technological innovation and economic growth in the state as a whole.

In April, NJIT hosted a half-day Open Partnership conference that brought together participants representing nearly 50 different domestic businesses and universities. Strong support emerged from the conference for a project that ADVANCE has championed: a cross-sector virtual research network (V-Net). In order to make this network possible, ADVANCE has already begun to develop a special E-connectivity tool. (The prototype,